Final Program

American Society of Mechanical Engineers (ASME)

TURBO EXPO
Turbomachinery Technical Conference & Exposition

POWER & ENERGY
Conference & Exhibition

ICOPE
International Conference on Power Engineering

CONFERENCE
JUNE 26–30, 2017

EXHIBITION
JUNE 27–29, 2017

Charlotte Convention Center, Charlotte, NC, USA

ASME
SETTING THE STANDARD

ASME
INTERNATIONAL GAS TURBINE INSTITUTE

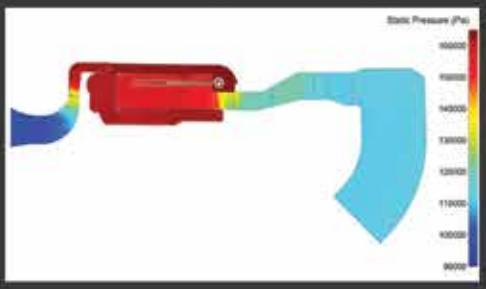
Numeca Turbomachinery Solutions: Design, Analysis & Multidisciplinary Optimization

NUMECA INTERNATIONAL

Full engine simulation, combining NLH power with our advanced combustion models, in one single run

Hybrid mesh (structured & unstructured grids) of a KJ66 micro-turbine jet engine

Static temperature field inside the combustion chamber of the KJ-66



Meridional cutting plane colored by total pressure of KJ66 fully-coupled simulation

Meshing tools for high-quality structured and unstructured grids:

AutoGrid5™ , HEXPRESS™ & HEXPRESS™/Hybrid - the market reference for high quality, automatic meshing

Ultrafast CFD solvers:

FINE™/Turbo and FINE™/Open with OpenLabs , with unique CPU Booster™ and Non-Linear Harmonic (NLH) technology

Meanline and detailed 3D design*

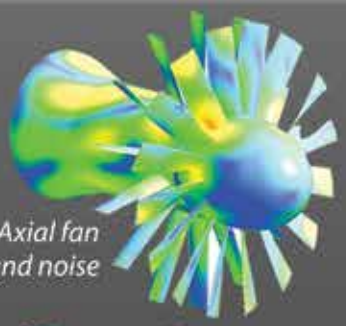
for single & multistage axial, radial and mixed-flow turbomachinery, streamline curvature and blade-to-blade solvers

FINE Agile

Fully coupled aero-vibro-acoustics suite

with FINE™/Acoustics

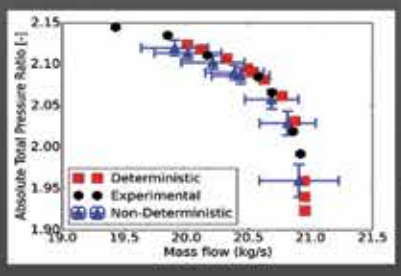
Wizard-based automation for tonal and broadband noise prediction.



Axial fan broadband noise

Multidisciplinary & Robust Design Optimization

FINE™/Design3D - Uncertainty Quantification (UQ): considering geometrical, operational & manufacturing uncertainties



Rotor 37: Total pressure ratio over mass flow

Deterministic (left) vs Robust Design (right)

Oil flow in gearbox casing

Mesoscopic scale simulations

with the new Lattice Boltzmann solver FINE™/LB

INNOVATION & QUALITY

www.numeca.com

*COMPAL®, PUMPAL™, RITAL™, FANPAM™, AXIAL™, AxCent® by Concepts NREC

Table of Contents

Charlotte, NC

Welcome to The Queen City, from Mayor Roberts.

Greetings!

On behalf of the citizens of Charlotte, I would like to welcome the attendees of the Turbo Expo, Power & Energy Conference, and the International Conference on Power Engineering (ICOPE) to Charlotte on June 26 – 30, 2017. We are happy that you have chosen Charlotte for this event and we trust that you will feel comfortable and at home in the Queen City.

It gives me great pleasure to share our fast-growing, dynamic, and innovative city with such a diverse and impressive group. Charlotte continues to be recognized and selected as a meeting destination by an increasing number of organizations. It is a community of pleasant tree-lined neighborhoods, parks and museums, restaurants, and sports facilities. We are especially proud to be the home of the NASCAR Hall of Fame, the Levine Center for the Arts which includes The Bechtler Museum of Modern Art, and the Harvey B. Gantt Center for African-American Arts +Culture. In addition, the activities available in our vibrant Center City mixes dining, entertainment, and cultural amenities that are distinctly Charlotte.

Again, we are pleased to have you join us in Charlotte and we welcome the opportunity to share our southern hospitality with you.

Warm Regards,

Jennifer Watson Roberts
Mayor

Welcome from the Conference Chairs and Executive Advisory Committee

Power and Energy + ICOPE Conferences

Dear Colleagues,

Welcome to the ASME 2017 Power & Energy Conference and to Charlotte, North Carolina, a U.S. energy hub!

In 2017, we bring together five of ASME's energy events including – the Power Conference, the Energy Storage Forum, the Energy Sustainability Conference, the Fuel Cell Conference, and the Nuclear Forum, and the co-located International Conference on Power Engineering (ICOPE)– to bring you "The Future of Energy- Powering Change."

As an attendee of ASME 2017 Power & Energy Conference, you will also gain access to two co-located events, ASME's TurboExpo, a must-attend event for turbomachinery professionals and ICOPE, the International Conference on Power Engineering, which is co-sponsored by ASME, the Japan Society of Mechanical Engineers (JSME), and the Chinese Society of Power Engineering (CSPE). ICOPE is focused on both fundamental and applied topics in power engineering.

We have a five-day packed schedule and much for you to learn and in which to engage. From pre-conference workshops, multiple technical tours, keynote, plenary, panel, and poster sessions, and technical tracks, you will have many options from which to choose. Additionally, there are numerous ASME Standards & Certification meetings, including Performance Test Code Week, and ASME Technical Division Committee Meetings. Be sure to visit our expansive exhibit floor and to learn about the newest technological advancements in the power and energy fields.

We thank you in advance for choosing to attend this comprehensive event. We look forward to meeting many of you. We also thank our volunteer leadership and Executive Advisory Committee, - who spent countless hours putting together a top-notch technical program and our sponsors and exhibitors for their support of the program.

Lastly, we are confident that you will enjoy Charlotte. Have a great conference, and thank you again for attending.

ASME 2017 Energy Storage Forum

Conference Chair: Gregory Jackson, *Colorado School of Mines*
Conference Co-Chair: Mark Lausten, *U.S. Department of Energy*

ASME 2017 11th International Conference on Energy Sustainability

Conference Chair: Robert Braun, *Colorado School of Mines*
Conference Co-Chair: Mark Lausten, *U.S. Department of Energy*
Technical Program Co-Chair: Hohyun Lee, *Santa Clara University*
Technical Program Co-Chair: Reza Baghaei Lakeh, *California State Polytechnic University, Pomona*
Technical Program Co-Chair: Amanda Smith, *University of Utah*
Technical Program Co-Chair: Keith Sharp, *University of Louisville*
Technical Program Co-Chair: Sophia Haussener, *RPFL*

ASME 2017 15th Fuel Cell Science, Engineering, and Technology Conference

Conference Chair: George Nelson, *University of Alabama in Huntsville*
Technical Program Co-Chair: Partha Mukherjee, *Texas A&M University*

ASME 2017 Power Conference

Conference Chair: Michael Smiarowski, *Siemens Energy Inc.*
Technical Program Chair: Steven Greco, *We Energies*

ASME 2017 Nuclear Forum

Conference Chair: Robert Stakenborghs, *ILD Power*
Conference Co-Chair: Jovica Riznic, *Canadian Nuclear Safety Commission*

ICOPE17 Conference

Conference Co-Chair: Motonari Haraguchi, *Mitsubishi Hitachi Power*
Conference Co-Chair: Mingjiang Ni, *Zhejiang University*
Conference Co-Chair: Michael Smiarowski, *Siemens Energy Inc.*
Technical Program Co-Chair: Tomohiro Asai, *Mitsubishi Hitachi Power*
Technical Program Co-Chair: Takao Nakagaki, *Waseda University*
Technical Program Co-Chair: Yuso Oki, *Criepi*
Technical Program Co-Chair: Fei Wang, *Institute for Thermal Power Engineering Zhejiang University*

Executive Advisory Committee

Chair: Frank L. Michell, *American Electric Power (AEP)*
Co-Chair: Jason Lee, *Babcock Power*
Robert Braun, *Colorado School of Mines*
Sophia Haussener, *Ecole Polytechnique Federale de Lausanne (EPFL)*
Reza Baghaei Lakeh, *Cal Poly Pomona*
Mark Lausten, *US Department of Energy*
Hohyun Lee, *Santa Clara University*
Partha Mukherjee, *Texas A&M University*
George Nelson, *University of Alabama Huntsville*
Jovica Riznic, *Canadian Nuclear Safety Commission*
Keith Sharp, *University of Louisville*
Amanda Smith, *University of Utah*
Bob Stakenborghs, *ILD/Evisive*
Mark Turner, *University of Cincinnati*
Mansour Zenouzi, *Wentworth Institute of Technology*
John Bendo, *ASME*
Stephen Crane, *ASME*
Paul Cleri, *ASME*

Welcome to ASME 2017 Turbo Expo

We hope you will enjoy your visit to Charlotte!

Please join us at the Grand Opening Session on Monday morning which includes the Turbo Expo Keynote Panel and ASME IGTI Awards Ceremony. This year's keynote theme is "Disruptive Technologies & Accelerating the Pace of Innovation in Gas Turbines." The keynote panel format, with moderators fielding questions from the audience and posing them to the panelists, was introduced in 2016. Offering their expert perspectives will be keynote panelists Dag Calafell, Upstream Machinery Chief, Exxon Mobil; Jean-Paul Ebanga, President & CEO, CFM International; Karen B. Florschuetz, Vice President and General Manager, Operations Americas, Dresser Rand, a Siemens Business, USA and India; and Kevin Murray, PMC Engineering & Construction, Duke Energy. Moderators will be myself, Mark Turner, Professor, University of Cincinnati and Paul Garbett, Head of Large Gas Turbine Engineering, Siemens Power & Gas Division. Two plenary sessions will follow the same format on Tuesday and Wednesday morning (see page 7 for more information).

The awards ceremony will honor the winners of the ASME R. Tom Sawyer Award, the ASME Gas Turbine Award, the ASME IGTI Industrial Gas Turbine Technology and Aircraft Engine Technology Awards, the ASME IGTI Scholar Award, the John P. Davis Award, and the Early Career Engineer Award in memory of the late Dilip R. Ballal.

As one of an estimated 4,000 participants, you will have a choice of over 1,000 technical papers to be presented in over 300 technical sessions. The exposition will showcase the newest products from over 130 companies, offering opportunities for practitioners and researchers to come together. There will also be Workshops, Panel Sessions and Tutorials. All attendees are invited to the Welcome Reception on Monday evening. The Women in Engineering Networking Event is on Tuesday evening and students and young engineers should not miss the mixer on Wednesday evening.

On behalf of ASME IGTI, I wish to thank our sponsors who have ensured the success of Turbo Expo 2017 through their generous support. I also wish to thank our Executive Conference Chair, Paul Garbett, the keynote and plenary panelists, our Local Liaison Committee Chair, Brian Maragno; this year's Review Chair, Zolti Spakovszky and the Vice Review Chairs, Patricia Cargill, Nirm Nirmalan, Alberto Traverso and Technical Program Chair, Ray Chupp. Special thanks to all of the volunteers who contributed to make Turbo Expo the premier conference for turbomachinery technology. Turbo Expo would not be possible without the tireless efforts of the authors, reviewers, session organizers, point contacts, vanguard chairs, committee leaders, and others. Thank you for attending Turbo Expo. I hope that you find your time in Charlotte to be an enriching and memorable experience.

Charlotte, Queen City, was named after King George III of Great Britain's wife, Queen Charlotte of Mecklenburg-Strelitz. You will be pleased you visited this Southern gem and attest that Charlotte is a crown jewel.

Charlotte is proud to be the home of the NASCAR Hall of Fame, the Levine Center for the Arts which includes the Bechtler Museum of Modern Art, and the Harvey B. Gantt Center for African-American Arts + Culture. With Southern grace and cosmopolitan style, it plays host to a vibrant arts and music scene plus it is a booming metropolis for big business.

The Carolinas is regarded as "a New State of Energy" with Charlotte at its center. The Carolinas is home to more than a thousand companies and organizations directly tied to the energy sector, which employ over 36,500 people! Globally recognized brands with a major energy presence include Duke Energy, Siemens Energy, AREVA, ABB, CB&I, Fluor, GE, Honeywell, Hubbell, Ingersoll Rand, Itron, Mitsubishi, SCANA, Babcock & Wilcox, Toshiba, Westinghouse and many others. The US Department of Energy, in fiscal year 2016, awarded 274 energy projects to the state of North Carolina worth 92.5 million USD.

The Carolinas is also home to the largest concentration of U.S. universities and institutes engaged in energy research, including Duke University, NC State, UNC Chapel Hill, Clemson, South Carolina, UNC Charlotte and its Energy Production and Infrastructure Center (EPIC), the Savannah River National Lab, RTI International and the Electric Power Research Institute. This community of energy institutions is further served by E4 Carolinas, a nonprofit that convenes the region's energy companies and institutes to promote energy commerce. Such concentration of users, researchers, and manufacturers offers an exceptional environment for Turbo Expo.

I wish you all a pleasant, productive, and rewarding visit to Charlotte.

Conference Chair
Mark Turner
University of Cincinnati

Executive Conference Chair
Paul Garbett
Siemens Power & Gas Division

ASME Turbo Expo Grand Opening:

Keynote & Awards Program

Monday, June 26 Crown Ballroom, Charlotte Convention Center - 10:15 am – 12:15 pm

Following the Keynote address, we will recognize the ASME IGTI award winners. Be sure to join us in celebrating their successes.

The ASME Turbo Expo 2017 Keynote Session will be held in a panel format like last year in Seoul.

Disruptive Technologies & Accelerating the Pace of Innovation in Gas Turbines

Graeme Wood said about advertising that "change has never happened this fast before, and it will never be this slow again".

Despite approaching its 80th birthday, this could equally be applied to the gas turbine. Technology developments are propelling the industry forward at an ever faster pace, be it in design, manufacturing or maintenance. The theme of the conference will focus on the technologies that are disrupting and accelerating the development of the gas turbine. These include leaps in the areas of multi-disciplinary optimization, advanced manufacturing, automation and digitalization among others. The conference will open with keynote speeches from customers in the aircraft, power generation and oil & gas segments.

These industry leaders will introduce their expectations for where technology developments will lead, and how they will help them face their future challenges.

Panelists:

Dag Calafell,
Retired, formerly Chief Machinery Engineer, ExxonMobil

Jean-Paul Ebanga,
President & CEO, CFM International

Kevin Murray,
PMC Engineering & Construction, Duke Energy

Karen B. Florschuetz,
Vice President and General Manager, Operations Americas, Dresser Rand, a Siemens Business

Moderators

Paul Garbett,
Head of Large Gas Turbine Engineering, Siemens

Mark Turner,
Professor, University of Cincinnati

ASME Turbo Expo Organizing Committee

Paul Garbett
Executive Conference Chair
Siemens Energy, Inc.

Mark Turner
Conference Chair
University of Cincinnati

Ray Chupp
Technical Program Chair
REC Consulting, LLC

Zolti Spakovzsky
Review Chair
Massachusetts Institute of Technology

Patricia Cargill
Vice Review Chair
GE Aviation

Nirm Nirmalan
Vice Review Chair
GE Aviation

Alberto Traverso
Vice Review Chair
University of Genova

Dave Pincince
Exhibitor Representative
TURBOCAM International

Tim Lieuwen
Gas Turbine Segment Liaison
Georgia Institute of Technology

Brian Maragno
Local Liaison Chair
Siemens Charlotte Energy Hub

Turbo Expo Plenaries

Two Plenary Sessions Will Follow the Keynote Format on the Following Days:

Multidisciplinary Computations and Optimization in Gas Turbine Design

Tuesday, June 27 • 11:50 am – 12:45 pm
Crown Ballroom, Charlotte Convention Center

Panelists:

Andrew Aggarwala, *Manager, Turbine Aerodynamics, Pratt & Whitney*

Dr. Eisaku Ito, *Senior General Manager, Business Intelligence & Innovation Department Marketing & Innovation Headquarters, MHI*

Dr. Ingrid Lepot, *Research and Technology Manager, Cenaero*

Robert Nichols, *UAB/ AEDC, DOD HPC Modernization Program*

Moderators

Mark Turner, *Professor, University of Cincinnati*

Dirk Nuernberger, *Siemens Gas Turbines, Mulheim, Germany*

Additive Manufacturing Plenary Panel Session

Disruptive Technologies and Accelerating Innovation in Gas Turbines: The Role of Additive Manufacturing
Wednesday, June 28 • 11:50 am – 12:45 pm
Crown Ballroom, Charlotte Convention Center

Panelists:

Christine Furstoss, *Technical Director, Manufacturing, Chemical & Materials Technologies, GE Global Research*

Thomas W. Prete, *Vice President, Engineering, Pratt & Whitney*

Markus Seibold, *Power & Gas Business Lead for Additive Manufacturing, Siemens*

Mike Aller, *The Consortium for Advanced Production & Engineering of Gas Turbines*

Moderators

Rob Gorham, *Director of Operations, National Center for Defense Manufacturing and Machining, America Makes*

Rich Dennis, *Advanced Turbines Technology Manager, U.S. Department of Energy National Technology Laboratory*

Karen A. Thole, *Department Head of Mechanical and Nuclear Engineering, Professor of Mechanical Engineering, Pennsylvania State University*

AM3D Day

Be sure to stop by and visit the below exhibitors with Additive Manufacturing Products and Services. Posters can be found in the exhibit hall with information

AEROPROBE Revolutionary Technology

CPCC CENTRAL PIEDMONT COMMUNITY COLLEGE

IfTA

MMP TECHNOLOGY

Ophir®

PRÄWEST

RENISHAW apply innovation™

SIEMENS

SLM SOLUTIONS

SMARTUQ® Quantify Every Uncertainty™

SoftInWay Incorporated

TE connectivity

TURBOCAM INTERNATIONAL

The University Of Sheffield.

vectoflow measurements in fluids

NASCAR Hall of Fame

Turbo Expo Awards

Congratulations to all award recipients and thank you to all ASME IGTI committee award representatives whose work assists the awards and honors chair and the reading committee in the recognition of important gas turbine technological achievements.

2017 ASME R. Tom Sawyer Award

Awarded to an individual who has made important contributions to advance the purpose of the gas turbine industry and the International Gas Turbine Institute over a substantial period of time. The contribution may be in any area of Institute activity, but must be marked by sustained forthright efforts.

Dr. Alan H. Epstein, *Pratt & Whitney*

2015 ASME Gas Turbine Award

The Gas Turbine Award was established in 1963 to be given in recognition of an outstanding contribution to the literature of noncombustion gas turbines thermally combined with nuclear or steam power plants.

Receiving the 2015 GAS TURBINE AWARD for their paper:

"The Effect of Aspect Ratio On Compressor Performance"

Dr. Robert J. Miller, *University of Cambridge*
Dr. Ho-On To, *University of Cambridge*

2015 John P. Davis Award

Receiving the 2015 John P. Davis Award for their paper:

"Organic Rankine Cycle System for Effective Energy Recovery in Offsore Applications: A Parametric Investigation with Different Power Rating Gas Turbines"

Rakesh Bhargava, I*nnovative Turbomachinery Technologies Corp.*
Lisa Branchini, *University of Bologna*
Michele Bianchi, *University of Bologna*
Andrea Depascale, *University of Bologna*
Valentina Orlandini, *University of Bologna*

2017 Scholar Award

The International Gas Turbine Institute Scholar Award is bestowed upon an individual who submits a learned and comprehensive paper that makes a significant and timely contribution to the science and practice of gas turbine engineering. The Scholar presents the award-winning paper as a lecture to an audience of his peers.

Dr. Ronald Bunker, *Retired from GE*

2017 Aircraft Engine Technology Award

For outstanding contributions to the field of air breathing propulsion through inspiring leadership, education, and research, having major impacts on operational capability, performance, and design.

Michael Dunn, *Ohio State University*

2017 Industrial Gas Turbine Technology Award

For outstanding contributions and industry leadership in low emissions combustion system research, design, development, and deployment.

Dr. Eisaku Ito, MHI

2017 Dilip R. Ballal Early Career Award

Awarded to an individual who has made significant contributions in the gas turbine industry within the first five years of their career.

Subith Vasu, *University of Central Florida*

For more details on the award winners, please refer to the 2017 Awards Program. Programs will be available during the Grand Opening: Keynote and Awards Program on Monday, June 26.

Upcoming Award Opportunities

2017-2018 IGTI Student Scholarship

The deadline to submit an application is June 15, 2017. In the 2017-2018 school year up to 20 scholarships at $2,000 (USD) each will be awarded to qualifying students registered at an accredited university (either in the U.S. or elsewhere).

2018 Dilip R. Ballal Early Career Award

Nominations for the 2018 award are due to igtiawards@asme.org by August 1, 2017. The Early Career Award is intended to honor individuals who have outstanding accomplishments during the beginning of their careers. An early career award is intended for those starting a professional career, which is typically after a relevant terminal degree: BS, MS, or PhD. A criterion of seven-years-from-degree will be used to define the nominee's eligibility. The nominee must receive the award prior to the completion of the seventh year beyond the terminal degree.

For more information on how to submit a nomination for an award, visit **https://community.asme.org/international_gas_turbine_institute_igti/w/wiki/4029.honors-and-awards.aspx.**

Featured Sessions

Scholar Lecture

"Evolution of Turbine Cooling" *By Dr. Ronald Bunker*
Monday, June 26 | 5:45 – 7:00 pm
Crown Ballroom, Charlotte Convention Center

Dr. Ronald Bunker has been selected as IGTI's 2017 Scholar Lecturer.

Turbine cooling is a battle between the desire for greater hot section component life and the techno-economic demands of the marketplace. Surprisingly little separates the haves from the have nots. The evolution of turbine cooling is loosely analogous to that of the Darwinian theory of evolution for animals, starting from highly simplistic forms and progressing to increasingly more complex designs having greater capabilities. Cooling technologies have been aided by complimentary and substantial advancements in materials and manufacturing. The state-of-the-art now contains dozens of internal component cooling methods with their many variations, yet still relies mainly on only a handful of basic film cooling forms that have been known for 40 years. Even so, large decreases in coolant usage, up to 50%, have been realized over time in the face of increasing turbine firing temperatures. The primary areas of greatest impact for the future of turbine cooling are discussed, these being new engine operating environments, component and systems integration effects, revolutionary turbine cooling, revolutionary manufacturing, and the quantification of unknowns. One key will be the marriage of design and manufacturing to bring about the concurrent use of engineered micro cooling or transpiration, with the ability of additive manufacturing. If successful, this combination could see a further 50% reduction in coolant usage for turbines. The other key element concerns the quantification of unknowns, which directly impacts validation and verification of current state-of-the-art and future turbine cooling. Addressing the entire scope of the challenges will require future turbine cooling to be of robust simplicity and stability, with freeform design, much as observed in the "designs" of nature.

Aircraft Engine Technology Award Lecture

"Where Have all the Years Gone, 1961-2017?" *By Professor Michael G. Dunn*
Tuesday, June 27 | 10:15 – 11:45 am
Room 217AB, Charlotte Convention Center

Professor Michael G. Dunn was awarded the AET Award

Professor Dunn is Professor and Director of the OSU Gas Turbine Laboratory- Department of Mechanical Engineering at The Ohio State University. He received his B.S. (1958)- M.S. (1960) and Ph.D. (1961) in Mechanical Engineering from Perdue University in Lafayette, IN. His research interests are gas turbine heat transfer, aerodynamics and aeromechanics. His current research projects are: Co-principal Investigator on the Gulde Consortium Aeromechanics Award, in which the program is in its 2nd year, and he is also Co-principal Investigator on the Siemens Program for Aeromechanics.

Professor Dunn has received the Associate Fellow award from The American Institute of Aeronautics and Astronautics, the Fellow Award from The American Society of Mechanical Engineers, the 1990 ASME Heat Transfer Memorial Award, the Japanese Government Research Award for Foreign Specialist in 1992, 1990 Outstanding Mechanical Engineer Award from Perdue University, the ASME 1994 John P. Davis Award for paper judged to be of exceptional value to those supplying or using gas turbines and their support systems, the 2001 ASME International Gas Turbine Scholar Award, the 2006 ASME Heat Transfer Committee Best Paper Award, The 2009 ASME IGTI R. Tom Sawyer Award, The 2010 ASME Heat Transfer Committee Best Paper Award, the 75th Anniversary Medal of the ASME Heat Transfer Division received in July, 2013 and the 2016 Purdue University Distinguished Engineering Alumni/Alumnae Award.

Industrial Gas Turbine Technology Award Lecture

"On the Frontiers of Future GT Concepts" *By Dr. Eisaku Ito*
Monday, June 26 | 2:30 – 3:30 pm
Room 207A, Charlotte Convention Center

Dr. Eisaku Ito was awarded the IGTT Award

Dr. Eisaku Ito is a senior general manager in marketing and innovation at the headquarters of MHI. He had extensive experimental and numerical simulation experience while working at MHI R&D Center in Takasago. He successfully applied Computational Fluid Dynamics analyses for the development of three dimensional design systems with inviscid and viscous analyses for multi-stage turbines. The resulting systems are widely used by MHI and MHPS to evaluate gas turbine designs from the aero, heat transfer, vibration, structure and strength point of view.

He was awarded the ASME Best Paper award in 2010 (GT2010-23233) and has seventy six gas turbine related patents covering a wide range of technology. He has written thirty two peer reviewed conference papers and eleven papers on technical review of MHI.

Mind-Mapping on MRO/Service Engineering within Turbo Expo

Monday, June 26 | 12:30 – 2:30 pm
Providence II, The Westin Charlotte Hotel
*Lunch served from 12:30 – 1:00 pm (by invitation only)**

Motivation

For over 60 years Turbo Expo has been successfully providing an insight into the latest technologies of turbomachines. At the same time, a large Aftermarket of thousands of GT engines has been created. MRO / Service Engineering is becoming a sophisticated business based on predictive maintenance, customized repair, engine overhaul, field data monitoring and other disciplines. At present, Digital Solutions and Additive Manufacturing leverage significant business opportunities of Service Engineering for Turbomachines.

Objective

Discussion regarding a new knowledge platform for current and future Service Engineering for Turbomachines

Who Should Attend*

Service Engineers, End Users, Managers, Researchers and Insurers interested in sharing knowledge on today's Service Technologies using benefits of Industry 4.o

Session Organizers

Leaders of ASME Gas Turbine Segment (IGTI)

- Piero Colonna, *Delft University of Technology*
- Richard Dennis, *NETL, Office of Fossil Energy (FE), U.S. Department of Energy (DOE)*
- Tim Lieuwen, *Georgia Institute of Technology*
- Jaroslaw (Jarek) Szwedowicz, *GE, Power Services*

Following the session, all participants will be provided with a summary of the outcomes and future goals of this new GTS MRO initiative.

** Because of limited seating, participation in this session is by invitation only or to those who have sent a request, including contact information, to GTS (IGTI) staff at veseya@asme.org. Lunch will be provided to those who have responded that they will be in attendance.*

Thank You ASME Turbo Expo Pre-Conference Workshop Instructors!

ASME IGTI would like to thank the following instructors for sharing their knowledge, skills and time with all the engineers attending this year's ASME Turbo Expo Pre-Conference workshops:

High-Performance Aerodynamic Design of a Gas Turbine Exhaust Diffuser Leveraging CFD-Based Entropy Map

Dr. Bijay (BJ) K. Sultanian, *Ph.D., PE, MBA, ASME Fellow, Founder & Managing Member – Takaniki Communications, LLC, Oviedo, Florida, USA, Adjunct Professor - University of Central Florida, Orlando, Florida, USA*; Dr. Riccardo Da Soghe, *PhD, Associate Research Manager, Ergon Research*

Basic Gas Turbine Metallurgy and Repair Technology

Douglas Nagy, *Manager IGT Components Repair, Liburdi Turbine Services*

Uncertainty Quantification and Turbomachinery

Francesco Montomoli, Richard Ahlfeld, Marco Pietropaoli, Audrey Gaymann, *Imperial College; Andrea Panizza, General Electric Oil & Gas; Shahrokh Shahpar, Rolls-Royce*

Design, Operation and Maintenance Considerations for Cogeneration and Combined Cycle Systems

Rakesh Bhargava, Ph.D., Innovative Turbomachinery Technologies Corp.; Cyrus Meher-Homji, P.E., Bechtel Corporation; Manfred Klein, MA Klein & Associates; Steve Ingistov, P.E., ASME Fellow

Introduction to ISO 55000 Standard for Asset Management

Thomas Smith MS, *MA, Fellow, Inst. of Asset Management, University of Wisconsin*; Scott Morris, *Assoc. Dir., Facilities, Genzyme Corporation*; Dr. Thomas Houlihan, *Chairman, ASME Management Division*

Gas Turbine Aerothermodynamics and Performance Calculations

Syed J. Khalid *has an MSME (Purdue) and an ME (Aerospace, North Carolina State University)*

ASME Gas Turbine Segment Leadership Team

Piero Colonna
Segment Leader
Delft University of Technology

Tim Lieuwen
TEC Representative
Georgia Institute of Technology

Jaroslaw Szwedowicz
Vice Leader
GE, Power Services

Richard Dennis
Member
NETL, Office of Fossil Energy (FE)
U.S. Department of Energy (DOE)

Anestis Kalfas
Member
Aristotle University of Thessaloniki

James Maughan
Member
GE Global Research

Hany Moustapha
Member
Ecole de Technologie Superieure

Ruben Del Rosario
Advisor
NASA

Karen Thole
Advisor
Pennsylvania State University

www.rolls-royce.com/futuretechnology

We're in the business of Eureka moments.

As Archimedes lay in his bath, he realised the volume of water displaced was equal to the volume of his body. 'Eureka!' he cried, then ran through the streets of Syracuse in triumph... naked.

Like Archimedes, we are in the business of pioneering science and discoveries. Our market-leading engines employ the very latest technology. We strive continuously to find the right power solutions for our customers and to deliver innovative, comprehensive services. Each year we invest $2 billion in research and development to create ground-breaking engineering, leading to the next generation of engine designs. And we are working on these right now - Advance and UltraFan™. Such world-leading, intelligent innovation in aerospace puts Rolls-Royce customers at the forefront of technology today and will keep them there long into the future.

As to how we celebrate, well that's where we differ from Archimedes!

We deliver the best jet engines in the world

The story continues...

Rolls-Royce

Tutorials of Basics, Joint Sessions, & User Sessions

Tutorials of Basics

Aircraft Engine
ThC-1-2, CCC, 216AB, *Transient Engine Simulation - Its Role in Design and Development*

Ceramics
ThB-2-4, CCC, 105, *CMC Tutorials*

Coal, Biomass & Alternative Fuels
FB-3-8, CCC, 105, *CFD Workshop*

Coal, Biomass & Alternative Fuels with Combustion, Fuels & Emissions
WA-3-7, CCC, 207BC, *Basics of Alternative Fuel Combustion and Emissions*

Combustion, Fuels & Emissions with Coal, Biomass & Alternative Fuels
WA-4-33, CCC 207BC, *Basics of Alternative Fuel Combustion and Emissions*

Electric Power
TB-8-6, Westin Hotel, Providence I, *Combined Cycle Gas Turbine Operational Risk Management: A Utility Industry Perspective*

Heat Transfer: Tutorials
MA-14-2, CCC, 217CD, *Heat Transfer Track Overview II*
MC-14-1, CCC, 207D, *Heat Transfer Track Overview I*
TA-14-3, CCC, 207D, *Introduction to Cooling Design and Heat Transfer Technologies for Gas Turbine Vanes and Blades*
TC-14-4, CCC, 207D, *Physics-Based Introduction to Vortex, Windage, Rothalpy, Mach Number, Choking, and Misuse of the Bernoulli Equation*

Manufacturing Materials & Metallurgy
MA-24-7, CCC, 208B, *Gas Turbine Materials for the Non-Metallurgist*

Microturbines, Turbochargers & Small Turbomachines
MA-26-13, CCC, 210A, *Oil-Free Bearings: System Development, Dynamics and Performance Evaluation*

Oil & Gas Applications
MA-27-8, CCC, 207D, *Basics of Turbomachinery Modelling and Simulation: Lumped Parameter Dynamic Models and CFD Models*
MC-27-13, CCC, 203B, *Rotordynamics Data Acquisition & Instrumentation*
TB-27-11, CCC, 216AB, *Dry Gas Seal Systems and Failure Prevention*
TC-27-12, CCC, 207BC, *Compressor Fouling Mechanisms and Modeling*
WA-27-10, CCC, 105, *Compressor Surge and Station Dynamics*
ThC-27-9 CCC, 106, *Gas Turbines and Centrifugal Compressors in Oil and Gas Applications*

Steam Turbines
TC-29-3, CCC, 208B, *Sealing and Leakage Interaction Flows*

Supercritical CO Power Cycles
MA-38-16, CCC, 213CD, *Supercritical CO2 Power Cycle Modeling and Fluid Properties*
WA-38-13, CCC, 203A, *Supercritical CO2 Power Cycle Turbomachinery*
ThA-38-14, CCC, 208B, *Supercritical CO2 Power Cycle Heat Exchangers*
FA-38-12, CCC, 216AB, *Supercritical CO2 Power Cycle Fundamentals*
FB-38-15, CCC, 218B & 219B, *Supercritical CO2 Power Cycle Materials*

Wind Energy
MC-49-11, Westin Hotel Providence I, *Introduction to Wind Energy*

Joint Sessions

Cycle Innovations with Structures & Dynamics: Fatigue, Fracture & Life Prediction
TB-6-15, Westin Hotel, Trade, Introduction to Dynamic Analysis and Modelling of Plant Systems

Coal, Biomass & Alternative Fuels with Combustion, Fuels & Emissions
WA-3-7, CCC, 207BC, Basics of Alternative Fuel Combustion and Emissions
ThA-3-6, Westin Hotel, Trade, *Liquid Fuel Atomization and Combustion*

Heat Transfer: Internal Air Systems & Seals with Turbomachinery
TB-15-2, CCC, 211AB, *Air System Components*
WA-15-1, CCC, 207D, *Air System Analysis*
WB-15-3, CCC, 218A & 219A, *Brush Seals*
WC-15-4, CCC, 212AB, *Oil Systems*
ThA-15-5, CCC, 212AB, *Rotating Cavities*
ThB-15-6, CCC, 207A, *Rim Seals 1*
ThC-15-8, CCC, 212AB, *Rim Seals 3*
FA-15-7, CCC, 203A, *Rim Seals 2*
FB-15-9, CCC, 203A, *Shaft and Strip Seals*

Heat Transfer: Combustors with Combustion, Fuels & Emissions
MC-17-1, CCC, 212AB, *Effusion Cooling*
WB-17-2, CCC, 207D, *Combustor Heat Transfer*
FA-17-3, CCC, 217AB, *Combustor Turbine Interactions*

Tutorials of Basics, Joint Sessions, & User Sessions

Manufacturing Materials & Metallurgy with Ceramics
TA-24-2, CCC, Crown Ballroom, *Thermal Barrier Coatings Part A*
TB-24-3, CCC, Crown Ballroom, *Thermal Barrier Coatings Part B*

Steam Turbines with Structures & Dynamics: Aero Excitation and Damping
MC-29-7, CCC, 217AB, *LSB Vibrational Aspects*

Steam Turbines with Structures & Dynamics: Fatigue, Fracture & Life Prediction
WA-29-10, Westin Hotel, Providence II, *Steam Turbine Mechanical Aspects*

Turbomachinery: Noise & Innovative Noise Reduction with Aircraft Engine
MC-43-1, CCC, 208A, *Combustion and Entropy Noise*
WB-43-2 Fan, CCC, 217CD, Fan, *Compressor, and Open Rotor Noise*
WA-43-4, CCC, 211AB, *Computational Aero-Acoustics Methods and Duct Acoustics*

User Sessions

Manufacturing Materials & Metallurgy
ThB-24-4, CCC, 217AB, *Gas Turbine Component Degradation and Life Prediction*
FA-24-6, CCC, Richardson Ballroom C, *Repair Development*

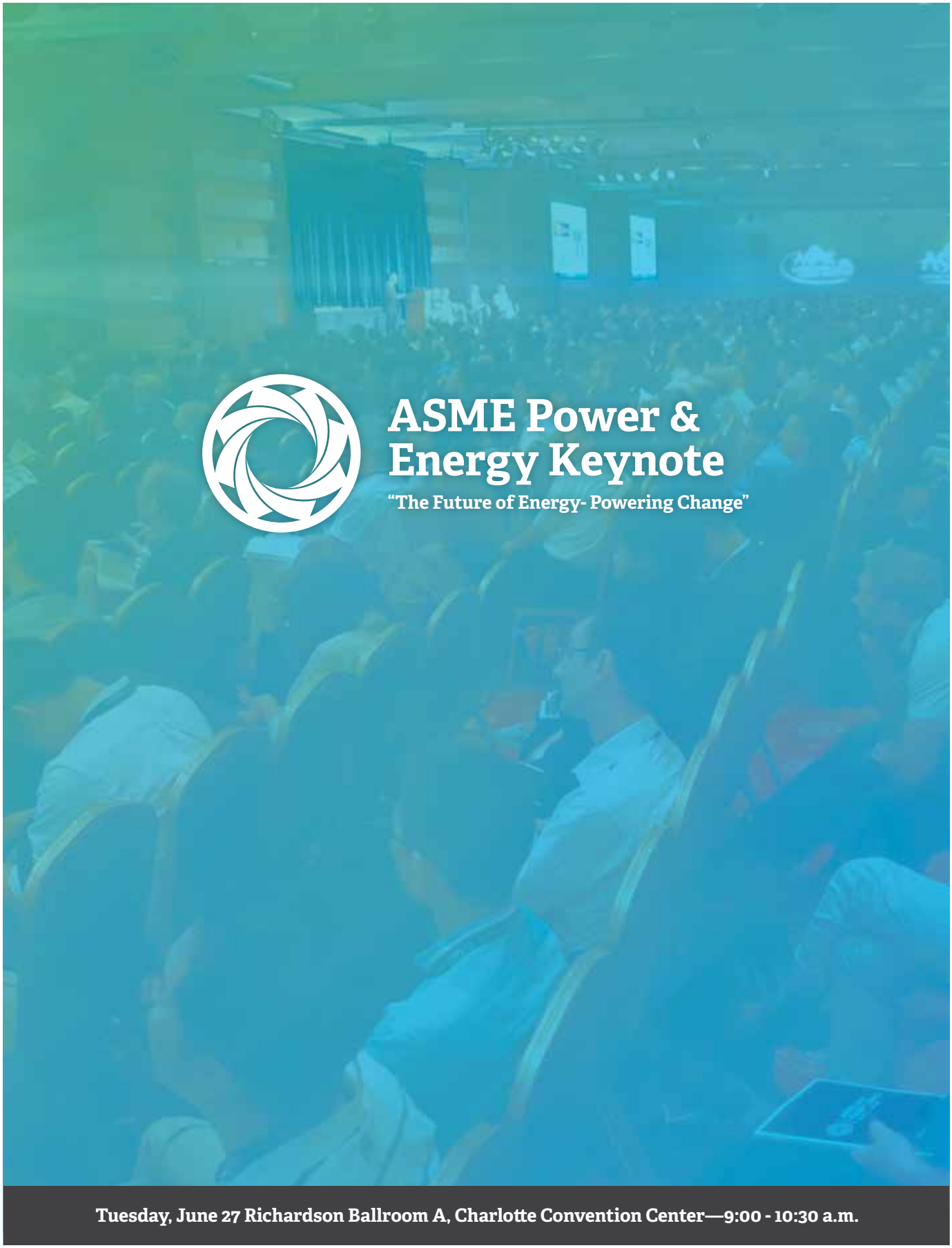
Oil & Gas
MA-27-2, CCC, 203B, *Gas Turbine Monitoring and Life Extension*
TB-27-6, CCC, 212AB, *Performance and Design*
WA-27-5, CCC, 208B, *New Applications*
WB-27-4, CCC, 208B, *Gas Turbine and Compressor Fouling*
WC-27-1, CCC, 106, *Compressor Surge*
ThA-27-7, CCC, 105, *Commissioning and Operation*
ThC-27-3, CCC, 105, *Wet Gas Compression*

Steam Turbines
MA-29-12, CCC, 217AB, *Steam Turbine Heat Transfer & Thermal Aspects*
MC-29-7, CCC, 217AB, *LSB Vibrational Aspects*
TB-29-8, CCC, 207BC, *Steam Turbine Exhausts*
WA-29-10, Westin Hotel, *Providence II, Steam Turbine Mechanical Aspects*
WB-29-9, Westin Hotel, Providence II, *Steam Turbine Valves & Seals*
ThC-29-6, Westin Hotel, Providence II, *LSB Aerodynamic Aspects*
FA-29-5, CCC, 208B, *Steam HP/IP turbines*

Supercritical CO2 Power Cycles
TC-38-11, CCC, Richardson Ballroom C, *Supercritical CO2 Power Cycle Path Forward*

Turbomachinery: Axial Flow Turbine Aerodynamics
ThC-40-4, CCC Richardson Ballroom C, *Low Pressure Turbine Aerodynamics*

Supporting Publications and Participating Organizations



ASME Power & Energy Keynote

"The Future of Energy- Powering Change"

Tuesday, June 27 Richardson Ballroom A, Charlotte Convention Center—9:00 - 10:30 a.m.

Keynote Speakers

Michael Bryson

Michael Bryson Vice President – Operations, PJM

Mr. Bryson is responsible for PJM's Operations Division, including 24x7 transmission operations for real time systems to include scheduling, transmission dispatch and generation dispatch, reliability coordination, and training as well as the engineering analysis required to run the system and support the critical energy management systems. Mr. Bryson had nearly ten years of military experience as a pilot. His responsibilities in the United States Army included operations planning and support, supervision and training of pilots and mechanics, and training and maintenance of tactical computer systems. He was awarded the Bronze Star for Combat Service in Desert Storm.

Fuel Security and Resilience

PJM recognizes the benefits of fuel or resource diversification include ability to withstand technical disturbances, common modes of failure in similar resource types, fuel price volatility, fuel supply disruptions, and other unforeseen system shocks. Diversification allows for increased flexibility and adaptability. PJM will need to proactively assess this diversity and security going forward and work through existing processes and new market solutions developed with PJM stakeholders to ensure the essential reliability services will be maintained to meet future system needs.

Governor Bill Ritter Jr.

Governor Bill Ritter was elected Colorado's 41st governor in 2006. During his four-year term, Ritter established Colorado as a national and international leader in clean energy by building a New Energy Economy. After leaving the Governor's Office, Ritter founded the Center for the New Energy Economy at Colorado State University, which works with state and federal policy makers to create clean energy policy throughout the country. Governor Ritter has authored a book that was recently published entitled, Powering Forward – What Everyone Should Know about America's Energy Revolution.

Powering Forward:

Why Changing Political Winds Can't Stop the Energy Revolution

Prospects for launching into a powerful clean energy policy regime have considerably dimmed since the November elections. Nevertheless, the 'Smart Money' is still on renewables, argues former Colorado governor Bill Ritter, because their economic case is simply very strong. Gov. Ritter will also talk about his recent book and share insights based on his extensive work with legislators, planners, policymakers, and the power industry.

Power & Energy Plenary Sessions

ASME Advanced Energy Systems Division Plenary Session

Smart Grid via Integrated Distributed Energy Resources combining Solar Photovoltaics, Electric Vehicles, and, Battery Energy Storage Systems

Wednesday, June 28 | 9:00 - 10:30 a.m. Richardson Ballroom B

Dr. Rajit Gadh, Ph.D., Professor and Director,
UCLA – WINMEC & Smart Grid Energy Research Center

Dr. Rajit Gadh is Professor of the Henry Samueli School of Engineering and Applied Science at UCLA, Founder and Director the Smart Grid Energy Research Center or SMERC (http://smartgrid.ucla.edu) and Founder and Director of the UCLA WINMEC Consortium (http://winmec.ucla.edu). Dr. Gadh has a Doctorate degree from Carnegie Mellon University (CMU), a Masters from Cornell University and a Bachelors degree from IIT Kanpur all in engineering. He has taught as a visiting researcher at UC Berkeley, has been an Assistant, Associate and Full Professor at University of Wisconsin-Madison, and was a visiting researcher at Stanford University.

Dr. Gadh's current research interests include modeling and control of Smart Grids, Electric Vehicle to Grid Integration, Vehicle to Grid (V2G), Autonomous Electric Vehicles, Demand Response, Microgrids, Energy Storage in the Grid, Renewable Integration, Internet of Things, Wireless/RFID. Dr. Gadh is author of over 200 articles in journals and conference proceedings and 4 patents. His team has developed the WINSmartEV™ and WINSmartGrid™ research platforms at UCLA.

Dr. Gadh's research has recently been funded by the following sources: (i) LADWP (in turn funded by DOE) in which UCLA is one of three academic cooperating partners along with USC, and, JPL/Caltech in which DOE funding is roughly $60M) (ii) Korean Institute for Energy Research (KIER), (iii) EPRI NESCOR Grant (funded by DOE), (iv) California Energy Commission, and (v) the UCLA Smart Grid Industry Partners Program or SMERC-IPP consisting of over a dozen industry members.

He is a Fellow of the American Society of Mechanical Engineers. He has received the National Science Foundation (NSF) CAREER award, NSF Research Initiation Award, and, NSF-Lucent Industry Ecology Fellow Award, Society of Automotive Engineers Ralph R. Teetor Educational award, IEEE WTS second best student paper award, ASME Kodak Best Technical Paper award, AT&T Industrial ecology fellow award, Engineering Education Foundation Research Initiation Award, the William Mong Fellowship from University of Hong Kong, and other accolades in his career. He has lectured and given keynote/distinguished addresses worldwide in countries such as Belgium, Brazil, China, France, Germany, India, Ireland, Italy, Spain, Holland, Hong Kong, Japan, S. Korea, Singapore, Taiwan, and, Thailand. Dr. Gadh serves as advisor to a handful of technology-based startups.
The North American electric grid today is witnessing the fastest pace of change since its creation about one hundred years ago. States such as California have seen a substantial rise in the amount of energy generated from solar photovoltaics (PV) on rooftops. These renewable energy resources, being intermittent, can potentially destabilize the grid when scaled up to the level of the entire grid. Electric vehicles (EVs) are being added at a significant pace in California thereby increasing the load on the grid at various times of the day. While they may be considered as a load, their batteries may be exploited as battery energy storage system (BESS) devices thereby becoming an asset to compensate for the instability resulting from intermittency caused by renewables. The continuous decline in the cost of solar PV and lithium ion batteries for EVs is expected to further propel their growth resulting in further increase in complexity of balancing the demand and supply of electricity. Management and control of each of these distributed energy resources (DERs)– generation, storage and consumption – is a major area of research for the UCLA Smart Grid Energy Research Center (SMERC). The integration of advanced technologies, consumer preferences and innovative pricing models to address the above opportunities and challenges would achieve a modern grid that allows for higher penetration of renewables, increase in the number of electric vehicles, higher energy efficiency, improved grid security and resiliency, and, reduced outages.

In the context of the above issues, the talk will present two relevant research projects that UCLA's Smart Grid Energy Research Center (SMERC) has been involved with.

(i) SMERC has partnered with Los Angeles Department of Water and Power in the $120M DOE-funded Smart Grid Demonstration Project or SGRDP. To achieve the SGRDP goals, UCLA has installed a test-bed consisting of over 100 electric vehicle charging stations in the UCLA campus, a 100KW BESS integrated into a building grid, Solar PV monitoring and integration

with BESS, a Vehicle-to-grid or V2G system, a DC fast charger, 30 refrigerators within the campus housing, LED lighting controls and electric driers. These are networked, monitored and controlled via a variety of algorithms enabling a model for DER.

(ii) SMERC is working on a California Energy Commission funded research project in the Southern California Edison territory in the City of Santa Monica to create a microgrid enabled with control system that integrates the following DERs: BESS, EV, V2G, Smart Charger, and, Solar PV. This system serves multiple simultaneous objectives including PV generation curve smoothing with BESS, local voltage regulation with BESS, Using V2G for fleet operations, controlling peak demand as a result of DC fast charging of EVs.

Chris Greer, Director of the Smart Grid and Cyber-Physical Systems Program Office and National Coordinator, *Smart Grid Interoperability.*

Chris Greer is Senior Executive for Cyber Physical Systems, Director of the Smart Grid and Cyber-Physical Systems Program Office, and National Coordinator for Smart Grid Interoperability at the National Institute of Standards and Technology. His responsibilities include promoting the emergence of a globally interoperable Internet of Things and coordinating the development of a framework for smart grid interoperability. Prior to joining NIST, Chris served as Assistant Director for Information Technology R&D in the White House Office of Science and Technology Policy (OSTP) and Cybersecurity Liaison to the National Security Staff. His responsibilities there included networking and information technology research and development, cybersecurity, and digital scientific data access. He has also served as Director of the National Coordination Office for the Federal Networking and Information Technology Research and Development (NITRD) Program. This program coordinates IT R&D investments across the Federal government.

ASME Fuel Cell Conference Plenary Session

Materials Processing and Manufacturing Scale-Up Challenges of Lithium-Ion Battery and Polymer Electrolyte Fuel Cell Electrodes and for xEVs

Wednesday, June 28 | 9:00 - 10:30 a.m. 210A

David L. Wood, III, Ph.D., Team Lead, Roll-to-Roll Manufacturing, Manager, Fuel Cell Technologies Program, Joint Faculty Associate *Professor, University of Tennessee*

Materials Processing and Manufacturing Scale-Up Challenges of Lithium-Ion Battery and Polymer Electrolyte Fuel Cell Electrodes and for xEVs

Lithium-ion battery pack costs have dropped significantly over the past several years from about $500-600/kWh down to $275-325/kWh due to economies of scale, improvements in electrode and cell quality control, and more efficient production methods. However, much more development on electrode processing cost reduction, coating deposition quality control, and cell assembly methods needs to occur in order to meet the DOE ultimate pack cost of $125/kWh for battery electric vehicles (BEVs). In addition, cell energy densities still need to be increased from 150-180 Wh/kg to 350-450 Wh/kg to provide sufficient BEV driving range. This presentation will cover several major ORNL research activities, and the associated challenges, that are contributing to cost reduction and energy density improvements in advanced lithium-ion cells including: 1) non-NMP electrode dispersion processing for lithium-ion pouch cells; 2) tailored thick electrode architectures for reduced cost and increased cell energy density; 3) in-line non-destructive evaluation of electrodes and analysis of coating defects on cell performance; 4) challenges of utilizing high-voltage cathode (Ni-rich NMCs, etc.) and high-capacity anode (Si/C composites and Li metal) materials for increasing cell energy density; and 5) reducing cell wetting and formation time and optimizing pouch cell electrolyte content.

Many of the same challenges in preparing advanced battery electrodes exist when manufacturing polymer electrolyte fuel cell (PEFC) membrane electrode assembly (MEA) electrocatalyst layers for fuel cell electric vehicles (FCEVs), such as optimizing formulation chemistry of the catalyst inks, ensuring a homogeneous coating onto the membrane or gas diffusion layer (GDL) surface, bonding of the individual layers into a unitized MEA, etc. In order to get from the current low-volume cost of FCEV PEFC stacks of $280-285/kW down to the DOE FCTO ultimate cost target of $30/kW in high-volume manufacturing, while maintaining performance levels of >1 W/cm2 at 0.65 V, advanced processing methods for making MEAs and gas diffusion electrodes

Power & Energy Plenary Sessions

(GDEs) must be employed that go beyond catalyst ink spraying, as well as developing a strong understanding of the underlying manufacturing science. This presentation will also cover how ORNL is leveraging its expertise in pilot-scale battery electrode manufacturing to make low-cost, high-quality MEAs and GDEs for FCEV applications.

David Wood is a Senior Staff Scientist, Roll-to-Roll Manufacturing Team Lead, Fuel Cell Technologies Program Manager, and UT Bredesen Center Faculty Member at Oak Ridge National Laboratory (ORNL) researching novel electrode architectures, advanced processing methods, manufacturing science, and materials characterization for lithium ion batteries and low-temperature fuel cells, and has been employed there since 2009. He is a well-known energy conversion and storage researcher with an industrial and academic career that began in 1995. From 1997 to 2002, he was employed by General Motors Corporation and SGL Carbon Group, excelling at applied R&D related to automotive and stationary PEFC technology. Later work (2003-2009) at Los Alamos National Laboratory (LANL) and Cabot Corporation focused on elucidation of key chemical degradation mechanisms, development of accelerated testing methods, and component development. Dr. Wood received his B.S. in Chemical Engineering from North Carolina State University in 1994, his M.S. in Chemical Engineering from the University of Kansas in 1998, and his Ph.D. in Electrochemical Engineering from the University of New Mexico in 2007. He was part of two LANL research teams that won the DOE Hydrogen Program R&D Award for outstanding achievement in 2005 and 2009. He was also part of the Cabot Corporation Direct Methanol Fuel Cell team, which won the Samuel W. Bodman Award for Excellence in 2008. Dr. Wood was also the 2011 winner of the ORNL Early Career Award for Engineering Accomplishment and led a team that won both a 2013 R&D 100 award and 2014 Federal Laboratory Consortium (FLC) award with Porous Power Technologies. He has received 14 patents and patent applications, authored 52 refereed journal articles and transactions papers, and authored 2 book chapters. His h-index is 20 and personal Web of Science impact factor is 97.0. Dr. Wood manages an average annual ORNL budget of $10M related to hydrogen infrastructure issues, polymer electrolyte fuel cells, lithium ion batteries, and roll-to-roll manufacturing science.

ASME Power Conference Plenary Session

Wednesday, June 28 | 9:00 - 10:30 a.m. Richardson Ballroom A

Amogh Bhonde , Director, Large Steam Turbine Operations, North America,
Siemens Charlotte Energy Hub

The Changing Energy Landscape and our Companies Response to the Declining Coal-fired Generation Fleet and Increased Focus on International Work, NG, Renewables, etc.

Amogh Bhonde is the Director of Large Steam Turbine Operations for Siemens Energy, Inc. in North America. Mr. Bhonde is based in Charlotte, North Carolina, at the Siemens Charlotte Energy Hub, which is the company's worldwide hub for power generation in the 60Hz market. He is responsible for the design, procurement and production of the company's Steam Turbine product line in the Americas.

Mr. Bhonde has more than 16 years of experience in the power generation industry, and has held various project management and plant roles throughout his career. Most recently, Mr. Bhonde was the Plant Director at the Winston-Salem Service Center in Winston-Salem, North Carolina, where he was responsible for the manufacturing and repair operations for advanced turbine components. In his current role, Mr. Bhonde is responsible for the expansion of the US manufacturing footprint for the Steam Turbine business in Charlotte, NC. He is responsible for more than320 employees who design, manufacture and service steam turbines in Charlotte, NC and Orlando, FL.

The Siemens Charlotte Energy Hub is capable of manufacturing all three main power-producing products used by central power stations (Generators, Steam Turbines and Gas Turbines). The products range in size from 150 MW up to more than 1600 MW. Mr. Bhonde received his Bachelor's degree in Mechanical Engineering from the University of Pune, and his Master's degree in Industrial and Systems Engineering from the University of Florida.

Douglas J. Harding, Vice President, Strategic Operations,
Babcock Power, Inc. (BPI)

Power & Energy Plenary Sessions

DJ Harding was promoted to the role of Vice President Strategic Operations of Babcock Power Inc. in June of 2012. Mr. Harding plays a key role in helping to expand Babcock Power Inc.'s market and market share both domestically and internationally. He is responsible for overseeing market analysis, strategic planning including mergers and acquisitions. Strategic Operations will follow and evaluate market trends, competition, new markets and new technologies. Mr. Harding joined Babcock Power Inc. in 2010 as Manager of Strategic Operations with experience in investment banking and investment management. He came to Babcock Power Inc. from Sirios Capital Management, a Boston hedge fund, where he analyzed the electric utility, energy and healthcare services industry sectors. Mr. Harding has an undergraduate degree from Brown University in International Relations and Business Management. In addition, he received his MBA from the Wharton School of Business at the University of Pennsylvania.

Adam Nygaard, Business Development Manager,
Duke Energy

Adam Nygaard is a Business Development Manager for Duke Energy. He is responsible for developing investment opportunities in Distributed Energy Technologies, specifically focusing on Combined Heat and Power, Microgrids, and Energy Storage projects in Duke Energy's regulated territories. Duke Energy is one of the nation's top 5 renewable energy companies with over 5,400 MW of wind, solar, and biomass energy owned or under contract and over 40 MW of energy storage systems installed.

The changing energy landscape has made it necessary for utilities and their suppliers to adjust their focus from their coal-fired generation fleet to a diverse generation mix including gas, nuclear, combined cycle and the increasing role of renewables. This panel discussion will feature speakers from Babcock Power, Duke Energy, and Siemens. The utility perspective will include discussion of the increased incorporation of wind, solar, combined heat and power, energy storage, microgrids, and other disruptive technologies and how they effect the utility business model. The supplier perspective will discuss their company's shift from a focus on coal-based products and services to support a more diverse energy mix and their strategy to meet the challenges that lay ahead for their business models. For the suppliers, areas discussed will be the reaction to the natural gas generation boom, the effect of increased focus on renewable technology, an increasing focus on international projects using coal-based technology in developing markets, strategic alliances, and other OEM strategies. After each speaker gives a short presentation on their firm's perspective of this changing landscape, there will be a question and answer opportunity.

ASME Solar Division Plenary Session

Thursday, June 29 | 9:00 - 10:30 a.m. Richardson Ballroom A

Eric A. Rohlfing, Acting Director,
Advanced Research Projects Agency-Energy (ARPA-E)

Dr. Eric A. Rohlfing serves as Acting Director at the Advanced Research Projects Agency–Energy (ARPA-E), responsible for oversight of the agency. Dr. Rohlfing also serves as Deputy Director for Technology, in which he oversees all technology issues relating to ARPA-E's programs. Dr. Rohlfing will share how ARPA-e operates, highlight several outstanding accomplishments of awardees from their research portfolio, and discuss potential upcoming opportunities through ARPA-e.
The Advanced Research Projects Agency-Energy (ARPA-E) advances high-potential, high-impact energy technologies that are too early for private-sector investment. ARPA-E awardees are unique because they are developing entirely new ways to generate, store, and use energy. ARPA-E projects have the potential to radically improve U.S. economic prosperity, national security, and environmental well-being with focus on transformational energy projects that can be meaningfully advanced with a small investment over a defined period of time. The agency has implemented a streamlined awards process to act quickly and catalyze cutting-edge areas of energy research. ARPA-E empowers America's energy researchers with funding, technical assistance, and market readiness. Our rigorous program design, competitive project selection process, and active program management ensure thoughtful expenditures. ARPA-E Program Directors serve for limited terms to ensure a constant infusion of fresh thinking and new perspectives.

Power & Energy Plenary Sessions

International Conference on Power Engineering (ICOPE-17) Plenary Session
Thursday, June 29 | 9:00 - 10:30 a.m. Richardson Ballroom B, Charlotte Convention Center

Dr. Gang Xiao, Institute for Thermal Power Engineering, State Key Laboratory of Clean Energy Utilization, *Zhejiang University, China*

Dr. Gang Xiao obtained PhD in Engineering Thermophysics in 2006 and now is a full professor at the College of Energy Engineering of Zhejiang University of China. His primary research interests are concerned with on concentrating solar thermal utilization, including high temperature collection, thermal storage and heat work conversion. He has published over 40 international journal papers and obtains 28 granted patents and 2 registered software.

Development of Solar Thermal Power Technologies in China

There will be a rapid growth for solar thermal power (STP) plants in China in the near future. Twenty solar thermal power projects had been issued by the National Energy Administration of China in 2016, and the total capacity is 1.35GW (~5GW operating in the world). These plants should be put into operation with at least 4h thermal storage before December 31, 2018, awarding a feed-in tariff of 1.15 RMB/kWh (~16 cents/kWh). Another 4GW projects are in the plan before 2020, and 30GW is expected before 2030. Three kinds of STP technologies are expected to be demonstrated in 2018, including tower, parabolic trough and linear Fresnel. Water/steam, thermal oil and molten salt are applied in the current technologies as heat transfer and thermal storage fluids, whose working temperatures are usually below 400Ð (580Ð), 400Ð and 580Ð, respectively. As to developing technologies, Air, CO2 and solid particles are probably working as heat transfer media, and thermal chemical and phase change materials are used for high-density thermal storage, then the working temperature and efficiency are expected to have a great improvement. Considering weather characteristics of solar resources of China, a lot of efforts are suggested for further research, demonstration and commercialization.

Motonari Haraguchi, Senior Manager, Turbine Products Headquarters, *Mitsubishi Hitachi Power Systems, Ltd.*

Mr. Motonari Haraguchi is currently employed as a Senior Manager, Turbine Products Headquarters at Mitsubishi Hitachi Power Systems, Ltd. since 2014. He is a co-author of two books, "Steam Turbine" from Japan Industry Publications and ""Mechanical Engineering Dictionary" from Japan Society of Mechanical Engineers. He has published several technical papers with ASME, CEA (Canadian Electric Association) and through the Hitachi Review. His also has worked as a Japanese Government ODA Training Instructor for Steam Turbine Technology in India, Mexico, Egypt, Philippines, Malaysia, Iran, Turkey, Chili and South Africa.

Power Division Banquet and Awards Dinner | The Speedway Club at Charlotte Motor Speedway | Tuesday, June 27: 7:00pm- 10:30pm

Prime Movers Award
The Prime Movers Committee recognizes outstanding contributions to the literature of thermal electric station practice or equipment which are available through public presentation and publication. The Prime Movers Committee of the Edison Electric Institute established the award in 1954.

Darren M. Nightingale
For the paper titled "Guidelines and Techniques for the Effective Control of Condensate Dissolved Oxygen in Steam Surface Condensers."

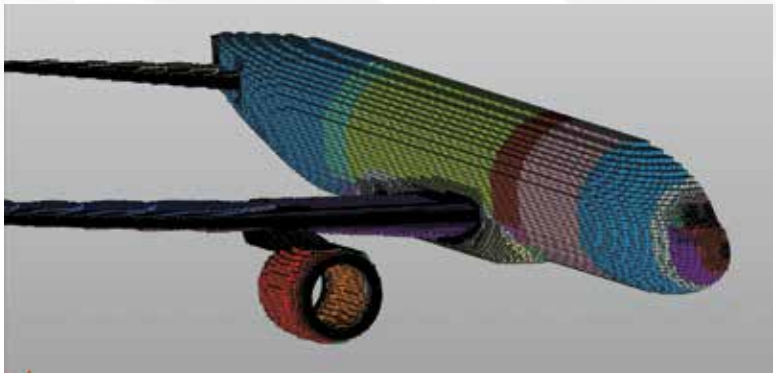
James N. Landis Medal
The James N. Landis Medal is presented for outstanding personal performance in the design, construction, or management of major steam-electric stations using nuclear or fossil fuels. The candidate must also demonstrate personal leadership in humanitarian pursuits, which may include committee activity, Section leadership, or the broad non-technical professional activity of the individual's engineering society. The award was established in 1977 in honor of James N. Landis, President of ASME in 1958.

Yassin A. Hassan
For outstanding contributions to the operation of nuclear power plants through long-term efforts to resolve Generic Safety Issue 191–Assessment of Debris Accumulation on Pressurized Water Reactor Sump Performance; for tireless efforts educating engineering students and early career engineers; and for dedicated service to the engineering profession.

CAMBRIDGE FLOW SOLUTIONS

Proprietary and customised CFD

Cambridge Flow Solutions conducts strategic, long-term research with Development Partners. Our work is focussed on BOXER – a fully scalable simulation environment coupling an advanced digital geometry model, mesh generation and CFD – aimed at complex, real-world, conjugate applications.



Digital Geometry

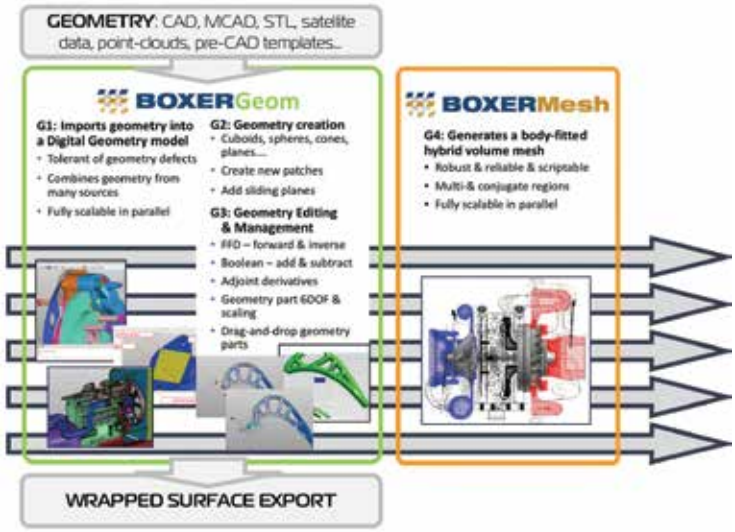
- Direct CAD import
- Very flexible geometry editing & management

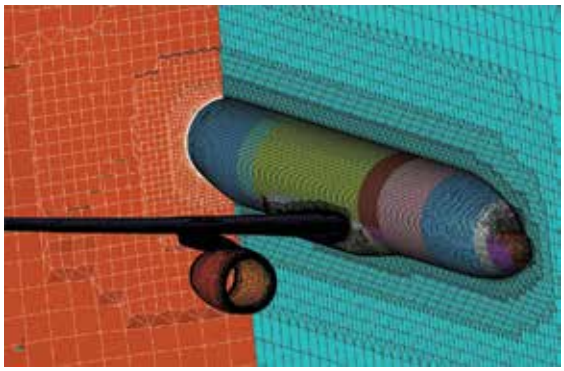
Fast & Scalable

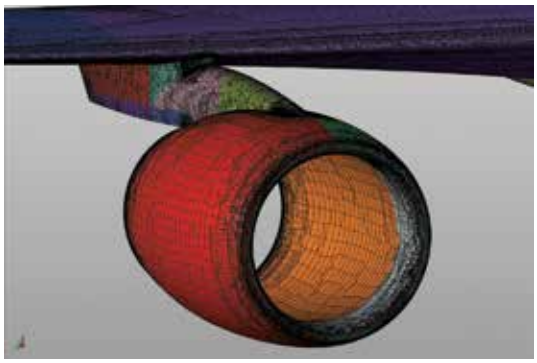
- Fully parallel, including layering
- Runs on laptops, cpu clusters and HPC

Intuitive & Easy to Use

- Simple & powerful GUI
- Fully scripted capability

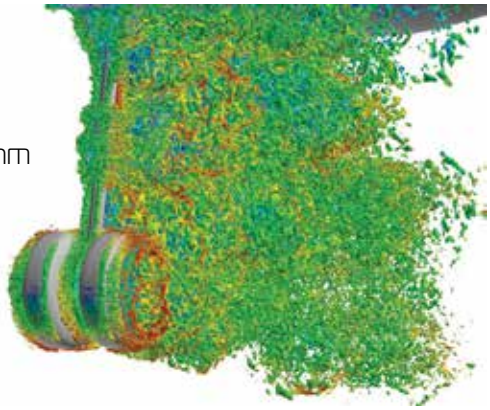






Efficient LES

- Higher order on hybrid unstructured meshes
- Innovative STEFR algorithm
- Runs on cpu clusters & Intel PHI co-processors



CFS distributes & supports BOXER and advanced higher-order LES to Application & Licencing Partners via our specialist network: BOXERsolutions Ltd (UK & Europe), BOXERsolutions kk (Japan) & BOXERsolutions Inc (USA).

Power & Energy Leadership Teams

ASME Power & Energy Leadership
Energy Storage Forum

Conference Chair
Gregory Jackson
Colorado School of Mines

Conference Co-Chair
Mark Lausten, U.S. *Department of Energy*

International Conference on Energy Sustainability

Conference Chair
Robert Braun
Colorado School of Mines

Conference Co-Chair
Mark Lausten
U.S. Department of Energy

Technical Program Co-Chair
Hohyun Lee
Santa Clara University

Technical Program Co-Chair
Reza Baghaei Lakeh *California State Polytechnic University of Pomona*

Technical Program Co-Chair
Amanda Smith
University of Utah

Technical Program Co-Chair
Keith Sharp
University of Louisville

Technical Program Co-Chair
Sophia Haussener
RPFL

Fuel Cell Science, Engineering and Technology Conference

Conference Chair
George Nelson
University of Alabama in Huntsville

Technical Program Co-Chair
Partha Mukherjee
Texas A & M University

Power Conference

Conference Chair
Michael Smiarowski
Siemens Energy Inc.

Technical Program Chair
Steven Greco
We Energies

Nuclear Forum Conference Chair
Robert Stakenborghs
ILD Power

Conference Co-Chair
Jovica Riznic
Canadian Nuclear Safety Commission

ICOPE Conference

Conference Co-Chair
Montonari Haraguchi
Mitsubishi Hitachi Power

Conference Co-Chair
Mingjiang Ni
Zhejiang University

Conference Co-Chair
Michael Smiarowski,
Siemens Energy Inc.

Technical Program Co-Chair
Tomohiro Asai
Mitsubishi Hitachi Power

Technical Program Co-Chair
Takao Nakagaki
Waseda University

Technical Program Co-Chair
Yuso Oki, *Criepi*

Technical Program Co-Chair
Fei Wang
Institute for Thermal Power Engineering- Zhejiang University

ASME Power & Energy Leadership
P & E Executive Advisory Committee

Chair
Frank L. Michell
American Electric Power (AEP)

Co-Chair
Jason Lee
Babcock Power

ESC Chair
Robert Braun
Colorado School of Mines

ESC Technical Program Co-Chair
Sophia Haussener
(EPFL)

ESC Technical Program Co-Chair
Reza Baghaei Lakeh
Cal Poly- Pomona

ESC Technical Program Co-Chair
Mark Lausten -
US Department of Energy

ESC Technical Program Co-Chair
Hohyun Lee
Santa Clara University

ESC Technical Program Co-Chair
Partha Mukherjee
Texas A & M University

FCC Chair
George Nelson
University of Alabama-Huntsville

Nuclear Forum Chair
Jovica Riznic
Canadian Nuclear Safety Commission

ESC Technical Program Co-Chair
Keith Sharp
University of Louisville

ESC Technical Program Co-Chair
Amanda Smith
University of Utah

Nuclear Forum- Co Chair/ NED Chair
Bob Stakenborghs
ILD/Evisive

Advisory Committee Member & Turbo Expo Liaison
Mark Turner
University of Cincinnati

Advisory Committee Member-
Mansour Zenouzi
Wentworth Institute of Technology

ASME Power & Energy Leadership
Energy Conversion and Storage Segment

Segment Leader
Eduardo J. Barrientos
GM Global- Propulsion Systems

Member
Asif Arastu
Unisont Engineering

Member
Antonio Bula
Universidad del Norte

Member
Jennifer Seals Cooper
RCP, Inc.

Member
Ralph S. Hill III
Westinghouse Consulting Engineer

Member
Timothy Jacobs
Texas A & M University

Representative
Frank L. Michell
American Electric Power, (AEP)

Member
Christopher Rahn
Penn State University

Member
Christian Sattler
German Aerospace Center

Member
Karen A. Thole
Pennsylvania State University

ASME 2018
POWER & ENERGY
Conference & Exhibition
Disney's Contemporary Resort

Lake Buena Vista, Florida, USA

Save the Date
June 24–28, 2018

Topical Areas Include:

Nuclear Energy
Power
Energy Sustainability & Renewables
Gas Turbines
Fuel Cells & Energy Storage

Keynote and Plenary Speakers
Technical Tracks & Workshops
Posters
Competitions
Technical Tours
Exhibitions

Abstract date: Deadline, October 3

ASME
SETTING THE STANDARD

The American Society of Mechanical Engineers® (ASME®)

Power & Energy Workshop

From Engineer to Manager: A Roadmap for a Successful Transition

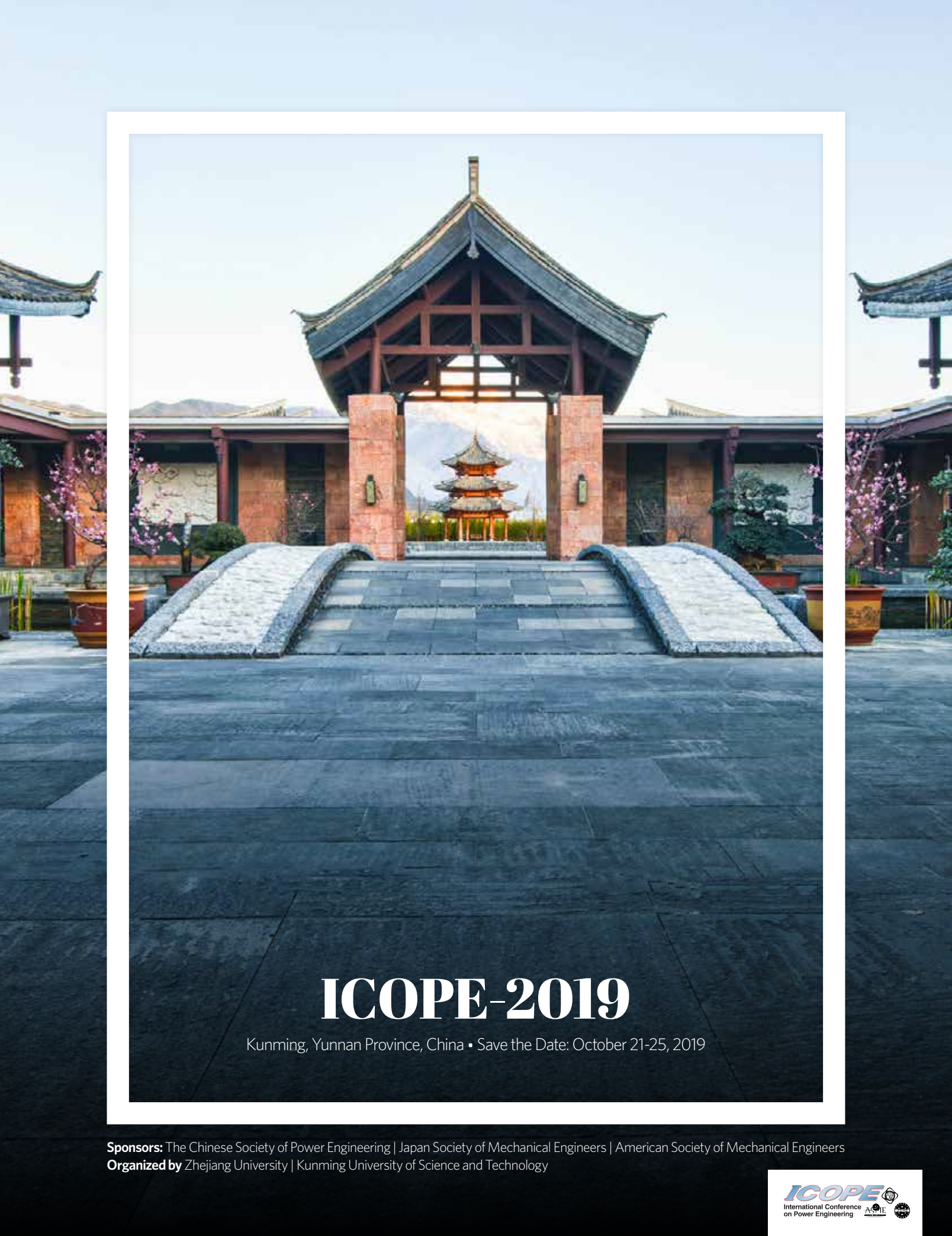
Sunday June 25 | 1:00 pm – 5:00 pm Cost: $200 per person
Room Queens Room, Westin Hotel

This workshop is for ALL engineers and students who may at some point in their careers assume a management role or consider a career move from technical professional into management. Most engineers will at some point in their careers assume a management role (e.g., as a project manager or team leader) or consider a move into a full-time management position. The change in role is usually quick to occur but in few cases has there been any preparation to assist in a smooth transition. As a result most engineers are not aware of what being a new manager is all about before its thrust upon them. Would you be ready for the change? What should you really expect? What are the critical things you need to know as a new manager?

The workshop will be a practical look at some of the key elements in preparing for a successful transition from technical professional to manager. As opposed to being a "How to Manage" session, the speaker will relate lessons he has learned as he crossed over into management and assumed increasingly responsible management positions. He will share lessons from his personal experiences that have enhanced his effectiveness and the "little things" that can assist the attendee in becoming an effective manager – be it as a project manager, team leader or as a full-time manager in a supervisory position. If you are an engineer about to assume a managerial role, an engineer who may be contemplating a move into management or even if you are a new manager who is now experiencing some managerial growing pains, this session is for you. And for the student engineer or early career professional, it's never too early to consider the requirements and steps to be taken in preparing for future management roles and positions.

Presenter: John T. Bozewicz, Division Head, Naval Surface Warfare Center

The Westin Hotel located next to the Charlotte Convention Center

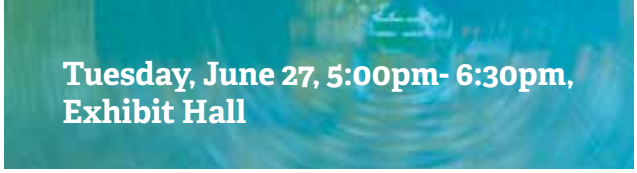


ICOPE-2019

Kunming, Yunnan Province, China • Save the Date: October 21-25, 2019

Sponsors: The Chinese Society of Power Engineering | Japan Society of Mechanical Engineers | American Society of Mechanical Engineers
Organized by Zhejiang University | Kunming University of Science and Technology

ICOPE International Conference on Power Engineering



Power & Energy Student Poster Presenters

1) Heat Exchanger Capacity Control by Air Recirculation in Cold Regions
Poster Presentation: PowerEnergy2017-3026
D. Han, TSPE Engineering, Seoul, Korea (Republic)

2) Wind Screen Effect on Water Spray Cooling Performance in an Air Cooled Heat Exchanger
Poster Presentation: PowerEnergy2017-3027
D. Han, TSPE Engineering, Seoul, Korea (Republic)

3) CO2 Hydrogenation to Methanol over Au-CuO/SBA-15 Catalysts
Poster Presentation: PowerEnergy2017-3143
Wei Na, Yanyan Li, Kunming University of Science and Technology, Kunming, China

4) Transition Metal Fe Adsorption on CeO2 (110) Surface Affects the Methane Activation and Oxygen Vacancy Formation: A Density Functional Theory Study
Poster Presentation: PowerEnergy2017-3415
Dong Tian, Wang Hua, Kongzhai Li, Yonggang Wei, Chunhua Zeng, Xing Zhu, Kunming University of Science and Technology, Kunming, China

5) Volatile Release Characteristics of Different Rank Coals under Various Pyrolysis Conditions
Poster Presentation: PowerEnergy2017-3450
Kang Zhang, Zhihua Wang, Yong He, Qian Li, Yingzu Liu, Yanqun Zhu, Kefa Cen, Zhejiang University, Hangzhou, Zhejiang, China

6) Flow Stabilized Heterogeneous Porous Combustor
Poster Presentation: PowerEnergy2017-3512
Anthony Terracciano, Samuel de Oliveira, Nina Orlovskaya, Subith Vasu, University of Central Florida, Orlando, FL, United States

7) Feasibility Study to Increase Range for Battery Electric Vehicles via Solar Energy Harvesting
Poster Presentation: PowerEnergy2017-3652
Danielle Perdue, Rice University, Houston, TX, United States, Scott Curran, ORNL, Knoxville, TN, United States, Robert Wagner, Oak Ridge National Lab, Knoxville, TN, United States, Laura Schaefer, Rice University, Houston, TX, United States

8) Comparison of Heat Dissipation Measure Methods of Heat Sink
Poster Presentation: PowerEnergy2017-3781
Xiangrui Meng, Xinling Ma, X.l Wei, Zhengzhou University, Zhengzhou, China

9) Correlation between Chlorobenzene and Dioxin TEQs in Flue Gas from Municipal Solid Waste Incinerator
Poster Presentation: PowerEnergy2017-3302
Shang Fanjie, Liang Yiran, Tang Shaofu, Zhejiang Fuchunjiang Environmental Technology Research Co., Ltd, Hangzhou, Zhejiang, China, Shengyong Lu, Zhejiang University, Hangzhou, Zhejiang, China

10) Exergy Analysis Prediction of Small Direct Injection Diesel Engine by using ANN Modeling
Poster Presentation: PowerEnergy2017-3843
Veena Chaudhary, Indian Institute of Technology Roorkee, Roorkee, Uttrakhand, India, Rakesh. P Gakkhar, IIT Roorkee, Uttrakhand, India

11) Effect of Pin Inclined Angle on Flow and Heat Transfer Characteristics of Pin Arrays
Poster Presentation: PowerEnergy2017-3844
Chayut Nuntadusit, Prince of Songkla University, Hatyai, Thailand

12) Analysis of Fluid Structure Interaction Vibration Response for Plate and Rod Structures Excited by Sinusoidal and Impulse Loads
Poster Presentation: PowerEnergy2017-3861
Sumathi Vasu, IGCAR, Chennai, India, S Jalaldeen, Indira Gandhi Centre For Atomic Research, Kalpakkam, India, P Selvaraj, S Murugan, Indira Gandhi Centre for Atomic Research, Chennai, Tamil Nadu, India

13) Changes in Dissolved Oxygen in a Pond by the Simple Centrifugal Pump Used in an Aeration System Driven by a Savonius Wind Turbine
Poster Presentation: PowerEnergy2017-3902
Yoshiaki Tanzawa, Nippon Institute of Technology, Saitama, Japan

Power & Energy Student Poster Presenters

14) The Temperature Effect in the Compressive Gas Flows from the High-temperature Gas Well with a Vertical Hydraulic Fracture

Poster Presentation: PowerEnergy2017-3772

Hailong Jiang, Xi'an Shiyou University, Xi'an, China

15) Numerical Investigation on Two-phase Flow Characteristic in the Separated Structure Shell-and-Tube Waste Heat Recovery Boiler

Poster Paper Publication: PowerEnergy2017-3283

Huaishuang Shao, Yungang Wang, Xi'an Jiaotong University, Xi'an, Shaanxi Province, China, Haidong Ma, Xi'an Jiaotong University, Xi'an, Shaanxi, China, Qinxin Zhao, Xi'an Jiaotong University, Xi'an, Shaanxi, China

16) Investigations on the Air Preheater Ash Deposit Formation In Coal-fired Chain Boiler

Poster Presentation: PowerEnergy2017-3081

Xiaolu Chen, Qinxin Zhao, Zhiyuan Liang, Xin Ma, Xi'an Jiaotong University, Xi'an, China

17) Two-tower Type Fluidized Bed Receiver for High-temperature Solar Energy Storage and Power Generation

Poster Presentation: PowerEnergy2017-3228

Yuki Aoki, Koji Matsubara, Takahiro Suzuki, Niigata University, Niigata, Japan

18) Creep Damage Assessment of Notched Material Made of the Solidification Control Ni-base Superalloy using the EBSD Method

Poster Paper Publication: PowerEnergy2017-3229

Daisuke Kobayashi, Chubu Electric Power Co Inc, Nagoya, Japan, Tsutomu Takeuchi, Katsushi Nakabeppu, Chubu Electric Power Co., Inc., Nagoya, Japan

19) Controlled Growth and Property Study of Two-dimensional Oxide Nanostructures

Poster Presentation: PowerEnergy2017-3937

Soheil Razmyar, University of North Carolina at Charlotte, Charlotte, NC, United States

20) Return on Investment Modeling for Using LIDAR on Wind Turbines for Yaw Error Correction Applications

Poster Presentation: PowerEnergy2017-3939

Roozbeh Bakhshi, Peter Sandborn, University of Maryland, College Park, MD, United States

21) Energy Access, Need and Priority in the Rural Off Grid Areas of Bangladesh

Poster Presentation: PowerEnergy2017-3010

Taif Rocky, Anjum Islam, Practical Action Bangladesh, Dhaka, Dhaka, Bangladesh

22) Combined Gasification and Methane Reformation for Enhanced Syngas Production from Biomass

Poster Presentation: PowerEnergy2017-3025

Evan Terrell, Washington State University, Pullman, WA, United States, Chandra Theegala, Louisiana State University, Baton Rouge, LA, United States

23) Experimental Study of Condensate Drainage in Different Morphologies of Regenerator in a Solar-thermal Driven Thermoacoustic Dehumidifier

Poster Presentation: PowerEnergy2017-3300

Ben Xu, The University of Texas Rio Grande Valley, Edinburg, TX, United States, Andrew Luthen, Justin Osorio, Hermes Chirino, University of Texas Rio Grande Valley, Edinburg, TX, United States

24) Power to Gas/Liquid - Biomass Gasification and SOEC Combined System

Poster Presentation: PowerEnergy2017-3480

Shahid Ali, Mads Pagh Nielsen, Kim Sørensen, Aalborg University, Aalborg, Denmark

25) Novel Ice Energy Storage Using Supercooling Technology

Poster Presentation: PowerEnergy2017-3647

Hailei Wang, Sean Kissick, Yili Zhang, Oregon State University, Corvallis, OR, United States

Power & Energy Student Poster Presenters

26) Sustainable Infrastructure and Transportation: Wave Attenuation and SAV Mitigation Strategies of Coastal Waters

Poster Presentation: PowerEnergy2017-3759

Navid Goudarzi, UNCC, Charlotte, NC, United States, Wesley Williams, Umit Cali, University of North Carolina at Charlotte, Charlotte, NC, United States

27) 3D Unsteady CFD Simulations of Heat and Mass Transfer with Chemical Reaction for the Design of Seasonal Solar Thermochemical Heat Storage for Buildings

Poster Presentation: PowerEnergy2017-3909

Wahiba Yaici, Evgueniy Entchev, Canmet Energy Research Centre / Natural Resources Canada, Ottawa, ON, Canada

28) Lifecycle Analysis of Saline Droplet in Full Separation Multi Effect Distillation System

Poster Presentation: PowerEnergy2017-3874

Thomas Rodriguez, Luis Escobar, University of Texas Rio Grande Valley, Edinburg, TX, United States, Yan Wei, Eastern Washington University, Cheney, WA, United States, Ben Xu, The University of Texas Rio Grande Valley, Edinburg, TX, United States, Hermes Chirino, University of Texas Rio Grande Valley, Edinburg, TX, United States

29) Progress on in-situ Carbon Dioxide Corrosion Monitoring

Poster Presentation: PowerEnergy2017-3901

Alan Kruizenga, Matthew Walker, Sandia National Laboratories, **Livermore, CA, United States**

30) Performance Enhancement of Anion Exchange Membrane Water Electrolysis by Modification of Electrode Fabrication Process

Poster Presentation: PowerEnergy2017-3918

Hyun S. Park, Jong Hyun Jang, Korea Institute of Science and Technology, Seoul, Korea (Republic)

31) Integration of First Principles Molecular Dynamics of Molten Electrolytes and CFD Analysis on Thermal Batteries

Poster Presentation: PowerEnergy2017-3890

En-Jui Liu, National Tsing Hua University, Hsinchu, Taiwan, Che-Wun Hong, National Tsing Hua University, Hsinchu, Taiwan, Wei-Tsun Wang, National Tsing Hua University, Hsinchu, Taiwan

32) Molecular Simulation and Analysis of Thermal Storage Properties of Molten Salts

Poster Presentation: PowerEnergy2017-3892

Wei-Tsun Wang, En-Jui Liu, National Tsing Hua University, Hsinchu, Taiwan, Che-Wun Hong, National Tsing Hua University, Hsinchu, Taiwan

33) Thermochemical Heat Storage Combining with Automobile for Supplying Building Energy Use

Poster Presentation: PowerEnergy2017-3928

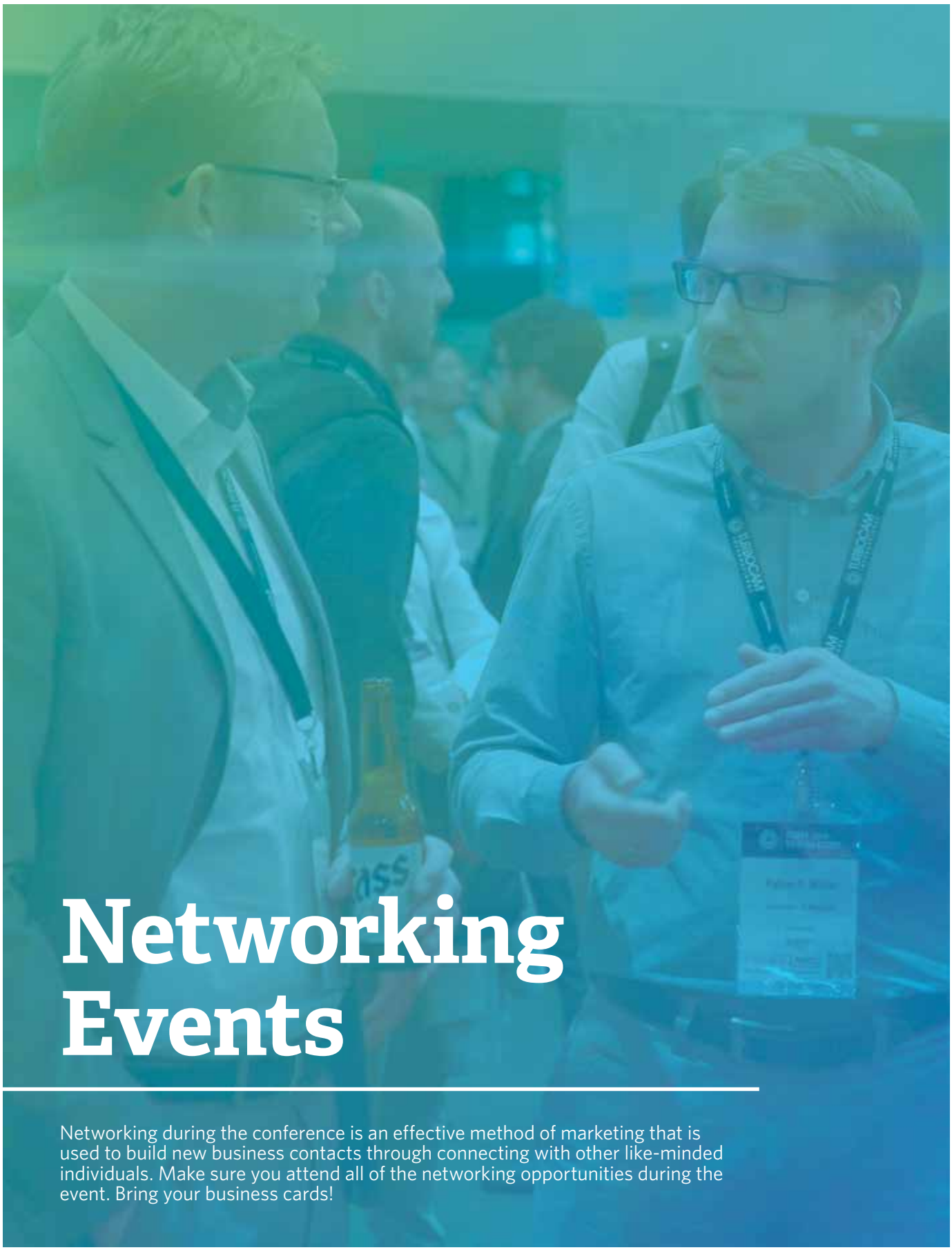
Jae Yong Lee, Yong Hoon Im, Jinyoung Jang, Chankyu Lee, Tae Su Yim, Sungkook Hong, Hyuck Joo Kim, Korea Institute of Energy Research, Daejeon, Korea (Republic)

Highest energy efficiency, highest reliability

Atlas Copco is proud to set standards for compressed air energy efficiency. Manufactured under strict codes of quality control according to the ISO 9001, ISO 14001, ISO 22000 and OHSAS 18001 guidelines, our ZH centrifugal air compressors superior turbo technology and over-sized cooling provide the highest efficiency and reliability, together with AGMA class A4/ISO 1328 Class 4 gears for low noise and vibrations, durable, high-grade stainless steel coolers, and an integrated lubrication system.

Atlas Copco

www.atlascopco.us – 866-546-3588



Networking Events

Networking during the conference is an effective method of marketing that is used to build new business contacts through connecting with other like-minded individuals. Make sure you attend all of the networking opportunities during the event. Bring your business cards!

Networking Events

Daily Lunches
June 26 – 30

All Technical Conference delegate badges as well as exhibit booth staff badges include a daily lunch. Additional lunches for guests can be purchased onsite during registration. Take the time during lunch to walk the exhibit floor and visit the many exhibitors from around the world showcasing their products and services.

Coffee Breaks
Turbo Expo Daily Coffee Breaks:
Monday-Friday, 10:00am- 10:15am

Power & Energy/ICOPE Daily Coffee Breaks:
Monday- Thursday, 10:30am- 11:00am
All coffee breaks will be served near the technical session meeting rooms.

Welcome Reception
Monday, June 26 | 7:00 – 8:30 pm
NASCAR Hall of FAME

All Conference registrants are invited to join their colleagues for complimentary light refreshments during the Monday evening event. In a casual atmosphere, greet friends, and meet the thinkers from around the world who are shaping the future of turbomachinery and power & energy.

Expo Hall Receptions
Tuesday & Wednesday, June 27 & 28 5:00 – 6:30 pm
All registered delegates are invited to the Expo Hall for complimentary drinks and networking with industry colleagues, while viewing the exhibits of the industry's leading companies.

Early Career Engineer & Student Mixer
Wednesday, June 28 | 6:45 – 8:00 pm
Richardson Ballroom Foyer, Charlotte Convention Center

Unwind after a full day of technical sessions and exhibits with fellow engineering students and early career engineers. This popular event allows students to make new friends and build their professional network in a casual evening atmosphere. Complimentary refreshments will be provided. Sponsored by Dresser Rand.

DRESSER-RAND
A Siemens Business

Exposition Closing Ceremony
Thursday, June 29 Expo Hall 1:45 pm

Please join us as we announce the "Peoples' Choice" booth display winners, the Student Poster winners, recognize outgoing Committee Chairs, the Young Engineer Travel Award recipients, and announce plans for Turbo Expo 2018 in Oslo, Norway.

Power Division Banquet & Awards
Tuesday, June 27, 7:00pm-10:30pm

The Speedway Club at Charlotte Motor Speedway
5555 Concord Parkway South, 6th Floor, Concord, North Carolina

Tickets are sold at the registration counter and cost $65 for conference attendees. Busses will leave from the convention center Martin Luther King jr. entrance at 6:45pm.

Energy Sustainability & Fuel Cell Conference Banquet & Awards
Tuesday, June 27, 7:00pm- 10:00pm

Cabarrus Brewery
329 McGill Avenue NW, Concord, North Carolina
Tickets are sold at the registration counter and cost $25 for conference attendees. Busses will leave from the convention center Martin Luther King jr. entrance at 6:45pm.


See next page for more information on ASME Turbo Expo 2018!

ASME 2018 Turbo Expo
June 11 - 15, 2018 | Lillestrøm, Norway

ASME 2018 Turbo Expo

June 11 - 15, 2018 | Lillestrøm, Norway

Turbo Expo 2018 in Lillestrøm

Norges Varemesse, Norway Convention & Exhibition Centre in Lillestrøm Norway

Abstract Submission Deadline
August 30, 2017

Secure your booth space and sponsorship today!
igtiexpo@asme.org

asme.org/events/turbo-expo

ASME
INTERNATIONAL GAS TURBINE INSTITUTE

Women in Engineering Event

Tuesday, June 27 | 7:45 pm – 9:00 pm

Female registrants are invited to join their colleagues for a networking event that will feature a motivating talk by Diane Beagle, GE Power. Attendees will have the opportunity to network with women in the industry and learn about the career paths of some successful women in the industry. Dinner will follow the talks and is included with your registration. If you haven't already registered, stop by the registration desk and add this event to your registration.

Diane Beagle
General Manager – Repair Technology Center of Excellence
GE Power – Power Services

The Women in Engineering Event is Sponsored by GE

Diane was born near Detroit, Michigan. She attended Michigan Technological University in Houghton, Michigan and graduated with a Bachelor's in Mechanical Engineering and a Master's in Metallurgical Engineering. She also holds an MBA from Carnegie Mellon University.

Diane started her career at Precision Castparts in Portland, Oregon in their Management Development Program. Upon completion of the program she was named Chief Metallurgist for the Master Melt Foundry. In 2000, Diane joined General Electric in Schenectady, New York as a Materials Engineer and shortly after took a Black Belt role in Materials & Processes Engineering. At the end of her Black Belt assignment, she was named Manager, Materials Application Engineering, leading a global team of materials engineers on development and qualification of large forgings and sand castings. In 2006, Diane accepted a Master Black Belt role in Advanced Technology Operations where she led the Conceptual Design of a gas turbine validation lab that was the seed study for Greenville Test Stand 7, the world's largest, most flexible test facility for industrial gas turbine engines. In 2008 Diane joined Turbine Module Design as a manager, where she led a variety of NPI programs including the 9FB PP1 & PP2 and the hot section design of the 7HA.01.

Diane was promoted to General Manager of the Power Services Repair Technology Center of Excellence in October 2013. She currently leads a team of engineers in developing and industrializing repair processes for Gas Turbines, Steam Turbines, Generators, Boilers and Aeroderivatives.

Diane lives in Greenville with her husband, Don, who is a Technical Leader in GE Renewables Wind Turbine Design. Together they have five children, one of whom also works at GE as a design engineer.


The engine of change will come
from the company that can build it.
GE is bringing together best-in-class analytics and deep domain expertise to help our customers
solve their toughest challenges. See how we're changing the way we fly at **geaviation.com**.

Student News

The Student Advisory Committee (SAC) is a group of students who work to foster student engagement in the IGTI community and improve the Turbo Expo conference every year. Toward this goal, the SAC organizes various sessions and events during the conference, provides opportunities for students to work behind the scenes with leaders in their technical area, and awards travel funds to eligible degree seeking individuals.

Student News

Student Advisory Committee

The Student Advisory Committee, SAC, consists of Jacob Snyder, Penn State University (Chair); Zhiping Mao; Duke University (Vice Chair); Michelle Wood, University of Houston (Secretary); and Kathryn Kirsch, Penn State University (Past Chair) , all of whom began their terms at the 2016 Turbo Expo student committee meeting in Seoul, South Korea. Together, the four officers manage the committee, plan all student events and activities at Turbo Expo and represent the student community for the ASME Gas Turbine Segment.

The SAC encourages all students and degree-seeking individuals to participate in the ASME IGTI Student Advisory Committee. We will be advertising more details about ASME 2018 Turbo Expo Conference very soon. ASME Turbo Expo hosts over 500 graduate and undergraduate students who present research findings, attend tutorials, visit the exhibition, and network with professionals.

SAC Tutorial Sessions

The Art of the Peer Review Process: Best Practices for Crafting and Responding to Paper Reviews

Tuesday, June 27 | 10:15 - 11:45 am
Richardson Ballroom B, Charlotte Convention Center
Dr. Karen A. Thole, *Department Head of Mechanical and Nuclear Engineering, Professor of Mechanical Engineering, Pennsylvania State University*

This tutorial session will discuss the importance of quality peer reviews to the technical community and give best practice for creating reviews that are beneficial to the author(s). Additionally, this tutorial will walk through the steps of the review process and will pose best practices for responding to paper reviews. Discussion among session participants will be encouraged through the use of example paper reviews.

Rethinking Scientific Presentations: The Assertion-Evidence Structure

Wednesday, June 28 | 2:30 - 5:30 pm
Richardson Ballroom A, Charlotte Convention Center
Michael Alley, *Associate Professor of Engineering Communication, Pennsylvania State University*

From an audience's perspective, many presentations in science and engineering suffer because the talks are unfocused. This lack of focus leads to much noise, which reduces the understanding by the audience. Much of the problem arises from speakers following PowerPoint's defaults and building their talks on phrase headlines supported by bulleted lists. This workshop presents the assertion-evidence approach (assertion-evidence.com) to designing scientific presentations. In this approach, the speaker builds the talk on key messages unsupported by visual evidence. Our research has found that assertion-evidence talks are more focused and much better understood by audiences. In addition, our students (even those initially nervous about making presentations) report that using the assertion-evidence approach has given them more confidence. To this workshop, participants are encouraged to bring a laptop.

SAC Poster Competition

Tuesday, June 27 | 12:30 – 2:30 pm
Exhibit Hall

The Student Advisory Committee is, once again, sponsoring a student poster session at ASME Turbo Expo 2017. Student posters will be on display on the main exposition floor on Tuesday, June 27th. Student poster finalists will be on display on Wednesday, June 27 from 12:30 – 2:30 pm. Be sure to stop by the poster session to see the results of their work and encourage them to become active in ASME.

Cast your vote for the People's Choice Best Student Poster – enter your selection at the computer station at the entrance to the exhibit hall.

This year the cash prizes will be: 1st place - $500, 2nd place - $250, and People's Choice - $100.

2017 YETEP Winners

Alessio Abrassi
University of Genoa

Valeria Andreoli
Purdue University

Myeonggeun Choi
University of Oxford

Arifur Chowdhury
University of Texas El Paso

Ward De Paepe
Universite Libre de Bruxelles

Adam Feneley
Brunel University London

Seyed M. Ghoreyshi
Texas A&M University

David Holst
Technical University Berlin

Seongpil Joo
Seoul National University

Julia Ling
Citrine Informatics

Anandkumar Makwana
Penn State University

Georg Atta Mensah
Technical University Berlin

Alom Mohammed Nur
National Institute of Technology Meghalaya

Aravin Daas Naidu
Technical University of Munich

Stefano Puggelli
University of Rouen

Janith Samarasinghe
GE Global Research

Prashant Singh
Virginia Tech

Natalie R. Smith
Southwest Research Institute

Adam Gabor Vermes
TU Delft

Sheng Wei
Georgia Institute of Technology

Turbo Expo Student Poster Presenters

Combustion, Fuels and Emissions

Eric Bach, TU Berlin
Study of the Thermoacoustic Properties of an Autoignition Stabilized Liquid Fuel Flame Using a Newly Designed Atmospheric Reheat Combustion Test Rig

Samuel Barak, University of Central Florida
Syngas Ignition in a Shock Tube with CO2 Dilution

Jose O. Bobren-Diaz, University of Central Florida
The Turbulence-Chemistry Interaction During Jet Fuel Combustion Using The Tabulated Premixed Conditional Moment Closure Method

Antoine Durocher, McGill University
Mechanism Reduction of C1-C3 Alkane Fuels Using Quasi Steady-State Approximation

Siddhartha Gadiraju, Virginia Tech
Combustor Swirling Flow and its Effect on Liner Heat Transfer

Seongpil Joo, Seoul National University
Flame Transfer Function characteristics in a Model Gas Turbine Combustor with Cold Flow State

Payam Mohammadzadeh Keleshtery, Technische Universität München
Hybrid Modeling Approach for Thermoacoustic Characterization of Lean-Premixed, Swirl-Stabilized Combustors with Water Injection

Yajin Lyu, Harbin Institute of Technology
Effect of the Structure of a Micro-mixing Tube on Mixing and Combustion

Thoralf Reichel, Technical University of Berlin
Study on fuel stratification for a Shockless Explosion Combustor

Suo Yang, Georgia Institute of Technology
Sensitivity of Extinction & Re-ignition Predictions to Finite-Rate Chemical Models in a Temporally Evolving Turbulent Non-premixed Syngas Flame

Combustion, Fuels and Emissions / Turbomachinery: Noise Reduction

Ariane Emmanuelli, ONERA
Indirect Combustion Noise in a Stator Row: 2D modelling and CAA Study

Fans and Blowers

Wenqiang Zhang, Imperial College London
Influence of the Inlet Distortion on Fan Stall Margin at Different Rotational Speed

Heat Transfer

Andrew Boulanger, Virginia Tech
Experimental Investigation of Sand Deposits on Hastelloy-X from 1000 aC to 1100 aC Using Particle Tracking

Prashant Singh, Virginia Tech
Development of Efficient Internal Cooling Technologies for Gas Turbine Airfoils at Advanced Propulsion and Power Laboratory (VT): Non-Rotating Conditions

Microturbines, Turbochargers & Small Turbomachines

Stephan Bamberg, Technische Universität Ilmenau
Study on the Surge Detection of a Centrifugal Compressor by Conducting CFD Analyses and Applying a Loss-based Performance Prediction Model

Hwabhin Kwon, Changwon National University
Numerical Simulation on the Performance of High-Speed Turbo Blower With an Impeller Diameter of 33 mm

Adam G. Vermes, Delft University of Technology
Modeling Rotating Cavitation Instabilities in Rocket Engine Turbopumps

Microturbines, Turbochargers & Small Turbomachines / ORC

Miles Robertson, Imperial College London
Radial Turboexpander Performance Maps for Organic Rankine Cycle Systems

Organic Rankine Cycle

Sarah Van Erdeweghe, KU Leuven - EnergyVille
Impact of the Turbine Performance on the Series and Parallel CHP Plants

Steam Turbines

Jonghyeon Lee, Changwon National University
Numerical Investigation of the Effect of Mass Flow Rate on the Isentropic Nozzle Efficiency of Steam Turbine

Stefanos Melekidis, University of Stuttgart
Experimental Study of Large Droplet Formation at Trailing Edges

Structures and Dynamics

Tianwei Lai, Xi'an Jiaotong University
Transient Rotordynamic Analysis of the Protuberant Foil Bearing Application in Turbo-Expander for Cryogenic Air Separation

Mindong Lyu, Tsinghua University
The Frequency Analysis and Identification of the Orbit Responses During the Touchdowns in the Active Magnetic Bearing

Siddharth Raval, University of New Brunswick
Experimental Study of the Flow Induced Impeller Vibrations in a Mixing Vessel

Tianbo Zhai, Texas A&M University
Prediction of Coupling Guard Temperature & Gearbox Windage Power Loss

Turbo Expo Student Poster Presenters

Supercritical CO2 Power Cycles

Kancherla Raghu Veera Manikantachari, University of Central Florida
The Influence of Elevated Pressures on Methane Combustion in N2 and CO2 Dilutions

Turbomachinery

Hamad Alruzihi, Saudi Aramco
Design of High Efficiency Gas Turbine GT24

Taeok Kang, Korea University
Numerical Investigation on Performance of a Transonic Centrifugal Compressor with Different Number of Diffuser Vane

Yongse Kim, Seoul National Univerisity
Structural Stability Evaluation of Centrifugal Compressor Impeller in High Frequency Resonance Area Using Partial Sector Component

James MacCalman, Durham University
Using Fluidic Curtains To Reduce Seal Leakage

Giacomo Mingardo, Delft University of Technology
Secondary Flow Mitigation Through Endwall Contouring Shape Optimization

Lorenzo Tieghi, La Sapienza
Analysis of Secondary Flows in Linear Compressor Cascade During Transient Operations with Elliptic-Relaxation-Based U-RANS Closure

Francesco Torre, Delft University of Technology
Improvement of Turbopump Cavitating Performance by Means of Splitter Blades Shape Optimization

Guglielmo Vivarelli, University of Sheffield
Robust Feature & Adjoint Combined Grid Adaptation for Turbomachinery

Yu Wan, Tongji University
A Corrected Method for Optimum Solution of Centrifugal Impeller Inlet Design

Wind Turbines

Sajid Ali, University of Science and Technology (UST)
Field Testing and Performance Evaluation of 1.5kW Darrieus Wind Turbine Using Different Statistical Parameters, Installed at Deokjeok-do Island, South Korea

Archana Choudhari, SRM University
Flow Field Analysis and Performance Characteristics For a K-F Airfoil Variant For Wind Turbines

ASME FutureME Mini-Talks

Monday, June 26 | 4:00 - 5:30 pm Richardson Ballroom B, Charlotte Convention Center
Join the ECE Programming Committee and the IGTI Student Advisory Committee for a 90-minute social experience! You will have the opportunity to hear three short, inspiring mini-talks given in an informal setting by experienced early career engineers sharing their perspectives on career development. In addition to the mini-talks, you can meet up with other mechanical engineers that have similar interests, to network professionally, and make new connections with ASME leadership and/or renew past friendships. Bring plenty of business cards. Ice cream will be served.

Event Highlights

- Listen to three short mini-talks focused on energizing your career development
- Engage with the presenters; ask questions
- Meet-up with other engineers to network professionally
- iPad Mini Giveaway

Program Moderator

Jason Ostanek, Ph.D., Assistant Professor, Purdue University

Biography: Jason Ostanek, Ph.D., is currently an Assistant Professor in the School of Engineering Technology at Purdue University. Jason holds a B.S degree in Mechanical Engineering Virginia Tech and M.S and Ph.D. degrees in Mechanical Engineering from the Pennsylvania State University. Jason has previously worked as a Mechanical Engineer at the Naval Surface Warfare Center, Philadelphia Division. In 2016, Jason won the first annual NAVSEA Commander's Award for innovation. His research experiences include gas turbine heat transfer, heat transfer in li-ion battery systems, fire safety, two-phase cooling systems, and thermal property measurement techniques.

A Recipe for Success in New Roles

Keye Su, Ph.D. Candidate, Department of Mech. Engineering and Material Science, Duke University

Transitioning from an engineering student to a real-world engineer or transitioning to a new workplace has never been easy. Tailored to help young professional engineers make a seamless transition and realize their full potential, this talk offers concise yet practical methods on how to maneuver and succeed during different stages of the transition to a new work environment. Initially, Keye has found that it is helpful to find a mentor or role-model to help navigate your transition. After beginning the new role, reinforce your findings by using data. Finally, at all times, be prepared to provide updates and summaries of your work to leaders in your organization.

Presenter biography: Keye Su is a Ph.D. candidate in the Department of Mechanical Engineering and Materials Science at Duke University. He is currently conducting research in wind turbine aerodynamics, turbine wake simulations and structural vibrations. Keye interned as a R&D engineer in the summer of 2015 at Continuum Dynamics, a company providing state-of-the-art technical solutions for government and industry. Keye earned his M.S. in Mechanical Engineering from Duke University (2013) and B.S. in Engineering from Sun Yat-sen University in China (2011). He is the receiver of Duke MEMS Fellowship and National Scholarship of China. In his spare time, Keye is an active soccer player in Duke Intramural League.

Leveraging Industry Experience for Success in an Academic Career

Ankur Jain, Assistant Professor, Mechanical and Aerospace Engineering Department, University of Texas at Arlington

While mechanical engineering careers in academia and industry share some common traits, there are also several distinctions that offer unique opportunities when transitioning from one to the other. In the presenter's opinion, this process needs careful thought and planning, but the two career paths are not mutually exclusive. Familiarity with real-world problems and skills important in industry, such as technical rigor, discipline and teamwork, have helped Ankur address challenging academic research problems. This talk will discuss some of his experiences, lessons learned and the importance of recognizing the skills complementary to the two career paths, and how success in one facilitates success in the other.

Presenter biography: Ankur Jain is an Assistant Professor in the Mechanical and Aerospace Engineering Department at the University of Texas, Arlington where he directs the Microscale Thermophysics Laboratory. He received the UT Arlington

Monday, June 26, 2017 4:00-5:30PM

College of Engineering Outstanding Early Career Award (2017), NSF CAREER Award (2016) and the ASME EPP Division Young Engineer of the Year Award (2013). His research interests include heat transfer in Li-ion batteries, microscale thermal transport, bioheat transfer, microelectromechanical systems, etc. He has previously held research and development positions in leading semiconductor companies including AMD and Freescale Semiconductor, and at Molecular Imprints Inc., a startup company that was acquired by Canon. He received his Ph.D. (2007) and M.S. (2003) in Mechanical Engineering from Stanford University, and his B.Tech. (2001) in Mechanical Engineering from the Indian Institute of Technology (IIT), Delhi with top honors. His research and education activities have been supported by National Science Foundation (NSF), Department of Energy (DoE), Office of Naval Research (ONR), Indo-US Science & Technology Forum (IUSSTF), etc.

An Economic and Business Case for Diversity in Engineering

Shane Haydt, Ph.D. Candidate, Department of Mech. and Nuclear Engineering, Pennsylvania State University

Traditional engineering recruitment messages and strategies have under-served and alienated many potential engineers, leading to a dearth of diversity in the field. These messages rely heavily on an emphasis towards science and math, while ignoring more relevant and actionable skills like problem solving, creativity, and a desire to make a difference. Due to social and cultural factors, these ingrained recruitment techniques have been shown not to work on underrepresented minorities in engineering. Diversity isn't just a buzzword. Aside from the moral case, there is also an economic and business benefit to increasing diversity in engineering; getting more women involved in STEM careers can help close the wage gap, and businesses with more diverse staff have been shown to be more successful. The road map to increasing diversity is mostly laid out. To follow it and make this change, we as engineers need to learn how to talk about our work and careers in a more aspirational way. Using the "Changing the Conversation" messages can help change the perception of engineering and improve the recruitment of underrepresented minorities. This is how we will inspire ALL of the next generation of engineers.

Presenter biography: Shane received his B.S. in Mechanical Engineering at Penn State University in 2013, and is currently at Penn State working on his Ph.D. in the Experimental and Computational Convection Lab. As an undergraduate, Shane was involved in a program called Engineering Ambassadors, and as a graduate student became the graduate assistant for the group. Engineering Ambassadors is a professional development program with an outreach mission, focused specifically on increasing diversity in engineering.

Learn more about the 2017 Power & Energy/ICOPE and Turbo Expo conferences and don't miss this unique Social Experience!
https://www.asme.org/events/power-energy, https://www.asme.org/events/turbo-expo

2017 Student Advisory Committee Travel Award (SACTA)

Michael Branagan
University of Virginia

James Braun
Purdue University

Bogdan Cezar Cernat
von Karmen Institute/UCL

Theofilos Efstathiadis
Aristotle University of Thessaloniki

Masha Folk
University of Cambridge

Chiara Gastaldi
Politecnico di Torino

Simone Giorgetti
Universite Libre de Bruxelles

David Gonzalez Cuadrado
Purdue University

Niclas Hanraths
Technical University Berlin

Shane Haydt
Penn State

Alexander Heinrich
Technical University Berlin

Thomas Jackowski
Karlsruhe Instititute of Tech

Salman Javed
Delhi Technological University

Nguyen LaTray
UT Arlington

Maria Rinaldi
KTH Royal Institute of Technology

Deepanshu Singh
Indian Institute of Technology

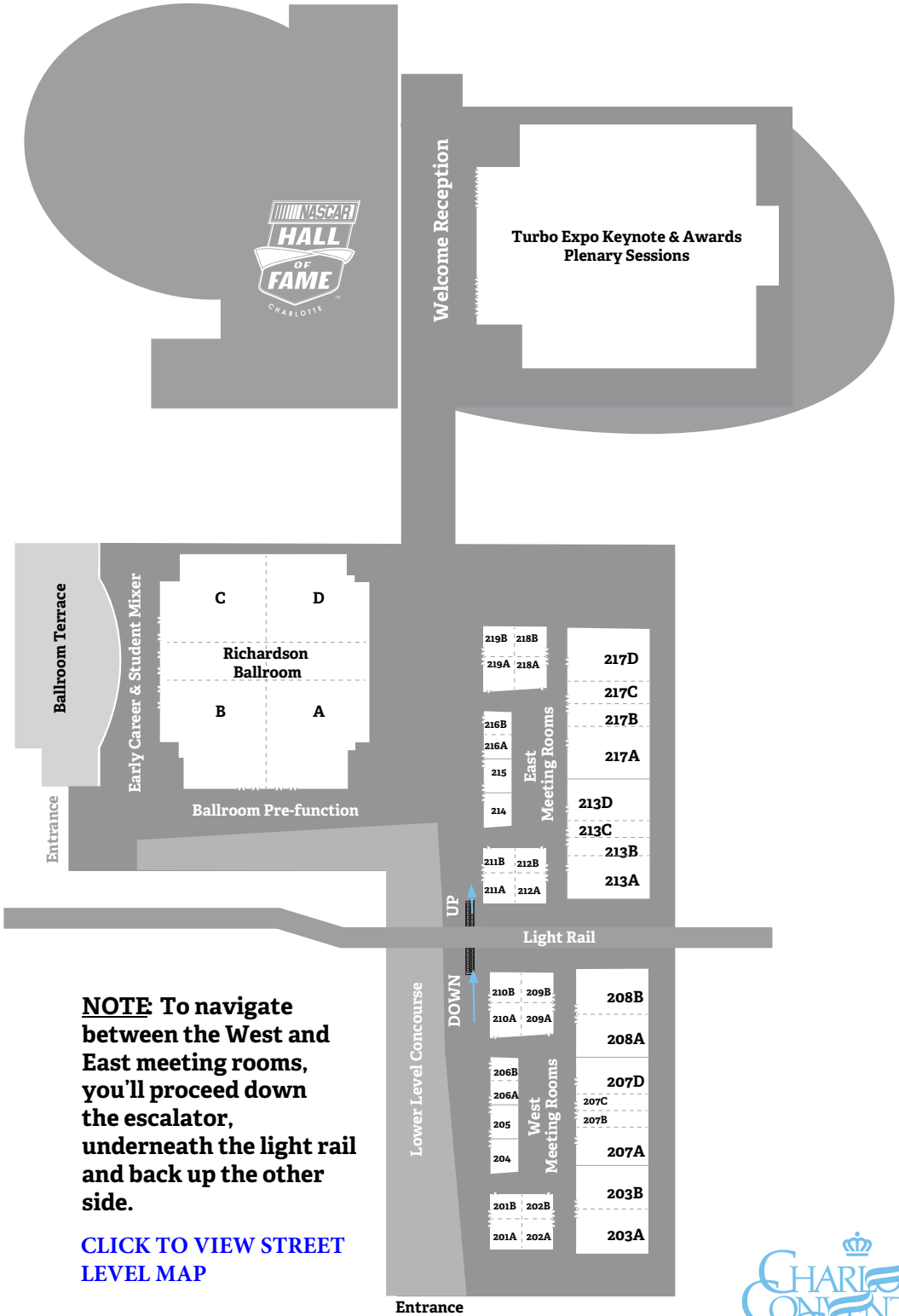
Cori Watson
University of Virginia

Suo Yang
Georgia Institute of Technology

Lv Ye
Xi'an Jiaotong University

Lisa Zander
Technical University Berlin

Convention Center Map

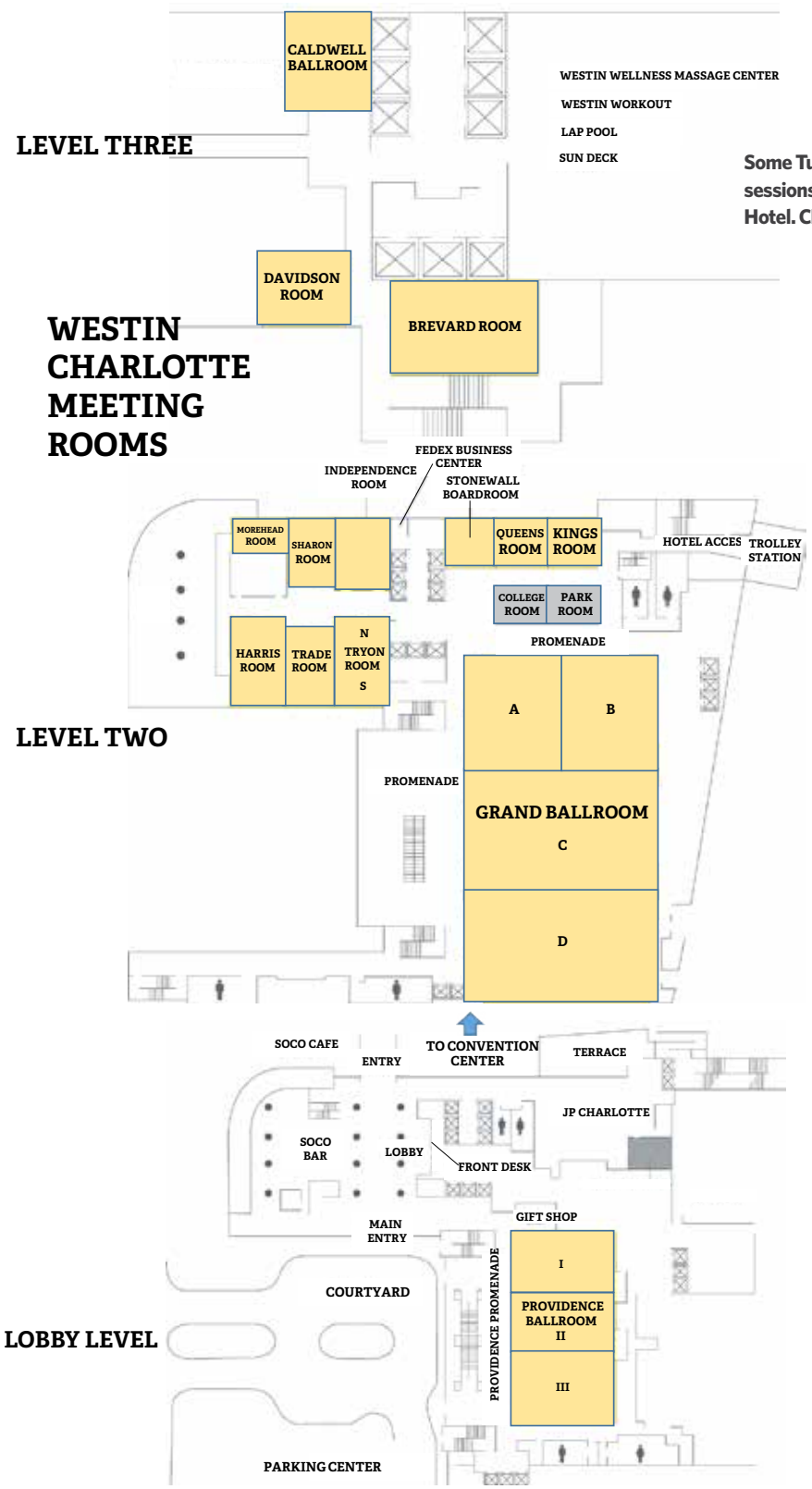


NOTE: To navigate between the West and East meeting rooms, you'll proceed down the escalator, underneath the light rail and back up the other side.

CLICK TO VIEW STREET LEVEL MAP

CHARLOTTE CONVENTION CENTER

Westin Hotel Map



Some Turbo Expo technical sessions will be held at the Westin Hotel. Check the schedule.

The Exposition

Round out your conference experience by spending time Tuesday through Thursday in the exhibit hall featuring the latest technology offered by leading companies in the industry and an exhibitor presentation stage. Lunches and receptions in the exhibit hall each day will provide relaxed, yet focused networking opportunities.

Table of Contents

Exposition Hours

Tuesday, June 27.....12:30 p.m. - 6:30 p.m.
Wednesday, June 28.....12:30 p.m. - 6:30 p.m.
Thursday, June 29.....11:30 a.m. - 2:30 p.m.

Don't miss the Turbo Expo Exhibit Closing Ceremony at 1:45 p.m.

The Exposition

Thank you to our Turbo Expo Exhibit Advisory Committee
Please stop by and visit with our EAC members and give them your suggestions and feedback for making the Turbo Expo Exposition an even better event. A complete listing can be found on page 49. If you are interested in joining this committee, contact the ASME IGTI Expositions Department at **igtiexpo@asme.org**.

If you are interested in exhibiting at the 63rd ASME Turbo Expo in Oslo, Norway in June 2018, contact ASME IGTI at **igtiexpo@asme.org** or stop by the ASME IGTI Exhibit Sales Office in the exhibit hall to secure your booth or one of the sponsorship opportunities. We also have space and sponsorship opportunities for the 2017 ASME Gas Turbine India Conference and Exposition this December in Bangalore.

If you are interested in exhibiting at ASME Power & Energy in Orlando, Florida USA in June 2018, contact ASME Sales at **valerog@asme.org.**

Reminders:

- No photographs can be taken in the exhibit hall without permission of Show Management and/or the exhibiting company.
- Place your votes for the People's Choice Best Booth Award and the People's Choice Best Turbo Expo Student Poster at the entrance of the exhibit hall.
- See security personnel for emergencies and first aid assistance.

The Exposition Floorplan

Turbo Expo Exhibit Advisory Committee Roster

Mission: To assist in the growth and expansion of the Turbo Expo exhibit with continued support to exhibiting companies and ASME IGTI expositions staff. Representatives serve as experts for fielding questions and providing resources and initiatives for continued success of the exposition.

Travis Carrigan
Pointwise, Inc.
213 S. Jennings Ave.
Fort Worth, TX 76104 USA
+1 817-377-2807 Phone
Term: 2014-2017

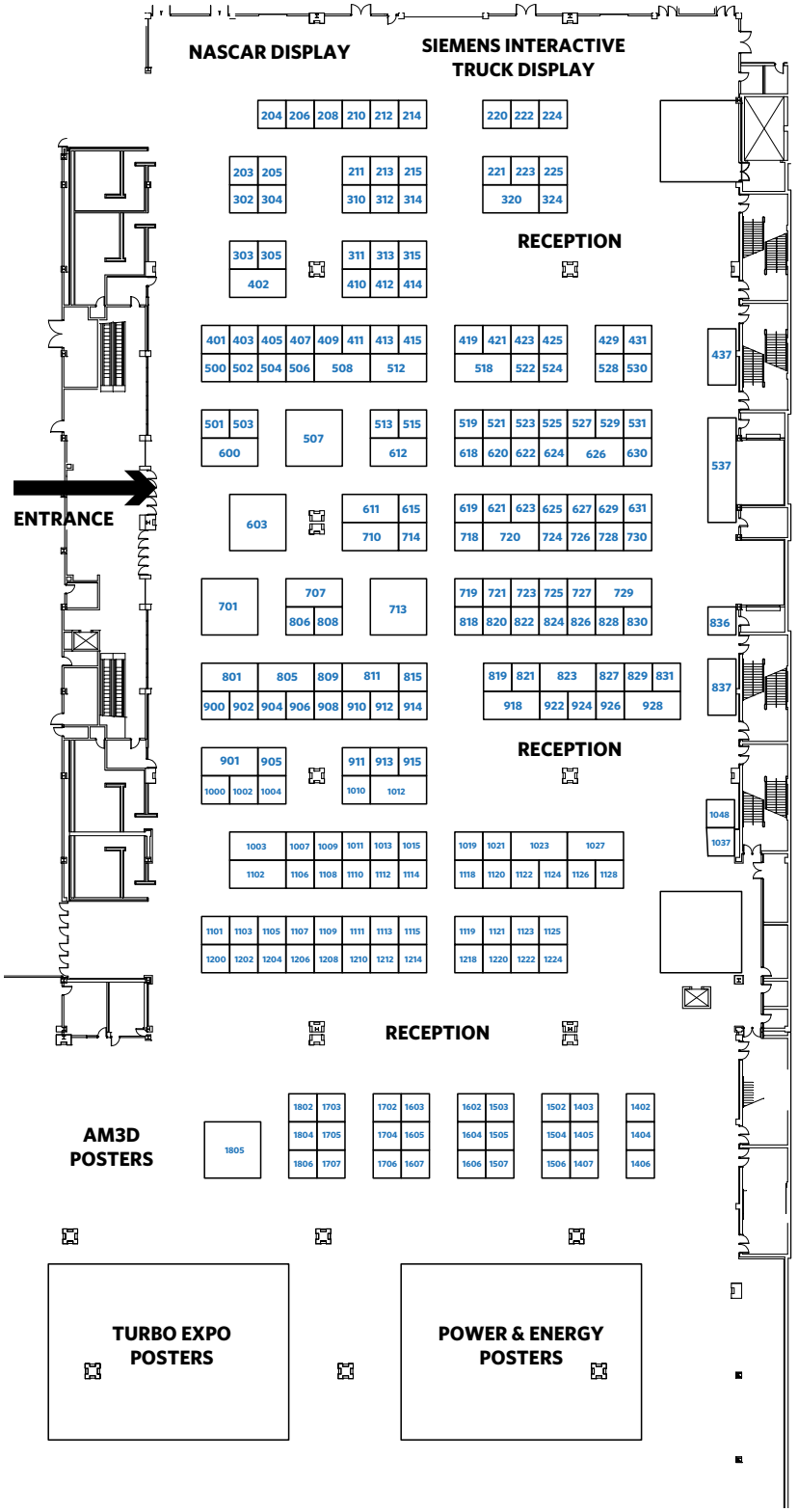
Dr. Leonid Moroz
SoftInWay Inc.
15 New England Executive Park
Burlington, MA 01803 USA
+1 781-685-4942 Phone
Term: 2014 – 2017

Dave Pincince
Turbocam International
607 Calef Highway, P.O. Box 830
Barrington, NH 03825 USA
+1 603-905-0200 Phone
Term: 2014-2017

Dr. Benjamin O'Shea
Praewest Präzisionswerkstätten Dr.-Ing.Heinz-Rudolf Jung GmbH & Co.
Martinsheide 7
Bremen, 28757 Germany
+49 421 / 658 51 – 0 Phone
Term: 2014-2017

Kristin Barranger
ASME International Gas Turbine Institute
barrangerk@asme.org
Term: Staff Liaison

If you are interested in joining this committee, contact Kristin Barranger igtiexpo@asme.org.



Stage Presentation Schedule

Every visitor, delegate and exhibitor at the EXPO can attend any of the following presentations, FREE OF CHARGE. Each is delivered by one of the Exhibitors at the EXPO - all of them leading experts in their field.

Tuesday, June 27	
1:00 – 1:30 pm	Turbocharger Testing and Validation at Aerodyn Engineering: This discussion will describe development testing of turbocharger designs on two loop gas stands. Performance, burst and containment, shaft motion, blade stresses, and system integration testing will be described at Aerodyn's test facility in Indianapolis, IN
1:45 – 2:15 pm	Eliminate unsafe, costly, and time consuming fastening methods by using Nord-Lock wedge-locking washers. A loose nut or bolt might be considered a nuisance, but can be detrimental in a critical application. Request the size you need and put them to the test by Nord-Lock, Inc.
2:30 – 3:00 pm	Run Your Plants, Not Reports – this discussion will take a look at how power plant owner/operators can optimize data collection and satisfy reporting requirements, while attaining productivity improvement using real-time data transformation processes. Specifically, we will focus on how owner/operators can use automated techniques for NERC GADS reporting, tracking equipment equivalent age, generating RAM metrics, and other reporting needs presented by Strategic Power Systems, Inc.
3:15 - 3:45 pm	Why You Can't Solve Today's Turbomachinery Problems with Yesterday's Tools presented by John Randazzo from SmartUQ
4:00 – 4:30 pm	Simulation Innovations Speed Turbomachinery Design and Analysis presented by Andre Braune, Technical Account Manager from ANSYS
4:45 – 5:15 pm	AxSTREAM ION – Next Generation Optimization & Integration system for In-house & Commercial Turbomachinery Design and Simulation Software presented by Dr. Leonid Moroz from SoftInWay, Inc.

Wednesday, June 28	
1:00 – 1:30 pm	AxSTREAM NET – for Cooled Gas Turbine Engineering & Optimization presented by Clement Joly from SoftInWay, Inc.
1:45 – 2:15 pm	Use of Simulation in Additive Manufacturing presented by Dave Conover, Corporate Fellow from ANSYS
2:30 – 3:00 pm	A presentation by Renishaw.
3:15 - 3:45 pm	High Resolution, 3D Surface Measurement for the Shop Floor presented by Mike Zecchino from 4D Technology Corporation
4:00 – 4:30 pm	Digital connectivity enhancing product life cycle value through prognostic health monitoring (PHM) presented by Ahmad Haidari, Ph.D., Global Industry Director from ANSYS
4:45 – 5:15 pm	A TEI Company Presentation offered by TEI – TUSAS Engine Industries Inc.

Thursday, June 29	
12:30 - 1:00 p.m.	Pump Systems Optimization Driving Energy Efficiency and Higher Reliability for Power Generation Facilities presented by William C. Livoti, Certified Instructor from the Hydraulic Institute
1:45 - 2:30 p.m.	ASME Turbo Expo Closing Ceremony and Kick-Off for Oslo, Norway

NUMECA INTERNATIONAL

Ancillary Event

Tuesday, June 27 12:45 PM Westin Hotel Providence II

You are invited to attend NUMECA's Lunch & Learn Session. During this free lunch, our technical experts will provide you with a detailed overview of our brand new solutions for turbomachinery design and analysis.

ASME 2017 Gas Turbine India Conference

December 7 – 8, 2017 | Bangalore, India | Sheraton Grand Hotel at Brigade Gateway

The Most Advanced Turbomachinery Conference in India

ASME Gas Turbine India Conference is the must-attend event for turbomachinery professionals. Over 500 leading experts will gather to present their peer-reviewed research and the latest technology advancements in the industry. If warranted by review, papers may also be recommended for publication in ASME's Journal of Turbomachinery or Journal of Engineering for Gas Turbines and Power.

Technical Content

- 2-day conference packed with technical education and knowledge exchange
- Panel sessions featuring industry professionals
- Tutorials for those looking to learn about a new topic
- Pre-conference workshops

Networking Opportunities

- Network with leading exhibiting companies
- Coffee breaks, lunches, and a dinner

ASME
INTERNATIONAL GAS TURBINE INSTITUTE

Exhibitor Social Media

ACTech North America, Inc. 500
ACTech GmbH

Advanced Design Technology Ltd. 815
@ADT_TURBO
Advanced Design Technology, Ltd.

Aerodyn 720
facebook.com/Aerodyn-Engineering-134551636619274/
@aerodyneng
Aerodyn Engineering, Inc.

Aeroprobe Corporation 1019
facebook.com/aeroprobe/
@AeroprobeCorp
Aeroprobe Corporation

ANSYS 701
@ANSYS
ANSYS, Inc.

APEX Turbine Testing Technologies 518
facebook.com/APEXTurbine
@ApexTurbine
APEX Turbine Testing Technologies

Applied Flow Technology 1119
facebook.com/appliedflowtechnology/
@appliedflowtech
Applied Flow Technology

ASME Turbo Expo 1037
facebook.com/ASMEIGTI
@IGTI
ASME International Gas Turbine Institute

AVL List GmbH 1101
facebook.com/AVL.List
@AVL_List

Calnetix Technologies 901
facebook.com/Calnetix9763296157131/
Calnetix Technologies

Atlas Copco 626
facebook.com/atlascopcousa
@AtlasCopcoUSA
atlas-copco-usa

Bosal 910
BOSAL

Celeroton AG 1009
Celeroton AG

Concepts NREC 801
facebook.com/conceptsnrec
@conceptsnrec
Concepts NREC

Conco Services Corporation 1007
facebook.com/ConcoSystems
@ConcoServices
Conco Services Corporation

Crane Inspection & Certification Bureau CICB 409
facebook.com/CICBTraining/
@CICBTraining

EOS GmbH - Electro Optical Systems 837
EOS - Electro Optical Systems

Creare LLC 723
Creare

EPRI 1023
facebook.com/search/top/?q=EPRI
@EPRINews
Electric Power Research Institute

Exa Corporation 1107
facebook.com/exacorp
@exacorp
Exa Corporation

Extrude Hone 423
facebook.com/Extrude-Hone-619550368207706/
@ExtrudeHone
Extrude Hone

Field Industries LLC 630
facebook.com/pages/Field-Industries-LLC/354238007921769
@fieldindustries
Field Industries

Flownex Simulation Environment 1102
Flownex Simulation Environment

HGL Dynamics 1115
facebook.com/HGLDynamics
@HGLDynamics
HGL Dynamics

Komax Systems, Inc. 1002
facebook.com/komaxsystem
@komaxinc
Komax Systems, Inc.

Hydraulic Institute 827
facebook.com/Hydraulic.Institute/
@HIpumps
Hydraulic Institute

MMP Technology 507
@MTFinishing
MMP TECHNOLOGIES LTD

Kulite Semiconductor Products, Inc. 515
facebook.com/kulitesemiconductor/

MTU Aero Engines 811
MTU Aero Engines North America

National Research Council of Canada (NRC) 915
@NRC_CNRC
National Research Council Canada

NUMECA International 600
facebook.com/NUMECAIntl/
@NumecaInt
NUMECA International

OPRA Turbines BV 900
OPRA Turbines

Ophir Spiricon 1202
facebook.com/ophir.optronics
@OphirPhotonics
Ophir-Spiricon LLC

OROS 513
@OROS_NV
OROS

OSRAM 1027
facebook.com/osramheaters

Exhibitor Social Media

PCA Engineers Limited 806
PCA Engineers Limited

Photron USA, Inc. 506
facebook.com/Photron-126137154096758/
@Photron_HSV
Photron

Pointwise, Inc. 619
facebook.com/pointwise/
@pointwise
Pointwise, Inc

První brnenská strojírna Velká Bíteš, a.s. 831
facebook.com/PBS-Velka-Bites-200127596694856/
@PBS_Velka_Bites
První brn?nská strojírna Velká Bíteš, a. s.

RetubeCo, Inc. 836
facebook.com/retubeco
@retubeco
Retubeco, Inc

Scanivalve 618
facebook.com/Scanivalve-Corporation-161504233879144/

SETPOINT 414
@goSETPOINT
SETPOINT Vibration

Siemens 303
facebook.com/cdadapco/
CD-adapco
facebook.com/Siemens/
@Siemens
Siemens

SLM Solutions 821
@SLMSolutions_NA
SLM Solutions NA, Inc.

SmartUQ 904
facebook.com/SmartUQ/
@SmartUQ
SmartUQ

Southwest Research Institute 512
facebook.com/southwestresearch
@swri
Southwest Research Institute

Strategic Power Systems, Inc. 1021
Strategic Power Systems, Inc.

Superheat FGH Services 425
facebook.com/superheatfgh
@SuperheatFGH
Superheat FGH

TE Connectivity 918
facebook.com/teconnectivity
@teconnectivity
TE Connectivity

TEI - TUSAS Engine Industries, Inc 729
TEI - TUSAS Engine Industries, Inc.

Thermal Wave Imaging 912
facebook.com/thermalwaveimaging/
Thermal Wave Imaging, Inc.

Turbine Diagnostic Services, Inc. 320
Turbine Diagnostic Services

Torquemeters Ltd. 805
Torquemeters Limited

Turbocam International 612
facebook.com/Turbocam/
@TurbocamIntl
Turbocam International

University of Notre Dame 911
Notre Dame Turbomachinery Laboratory

Vectoflow GmbH 721
facebook.com/vectoflow
@vectoflow
Vectoflow GmbH

Versa Integrity Group 631
facebook.com/versaintegritygroup/
@Versa_Integrity
Versa Integrity Group, Inc.

Waukesha Bearings Corporation 922
Waukesha Bearings Corporation

VISIT THE

ONLINE

EXHIBITOR

DIRECTORY

FOR

EXHIBITING

COMPANY

LISTINGS.

ASME – Siemens Power and Gas Truck – Partnering for a Sustainable Energy Future

Please visit the Siemens Power and Gas Truck on display at ASME for an interactive experience featuring a virtual reality demonstration of some gas turbines/steam turbines. You will also find a blade and burner on exhibit, a 3D model of a gas turbine, along with the Siemens Electric Chopper motorcycle for a photo opportunity at ASME!

Exhibit Hall: Best Display

People's Choice for Best Booth Display

Enter for a chance to win 1 of 3 USD cash prizes by Casting Your Ballot for the People's Choice Best Booth Award Winners.

$100 $250 $500

Three cash prize winners will be announced during the Closing Ceremony in the Exhibit Hall on Thursday, 1:45 pm.

Cast Your Ballot for:

- Most creative display design
- Best display of technology
- Best overall exhibit
- Best method of crowd attraction

One vote per attendee. Entrant must be present to win at the Closing Ceremony. To qualify for the prize drawings, votes must be cast by 1:00 p.m. on Thursday, June 29.

Place your vote for both categories:
Large Display (for booths 200sf and larger)
Small Display (for booths 100sf in size)

Congratulations to the 2016 People's Choice Award Winners

Large Display: ANSYS

Small Display: Vectoflow

People's Choice for Best Turbo Expo Student Poster

Please take a moment to also vote for the Best Student Poster.

Voting kiosk can be found at the entrance of the exhibit hall!

Exhibitor Product Categories

3D INSPECTION AND MEASUREMENTS
Aerodyn
Creare LLC
MMP Technology
Muller-BBM Vbroakustik Systeme
Präwest Präzisionswerkstätten GmbH & Co. KG.
První brnenská strojírna Velká Bíteš, a.s.
Renishaw Inc
SmartUQ

3D PRINTING
Aeroprobe Corporation
Concepts NREC
Präwest Präzisionswerkstätten GmbH & Co. KG.
Renishaw Inc
SLM Solutions
SmartUQ
Turbocam International
Vectoflow GmbH

ACADEMIC INSTITUTION
Gas Turbine Society of Japan
University of Sheffield, The

ADDITIVE MANUFACTURING
Aeroprobe Corporation
Concepts NREC
MMP Technology
Präwest Präzisionswerkstätten GmbH & Co. KG.
Renishaw Inc
SLM Solutions
SmartUQ
TEI - TUSAS Engine Industries, Inc
Turbocam International
Vectoflow GmbH

AERODERIVATIVE GAS TURBINE REPAIR & OVERHAUL
HGL Dynamics
LG Tech-Link Global, LLC
Liburdi Turbine Services Inc.
První brnenská strojírna Velká Bíteš, a.s.
Air Systems
Aeroprobe Corporation
Atlas Copco
Celeroton AG
TEI - TUSAS Engine Industries, Inc

ANALYTICAL
Creare LLC
HGL Dynamics
LPI, Inc.
Prime Photonics, LC
SmartUQ
Strategic Power Systems, Inc.
Waukesha Bearings Corporation

ANCILLARY EQUIPMENT
HGL Dynamics
Parker Hannifin Corporation
Waukesha Bearings Corporation

AUTOMATED 3D INSPECTION AND MEASUREMENTS
Aerodyn
Creare LLC
Präwest Präzisionswerkstätten GmbH & Co. KG.
Renishaw Inc
SmartUQ

AXIAL & CENTRIFUGAL COMPRESSORS
ADS CFD Inc.
Advanced Design Technology Ltd.
Aerodyn
Atlas Copco
Celeroton AG
CEROBEAR GmbH
Concepts NREC
Creare LLC
PCA Engineers Limited
Präwest Präzisionswerkstätten GmbH & Co. KG.
Scanivalve
SoftinWay

CENTRIFUGAL CASTINGS
ACTech North America, Inc.
Field Industries LLC
MMP Technologies
SUNG-IL TURBINE CO., LTD.

COMPONENTS
ACTech North America, Inc.
AneCom AeroTest GmbH
Bosal
Calnetix Technologies
Celeroton AG
CEROBEAR GmbH
Concepts NREC
Parker Hannifin Corporation
První brnenská strojírna Velká Bíteš, a.s.
SUNG-IL TURBINE CO., LTD.
Turbocam International
Vectoflow GmbH
Waukesha Bearings Corporation

CONSULTING & ENGINEERING SERVICES
ADS CFD Inc.
Advanced Design Technology Ltd.
Aerodyn
Aeroprobe Corporation
AIM MRO
AneCom AeroTest GmbH
ANSYS
APEX Turbine Testing Technologies
Applied Flow Technology
AVL List GmbH
Babcock Power/TEi
Cambridge Flow Solutions Ltd
Celeroton AG
CFturbo GmbH
CleanAir Engineering
Concepts NREC
Creare LLC
Curtis-Wright / Scientech
EOS GmbH- Electro Optical Systems
IfTA GmbH
LG Tech-Link Global, LLC
Liburdi Turbine Services Inc.
LPI, Inc.
MTU Aero Engines
Muller-BBM Vbroakustik Systeme
National Research Council of Canada (NRC)
NUMECA International
OROS
OSRAM
PCA Engineers Limited
Pointwise, Inc.
První brnenská strojírna Velká Bíteš, a.s.
SmartUQ
University of Sheffield, The
Vectoflow GmbH
Versa Integrity Group
Waukesha Bearings Corporation

COOLING TOWERS & ACC'S
Cooling Technology Institute

CONTROLS/ INSTRUMENTATION
ACTech North America, Inc.
Aerodyn
Aeroprobe Corporation
Alta Solutions, Inc.
APEX Turbine Testing Technologies
Creare LLC
FOGALE nanotech
HGL Dynamics
JMS Southeast, Inc
LG Tech-Link Global, LLC
National Research Council of Canada (NRC)
OROS
OSRAM
Parker Hannifin Corporation
Precision Filters, Inc.
Prime Photonics, LC
Scanivalve
SETPOINT
TE Connectivity
Torquemeters Ltd.
Turbine Diagnostic Services, Inc.
Vectoflow GmbH

DATA ACQUISITION
Aeroprobe Corporation
AneCom AeroTest GmbH
APEX Turbine Testing Technologies
Curtiss-Wright/Scientech
FOGALE nanotech
HGL Dynamics

Exhibitor Product Categories

IfTA GmbH
Muller-BBM Vbroakustik Systeme
National Research Council of Canada (NRC)
OROS
Pentair Technical Solutions UK Ltd
Precision Filters, Inc.
Prime Photonics, LC
Scanivalve
SmartUQ
TE Connectivity
Vectoflow GmbH

DESIGN PROCESS & METHODOLIGIES

ACTech North America, Inc.
ADS CFD Inc.
Advanced Design Technology Ltd.
AneCom AeroTest GmbH
ANSYS
AVL List GmbH
Cambridge Flow Solutions Ltd
Exa Corporation
Komax Systems, Inc.
LG Tech-Link Global, LLC
National Research Council of Canada (NRC)
Pointwise, Inc.
Siemens
SmartUQ
Vacuum Process Engineering, Inc.
Vectoflow GmbH

DRIVE TRAIN EQUIPMENT

Sohre Turbomachinery Inc.
Turbine Diagnostic Services, Inc

EDUCATION

AIM MRO
ASME Turbo Expo
ASME Turbo Expo Sales
Concepts NREC
Hydraulic Institute
Photron USA, Inc.
SoftinWay
University of Sheffield, The

EXPANDERS

ADS CFD Inc.
Calnetix Technologies
Celeroton AG
Creare LLC
PCA Engineers Limited
Präwest Präzisionswerkstätten GmbH & Co. KG. & Co. KG.

FANS & BLOWERS

ADS CFD Inc.
Advanced Design Technology Ltd.
Alta Solutions, Inc.
AneCom AeroTest GmbH
Atlas Copco
Celeroton AG
CEROBEAR GmbH
Concepts NREC
Creare LLC
EOS GmbH- Electro Optical Systems
PCA Engineers Limited
Präwest Präzisionswerkstätten GmbH & Co. KG.
První brnenská strojírna Velká Bíteš, a.s.
SoftinWay
Turbine Diagnostic Services, Inc.
Turbocam International

FASTENERS

Field Industries LLC

FILTERS

Atlas Copco
Parker Hannifin Corporation

FIRE PROTECTION SYSTEMS

Flownex Simulation Environment

FITTINGS

Atlas Copco
Field Industries LLC

FLANGES

Field Industries LLC

FUEL SYSTEMS

ACTech North America, Inc.
AVL List GmbH
National Research Council of Canada (NRC)
Parker Hannifin Corporation
SmartUQ
University of Sheffield, The

GAS TURBINE COOLING

ADS CFD Inc.
Aeroprobe Corporation
Bosal
Exa Corporation
LG Tech-Link Global, LLC
National Research Council of Canada (NRC)
OPRA Turbines BV
První brnenská strojírna Velká Bíteš, a.s..
SmartUQ

GAS TURBINES

ADS CFD Inc.
Advanced Design Technology Ltd.
Aerodyn
Aeroprobe Corporation
AneCom AeroTest GmbH
AVL List GmbH
Calnetix Technologies
CEROBEAR GmbH
Concepts NREC
EOS GmbH- Electro Optical Systems
HGL Dynamics
LG Tech-Link Global, LLC
Liburdi Turbine Services Inc.
MMP Technology
MTU Aero Engines
National Research Council of Canada (NRC)
OPRA Turbines BV
PCA Engineers Limited
Pentair Technical Solutions UK Ltd
Pratt & Whitney
Präwest Präzisionswerkstätten GmbH & Co. KG. & Co. KG.
Precision Filters, Inc.
Präzisionswerkstätten GmbH & Co. KG.
Scanivalve
SmartUQ
SoftinWay
Sohre Turbomachinery Inc.
Strategic Power Systems, Inc.
SUNG-IL TURBINE CO., LTD.
TEI - TUSAS Engine Industries, Inc
Turbine Diagnostic Services, Inc.
University of Sheffield, The
Vectoflow GmbH

GEAR TYPE COMPRESSORS

Scanivalve
SmartUQ

GOVERNMENT ORGANIZATION

National Aeronautics and Space Administration (NASA)

HEAT EXCHANGERS

Atlas Copco
Bosal
Calnetix Technologies
Conco Services Corporation
Creare LLC
Field Industries LLC
Komax Systems, Inc.
National Research Council of Canada (NRC)
RetubeCo, Inc.
SmartUQ
Superheat FGH Services
Vacuum Process Engineering, Inc.
Versa Integrity Group

HEAT TREATMENT

AVL List GmbH
National Research Council of Canada (NRC)
Superheat FGH Services
Vacuum Process Engineering, Inc.

ISOTHERM COMPRESSORS

Concepts NREC

LASER AND OPTICAL 3D SCANNING

Creare LLC
SmartUQ

LASER DRILLING

Creare LLC

LASER MACHINING

Creare LLC
Vectoflow GmbH

Exhibitor Product Categories

LASER WELDING
Aerodyn
Bosal
Creare LLC

MAINTENANCE AND OPERATION
Conco Services Corporation
Liburdi Turbine Services Inc.
OROS
PCB Piezotronics, Inc.
Pentair Technical Solutions UK Ltd
Prime Photonics, LC
SmartUQ
Strategic Power Systems, Inc.
Superheat FGH Services
Turbine Diagnostic Services, Inc.
Versa Integrity Group

MANAGEMENT & MAINTENANCE OF ROTATING EQUIPMENT
HGL Dynamics
OROS
PCB Piezotronics, Inc.
Pentair Technical Solutions UK Ltd
Sohre Turbomachinery Inc.
Strategic Power Systems, Inc.
Torquemeters Ltd.
Turbine Diagnostic Services, Inc.

MANUFACTURING PROCESSES
Aeroprobe Corporation
Aikoku Alpha Corp.
Conco Services Corporation
EOS GmbH- Electro Optical Systems
Komax Systems, Inc.
MMP Technology
Präwest Präzisionswerkstätten GmbH & Co. KG.
První brnenská strojírna Velká Bíteš, a.s
Renishaw Inc
SmartUQ
Turbocam International
Vacuum Process Engineering, Inc.
Vectoflow GmbH

MICROSCOPE SYSTEMS AND DIGITAL IMAGING
SmartUQ

MONITORING SOFTWARE
Alta Solutions, Inc.
APEX Turbine Testing Technologies
FOGALE nanotech
HGL Dynamics
IfTA GmbH
Pentair Technical Solutions UK Ltd
Photron USA, Inc.
Prime Photonics, LC
SETPOINT
Strategic Power Systems, Inc.
Torquemeters Ltd.

MOTION CONTROL EQUIPMENT
Celeroton AG
Parker Hannifin Corporation
Renishaw Inc

NONDESTRUCTIVE TESTING
Babcock Power/TEi
LPI, Inc.
Photron USA, Inc.
Thermal Wave Imaging

OEM GAS TURBINE/ POWER TURBINE
Aeroprobe Corporation
Calnetix Technologies
E+A
LG Tech-Link Global, LLC
MTU Aero Engines
OPRA Turbines BV
První brnenská strojírna Velká Bíteš, a.s
SmartUQ
SUNG-IL TURBINE CO., LTD.

OIL SYSTEMS
Aeroprobe Corporation
Parker Hannifin Corporation
Turbine Diagnostic Services, Inc.

PACKAGE/TURNKEY APPLICATIONS
Aerodyn
APEX Turbine Testing Technologies
Curtiss-Wright/Scientech
Parker Hannifin Corporation
Pentair Technical Solutions UK Ltd
Telemetrie Elektronik GmbH

PIPE
Field Industries LLC
Superheat FGH Services
Versa Integrity Group

PRESSURE VESSELS
Babcock Power/TEi
Bosal
Curtiss-Wright/Scientech
Field Industries LLC
PCB Piezotronics, Inc.
Superheat FGH Services
Versa Integrity Group

PROCESS CONTROL SYSTEMS
Curtis-Wright / Scientech
JMS Southeast, Inc
Komax Systems, Inc.
PCB Piezotronics, Inc.
Photron USA, Inc.
Renishaw Inc
TE Connectivity
Turbine Diagnostic Services, Inc.

PUBLICATION
A Shot of Texas Magazine
COMPRESSORtech2
Diesel & Gas Turbine Worldwide
Industrial Heating
Turbomachinery International

PUBLISHING COMPANY
Hydraulic Institute

RAPID PROTOTYPING
ACTech North America, Inc.
AIM MRO
Concepts NREC
Präwest Präzisionswerkstätten GmbH & Co. KG
SmartUQ
Turbocam International
Vectoflow GmbH

SERVICE FOR TURBINES & COMPRESSORS
AneCom AeroTest GmbH
HGL Dynamics
MMP Technology
National Research Council of Canada (NRC)
Parker Hannifin Corporation
Präwest Präzisionswerkstätten GmbH & Co. KG
První brnenská strojírna Velká Bíteš, a.s
Scanivalve
SoftinWay
Turbine Diagnostic Services, Inc.

SOFTWARE & COMPUTER HARDWARE
ADS CFD Inc.
Advanced Design Technology Ltd.
ANSYS
APEX Turbine Testing Technologies
Applied Flow Technology
AVL List GmbH
Cambridge Flow Solutions Ltd
CFturbo GmbH
Concepts NREC
Curtiss-Wright/Scientech
HGL Dynamics
IfTA GmbH
Intelligent Light
Muller-BBM Vbroakustik Systeme
NUMECA International
PCA Engineers Limited
Pointwise, Inc.
SETPOINT
Siemens
SmartUQ
SoftinWay
Strategic Power Systems, Inc.

SOLAR
National Research Council of Canada (NRC)
SmartUQ

Exhibitor Product Categories

SPECIAL MATERIALS
AIM MRO
EOS GmbH- Electro Optical Systems
National Research Council of Canada (NRC)
SmartUQ

STEAM TURBINES
Aeroprobe Corporation
Bosal
Celeroton AG
CEROBEAR GmbH
Concepts NREC
MMP Technology
PCA Engineers Limited
Präwest Präzisionswerkstätten GmbH & Co. KG
Precision Filters, Inc.
První brnenská strojírna Velká Bíteš, a.s
Scanivalve
SmartUQ
Sohre Turbomachinery Inc.
Superheat FGH Services
Turbine Diagnostic Services, Inc.

SUSTAINABLE ENERGY
Atlas Copco
Curtiss-Wright/Scientech
National Research Council of Canada (NRC)

TANKS
Field Industries LLC
Versa Integrity Group

TESTING
Aerodyn
Aeroprobe Corporation
AneCom AeroTest GmbH
AVL List GmbH
Bosal
CleanAir Engineering
Concepts NREC
Conco Services Corporation
Creare LLC
FOGALE nanotech
HGL Dynamics
IfTA GmbH
LG Tech-Link Global, LLC
LPI, Inc.
Muller-BBM Vbroakustik Systeme
National Research Council of Canada (NRC)
OROS
Photron USA, Inc.
Precision Filters, Inc.
Prime Photonics, LC
První brnenská strojírna Velká Bíteš, a.s.
Scanivalve
Siemens
SmartUQ
Southwest Research Institute
Telemetrie Elektronik GmbH
Thermal Wave Imaging
Torquemeters Ltd.
Turbine Diagnostic Services, Inc.
Vacuum Process Engineering, Inc.
Vectoflow GmbH
Waukesha Bearings Corporation

UNIVERSITY LABORATORY
Aeroprobe Corporation
Photron USA, Inc.
Precision Filters, Inc.
Scanivalve
University of Sheffield, The

VACUUM HEAT TREATING AND BRAZING SERVICES
Präwest Präzisionswerkstätten GmbH & Co. KG
První brnenská strojírna Velká Bíteš, a.s
SUNG-IL TURBINE CO., LTD.
Turbocam International
Vacuum Process Engineering, Inc.

WATERJET CUTTING/ DRILLING
SmartUQ

WIND TURBINES
ADS CFD Inc.
Aeroprobe Corporation
AVL List GmbH
EOS GmbH- Electro Optical Systems
MMP Technology
Muller-BBM Vbroakustik Systeme
National Research Council of Canada (NRC)
Precision Filters, Inc.
Scanivalve
SmartUQ
Vectoflow GmbH

Turbo Expo Technical Committees

Aircraft Engine
Current Chair: Wing Ng
Current Vice Chair: Wilfried Visser

Ceramics
Current Chair: Sai Sarva
Current Vice Chair: Jun Shi

Coal, Biomass & Alternative Fuels
Current Chair: Ajay Agrawal
Current Vice Chair: Pierre Q. Gauthier

Combustion, Fuels & Emissions
Current Chair: Ibrahim Yimer
Current Vice Chair: Mike Klassen
Incoming Chair: Mike Klassen
Incoming Vice Chair: Christian Oliver Paschereit

Controls, Diagnostics & Instrumentation
Current Chair: Lorenzo Ferrari
Current Vice Chair: Sebastian Borguet

Cycle Innovations
Current Chair: Vassilios Pachidis
Current Vice Chair: David Sanchez
Incoming Chair: David Sanchez
Incoming Vice Chair: Mario L. Ferrari

Education
Current Chair: Sabri Deniz
Current Vice Chair: Devin O'Dowd

Electric Power
Current Chair: Jeffrey A. Benoit
Current Vice Chair: Seyfettin C. (John) Gulen

Fans and Blowers
Current Chair: Alessandro Corsini
Current Vice Chair: Johan Van der Spuy

Heat Transfer
Current Chair: Phil Ligrani
Current Vice Chair: John Blanton

Industrial & Cogeneration
Current Chair: Mustapha Chaker
Current Vice Chair: Yiguang Li
Incoming Chair: Yiguang Li
Incoming Vice Chair: Francesco Melino

Manufacturing Materials & Metallurgy
Current Chair: Ashok Koul
Current Vice Chair: Douglas Nagy

Marine
Current Chair: Desiree Deshmukh
Current Vice Chair: Morgan Hendry
Incoming Chair: Morgan Hendry
Incoming Vice Chair: Jeffrey S. Patterson

Microturbines, Turbochargers & Small Turbomachines
Current Chair: Jeffrey Armstrong
Current Vice Chair: Keun Ryu
Incoming Chair: Keun Ryu
Incoming Vice Chair: Fabrizio Reale

Oil & Gas Applications
Current Chair: Tim Allison
Current Vice Chair: Michele Pinelli
Incoming Chair: Michele Pinelli
Incoming Vice Chair: Klaus Brun

ORC Power Systems
Current Chair: Jos van Buijtenen
Current Vice Chair: Carsten Trapp
Incoming Chair: Teemu Turunen-Saaresti
Incoming Vice Chair: Marco Astolfi

Steam Turbine
Current Chair: Thomas Thiemann
Current Vice Chair: Ivan McBean
Incoming Chair: Ivan McBean
Incoming Vice Chair: Markus Schatz

Structures & Dynamics
Current Chair: Harald Schoenenborn
Current Vice Chair: Jerzy T. Sawicki

Student Advisory
Current Chair: Jacob Snyder
Incoming Chair: Zhiping Mao

Supercritical CO2
Current Chair: Klaus Brun
Current Vice Chair: Eric Clementori
Incoming Chair: Eric Clementoni
Incoming Vice Chair: Grant Musgrove

Turbomachinery
Current Chair: Pat Cargill
Current Vice Chair: Ricardo Martinez-Botas
Incoming Chair: Ricardo Martinez-Botas
Incoming Vice Chair: Dale Van Zante

Wind Energy
Current Chair: Ken Van Treuren
Current Vice Chair: George Pechlivanoglou
Incoming Chair: George Pechlivanoglou
Incoming Vice Chair: Alessandro Bianchini

Turbo Expo Committee Meeting Schedule

Group	Date	Time	Location
Aircraft Engine	Thursday, June 29	6:00-7:30 PM	217AB
Ceramics	Wednesday, June 28	6:00-7:30 PM	207A
Coal, Biomass & Alternative Fuels	Thursday, June 29	6:00-7:30 PM	207BC
Combustion, Fuels & Emissions	Tuesday, June 27	6:00-7:30 PM	217AB
Controls, Diagnostics & Instrumentation	Wednesday, June 28	6:00-7:30 PM	212AB
Cycle Innovations	Tuesday, June 27	6:00-7:30 PM	219A
Education	Tuesday, June 27	1:15-2:15 PM	219A
Electric Power	Wednesday, June 28	12:00 - 1:00 PM	(Westin) Kings Room
Fans and Blowers	Thursday, June 29	6:00-7:30 PM	211AB
Gas Turbine India Chapter Meeting	Wednesday, June 28	1:30 - 2:15 PM	106
Heat Transfer	Wednesday, June 28	6:00-7:30 PM	203B
Industrial & Cogeneration	Tuesday, June 27	6:00-7:30 PM	219B
Manufacturing Materials & Metallurgy	Wednesday, June 28	6:00-7:30 PM	208B
Marine	Tuesday, June 27	6:30 PM	
Microturbines, Turbochargers & Small Turbomachines	Wednesday, June 28	6:00-7:30 PM	219B
Oil & Gas Applications	Thursday, June 29	6:00-7:30 PM	208A
ORC Power Systems	Not meeting at Turbo Expo		
Steam Turbine	Wednesday, June 28	6:00-7:30 PM	213AB
Structures & Dynamics	Tuesday, June 27	6:00-7:30 PM	213AB
Student Advisory	Thursday, June 29	5:30-7:00 PM	217CD
Supercritical CO2	Wednesday, June 28	6:00-7:30 PM	203A
Turbomachinery	Tuesday, June 27	6:00-7:30 PM	Crown Ballroom
Wind Energy	Thursday, June 29	6:00-7:30 PM	105

Thank You to the Turbo Expo 2017 Local Liaison Committee

Chair
Brian Maragno
Siemens

Lynne Bellizzi
Strategic Power Systems, Inc.

Neil Breedlove
Atlas Copco- Compressors LCC

David Causey
UNCC EPIC

Tom Christiansen
Strategic Power Systems, Inc.

Sal DellaVilla
Strategic Power Systems, Inc.

Tom Eshelman
Atlas Copco Compressors LCC

Peter Kyriacopoulos
Atlas Copco Compressors LCC

Bobby Noble
Electric Power Research Institute

Brian Tribble
Liburdi Turbine Services, Inc.

Katie Wilson
Siemens

Lindsay Yontz
Atlas Copco Compressors LCC

Turbo Expo Committee Point Contacts

Aircraft Engine
Oscar Kogenhop
Netherlands Aerospace Centre - NLR

Ceramics
Sai Sarva
GE Global Research

Coal, Biomass & Alternative Fuels
Marina Braun-Unkhoff
DLR

Combustion, Fuels & Emissions
Rudy Dudebout
Honeywell Aerospace

Controls, Diagnostics & Instrumentation
Sebastien Borguet
CMI Energy

Cycle Innovations
Mario Luigi Ferrari
University of Genoa

Education
Sabri Deniz
Lucerne University of Applied Sciences

Electric Power
Rick Tomlinson
Chevron

Fans and Blowers
Alessandro Corsini
'Sapienza' University of Rome

Heat Transfer: Additive Manufacturing
Dr. Bijay K. Sultanian
Takaniki Communications, LLC

Heat Transfer: Combustors (with Combustion, Fuels & Emissions)
Dr. Bijay K. Sultanian
Takaniki Communications, LLC

Heat Transfer: Conjugate Heat Transfer
Dr. Bijay K. Sultanian
Takaniki Communications, LLC

Heat Transfer: Experimental Film Cooling
Dr. Bijay K. Sultanian
Takaniki Communications, LLC

Heat Transfer: Experimental Internal Cooling
Dr. Bijay K. Sultanian
Takaniki Communications, LLC

Heat Transfer: General Computational Heat Transfer
Dr. Bijay K. Sultanian
Takaniki Communications, LLC

Heat Transfer: General Experimental Heat Transfer
Dr. Bijay K. Sultanian
Takaniki Communications, LLC

Heat Transfer: Internal Air Systems & Seals (with Turbomachinery)
Dr. Bijay K. Sultanian
Takaniki Communications, LLC

Heat Transfer: Multiphysics Modeling & Optimization
Dr. Bijay K. Sultanian
Takaniki Communications, LLC

Heat Transfer: Numerical Film Cooling
Dr. Bijay K. Sultanian
Takaniki Communications, LLC

Heat Transfer: Numerical Internal Cooling
Dr. Bijay K. Sultanian
Takaniki Communications, LLC

Heat Transfer: Special Sessions
Dr. Bijay K. Sultanian
Takaniki Communications, LLC

Heat Transfer: Tutorials
Dr. Bijay K. Sultanian
Takaniki Communications, LLC

Industrial & Cogeneration
Mustapha Chaker
CB&I

Manufacturing Materials & Metallurgy
Ashok Koul
Life Prediction Technologies

Marine
Desiree Deshmukh
NSWCPD

Microturbines, Turbochargers & Small Turbomachines
Keun Ryu
Hanyang University

Oil & Gas Applications
Timothy Allison
Southwest Research Institute

ORC Power Systems
Jos Van Buijtenen
Triogen B.V.

Steam Turbine
Damian Vogt
University of Stuttgart

Structures & Dynamics: Aerodynamic Excitation & Damping
Harald Schoenenborn
MTU Aero Engines

Structures & Dynamics: Bearing & Seal Dynamics
Harald Schoenenborn
MTU Aero Engines

Structures & Dynamics: Emerging Methods in Design & Engineering
Harald Schoenenborn
MTU Aero Engines

Structures & Dynamics: Fatigue, Fracture & Life Prediction
Harald Schoenenborn
MTU Aero Engines

Structures & Dynamics: Probabilistic Methods
Harald Schoenenborn
MTU Aero Engines

Turbo Expo Committee Point Contacts

Structures & Dynamics: Rotordynamics
Harald Schoenenborn
MTU Aero Engines

Structures & Dynamics: Structural Mechanics, Vibration & Damping
Harald Schoenenborn
MTU Aero Engines

Student Advisory
Jacob Snyder
Penn State

Student Poster
Jacob Snyder
Penn State

Supercritical CO2
Klaus Brun
Southwest Research Institute

Turbomachinery: Axial Flow Fan & Compressor Aerodynamics
Nicole Key
Purdue Univ

Turbomachinery: Axial Flow Turbine Aerodynamics
Luca Porreca
MAN Diesel & Turbo Schweiz AG

Turbomachinery: Design Methods & CFD Modeling for Turbomachinery
Akin Keskin
Rolls-Royce plc

Turbomachinery: Ducts & Component Interactions
Steven Burd
Pratt & Whitney

Turbomachinery: General Interest
Ricardo Martinez-Botas
Imperial College London

Turbomachinery: Multidisciplinary Design Approaches, Optimization & Uncertainty Quantification
Ingrid Lepot
Cenaero

Turbomachinery: Noise & Innovative Noise Reduction (with Aircraft Engine)
Jeff Defoe
University of Windsor

Turbomachinery: Radial Turbomachinery Aerodynamics
Jan Ehrhard
Continental Automotive GmbH

Turbomachinery: Unsteady Flows in Turbomachinery
Dale Van Zante
NASA Glenn Research Center

Wind Energy
Kenneth Van Treuren
Baylor University

ASME Standards & Certification

Performance Test Code Week
All Meetings will be held at the: Westin Charlotte, 601 South College Street

Monday, June 26, 2017

Reliability, Availability, and Maintainability (RAM) of Power Plants Committee
9:00 am - 5:00 pm; Room: Independence, Level 2

PTC 46 Overall Plant Performance
8:00 am - 5:00 pm; Room: Queens, Level 2

PTC 4 Fired Steam Generators
8:00 am - 5:00 pm; Room: Sharon, Level 2

TWDP Turbine Water Damage Prevention Committee
12:00 pm - 5:00 pm; Room: Harris, Level 2

Tuesday, June 27, 2017

PTC 53 Mechanical and Thermal Energy Storage Systems
8:00 am- 12:00 pm; Room: Sharon, Level 2

PTC 46 Overall Plant Performance Committee
8:00 am- 12:00 pm; Room: Brevard, Level 2

RAP Standards Committee on Power Plant Reliability, Availability and Performance Committee
5:00 pm - 7:00 pm; Room: Kings, Level 2

PTC 6 Steam Turbines
8:00 am - 5:00 pm, Davidson Room, Level 3

PTC 22- Gas Turbines
1:00 pm- 5:00 pm; Room: Kings Level 2

Wednesday, June 28

PTC 6.2- Steam Turbines in Combines Cycle
9:00 am- 5:00 pm; Room: Davidson, Level 2

PTC 6- Steam Turbines
8:00 am- 5:00 pm; Room: Independence, Level 2

Thursday, June 29, 2017

Performance Test Code (PTC) Standards Committee
8:00 am - 4:00 pm; Room: Sharon, Level 2

Power & Energy Committee Schedule

Power Division Technical Committee Meetings

Sunday, June 25; 1:00 pm- 5:00 pm
Power Division Executive Committee
Westin Hotel, Caldwell Room
(By Invitation Only)

Monday, June 26, 2017, 8:30am-9:30am
ICOPE International Advisory Committee
Charlotte Convention Center, Room 215

Monday, June 26; 12:30pm- 2:00pm
Power Division Executive Committee and Committee Chairs Meeting
Charlotte Convention Center, Room 215 (Closed)

Wednesday, June 28; 12:30pm- 2:00pm
Power Division Technical Committee Meetings
Charlotte Convention Center
(Open to all attendees)
- Combined Cycle Power Plant - Room 204
- Fuels & Combustion Technology - Room 205
- Heat Exchangers - Room 206A
- Plant Operations - Room 206B
- Reliability, Availability & Maintainability - Room 209A
- Renewables and Advanced Energy Systems- Room 210AB
- Turbines, Generators & Auxiliaries- Room 209B

Thursday, June 29; 12:30pm- 2:00pm
2018 Conference Program Coordination Meeting
Charlotte Convention Center, Room 215
Power Division EXCOM and Division Committee and TRACK chairs
Conference lesson learned wrap-up and initial 2018 program track and session development
Submittal of Power Division Committee reports and membership

Friday, June 30: 8:00am- 1:00pm
Power Division Organizational Meeting
Charlotte Convention Center, Room 215

Advanced Energy Systems Division Technical Committee Meetings

Wednesday, June 28
Advanced Energy Systems Division Systems Analysis
Charlotte Convention Center, Room 201A | 6:30 pm- 7:30 pm

Advanced Energy Systems Division Renewable Energy and Energy Efficiency
Charlotte Convention Center, Room 201B | 6:30 pm- 7:30 pm

Advanced Energy Systems Division Electrochemical Energy Conversion and Storage
Charlotte Convention Center, Room 202A | 6:30 pm- 7:30 pm

Advanced Energy Systems Division Executive Committee
Charlotte Convention Center, Room 202B | 7:30 pm- 8:30 pm

Solar Energy Division Technical Committee Meetings

Wednesday, June 28
Solar Energy Division Conservation and Solar Buildings Committee
Charlotte Convention Center, Room 204 | 6:30 pm- 7:30 pm

Solar Energy Division Heating and Cooling Applications and Analysis Committee
Charlotte Convention Center, Room 205 | 6:30 pm- 7:30 pm

Solar Energy Division Solar Chemistry & Bio Conversion Committee
Charlotte Convention Center, Room 206A | 6:30 pm- 7:30 pm

Solar Energy Division Solar Thermal Power Committee
Charlotte Convention Center, Room 206B | 6:30 pm- 7:30 pm

Solar Energy Division Photovoltaics Committee
Charlotte Convention Center, Room 209A | 6:30 pm- 7:30 pm

Solar Energy Division Wind Energy Committee
Charlotte Convention Center, Room 209B | 6:30 pm- 7:30 pm

Solar Energy Division Executive Committee Meeting
Charlotte Convention Center, Room 210A | 7:30 pm- 8:30 pm

Environmental Engineering Division Meetings

Sunday, June 25
Westin Charlotte, Sharon Room | 7:00am- 4:00pm

Monday, June 26
Westin Charlotte, College Room | 7:00am- 12:00pm

Tuesday, June 27
Power & Energy Advisory Committee
Charlotte Convention Center, Room 214
12:30pm- 2:00pm

Power & Energy + ICOPE Conference Track Chairs

Track 1-1 Fuels, Combustion & Material Handling

Track Organizer
Christopher Blazek
Benetech Inc.

Track Co-Organize
Ashwani Gupta
University of Maryland

Track Co-Organizer
Hong Yao
Huazhong University of Science & Technology

Track Co-Organizer
Tomohiro Asai
Mitsubishi Hitachi Power Systems, Ltd.

Track 1-2 Combustion Turbines

Track Organizer
Bob Aslin
FM Global

Track Co-Organizer
Masahide Kazari
Kawasaki Heavy Industries, Ltd.

Track Co-Organizer
Thomas Cavalcante
Sargent & Lundy Consulting

Track Co-Organizer
Tony Clark
Power Engineers, Inc.

Track Co-Organizer
Yiwu Weng
Shanghai Jiao Tong University

Track 1-3 Boilers & Heat Recovery Steam Generators

Track Organizer
Paul Weitzel
Retired

Track Co-Organizer
David Fitzgerald
Engie NA

Track Co-Organizer
Henry Wong
AECOM Corp

Track Co-Organizer
Qulan Zhou
Xi'an Jiaotong University

Track Co-Organizer
Takashi Kiga
IHI Corporation

Track 1-4 Risk Management, Safety and Cyber Security

Track Organizer
Frank Michell
American Electric Power

Track Co-Organizer
Yiwu Weng
Shanghai Jiao Tong University

Track Co-Organizer
Yuso Oki
CRIEPI

Track 1-6 Plant Construction Issues and Supply Chain Management

Track Organizer
Navid Goudarzi
UNC Charlotte, ETCM Department

Track Co-Organizer
Chen Yang
Chongqing University

Track Co-Organizer
Shuichi Umezawa
Tokyo Electric Power Company Holdings, Inc.

Track 1-7 Renewable Energy Systems: Solar, Wind, Hydro and Geothermal

Track Organizer
Navid Goudarzi
UNC Charlotte, ETCM Department

Track Co-Organizer
David MacPhee
University of Alabama

Track Co-Organizer
Fei Wang
Zhejiang University

Track Co-Organizer
John Fall
American Electric Power

Track Co-Organizer
Koji Matsubara
Niigata University

Track Co-Organizer
Ossama Abdelkhalik
Michigan Technological University

Track Co-Organizer
Victor Osorio
San Francisco State University

Track Co-Organizer
Weifei Hu
Cornell University

Track Co-Organizer
Yuso Oki
CRIEPI

Track 1-8 Heat Exchangers, Condensers, Cooling Systems, and Balance-of-Plant

Track Organizer
James Smith
RetubeCo Inc

Track Co-Organizer
Danmei Xie
Wuhan University

Track Co-Organizer
Eric Svensson
Powerfect, Inc.

Track Co-Organizer
Gary Fischer
Conco Systems Inc

Track Co-Organizer
Hitoshi Asano
Kobe University

Track 1-9 Steam Turbine-Generators, Electric Generators, Transformers, Switchgear, and Electric BOP & Auxiliaries

Track Organizer
Lyle Branagan
Pioneer Motor Bearing Co.

Track Co-Organizer
Bob Scott
GE Power

Track Co-Organizer
Hiroshi Morimoto
Mitsubishi Hitachi Power Systems, Ltd.

Track Co-Organizer
Jinyuan Shi
Shanghai Power Equipment Research Institute

Track Co-Organizer
Thomas Bauer
Svobatech, Inc.

Track 1-10 I&C, Digital Controls, and Influence of Human Factors

Track Organizer
Miltos Alamaniotis
Purdue University

Track Co-Organizer
Hitoshi Asano
Kobe University

Track Co-Organizer
Hua Wang
Kunming University of Science and Technology

Track 1-11 Plant Operations, Maintenance, Aging Management, Reliability and Performance

Track Organizer
Christopher Marcella
Able Engineering Services

Track Co-Organizer
Brian Langel
Omaha Public Power District
Wenhu Yang
Huaibei Shenergy Power Generation Company, LTD.
Noman Sadi
Arkansas State University
Bo Zemin
Shanghai Jiao Tong University
Tarannom Parhizkar,
Sharif University of Technology

Power & Energy + ICOPE Conference Track Chairs

Track Co-Organizer
Brian Wodka
RMF Engineering

Track Co-Organizer
Chen Yang
Chongqing University

Track Co-Organizer
Motonari Haraguchi
Mitsubishi Hitachi Power Systems, Ltd.

Track Co-Organizer
Steve Kaercher
DTE Energy

Track 1-12 Thermal Hydraulics and Computational Fluid Dynamics

Track Organizer
George Mesina
Idaho National Laboratory

Track Co-Organizer
Donna Guillen
Idaho National Laboratory

Track Co-Organizer
Qulan Zhou
Xi'an Jiaotong University

Track Co-Organizer
Ryosuke Matsumoto
Kansai University

Track Co-Organizer
Yutaka Oda
Kansai University

Track 1-13 Energy Water Sustainability

Track Organizer
Jessica Mullen
US DOE/National Energy Technology Laboratory

Track Co-Organizer
Nicholas Siefert
DOE/NETL

Track Co-Organizer
Yuso Oki
CRIEPI

Track 1-14 Student Competition

Track Organizer
Rachel Willis
University of Central Florida

Track Co-Organizer
Fei Wang
Zhejiang University

Track Co-Organizer
Justin Voss
AES - Global Insurance

Track Co-Organizer
Steven Greco
We Energies

Track 1-15 Posters

Track Organizer
Tina Toburen
T2E3, Inc.

Track Co-Organizer
Fei Wang
Zhejiang University

Track Co-Organizer
Jason Lee
Babcock Power Services Inc.

Track Co-Organizer
Takao Nakagaki
Waseda University

ASME 2017 11th International Conference on Energy Sustainability

Track 2-1 Biofuels, Hydrogen, Syngas, and Alternate Fuels

Track Organizer
Peiwen Li
University of Arizona

Track Co-Organizer
Choongho Yu
Texas A&M College Station

Track Co-Organizer
Gisuk Hwang
Wichita State University

Track 2-2 Concentrating Solar Power

Track Organizer
Roman Bader
Solar Energy Engineering

Track 2-3 Photovoltaics

Track Organizer
Bing Guo
A&M University at Qatar

Track Co-Organizer
Thad Druffel
University of Louisville

Track 2-4 Solar Chemistry

Track Organizer
Erik Koepf
ETH Zurich

Track 2-5 Wind Energy Systems and Technologies

Track Organizer
Jie Zhang
University of Texas at Dallas

Track 2-6 Geothermal Power, Hydro/Ocean Power, and Emerging Energy Technologies

Track Organizer
Guangdong Zhu
National Renewable Energy Laboratory

Track 2-7 CHP and Hybrid Power & Energy Systems

Track Organizer
Heejin Cho
Mississippi State University

Track 2-8 Thermodynamic Analysis of Energy Systems

Track Organizer
Ali Al-Alili
The Petroleum Institute

Track 2-9 Environmental, Economic, and Policy Considerations of Advanced Energy Systems

Track Organizer
Pouria Ahmadi
University of Illinois at Urbana-Champaign

Track 2-10 Sustainable Building Energy Systems

Track Organizer
Jorge Gonzalez
The City College of New York

Track Co-Organizer
M. Keith Sharp
University of Louisville

Track 2-11 Sustainable Infrastructure and Transportation

Track Organizer
Dervis Demirocak
Texas A&M University - Kingsville

Track 2-12 Posters

Track Organizer
Hohyun Lee
Santa Clara University

ASME 2017 15th Fuel Cell Science, Engineering, and Technology Conference

Track 3-1 Batteries and

Power & Energy + ICOPE Conference Track Chairs

Electrochemical Energy Storage

Track Organizer
Partha Mukherjee
Texas A&M University

Track Co-Organizer
George Nelson
University of Alabama in Huntsville

Track Co-Organizer
Todd Bandhauer
Colorado State University

Track 3-2 Polymer Electrolyte Membrane, Direct Methanol, & Alkaline Fuel Cells

Track Organizer
Prodip K. Das
Newcastle University

Track Co-Organizer
Kyle Grew
U.S. Army Research Laboratory

Track 3-3 Phosphoric Acid, Molten Carbonate, & Solid Oxide Fuel Cells

Track Organizer
Eon Soo Lee
New Jersey Institute of Technology (NJIT)
Min Hwan Lee
University of California, Merced
Y. Sam Park
University of Louisville

Track 3-4 Fuel Cell Ancillary Systems and Balance-of-Plant

Track Organizer
David Tucker
National Energy Technology Laboratory

Track Co-Organizer
Nor Farida Harun
National Energy Technology Laboratory

Track 3-5 Commercial Applications of Fuel Cells

Track Organizer
George Nelson
University of Alabama in Huntsville

Track 3-6 Posters

Track Organizer
Partha Mukherjee
Texas A&M University

ASME 2017 Energy Storage Forum

Track 4-1 Commercial Applications of Energy Storage

Track Organizer
Gregory Jackson
Colorado School of Mines

Track 4-2 Batteries and Electrochemical Energy Storage

Track Organizer
George Nelson
University of Alabama in Huntsville

Track Co-Organizer
Partha Mukherjee
Texas A&M University

Track 4-3 Compressed Air & Mechanical Energy Storage Systems

Track Organizer
Mark Lausten
U.S. Department of Energy Solar Office

Track 4-4 Thermal Energy Storage Systems

Track Organizer
Siamak Farhad
University of Akron

Track Co-Organizer
Sean Babiniec
Sandia National Laboratories

Track 4-5 Posters

Track Organizer
Gregory Jackson
Colorado School of Mines

ASME 2017 Nuclear Forum

Track 5-1 Nuclear Steam Supply Systems Including Advanced and Small Modular Reactors

Track Organizer
Jovica Riznic
Canadian Nuclear Safety Commission

Track 5-2 Risk Management, Safety and Cyber Security

Track Organizer
Arun Veeramany
Pacific Northwest National Laboratory

Track 5-3 Codes, Standards, Licensing and Regulatory Compliance

Track Organizer
Ralph Hill
Hill Consulting

Track Co-Organizer
Clayton Smith
Fluor Nuclear Power

Track 5-4 Plant Construction Issues and Supply Chain Management

Track Organizer
Jovica Riznic
Canadian Nuclear Safety Commission

Track Co-Organizer
Milan Petrovic
University Belgrade

Track 5-5 Structures, Components and Materials

Track Organizer
Hakan Ozaltun
Idaho National Laboratory

Track 5-6 I&C, Digital Controls, and Influence of Human Factors

Track Organizer
Miltos Alamaniotis
Purdue University

Track 5-7 Plant Operations, Maintenance, Aging Management, Reliability and Performance

Track Organizer
Robert Stakenborghs
ILD Power

Track 5-8 Thermal Hydraulics and Computational Fluid Dynamics

Track Organizer
Blazenka Maslovaric
Research and Consulting

Track Co-Organizer
George Mesina
Idaho National Laboratory

Track Co-Organizer
Jovica Riznic
Canadian Nuclear Safety Commission

Track 5-9 Posters

Track Organizer
Jovica Riznic
Canadian Nuclear Safety Commission

Registration Information

Registration Location/Hours

Charlotte Convention Center, A Concourse
(South College Street Entrance)
Sunday, June 25 - 7:00 am – 7:00 pm
Monday, June 26 - 7:00 am – 7:00 pm
Tuesday, June 27 - 7:00 am – 6:30 pm
Wednesday, June 28 - 7:00 am – 6:30 pm
Thursday, June 29 - 7:00 am – 6:30 pm
Friday, June 30 - 7:00 am – 3:30 pm

Technical Conference Registration Includes:

- Access to every session in the Technical Conference
- Conference DVD
- Access to the Online Final Papers
- Professional Development Hours (PDHs) Certificate
- Admission to the Turbo Expo and Power and Energy Keynotes and Plenary Sessions.
- Welcome Reception, June 26
- Daily Lunch, June 26 – 30
- Exhibition, June 27 – 29
- Exhibit Hall Receptions, June 27 – 28
- Opportunity to attend Facility Tours

Free ASME Membership

Non-member 5-day and 3-day registrants, plus students are eligible to receive a complimentary one-year ASME membership. Registrants in this category will receive an email invitation within 90 days after the Show from ASME Membership with the invitation to join.

Badge/Tickets

Your badge is encoded with all payments made through conference registration. It is your only ticket and must be presented for admission to ticketed functions.

Security

For security reasons, your badge must be worn at all official functions including Technical Conference, the Welcome Reception, the Keynote Sessions, luncheons and in the Exposition.

Turbo Expo PDH Certificates

Technical Conference delegates will receive their PDH (Professional Development Hours) certi cate for attendance by email within 3-weeks following the conference. (5-day = 32.5 PDHs, 3-day = 19.5 PDHs).

ASME Power & Energy PDH Certificates

Available upon request.

ASME Event Connect

Create your own personalized conference itinerary with the ASME Event Connect Mobile App for the iPhone, iPad, Android, and Blackberry. Add technical sessions, committee meetings, special events, personal appointments, and tours to your schedule. For more information, and to download the mobile app, please go to https://www.asme.org/events/turbo-expo/about/asme-event-connect

Conference Proceedings

Printed volumes of the official Conference Proceedings may be ordered after the Conference by emailing customercare@asme.org or by calling 1-800-THE-ASME. All ASME Conference Proceedings are submitted for indexing to the Engineering index, which publishes COMPENDEX, SCOPUS, and a host of other indexing databases. Proceedings are also submitted to ISI for indexing in the Thomson Reuters Conference Proceedings Citation Index. Only presented papers are submitted.

Technical Papers

The collection of the technical papers accepted for presentation and publication are posted online. Presentations, such as panels or posters, that do not have an accompanying paper are considered to be "Oral Presentation Only" and do not appear in the system. Please note that this is NOT the official proceedings of the Conference, which is published after the Conference and is also made available online on the ASME Digital Collection at http://asmedigitalcollection.asme.org. As such, papers that appear in the system may not be cited until after the official Proceedings have been published. Technical conference attendees may view accepted conference papers at the 2017 Paper Printing Station in Registration.

GUEST TOURS

The Carolina Aviation Museum Tour and the Lake Norman Sightseeing Cruise

Wednesday, June 28 | 10:15am – 3:45pm

Our first stop will be a visit to the Carolina Aviation Museum (a self-guided tour and narrative about U.S. Airways Flight 1549 "Miracle on the Hudson" is included)
Next, step back in time when the paddle wheel boat was the queen of the lake. You'll tour Lake Norman on the paddle wheel boat as you cruise the lake and take in the beautiful area sites & homes.

Tour includes: Escort, Luxury transportation, admission fees and boarding pass
Tour Time: 5.5 hours | Cost: $79.50 per person

Charlotte Uptown Foodie Walking Tour

Thursday, June 29, 2:00pm- 5:30pm

Explore the culinary mecca found in dynamic Uptown Charlotte. We will start out at the 7th Street Market (Pure Pizza) and make our way through the busy city streets. We sample farm to table restaurants, wonderful wines, fabulous pastries and more! You will meet the artisans who create these incredible culinary dishes and find out what motivates them, learn about Charlotte's deep history and view the architectural beauty the city offers. Eat Drink Walk with us through Uptown Charlotte.

Tour includes: Tour guide, food, wine and dessert
Tour Time: 3.5 hours | Cost: $77.00 per person

Technical Tours

Universal Technical Institute/ NASCAR Technical Institute

FULL

Monday, June 26th 10:00 am – 1:00 pm

Depart Charlotte Convention Center at 9:15 a.m., Martin Luther King Jr. exit

Headquartered in Scottsdale, Arizona, Universal Technical Institute, Inc. is the leading provider of post-secondary education for students seeking careers as professional automotive, diesel, collision repair, motorcycle and marine technicians. With more than 190,000 graduates in its 50-year history, UTI offers undergraduate degree and diploma programs at 11 campuses across the United States, as well as manufacturer-specific training programs at dedicated training centers. Through its campus-based school system, UTI provides specialized post-secondary education programs under the banner of several well-known brands, including Universal Technical Institute (UTI), Motorcycle Mechanics Institute and Marine Mechanics Institute (MMI) and NASCAR Technical Institute (NASCAR Tech). The Mooresville, NC NASCAR Technical Institute campus is the exclusive education provider of NASCAR technician training. During the tour, participants will have the opportunity to tour the classrooms and labs at the facility, and participate in two workshops: pit crew and chassis dyno demonstrations. Tour participants must wear closed-toed shoes and safety glasses, NASCAR Tech will provide safety glasses. Photography and video are permitted on campus. Lunch will be available for purchase.

LIBURDI Turbine Services

FULL

Tuesday, June 27th 2:00 – 5:30 pm

Depart Charlotte Convention Center at 2:00pm; arrive for bus loading at 1:45pm, Martin Luther King, Jr. exit

The Liburdi Group of Companies are considered Global Leaders in Advanced Processes and Services and have been serving the Power Generation, Aerospace, Oil and Gas Exploration, Production and Transmission, Petrochemical and Medical/Pharmaceutical industries for over 30 years.

Liburdi has pioneered in the development of advanced metallurgical processes and technologies to solve the challenges faced by these industries through innovation and dedication to quality. Liburdi has become the recognized leader in Gas Turbine repair and life extension technologies — as well as a leading supplier of welding systems that have become the first choice for these industries.

International qualifications are important for the high-tech regulated industries we serve. Liburdi is a certified supplier under: AS9100 (Aerospace), ISO9000, Transport Canada Approved Maintenance Organization (FAA), Nadcap, and International Controlled Goods Program. We are prequalified and an authorized supplier for major corporations including commercial airlines, gas turbine engine manufacturers, international and national oil companies, power generation operators and contractors for both nuclear power and conventional energy.

SIEMENS

FULL

Thursday, June 29th 8:00 am- 12:00 pm

Depart Charlotte Convention Center at 8:00am; arrive for bus loading at 7:45am, Martin Luther King, Jr. exit

Siemens in Charlotte is one of the lead facilities in the company's global manufacturing network and serves as the worldwide hub for Siemens 60 Hz large power generating equipment. Opened in 1969, the facility has manufactured and serviced generators and steam turbines for the power generation market for decades. In November 2011, the facility celebrated the opening of a new expansion, adding gas turbine production and service capabilities. The new Gas Turbine facility was designed based on LEAN manufacturing principles and is certified to U.S. LEED Gold green building standards. With its current workforce of 1,600 and more than one million square feet of space under roof, Siemens Energy in Charlotte has become one of the largest manufacturers in the city and also one of the largest among the 250+ Energy companies based in Charlotte. Tour participants will see the manufacturing and servicing of large gas turbines, large steam turbines, and generators. The tour will also cover various aspects of the Siemens Charlotte operation, including its focus on lean manufacturing concepts, workforce development, and more. Tour participants must wear flat, hard soled, closed shoes. Business flats, running shoes, or hiking shoes with a hard sole are fine. Steel- or composite-toed safety shoes are also fine. Siemens will provide safety glasses. All tour participants must be fully mobile in the event of an emergency. Tour participation is subject to review by Siemens Energy, Inc. Advance registration will be required.

EPRI & UNCC EPIC

FULL

Friday, June 30th 8:00 am – 1:00 pm

Depart Charlotte Convention Center at 8:00am; arrive for bus loading at 7:45am, Martin Luther King, Jr. exit

EPRI is providing a tour of its material and NDE test labs located in its Charlotte, North Carolina office complex. These facilities are utilized by our researchers and members in R&D to solve current and future challenges in the gas turbine power generation industry. The tour will also visit the University of North Carolina at Charlotte's (UNCC) Energy Production & Infrastructure Center, which features state-of-the-art test labs focusing on smart grid integration, manufacturing of large parts, production of photovoltaics, and flexible voltage energy systems. Both campuses are approximately 20 minutes from the convention center. Tour participation is subject to review by EPRI & UNCC Advance registration will be required.

Schedule

8:00am - Depart Charlotte Convention Center
8:30am - Arrive at UNCC EPIC
9:45am -Depart UNCC
10:00am - Arrive at EPRI
11:30am - Lunch at EPRI
12:30pm - Depart EPRI
1:00pm - Arrive at Charlotte Convention Center

Session Participant Information

Session Participant Networking Coffee

Monday, June 26 – Friday, June 30 -7:00 – 7:45 am Hall A Charlotte Convention Center

On the day of your scheduled presentation, a table will be reserved for your session. Meet with the other session participants and discuss session logistics. All session organizer materials will be distributed at this meeting. Complimentary coffee and pastry provided.

Presentation Uploads

Presenters (authors, panelists, tutorial instructors, lecturers) should plan to upload their presentations only on the computer in their session room. Please arrive 15 to 30 minutes prior to your session to upload your presentation. Presentations may be uploaded from a CDROM or USB flash drive. There will not be a central network server for the sessions.

Audiovisual Equipment Provided

Standard AV equipment provided in meeting rooms:

LCD Projector, Laptop Computer, Projection Screen, Microphone(s), Wireless Remote/Pointer

Speaker Ready Room

Room 103, Charlotte Convention Center

Sunday, June 25 1:00 pm – 6:00 pm
Monday, June 26 7:00 am – 5:30 pm
Tuesday, June 27 7:00 am – 5:30 pm
Wednesday, June 28 7:00 am – 5:30 pm
Thursday, June 29 7:00 am – 5:30 pm
Friday, June 30 7:00 am – 3:30 pm

Registration

As a non-profit organization, ASME requires all presenters to register for the conference and pay an appropriate fee. We are pleased to offer all presenters the discounted ASME Member registration rate of $950 for 5-Day or $775 for 3-Day. Onsite registration is located in Concourse A of the Charlotte Convention Center, South College Street Entrance.

Badge Ribbons

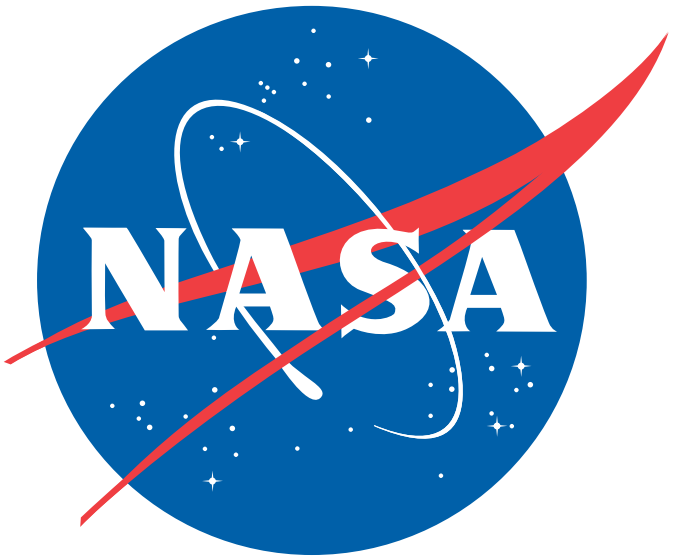
Role and attendance ribbons are available at the Information Desk in Registration. See the display for available options.

Final Papers DVD/Paper Printing Stations

All Technical Conference registrants are eligible to receive a DVD containing the collection of the technical papers accepted for presentation and publication plus online access. Presentations, such as panels or posters, that do not have an accompanying paper are considered to be "Oral Presentation Only" and do not appear in the system. Please note that this is NOT the official proceedings of the Conference, which is published after the Conference and is also made available online on the ASME Digital Collection at http://asmedigitalcollection.asme.org. As such, papers that appear in the system may not be cited until after the official Proceedings have been published. Registered ASME Turbo Expo 2017 & ASME Power & Energy Conference/ICOPE technical conference attendees may view and print accepted conference papers at the 2017 Paper Printing Station in Registration.

Need Assistance?

ASME staff (red badges) and Session Assistants (yellow Assistant badges) are circulating the session room hallways to provide assistance as needed.



Save the Date for ASME 2019 Turbo Expo

June 17 – 21, 2019 | Phoenix Convention Center
Headquarters Hotel: Sheraton Grand Phoenix


ASME
INTERNATIONAL GAS
TURBINE INSTITUTE

Schedule At A Glance

ASME Turbo Expo → **Power & Energy/ICOPE** →

Sunday June 25	Monday June 26	Tuesday June 27	Wednesday June 28	Thursday June 29	Friday June 30
GT Workshops 8:00 am – 5:00 pm Westin Hotel (adjacent to the Charlotte Convention Center)	**Registration** 7:00am - 7:00 pm Concourse A	**Registration** 7:00am - 6:30pm Concourse A	**Registration** 7:00am - 6:30pm Concourse A	**Registration** 7:00am- 6:30pm Concourse A	**Registration** 7:00am- 3:30pm Concourse A
	Speaker Ready Room 7:00 am – 5:30 pm Room 103	**Speaker Ready Room** 7:00 a.m. – 5:30 p.m. Room 103	**Speaker Ready Room** 7:00 a.m. – 5:30 p.m. Room 103	**Speaker Ready Room** 7:00 a.m. – 5:30 p.m. Room 103	**Speaker Ready Room** 7:00 a.m. – 3:30 p.m. Room 103
	Session Participant Networking Coffee 7:00 – 7:45 am | Hall A	**Session Participant Networking Coffee** 7:00 – 7:45 am | Hall A	**Session Participant Networking Coffee** 7:00 – 7:45 am | Hall A	**Session Participant Networking Coffee** 7:00 – 7:45 am | Hall A	**Session Participant Networking Coffee** 7:00 – 7:45 am | Hall A
	Conference Sessions 8:00 – 10:00 am	**Conference Sessions** 8:00 – 10:00 am	**Conference Sessions** 8:00 – 10:00 am	**Conference Sessions** 8:00 – 10:00 am	**Conference Sessions** 8:00 – 10:00 am
Gas Turbine Segment Meeting 1:00 – 5:00 pm Kings, Westin Hotel **Registration** 7:00 am – 7:00 pm Concourse A, Charlotte Convention Center	**Opening Session: Turbo Expo Keynote Panel & Awards Program** 10:15 am – 12:15 pm Crown Ballroom	**Coffee Break** 10:00 – 10:15 am. **Conference Sessions** 10:15 - 11:45 am	**Coffee Break** 10:00 – 10:15 am. **Conference Sessions** 10:15 - 11:45 am	**Coffee Break** 10:00 – 10:15 am. **Conference Sessions** 10:15 -12:15 pm	**Coffee Break** 10:00 – 10:15 am. **Conference Sessions** 10:15 - 12:45 pm
Speaker Ready Room 1:00 – 6:00 pm VIP Room 103		**Plenary: Multidisciplinary Computations and Optimization in Gas Turbine Design** 11:50 am – 12:45 pm Crown Ballroom	**Plenary: Disruptive Technologies and Accelerating Innovation in Gas Turbines: The Role of Additive Manufacturing** 11:50 am – 12:45 pm Crown Ballroom	**Expo Open** 11:30 am – 2:30 pm Hall C	
				Expo Open 11:30 a.m. – 2:30 p.m. Hall C	
Council of Chairs Meeting 6:00 – 7:30 pm Providence I, Westin Hotel	**Opening Lunch** 12:30 – 2:30 p.m. Hall A	**Expo Open** 12:30 – 6:30 p.m. Hall C	**Expo Open** 12:30 – 6:30 p.m. Hall C	**Expo Lunch** 12:30 – 2:30 p.m. **Closing Ceremony** 1:45 p.m. Hall C	**Closing Lunch** 12:30 – 2:30 p.m. Hall C
	Conference Sessions 2:30 – 5:30 p.m.	**Expo Lunch** 12:30 – 2:30 p.m. **Poster Session** 12:30 – 2:30 p.m. Hall C	**Expo Lunch** 12:30 – 2:30 p.m. Hall C	**Conference Sessions** 2:30 – 5:30 p.m.	**Conference Sessions** 2:30 – 5:30 p.m.
	FutureME Mini-Talks 4:00 – 5:30 pm Richardson Ballroom A	**Conference Sessions** 2:30 – 5:30 pm	**Conference Sessions** 2:30 – 5:30 pm		
	Scholar Lecture 5:45 – 7:00 pm Crown Ballroom	**Expo Hall Reception** 5:00 – 6:30 p.m. Hall C	**Expo Hall Reception** 5:00 – 6:30 p.m. Hall C		
	Welcome Reception Turbo Expo, Power & Energy, ICOPE 7:00 – 8:30 pm NASCAR Hall of Fame	**Committee Meetings** 6:00 – 7:30 p.m.	**Committee Meetings** 6:00 – 7:30 p.m.	**Committee Meetings** 6:00 – 7:30 p.m.	
		Women in Engineering Event 7:45 – 9:30 p.m.	**ECE/Student Mixer** 6:45 – 8:00 p.m. Richardson Ballroom Foyer		

Sunday June 25	Monday June 26	Tuesday June 27	Wednesday June 28	Thursday June 29
Registration 7 am – 7 pm **Speaker Ready Room** 1:00pm- 6:00pm	**Registration** 7 am – 7 pm **Speaker Ready Room** 7 am – 5:30 pm	**Registration** 7 am – 6:30 pm **Speaker Ready Room** 7 am – 5:30 pm	**Registration** 7 am – 6:30 pm **Speaker Ready Room** 7 am – 5:30 pm	**Registration** 7 am – 6:30 pm **Speaker Ready Room** 7 am – 5:30 pm
Power & Energy/ICOPE Workshops **From Engineer to Manager: A Roadmap for a successful Transition** 1:00pm – 5:00pm	**Session Participant Networking Coffee** 7:00 – 7:45 am at Convention Center	**Session Participant Networking Coffee** 7:00 – 7:45 am at Convention Center	**Session Participant Networking Coffee** 7:00 – 7:45 am at Convention Center	**Session Participant Networking Coffee** 7:00 – 7:45 am at Convention Center
Power Division Executive Committee Meetings (closed) 1:00pm- 5:00pm	**Technical Tours – NASCAR Technical Institute** 10:00am- 1:00pm	**Power & Energy/ICOPE Keynote** 9 am – 10:30 am at Convention Center	**Power & Energy/ICOPE Conference-Specific Plenary Sessions** 9 am – 10:30 am at Convention Center **Guest Tour- Carolina Aviation Museum and Lake Norman Sightseeing Cruise** 10:15am- 3:45pm	**Power & Energy/ICOPE Conference-Specific Plenary Sessions/ Technical Sessions/ Power Division Committee Meetings** 9 am – 10:30 am at Convention Center
	Power & Energy/ICOPE Technical Sessions 9 am – 10:30 am at Convention Center	**Refreshment Break** 10:30 am – 11 am at Convention Center	**Refreshment Break** 10:30 am – 11 am at Convention Center	**Refreshment Break** 10:30 am – 11 am at Convention Center
	Refreshment Break 10:30 am – 11 am at Convention Center	**Power & Energy/ICOPE Technical Sessions** 11 am – 12:30 pm at Convention Center	**Power & Energy/ICOPE Technical Sessions** 11 am – 12:30 pm at Convention Center	**Power & Energy/ICOPE Technical Sessions** 11 am – 12:30 pm at Convention Center
	Power & Energy/ICOPE Technical Sessions 11 am – 12:30 pm at Convention Center	**Lunch** 12:30 pm – 2:00 pm at Convention Center Expo Hall (lower level)	**Lunch** 12:30 pm – 2:00 pm at Convention Center Expo Hall (lower level)	**Lunch** 12:30 pm – 2:00 pm at Convention Center Expo Hall (lower level)
	Lunch 12:30 pm – 2:00 pm at Convention Center Expo Hall (lower level)	**Expo Open** 12:30 – 6:30 p.m. Hall C	**Expo Open** 12:30 – 6:30 p.m. Hall C	**Expo Open** 12:30 – 2:30 p.m. Hall C
	Power & Energy/ICOPE Technical Sessions 2pm – 3:30 pm at Convention Center	**Power & Energy/ICOPE Technical Sessions** 2:00 pm – 3:30 pm at Convention Center **Technical Tours – Liburdi Turbine Services** 2:00pm- 5:00pm Depart from the Convention Center	**Power & Energy/ICOPE Technical Sessions** 2:00 pm – 3:30 pm at Convention Center	**Power & Energy/ICOPE Technical Sessions** 2:00 pm – 3:30 pm at Convention Center
	Break 3:30 pm – 3:45 pm at Convention Center	**Break** 3:30 pm – 3:45 pm at Convention Center	**Break** 3:30 pm – 3:45 pm at Convention Center	**Break** 3:30 pm – 3:45 pm at Convention Center
	Power & Energy/ICOPE Technical Sessions 3:45 pm – 5:15 pm at Convention Center	**Power & Energy/ICOPE Technical Sessions** 3:45 pm – 5:15 pm at Convention Center	**Power & Energy/ICOPE Technical Sessions** 3:45 pm – 5:15 pm at Convention Center	**Power & Energy/ICOPE Technical Sessions** 3:45 pm – 5:15 pm at Convention Center
	FutureME Mini-Talks 4:00 pm – 5:30 pm	**Expo Hall Reception** 5:00 – 6:30 p.m. Hall C	**Expo Hall Reception** 5:00 – 6:30 p.m. Hall C	**Technical Tour – SIEMENS, 8:00am- 12:00pm** Depart from Convention Center
	Welcome Reception Turbo Expo, Power & Energy, ICOPE 7:00 – 8:30 pm NASCAR Hall of Fame	**Energy Sustainability/ Fuel Cell Awards Banquet** 7:00 pm – 10:00pm Cabarrus Brewery	**ECE/Student Mixer** 6:45 – 8:00 p.m. Richardson Ballroom Foyer	
		Power Division Awards Banquet 7:00 pm – 10:30pm The Speedway Club at Charlotte Motor Speedway	**Advanced Energy Systems Division/Solar Energy Division Committee** Meetings at Convention Center	

Turbo Expo Session Schedule

Session ID Key

The Session ID is comprised of the day code and the original session number from the conference web tool.

- Consult pages 91-207 for the detailed Technical Conference session schedule.
- All turbine user-oriented sessions are listed on page 14-15.
- All Tutorials of Basics sessions are listed on page 14-15.
- All sessions are conducted in English.
- Sessions are held at the Charlotte Convention Center, CCC, and at the Westin Hotel

MA - Monday, June 26	**8:00 - 10:00 AM**
MB - Monday, June 26	**2:30 - 5:30 PM**
TA - Tuesday, June 27	**8:00 - 10:00 AM**
TB - Tuesday, June 27	**10:15 AM - 11:45 AM**
TC - Tuesday, June 27	**2:30 - 5:30 PM**
WA - Wednesday, June 28	**8:00 - 10:00 AM**
WB - Wednesday, June 28	**10:15 AM - 11:45 AM**
WC - Wednesday, June 28	**2:30 - 5:30 PM**
ThA - Thursday, June 29	**8:00 - 10:00 AM**
ThB - Thursday, June 29	**10:15 AM - 12:15 PM**
ThC - Thursday, June 29	**2:30 - 5:30 PM**
FA - Friday, June 30	**8:00 - 10:00 AM**
FB - Friday, June 30	**10:15 AM - 12:45 PM**
FC - Friday, June 30	**2:30 - 5:30 PM**

Power & Energy/ICOPE Session Schedule

Session ID Key

The session ID is the original session number from the conference web tool.

- Consult pages 232-283 for the detailed Technical Conference session schedule.
- All sessions are conducted in English.
- All technical sessions are held in the Charlotte Convention Center

Monday, June 26	**10:30am- 11:30am**
Monday, June 26	**11:00 AM - 12:30 PM**
Monday, June 26	**2:00 - 3:30 PM**
Monday, June 26	**3:45 - 5:15 PM**
Tuesday, June 27	**10:30am- 11:30am**
Tuesday, June 27	**11:00 AM - 12:30 PM**
Tuesday, June 27	**2:00 - 3:30 PM**
Tuesday, June 27	**3:45 - 5:15 PM**
Wednesday, June 28	**11:00 AM - 12:30 PM**
Wednesday, June 28	**2:00 - 3:30 PM**
Wednesday, June 28	**3:45 - 5:15 PM**
Thursday, June 29	**11:00 AM - 12:30 PM**
Thursday, June 29	**2:00 - 3:30 PM**
Thursday, June 29	**3:45 - 5:15 PM**

Turbo Expo Technical Conference Program Information

Sessions are detailed vertically. The top rows contain general information, and the bottom rows list the organizer and paper details. Presentation times are noted to the left.

Column Detail

	COMMITTEE/TRACK NAME
	Session Title
	Session Type • Room • Session ID
	Session Chair, Affiliation **Session Co-Chair(s),** Affiliation(s)
PRESENTATION TIME	ASME Paper Number **Paper Title** ***Author(s)**, Affiliation(s)*

Example

	MARINE
	Applications
	Technical Session • CCC, Room 105 • MA-25-2
	Session Chair: **Morgan Hendry**, SSS Clutch Session Co-Chair: **Ningbo Zhao**, Harbin Engineering University
8:00	GT2017-63580 **Applicability Analysis of Inlet Air Fogging in Marine Gas Turbines** ***Zygfryd Domachowski,** Marek Dzida, Gdansk University of Technology*
8:30	GT2017-64048 **The United States Navy "Standard Day" for Marine Gas Turbines** ***Dan Groghan**, BAI, Inc., **John J. Hartranft,** Naval Sea, **Bruce Thompson**, Southwest Regional Maint Ctr*
9:00	GT2017-63651 **Optimized Gas Turbine Control System for Improved US Navy Landing Craft Air Cushion (LCAC) Operation** ***Sunit Oliver, Martin Engber,** Vericor Power Systems; **James Hampshire, Alan Louie,** US Navy*
9:30	GT2017-65281 **The Increasing Complexity of Hot Corrosion** ***David Shifler,** Office of Naval Research*

MONDAY, JUNE 26 — 8:00 - 10:00 AM

	AIRCRAFT ENGINE	HEAT TRANSFER: TUTORIALS	MANUFACTURING MATERIALS & METALLURGY
	What is that Hole in the Back of the Airplane-APU Tutorial Session	**Heat Transfer Track Overview II**	**Gas Turbine Materials for the Non-Metallurgist**
	Tutorial Session • CCC, 216AB • MA-1-12	**Tutorial Session • CCC, 217CD • MA-14-2**	**Tutorial Session • CCC, 208B • MA-24-7**
	Session Chair: **Joe Howard,** Honeywell	Session Chair: **Andrew Nix**, West Virginia University	Session Chair: **Henry Bernstein,** Gas Turbine Materials Associates
8:00	GT2017-65431 **What is that hole in the back of the airplane?** ***Joe Howard,*** *Honeywell* **T U T O R I A L**	GT2017-65382 **Comm-19 Heat Transfer Track Overview - Experimental Film Cooling** ***Srinath Ekkad,*** *Virginia Tech*	GT2017-65457 **Base Metals** ***Paul Lowden,*** *Liburdi Engineering Ltd*
8:30		GT2017-65369 **Comm-20 Heat Transfer Track Overview - Multiphysics Modeling & Optimization** ***Guillermo Paniagua,*** *Purdue University*	GT2017-65458 **High Temperature Coatings** ***Henry Bernstein,*** *Gas Turbine Materials Associates*
9:00		GT2017-65381 **Comm-21 Heat Transfer Track Overview - Additive Manufacturing** ***Changmin Son***, *Pusan National University*	GT2017-65459 **Failure Analysis** ***Ronald Munson***, *Ron Munson Associates*
9:30		GT2017-65383 **COMM-22 Heat Transfer Track Overview - General Computational Heat Transfer** ***Li He***, *Oxford University* GT2017-65366 **Comm-16 Heat Transfer Track Overview - Experimental Internal Cooling** ***Andrew Nix***, *West Virginia University*	GT2017-65460 **Repair** ***Ronald Natole,*** *Natole Enterprises*

MONDAY, JUNE 26 — 8:00 - 10:00 AM

	MARINE	MICROTURBINES, TURBOCHARGERS & SMALL TURBOMACHINES	OIL & GAS APPLICATIONS
	Applications	**Oil-Free Bearings: System Development, Dynamics and Performance Evaluation**	**Gas Turbine Monitoring and Life Extension**
	Technical Session • CCC, Room 105 • MA-25-2	**Tutorial Session • CCC, 210A • MA-26-13**	**Technical Session • CCC, 203B • MA-27-2**
	Session Chair: **Morgan Hendry,** SSS Clutch Company, Inc. Session Co-Chair: **Ningbo Zhao,** Harbin Engineering University	Session Chair: **Thomas Chirathadam,** Bearings Plus, Waukesha Bearings	Session Chair: **Rainer Kurz**, Solar Turbines Inc.
8:00	GT2017-63580 **Applicability Analysis of Inlet Air Fogging in Marine Gas Turbines** ***Zygfryd Domachowski, Marek Dzida,*** *Gdansk University of Technology*	GT2017-65386 **Introduction to foil bearing technology** ***Daniel Lubell,*** *Oil-Free Machinery*	GT2017-63409 **Optimization of Statistical Methodologies for Anomaly Detection in Gas Turbine Dynamic Time Series** ***Giuseppe Fabio Ceschini,*** *Siemens AG;* ***Nicolo' Gatta, Mauro Venturini,*** *Università degli Studi di Ferrara;* ***Thomas Hubauer, Alin Murarasu,*** *Siemens*
8:30	GT2017-64048 **The United States Navy "Standard Day" for Marine Gas Turbines** ***Dan Groghan,*** *BAI, Inc.,* ***John J. Hartranft,*** *Naval Sea,* ***Bruce Thompson,*** *Southwest Regional Maint Ctr*	GT2017-65387 **Design consideration of foil bearing supported rotor systems** ***Daniel Lubell,*** *Oil-Free Machinery*	GT2017-63410 **Resistant Statistical Methodologies for Anomaly Detection in Gas Turbine Dynamic Time Series: Development and Field Validation** ***Giuseppe Fabio Ceschini, Thomas Hubauer, Alin Murarasu,*** *Siemens AG;* ***Nicolo' Gatta, Mauro Venturini,*** *Università degli Studi di Ferrara*
9:00	GT2017-63651 **Optimized Gas Turbine Control System for Improved US Navy Landing Craft Air Cushion (LCAC) Operation** ***Sunit Oliver, Martin Engber,*** *Vericor Power Systems;* ***James Hampshire, Alan Louie,*** *US Navy*	GT2017-65388 **Practical Performance of Foil Bearings** ***Keun Ryu,*** *Hanyang University*	GT2017-63411 **A Comprehensive Approach for Detection, Classification and Integrated Diagnostics of Gas Turbine Sensors (DCIDS)** ***Giuseppe Fabio Ceschini, Thomas Hubauer, Alin Murarasu,*** *Siemens;* ***Nicolo' Gatta, Mauro Venturini,*** *Università degli Studi di Ferrara*
9:30	GT2017-65281 **The Increasing Complexity of Hot Corrosion** ***David Shifler,*** *Office of Naval Research*	GT2017-65389 **Introduction to Rigid Gas Bearings** ***Keun Ryu,*** *Hanyang University*	GT2017-64906 **RT61 Power Turbine 100K MTBO Life Extension - Life Cycle Cost Reduction** ***Deepak Thirumurthy, Jaskirat Singh, Mark Peng,*** *Siemens Energy, Inc.*

MONDAY, JUNE 26 — 8:00 - 10:00 AM

	OIL & GAS APPLICATIONS	STEAM TURBINES	STRUCTURES & DYNAMICS: FATIGUE, FRACTURE & LIFE PREDICTION
	Basics of Turbomachinery Modelling and Simulation: Lumped Parameter Dynamic Models and CFD Models	**Steam Turbine Heat Transfer & Thermal Aspects**	**Crack Growth Modelling**
	Tutorial Session • CCC, 207D • MA-27-8	**Technical Session • CCC, 217AB • MA-29-12**	**Technical Session • CCC, 206AB • MA-31-1**
	Session Chair: **Mirko Morini,** University of Parma Session Co-Chair: **Michele Pinelli,** Univ Of Ferrara Endif	Session Chair: **Sean Jenkins,** GE Global Research Session Co-Chair: **James McCracken,** Siemens	Session Chair: **Uwe Gampe,** Dresden University Session Co-Chair: **Scott Keller,** Power Systems Mfg., LLC; **Balkrishna Annigeri,** Pratt & Whitney
8:00	GT2017-65398 **System simulation by means of lumped parameter dynamic models** ***Mirko Morini,*** *University of Parma*	GT2017-63547 **Integrated Approach for Steam Turbine Thermo-Structural Analysis and Lifetime Prediction at Transient Operations** ***Leonid Moroz, Roman Kochurov, Boris Frolov,*** *Softinway Inc;* ***Glenn Doerksen, Fernando Romero,*** *Sulzer Turbo Services Houston Inc.*	GT2017-65087 **Connecting Computed-Tomography-Assisted Discontinuity Detection in Ni-Base Superalloys to Engineering Simulation** ***Adrian Loghin, Albert Cerrone, Anjali Singhal, Ying Zhou,*** *GE Corporate Research & Development*
8:30	GT2017-65400 **Component characterization by means of CFD simulations** ***Michele Pinelli,*** *Univ Of Ferrara Endif*	GT2017-63592 **Assessment of Unsteadiness Modelling for Transient Natural Convection** ***Mohamed Fadl, Li He,*** *Oxford University;* ***Peter Stein, Gabriel Marinescu,*** *General Electric*	GT2017-65189 **A Probabilistic Simulation of Grain Size Effect on Small Crack Growth in a Nickel Based Superalloy** ***Dianyin Hu,*** *Beihang University;* ***Jianxing Mao,*** *Beihang University;* ***Rongqiao Wang,*** *Beihang University;* ***Jun Song,*** *McGill University;* ***Xiyuan Wang,*** *Beihang University*
9:00	**TUTORIAL**	GT2017-63555 **Numerical Investigation of the Heat Transfer and Flow Phenomena in an IP Steam Turbine in Warm-Keeping Operation With Hot Air** ***Dennis Toebben, Piotr Luczynski, Manfred Wirsum, Mathias Diefenthal,*** *RWTH Aachen University;* ***Klaus Helbig, Wolfgang F. D. Mohr, Stefan Reitschmidt,*** *GE Germany*	GT2017-63871 **Study of Constraint Issues in Elasto-Plastic Fracture Analysis Using Experimental and Finite Element Simulation** ***MD IBRAHIM KITTUR,*** *Mangalore Institute of Technology and Engineering;* ***Krishnaraja G Kodancha,*** *KLE Technological University;* ***C R Rajashekar,*** *Mangalore Institute of Technology and Engineering*
9:30			GT2017-64890 **Application of 3D Fracture Mechanics for Improved Crack Growth Predictions of Gas Turbine Components** ***Kanwardeep Bhachu,*** *Siemens Energy Inc.;* ***Santosh B Narasimhachary,*** *Siemens Corporate Technology;* ***Sachin Shinde,*** *Siemens Energy, Inc.;* ***Phillip Gravett,*** *Siemens Energy Inc*

MONDAY, JUNE 26 — 8:00 - 10:00 AM

	STRUCTURES & DYNAMICS: AERODYNAMIC EXCITATION & DAMPING	SUPERCRITICAL CO2 POWER CYCLES	TURBOMACHINERY: AXIAL FLOW TURBINE AERODYNAMICS
	Forced Response on an Embedded Compressor (Guide)	**Supercritical CO2 Power Cycle Modeling and Fluid Properties**	**Endwall Profiling and Secondary Flows**
	Technical Session • CCC, 201AB • MA-36-1	**Tutorial Session • CCC, 213CD • MA-38-16**	**Technical • CCC, Richardson Ballroom A • MA-40-3**
	Session Chair: **Damian Vogt,** University of Stuttgart Session Co-Chair: **Hans Mårtensson,** GKN Aerospace	Session Chair: **Jacob Delimont,** Southwest Research Institute Session Co-Chair: **Aaron McClung,** Southwest Research Institute; **Douglas, Hofer;** GE Global Research	Session Chair: **Giacomo Persico,** Politecnico Di Milano
8:00	GT2017-63008 **System Eigenvalue Identification of Mistuned Bladed Disks Using Least-Squares Complex Frequency-Domain Method** ***Yuan Huang, Robert Kielb, Jing Li,*** *Duke University;* ***Grigorios Dimitriadis,*** *University of Liege*	GT2017-65428 **Supercritical CO2 Power Cycle Modeling and Fluid Properties Tutorial** ***Jeffrey Bennett,*** *Southwest Research Institute*	GT2017-63575 **Investigation of the Influence of Leakages on Non Axisymmetric Endwall Contouring Applied on 3D Steam Turbine Airfoils** ***Tobias W. Zimmermann,*** *Institute for Powerplant Technology Steam and Gas Turbines;* ***Manfred Wirsum,*** *RWTH-Aachen University;* ***Andrew Fowler, Kush Patel,*** *GE Power*
8:30	GT2017-64633 **Mistuned Higher-Order Mode Forced Response of an Embedded Compressor Rotor: Part I: Steady and Unsteady Aerodynamics** ***Jing Li, Robert Kielb,*** *Duke University;* ***Nyansafo Aye-Addo, Nicholas Kormanik III, Douglas Matthews, Nicole Key,*** *Purdue University*	**T U T O R I A L**	GT2017-63898 **The Aerodynamic Optimization Design of Turbine Cascade With Nonaxisymmetric Endwall and Experimental Validations** ***Hao Liu, Xin Shen, Xiaocheng Zhu, Zhaohui Du,*** *Shanghai Jiao Tong University;* ***Hong Yang, Rui Yang,*** *Shanghai Turbine Works Co. Ltd*
9:00	GT2017-64647 **Mistuned Higher-Order Mode Forced Response of an Embedded Compressor Rotor: Part II: Mistuned Forced Response Prediction** ***Jing Li, Robert Kielb,*** *Duke University;* ***Nyansafo Aye-Addo, Nicole Key,*** *Purdue University*		GT2017-64390 **Experimental Investigation of Periodically Unsteady Wake Impact on the Secondary Flow in a 1.5 Stage Full Annular LPT Cascade With Modified T106 Blading** ***Martin Sinkwitz, David Engelmann,*** *Ruhr-Universität Bochum;* ***Ronald Mailach,*** *Technische Universität Dresden*
9:30	GT2017-64657 **Forcing Superposition and Decomposition of an Embedded Compressor Rotor** ***Jing Li, Robert Kielb,*** *Duke University*		GT2017-63790 **Effect of Stage Axial Distances on the Aerodynamic Performance of Three-Stage Axial Turbine Using Experimental Measurements and Numerical Simulations** ***YANG CHEN, Jun Li,*** *Xi'an Jiaotong University & Dongfang Steam Turbine Co. Ltd;* ***Zhuhai Zhong,*** *Dongfang Turbine Co., Ltd;* ***Weijiu Zhou, Gangyun Zhong, Qi Sun, Yan Ping, Shan Wang,*** *Dongfang Steam CO LTD.*

MONDAY, JUNE 26 — 8:00 - 10:00 AM

	TURBOMACHINERY: DESIGN METHODS & CFD MODELING FOR TURBOMACHINERY	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: DUCTS & COMPONENT INTERACTIONS
	Optimization Methods and Applications (1)	**Combustion Dynamics: Basic Mechanism**	**Gas Turbine Engine Shaped and Transition Ducts**
	Technical Session • CCC, 213AB • MA-41-4	**Technical Session • CCC, 219B • MA-4-19**	**Technical Session • CCC, 203A • MA-42-3**
	Session Chair: **Marcus Meyer,** Rolls-Royce Deutschland Ltd & Co KG Session Co-Chair: **Benjamin Walther,** GE Aviation; **Jaeho Choi,** Hanwha Techwin	Session Chair: **Santosh Hemchandra,** Indian Institute of Science Session Co-Chair: **Shreekrishna Rao,** GE Power	Session Chair: **Berardo Paradiso,** Energy Department - Politecnico di Milano Session Co-Chair: **David, Cerantola**; *Queen's University*
8:00	GT2017-63497 **Machine Learning for Turbulence Model Development Using a High-Fidelity HPT Cascade Simulation** ***Jack Weatheritt, Richard Pichler, Richard Sandberg,*** *University of Melbourne;* ***Gregory Laskowski,*** *GE Aviation;* ***Vittorio Michelassi,*** *General Electric Oil&Gas*	GT2017-63342 **Impact of Water Injection on Thermoacoustic Modes in a Lean Premixed Combustor Under Atmospheric Conditions** ***Nicolai V. Stadlmair, Payam Mohammadzadeh Keleshtery, Max Zahn, Thomas Sattelmayer,*** *Technische Universität München*	GT2017-63282 **Geometric Modeling and Analysis for Gooseneck II: 2D Simplified Model for Quick Assessment** ***Qiuye Tu, Rutan Deng, Dongdong Zhang, Xingjian Sun,*** *Northwestern Polytechnical University*
8:30	GT2017-63509 **Adjoint Aerodynamic Optimization of a Transonic Fan Rotor Blade With a Localized Two-Level Mesh Deformation Method** ***Xiao Tang, Jiaqi Luo,*** *Peking University;* ***Feng Liu,*** *University Of California Irvine*	GT2017-64231 **Analysis of the Transfer Function of Large and Small Premixed Laminar Conical Flames** ***Renaud Gaudron, Marco Gatti, Clément Mirat,*** *Ecole CentraleSupélec;* ***Thierry Schuller,*** *Laboratoire EM2C, CNRS, CentraleSupélec*	GT2017-63959 **The Aerodynamic Design of the Low Pressure Air Delivery Ducts for a Cooled Cooling Air System** ***A Duncan Walker, Apostolos Spanelis,*** *Loughborough University;* ***Peter A Beecroft,*** *Rolls-Royce plc*
9:00	GT2017-63136 **Mixed Helical Labyrinth Groove Seal Optimization Using Computational Fluid Dynamics** ***Wisher Paudel, Cori Watson, Houston G. Wood,*** *University of Virginia*	GT2017-63225 **Interaction Between Precessing Vortex Core and Thermoacoustic Coupling in a Lab-Scale Lean Premixed Gas Turbine Combustor: Numerical Simulation Studies** ***Zhenlin Wang, Xiangsheng Li, Zhenping Feng,*** *Xi'an Jiaotong University*	GT2017-64274 **Investigation of Loss Impact From Production-Like Features in a Compressor Duct Under Engine Realistic Conditions** ***Fredrik Wallin,*** *GKN Aerospace Sweden AB;* ***Mark Ross, Scott Morris,*** *Notre Dame Turbomachinery Laboratory;* ***Max Rusche, Steven Ray,*** *GE Aviation*
9:30	GT2017-63920 **Global Three-Dimensional Surrogate Modeling of Gas Turbine Aerodynamic Performance** ***Zafer Leylek,*** *DSTG;* ***Andrew J. Neely,*** *University of New South Wales*	GT2017-64602 **Application of Proper Orthogonal Decomposition to High Speed Imaging to Observe the Combustion Oscillations** ***Siddhartha Gadiraju, Suhyeon Park, Srinath Ekkad, K. Todd Lowe,*** *Virginia Tech;* ***David Gomez Ramirez,*** *Schlumberger;* ***Hee-Koo Moon, Ram Srinivasan, Yong Kim,*** *Solar Turbines*	GT2017-63586 **Correlation Between Pressure Recovery of Highly Loaded Annular Diffusers and Integral Stage Design Parameters** ***Dajan Mimic, Bastian Drechsel, Florian Herbst,*** *Leibniz Universitaet Hannover*

MONDAY, JUNE 26 — 8:00 - 10:00 AM

	COMBUSTION, FUELS & EMISSIONS	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: UNSTEADY FLOWS IN TURBOMACHINERY
	Combustion Dynamics: Modeling I	**Combustion Fundamentals Tutorial**	**Unsteady Flows in Compressors I**
	Technical Session • CCC, 207BC • MA-4-23	**Tutorial Session • CCC, 212AB • MA-4-34**	**Technical • CCC, Richardson Ballroom C • MA-46-8**
	Session Chair: **Bhupendra Khandelwal,** University of Sheffield	Session Chair: **Michael Klassen,** Combustion Science & Engrg Session Co-Chair: **Tim Lieuwen,** Georgia Institute of Technology	Session Chair: **Mark Celestina,** NASA Glenn Research Center
8:00	GT2017-64188 **Reconstruction and Analysis of the Acoustic Transfer Matrix of a Reheat Flame From Large-Eddy Simulations** ***Mirko Bothien,*** *Ansaldo Energia Switzerland Ltd;* ***Demian Lauper,*** *Ansaldo Energia;* ***Yang Yang,*** *Ansaldo Energia Switzerland;* ***Alessandro Scarpato,*** *ANSALDO Energia Switzerland AG*	GT2017-65499 Combustion Fundamentals Tutorial ***Tim Lieuwen,*** *Georgia Institute of Technology*	GT2017-63753 **The Effects of Periodic Suction on Separated Flow in Diffuser** ***Jin-Chun Wang,*** *Nanjing University of Aeronautics & Astronautics;* ***Guoping Huang,*** *Nanjing University of Aeronautics and Astronautics;* ***Yu-Xuan Yang,*** *Nanjing University of Aeronautics & Astronautics;* ***Xin Fu,*** *Nanjing University of Aeronautics and Astronautics;* ***Lu Weiyu,*** *NUAA*
8:30	GT2017-64191 **Mixed Acoustic-Entropy Combustion Instabilities in a Model Aeronautical Combustor: Large Eddy Simulation and Reduced Order Modeling** ***Florent Lacombe,*** *Safran Aircraft Engines;* ***Yoann Mery,*** *Safran Aircraft Engines*	GT2017-65500 **Combustion Fundamentals Tutorial** ***Michael Klassen,*** *Combustion Science & Engrg*	GT2017-63779 **Exploration and Research of the Impact of Hydrofoil Surface Water Injection on Cavitation Suppression** ***Wei Wang, Qi Yi, Xiaofang Wang, Shengpeng Lu,*** *Dalian University of Technology*
9:00	GT2017-64348 **Pulsations in Gas Turbine Operation: Identification and Modeling With the Purpose of Online Engine Monitoring and Optimization** ***Frank Weidner, Moritz Lipperheide, Manfred Wirsum,*** *RWTH Aachen University;* ***Martin Gassner, Stefano Bernero,*** *GE Power*	**TUTORIAL**	GT2017-63958 **Cavitation Model Verification and Validation for Water and Liquid Nitrogen in an Inducer** ***Yuqiao Zhang, Xuesong Li, Yuhong Li,*** *Tsinghua University*
9:30	GT2017-64829 **Methods for the Calculation of Thermoacoustic Stability Margins and Monte-Carlo Free Uncertainty Quantification** ***Georg Atta Mensah, Jonas P. Moeck,*** *Technische Universität Berlin;* ***Luca Magri,*** *University of Cambridge*		GT2017-64786 **Validation of Transonic Axial Compressor Stage Unsteady-State Rotor-Stator Simulations** ***Paul F. Galpin, Thorsten Hansen, Georg Scheuerer,*** *ISimQ Ltd;* ***Ryan T. Kelly, Adam Hickman, Aleksandar Jemcov,*** *University of Notre Dame;* ***Scott Morris,*** *Notre Dame Turbomachinery Laboratory*

MONDAY, JUNE 26 — 8:00 - 10:00 AM

	TURBOMACHINERY: MULTIDISCIPLINARY DESIGN APPROACHES, OPTIMIZATION & UNCERTAINTY QUANTIFICATION	CONTROLS, DIAGNOSTICS & INSTRUMENTATION	CYCLE INNOVATIONS
	Axial Compressor Design	**Advanced Controls for Gas Turbines**	**Fuel Cell Driven Cycles I**
	Technical Session • CCC, 211AB • MA-47-4	**Technical Session • CCC, 207A • MA-5-2**	**Technical Session • CCC, Room 106 • MA-6-1**
	Session Chair: **Stéphane Hiernaux,** Safran Aero Boosters Session Co-Chair: **Lieven Baert,** Cenaero	Session Chair: **Richard Meisner,** Pratt & Whitney	Session Chair: **Tong Seop Kim,** Inha University Session Co-Chair: **Jeong Lak Sohn,** Korea Institute of Machinery & Materials
8:00	GT2017-63199 **CAD-Based Aerodynamic Optimization of a Compressor Stator Using Conventional and Adjoint-Driven Approaches** ***Ilias Vasilopoulos, Peter Flassig, Marcus Meyer,*** *Rolls-Royce Deutschland*	GT2017-63571 **Sliding Controller Design for Aero-Engines With the Rate Limitation of Actuators** ***Shubo Yang, Wang Xi,*** *Beihang University*	GT2017-63859 **Performance Evaluation of a Molten Carbonate Fuel Cell/Micro Gas Turbine Hybrid System With Oxy-Combustion Carbon Capture** ***Ji Ho Ahn, Tong Seop Kim,*** *Inha University*
8:30	GT2017-64116 **High-Loaded Compressor Blisk-Type Impeller Multidisciplinary Optimization** ***Tatiana Buyukli, Anton Salnikov, Yury Fedorchenko,*** *Central Institute of Aviation Motors*	GT2017-64840 **Model Reference Adaptive Control of a Turbofan Engine Using Output-Feedback** ***C. Harvey O. Cline, Richard J. Skertic, Donald M. Silverstein,*** *Rolls-Royce Corporation;* ***Stanislaw Zak,*** *Purdue University*	GT2017-65036 **Active Control of Fuel Cell Degradation in an SOFC/GT Hybrid System** ***Valentina Zaccaria,*** *Oak Ridge Institute for Science and Education;* ***David Tucker,*** *National Energy Technology Laboratory;* ***Alberto Traverso,*** *Univ Of Genova;* ***Paolo Pezzini, Kenneth Mark Bryden,*** *Ames Laboratory at Iowa State University*
9:00	GT2017-63009 **Selection of the Optimum Control Parameters for Compressor Design Optimization Algorithm** ***Viktor Kilchyk, Ahmed Abdelwahab,*** *Praxair Inc;* ***Emily Senay,*** *University of Bufffalo*	GT2017-64987 **Multiple Model Adaptive Control of a Hybrid Solid Oxide Fuel Cell Gas Turbine Power Plant Simulator** ***Alex Tsai,*** *United States Coast Guard Academy;* ***David Tucker,*** *National Energy Technology Laboratory;* ***Paolo Pezzini,*** *Ames National Laboratory;* ***Kenneth Mark Bryden,*** *Ames Laboratory at Iowa State University*	GT2017-65060 **Integrating Anode Recycle in a Solid Oxide Fuel Cell for Hybrid Applications: Design Considerations** ***Amelia McIlvenna,*** *University of Tennessee;* ***Valentina Zaccaria, Nor Farida Harun,*** *Oak Ridge Institute for Science and Education;* ***David Tucker,*** *National Energy Technology Laboratory*
9:30			GT2017-65074 **Steady State Analysis of Direct Thermal Energy Storage in Solid Oxide Fuel Cells (SOFC)** ***Francesca Moloney,*** *University of South Florida Clean Energy Research Center;* ***Nor Farida Harun,*** *Oak Ridge Institute for Science and Education;* ***David Tucker,*** *National Energy Technology Laboratory*

MONDAY, JUNE 26 — 8:00 - 10:00 AM

FANS & BLOWERS

Design Methods

Technical Session • CCC, 209A • MA-9-3

Session Chair: **Johan Van der Spuy,** Stellenbosch University
Session Co-Chair: **Massimo Masi,** University of Padova - DTG

8:00

GT2017-64032 **On the Choice of Suitable Parameters for the Assessment of Industrial Fans Performance and Efficiency**

Massimo Masi, Federico Fontana, Andrea Lazzaretto, *University of Padova - DTG*

8:30

GT2017-64276 **A Critical Analysis of the Differences Among Design Methods for Low-Speed Axial Fans**

Stefano Castegnaro, *University of Padova - DII*

9:00

GT2017-63331 **The Design of a Large Diameter Axial Flow Fan for Air-Cooled Heat Exchanger Applications**

Michael Wilkinson, Johan Van der Spuy, Theodor Von Backstrom, *Stellenbosch University*

9:30

GT2017-64517 **Design of a Single Stage Variable Pitch Axial Fan**

Tommaso Bonanni, Alessandro Corsini, Giovanni Delibra, David Volponi, *Sapienza, University of Rome;* ***Mark Bublitz,*** *The New York Blower Company;* ***Anthony Sheard,*** *AGS Consulting LLC*

MONDAY, JUNE 26 — 2:30 - 5:30 PM

	AIRCRAFT ENGINE	HEAT TRANSFER: TUTORIALS	HEAT TRANSFER: EXPERIMENTAL INTERNAL COOLING
	Operability	**Heat Transfer Track Overview I**	**Rotating Rigs**
	Technical Session • CCC, 216AB • MB-1-1	**Tutorial Session • CCC, 207D • MB-14-1**	**Technical Session • CCC, 213AB • MB-16-3**
	Session Chair: **Walter Obrien,** Virginia Tech. Session Co-Chair: **Kevin Shepherd,** Honeywell	Session Chair: **Andrew Nix,** West Virginia University	Session Chair: **Lesley Wright,** Baylor University Session Co-Chair: **Luai Al-Hadhrami,** King Fahd Univ Of Petro
2:30	GT2017-63721 **A Centrifugal Compressor Operability Correlation With Combined Total Pressure and Swirl Distortion** ***Yogi Sheoran, Bruce Bouldin, Robert Hoover, Mark Matwey,*** *Honeywell Int.*	GT2017-65362 **Comm-11 Heat Transfer Track Overview - Numerical Internal Cooling** ***Domenico Borello,*** *Sapienza University of Rome*	GT2017-64225 **Experimental Investigation of Rotating Rib Roughened Two-Pass Square Duct With Two Different Channel Orientations** ***Prashant Singh,*** *Virginia Tech*
3:00	GT2017-63082 **Non-Axisymmetric Stator Design for Boundary Layer Ingesting Fans** ***Ewan Gunn,*** *Turbostream Ltd;* ***Cesare Hall,*** *University of Cambridge*	GT2017-65363 **Comm-12 Heat Transfer Track Overview - Numerical Film Cooling** ***Ardeshir (Ardy) Riahi,*** *Honeywell*	GT2017-64265 **Isolated and Coupled Effects of Rotating and Buoyancy Number on Heat Transfer and Pressure Drop in a Rotating Two-Pass Parallelogram Channel With Transverse Ribs** ***Tong Miin Liou, Yi-An Lan, Shu-Po Chan,*** *National Tsing Hua Univ;* ***Shyy Woei Chang,*** *National Kaohsiung Marine University*
3:30	GT2017-63369 **Numerical Investigation of Effect of Inlet Distortion on Compressor Flow Field and Stability** ***Haoguang Zhang, Kang An, Feng Tan, Yanhui Wu, Wuli Chu,*** *Northwestern Polytechnical University*	GT2017-65364 **Comm-13 Heat Transfer Track Overview - General Experimental Heat Transfer** ***James Downs,*** *Florida Turbine Technologies Inc*	GT2017-64508 **Heat Transfer in a Rotating Rib-Roughened Wedge-Shaped U-Duct** ***Liang Ding, Shuqing Tian,*** *AECC Commercial Aircraft Engine Co., LTD;* ***Hongwu Deng,*** *Beijing University of Aeronautics and Astronautics*
4:00	GT2017-64525 **Effect of Inflow Circumferential Distortion on a Transonic Axial Compressor** ***Yuyun Li, Zhiheng Wang, Guang Xi,*** *Xi'an Jiaotong University*	GT2017-65365 **Comm-15 Heat Transfer Track Overview - Internal Air Systems and Seals** ***J. Axel Glahn,*** *Pratt & Whitney, Aero Thermal Systems*	GT2017-64879 **Rotation Effects on the Heat Transfer Distribution in a Two-Pass Rotating Internal Cooling Channel Equipped With Triangular Ribs** ***Ignacio Mayo, Tony Arts, Nicolas Van De Wyer,*** *Von Karman Institute for Fluid Dynamics*
4:30	GT2017-65031 **Fourier Descriptors for Improved Analysis of Distortion Transfer and Generation** ***Marshall Peterson, Steven Gorrell,*** *Brigham Young University;* ***Michael G. List,*** *Air Force Research Laboratory*	GT2017-65367 **Comm-17 Heat Transfer Track Overview - Combustors (with Combustion, Fuels & Emissions** ***Marc Polanka,*** *AFIT/ENY*	GT2017-64095 **Effect of Missing Fin on Endwall Heat Transfer in a Rotating Cooling Channel** ***Chen Chih Wang, Szu Chi Huang, Yao Hsien Liu,*** *National Chiao-Tung University*
5:00		GT2017-65380 **COMM-18 Heat Transfer Track Overview - Special Sessions** ***Karen Thole,*** *Pennsylvania State Univ*	

MONDAY, JUNE 26 — 2:30 - 5:30 PM

	HEAT TRANSFER: COMBUSTORS (WITH COMBUSTION, FUELS & EMISSIONS)	HEAT TRANSFER: EXPERIMENTAL FILM COOLING	HEAT TRANSFER: MULTIPHYSICS MODELING & OPTIMIZATION
	Effusion Cooling	**General Film Cooling**	**Multiphysics Modeling & Optimization**
	Technical Session • CCC, 212AB • MB-17-1	**Technical Session • CCC, 219A • MB-19-4**	**Technical Session • CCC, 208B • MB-20-1**
	Session Chair: **Marc Polanka,** AFIT/ENY Session Co-Chair: **Sundaram Narayan,** Newry Corporation	Session Chair: **Kenichiro Takeishi,** Tokushima Bunri University Session Co-Chair: **Robert Krewinkel,** MAN Diesel & Turbo SE	Session Chair: **Atul Kohli,** Pratt & Whitney Session Co-Chair: **Guillermo Paniagua,** Purdue University
2:30	GT2017-64264 **Effusion Cooling 3D Simulations to Establish a Discharge Coefficient Correlation** ***Nicolas Savary, Thibaud Aupoix, Patrick Duchaine, Guillaume Cottin,*** *Safran Helicopter engines*	GT2017-63143 **Transonic Turbine Vane Suction Side Film Cooling With Showerhead Effect Using PSP Measurement Technique** ***Chao-Cheng Shiau, Nafiz Chowdhury, Je-Chin Han,*** *Texas A&M University;* ***Alexander Mirzamoghadam, Ardeshir (Ardy) Riahi,*** *Honeywell Aerospace*	GT2017-63039 **Heat Transfer Investigation on Center Housing Using Genetic Algorithms and Finite Element Method** ***Henry Guo, Wei Guo, Huade Yu,*** *Honeywell Integrated Technology China;* ***Farid Ahdad,*** *Honeywell Turbo Technologies*
3:00	GT2017-65038 **Numerical Investigation of Optimized Arrangements for Effusion Cooling in Gas Turbine Combustor Applications** ***Lorenzo Mazzei, Stefano Puggelli, Antonio Andreini, Bruno Facchini,*** *University of Florence*	GT2017-64097 **Effect of Density Ratio on Multi-Row Film Cooling Performance** ***Michael T. Voet, Craig Fernandes, Zachary Little, Erik Fernandez, Jayanta Kapat,*** *University of Central Florida*	GT2017-63890 **Numerical Investigation of the Performance of a Forced Draft Air-Cooled Heat Exchanger** ***Ruan Engelbrecht, Johan Van der Spuy, Chris J Meyer,*** *University of Stellenbosch;* ***Albert Zapke,*** *ENEXIO Management GmnH*
3:30	GT2017-64247 **Effect of Holes Array on Effusion Cooling Characteristics of a Three-Nozzle Model Combustor Liner** ***Yongbin Ji, Bing Ge, Zang Shusheng, Jianhua Xin, Ye Chun, Huafeng Song,*** *Shanghai Jiao Tong University*	GT2017-64650 **Experimental and Numerical Investigation of Turbulent Mixing in Film Cooling Applications** ***Michael Straußwald, Karin Schmid, Hagen Müller, Michael Pfitzner,*** *Universität der Bundeswehr München*	GT2017-63933 **Analysis of Runback Water Flow on Anti-Icing Surface Using Volume-of-Fluid Method** ***Mei Zheng, Wei Dong, Zhiqiang Guo, Guilin Lei,*** *Shanghai Jiao Tong University*
4:00	GT2017-63494 **Impingement/Effusion Cooling Wall Heat Transfer: Reduced Number of Impingement Jet Holes Relative to the Effusion Holes** ***Gordon E. Andrews, John E. J. Staggs, Ahmad Nazari,*** *University of Leeds;* ***Abubakar M. El-jummah,*** *University of Maiduguri*	GT2017-64746 **On Film Cooling Performance of a Turbine Vane Pressure Side: The Effect of Showerhead and Hole Alignment** ***HOSSEIN NADALI NAJAFABADI, Matts Karlsson,*** *Linkoping University;* ***Mats Kinell,*** *Siemens Industrial Turbomachinery AB*	GT2017-64179 **Comparison of Monte Carlo Methods Efficiency to Solve Radiative Energy Transfer in High Fidelity Unsteady 3D Simulations** ***Lorella Palluotto, Nicolas Dumont, Pedro Rodrigues, Chai Koren,*** *Laboratoire EM2C Centrale Supélec;* ***Ronan Vicquelin,*** *CNRS-EM2C, ECP;* ***Olivier Gicquel,*** *Laboratoire EM2C CentraleSupélec*
4:30	GT2017-63484 **Impingement/Effusion Cooling With Low Coolant Mass Flow** ***Gordon E. Andrews, Alan Burns,*** *University of Leeds;* ***HABEEB I. OGUNTADE,*** *Kwara State University;* ***Derek Ingham, Mohamed Pourkashanian,*** *University of Sheffield*	GT2017-65012 **Experimental and Numerical Investigation of Heat Transfer and Film Cooling Effectiveness of a Highly Loaded Turbine Blade Under Steady and Unsteady Wake Flow Condition** ***Ali Nikparto, Tyler Rice, Meinhard T. Schobeiri,*** *Texas A & M University*	GT2017-64758 **Cooling System Optimization of Combustor Liners** ***Egidio Pucci, Guido Peano, Matteo Cerutti,*** *GE Oil & Gas, Nuovo Pignone Tecnologie srl;* ***Antonio Andreini, Bruno Facchini,*** *University of Florence*
5:00			GT2017-65241 **The Effect of External Casing Impingement Cooling Manifold Standoff Distance on Casing Contraction for Thermal Control of Blade Tip Clearance** ***Myeonggeun Choi, David Gillespie,*** *University of Oxford;* ***Leo V. Lewis,*** *Rolls-Royce plc*

MONDAY, JUNE 26 — 2:30 - 5:30 PM

	MANUFACTURING MATERIALS & METALLURGY	MICROTURBINES, TURBOCHARGERS & SMALL TURBOMACHINES	ORGANIC RANKINE CYCLE POWER SYSTEMS
	Advanced Turbomachinery Manufacturing - Fundamentals of Manufacturing Processes and Process Chains	**Turbochargers & Small Turbomachinery - Bearing systems & NVH**	**Organic Rankine Cycle Power Systems**
	Tutorial Session • CCC, 217CD • MB-24-8	**Technical Session • CCC, 210A • MB-26-10**	**Technical Session • CCC, 106 • MB-28-1**
	Session Chair: **Matthias Brockmann,** WZL RWTH Aachen	Session Chair: **Keun Ryu,** Hanyang University Session Co-Chair: **Thomas Chirathadam,** Bearings Plus, Waukesha Bearings	Session Chair: **Teemu Turunen-Saaresti,** Lappeenranta University of Technology
2:30	GT2017-65435 **Session 1: Conventional Processes** ***Benjamin Doebbeler,*** *Laboratory for Machine Tools and Production Engineering*	GT2017-63658 **Transient Thrust Forces on a Twin Scroll Turbocharger** ***Janakiraman Thiyagarajan, Erik Halldorf,*** *Scania CV AB;* ***Jens Fridh,*** *KTH Royal Institute of Technology*	GT2017-63026 **Development of a 350kW Marine Organic Rankine Power Module for Ship Waste Steam** ***Chris Sellers,*** *Calnetix Technologies;* ***Larry Hawkins,*** *Calnetix Technologies*
3:00	GT2017-65436 **Session 2: Unvonventional Processes** ***David Welling,*** *Makino GmbH*	GT2017-63185 **The Wing Foil: A Novel Compliant Radial Foil Bearing Design** ***Erik Swanson, P. Shawn O'Meara,*** *Xdot Engineering and Analysis*	GT2017-63164 **Working Fluid and Parametric Optimization of a Two-Stage ORC Utilizing LNG Cold Energy and Low Grade Heat of Different Temperatures** ***Zhixin Sun, Shujia Wang, Fuquan Xu,*** *Fuzhou University;* ***Tielong Wang,*** *Fujian Snowman Co.,Ltd.*
3:30	GT2017-65437 **Session 3: Additive Manufacturing** ***Robin J. Day,*** *Fraunhofer Institute for Laser Technology*	GT2017-64628 **Experimental and Numerical Investigations of Turbocharger Rotors on Full-Floating Ring Bearings With Circumferential Oil-Groove** ***Ioannis Chatzisavvas, Gerrit Nowald, Bernhard Schweizer,*** *TU Darmstadt;* ***Panagiotis Koutsovasilis,*** *Global Engineering Core Science BorgWarner Turbo Systems Engineering GmbH*	GT2017-63797 **1-D Model Analysis of Tesla Turbine for Small Scale Organic Rankine Cycle (ORC) System** ***Jian Song, Chunwei Gu,*** *Tsinghua University*
4:00	GT2017-65438 **Session 4: Process Monitoring and Certification** ***Sascha Gierlings,*** *Fraunhofer Institute for Production Technology*	GT2017-64839 **The Influence of Lubricant Supply Conditions and Bearing Configuration on the Performance of (Semi) Floating Ring Bearing Systems for Turbochargers** ***Luis San Andres,*** *Texas A & M Univ;* ***Feng Yu,*** *Honghua America LLC;* ***Kostandin Gjika,*** *Honeywell Turbo Technologies*	GT2017-64246 **Performance Simulation of an Integrated Organic Rankine Cycle and Air Inter-Cooling System for Heavy-Duty Diesel Truck Engines** ***Haoxiang Chen, Weilin Zhuge, Yangjun Zhang, Tao Chen, Lei Zhang,*** *Tsinghua University*
4:30			GT2017-65096 **Analytical Investigation of a Thermal-Supercharged Internal Combustion Engine Compounded With Organic Rankine Cycle for Waste Heat Recovery** ***Manuel Jimenez-Arreola, Fabio Dal Magro, Alessandro Romagnoli,*** *Nanyang Technological University;* ***Meng Soon Chiong, Srithar Rajoo,*** *Universiti Teknologi Malaysia;* ***Ricardo Martinez-Botas,*** *Imperial College London*
5:00			

MONDAY, JUNE 26 — 2:30 - 5:30 PM

	STEAM TURBINES	STRUCTURES & DYNAMICS: FATIGUE, FRACTURE & LIFE PREDICTION	STRUCTURES & DYNAMICS: AERODYNAMIC EXCITATION & DAMPING
	LSB Vibrational Aspects	**Life Modelling of Blades**	**Aerodynamic Forced Response Investigations I**
	Technical Session • CCC, 217AB • MB-29-7	**Technical Session • CCC, 206AB • MB-31-2**	**Technical Session • CCC, 201AB • MB-36-2**
	Session Chair: **Tadashi Tanuma,** Teikyo University Session Co-Chair: **Bertold Luebbe,** Siemens AG - Power and Gas Division	Session Chair: **W. David Day,** PSM - Ansaldo Energia Group Session Co-Chair: **Boris Vasilyev,** Central Institute of Aviation Motors - CIAM	Session Chair: **Damian Vogt,** University of Stuttgart Session Co-Chair: **Andrew Brown,** NASA/ MSFC
2:30	GT2017-63280 **Influence of a Cylindrical Exhaust Hood Installation on the Last Stage Rotor Blades of a Low Pressure Model Steam Turbine** ***Fabian F. Müller, Markus Schatz,*** *ITSM University Stuttgart;* ***Damian Vogt,*** *University of Stuttgart;* ***Jens Aschenbruck,*** *Siemens AG, Power and Gas*	GT2017-63341 **Efficient Lifetime Prediction of High Pressure Turbine Blades in Real Life Conditions** ***Marinus Johannus van Enkhuizen, Christian Dresbach, Stefan Reh,*** *German Aerospace Center;* ***Stefan Kuntzagk,*** *Lufthansa Technik AG*	GT2017-63018 **Analysis of the Effect of Multi-Row and Multi-Passage Aerodynamic Interaction on the Forced Response Variation in a Compressor Configuration: Part 1: Aerodynamic Excitation** ***Harald Schoenenborn,*** *MTU Aero Engines;* ***Johann Gross, Malte Krack,*** *University of Stuttgart*
3:00	GT2017-63401 **On the Impact of Simulation Approaches on the Predicted Aerodynamic Damping of a Low Pressure Steam Turbine Rotor** ***Christopher Fuhrer, Damian Vogt,*** *University of Stuttgart*	GT2017-63857 **Plastic Effects on High Cycle Fatigue at the Edge of Contact of Turbine Blade Fixtures** ***Christoph H. Richter, Ulrich Krupp, Michaela Zeissig,*** *Osnabrueck University of Applied Sciences;* ***Gerd Telljohann,*** *DYNATEC GmbH*	GT2017-64564 **Research on Failure of Semi-Open Centrifugal Impeller Under Aerodynamic Load** ***Xudong Chen, Shengli Xu, Xiaofang Wang, Wenying Ju, Shuhua Yang,*** *Dalian University of Technology;* ***Jigang Meng,*** *Shenyang Blower Works Group Corporation*
3:30	GT2017-63550 **Optimization of the Vibration Behavior at Speed-Synchronous Resonance of a Large Turbine Blade During Speed-Up and Coast-down Under Consideration of Mistuning** ***Bertold Luebbe, Christian Siewert,*** *Siemens AG - Power and Gas Division*	GT2017-63775 **Development of a Fatigue Damage and Lifing Assessment Method for Inconel 625 and Aluminum 6061-T6** ***Mo-How Shen, Dino Celli,*** *The Ohio State University;* ***Tommy George, Onome Scott-Emuakpor, Casey Holycross,*** *Air Force Research Laboratory*	GT2017-64468 **Aerodynamic Excitation Analysis of Radial Turbine Blades due to Unsteady Flow From Vaneless Turbine Housings** ***Stephan Netzhammer, Stephan Krätschmer, Johannes Leweux, Andreas Köngeter,*** *Daimler AG;* ***Damian Vogt,*** *University of Stuttgart*
4:00	GT2017-63630 **Development of a Last Stage Blade Row Coupled by Damping Elements: Numerical Assessment of its Vibrational Behavior and its Experimental Validation During Spin Pit Measurements** ***Christian Siewert, Frank Sieverding,*** *Siemens AG - Power and Gas Division;* ***William J. McDonald, Manish Kumar, James McCracken,*** *Siemens*	GT2017-64634 **Distinguishing Primary and Secondary Loads to Support Gas Turbine Blades and Vanes Design** ***Andrea Riva, Stefano Elli, Julien Nussbaum,*** *Ansaldo Energia Switzerland AG*	GT2017-64502 **Influence of Detailing on Aerodynamic Forcing of a Transonic Axial Turbine Stage and Forced-Response Prediction for Low-Engine-Order (LEO) Excitation** ***Tobias R. Müller, Damian Vogt,*** *University of Stuttgart;* ***Klemens Vogel, Bent A. Phillipsen, Peter Hönisch,*** *ABB Turbo Systems Ltd*
4:30	**GT2017-64021 Investigation of Tip Clearance Flow Effects on an Open 3D Steam Turbine Flutter Test Case** ***Tianrui Sun, Paul Petrie-Repar, Di Qi,*** *KTH Royal Institute of Technology*	GT2017-64598 **Low Cycle Fatigue Life Prediction Model of Single Crystal Nickel-Based Superalloys Using Critical Plane Approach Combined With Crystallographic Slip Theory** ***Li-juan Mu, Xue-zhi Dong, Qing Gao, Yong-sheng Tian, Chun-qing Tan,*** *Institute of Engineering Thermophysics, Chinese Academy of Sciences*	
5:00	GT2017-64047 **Experimental Investigation of the Grouped Blade Vibration for Steam Turbine by Non-Contact Sensors** ***Tomomi Nakajima, Kiyoshi Segawa, Hiromichi Kitahara, Akimitsu Seo, Yutaka Yamashita, Takeshi Kudo,*** *Mitsubishi Hitachi Power Systems, Ltd.*		

MONDAY, JUNE 26 — 2:30 - 5:30 PM

	SUPERCRITICAL CO2 POWER CYCLES	TURBOMACHINERY: AXIAL FLOW FAN & COMPRESSOR AERODYNAMICS	TURBOMACHINERY: DESIGN METHODS & CFD MODELING FOR TURBOMACHINERY
	Supercritical CO2 Cycle Concepts & Testing	**Casing Treatments**	**Methods and CFD Modelling for Turbomachinery Design (1)**
	Technical • CCC, Crown Ballroom • MB-38-4	**Technical • CCC, Richardson Ballroom A • MB-39-7**	**Technical • CCC, Richardson Ballroom B • MB-41-7**
	Session Chair: **Eric Clementoni,** Naval Nuclear Laboratory Session Co-Chair: **Jim Pasch,** Sandia National Lab	Session Chair: **Lisa Brilliant,** UTC/Pratt & Whitney Session Co-Chair: **Matthew Bennington,** Pratt & Whitney; **Nick Nolcheff,** Honeywell	Session Chair: **Sunil Patil,** ANSYS Inc Session Co-Chair: **Kurt Weber,** Rolls-Royce Corporation
2:30	GT2017-64287 **Development of the Supercritical Carbon Dioxide Power Cycle Experimental Loop With a Turbo-Generator** ***Junhyun Cho, Hyungki Shin, Jongjae Cho, Ho-Sang Ra, Chulwoo Roh, Beomjoon Lee, Gilbong Lee, YOUNG-JIN BAIK,*** *Korea Institute of Energy Research*	GT2017-63051 **Experimental and Numerical Investigation of a Circumferential Groove Casing Treatment in a Low Speed Axial Research Compressor at Different Tip Clearances** ***Matthias Rolfes, Martin Lange, Konrad Vogeler, Ronald Mailach,*** *Technische Universität Dresden*	GT2017-64738 **Design and Operational Development a Pneumatic Braking System for a Gas-Turbine Units Test Bench** ***Valeriy Matveev, Yulia Novikova, Grigorii Popov, Oleg Baturin, Evgenii Goriachkin,*** *Samara National Research University*
3:00	GT2017-63056 **Transient Power Operation of a Supercritical Carbon Dioxide Brayton Cycle** ***Eric Clementoni, Tim Cox, Martha King, Kevin Rahner,*** *Naval Nuclear Laboratory*	GT2017-63767 **Numerical Investigation of Effect of Recess Vane Casing Treatments on an Axial Lift Fan Performance** ***Xiangyi Chen, Wuli Chu, Haoguang Zhang, Jinge Li, Jinhua Lang,*** *Northwestern Polytechnical University*	GT2017-65111 **Research on Fluid Flow Stability With Baffles of Different Size in a Hydrodynamic Coupling During Partially Liquid-Filled Operating Conditions** ***Qingdong Yan, Yuanyuan An, Wei Wei,*** *Beijing Institute of Technology*
3:30	GT2017-64933 **Comparison of Supercritical CO2 Power Cycles to Steam Rankine Cycles in Coal-Fired Applications** ***Jason Miller, David Buckmaster, Timothy Held, Katherine Hart,*** *Echogen Power Systems (DE), Inc;* ***David Thimsen, Andrew Maxson, Jeffrey Phillips, Scott Hume,*** *Electric Power Research Institute*	GT2017-65099 **An Experimental Study of Stall Suppression and Associated Changes to the Flow Structures in the Tip Region of an Axial Low Speed Fan Rotor by Axial Casing Grooves** ***Huang Chen, Yuanchao Li, Subhra Shankha Koley, Nick Doeller, Joseph Katz,*** *Johns Hopkins University*	GT2017-63594 **Smoothed Particle Hydrodynamics Simulation of Oil-Jet Gear Interaction** ***Marc C. Keller, Samuel Braun, Lars Wieth, Geoffroy Chaussonnet, Thilo F. Dauch, Rainer Koch, Corina Schwitzke, Hans-Jörg Bauer,*** *Institut of Thermal Turbomachinery - Karlsruhe Institut of Technology*
4:00	GT2017-65224 **300 MW Boiler Design Study for Coal-Fired Supercritical CO2 Brayton Cycles** ***Wengang Bai, Yifan Zhang, Yu Yang, Hongzhi Li, Mingyu Yao,*** *Xi'an Thermal Power Research Institute Co., Ltd.*	GT2017-65226 **Design of Casing Treatment on a Mixed-Flow Compressor** ***Juan Du,*** *Institute of Engineering Thermophysics;* ***Joerg Seume,*** *Gottfried Wilhelm Leibniz Universitaet*	GT2017-64362 **Development, Numerical Investigation and Experimental Validation of a New Recuperator Design for Aero Engines Applications** ***Zinon Vlahostergios, Christina Salpingidou, Apostolos Goulas, Kyros Yakinthos,*** *Aristotle University of Thessaloniki;* ***Dimitrios Misirlis,*** *TEI of Central Macedonia;* ***Michael Flouros, Stefan Donnerhack,*** *MTU Aero Engines AG*
4:30	GT2017-65219 **Study on a Modified Supercritical CO2 Brayton Cycle for the Thermal Power Generation** ***Yifan Zhang, Hongzhi Li, Yueming Wang, Mingyu Yao, Wei Gao,*** *Xi'an Thermal Power Research Institute Co., Ltd.*	GT2017-65257 **Testing Protruding Studs As a Form of Casing Treatment on a Transonic Turbofan: A Computational Study** ***Max David Collao, Robert Webster, Kidambi Sreenivas,*** *University of Tennesee at Chattanooga*	GT2017-64166 **CFD Driven Analysis of a Multi-Port Pressure Probe for Real Engine Testing** ***Aude Lahalle, Fabrizio Fontaneto, Tony Arts,*** *Von Karman Inst*
5:00	GT2017-65214 **A Novel S-CO2 and ORC Combined System for Exhaust Gases** ***Wei Gao, Hongzhi Li, Peng Nie, Yu Yang, Chun Zhang,*** *Xi'an Thermal Power Research Institute Co., Ltd.*	GT2017-64403 **Fan Blade Tip Aerodynamics With Realistic Operational Casing Geometries and Clearances** ***Alistair John, Ning Qin,*** *University of Sheffield;* ***Shahrokh Shahpar,*** *Rolls-Royce Plc*	GT2017-64213 **Modeling Surface Variation and Assessment of its Impact on Aerodynamic Performance in Turbomachinery Applications** ***Saurya Ray,*** *General Electric;* ***Ravi Avancha,*** *GE Aviation;* ***Sriram Shankaran, Lyle Dailey,*** *GE*

MONDAY, JUNE 26 — 2:30 - 5:30 PM

	COMBUSTION, FUELS & EMISSIONS	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: NOISE & INNOVATIVE NOISE REDUCTION (WITH AIRCRAFT ENGINE)
	Jet-in-Crossflow & Swirling Flows	**Combustion Dynamics: Instability Analysis I**	**Combustion and Entropy Noise**
	Technical Session • CCC, 219B • MB-4-18	**Technical Session • CCC, 207BC • MB-4-21**	**Technical Session • CCC, 208A • MB-43-1**
	Session Chair: **Antonio Andreini,** Department of Industrial Engineering (DIEF)-University of Florence	Session Chair: **Mirko Bothien,** Ansaldo Energia Switzerland Ltd Session Co-Chair: **Vishal Acharya,** Georgia Institute of Technology	Session Chair: **Jean-Michel Lourier,** GE Aviation Session Co-Chair: **Trevor Wood,** General Electric Global Research
2:30	GT2017-64197 **Numerical Study of Counter Jet Formed by Impinging Jets in Cross-Flow and its Effect on Mixing** ***Thomas A. Epalle, Olivier Gicquel,*** *CentraleSupélec;* ***Fabien Gaugain, Vincent Melot,*** *DCNS;* ***Nasser Darabiha,*** *CNRS EM2C*	GT2017-64079 **Effect of Pilot Flame on Flame Macrostructure and Combustion Instability** ***Jihang Li, Stephen Peluso, Bryan Quay, Domenic Santavicca,*** *Pennsylvania State University;* ***James W. Blust, Ram Srinivasan,*** *Solar Turbines*	GT2017-63076 **Species Dependency of the Compositional Indirect Noise Mechanism** ***Jeffrey O'Brien,*** *Stanford University - Center for Turbulence Research;* ***Matthias Ihme,*** *Stanford University*
3:00	GT2017-64325 **Numerical Simulation of a Reacting Jet in a Vitiated Cross Flow Using a Novel Progress Variable Approach** ***Rohit Kulkarni, Mario Zuber, John Wood,*** *General Electric GmbH;* ***Hasan Karim,*** *General Electric*	GT2017-64518 **Experimental and LES Analysis of a Premix Swirl Burner Under Acoustic Excitation** ***Fernando Biagioli, Stefan Wysocki, Panduranga Reddy Alemela,*** *GE (Switzerland) GmbH;* ***Shivakumar Srinivasan,*** *GE Energy;* ***Alexey Denisov,*** *Hochschule für Technik FHNW*	GT2017-64428 **Direct and Indirect Noise Generated by Injected Entropic and Compositional Inhomogeneities** ***Erwan Rolland, Francesca De Domenico, Simone Hochgreb,*** *University of Cambridge*
3:30	GT2017-65016 **Mixing and Combustion Characterization of a Staged Combustor With Multiple, High Mass-Ratio Jets in Crossflow** ***Nishant Jain, Jerry Seitzman,*** *Georgia Institute of Technology*	GT2017-64943 **Flame Dynamics Intermittency in the Bi-Stable Region Near a Subcritical Hopf Bifurcation** ***Dominik Ebi,*** *Paul Scherrer Institut;* ***Alexey Denisov,*** *Hochschule für Technik FHNW;* ***Giacomo Bonciolini, Edouard Boujo, Nicolas Noiray,*** *CAPS Lab, ETHZ*	GT2017-63382 **Effects of Nozzle Helmholtz Number on Indirect Combustion Noise by Compositional Perturbations** ***Luca Magri,*** *University of Cambridge;* ***Jeffrey O'Brien,*** *Stanford University - Center for Turbulence Research;* ***Matthias Ihme,*** *Stanford University*
4:00	GT2017-65252 **Experimental and Computational Characterization of Flow Rates in a Multiple-Passage Gas Turbine Combustor Swirler** ***Timothy Erdmann, David Burrus,*** *Innovative Scientific Solutions, Inc;* ***Alejandro Briones, Scott Stouffer,*** *University of Dayton Research Institute;* ***Brent Rankin, Andrew Caswell,*** *Air Force Research Laboratory*	GT2017-64438 **A Study of Spontaneous Transition in Swirl-Stabilized Flames** ***Isaac Boxx, Klaus-Peter Geigle, Wolfgang Meier,*** *German Aerospace Center;* ***Campbell D Carter,*** *Air Force Research Laboratory;* ***Benjamin Akih Kumgeh, Jacques Lewalle,*** *Syracuse University*	GT2017-63525 **Budgets of Disturbances Energy for Nozzle Flows at Subsonic and Choked Regimes** ***Maxime Huet,*** *ONERA*
4:30	GT2017-64876 **The Effect of the Geometric Modifications of the Venturi on the Non-Reactive Flow and Combustion Behavior Using a Counter-Rotating Radial-Radial Swirler** ***Sheng-Chieh Lin, Xionghui Wang, Wessam Estefanos, Samir Tambe, San-Mou Jeng,*** *University of Cincinnati*	GT2017-64856 **Effect of Acoustic Feedback on Lagrangian Coherent Structures in a Backward Facing Step Combustor With a Partially Premixed Flame** ***Ramgopal Sampath, Sathyanarayanan. R. Chakravarthy,*** *Indian Institute of Technology Madras*	GT2017-63640 **CAA Study of Entropy Noise in Nozzle Flow for the Validation of a 2D Semi-Analytical Model** ***Ariane Emmanuelli, Maxime Huet, Thomas Le Garrec,*** *ONERA;* ***Sébastien Ducruix,*** *CNRS*
5:00		GT2017-64691 **Impact of PVC Dynamics on Shear Layer Response in a Swirling Jet** ***Mark Frederick, Joshua Dudash, Jacqueline O'Connor,*** *Pennsylvania State University;* ***Kiran Manoharan,*** *Indian Institute of Science;* ***Brian Brubaker,*** *Texas A&M University;* ***Santosh Hemchandra,*** *Department of Aerospace Engineering*	GT2017-64378 **Measurements of the Effect of Boundary Conditions on Upstream and Downstream Noise Arising From Entropy Spots** ***Francesca De Domenico, Erwan Rolland, Simone Hochgreb,*** *University of Cambridge*

MONDAY, JUNE 26 — 2:30 - 5:30 PM

	TURBOMACHINERY: RADIAL TURBOMACHINERY AERODYNAMICS	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: UNSTEADY FLOWS IN TURBOMACHINERY
	Centrifugal Compressors - Stall & Surge	**DLN Combustor Development**	**Stall and Surge I**
	Technical Session • CCC, Richardson Ballroom C • MB-44-6	**Technical Session • CCC, 203A • MB-4-5**	**Technical Session • CCC, 211AB • MB-46-4**
	Session Chair: **Colin Copeland,** University of Bath	Session Chair: **Keith McManus,** GE Global Research Center	Session Chair: **William Cousins,** United Technologies Research Center Session Co-Chair: **Yuan Dong,** Pratt and Whitney
2:30	GT2017-63151 **Numerical Investigation of a Centrifugal Compressor With a Single Circumferential Groove in Different Types of Diffusers** ***Xuefei Chen, Zijian Ai, Yunfeng Ji, Guoliang Qin,*** *Xi'an Jiaotong University*	GT2017-63089 **Verification of Single Digit Emission Performance of a 24 MW Gas Turbine: SGT-600 3rd Generation DLE** ***Arturo Manrique Carrera, Anders Larsson, Rikard Magnusson,*** *Siemens Industrial Turbomachinery*	GT2017-63174 **Stall Inception Analysis of Transonic Compressors With Chordwise and Axial Sweep** ***Chen He, Dakun Sun,*** *Beihang University;* ***Xiaofeng Sun,*** *Beijing University of Aeronautics and Astronautics*
3:00	GT2017-63352 **Numerical Prediction of Centrifugal Compressor Stability Limit** ***Carlo Cravero, Davide Marsano, Mauro Carretta,*** *DIME - Università di Genova*	GT2017-63412 **SGT-750 Fuel Flexibility: Engine and Rig Tests** ***Olle Lindman, Mats Andersson, Anders Larsson, Alessio Bonaldo, Jacek Janczewski, Magnus Persson,*** *Siemens Industrial Turbomachinery AB*	GT2017-63974 **Effects of Increasing Blade Hub Loading on Instability Evolution in a Low-Speed Compressor** ***Qiushi Li, Simin Li, Ali Arshad,*** *Beihang University;* ***Tianyu Pan, Duke University; Yifang Gong,*** *Anhui KEDA Air Compressor*
3:30	GT2017-63356 **Investigation of the Coupling Mechanism Between Bent Pipes and Volute on the Stall Inception at the Centrifugal Compressor Inlet** ***Ce Yang, Yingjun Wang, Dazhong Lao, Hanzhi Zhang, Mingxu Qi,*** *Beijing Institute of Technology;* ***Ding Tong,*** *China North Engine Research Institute*	GT2017-63998 **Staged Combustion System for Improved Emissions Operability and Flexibility for 7HA Class Heavy Duty Gas Turbine Engine** ***Hasan Karim, Joseph Citeno,*** *General Electric;* ***Jayaprakash Natarajan, Venkat Narra, Jun Cai, Jonathan Kegley, Shreekrishna Rao,*** *GE Power*	GT2017-63759 **Investigation of In-Stall Behavior in a Transonic Compressor Rotor** ***Jinhua Lang, Wuli Chu, Haoguang Zhang, Shan Ma, Xiangyi Chen,*** *Northwestern Polytechnical University*
4:00	GT2017-63568 **Evolution of Reverse Flow in a Transonic Centrifugal Compressor at Near-Surge** ***Kazutoyo Yamada, Masato Furukawa, Hiromitsu Arai,*** *Kyushu University;* ***Dai Kanzaki,*** *IHI Corporation*	GT2017-64289 **Ansaldo GT26 Sequential Combustor Performance in Long-Term Commercial Operation** ***Selma Zahirovic, Klaus Knapp,*** *Ansaldo Energia Switzerland AG*	GT2017-64066 **Numerical Investigations on Partial Surge Initiated Inception and Stall Evolution in a Transonic Compressor** ***Jiaguo Hu, Wenqian Wu, Qiushi Li,*** *Beihang University;* ***Tianyu Pan,*** *Duke University;* ***Yifang Gong,*** *Anhui KEDA Air Compressor*
4:30	GT2017-63758 **Study on a Subsonic Micro-Centrifugal Compressor Stall Mechanism** ***Shuli Hong, Guoping Huang, Lu Weiyu,*** *Nanjing University of Aeronautics and Astronautics*	GT2017-64588 **Fuel and Combustion System Capabilities of GE's F and HA Class Gas Turbines** ***Jeffrey Goldmeer, William York, Paul Glaser,*** *GE Power*	GT2017-64685 **Statistical Anomaly Based Study of Rotating Stall in a Transonic Axial Compressor Stage** ***Gregory S. Heinlein, Chun-Ming Chen, Soumya Dutta, Jen-Ping Chen, Han-Wei Shen,*** *The Ohio State University*
5:00	GT2017-64499 **Stall Inception in a High Speed Centrifugal Compressor During Speed Transients** ***Lou Fangyuan, John Fabian, Nicole Key,*** *Purdue Univ*	GT2017-64790 **An Introduction to the Ansaldo GT36 Constant Pressure Sequential Combustor** ***Douglas Pennell, Mirko Bothien, Andrea Ciani, Victor Granet, Ghislain Singla, Steven Thorpe, Anders Wickstroem,*** *Ansaldo Energia Switzerland Ltd;* ***Khalid Oumejjoud, Matthew Yaquinto,*** *PSM Ansaldo Energia Group*	GT2017-64901 **Characteristics of Stable Rotating Stall Cells in an Axial Compressor** ***Adam Hickman,*** *University of Notre Dame;* ***Scott Morris,*** *Notre Dame Turbomachinery Laboratory*

MONDAY, JUNE 26 — 2:30 - 5:30 PM

	WIND ENERGY	HONORS AND AWARDS	CONTROLS, DIAGNOSTICS & INSTRUMENTATION
	Introduction to Wind Energy	**Industrial Gas Turbine Technology Award**	**Performance Monitoring and Fault Diagnostics of Gas Turbines**
	Tutorial Session • Westin Hotel, Providence I • MB-49-11	Lecture Session • CCC, 207A • MB-51-2	Technical Session • CCC, Room 105 • MB-5-6
	Session Chair: **Ndaona Chokani,** ETH Zurich Session Co-Chair: **George Pechlivanoglou,** TU Berlin; **C. Oliver Paschereit,** H.F.I TU Berlin	Session Chair: **S. Can Gülen,** Bechtel Infrastructure & Power Inc.	Session Chair: **David Doel,** General Electric
2:30	GT2017-65468 **Introduction to Wind Energy** ***Ndaona Chokani,*** *ETH Zurich*	GT2017-65375 **On the Frontiers of Future GT Concepts** ***Eisaku Ito,*** *MHI Takasago R&D Center*	GT2017-64089 **Design of Fault Detection System for a Heavy Duty Gas Turbine With State Observer and Tracking Filter** ***Yongwen Liu,*** *Shanghai Jiao Tong University*
3:00	GT2017-65469 **Introduction to Wind Energy Part 2** ***George Pechlivanoglou,*** *TU Berlin*	**L E C T U R E**	GT2017-64373 **Fault Diagnosis of Gas Turbine Based on Complex Networks Theory** ***Yunpeng Cao, Dongyang Yan, Qingcai Yang, Shuying Li, Minghao Wu, Lie Chen,*** *Harbin Engineering University*
3:30	GT2017-65470 **Introduction to Wind Energy Part 3** ***C. Oliver Paschereit,*** *H.F.I TU Berlin*		GT2017-64455 **Health Condition Assessment of Gas Turbine Generator on Offshore Platform** ***Yunpeng Cao, Minghao Wu, Qingcai Yang, Shuying Li, Dongyang Yan, Lie Chen,*** *Harbin Engineering University*
4:00	**TUTORIAL**		GT2017-64755 **Gas Turbine Machinery Diagnostics: A Brief Review and a Sample Application** ***Cody Allen, Chad Holcomb,*** *Solar Turbines Inc;* ***Mauricio de Oliveira,*** *University of California San Diego*
4:30			GT2017-64940 **Online health monitoring system using dynamic structural responses** ***Amit Paspulati, Kashinath Akki, Krishna Veluru,*** *Siemens Energy Inc.*
5:00			

MONDAY, JUNE 26 — 2:30 - 5:30 PM

	FANS & BLOWERS	INDUSTRIAL & COGENERATION	OIL & GAS APPLICATIONS
	Noise and Vibration	**Combustion and Emissions**	**Rotordynamics Data Acquisition & Instrumentation**
	Technical Session • CCC, 209A • MB-9-5	**Tutorial Session • Westin Hotel, Tryon • MB-23-4**	**Tutorial Session • CCC, 203B • MB-27-13**
	Session Chair: **Giovanni Delibra,** Sapienza University of Rome Session Co-Chair: **Alessio Castorrini,** Sapienza University of Rome	Session Chair: **Manfred Klein,** MA Klein and Associates Session Co-Chair: **Michael Klassen,** Combustion Science & Engrg; **Leonard Angello,** EPRI	Session Chair: **Meera Day,** Southwest Research Institute Session Co-Chair: **Timothy Allison,** Southwest Research Institute
2:30	GT2017-64644 **Fluid-Structure Interaction Study of Large and Light Axial Fan Blade** ***Alessio Castorrini, Alessandro Corsini, Franco Rispoli, Manuel Lamperini,*** *Sapienza University of Rome;* ***Anthony Sheard,*** *AGS Consulting LLC*	**T** **U** **T** **O** **R** **I** **A** **L**	**T** **U** **T** **O** **R** **I** **A** **L**
3:00	GT2017-64302 **Analysis of a Large-Scale Cooling System Fan Gearbox Loads** ***Charles H.O. Lombard, Daniel N.J. Els, Jacques Muiyser,*** *Stellenbosch University;* ***Albert Zapke,*** *ENEXIO Management GmnH*		
3:30	GT2017-64417 **Aeroacoustic Analysis of Low-Speed Axial Fans With Different Rotational Speeds in the Design Point** ***Patrick Buchwald, Damian Vogt,*** *University of Stuttgart;* ***Julien Grilliat, Wolfgang Laufer, Andreas Lucius, Marc Schneider, Michael B. Schmitz,*** *ebm-papst St. Georgen GmbH & Co.KG*		
4:00	GT2017-63172 **A Semantic Differential for Evaluating the Sound Quality of Fan Systems** ***Carolin Feldmann, Thomas Carolus,*** *University of Siegen;* ***Marc Schneider,*** *ebm-papst Mulfingen GmbH & Co. KG*		
4:30			
5:00			

MONDAY, JUNE 26 — 2:30 - 5:00 PM

	CYCLE INNOVATIONS	STUDENT ADVISORY	
	Electric/Hybrid Propulsion Integration Innovations and Challenges	**ASME FutureME Mini-Talks 4:00 - 5:30 PM**	
	Panel • Westin Hotel, Providence III • MB-6--17	**Panel • CCC, Richardson Ballroom B • 37-17**	
	Session Chair: **Nateri Madavan,** NASA Ames Research Center Session Co-Chair: **Devaiah Nalianda,** Cranfield University	Session Chair: J**ason Ostanek,** NSWCPD	
2:30	**P A N E L**		
3:00			
3:30			
4:00		GT2017-65563 **A Recipe for Success in New Roles** ***Keye Su,*** *Duke University* GT2017-65564 **Leveraging Industry Experience for Success in an Academic Career** ***Ankur Jain,*** *The University of Texas at Arlington*	
4:30		GT2017-65565 **An Economic and Business Case for Diversity in Engineering** ***Shane Haydt,*** *The Pennsylvania State University* GT2017-65566 **Question & Answer** ***Jason Ostanek,*** *NSWCPD*	
5:00		GT2017-65567 **Social Meetup: Speed Networking Activity** ***Jason Ostanek,*** *NSWCPD*	

MONDAY, JUNE 26

HONORS AND AWARDS

ASME IGTI Scholar Lecture
Dr. Ronald Bunker
5:45 - 7:00 PM

Lecture Session • CCC, Crown Ballroom • 51-1

Session Chair: **Thomas Sattelmayer**, Technical Univ Munich

5:45 - 7:00

GT2017-63205 **Evolution of Turbine Cooling**

Ronald Bunker, *Consultant*

L E C T U R E

TUESDAY, JUNE 27 — 8:00 - 10:00 AM

	HEAT TRANSFER: NUMERICAL INTERNAL COOLING	HEAT TRANSFER: GENERAL EXPERIMENTAL HEAT TRANSFER	AIRCRAFT ENGINE
	Impingement Cooling	**Vane Endwall Heat Transfer**	**Thermal Management Systems and Aero-Engine Oil Systems**
	Technical Session • CCC, 207BC • TA-11-1	**Technical Session • CCC, 219A • TA-13-3**	**Technical Session • CCC, 216AB • TA-1-4**
	Session Chair: **Anil Tolpadi,** GE Aviation Session Co-Chair: **Paul Giel,** NASA Glenn Research Center	Session Chair: **Forrest Ames,** Univ Of North Dakota Session Co-Chair: **Brett Barker,** Rolls-Royce	Session Chair: **Hervé Morvan,** University of Nottingham Session Co-Chair: **Guillermo Paniagua,** Purdue University
8:00	GT2017-63278 **Optimization of Hybrid-Linked Jet Impingement Cooling Channels Based on Response Surface Methodology and Genetic Algorithm** ***Li Yang, Zheng Min, Sarwesh Narayan Parbat, Minking Chyu,*** *University of Pittsburgh*	GT2017-63088 **Assessment of Real Turbine Blade Roughness Parameters for the Design of a Film Cooling Test Rig** ***Tobias Glasenapp, Franz Puetz, Achmed Schulz,*** *Karlsruhe Institute of Technology;* ***Hans-Jörg Bauer,*** *Institut of Thermal Turbomachinery (ITS) - Karlsruhe Institut of Technology (KIT)*	GT2017-63010 **Assessment of Bearing Heat Generation Prediction by the Program ADORE With Respect to Experimental Results and SHABERTH Predictions** ***Brian Nicholson, Garry Givan, Kevin Thompson, Justin Mason,*** *Air Force Research Lab;* ***Pradeep Gupta,*** *Pkg Inc;* ***Hitesh Trivedi,*** *UES Inc*
8:30	GT2017-64073 **Investigation of Heat Transfer and Pressure Field of Jet Impingement on the Side of a Dimpled Surface** ***lijian cheng, Weijiang Xu, Huiren Zhu, Ru Jiang,*** *Northwestern Polytechnical University*	GT2017-64266 **Heat Transfer Analysis Over a Film Cooled Platform of a Vane Cascade With a Non Uniform Inlet Flow** ***Giovanna Barigozzi, Universita' Di Bergamo; Silvia Ravelli,*** *Univ of Bergamo-Faculty of Engrg;* ***Hamed Abdeh, Antonio Perdichizzi,*** *University Of Bergamo;* ***Marc Henze, Joerg Krueckels,*** *Ansaldo Energia Switzerland Ltd.*	GT2017-63208 **Classification of Fluid Dynamic Loss in Aeroengine Transmission Gears: Experimental Analysis and CFD Validation** ***Hidenori Arisawa, Yuji Shinoda, Mitsuaki Tanaka, Tatsuhiko Goi, Hirofumi Akahori, Mamoru Yoshitomi,*** *Kawasaki Heavy Industries, LTD.*
9:00	GT2017-64159 **Characterization of the Surface Curvature Effect Using LES for a Single Round Impinging Jet** ***Pierre Aillaud, Florent Duchaine, Laurent Gicquel, CERFACS; Sheddia Didorally,*** *Safran Helicopter Engines*	GT2017-65091 **Effect of Combustor-Turbine Platform Misalignment on the Aerodynamics and Heat Transfer of an Axisymmetric Converging Vane Endwall at Transonic Conditions** ***David Mayo, Allan Arisi, Wing Ng,*** *Virginia Tech;* ***ZHIGANG LI, Jun Li,*** *Xian Jiaotong Univerity;* ***Hee-Koo Moon, Luzeng Zhang,*** *Solar Turbines Inc.*	GT2017-63561 **Experimental Investigation of the Influence of Chamber Geometry on Bearing Chamber Oil Leakage** ***Felix Von Plehwe, Benedikt Brox, Corina Schwitzke,*** *Karlsruhe Institute of Technology;* ***Hans-Jörg Bauer,*** *Institut of Thermal Turbomachinery - Karlsruhe Institut of Technology*
9:30	GT2017-64336 **A Combined Experimental and Numerical Investigation of the Flow and Heat Transfer Inside a Turbine Vane Cooled by Jet Impingement** ***Emmanuel Laroche,*** *ONERA;* ***Matthieu Fenot, Eva Dorignac, Laurent E. Brizzi, Jean Jacques Vuillerme,*** *PPRIME INSTITUTE, CNRS, ENSMA, POITIERS UNIVERSITY;* ***Juan-Carlos Larroya,*** *SAFRAN AIRCRAFT ENGINES*	GT2017-65037 **Vane Suction Surface Heat Transfer in Regions of Secondary Flows: The Influence of Turbulence Level, Reynolds Number and the Endwall Boundary Condition** ***Justin Varty,*** *University of North Dakota* ***Loren Soma,*** *Forrest Ames, University of North Dakota;* ***Sumanta Acharya,*** *Illinois Institute of Technology*	GT2017-64030 **Experimental Optimization of Rolls-Royce AE3007 Sump Design** ***Budi W. Chandra,*** *University of the West of England;* ***Steven H. Collicott,*** *Purdue University;* ***John Munson,*** *Rolls Royce Corporation*

TUESDAY, JUNE 26 — 8:00 - 10:00 AM

	HEAT TRANSFER: TUTORIALS	CERAMICS	HEAT TRANSFER: ADDITIVE MANUFACTURING
	Introduction to Cooling Design and Heat Transfer Technologies for Gas Turbine Vanes and Blades	**CMC/Ceramic Impact Testing and Analysis**	**Heat Transfer: Additive Manufacturing**
	Tutorial Session • CCC, 207D • TA-14-3	**Technical • Westin Hotel, Providence III • TA-2-1**	**Technical Session • CCC, 219B • TA-21-1**
	Session Chair: **Andrew Nix,** West Virginia University	Session Chair: **Jun Shi,** Rolls-Royce Corporation Session Co-Chair: **Sai Sarva,** GE Global Research	Session Chair: **Okey Kwon,** Pusan National University Session Co-Chair: **Paul Davis,** Rolls-Royce Corp.
8:00	GT2017-65236 **Introduction to cooling design and heat transfer technologies for gas turbine vanes and blades** ***Kenichiro Takeishi,*** *Tokushima Bunri University* **T U T O R I A L**	GT2017-63073 **Foreign Object Damage Behavior of a SiC Fibrous Ceramic Composite** ***Nesredin Kedir, D. Calvin Faucett, Luis Sanchez,*** ***Sung Choi,*** *Naval Air Systems Command*	GT2017-63442 **Effects of Geometry and Spacing in Additively Manufactured Microchannel Pin Fin Arrays** ***Katharine Ferster, Kathryn Kirsch, Karen Thole,*** *Pennsylvania State University*
8:30		GT2017-63475 **Foreign Object Damage in 3-D Woven SiC/SiC Ceramic Matrix Composites of Varying Architectures at Ambient and High Temperatures** ***Michael Presby, Gregory Morscher,*** *The University of Akron;* ***Craig Iwano, Brian Sullivan,*** *Materials Research & Design, Inc*	GT2017-63582 **Analysis of Aerothermal Characteristics of Surface Micro-Structures** ***Marios Kapsis, Li He,*** *Univerisity of Oxford*
9:00		GT2017-63736 **Erosion Properties of Ceramic Composite Material Based on Nano-Mullite Whisker and Zirconia-Toughened Alumina** ***Fabian Erazo, Taylor Robertson, Xiao Huang,*** *Carleton University;* ***Richard Kearsey, Qi Yang,*** *National Research Council of Canada*	GT2017-64903 **Effectiveness Measurements of Additively Manufactured Film Cooling Holes** ***Curtis Stimpson, Jacob Snyder, Karen Thole,*** *Pennsylvania State University;* ***Dominic Mongillo,*** *Pratt & Whitney*
9:30		GT2017-64944 **Development and Evaluation of Foreign Object Damage Resistant Ceramic Matrix Composites** ***Craig Iwano, Brian Sullivan,*** *Materials Research & Design, Inc;* ***Michelle Hoo Fatt,*** *The University of Akron*	GT2017-64934 **Experimental Investigation of Numerically Optimized Wavy Microchannels Created Through Additive Manufacturing** ***Kathryn Kirsch, Karen Thole,*** *Pennsylvania State University*

TUESDAY, JUNE 27 — 8:00 - 10:00 AM

	INDUSTRIAL & COGENERATION	MANUFACTURING MATERIALS & METALLURGY	MARINE
	Gas Turbine Power Augmentation Technologies	**Thermal Barrier Coatings Part A**	**Design & Development**
	Technical Session • Westin Hotel, Tryon • TA-23-1	**Technical Session • CCC, Crown Ballroom • TA-24-2**	**Technical Session • CCC, 105 • TA-25-1**
	Session Chair: **Qun Zheng,** Harbin Engineering University	Session Chair: **Jeffery Smith**, Material Processing Technologies, LLC Session Co-Chair: **Tania Bhatia Kashyap,** Pratt and Whitney	Session Chair: **Jeffrey Patterson**, NSWCPD Session Co-Chair: **Glenn McAndrews**, Mendenhall Technical Services, Inc.
8:00	GT2017-65149 **Sensitivity Analysis on the Effect of D32 and DV90 on the Evaporation Efficiency of Gas Turbine Inlet Fogging for Power Augmentation** ***Mustapha Chaker,*** *CB&I*	GT2017-63603 **Optimizing Thermal Barrier Coating Design Using Structural Optimization Methods** ***Robert Eriksson, Bo Torstenfelt, Anders Klarbring, Kjell Simonsson,*** *Linköping University*	GT2017-63043 **Flow Interactions Between Shrouded Power Turbine and Nonaxisymmetric Exhaust Volute for Marine Gas Turbines** ***Jie Gao, Xiying Niu, Qun Zheng, Guoqiang Yue, Weiliang Fu, Ming Wei,*** *Harbin Engineering University;* ***Feng Lin****, China Shipbuilding Industry Corporation*
8:30	GT2017-64189 **Water Injection Evaporation in Frame 7EA Gas Turbine Wrapper** ***Francesco Melino, Michele Bianchi, Antonio Peretto, Andrea De Pascale,*** *University of Bologna; Sasha Savic, SSA POWER*	GT2017-63883 **Analysis of Thermal-Mechanical Behavior in the Thermal Barrier Coatings With Cooling Hole Structure** ***Jishen Jiang, Zhenwei Cai, Weizhe Wang, Yingzheng Liu,*** *Shanghai Jiao Tong University*	GT2017-63176 **Gas-Dynamics Design of Reversible Turbine for Marine Gas Turbine Engine** ***Xiying Niu, Weishun Li, Chen Liang, Shunwang Yu, Bo Xu****, Harbin Marine Boiler & Turbine Research Institute;* ***Feng Lin****, China Shipbuilding Industry Corporation*
9:00	GT2017-63267 **Influence of Non-Equilibrium Fluid Properties During Fogging on Intake Duct and Compressor Characteristics** ***Christoph Günther, Franz Joos,*** *Helmut-Schmidt-University Hamburg*	GT2017-63610 **A Study on Crack Configurations in Thermal Barrier Coatings** ***Robert Eriksson, Krishna Praveen*** *Jonnalagadda, Linkoping University*	GT2017-64381 **Analysis of the Vortex Series Around Tabs in the Bent Marine Exhaust Ejector** ***Aoyu Ren, Hai'ou Sun, Zhongyi Wang, Xudong Chen****, Harbin Engineering University*
9:30	GT2017-64193 **Renewable Energy Systems Integration for Efficiency Improvement of a CHP Unit** ***Maria Alessandra Ancona, Lisa Branchini,*** *University of Bologna,* ***Andrea De Pascale,*** *University of Bologna;* ***Francesco Melino,*** *University of Bologna;* ***Biagio Di Pietra****, ENEA*	GT2017-63683 **The Fabrication, High Heat Flux Testing, and Failure Analysis of Thermal Barrier Coatings for Power Generation Gas Turbines** ***Mary Helen McCay, Pei-Feng Hsu, D. Edward Croy, David Moreno, Mengqi Zhang,*** *Florida Inst of Technology*	GT2017-63503 **Industrial and Marine Development Policy Study and Practices for GT28 Gas Turbine** ***Xueyou Wen, Dongming Xiao,*** *Harbin Marine Boiler & Turbine Research Institute;* ***Ningbo Zhao,*** *Harbin Engineering University*

TUESDAY, JUNE 27 — 8:00 - 10:00 AM

	OIL & GAS APPLICATIONS	STEAM TURBINES	STRUCTURES & DYNAMICS: FATIGUE, FRACTURE & LIFE PREDICTION
	Aeroderivatives & Light Industrial Gas Turbines	**Steam Turbine Operational Aspects**	**Integrity of Engine Components**
	Panel Session • CCC, 213AB • TA-27-15	**Technical Session • CCC, 217AB • TA-29-13**	**Technical Session • CCC, 203B • TA-31-3**
	Session Chair: **Patrick Campbell,** GE Oil & Gas	Session Chair: **Henning Almstedt**, Siemens Session Co-Chair: **Sean Jenkins**, GE Global Research	Session Chair: **Chris Hulme,** General Electric (Switzerland) GmbH. Session Co-Chair: **Roland Muecke**, Ansaldo Energia
8:00	GT2017-65509 **Solar Turbines** ***John Mason, Rainer Kurz,*** *Solar Turbines Inc.*	GT2017-63059 **Validation Analysis of High Pressure Turbine Creep Deformation for Ultra-Super Critical Steam Turbine** ***Shifang Wu, Shanghai*** *Jiao Tong University;* ***Yongzhao Chen, Yanlei Yang, Yu Zhu, Liu Yang, Yizhang Fan,*** *Shanghai Electric Power Generation Equipment Co., Ltd. Shanghai Turbine Plant*	GT2017-63366 **Life Extension of Power Turbine Disks Exposed to In-Service Corrosion Damage** ***Dipankar Dua, Mohammad Reza Khajavi,*** *Siemens Energy;* ***Matthew Hill****, Siemens Industrial Turbine Company*
8:30	GT2017-65511 **Siemens** ***Michael Welch****, Siemens Industrial Turbomachinery Ltd*	GT2017-63902 **Thermal Stress and Deformation Analysis of HP Casing During Shutdown of CPR1000 Nuclear Steam Turbine** ***Yanan Guo, Danmei Xie****, Wuhan University*	GT2017-63599 **The Effect of Foreign Object Damage on Compressor Blade High Cycle Fatigue Strength** ***Benjamin Hanschke, Arnold Kühhorn****, Brandenburg University of Technology Cottbus-Senftenberg;* ***Thomas Klauke****, Rolls-Royce Deutschland*
9:00	GT2017-65512 **General Electric Gas Turbines** ***Dave Wolf****, General Electric*	GT2017-64281 **Investigation Into the Thermal Limitations of Steam Turbines During Start-Up Operation** ***Monika Topel, Björn Laumert,*** *KTH Royal Institute of Technology;* ***Åsa Nilsson, Markus Jöcker****, Siemens Industrial Turbomachinery*	GT2017-63789 **Effect of Laser Shock Peening on Fatigue Life of Full Scale Turbine Blades** ***Cao Chen, Xiaoyong Zhang, Lei Han, Xiaojun Yan****, Beihang University*
9:30	GT2017-65543 **MAN Diesel & Turbo** ***Robert Krewinkel****, MAN Diesel & Turbo SE*		GT2017-64147 **Investigation of Advanced Lifetime Calculation Procedure for Steam Turbines in Flexible Operation** ***Klaus Helbig, Dennis Jarmowski, Jan Vogt,*** *GE Germany;* ***Paolo Capozzi****, GE Swizerland*

TUESDAY, JUNE 27 — 8:00 - 10:00 AM

	STRUCTURES & DYNAMICS: ROTORDYNAMICS	STRUCTURES & DYNAMICS: AERODYNAMIC EXCITATION & DAMPING	SUPERCRITICAL CO2 POWER CYCLES
	Rotordynamics-I	**Influence of Relevant Parameters on Aerodynamic Damping and Flutter**	**Supercritical CO_2 Material and Fluid Properties 1**
	Technical Session • CCC, 106 • TA-33-1	**Technical Session • CCC, 203A • TA-36-4**	**Technical Session • CCC, 207A • TA-38-7**
	Session Chair: **Aaron Rimpel**, Southwest Research Institute Session Co-Chair: **Daniel Lubell**, Oil-Free Machinery	Session Chair: **Toshinori Watanabe,** The University of Tokyo Session Co-Chair: **Almudena Vega**, Dassault Systems	Session Chair: **Seth Lawson**, US Department of Energy Session Co-Chair: **Anthony Eastland**, Gas Technology Institute
8:00	GT2017-63459 **Lateral Equilibrium Position Analysis Program With Applications to Electric Submersible Pumps** ***Clay Norrbin, Dara Childs,*** *Texas A&M Turbomachinery Lab*	GT2017-63162 **Numerical Investigation of the Effects of Part-Span Shrouds on Aerodynamic and Aeroelastic Characteristics of a Transonic Fan Rotor** ***Di Zhou, Zhiliang Lu, Tongqing Guo, Nanjing*** *University of Aeronautics and Astronautics*	GT2017-63148 **Numerical Approach for Real Gas Simulations: Part I: Tabular Fluid Properties for Real Gas Analysis** ***Francisco Moraga, Douglas Hofer,*** *GE Global Research;* ***Swati Saxena,*** *ESI Group; Ramakrishna Mallina, GE*
8:30	GT2017-64369 **Structural Topology Optimization of Turbomachinery Components Using New Manufacturing Techniques and Innovative Materials** ***Enrico Meli, Enrico Boccini, Andrea Rindi,*** *University of Florence;* ***Giuseppe Iurisci, Simone Corbò, Stefano Falomi****, General Electric Nuovo Pignone*	GT2017-63556 **Influence of Geometric Imperfections on Aerodynamic and Aeroelastic Behavior of a Compressor Blisk** ***Christian Keller, Leibniz*** *Universitaet Hannover;* ***Andreas Kellersmann,*** *TU Braunschweig;* ***Jens Friedrichs****, TU Braunschweig Inst of Aircraft Propulsion & Turbomachinery;* ***Joerg Seume****, Gottfried Wilhelm Leibniz Universitaet*	GT2017-63149 **Numerical Approach for Real Gas Simulations: Part 2: Flow Simulation for Supercritical CO_2 Centrifugal Compressor** ***Swati Saxena****, ESI Group;* ***Ramakrishna Mallina****, GE;* ***Francisco Moraga****,* ***Douglas Hofer****, GE Global Research*
9:00	GT2017-64816 **Rotordynamic Energy Expressions for General Anisotropic Finite Element Systems** ***Manoj Settipalli, Venkatarao Ganji,*** *Honeywell Technology Solutions Lab;* ***Theodore Brockett****, Honeywell Aerospace*	GT2017-63877 **Research on Aerodynamic Damping of Bladed Disk With Random Mistuning** ***Lin LI, Xiao Ping YU, Peiyi WANG****, Beihang University*	GT2017-64044 **Effect of Multicomponent Mixtures on Cycles With Supercritical Carbon Dioxide** ***Ladislav Vesely, Vaclav Dostal,*** *Czech Technical University in Prague*
9:30	GT2017-64954 **Efficient Rotordynamic Analysis Using the Superelement Approach for an Aircraft Engine** ***Devesh Kumar, Konrad Juethner,*** *MSC Software;* ***Yves Fournier****, Pratt & Whitney Canada Corp.*	GT2017-64027 **Influence of the Steady Deformation on Numerical Flutter Prediction for Highly Loaded and Flexible Fan Blades** ***Matthias Schuff, Timea Lengyel-Kampmann, Nicolai Forsthofer****, German Aerospace Center*	GT2017-64261 **Evaluation of Property Methods for Modeling Direct-Supercritical CO_2 Power Cycles** ***Charles W. White,*** *KeyLogic Systems, Inc;* ***Nathan T. Weiland,*** *National Energy Technology Laboratory*

TUESDAY, JUNE 27 — 8:00 - 10:00 AM

	TURBOMACHINERY: AXIAL FLOW FAN & COMPRESSOR AERODYNAMICS	TURBOMACHINERY: AXIAL FLOW TURBINE AERODYNAMICS	TURBOMACHINERY: DESIGN METHODS & CFD MODELING FOR TURBOMACHINERY
	Multistage Compressors	**Combustor-Turbine Interactions**	**LES and DNS Methods and Applications (1)**
	Technical Session • CCC, 217CD • TA-39-4	**Technical • CCC, Richardson Ballroom B • TA-40-8**	**Technical • CCC, Richardson Ballroom C • TA-41-1**
	Session Chair: **Rebecca M. Howard**, Air Force Research Laboratory Session Co-Chair: **Anton Streit**, Siemens AG	Session Chair: **Michael Dunn**, Ohio State University Session Co-Chair: **Randall Mathison**, Ohio State University	Session Chair: **Kurt Weber**, Rolls-Royce Corporation
8:00	GT2017-63510 **Investigation on the Highly Loaded Helium Compressor Based on Helium Thermophysical Properties: Part A: The Design of Highly Loaded Axial Helium Compressor** ***Zhitao Tian, Bin Jiang, Qun Zheng, Qingfang Zhu,*** *Harbin Engineering University*	GT2017-63785 **Influence of Combustor Flow With Swirl on Integrated Combustor Vane Concept Full-Stage Performance** ***Simon Jacobi***, ***Budimir Rosic***, *Oxford University*	GT2017-63358 **Towards High-Order Large Eddy Simulation of Aero-Thermal Flows for Turbomachinery Applications** ***Rathakrishnan Bhaskaran, Umesh Paliath,*** *General Electric Co. Global Research Center;* ***Feilin Jia, Zhi Jian Wang,*** *University of Kansas;* ***Gregory Laskowski***, *GE Aviation*
8:30	GT2017-63511 **Investigation on the Highly Loaded Helium Compressor Based on Helium Thermophysical Properties: Part B: The Loss Analysis of Highly Loaded Axial Helium Compressor** ***Zhitao Tian, Bin Jiang, Qun Zheng, Qingfang Zhu,*** *Harbin Engineering University*	GT2017-64153 **InterTurb – High-Pressure Turbine Rig for the Investigation of Combustor-Turbine Interaction** ***Torsten Wolf, Knut Lehmann, Lars Willer,*** *Rolls-Royce Deutschland Ltd & Co KG;* ***Andreas Pahs, Marcel Rößling, Lothar Dorn***, *German Aerospace Center (DLR)*	GT2017-63473 **Integrated Large Eddy Simulation of Combustor and Turbine Interactions: Effect of Turbine Stage Inlet Condition** ***Florent Duchaine, Laurent Gicquel, Jérôme Dombard,*** *CERFACS;* ***Charlie Koupper***, *Safran Helicopter Engines*
9:00	GT2017-63673 **Complete Characterization of a Highly Loaded Low Pressure Compressor at Different Reynolds Numbers for CFD Simulations** ***Ruzbeh Hadavandi, Fabrizio Fontaneto, Julien Desset,*** *Von Karman Institute for Fluid Dynamics*	GT2017-64504 **Numerical Studies on Combustor-Turbine Interaction at the Large Scale Turbine Rig (LSTR)** ***Jonathan Hilgert, Martin Bruschewski, Holger Werschnik, Heinz-Peter Schiffer***, *Technical University of Darmstadt*	GT2017-63611 **Turbulent Energy Budget in a Tip Leakage Flow: A Comparison Between RANS and LES** ***Jean-François Monier, Jérôme Boudet, Ecole Centrale de Lyon; Joëlle Caro, Liang Shao,*** *CNRS*
9:30	GT2017-64964 **Simulation of Multi-Stage Compressor at Off-Design Conditions** ***Feng Wang, Mauro Carnevale, Luca Di Mare,*** *Imperial College;* ***Simon Gallimore***, *Rolls Royce Plc*	GT2017-63490 **Predicting Efficiency of a Turbine Driven by Pulsing Flow** ***Mark Fernelius, Steven Gorrell,*** *Brigham Young University*	GT2017-64195 **Development and Validation of a Compressible Large-Eddy Simulation Code With Overset Mesh Method** ***Atsushi Tateishi, Toshinori Watanabe, Takehiro Himeno***, *University of Tokyo*

TUESDAY, JUNE 27 — 8:00 - 10:00 AM

	COMBUSTION, FUELS & EMISSIONS	COMBUSTION, FUELS & EMISSIONS	COMBUSTION, FUELS & EMISSIONS
	Combustor Design & Development I	**Fuel Considerations for Existing and Future Gas Turbine Aircraft Combustors**	**Pollutant Emissions: Soot and Particulates I**
	Technical Session • CCC, 208B • TA-4-3	**Panel Session • CCC, 213CD • TA-4-36**	**Technical Session • CCC, 212AB • TA-4-42**
	Session Chair: **Holger Streb**, Siemens Power Session Co-Chair: **Olle Lindman**, Siemens AB	Session Chair: **Mel Roquemore**, WPAFB Session Co-Chair: **Med Colket**, United Technologies Research Center	Session Chair: **Ibrahim Yimer**, NRC
8:00	GT2017-64484 **Experimental Investigation With Optical Diagnostics of a Lean-Premixed Aero-Engine Injection System Under Relevant Operating Conditions** ***Pierre MALBOIS, Erwan SALAUN, Felix FRINDT, Gilles Cabot, Bruno RENOU, Frédéric GRISCH,*** *CORIA;* ***Lisa BOUHERAOUA, Hubert VERDIER, Stephane Richard,*** *SAFRAN Helicopter Engines*	GT2017-65478 **Overview of Gas Turbine Operation and Impact of Fuel on Lean-Blow-Out and Ignition** ***Tim Lieuwen,*** *Georgia Institute of Technology*	GT2017-64200 **Reduction of Soot Emitted by Gas Turbines Fired on Gasoil** ***Matthieu Vierling****, GE Energy Product;* ***Bernard Galantine****,* ***Philippe Lepante****,* ***Alex Angebert****, EDF;* ***Maher Aboujaib****,* ***Dmitry Sokolov****,* ***Mickael Plouhinec****, GE;* ***Michel Moliere****, UTBM*
8:30	GT2017-64249 **Analysis of Performance Sensitivity to Geometrical Variations of a Modern Helicopter Engine Combustor Using LES Simulations** ***Guillaume Vignat, Guillaume Taliercio, Jean Lamouroux, Sébastien DA VEIGA, Nicolas Savary,*** ***Patrick Duchaine,*** *Safran Helicopter Engines*	GT2017-65474 **Overview of DLR's Fuels Combustion Programs and Status of the European Alternate Fuels Program** ***Patrick Le Clercq****, DLR Stuttgart*	GT2017-64262 **On the Combination of Large Eddy Simulation and Phenomenological Soot Modelling to Calculate the Smoke Index From Aero-Engines Over a Large Range of Operating Conditions** ***Jean Lamouroux, Stephane Richard, Quentin Male****, SAFRAN Helicopter Engines;* ***Gabriel Staffelbach****,* ***Antoine Dauptain****,* ***Anthony Misdariis****, CERFACS*
9:00	GT2017-64280 **Investigation of the Reacting Flow Field of a Lean Burn Injector With Varying Degree of Swirl at Elevated Pressure Condition** ***Christoph Hassa, Ulrich Meier, Johannes Heinze, Eggert Magens, Michael Schroll,*** *DLR German Aerospace Center Institute of Propulsion Technology;* ***Imon Bagchi****, Rolls-Royce Deutschland*	GT2017-65476 **Impact of Fuel Properties on Altitude Ignition and Overview of Canadian Efforts in Alternative Fuels Integration** ***Wajid Chishty****, NRC Aerospace*	GT2017-65061 **An Emerging Technique for Low-Concentration Measurement of Particulate Emissions From Gas-Fired Gas Turbines** ***Kevin Crosby,*** *Montrose Air Quality Services, LLC;* ***Glenn England****, Ramboll Environ*
9:30	GT2017-63242 **CFD Analysis of the Combustion Chamber of a Commercial Aircraft Engine of Medium Thrust Class From a Maintenance Perspective** ***Stefan Kuntzagk, Joern Kraft, Ina Esemann,*** *Lufthansa Technik AG*	GT2017-65477 **Fuel and Combustor Concerns for Future Commercial Combustors** ***Clarence Chang****, NASA* GT2017-65475 **Engine Company Perspective on the National Jet Fuel Combustor Program and Fuel Concerns for Future Combustors** ***Jeffery Lovett****, Pratt & Whitney*	

TUESDAY, JUNE 27 — 8:00 - 10:00 AM

	TURBOMACHINERY: RADIAL TURBOMACHINERY AERODYNAMICS	TURBOMACHINERY: MULTIDISCIPLINARY DESIGN APPROACHES, OPTIMIZATION & UNCERTAINTY QUANTIFICATION	WIND ENERGY
	Centrifugal Compressors - Turbocharger Applications	**Axial Turbine Design: Aerodynamic Optimization and Multidisciplinary Approaches (Including Cooling)**	**Wind Turbine Systems and Other Topics**
	Technical Session • CCC, 208A • TA-44-4	**Technical Session • CCC, 211AB • TA-47-6**	**Technical Session • Westin Hotel, Harris • TA-49-7**
	Session Chair: **Peter Harley**, Dyson Session Co-Chair: **Maria Esperanza Barrera-Medrano**, Imperial College	Session Chair: **Shahrokh Shahpar**, Rolls-Royce Plc Session Co-Chair: **Francesco Montomoli**, Imperial College London	Session Chair: **Juan Jauregui**, University of Queretaro Session Co-Chair: **Lorenzo Ferrari**, University of Pisa; **Jaikumar Loganathan**, GEITC
8:00	GT2017-63108 **Component Matching of Centrifugal Compressors for Turbocharger Application** ***Hua Chen,*** *National Laboratory of Engine Turbocharging Technology North China Eng Rsrch Inst*	GT2017-63880 **Knowledge Based Aero-Thermal Multi-Objective Design Optimization of a Gas Turbine Blade** ***Yingjie Song, Zhendong Guo, LIMING SONG, Jun Li, Zhenping Feng****, Xi'An Jiaotong University*	GT2017-63362 **Wind Tunnel Study of a Generic Wind Turbine Nacelle Mode***l* ***Marinos Manolesos****, Flowfield* ***Panagiotis Chaviaropoulos****, iWind Renewables*
8:30	GT2017-63538 **Free-Form Versus Ruled Inducer Design in a Transonic Centrifugal Impeller** ***Hamid Hazby, Chris Robinson, Michael Casey,*** *PCA Engineers Ltd;* ***Daniel Rusch, René Hunziker,*** *ABB Turbo Systems*	GT2017-63991 **Metamodel-Assisted Optimization of a High-Lift Low Pressure Turbine Blade** ***Fabio Bigoni, Roberto Maffulli, Tony Arts, Tom Verstraete,*** *Von Karman Institute for Fluid Dynamics*	GT2017-63557 **Techno-Economic Study of Wind Farm Forecast Error Compensation by Flexible Heat-Driven CHP Units** ***Thomas Bexten, Manfred Wirsum, Björn Roscher, Ralf Schelenz, Georg Jacobs, Daniel Weintraub, Peter Franz Jeschke,*** *RWTH Aachen University*
9:00	GT2017-63678 **Ported Shroud Flow Processes and Their Effect on Turbocharger Compressor Operation** ***Sidharath Sharma, Martyn Jupp, J.M. Allport,*** *University of Huddersfield;* ***A.K. Nickson,*** *BorgWarner Turbo Systems*	GT2017-64776 **Robust Detection and Characterization of Cooling Holes Based on Surface Meshes of Turbine Blades** ***Sebastian Knebel, Oliver Baum, Lars Högner, Matthias Voigt, Ronald Mailach,*** *Technische Universität Dresden;* ***Marcus Meyer,*** *Rolls-Royce Deutschland Ltd & Co KG*	T2017-65145 **Real Time Conditioning Monitoring for Failure Prediction** ***J. Alejandro Franco-Piña, Luis Contreras, Juan Jauregui,*** *University of Queretaro*
9:30	GT2017-63213 **Investigation on Effect of Curvilinear Element Blades on Centrifugal Impeller Performance** ***Kiyotaka Hiradate,*** *Research & Development Group, Hitachi Ltd;* ***Takahiro Nishioka****, Hiromi Kobayashi, Hitachi, Ltd.*	GT2017-64843 **Multidisciplinary Optimization of the Working Process of Uncooled Axial Turbine According to Efficiency and Strength Criteria** ***Evgeny Yu. Marchukov, Igor Egorov,*** *Lyulka Design Bureau;* ***Grigorii Popov****,* ***Evgenii Goriachkin****,* ***Daria Kolmakova****, Samara National Research University;* ***Anton Salnikov****, Central Institute of Aviation Motors*	GT2017-63161 **Aeroelastic Analysis of NREL Wind Turbine** ***Yaozhi Lu, Fanzhou Zhao, Loic Salles, Mehdi Vahdati,*** *Imperial College London*

TUESDAY, JUNE 27 — 8:00 - 10:00 AM

	CYCLE INNOVATIONS	CYCLE INNOVATIONS	
	Cycle Performance Simulation I	**Fuel Cell Driven Cycles II**	
	Technical Session • Westin Hotel, Trade • TA-6-11	**Technical Session • Westin Hotel, Providence I • TA-6-2**	
	Session Chair: **Theofilos Efstathiadis,** Aristotle University of Thessaloniki	Session Chair: **Valentina Zaccaria**, Malardalen University	
8:00	GT2017-63288 **Investigation of a Gas Turbine Process With Reheat Combustion at Flue Gas Recirculation and Oxyfuel-Conditions** ***Florian Beenken, Franz Joos**, Helmut-Schmidt-University Hamburg*	GT2017-63745 **Performance Evaluation of a SOFC-GT Hybrid System With Ejectors for the Anode and Cathode Recirculations** ***Jinwei Chen**, **Kuanying Gao**, **Maozong Liang**, **Huisheng Zhang**, Shanghai Jiao Tong Univ*	
8:30	GT2017-64173 **Gas Turbine Cycle Upgrade and Validation for Heavy Duty Industrial Machines** ***Alex Torkaman, Gregory Vogel, Doug Dietrich, PSM; Ron Washburn,** Agilis Measurement Systems, Inc; **Steve Fiebiger**, Power Systems Mfg.,LLC*	GT2017-63178 **Fuel Cell Microturbine Hybrid System Analysis Through Different Uncertainty Quantification Methods** ***Alessio Abrassi, Alessandra Cuneo, Alberto Traverso,** Univ Of Genova; **David Tucker**, National Energy Technology Laboratory*	
9:00	GT2017-63439 **Gas Dynamic Simulation of Shockless Explosion Combustion for Gas Turbine Power Cycles** ***T.S. Rähse, P. Stathopoulos,** Technische Universität Berlin; **C. Oliver Paschereit,** H.F.I TU Berlin; **R. Klein, P. Berndt,** Freie Universität Berlin;*	GT2017-64804 **Transient Analysis of an Innovative Cycle Integrating a SOFC and a Turbogenerator for Electric Propulsion** ***Venkata Adithya Chakravarthula, Rory Roberts,** Wright State University*	
9:30		GT2017-63483 **Electrochemical Carbon Separation in a SOFC-MCFC Poly-Generation Plant With Near-Zero Emissions** ***Luca Mastropasqua, Stefano Campanari, Politecnico Di Milano; Jack Brouwer,** National Fuel Cell Research Center, University of California*	

TUESDAY, JUNE 27 — 10:15 - 11:45 AM

	HEAT TRANSFER: CONJUGATE HEAT TRANSFER	HEAT TRANSFER: NUMERICAL INTERNAL COOLING	HEAT TRANSFER: NUMERICAL FILM COOLING
	Conjugate Heat Transfer with Film Cooling	**Passages with Turbulators and Bends I**	**Numerical Simulation of Vanes & Blades Film Cooling Design**
	Technical Session • CCC, 213CD • TB-10-1	**Technical Session • CCC, 219A • TB-11-2**	**Technical Session • CCC, 219B • TB-12-2**
	Session Chair: **Robert Proctor**, GE Aviation Session Co-Chair: **Savash Yavuzkurt**, Penn State University	Session Chair: **Antonio Andreini**, Department of Industrial Engineering (DIEF)-University of Florence Session Co-Chair: **Riccardo Da Soghe**, Ergon Research	Session Chair: **Khosro MollaHosseini,** Honeywell Aerospace Session Co-Chair: **Ardeshir (Ardy) Riahi**, Honeywell
10:15	GT2017-63421 **Overall Cooling Effectiveness Measurements on Pressure Side Surface of the Nozzle Guide Vane With Optimized Film Cooling Hole Arrangements** ***Dong-Ho Rhee, Young Seok Kang, Bong Jun Cha**, Korea Aerospace Research Institute; **Sanga Lee**, Seoul National University*	GT2017-63646 **Flow Computations of Rib-Roughened Cooling Channels With RANS and Scale Resolving Simulation Models** ***Ilhan Görgülü, Ender Hepkaya**, TUSAS, Engine Industries, Inc.*	GT2017-63624 **A Detailed Study of the Interaction Between Two Rows of Cooling Holes** ***Yuewen Jiang, Peter Ireland,** University of Oxford; **Luigi Capone**, **Eduardo Romero**, Rolls-Royce, plc.*
10:45	GT2017-64566 **Effects of Hole Pitch to Diameter Ratio P/D of Impingement and Film Hole on Laminated Cooling Effectiveness** ***Weilun ZHOU, Qinghua DENG, Wei HE, Zhenping Feng,** Xi'An Jiaotong University*	GT2017-64241 **Large Eddy Simulations of Static and Rotating Ribbed Channels in Adiabatic and Isothermal Conditions** ***Thomas Grosnickel, Laurent Gicquel, Florent Duchaine; Charlie Koupper,** Safran Helicopter Engines*	GT2017-63855 **Numerical Investigation of Coolant-to-Mainstream Scaling Parameters With Film Cooling on Pressure and Suction Side of a Gas Turbine Blade** ***Lingyu Zeng, XUEYING LI, Jing Ren, Hongde Jiang,** Tsinghua University, Department of Thermal Engineering*
11:15	GT2017-64596 **Comparison of 3D Unsteady Transient Conjugate Heat Transfer Analysis on a High Pressure Cooled Turbine Stage With Experimental Data** ***Jong-shang Liu, Mark Morris,** Honeywell Aerospace; **Malak Malak**, Honeywell Engine and Air Management; **Randall Mathison**, **Michael Dunn**, Ohio State University*	GT2017-64637 **LES Analysis of Flow and Heat Transfer in a Rib-Roughened Duct in Clockwise and Anti-Clockwise Rotation Regimes** ***Alessandro Salvagni, Domenico Borello, Sapienza** University of Rome*	GT2017-65208 **Parametric Cooling Study of Single-Row Cylindrical Film Holes on Pressure Side of a Rotor Blade** ***Zhongran Chi, Zang Shusheng**, Shanghai Jiao Tong University; **Haiqing Liu**, Shanghai Advanced Research Institute*

TUESDAY, JUNE 27 — 10:15 - 11:45 AM

	HEAT TRANSFER: INTERNAL AIR SYSTEMS & SEALS (WITH TURBOMACHINERY)	INDUSTRIAL & COGENERATION	MANUFACTURING MATERIALS & METALLURGY
	Air System Components	**Co-Generation Power Plant Performance and Optimization**	**Thermal Barrier Coatings Part B**
	Technical Session • CCC, 211AB • TB-15-2	**Technical Session • Westin Hotel, Tryon • TB-23-3**	**Technical Session • CCC, Crown Ballroom • TB-24-3**
	Session Chair: **Riccardo Da Soghe,** Ergon Research Session Co-Chair: **Sanjay Chopra**, General Electric	Session Chair: **Yi-Guang Li,** Cranfield University	Session Chair: **Jeffery Smith,** Material Processing Technologies, LLC Session Co-Chair: **Tania Bhatia Kashyap**, Pratt and Whitney
10:15	GT2017-63469 **The Effect of Manufacturing Tolerances on the Performance of Gas Turbine Air System Metering Holes With Chamfered Inlets** ***Polina Chernukha, Adrian Spencer, James Colwill,*** *Loughborough University*	GT2017-64341 **Parallel Between Rankine and Combined-Cycle Power Plants Configurations Burning Blast Furnace Gas** ***Gustavo Bonolo de Campos, Cleverson Bringhenti,*** *Aeronautics Institute of Technology;* ***Jesuino Takachi Tomita,*** *Technological Institute of Aeronautics - ITA/DCTA;* ***Diogo Cavalca****, Instituto Tecnológico de Aeronáutica;* ***Werner Riederer, Raphael Lemos Pinto****, ThyssenKrupp CSA*	GT2017-64046 **Development of Highly Durable Thermal Barrier Coating by Suppression of Thermally Grown Oxide** ***Masahiro Negami, Shinya Hibino, Akihito Kawano, Yoshimichi Nomura, Ryozo Tanaka, Kenichiroh Igashira****, Kawasaki Heavy Industries, Ltd.*
10:45	GT2017-64143 **Experimental Study on Pressure Losses in Circular Orifices With Inlet Cross Flow** ***Daniel Feseker****, Friedrich-Alexander University Erlangen-Nürnberg;* ***Mats Kinell****, Siemens Industrial Turbomachinery AB;* ***Matthias Neef****, University of Applied Sciences Düsseldorf*	GT2017-64836 **Identifying the Approach to Significantly Improve the Performance of NK-36ST Gas Turbine Power Plant** ***Oleg Baturin, Andrey Tkachenko, Ilja Krupenich, Grigorii Popov, Evgenii Goriachkin****, Samara National Research University*	GT2017-63604 **Bending Fatigue of Thermal Barrier Coatings** ***Robert Eriksson, Zhe Chen, Krishna Praveen Jonnalagadda****, Linkoping University*
11:15	GT2017-63201 **Annular Gap Windage Loss Measurements for High Speed Electrical Machinery** ***Erik Swanson, P. Shawn O'Meara****, Xdot Engineering and Analysis;* ***Hsin-Hua Tsuei****, Tsuei Engineering LLC*	GT2017-63656 **A Stand-Alone Syngas-Fuelled Small-Size CHP GT** ***Gianmario L. Arnulfi,*** *University of Udine;* ***Marco Fabris****, Technical School J. F. Kennedy*	GT2017-65103 **The Effect of Coating Composition and Geometry on TBC Lifetime** ***Bruce Pint, Michael Lance, J. Allen Haynes,*** *Oak Ridge National Lab*

TUESDAY, JUNE 27 — 10:15 - 11:45 AM

	MICROTURBINES, TURBOCHARGERS & SMALL TURBOMACHINES	OIL & GAS APPLICATIONS	STEAM TURBINES
	Turbochargers - Turbines 1	**Performance and Design**	**Steam Turbine Exhausts**
	Technical Session • Westin Hotel, Providence III • TB-26-7	**Technical Session • CCC, 212AB • TB-27-6**	**Technical Session • CCC, 207BC • TB-29-8**
	Session Chair: **Colin Copeland**, University of Bath	Session Chair: **Mauro Venturini**, Università Degli Studi Di Ferrara	Session Chair: **Zhenping Feng**, Xi'An Jiaotong University Session Co-Chair: **Hiteshkumar Mistry**, General Electric
10:15	GT2017-63360 **Methodology to Evaluate Turbocharger Turbine Performance at High Blade to Jet Speed Ratio Under Quasi Adiabatic Conditions** ***Jose Serrano, L. M. Garcia-Cuevas, L. B. Inhestern,*** *Universitat Politècnica de València;* ***Holger Mai, A. Rinaldi, Kratzer Automation; A. Miguel-Sanchez****, CRITT M2A*	GT2017-63106 **ASME PTC-10 and Heat Capacity Relations for Polytropic and Isentropic Compression Process of Real Gas** ***Matt Taher****, Bechtel Oil & Gas Chemical*	GT2017-63269 **Detailed Numerical Study of the Main Sources of Loss and Flow Behavior in Low Pressure Steam Turbine Exhaust Hoods** ***Dickson Munyoki, Damian Vogt,*** *University of Stuttgart;* ***Markus Schatz****, ITSM, University of Stuttgart*
10:45	GT2017-63370 **Aerodynamic Optimization of High Pressure Turbine and Interstage Duct in a Two-Stage Air System for a Heavy-Duty Diesel Engine** ***Uswah Khairuddin, Aaron Costall,*** *Imperial College London*	GT2017-65235 **Centrifugal Compressor Polytropic Performance: Consistently Accurate Results From Improved Real Gas Calculations** ***B Fred Evans, Spencer Huble****, Chiyoda International Corporation*	GT2017-63576 **Numerical Investigation and Validation of the 1 090 MW Steam Turbine Exhaust Hood Flow Field** ***Antonín Živný, Aleš Macálka****, NUM solution, s.r.o.* ***Michal Hoznedl, Kamil Sedlak, Miroslav Hajšman, Doosan Skoda Power s.r.o; Michal Kolovratnik,*** *Czech Technical University*
11:15	GT2017-64190 **3-D Computational Loss Analysis of an Asymmetric Volute Twin-Scroll Turbocharger** ***Torsten Palenschat, Markus Müller, Johannes Leweux, Daimler AG; Peter Newton, Ricardo Martinez-Botas,*** *Imperial College London*	GT2017-63385 **Static Load Performance of a Water Lubricated Hydrostatic Thrust Bearing** ***Michael Rohmer****, ExxonMobil Research & Engineering;* ***Luis San Andres, Scott M Wilkinson,*** *Texas A&M University*	GT2017-63964 **Numerical Tests on the Effect Factors of the Last Stage Blade for Low Pressure Exhaust Hood Simulation** ***Liu Meng, Chen Yang, Zhuhai Zhong, Zhang Xiaodan, Deng Guoliang, Qi Sun****, Dongfang Steam Turbine Co;* ***Mingyan YIN, Jun Li****, Institute of Turbomachinery, Xi'an Jiaotong University*

	COAL, BIOMASS & ALTERNATIVE FUELS	STRUCTURES & DYNAMICS: ROTORDYNAMICS	STRUCTURES & DYNAMICS: AERODYNAMIC EXCITATION & DAMPING
	Combustion of Coal, Biomass, and Byproducts	**Torsional Vibration Measurement And Model-Based Monitoring in Today's Reality of Power Generation Business**	**Stall Induced Aeromechanical Vibrations**
	Technical Session • CCC, 106 • TB-3-1	**Tutorial Session • CCC, 207A • TB-33-5**	**Technical Session • CCC, 203B • TB-36-5**
	Session Chair: **Thomas Fletcher,** Brigham Young Univ Session Co-Chair: **Francesco Fantozzi**, University of Perugia, Dip. Ingegneria Industriale	Session Chair: **Jaroslaw Szwedowicz**, General Electric Gmbh Session Co-Chair: **Jeffrey Moore**, Southwest Research Institute	Session Chair: **Sina Stapelfeldt**, Imperial College of London Session Co-Chair: **Tianyu Pan**, Duke University
10:15	GT2017-63724 **Formation of Deposits From Heavy Fuel Oil Ash in an Accelerated Deposition Facility at Temperatures Up to 1206˚C** ***Robert Laycock, Thomas Fletcher,*** *Brigham Young University*	GT2017-65429 **Torsional Vibration Measurement and Model-Based Monitoring in Today's Reality of Power Generation Business** ***Mateusz Golebiowski,*** *GE Power*	GT2017-63660 **Influence of Rotor Tip Blockage on Near Stall Blade Vibrations in an Axial Compressor Rig** ***Daniel Möller, Maximilian Jüngst, Heinz-Peter Schiffer,*** *Technische Universität Darmstadt;* ***Thomas Giersch, Frank Heinichen,*** *Rolls-Royce Deutschland Ltd & Co KG*
10:45	GT2017-64941 **Investigation of Effect of Biomass Torrefaction Temperature on Volatile Energy Recovery Through Combustion** ***Oladapo S. Akinyemi, Lulin Jiang, Prashanth R. Buchireddy, Stanislav O. Barskov, John L. Guillory, William Holmes,*** *University of Louisiana at Lafayette*	TUTORIAL	GT2017-64576 **Measurements of Radial Vortices, Spill Forward and Vortex Breakdown in a Transonic Compressor** ***Christoph Brandstetter, Maximilian Jüngst, Heinz-Peter Schiffer,*** *Technische Universität Darmstadt*
11:15	GT2017-64902 **Characterization of Spark- and Laser-Ignition of Bio- and Natural Gas** ***Nathan D. Peters, Benjamin Akih Kumgeh,*** *Syracuse University*		GT2017-65244 **Numerical Examination of Lock-in Hypothesis of Non-Synchronous Vibration in an Axial Compressor** ***Jiaye Gan, Ge-Cheng Zha,*** *University of Miami;* ***Hongsik Im,*** *Honeywell*

TUESDAY, JUNE 27 — 10:15 - 11:45 AM

	STUDENT ADVISORY	TURBOMACHINERY: AXIAL FLOW TURBINE AERODYNAMICS	COMBUSTION, FUELS & EMISSIONS
	The Art of the Peer Review Process: Best Practices for Crafting and Responding to Paper Reviews	**Cavity Flows**	**Combustion Dynamics: High-Frequency Instabilities**
	Tutorial Session • CCC, 217AB • TB-37-1	**Technical • CCC, Richardson Ballroom C • TB-40-7**	**Technical Session • CCC, 207D • TB-4-27**
	Session Chair: **Jacob Snyder,** Penn State Session Co-Chair: **Zhiping Mao**, Duke Univeristy	Session Chair**: Eisaku Ito,** MHI Takasago R&D Center Session Co-Chair**: Nicholas Atkins**, Cambridge University	Session Chair: **Marc Furi**, Siemens Canada Limited Session Co-Chair: **Patrick Flohr**, SIEMENS
10:15	GT2017-65419 **The Art of the Peer Review Process: Best Practices for Crafting and Responding to Paper Reviews** ***Karen Thole**, Pennsylvania State Univ* **T U T O R I A L**	GT2017-63606 **The Behavior of Turbine Center Frames Under the Presence of Purge Flows** ***Stefan Zerobin, Sabine Bauinger, Ashwini Bhadravati Ramesh, Michael Steiner, Franz Heitmeir, Emil Göttlich**, Graz University of Technology; **Andreas Peters**, GE Aviation*	GT2017-64233 **Extraction of Linear Growth and Damping Rates of High-Frequency Thermoacoustic Oscillations From Time Domain Data** ***Tobias Hummel, Frederik Magnus Berger**, Technical University of Munich, Chair of Thermodynamics; **Nicolai V. Stadlmair**, Technische Universität München; **Bruno Schuermans**, GE (Switzerland) GmbH; **Thomas Sattelmayer**, Technical Univ Munich*
10:45		GT2017-63616 **Impact of Individual High-Pressure Turbine Rotor Purge Flows on Turbine Center Frame Aerodynamics** ***Stefan Zerobin, Christian Aldrian, Franz Heitmeir, Emil Göttlich**, Graz University of Technology; **Andreas Peters**, GE Aviation*	GT2017-63234 **A Selective Fast Fourier Filtering Approach Applied to High Frequency Thermoacoustic Instability Analysis** ***Felix Grimm, Jean-Michel Lourier, Oliver Lammel, Berthold Noll**, German Aerospace Center (DLR); **Manfred Aigner**, DLR*
11:15		GT2017-64295 **Seedgas Investigation of Turbine Stage and Seal Performance at Varying Cavity Purge Rates and Operating Speeds** ***Johan Dahlqvist**, **Jens Fridh**, KTH Royal Institute of Technology*	GT2017-63997 **Pulsation Amplitude-Dependent Flame Dynamics of High-Frequency Thermoacoustic Oscillations in Lean-Premixed Gas Turbine Combustors** ***Frederik Magnus Berger**, **Tobias Hummel**, Technical University of Munich, Chair of Thermodynamics; **Bruno Schuermans**, GE (Switzerland) GmbH; **Thomas Sattelmayer**, Technical Univ Munich*

TUESDAY, JUNE 27 — 10:15 - 11:45 AM

	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: RADIAL TURBOMACHINERY AERODYNAMICS	TURBOMACHINERY: UNSTEADY FLOWS IN TURBOMACHINERY
	Combustor Design & Development II	**Centrifugal Compressors - Map Width & Off-Design**	**Stall and Surge: Centrifugal Compressors**
	Technical Session • CCC, 208B • TB-4-4	**Technical Session • CCC, 208A • TB-44-7**	**Technical Session • CCC, 217CD • TB-46-3**
	Session Chair: **Michael Duesing,** Ansaldo Energia Session Co-Chair: **Adnan Eroglu**, Siemens Switzerland	Session Chair: **Hamid Hazby**, PCA Engineers Limited Session Co-Chair: **René Hunziker**, ABB Turbo Systems	Session Chair: **Mike Macrorie**, GE Aviation
10:15	GT2017-65205 **Low-NOx Combustion of Fuel Spray-Air Mixtures From a Converging Splitter in a Co-Swirling Annular Air Flow** ***Shunsaku Oide, Masanao Iwakura, Mai Takaoka, Shigeru Hayashi,*** *Hosei University;* ***Shunsuke Kasuga****, Toyota Motor Corporation*	GT2017-63770 **Design and Optimization of Multi-Stage Centrifugal Compressors With Uncertainty Quantification of Off Design Performance** ***Alessandro Romei, Roberto Maffulli, Clara Garcia Sanchez, Sergio Lavagnoli,*** *Von Karman Inst for Fluid Dynamics*	GT2017-63400 **Unsteady Behavior of Diffuser Stall in a Centrifugal Compressor With Vaned Diffuser** ***Nobumichi Fujisawa, Daiki Ema, Yutaka Ohta****, Waseda University*
10:45	GT2017-63950 **Experimental Investigation of the Influence of Burner Geometry on Flame Characteristics at a Dry Low Emission Industrial Prototype Burner at Atmospheric Pressure Conditions** ***Arman Ahamed Subash****,* ***Atanu Kundu****,* ***Robert Collin****,* ***Jens Klingmann****,* ***Marcus Aldén****, Lund University*	GT2017-65062 **Novel Centrifugal Compressor Architecture for Wide-Range Operation: A Feasibility Assessment** ***Eric M. Krivitzky****, Concepts NREC;* ***Louis M. Larosiliere****, Elliot Group*	GT2017-63913 **Numerical Investigation of Diffuser Flow Field and Rotating Stall in a Centrifugal Compressor With Vaned Diffuser** ***Yang Zhao, Jiayi Zhao, Zhiheng Wang, Guang Xi,*** *Xi'an Jiaotong University*
11:15	GT2017-64129 **Numerical and Experimental Investigations of the Siemens SGT-800 Burner Fitted to a Water Rig** ***Daniel Moëll, Daniel Lörstad, Annika Lindholm, David Christensen****, Siemens Industrial Turbomachinery AB;* ***Xue-Song Bai,*** *Lund University*	GT2017-64210 **Experimental and Numerical Verification of Effect of Using Curvilinear Element Blades for Low-Solidity Cascade Diffuser in Centrifugal Compressor** ***Kazuhiro Tsukamoto, Kiyotaka Hiradate, Kiyohide Sakamoto,*** *Research & Development Group, Hitachi,Ltd;* ***Yasushi Shinkawa****, Industrial Products Business Unit, Hitachi, Ltd.*	GT2017-64452 **Numerical Study on the Influence of Tip Clearance on Rotating Stall in an Unshrouded Centrifugal Compressor** ***Wenying Ju, Shengli Xu, Xiaofang Wang, Xudong Chen, Shuhua Yang,*** *Dalian University of Technology;* ***Jigang Meng****, Shenyang Blower Works Group Corporation*

	TURBOMACHINERY: DEPOSITION, EROSION, FOULING, AND ICING	WIND ENERGY	HONORS AND AWARDS
	Icing Modeling and Experiments	**Wind Turbine Condition Monitoring**	**Aircraft Engine Technology Award Lecture - "Where Have all the Years Gone, 1961-2017?"**
	Technical Session • CCC, Richardson Ballroom B • TB-48-3	Tutorial Session • Westin Hotel, Harris • TB-49-10	Lecture Session • CCC, 213AB • TB-51-3
	Session Chair: **Alessandro Corsini**, 'Sapienza' University of Rome	Session Chair: **Juan Jauregui**, University of Queretaro	Session Chair: **Keith Boyer,** Practical Aeronautics
10:15	GT2017-63077 **Heat Transfer in the Core Compressor Under Ice Crystal Icing Conditions** ***Alexander Bucknell, Matthew McGilvray,*** *University of Oxford;* ***David Gillespie,*** *University of Oxford;* ***Geoff Jones, Alasdair Reed,*** *Rolls-Royce Plc;* ***David R Buttsworth,*** *University of Southern Queensland*	GT2017-65467 **Wind Turbine Condition Monitoring** ***Juan Jauregui,*** *University of Queretaro*	GT2017-65361 **Where Have all the Years Gone, 1961-2017?** ***Michael Dunn,*** *Ohio State University*
10:45	GT2017-63202 **Modeling of a Turbofan Engine With Ice Crystal Ingestion in the NASA Propulsion System Laboratory** ***Joseph Veres, Scott Jones, Samaun Nili,*** *NASA Glenn Research Center;* ***Philip C. E. Jorgenson,*** *NASA*	TUTORIAL	LECTURE
11:15	GT2017-65128 **A Dynamic Model for the Evaluation of Aircraft Engine Icing Detection and Control-Based Mitigation Strategies** ***Donald L. Simon, Scott Jones,*** *NASA Glenn Research Center;* ***Aidan Rinehart,*** *NASA Glenn / Vantage Partners*		

TUESDAY, JUNE 27 — 10:15 - 11:45 AM

	ELECTRIC POWER	OIL & GAS APPLICATIONS	CYCLE INNOVATIONS
	Combined Cycle Gas Turbine Operational Risk Management: A Utility Industry Perspective	**Dry Gas Seal Systems and Failure Prevention**	**Introduction to Dynamic Analysis and Modelling of Plant Systems**
	Tutorial Session • Westin Hotel, Providence I • TB-8-6	Tutorial Session • CCC, 216AB • TB-27-11	Tutorial Session • Westin Hotel, Trade • TB-6--15
	Session Chair: **John Scheibel,** Electric Power Research Institute Session Co-Chair: **David Noble**, Electric Power Research Institute	Session Chair: **Meera Day**, Southwest Research Institute Session Co-Chair: **Timothy Allison**, Southwest Research Institute	Session Chair: **Alberto Traverso**, Univ Of Genova Session Co-Chair: **S. Can Gülen**, Bechtel Infrastructure & Power Inc.; **Kihyung Kim**, GE Energy; **Alessandro Ramaglia**, Ansaldo Energia
10:15	GT2017-65545 **Compressor Life Monitoring & Inspection** ***Matt Ballew**, Luminant Power*	**T U T O R I A L**	**T U T O R I A L**
10:45	GT2017-65546 *HRSG* **Pressure Wave Cleaning Assessment** ***Jacob Pursley**, Southern Power*		
11:15	GT2017-65547 **Rotor Life Management** ***Mark Lozier**, Exelon Generation* GT2017-65548 **Air Filter Life Analysis** ***Josh Barron**, Power Generation, Southern Company Services*		

TUESDAY, JUNE 27 — 2:30 - 5:30 PM

	AIRCRAFT ENGINE	HEAT TRANSFER: TUTORIALS	HEAT TRANSFER: EXPERIMENTAL INTERNAL COOLING
	Fundamentals of Engine/Aircraft Instrumentation	**Physics-Based Introduction to Vortex, Windage, Rothalpy, Mach Number, Choking, and Misuse of the Bernoulli Equation**	**Impingement Cooling I**
	Panel Session • CCC, 213CD • TC-1-11	**Tutorial Session • CCC, 207D • TC-14-4**	**Technical Session • CCC, 211AB • TC-16-1**
	Session Chair: **David Kidman,** U.S. Air Force	Session Chair: **Andrew Nix**, West Virginia University	Session Chair: **Hyung-Hee C**ho, Yonsei University Session Co-Chair: **Salam Azad**, Siemens
2:30	GT2017-65568 **Sensor Selection and Other Considerations** ***Steve Carter**, Kulite Semiconductor Products, Inc.*	GT2017-65270 **Physics-Based Introduction to Vortex, Windage, Rothalpy, Mach Number, Choking, and Misuse of the Bernoulli Equation** ***Dr. Bijay K. Sultanian**, Takaniki Communications, LLC*	GT2017-63053 **Experimental Study of Impingement Heat Transfer Characteristics in a Convergent Channel With Pin Fin** ***Yang Xu, Weijiang Xu, Huiren Zhu, Cunliang Liu,** Northwestern Polytechnical University; **Haiying Lu**, Shenyang Aircraft Engine Design Institute*
3:00	GT2017-65569 **Data Filtering and Sample Rate During Data Acquisition** ***David Kidman**, U.S. Air Force*	**T U T O R I A L**	GT2017-63140 **Experimental Investigation of Dynamically Forced Impingement Cooling** ***Arne Berthold, Frank Haucke**, Technische Universität Berlin*
3:30	GT2017-65570 **Miscellaneous Instrumentation Topics** ***David Beale**, USAF Ground Test - Quantech*		GT2017-63219 **Effect of Holes Shape on Cooling Performance of Trailing Edge of Gas Turbine Blade With Perforated Blockages With Inclined Holes** ***Yi Ye, Xueying Li, Jing Ren, Hongde Jiang,** Tsinghua University*
4:00	GT2017-65571 **Advanced Measurement Technologies** ***Michel Mansour**, Limmat Scientific AG*		GT2017-63809 **Turbine Blade Leading Edge Cooling With One Row of Normal or Tangential Impinging Jets** ***Nian Wang, Andrew F Chen, Mingjie Zhang, Je-Chin Han**, Texas A&M University*
4:30			GT2017-63994 **Flow and Heat Transfer Analysis in a Single Row Narrow Impingement Channel: Comparison of PIV, LES, and RANS to Identify RANS Limitations** ***Jahed Hossain, Erik Fernandez, Christian Garrett, Jayanta Kapat**, University of Central Florida*
5:00			GT2017-63044 **Rib Turbulated Pin Fin Array for Trailing Edge Cooling** ***Marcel Otto**, CATER University of Central Florida; **Erik Fernandez**, **Jayanta Kapat**, University of Central Florida; **Shantanu Mhetras**, Siemens; **Mark Ricklick**, Embry Riddle Aeronautical University*

TUESDAY, JUNE 27 — 2:30 - 5:30 PM

	HEAT TRANSFER: SPECIAL SESSIONS	HEAT TRANSFER: EXPERIMENTAL FILM COOLING	MANUFACTURING MATERIALS & METALLURGY
	Fred Soechting Memorial Session	**Hole Geometry Effects II**	**Advances in Turbine Coatings**
	Lecture Session • CCC, 213AB • TC-18-1	**Technical Session • CCC, 212AB • TC-19-6**	**Panel • CCC, Richardson Ballroom B • TC-24-9**
	Session Chair: **Karen Thole,** Pennsylvania State Univ Session Co-Chair: **Mark Zelesky**, United Technologies	Session Chair: **Jae Su Kwak**, Korea Aerospace University Session Co-Chair: **Dong-Ho Rhee**, Korea Aerospace Research Institute	Session Chair: **Purusottam Sahoo**, ASM, LLC Session Co-Chair: **Lauren Day**, Liburdi Turbine Services
2:30	GT2017-65415 **Fred Soecthing Memorial Session Part A** ***Om Sharma,*** *United Technologies Research Center;* ***Joel Wagner****, Pratt & Whitney Aircraft*	GT2017-63452 **Experimental Investigation of Dust-Pan Shaped Hole Film Cooling Characteristics on Pressure Side of a Turbine Blade in a Linear Transonic Cascade** ***Zhong-yi Fu, Huiren Zhu, Cong Liu, Zheng Li,*** *Northwestern Polytechnical University*	GT2017-65448 **Low K Thermal Barrier Coatings using Nanostructured YSZ powders** ***Alan Burgess,*** *SprayWerx Technologies Inc*
3:00	GT2017-65416 **Fred Soecthing Memorial Session Part B** ***David Bogard****, Univ Of Texas At Austin;* ***James Downs****, Florida Turbine Technologies Inc;* ***Thomas A. Auxier***	GT2017-63679 **Pitfalls of Fan-Shaped Hole Design: Insights From Experimental Measurement of In-Hole Flow Through MRV** ***Emin Issakhanian, Loyol****a Marymount University;* ***Christopher J. Elkins, John K. Eaton****, Stanford University*	GT2017-65454 **Honeywell's Approach to Low Thermal Conductivity TBC Coatings** ***Vladimir Tolpygo****, Honeywell Aerospace Materials and Process Engineering*
3:30	GT2017-65417 **Fred Soecthing Memorial Session Part C** ***Michael Dunn****, Ohio State University;* ***Atul Kohli****, Pratt & Whitney*	GT2017-63692 **The Effect of Area Ratio Change via Increased Hole Length for Shaped Film Cooling Holes With Constant Expansion Angles** ***Shane Haydt, Stephen Lynch****, Pennsylvania State University;* ***Scott Lewis****, Pratt & Whitney*	GT2017-65455 **GE's Approach to Low K TBC Coatings** ***Surinder Pabla****, GE Energy*
4:00	GT2017-65418 **Fred Soecthing Memorial Session Part D** ***AJ Fredmonski****, Ansaldo Power Systems Mfg.*	GT2017-64479 **Experimental and Numerical Investigation of Sweeping Jet Film Cooling** ***Mohammad Arif Hossain, Robin Prenter, Ryan Lundgreen, Ali Ameri, James Gregory, Jeffrey Bons****, Ohio State University*	GT2017-65456 **Low K Thermal Barrier Coatings** ***Eric Jordan****, University of Connecticut*
4:30		GT2017-65032 **Enhancement of Film Effectiveness of Cooling Holes With Fan-Shaped Exit Geometry by the Application of Double Flow-Control Devices: Optimization in Consideration of Device Offset** ***Ken-ichi Funazaki****, Iwate University*	
5:00		GT2017-63743 **Effect of Density Ratio on Film-Cooling Effectiveness Distribution and its Uniformity for Several Hole Geometries on a Flat Plate** ***Jiaxu Yao, Jin Xu, Ke Zhang, Jiang Lei****, Xi'an Jiaotong University;* ***Lesley Wright****, Baylor University*	

TUESDAY, JUNE 27 — 2:30 - 5:30 PM

	MICROTURBINES, TURBOCHARGERS & SMALL TURBOMACHINES	STEAM TURBINES	STRUCTURES & DYNAMICS: FATIGUE, FRACTURE & LIFE PREDICTION
	Turbochargers - Heat Transfer & Systems	**Sealing and Leakage Interaction Flows**	**Structural Modelling and Life Prediction**
	Technical Session • Westin Hotel, Harris • TC-26-5	**Tutorial Session • CCC, 208B • TC-29-3**	**Technical Session • CCC, 203A • TC-31-4**
	Session Chair: **Harold Sun**, FiTech Session Co-Chair: **Bobby Sirakov**, Honeywell Turbo Technologies	Session Chair: **Simon Hogg**, School of Engineering Session Co-Chair: **Grant Ingram**, Durham University	Session Chair: **Dipankar Dua**, Siemens Energy Inc. Session Co-Chair: **Richard W. Neu**, Georgia Tech; **Andreas Fischersworring-Bunk**, MTU Aero Engines AG
2:30	GT2017-63462 **Methodology to Evaluate the Characteristics of a Twin-Scroll Turbocharger With Various Approaches for the Computation of Thermodynamic Properties** ***Holger Mai,*** *Kratzer Automation AG;* ***André Kaufmann****, Ravensburg-Weingarten University of Applied Sciences*	GT2017-65558 **Leakage Losses and Labyrinth Sealing** ***Jayanta Kapat,*** *University of Central Florida*	GT2017-63422 **Innovative Material Testing Based on Small-Scale Specimens and Application for Turbomachinery Components** ***Mario Raddatz****,* ***Uwe Gampe****, Dresden University;* ***Dirk Hollaender****, TU Dresden*
3:00	GT2017-64283 **Correcting Turbocharger Performance Measurements for Heat Transfer and Friction** ***Mario Schinnerl, Jan Ehrhard, Mathias Bogne****r, Continental Automotive Gmbh;* ***Joerg Seume****, Gottfried Wilhelm Leibniz Universitaet*	GT2017-65562 **Beyond Labyrinth Seals**. ***Peter Crudgington****, Cross Manufacturing Company (1938) Ltd*	GT2017-63229 **A New Temperature Based Method for Determination of Lifetime Consumption of Turbo-Machinery Components During Operation** ***Meisam Sistaninia, Diego Ugel, Sven Olmes,*** *Ansaldo Energia Switzerland*
3:30	GT2017-64743 **A One-Dimensional Gas Dynamics Code for Turbocharger Turbine Pulsating Flow Performance Modelling** ***Adam Feneley, Apostolos Pesiridis, Brunel*** *University London;* ***Hua Chen****, National Laboratory of Engine Turbocharging Technology North China Eng Rsrch Inst*	GT2017-65573 **Turbine Sealing Service Experience** ***Ivan McBean****, General Electric*	GT2017-64414 **A Processing Method for Combined Fatigue Accelerated Test Data** ***Songwang Zheng, Cao Chen, Lei Han, Xiaoyong Zhang, Xiaojun Yan****, Beihang University*
4:00	GT2017-63195 **Validation of a Heat Transfer Prediction Approach Inside Turbochargers and its Application on Turbocharged Engine Performance Analysis** ***Uwe Tomm****,* ***Sascha Weiske****,* ***Ahmet Coksen****,* ***Youness Rafaa****,* ***Stefan Muenz, BorgWarner*** *Turbo Systems Engineering GmbH*	GT2017-65561 **Innovative Future Turbomachinery Seal Designs** ***Simon Hogg****, School of Engineering*	GT2017-64435 **A New Modified Contrast Method for Life Prediction in Combined Cycle Fatigue Test** ***Lei Han, Cao Chen, Xiaoyong Zhang, Xiaojun Yan,*** *Beihang University*
4:30			GT2017-64791 **Multiscale Investigation of Strain Energy Density for Fatigue Life Prediction** ***Casey Holycr****oss, Air Force Research Laboratory;* ***Mo-How Shen****, Ohio State University;* ***Onome Scott-Emuakpor****, AFRL/RQTI;* ***Tommy George****, AFRL*
5:00			

TUESDAY, JUNE 27 — 2:30 - 5:30 PM

	STRUCTURES & DYNAMICS: ROTORDYNAMICS	COAL, BIOMASS & ALTERNATIVE FUELS	STRUCTURES & DYNAMICS: AERODYNAMIC EXCITATION & DAMPING
	Rotordynamics-II	**Alternative Liquid Fuels**	**Aerodynamic Damping Methods and Tools Validation I**
	Technical Session • CCC, 207A • TC-33-2	**Technical Session • CCC, 106 • TC-3-4**	**Technical Session • CCC, 203B • TC-36-3**
	Session Chair: **Giuseppe Vannini**, GE Oil & Gas Session Co-Chair: **Filippo Cangioli**, Politecnico di Milano	Session Chair: **Marina Braun-Unkhoff,** DLR Session Co-Chair: **Subith Vasu**, University of Central Florida	Session Chair: **Virginie Chenaux,** German Aerospace Center Session Co-Chair: **Harald Schoenenborn**, MTU Aero Engines; Anton Streit, Siemens AG
2:30	GT2017-63035 **Prediction of Structural Supports Influence on Rotating Machinery Dynamics** ***Leonid Moroz, Leonid Romanenko, Roman Kochurov, Evgen Kashtanov**, SoftInWay Inc.*	GT2017-63198 **Influence of Nozzle Design Upon the Primary Jet Breakup of High-Viscosity Fuels for Entrained Flow Gasification** ***Thomas Müller, Alexa Dullenkopf, Peter Habisreuther,** Karlsruhe Institute of Technology, **Engler**-Bunte-Institute; **Alexander Saenger, Tobias Jakobs, Thomas Kolb**, Institute of Technical Chemistry - Karlsruhe Institute of Technology; **Nikolaos Zarzalis**, Karlsruhe Inst. of Tech., Division of Comb. Tech.*	GT2017-64643 **Comparison of the Influence Coefficient Method and Travelling Wave Mode Approach for the Calculation of Aerodynamic Damping of Radial Compressors and Axial Turbines** ***Klemens Vogel, Aravin Dass Naidu, Magnus Fischer**, ABB Turbo Systems Ltd.*
3:00	GT2017-63142 **Investigation of the American Petroleum Institute's Support Stiffness Ratio Specification** ***David J. Griffin, Roger L. Fittro, Robert D. Rockwell, Christopher P. Goyne,** University of Virginia*	GT2017-65199 **Computational Analysis of Two-Phase Mixing Inside a Twin-Fluid, Fuel-Flexible Atomizer** ***Nathan Vardaman, Ajay Agrawal,** University of Alabama*	GT2017-63376 **Interaction of Concurrent Forced Response and Flutter Phenomena in a Compressor Stage** ***Zhiping Mao**, **Robert Kielb**, Duke University*
3:30	GT2017-63926 **Dynamic Analysis of Flexible Rotor Systems Subjected to Time-Varying Base Excitations** ***Liqiang Chen, Jianjun Wang,** Beihang University; **Qinkai Han, Fulei Chu**, Tsinghua University*	GT2017-64420 **A Numerical Study of Ethanol-Water Droplet Evaporation** ***Giandomenico Lupo**, **Christophe Duwig**, KTH - Royal Institute of Technology*	GT2017-64621 **Design and Analysis of an Intentional Mistuning Experiment Reducing Flutter Susceptibility and Minimizing Forced Response of a Jet Engine Fan** ***Felix Figaschewsky, Bernd Beirow, Arnold Kühhorn,** Brandenburg University of Technology Cottbus-Senftenberg; **Jens Nipkau, Thomas Giersch, Bronwyn Power**, Rolls-Royce Corporation*
4:00	GT2017-64353 **Investigation on the Excitation Characteristics and Dynamic Response of the Multi-Support Flexible Rotor With Misalignment** ***Sen Xiao, Hong Jie**, Beihang University; **FaYong Wu**, AECC Shenyang Engine Design and Research Institute; **Yanhong Ma**, Beihang University; Collaborative Innovation Center of Advanced Aero-Engine*	GT2017-65191 **Twin-Fluid Atomized Spray Combustion of Straight Vegetable Oil at Elevated Pressures** ***Yonas Niguse**, University of Louisiana at Lafayette; **Ajay Agrawal**, University of Alabama*	GT2017-64167 **On the Importance of Engine-Representative Models for Fan Flutter Predictions** ***Sina Stapelfeldt, Mehdi Vahdati,** Imperial College London*
4:30		GT2017-63364 **Thermal Stability Measurement of Alternative Jet Fuels Using Ellipsometry** ***Leigh Nash**, **Subith Vasu**, University of Central Florida*	GT2017-64211 **Unsteady Pressure Measurement on Oscillating Blade in Transonic Flow Using Fast-Response Pressure-Sensitive Paint** ***Toshinori Watanabe**, **Toshihiko Azuma**, **Seiji Uzawa**, **Takehiro Himeno**, **Chihiro Inoue**, The University of Tokyo*
5:00		GT2017-64551 **An Investigation of Combustion Properties of Butanol and its Potential for Power Generation** ***Marina Braun-Unkhoff, Torsten Methling, Sandra Richter, Trupti Kathrotia, Clemens Naumann, Uwe Riedel,** German Aerospace Center (DLR), Institute of Combustion Technology*	

TUESDAY, JUNE 27 — 2:30 - 5:30 PM

	SUPERCRITICAL CO2 POWER CYCLES	TURBOMACHINERY: AXIAL FLOW FAN & COMPRESSOR AERODYNAMICS	TURBOMACHINERY: DESIGN METHODS & CFD MODELING FOR TURBOMACHINERY
	Supercritical CO2 Power Cycle Path Forward	**Fans & Transonic Flows**	**Compressor Design Methods and Applications (2)**
	Panel • CCC, Richardson Ballroom C • TC-38-11	**Technical Session • CCC, 217AB • TC-39-11**	**Technical • CCC, Crown Ballroom • TC-41-15**
	Session Chair: **Richard Dennis,** DoE National Energy Technology Lab Session Co-Chair: **Eric Clementoni**, Naval Nuclear Laboratory	Session Chair: **S.D. Grimshaw**, Whittle Laboratory, University of Cambridge	Session Chair: **Anthony Gannon**, Naval Postgraduate School Session Co-Chair: **Mahmoud Mansour**, Honeywell Aerospace
2:30	GT2017-65411 **Large Scale SCO2 Power Cycles for CSP, FE & NE** ***Jeffrey Phillips,*** *Electric Power Research Institute*	GT2017-64528 **Turbomachinery Active Subspace Performance Maps** ***Pranay Seshadri***, ***Geoffrey Parks***, *University of Cambridge;* ***Shahrokh Shahpar, Mike Adams***, *Rolls-Royce Plc;* ***Paul G. Constantine,*** *Colorado School of Mines*	GT2017-64466 **Multidisciplinary Design of a Three Stage High Speed Booster** ***Marcus Lejon, Tomas Grönstedt,*** *Chalmers University;* ***Magnus Genrup***, *Lund University* ***Nenad Glodic***, ***Paul Petrie-Repar,*** *Royal Institute of Technology, KTH;* ***Alexander Mann***, *Swerea IVF*
3:00	GT2017-65505 **Clean Power Generation for Sustainable Future with Super Critical CO2 Cycle** ***Sungho Chang***, *KEPCO Research Institute*	GT2017-64585 **Development of Direct-Driven and Geared Fan Stages With Reduced Tip Speeds** ***Sergey Pankov***, ***Victor Mileshin, Igor Orekhov***, ***Victor Fateev,*** *Central Institute of Aviation Motors*	GT2017-64660 **An Approach for Efficient CFD Simulations of an Ejector Air Injection System for Active Aerodynamic Compressor Stabilization** ***Sebastian Brehm, Felix Kern, Jonas Raub, Reinhard Niehuis***, *University of the Federal Armed Forces Munich*
3:30	GT2017-65408 **Commercialization of sCO2 power cycles** *Douglas Hofer, GE Global Research* GT2017-65410 **Application Considerations for Integrally Geared Supercritical CO2 Power Cycles** ***Karl Wygant***, *Hanwha Techwin*	*GT2017*-63031 **Numerical Efforts of Aerodynamic Re-Design in a Single-Stage Transonic Axial Compressor: Part 1: Stator Design** ***Justin Jongsik Oh***, *Danfoss Turbocor*	GT2017-64708 **Effect of RANS Method on Stall Inception Eigenvalue Approach** ***Zhe Xie, Yangwei Liu, Xiaohua Liu, Lipeng Lu, Xiaofeng Sun***, *Beijing University of Aeronautics and Astronautics*
4:00	GT2017-65412 **Novel Oxy-Combustion Power Cycle** ***Lalit Chordia,*** *Thar Energy, LLC* GT2017-65506 **Oxy Fuel Combustion Turbine for SCO2 Power Cycles** ***Takashi Sasaki***, *TOSHIBA Corporation*	GT2017-63536 **Effects of a Circumferential Feed-Back Channel on Aerodynamic Performance of a Single-Stage Transonic Axial Compressor** ***Cong Truong Dinh, Sang-Bum Ma, Kwang-yong Kim***, *Inha Univ*	GT2017-65194 **Aerodynamic Inverse Blade Design of Axial Compressors in Three-Dimensional Flow Using a Commercial CFD Program** ***Araz Arbabi, Wahid Ghaly*** *Concordia University;* ***Adam Medd***, *Honeywell*
4:30	GT2017-65409 **Commercial WHR Applications** *Timothy Held, Echogen Power Systems (DE), Inc* GT2017-65413 **50 MWth Direct SCO2 Power Cycle (Allam Cycle)** ***Walker Dimming***, *8 Rivers Capital, LLC, / NET Power LLC*	GT2017-64144 **Aerodynamic Design and Analysis of a Two-Stage High-Load Low-reaction Transonic Aspirated Counter-Rotating Compressor** ***Shijun Sun, Songtao Wang, Shaowen Chen,*** *Harbin Institute of Technology*	
5:00	GT2017-65407 **The Plan to Design, Build & Operate the STEP 10 MWe sCO2 Pilot Plant** ***Michael McDowell***, *Gas Technology Institute*	GT2017-64202 **Numerical Research of Aerodynamic Sweep on Leading Edge in the Ram-Rotor** ***Jian Guan, Ji-ang Han, Jingjun Zhong, Chenguang Yuan,*** *Dalian Maritime University*	

TUESDAY, JUNE 27 — 2:30 - 5:30 PM

	COMBUSTION, FUELS & EMISSIONS	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: DUCTS & COMPONENT INTERACTIONS
	Combustion Modeling II	**Novel Combustor Concepts II**	**Gas Turbine Engine Component and Flow Interactions**
	Technical Session • CCC, 219A • TC-4-12	**Technical Session • CCC, 216AB • TC-4-2**	**Technical Session • CCC, 208A • TC-42-2**
	Session Chair: **Alejandro Briones**, University of Dayton Research Institute Session Co-Chair: **Scott Martin**, Embry-Riddle Aeronautical University	Session Chair: **Jeffery Lovett**, Pratt & Whitney Session Co-Chair: **Benjamin Emerson**, Georgia Institute of Technology	Session Chair: **Mauro Carnevale,** Imperial College of London Session Co-Chair: **Davide Lengani**, Università di Genova
2:30	GT2017-63357 **LES Combustion Model With Stretch and Heat Loss Effects for Prediction of Premix Flame Characteristics and Dynamics** ***Luis Tay-Wo-Chong, Alessandro Scarpato,*** *ANSALDO Energia Switzerland AG;* ***Wolfgang Polifke****, TU München*	GT2017-63128 **NOx-Formation and Co-Burnout in Water Injected, Premixed Natural Gas Flames at Typical Gas Turbine Combustor Residence Times** ***Stephan Lellek,*** *TUM - Lehrstuhl für Thermodynamik;* ***Thomas Sattelmayer****, Technical Univ Munich*	GT2017-63184 **The Effect of Axial Flow Velocity on Annular Gap Windage Power Loss** ***Erik Swanson, P. Shawn O'Meara****, Xdot Engineering and Analysis;* ***Hsin-Hua Tsuei,*** *Tsuei Engineering LLC*
3:00	GT2017-64569 **Modelling Strategies for Large-Eddy Simulation of Lean Burn Spray Flames** ***Stefano Puggelli, Davide Bertini, Antonio Andreini.*** *Department of Industrial Engineering, University of Florence;* ***Lorenzo Mazzei****, University of Florence*	GT2017-63435 **The Design and Characteristics of a Novel Injector: A Lobed Swirl Injector** ***Gang Li****,* ***Gang Xu, Yong Mu, Cunxi Liu,*** *Institute of Engineering Thermophysics, Chinese Academy of Sciences;* ***Yujun Zhao,*** *School of Mechanism, Electronic and Control Engineering, Beijing Jiaotong University;* ***Xi Jiang****, Queen Mary University of London;* ***Qi Chen****, Beijing Jiaotong University*	GT2017-63351 **Influence of Backward and Forward Facing Steps on the Flow Through a Turning Mid Turbine Frame** ***Sabine Bauinger****,* ***Emil Göttlich, Franz Heitmeir,*** *Graz University of Technology;* ***Franz Malzacher****, Dachauer Straße 665*
3:30	GT2017-65256 **Large Eddy Simulations of a Pressurized, Partially-Premixed Swirling Flame With Finite-Rate Chemistry** ***Sandeep Jella, Gilles Bourque****, Siemens Canada;* ***Jeffrey Bergthorson****, McGill University;* ***Ghenadie Bulat, Jim Rogerson, Suresh Sadasivuni,*** *Siemens Industrial Turbomachinery Ltd;* ***Pierre Gauthier****, Siemens Energy Canada*	GT2017-63976 **Development of Porous Injection Technology to Reduce Emissions for Dry Low NOx Combustors: Micromixer and Swirl Injectors** ***Umesh Bhayaraju****,* ***Mahmoud Hamza, San-Mou Jeng,*** *University of Cincinnati*	GT2017-63962 **Preliminary Investigation Into the Effects of a Compressor Rim Purge Flow on OGV/Pre-Diffuser and Combustion System Aerodynamics** ***A Duncan Walker****,* ***Bharat Koli****, Loughborough University;* ***Peter A Beecroft,*** *Rolls-Royce plc*
4:00	GT2017-64744 **Investigation of an Industrial Gas Turbine Combustor and Pollutant Formation Using LES** ***George Mallouppas****, Cd-adapco, a Siemens Business;* ***Graham Goldin, Yongzhe Zhang, Piyush Thakre, Niveditha Krishnamoorthy, Rajesh Rawat****, CD-adapco;* ***David Gosman****, Imperial College London;* ***Jim Rogerson****,* ***Ghenadie Bulat****, Siemens Industrial Turbomachinery Ltd.*	GT2017-63981 **Characterization of a Novel Porous Injector for Multi-Lean Direct Injection (M-LDI) Combustor** ***Jianing Li, Umesh Bhayaraju, San-Mou Jeng,*** *University of Cincinnati*	GT2017-64756 **Complex Flow Generation and Development in a Full-Scale Turbofan Inlet** ***Tamara Guimarães, K. Todd Lowe, Walter Obrien,*** *Virginia Tech.*
4:30	GT2017-64835 **Uncertainty Quantification in Large Eddy Simulations of a Rich-Dome Aviation Gas Turbine** ***Matthieu Masquelet, Jin Yan,*** *GE Global Research;* ***Anne Dord, Gregory Laskowski,*** *GE Aviation;* ***Lee Shunn,*** *Cascade Technologies, Inc;* ***Lluis Jofre****,* ***Gianluca Iaccarino****, Stanford University*	GT2017-63037 **Short Helical Combustor: Flow Control in a Combustion System With Angular Air Supply** ***Behdad Ariatabar****, Karlsruhe Institute of Technology (KIT),* ***Rainer Koch,*** *Institut of Turbomachinery (ITS) - Karlsruhe Institut of Technology (KIT)* ***Hans-Jörg Bauer****, Institut of Thermal Turbomachinery (ITS) - Karlsruhe Institut of Technology (KIT)*	GT2017-64779 **Experimental Quantification of Fan Rotor Effects on Inlet Swirl Using Swirl Distortion Descriptors** ***Dustin J. Frohnapfel, Walter Obrien, K. Todd Lowe,*** *Virginia Tech Mechanical Engineering*
5:00	GT2017-64145 **Large Eddy Simulation of Light-Round in an Annular Combustor With Liquid Spray Injection and Comparison With Experiments** ***Thea Lancien****, EM2C Laboratory, CNRS,* ***CentraleSupelec; Kevin Prieur,*** *Safran Tech, E&P;* ***Daniel Durox,*** *Laboratoire EM2C, CNRS, CentraleSupélec;* ***Sébastien Candel****, Laboratoire EM2C, CNRS and Ecole Centrale Paris;* ***Ronan Vicquelin****, CNRS-EM2C, ECP*	GT2017-64485 **Numerical Study on the Reduction of NOx Emissions From Pulse Detonation Combustion** ***Neda Djordjevic, Niclas Hanraths, Joshua Gray, P. Berndt, Jonas Moeck,*** *Technische Universität Berlin*	

TUESDAY, JUNE 27 — 2:30 - 5:30 PM

	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: RADIAL TURBOMACHINERY AERODYNAMICS	WIND ENERGY
	Combustion Dynamics: Instability Analysis III	**Radial and Mixed Flow Turbines**	**Wind Energy Wind Turbine Blade Aerodynamics and Optimization**
	Technical Session • CCC, 219B • TC-4-26	**Technical Session • CCC, 217CD • TC-44-1**	**Technical Session • CCC, 105 • TC-49-8**
	Session Chair: **Benjamin Emerson**, Georgia Institute of Technology Session Co-Chair: **David**, **Noble**; Electric Power Research Institute	Session Chair: **Bent A. Phillipsen**, ABB Turbo Systems Session Co-Chair: **Jason Walkingshaw**, IHI Charging Systems	Session Chair: **George Pechlivanoglou**, TU Berlin Session Co-Chair: **Aya Diab**, Faculty of Engineering - Ain Shams University
2:30	GT2017-63343 **Strong Azimuthal Combustion Instabilities in a Spray Annular Chamber With Intermittent Partial Blow-Off** ***Kevin Prieur**, Laboratoire EM2C, CNRS, CentraleSupélec / Safran Tech; **Daniel Durox**, **Thierry Schuller**, **Sébastien Candel**, Laboratoire EM2C, CNRS, CentraleSupélec*	GT2017-63975 **Multi-Injection Turbine Housing: A Novel Concept for Tip-Leakage Improvement in Radial Turbines** ***Hao Liu**, **Alessandro Romagnoli**, Nanyang Technological University; **Ricardo Martinez-Botas**, Imperial College London; **Srithar Rajoo**, **Muhamad Hasbullah Padzillah**, Universiti Teknologi Malaysia*	GT2017-63643 **Experimental Analysis of a NACA 0021 Airfoil Section Through 180-Degree Angle of Attack at Low Reynolds Numbers for Use in Wind Turbine Analysis** ***David Holst**, **George Pechlivanoglou**, TU Berlin; **Benjamin Church**, H.F.I. TU Berlin, **Ergin Tüzüner**, **Christian Navid Nayeri**, **C. Oliver Paschereit**, H.F.I. TU Berlin; **Joseph Saverin**, Technische Universitat Berlin*
3:00	GT2017-64102 **Experimental Study of Thermo-Acoustic Instability Triggering in a Staged Liquid Fuel Combustor Using High-Speed OH-PLIF** ***Antoine Renaud**, JAXA and Keio University; **Shigeru Tachibana**, Japan Aerospace Exploration Agency; **Shuta Arase**, Takeshi Yokomori, Keio University*	GT2017-63983 **Development and Experimental Validation of a Low Order Turbine Model Under Highly Pulsating Flow** ***Karl Georg Hohenberg**, **Peter Newton**, **Ricardo Martinez-Botas**, Imperial College London; **Martin Halamek**, **Kotaro Maeda**, **Julien Bouilly**, Toyota Motor Europe*	GT2017-63653 **Vortex Shedding and Frequency Lock in on Stand Still Wind Turbines: A Baseline Experiment** ***Matthew Lennie**, **David Holst**, **George Pechlivanoglou**, TU Berlin; **Alireza Selahi Moghaddam**, **Christian Navid Nayeri**, **C. Oliver Paschereit**, H.F.I TU Berlin*
3:30	GT2017-64282 **Modeling of Acoustic Damping of Perforations on the Combustion Instability of Annular Aeroengine Combustors** ***Wenjie Tao**, **Man Zhang**, AECC Commerical Aircraft Engine CO., LTD; **Lei LI**, Key Laboratory for Power Machinery and Engineering of MOE, Shanghai Jao Tong University*	GT2017-63641 **Exhaust Volume Dependency of Turbocharger Turbine Design for a Heavy Duty Otto Cycle Engine** ***Nicholas Anton**, **Carl Fredriksson**, **Per-Inge Larsson**, Scania CV AB; **Magnus Genrup**, Lund University; **Anders Erlandsson Christiansen**, Royal Institute of Techonolgy*	GT2017-63691 **Leading-Edge Slots for Improving the Aerodynamic Performance of Cambered Airfoils in Horizontal Axis Wind Turbine Blades** ***Ryoichi Amano**, **Saman Beyhaghi**, University of Wisconsin-Milwaukee*
4:00	GT2017-65190 **Combustion Instabilities in a Lean Premixed Pre-Vaporized Combustor at High-Pressure High-Temperature** ***Xiao Han**, **Xin Hui**, **Chi Zhang**, **Yuzhen Lin**, Beihang University; **He Pei**, AVIC Commercial Aircraft Engine Co.,Ltd; **Chih Jen Sung**, University of Connecticut*	GT2017-63668 **Analysis of a Tilted Turbine Housing Volute Design Under Pulsating Inlet Conditions** ***S. P. Lee**, **Martyn Jupp**, **J.M. Allport**, University of Huddersfield; **A.K. Nickson**, BorgWarner Turbo Systems*	GT2017-64125 **Experimental Investigation on the Tip Vortex of a Wind Turbine With and Without a Slotted Tip** ***Pengyin Liu**, **Jinge Chen**, **Xin Shen**, **Xiaocheng Zhu**, **Zhaohui Du**, Shanghai Jiao Tong University*
4:30	GT2017-63688 **The Effect of Fuel Staging on the Structure and Instability Characteristics of Swirl-Stabilized Flames in a Lean Premixed Multi-Nozzle Can Combustor** ***Janith Samarasinghe**, **Wyatt Culler**, **Bryan Quay**, **Domenic Santavicca**, **Jacqueline O'Connor**, Pennsylvania State University*	GT2017-63967 **Investigation on the Shock Control Using Grooved Surface in a Linear Turbine Nozzle** ***Xinguo Lei**, **Mingxu Qi**, Beijing Institute of Technology; **Harold Sun**, FiTech; **Leon Hu**, Ford Motor Company*	GT2017-64475 **Parametric Investigation of Gurney Flaps for the Use on Wind Turbine Blades** ***Joerg Alber**, Technische Universitaet Berlin; **George Pechlivanoglou**, TU Berlin; **Jochen Twele**, University of Applied Sciences (HTW Berlin); **Guido Weinzierl**, SMART BLADE; C. **Oliver Paschereit**, H.F.I TU Berlin*
5:00	GT2017-65112 **Effect of Azimuthal Velocity Fluctuation on Hollow Cone Spray** ***ARAVIND I B**, National Center for Combustion Research & Development, and Indian Institute of Technology Madras* ***Satya Chakravarthy**, IIT Madras*	GT2017-64419 **Design and Analysis of a Novel Split Sliding Variable Nozzle for Turbocharger Turbine** ***Leon Hu**, **James Yi**, **Eric Curtis**, Ford Motor Company; **Harold Sun**, FiTech; **Jizhong Zhang**, China North Engine Research Institute*	GT2017-65153 **Novel Curvature-Based Airfoil Parameterization for Wind Turbine Application and Optimization** ***Karthik Balasubramanian**, **Mark Turner**, **Kiran Siddappaji**, University of Cincinnati*

TUESDAY, JUNE 27 — 2:30 - 5:30 PM

	CONTROLS, DIAGNOSTICS & INSTRUMENTATION	CYCLE INNOVATIONS	ELECTRIC POWER
	Advances in Instrumentation 1	**Cycle and Turbomachinery Design for Propulsion & Power**	**Gas Turbine Developments**
	Technical • Westin Hotel, Providence III • TC-5-7	Technical • Westin Hotel, Trade • TC-6-8	Technical • Westin Hotel, Providence I • TC-8-1
	Session Chair: **Peter L Loftus**, Rolls-Royce plc	Session Chair: **Ioannis Goulos,** Cranfield University Session Co-Chair: **Vassilios Pachidis**, Cranfield University	Session Chair: **Leonardo Torbidoni**, Ansaldo Sviluppo Energia Session Co-Chair: **William Day**, Longview Energy Associates
2:30	GT2017-63626 **Heat Resistant Probe Combining Optic and Acoustic Sensors for Advanced Combustion Monitoring Including Detection of Flame Instabilities** ***Gerhard Kraft**, **Fabrice Giuliani**, **Lukas Pfefferkorn**, **Nina Paulitsch**, Combustion Bay One e. U.; **Lukas Andracher**, FH Joanneum GmbH*	GT2017-64950 **Economic Viability of On-Line Compressor Washing for Different Rated Capacity** ***Gali Musa**, **Uyioghosa Igie**, **Pericles Pilidis**, **Sule Gowon**, Cranfield University*	GT2017-63333 **Performance Improvement Program for Kawasaki Gas Turbine** ***Tomoki Taniguchi**, **Ryoji Tamai**, **Yoshihiko Muto**, **Satoshi Takami**, **Ryozo Tanaka**, **Masanori Ryu**, Kawasaki Heavy Industries, Ltd*
3:00	GT2017-63803 **Tip-Clearance Measurements on an Engine High Pressure Turbine Using an Eddy Current Sensor** ***Vikram Sridhar**, **Kam Chana**, Oxford University*	GT2017-64780 **Case for Exploring Compressor Water Injection for Airport Emission Reduction** ***David Alejandro Block Novelo**, **Uyioghosa Igie**, Cranfield University*	GT2017-64404 **GT36 Turbine Aero-Thermal Development and Validation** ***Shailendra Naik**, **Willy Hofmann**, Ansaldo Energia; **Joerg Krueckels**, **Marc Henze**, **Martin Schnieder**, Ansaldo Energia Switzerland AG*
3:30	GT2017-63807 **Development of a Combined Eddy Current and Pressure Sensor for Gas Turbine Blade Health Monitoring** ***Vikram Sridhar**, **Kam Chana**, Oxford University*	GT2017-63429 **Integrated Electrical Machine-Turbo Machinery** ***Mahir Alani**, **S. P. Lee**, **J.M.** Allport, University of Huddersfield*	GT2017-64893 **Development of the New Ansaldo Energia Gas Turbine Technology Generation** ***Uwe Ruedel**, **Vasileios Stefanis**, **Stefan Florjancic**, Ansaldo Energia Switzerland; **Alessandro Ramaglia**, Ansaldo Energia*
4:00	GT2017-64513 **Gas Thermometry Using Two-Thermocouple Radiation Correction** ***Christopher Martin**, Penn State; **Stephen LePera**, Consultant; **Uri Vandsburger**, Virginia Tech*	GT2017-63917 **Installed Performance Assessment of an Array of Distributed Propulsors Ingesting Boundary Layer Flow** ***Chana Goldberg**, **Devaiah Nalianda**, **Pericles Pilidis**, Cranfield University*	GT2017-65266 **Optimal Gas Turbine Power Plant Operation Regarding Fuel- and Maintenance Cost** ***Phillip Waniczek**, **Dirk Therkorn**, **Darrel S. Lilley**, General Electric (GE)*
4:30	GT2017-64669 **Development of High Frequency Virtual Thermocouples** ***James Braun**, **Shengqi Lu**, **Guillermo Paniagua**, Purdue University*	GT2017-65029 **Numerical Simulation of the Multistage Ultra-High Efficiency Gas Turbine Engine, UHEGT** ***Seyed Ghoreyshi**, **Meinhard T. Schobeiri**, Texas A & M University*	
5:00		GT2017-63905 **Design Parameters Prediction of New Type Gas Turbine Based on a Hybrid GRA-SVM Prediction Model** ***Tingting Wei**, **Dengji Zhou**, **Jinwei Chen**, **Huisheng Zhang**, **Shanghai Jiao Tong Univ**; **Yaoxin Cui**, Shanghai Turbine Company*	

TUESDAY, JUNE 27 — 2:30 - 5:30 PM

	INDUSTRIAL & COGENERATION	OIL & GAS APPLICATIONS	OIL & GAS APPLICATIONS
	Gas Turbine Applications Involving Heavy Fuel Oils and Crude Oils	**Compressor Fouling Mechanisms and Modeling**	**Gas Pipeline Compression Topics**
	Tutorial Session • Westin Hotel, Tryon • TC-23-7	**Tutorial Session • CCC, 207BC • TC-27-12**	**Panel • CCC, Richardson Ballroom A • TC-27-16**
	Session Chair: **Jean-Pierre Stalder**, Turbotect Ltd. Session Co-Chair**: Simon Kloter,** Turbotect Ltd.	Session Chair: **Michele Pinelli**, Univ of Ferrara Endif	Session Chair: **Manfred Klein,** MA Klein and Associates
2:30	T	T	
3:00	U	U	P
3:30	T	T	A
4:00	O	O	N
4:30	R	R	E
5:00	I	I	L
	A	A	
	L	L	

WEDNESDAY, JUNE 28 — 8:00 - 10:00 AM

	HEAT TRANSFER: CONJUGATE HEAT TRANSFER	HEAT TRANSFER: NUMERICAL FILM COOLING	AIRCRAFT ENGINE
	Conjugate Heat Transfer with Internal Cooling	**Numerical Simulation of Effusion and Slot Film Cooling**	**Modelling, Simulation and Validation**
	Technical Session • CCC, 212AB • WA-10-2	**Technical Session • CCC, 219A • WA-12-4**	**Technical Session • CCC, 203B • WA-1-5**
	Session Chair: **Gregory Laskowski,** GE Aviation Session Co-Chair: **Gustavo Ledezma**, GE Aviation	Session Chair: **Lamyaa El-Gabry,** American Univ In Cairo Co-Chair: **Malak Malak,** Honeywell Engine and Air Management	Session Chair: **Wilfried Visser,** Delft U of Tech Session Co-Chair: **Steven Sirica**, Pratt & Whitney; **Reagan Woolf**, USAF
8:00	GT2017-63600 **On LES Based Conjugate Heat Transfer Procedure for Transient Natural Convection** ***Mohamed Fadl, Li He**, Oxford University*	GT2017-63304 **Quantifying Blowing Ratio for Shaped Cooling Holes** ***David Cerantola, A.M. Birk,** Queen's University*	GT2017-64510 **Design and Analysis of a Sliding Mode Parameter Limit Regulating System for Turbo Fan Engine** ***Yuansuo Zhang, Jinwei Tao, Xin-chen** MAI, AECC Commercial Aircraft engine co.,Ltd*
8:30	GT2017-63622 **Nonlinear Harmonic Method Applied to Turbine Conjugate Heat Transfer Analysis for Efficient Simulation of Hot Streak Clocking and Unsteady Heat Transfer** ***Omid Z. Mehdizadeh, Stephane Vilmin, Benoit Tartinville, Charles Hirsch,** NUMECA International*	GT2017-64607 **A Study of Source Term Model for Full Coverage Film Cooling Simulation** ***Yufang ZHANG, Ke WANG,** AECC Commercial Aircraft Engine CO, LTD.*	GT2017-65218 **First and Second Law Analysis of Radical Intercooling Concepts** ***Oskar Thulin, Olivier Petit, Carlos Xisto, Xin Zhao, Tomas Grönstedt,** Chalmers University of Technology*
9:00	GT2017-63837 **Uncertainty Quantification of Conjugate Heat Transfer of a Cooled Turbine Vane: Roughness Effect** ***Wei Shi, Weihong Li, Bo Shi, XUEYING LI, Jing Ren, Hongde Jiang,** Tsinghua University*	GT2017-65050 **Simulations of Slot Film-Cooling With Freestream Acceleration and Turbulence** ***Yousef Kanani, Sumanta Acharya,** Illinois Institute of Technology; **Forrest Ames**, Univ Of North Dakota*	GT2017-63591 **A Fully Coupled Approach for the Integration of 3D-CFD Component Simulation in Overall Engine Performance Analysis** ***Carsten Klein, Stanislaus Reitenbach, Dirk Schoenweitz, Florian Wolters,** German Aerospace Center (DLR)*
9:30	GT2017-64873 **Conjugate Heat Transfer Scaling for Inconel 718** ***William Stewart, Tom Dyson,** GE Global Research*	GT2017-63314 **Implicit LES for Shaped-Hole Film Cooling Flow** ***Todd Oliver, Josh Anderson, Robert Moser, David Bogard**, Univ Of Texas At Austin; **Gregory Laskowski**, GE Aviation*	GT2017-63858 **Analytical Dynamic Model of Statically Indeterminate Rotor System and Misalignment** ***Guang Zhao, Shengxiang Li, Yunqiu Zhang, Zhiliang xiong, Qingkai Han,** Dalian University of Technology*

WEDNESDAY, JUNE 28 — 8:00 - 10:00 AM

	HEAT TRANSFER: INTERNAL AIR SYSTEMS & SEALS (WITH TURBOMACHINERY)	HEAT TRANSFER: EXPERIMENTAL INTERNAL COOLING	INDUSTRIAL & COGENERATION
	Air System Analysis	**Impingement Cooling II**	**Co-Generation, CHP Application, Waste Heat Recovery**
	Technical Session • CCC, 207D • WA-15-1	**Technical Session • CCC, 207A • WA-16-2**	**Technical Session • Westin Hotel, Tryon • WA-23-2**
	Session Chair: **Peter Smout,** Rolls-Royce Session Co-Chair: **John Chew**, University of Surrey	Session Chair: **Tom Dyson**, GE Global Research Session Co-Chair: **Jayanta Kapat**, University of Central Florida	Session Chair: **Francesco Melino**, University of Bologna Session Co-Chair: **Lisa Branchini**, University of Bologna
8:00	GT2017-64427 **Experimental and Numerical Analysis of the Secondary Flow Across the Interphase Balance Drum of a High Pressure Back-to-Back Centrifugal Compressor** ***Francesco Maiuolo, Carmine Carmicino, Emanuele Rizzo,*** *GE Oil & Gas*	GT2017-65046 **Heat Transfer and Pressure Drop Measurements in a High Solidity Pin Fin Array With Variable Hole Size Incremental Impingement** ***Abdulqadir Sheikhmohamed, Loren Soma, Forrest Ames,*** *University of North Dakota;* ***Sumanta Acharya,*** *Illinois Institute of Technology*	GT2017-63335 **Development of a Simulation Model of Transient Operation of Micro-CHP Systems in a Microgrid** ***Francesco Ippolito, Mauro Venturini,*** *Università Degli Studi Di Ferrara*
8:30	GT2017-63647 **A System Integration Approach for Heavy-Duty Gas Turbine Upgrades Using Improved Rotor Thrust Predictions and Application of Advanced Thrust Bearing Designs** ***Francesco Bavassano, Marco Mantero, Riccardo Traverso, Ansaldo Energia; Richard Livermore-Hardy, Barry Blair,*** *Waukesha Bearings*	GT2017-63761 **Heat Transfer and Pressure Loss Characteristics of Pin-Fins With Different Shapes in a Wide Channel** ***Jin Xu, Jiaxu YAO, Jiang Lei, Junmei Wu, Tieyu Gao,*** *Xian Jiaotong University;* ***Pengfei Su,*** *Dongfang Turbine Co. Ltd*	GT2017-64296 **Multiobjective Optimal Design of a Gas Turbine Cogeneration Plant by a Revised Hierarchical Optimization Method** ***Yuji Shinano, Zuse Institute Berlin; Ryohei Yokoyama, Yuki Wakayama, Tetsuya Wakui,*** *Osaka Prefecture University*
9:00	GT2017-64512 **Transient Thermal Modelling of Whole GT Engine With a Partly Coupled FEM-Fluid Network Approach** ***Antonio Andreini,*** *Department of Industrial Engineering (DIEF)-University of Florence* ***Sabrina Giuntini, Bruno Facchini,*** *University of Florence;* ***Sven Olmes, Thomas Zierer,*** *Ansaldo Energia Switzerland AG;* ***Marco Pirotta, Marco Mantero,*** *Ansaldo Energia*	GT2017-64809 **An Experimental Investigation of an Array of Inline Impinging Jets on a Surface With Varying Rib Orientations and Blockages** ***Justin Hodges, Andrea Osorio, Erik Fernandez, Jayanta Kapat,*** *University of Central Florida;* ***Tryambak Gangopadhyay, Swarnendu Sen, Achintya Mukhopadhyay,*** *Jadavpur University*	GT2017-63854 **Modeling and Optimal Operation of a Network of Energy Hubs System With Distributed Energy Resources** ***Shixi Ma, Dengji Zhou, Huisheng Zhang, Zhenhua Lu, Shanghai*** *Jiao Tong University*
9:30	GT2017-63001 **Research on Active Control Strategy of Gas Turbine Secondary Air System in Different Ambient Temperature Conditions** ***Jingjin Ji, Danping Huang, Bo Sun, Shuhong Peng, Chengxiong Pan,*** *Shanghai Electric Gas Turbine Co., Ltd.*		GT2017-63516 **Heat and Mass Transfer Characteristics of Water Droplets in Wet Compression Process** ***Xiang Li,*** *Shanghai Institute of Aerospace Systems Engineering;* ***Chunlei Liu, Hai Zhang, Qun Zheng,*** *Harbin Engineering University*

WEDNESDAY, JUNE 28 — 8:00 - 10:00 AM

	MANUFACTURING MATERIALS & METALLURGY	MARINE	MICROTURBINES, TURBOCHARGERS & SMALL TURBOMACHINES
	Additive Manufacturing	**Auxiliaries and Support Systems**	**Turbochargers - Compressors**
	Technical Session • CCC, 213CD • WA-24-1	**Technical Session • CCC, 106 • WA-25-3**	**Technical • Westin Hotel, Harris • WA-26-9**
	Session Chair: **Douglas Nagy**, Liburdi Turbine Serv Inc Session Co-Chair: **Timothy Simpson,** Pennsylvania State University	Session Chair: **Kenneth Braccio**, Advanced Turbine Services Session Co-Chair: **Daniel Burch**, CLARCOR	Session Chair: **Jose Serrano**, Universitat Politècnica de València Session Co-Chair: **Holger Mai**, Kratzer Automation AG
8:00	GT2017-63482 **As-Built Geometry and Surface Finish Effects on Fatigue and Tensile Properties of Laser Fused Titanium 6Al-4V** ***Onome Scott-Emuakpor, Tommy George, Emily Henry, Casey Holycross, Jeff Brown,*** *US Air Force Research Laboratory*	GT2017-63346 **Development and Testing of a Gas Turbine Engine Combustion Air Inlet Filtration System for the USMC Amphibious Combat Vehicle** ***Thomai Gastopoulos, Joseph Lawton,*** *Naval Surface Warfare Center Philadelphia Division*	GT2017-63887 **Numerical Investigation of Unsteady Shock Wave Motion in a Transonic Centrifugal Compressor** ***Richard Amankwa Adjei, Weizhe Wang, Jishen Jiang, Yingzheng Liu,*** *Shanghai Jiao Tong University;* ***Tomoki Kawakubo****, IHI Corporation*
8:30	GT2017-63714 **Fabrication and Characterization of Additive Manufactured Nickel-Based ODS Coating Layer for High Temperature Application** ***Zheng Min, Sarwesh Narayan Parbat, Minking Chyu, Li Yang,*** *University of Pittsburgh;* ***Bruce Kang,*** *West Virginia Univ*	GT2017-63718 **Fits and Starts: A Current Look at Marine and Industrial Gas Turbine Electric Start Systems** ***Glenn McAndrews****, Mendenhall Technical Services, Inc.*	GT2017-64178 **Variable Geometry Compressors for Heavy Duty Truck Engine Turbochargers** ***Michael Woehr, Markus Müller, Johannes Leweux,*** *Daimler AG*
9:00	GT2017-64049 **Regression Study on Variables Affecting Vibration Fatigue Behavior of Additive Manufactured Titanium 6Al-4V** ***Kyle Matissek, Onome Scott-Emuakpor, Tommy George,*** *US Air Force Research Laboratory,* ***Casey Holycross****, Air Force Research Laboratory;* ***Thaddeus Crowe, Christopher Howard,*** *Universal Technology Corporation*	GT2017-63751 **A CFD Method Study on the Resistance Performance of the Axial Flow Cyclone Separator** ***Yigang Luan, Lianfeng Yang, Tao Sun****, Harbin Engineering University*	GT2017-64359 **Development of Efficient Compressors for Turbochargers** ***Dhinagaran Ramachandran, Balamurugan M, Seran Krishnamoorthy, Gopalakrishnan M, Vasudevan R,*** *Swathi L, Turbo Energy Limited*
9:30	GT2017-64896 **Characterization and Optimization of Selective Laser Melting Materials Through Small Punch Testing** ***Jonathan Torres, Ali Gordon****, University of Central Florida*		GT2017-64732 **Redesign of a Compressor Stage for a High-Performance Electric Supercharger in a Heavily Downsized Engine** ***Peng Wang****, Advanced Design Technology;* ***Mehrdad Zangeneh****, Univ College London;* ***Bryn Richards, Kevin Gray, James Tran, Asuquo Andah****, Aeristech Ltd*

WEDNESDAY, JUNE 28 — 8:00 - 10:00 AM

	OIL & GAS APPLICATIONS	STEAM TURBINES	STRUCTURES & DYNAMICS: BEARING & SEAL DYNAMICS
	New Applications	**Steam Turbine Mechanical Aspects**	**Gas Bearings**
	Technical Session • CCC, 208B • WA-27-5	**Technical • Westin Hotel, Providence II • WA-29-10**	**Technical Session • CCC, 216AB • WA-34-1**
	Session Chair: **Michele Pinelli,** Univ of Ferrara Endif	Session Chair: **Henning Almstedt**, Siemens Session Co-Chair: **Kristopher Frutschy**, GE Power	Session Chair: **Daejong Kim**, University of Texas at Arlington
8:00	GT2017-63456 **Performance Evaluation of a Hydraulic Turbine Used As a Turbodrill for Oil and Gas Applications in Post-Salt Environment** ***Vinicius Guimaraes Monteiro,*** *Aeronautics Institute of Technology;* ***Jesuino Takachi Tomita,*** ***Cleverson Bringhenti,*** *Aeronautics Institute of Technology;* ***Alexander Vastenavond,*** *BG Group;* ***Jorge Sampaio,*** *Colorado School of Mines*	GT2017-63224 **Cracking Analysis of Intermediate Pressure Inlet Diffuser in 1000MW Steam Turbine Units** ***Gang Chen, Junhui Zhang, Xingzhu Ye,*** *Shanghai Electric Power Generation Equipment Co.,Ltd;* ***Chunlei Ma,*** *Consys Group Ltd.*	GT2017-63558 **Experimental Analysis of Angled Injection Aerostatic Hybrid Bearings** ***Julian Le Rouzic,*** *Institut Pprime, Universite de Poitiers;* ***Mihai Arghir,*** *Universite De Poitiers - Instit Pprime, D3*
8:30	GT2017-64245 **Energy Recovery in Natural Gas Compressor Stations Taking Advantage of Organic Rankine Cycle: Preliminary Design Analysis** ***Lisa Branchini, Andrea De Pascale, Michele Bianchi, Francesco Melino, Valentina Orlandini, Antonio Peretto,*** *University of Bologna;* ***Tommaso Ferrari, Nicola Rossetti, Francesco Campana, Daniele Archetti,*** *Turboden*	GT2017-63608 **Prediction of Stress Relaxation in Power Plant Components Based on a Constitutive Model** ***Yevgen Kostenko,*** *Siemens AG Energy Sector;* ***Konstantin Naumenko,*** *Otto-von-Guericke University*	GT2017-63284 **Numerical and Experimental Investigations on Preload Effects in Air Foil Journal Bearings** ***Marcel Mahner, Pu Li, Andreas Lehn, Bernhard Schweizer,*** *Technical University Darmstadt, Department of Mechanical Engineering, Institute of Applied Dynamics*
9:00	GT2017-64689 **Development and Evaluation of a Mobile Plant to Prepare Natural Gas for Use in Foam Fracturing Treatments** ***Griffin Beck, Melissa Poerner, Kevin Hoopes,*** *Southwest Research Institute;* ***Sandeep Verma,*** ***Schlumberger*** *Doll Research Center;* ***Garud Sridhar, Alhad Phatak,*** *Schlumberger*	GT2017-63665 **Stress Corrosion Cracking in Steam Turbine: Two Case Studies** ***Vamadevan Gowreesan, Kirill Grebinnyk,*** *Sulzer Turbo Services*	GT2017-63822 **Numerical Analysis of the Impact of Manufacturing Errors on the Structural Stiffness of Foil Bearings** ***Aurelian Fatu,*** *Institut Pprime;* ***Mihai Arghir,*** *Universite De Poitiers - Instit Pprime, D3*
9:30	GT2017-64062 **Design of Turbine System for Positive Mud-Pulse Telemetry** ***Andrew Amini, Xiaobo Peng,*** *Prairie View A&m Univ*	GT2017-64133 **Identification of Torsional Natural Frequencies and Damping As Well As Prediction of Stress Amplitudes at a Nuclear Power Train** ***Roland G. Grein, Ulrich Ehehalt, Ingo Balkowski,*** *Siemens AG*	GT2017-63615 **Comparative Evaluation of Foil Bearings With Different Compliant Structures for Improved Manufacturability** ***Karim Shalash,*** *EPFL;* ***Jurg Schiffmann,*** *Ecole Polytechnique Federale De Lausanne*

WEDNESDAY, JUNE 28 — 8:00 - 10:00 AM

	STRUCTURES & DYNAMICS: AERODYNAMIC EXCITATION & DAMPING	COAL, BIOMASS & ALTERNATIVE FUELS	SUPERCRITICAL CO2 POWER CYCLES
	Coupled Fluid Structure Interaction Applications	**Basics of Alternative Fuel Combustion and Emissions**	**Supercritical CO2 Power Cycle Turbomachinery**
	Technical Session • CCC, 217AB • WA-36-6	**Tutorial Session • CCC, 207BC • WA-3-7**	**Tutorial Session • CCC, 203A • WA-38-13**
	Session Chair: **Paul Petrie-Repar**, KTH Royal Institute of Technology Session Co-Chair: **Atsushi Tateishi**, The University of Tokyo	Session Chair: **Jeffrey Bergthorson,** McGill University Session Co-Chair: **Gilles Bourque**, Siemens Canada Ltd	Session Chair: **Jeffrey Moore**, Southwest Research Institute Session Co-Chair: **Timothy Allison**, Southwest Research Institute
8:00	GT2017-63391 **Experimental and Numerical Investigation of Vibration Transmission Between Two Parallel Plate Partially Immersed in a Fluid** ***Sumathi V, Homi Bhabha*** *National Institute;* ***S Jalaldeen, S.D Sajish, P Selvaraj, S Murugan,*** *Indira Gandhi Centre for Atomic Research*	GT2017-65542 **Basics of Alternative Fuel Combustion and Emissions** ***Jeffrey Bergthorson,*** *McGill University*	GT2017-65425 **Supercritical CO2 Power Cycle Turbomachinery Tutorial** ***Jeffrey Moore,*** *Southwest Research Institute*
8:30	GT2017-63633 **Characterization of the Modal Characteristics of Structures Operating in Dense Liquid Turbopumps** ***Joseph Chiu,*** *City College of New York;* ***Andrew Brown****, NASA/MSFC*	**T U T O R I A L**	**T U T O R I A L**
9:00	GT2017-64260 **Computing Fluid Structure Interaction Coupling Time Spectral Method (TSM) and Harmonic Balance Method (HBM)** ***Aude Cadel, Marie-Océane Parent,*** *Safran Aicraft Engines;* ***Ghislaine Ngo Boum, Fabrice Thouverez,*** *Ecole Centrale de Lyon;* ***Alain Dugeai,*** *ONERA*		
9:30	GT2017-64586 **Analysis of a Turbine Bladed Disk With Structural and Aerodynamic Mistuning** ***Dimitri Franz,*** *Royal Institute of Technology;* ***Loic Salles, Sina Stapelfeldt,*** *Imperial College of London*		

WEDNESDAY, JUNE 28 — 8:00 - 10:00 AM

	TURBOMACHINERY: AXIAL FLOW TURBINE AERODYNAMICS	TURBOMACHINERY: DESIGN METHODS & CFD MODELING FOR TURBOMACHINERY	COMBUSTION, FUELS & EMISSIONS
	Turbine Aerodynamic Testing	**Compressor Design Methods and Applications (1)**	**Flashback & Blowout**
	Technical • CCC, Richardson Ballroom C • WA-40-11	**Technical • CCC, Crown Ballroom • WA-41-2**	**Technical Session • CCC, 219B • WA-4-15**
	Session Chair: **Choon Sooi Tan**, MIT Session Co-Chair: **John Clark**, US Air Force Reseaerch Laboratory AFRL	Session Chair: **Mahmoud Mansour,** Honeywell Aerospace Session Co-Chair: **Anthony Gannon**, Naval Postgraduate School	Session Chair: **Sunil James**, Honeywell Aerospace Session Co-Chair: **Luis Tay Wo Chong Hilares**, Ansaldo Energia
8:00	GT2017-63524 **Influence of Gas-to-Wall Temperature Ratio on By-Pass Transition** ***Tânia S. Cação Ferreira, Tony Arts,*** *Von Karman Inst*	GT2017-63240 **Facing the Challenges in CFD Modelling of Multistage Axial Compressors** ***Lorenzo Cozzi, Filippo Rubechini, Michele Marconcini, Andrea Arnone,*** *University of Florence;* ***Pio Astrua, Andrea Schneider, Andrea Silingardi,*** *Ansaldo Energia*	GT2017-63305 **Blowout Sensitivities in a Liquid Fueled Combustor: Fuel Composition and Preheat Temperature Effects** ***Nicholas Rock, Benjamin Emerson, Jerry Seitzman, Tim Lieuwen,*** *Georgia Institute of Technology;* ***Ianko Chterev,*** *Ben T. Zinn Combustion Laboratory*
8:30	GT2017-64409 **Next Generation Turbine Testing at DLR** ***Hans-Juergen Rehder, Andreas Pahs, Martin Bittner, Frank Kocian,*** *German Aerospace Center (DLR)*	GT2017-63879 **Experimental and Numerical Investigation on the Aerodynamic Performance of a Compressor Cascade Using Blended Blade and End Wall** ***Jiabin LI, Weilin YI, Ji Lu-cheng,*** *Beijing Institute of Technology*	GT2017-63367 **Experimental Study to Enhance Resistance for Boundary Layer Flashback in Swirl Burners Using Microsurfaces** ***Mohammed Al-fahham, Fares Hatem, Ali Alsaegh, Agustin Valera-Medina, Samuel Bigot, Richard Marsh,*** *Cardiff University*
9:00	GT2017-64736 **ECAT: An Engine Component Aerothermal Facility at the University of Oxford** ***Benjamin Kirollos, Roderick Lubbock, Paul Beard, Thomas Povey,*** *University of Oxford;* ***Frederic Goenaga, Anton Rawlinson, Erik Janke,*** *Rolls-Royce Deutschland Ltd. & Co KG*	GT2017-63189 **An Implicit Off-Design Deviation Angle Correlation of Axial Flow Compressor Blade Elements** ***Dong-run Wu, Jinfang Teng, Xiao-qing Qiang, Jin-zhang Feng,*** *Shanghai Jiao Tong University*	GT2017-63507 **Towards Predicting Lean Blow-Off Based on Damkohler Number and Practical Reaction Zone** ***Wang Zhonghao,*** *University of Chinese Academy of Sciences;* ***Hu Bin, Qingjun Zhao, Jianzhong Xu,*** *Key Laboratory of Light-Duty-Gas-Turbine*
9:30		GT2017-63023 **Centrifugal Pump Performance Enhancement by Blade Shape Modification** ***Ahmed Farid Ayad Hassan, H.M. Abdalla, Ahmed S. Abou El-Azm Aly,*** *Military Technical College*	GT2017-64248 **Stabilization Mechanisms of Swirling Premixed Flames With an Axial-Plus-Tangential Swirler** ***Paul Jourdaine,*** *EM2C laboratory;* ***Clément Mirat,*** *Centrale Supelec;* ***Jean Caudal,*** *Air Liquide;* ***Thierry Schuller,*** *Laboratoire EM2C, CNRS, CentraleSupélec*

WEDNESDAY, JUNE 28 — 8:00 - 10:00 AM

	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: NOISE & INNOVATIVE NOISE REDUCTION (WITH AIRCRAFT ENGINE)	COMBUSTION, FUELS & EMISSIONS
	Basics of Alternative Fuel Combustion and Emissions	**Computational Aero-Acoustics Methods and Duct Acoustics**	**Impacts of Advanced Manufacturing on Combustor and Fuel Injection Development**
	Tutorial Session • CCC, 207BC • WA-4-33	**Technical Session • CCC, 211AB • WA-43-4**	**Panel Session • CCC, 213AB • WA-4-37**
	Session Chair: **Gilles Bourque**, Siemens Canada Ltd Session Co-Chair: **Jeffrey Bergthorson**, McGill University	Session Chair: **Alessandro Corsini,** 'Sapienza' University of Rome Session Co-Chair: **Andreas Peters**, GE Aviation	Session Chair: **Tim Lieuwen,** Georgia Institute of Technology Session Co-Chair: **Jeffery Lovett,** Pratt & Whitney
8:00	GT2017-65534 **Basics of Alternative Fuel Combustion and Emissions** ***Jeffrey Bergthorson**, McGill University; **Gilles Bourque**, Siemens Canada Ltd* **T**	GT2017-63050 **Efficient Three Dimensional Time-Domain Combustion Noise Simulation of a Premixed Flame Using Acoustic Perturbation Equations and Incompressible LES** ***Kilian Lackhove, Amsini Sadiki, Johannes Janicka,** Technische Universität Darmstadt*	GT2017-65384 **Siemens Perspectives of additive manufacturing for combustion systems.** ***Olle Lindman**, Siemens AB*
8:30	**U** **T**	GT2017-65253 **Further Development and Initial Validation of Innovative DES-Based Approaches for the Prediction of Jet Noise Installation Effects** ***Charles Mockett, Marian Fuchs, Felix Kramer, Ulf Michel, Frank Thiele,** CFD Software E+F GmbH; **Mathias Steger**, Rolls-Royce Deutschland Ltd & Co KG*	GT2017-65414 **General Electric Perspective** ***Joseph Citeno**, GE*
9:00	**O** **R** **I**	GT2017-63693 **Large Eddy Simulation of Conventional and Bias Flow Acoustic Liners** ***Soufiane Ramdani, Nobuhiko Yamasaki, Yuzo Inokuchi**, Kyushu University; **Tatsuya Ishii**, Japan Aerospace Exploration Agency*	GT2017-65523 **Solar Turbines** ***Doug Rawlins**, Solar Turbines*
9:30	**A** **L**	GT2017-64524 **Radial Mode Analysis of Broadband Noise in Flow Ducts Using Azimuthal Sensor Array** ***Kunbo Xu, Weiyang Qiao, Fan Tong, Renke Wei,** Northwestern Polytechnical University*	**PANEL**

WEDNESDAY, JUNE 28 — 8:00 - 10:00 AM

	TURBOMACHINERY: UNSTEADY FLOWS IN TURBOMACHINERY	TURBOMACHINERY: DEPOSITION, EROSION, FOULING, AND ICING	CONTROLS, DIAGNOSTICS & INSTRUMENTATION
	Unsteady Flows in Compressors II	**Modeling the Impact of Deposition and/or Erosion on Engine Performance**	**Advanced Control of Turbomachinery Based Aero-Propulsion Systems**
	Technical Session • CCC, 217CD • WA-46-9	**Technical Session • CCC, 208A • WA-48-2**	**Tutorial • Westin Hotel, Providence III • WA-5-10**
	Session Chair: **David Halstead**, GE Aviation Session Co-Chair: **Natalie Smith**, Southwest Research Institute	Session Chair: **Eric Ruggiero**, GE Aviation Session Co-Chair: **Paolo Venturini**, Sapienza University of Rome	Session Chair: **Sanjay Garg**, NASA Glenn Research Center
8:00	GT2017-64022 **Assessment of the Severity of Unsteady Mach Number Effects in a 3-Stage Transonic Compressor** ***Anthony Dent, Liping Xu,*** *Whittle Laboratory, University of Cambridge;* ***Roger Wells****, Siemens Industrial Turbomachinery Ltd*	T2017-63544 **Predicting the Temporal Progression of Aircraft Engine Compressor Performance Deterioration due to Particle Deposition** ***Felix Döring,*** *Institute of Aircraft Propulsion Systems, University of Stuttgart;* ***Stephan Staudacher****, Institute of Aircraft Propulsion Systems, University of Stuttgart* ***Christian Koch****, University of Stuttgart*	GT2017-65536 **Advanced Control of Turbomachinery Based Aero-Propulsion Systems** ***Sanjay Garg,*** *NASA Glenn Research Center*
8:30	GT2017-64065 **Numerical Investigation Into the Mechanism of Tip Flow Unsteadiness in a Transonic Compressor** ***Guangyao An, Yanhui Wu, Jinhua Lang, Zhiyang Chen, Bo Wang, Guowei Yang,*** *Northwestern Polytechnical University*	GT2017-64051 **Microstructure Based Material-Sand Particulate Interactions and Assessment of Coatings for High Temperature Turbine Blades** ***muthuvel murugan****, ARL;* ***Anindya*** *Ghoshal,* ***Michael Walock, Andy Nieto, Luis G. Bravo, Blake Barnett, Marc Pepi, Jeffrey Swab,*** *U.S. Army Research Laboratory;* ***Robert Tyler Pegg,*** *NAVAIR;* ***Christopher Rowe****, NAVAIR;* ***Dongming zhu****, NASA;* ***Kevin Kerner****, U.S. Army Aviation Applied Technology Directorate*	**T U T O R I A L**
9:00	GT2017-64256 **Periodical Unsteady Tip Clearance Vortex Development in a Low Speed Axial Research Compressor at Different Tip Clearances** ***Martin Lange, Matthias Rolfes, Ronald Mailach,*** *Technische Universität Dresden;* ***Henner Schrapp****, Rolls-Royce Deutschland*	GT2017-64180 **Surface Roughness Impact on Low-Pressure Turbine Performance due to Operational Deterioration** ***Andreas Kellersmann****, TU Braunschweig* ***Sarah Weiler****, Airbus Defence & Space; Christoph Bode, Technische Universitaet Braunschweig;* ***Jens Friedrichs****, TU Braunschweig Inst of Aircraft Propulsion & Turbomachinery; Guenter Ramm, MTU* ***Joern Staeding****, MTU Maintenance GmbH*	
9:30		GT2017-64526 **EBFOG: Deposition, Erosion and Detachment on High Pressure Turbine Vanes** ***Nicola Casari, Michele Pinelli, Alessio Suman,*** *University of Ferrara; Luca Di Mare,* ***Francesco Montomoli****, Imperial College London*	

WEDNESDAY, JUNE 28 — 8:00 - 10:00 AM

	CYCLE INNOVATIONS	ELECTRIC POWER	OIL & GAS APPLICATIONS
	Fuel Cell Driven Cycles III	**Voice of the Customer - User Experience with Gas Turbine Technology**	**Compressor Surge and Station Dynamics**
	Technical • Westin Hotel, Trade • WA-6-3	**Panel Session • Westin Hotel, Providence I • WA-8-5**	**Tutorial Session • CCC, 105 • WA-27-10**
	Session Chair: **Alessio Abrassi**, University of Genoa	Session Chair: **Thomas Christiansen**, Strategic Power Systems Inc Session Co-Chair: **Rick Tomlinson**, Chevron	Session Chair: **Rainer Kurz**, Solar Turbines Inc Session Co-Chair: **Klaus Brun**, **Jeffrey Moore**, Southwest Research Institute
8:00	GT2017-64055 **Fuel Utilization Effects on System Efficiency and Solid Oxide Fuel Cell Performance in Gas Turbine Hybrid Systems** ***Nor Farida Harun,*** *Oak Ridge Institute for Science and Education;* ***Lawrence Shadle****,* ***Danylo Oryshchyn****,* ***David Tucker****, U.S. Dept. of Energy, National Energy Technology Lab*	GT2017-65495 **AEP Fleet Overview** ***Dan George,*** *American Electric Power*	**T U T O R I A L**
8:30	GT2017-64204 **Physics Based Dynamic Models of Three SOFC/GT Emulator Test-Rigs** ***Iacopo Rossi, Alberto Traverso,*** *Univ Of Genova;* ***Martina Hohloch****, Andreas Huber, German Aerospace Center (DLR);* ***David Tucker****, National Energy Technology Laboratory*	GT2017-65496 **Southern Company Fleet Overview** ***Josh Barron****, Power Generation, Southern Company Services*	
9:00	GT2017-64194 **Advanced Control for Clusters of SOFC/GT Hybrid Systems** ***Iacopo Rossi, Alberto Traverso,*** *Univ Of Genova;* ***Valentina Zaccaria****, Oak Ridge Institute for Science and Education*	GT2017-65497 **Duke Fleet Overview** ***Joe Miller****, Duke*	
9:30	GT2017-65013 **Analysis of Operational Strategies of a SOFC/MGT Hybrid Power Plant** ***Martina Hohloch****,* ***Andreas Huber****, German Aerospace Center (DLR);* ***Manfred Aigner****, Dlr*		

	HEAT TRANSFER: NUMERICAL INTERNAL COOLING	AIRCRAFT ENGINE	HEAT TRANSFER: GENERAL EXPERIMENTAL HEAT TRANSFER
	Passages with Turbulators and Bends II	**Combustion and Emissions**	**Blade Tip and Shroud Heat Transfer**
	Technical Session • CCC, 211AB • WB-11-3	**Technical Session • CCC, 106 • WB-1-3**	**Technical Session • CCC, 212AB • WB-13-2**
	Session Chair: **James Heidmann,** NASA Glenn Research Ctr Session Co-Chair: **Domenico Borello,** Sapienza University of Rome	Session Chair: **Yoji Okita,** IHI Corporation	Session Chair: **Mike Barringer,** Pennsylvania State University Session Co-Chair: **Seth Lawson**, US Department of Energy
10:15	GT2017-64573 **Numerical Study on Heat Transfer Performance of a New-Proposed Pin-Fin in an Internal Channel** ***Lv Ye, Zhao Liu, Chun Gao, Xing Yang, Zhenping Feng****, Xi'An Jiaotong University*	GT2017-63440 **Assessment of the Effect of Environmental Conditions on Rotorcraft Pollutant Emissions at Mission Level** ***Jesus Ortiz Carretero, Alejandro Castillo Pardo, Vassilios Pachidis, Ioannis Goulos****, Cranfield University*	GT2017-64216 **Effects of Unsteady Wakes on Heat Transfer of Blade Tip and Shroud** ***Minho Bang, Seok Min Choi, Hyung-Hee Cho,*** *Yonsei University;* ***Ho-Seong Sohn,*** *Repuiblic Korea/ Yonsei University;* ***Jun Su Park,*** *Korea National University of Transportation*
10:45	GT2017-65083 **Numerical Investigation of Local Cooling Enhancement Using Pin-Finned Channel With Incremental Impingement** ***Susheel Singh****, Louisiana State University;* ***Sumanta Acharya****, Illinois Institute of Technology;* ***Forrest Ames****, Univ Of North Dakota*	GT2017-65044 **Small Aircraft Turbine Noise From Combustion of Synthetic Kerosene Fuels** ***Aliyah Knowles, Valentin Soloiu, Emerald Simons, Martin Muinos, Jose Moncada, Huong Kim NGO,*** *Georgia Southern University*	GT2017-65102 **Turbine Shroud Heat Transfer and Cooling With Blade Rotation: Part I: Forward, Backward and Lateral Injection** ***Onieluan Tamunobere****, Heat Pipe Technology;* ***Sumanta Acharya****, Illinois Institute of Technology*
11:15	GT2017-64018 **Rib Cross Section Optimization of a Ribbed Turbine Internal Cooling Channel With Experimental Validation** ***Firat Kiyici, Sefa Yilmazturk, Ercan Arican****, Tusas Engine Industries Inc;* ***Kahraman Coban****, Tusas Engine Industries;* ***Stefano Porziani, Emiliano Costa****, D'Appolonia*		GT2017-65107 **Turbine Shroud Heat Transfer and Cooling With Blade Rotation: Part II: Effect of Trenched Holes With Forward, Backward and Lateral Injection** ***Onieluan Tamunobere****, Heat Pipe Technology;* ***Sumanta Acharya****, Illinois Institute of Technology*

WEDNESDAY, JUNE 28 — 10:15 - 11:45 AM

	HEAT TRANSFER: INTERNAL AIR SYSTEMS & SEALS (WITH TURBOMACHINERY)	HEAT TRANSFER: COMBUSTORS (WITH COMBUSTION, FUELS & EMISSIONS)	MANUFACTURING MATERIALS & METALLURGY
	Brush Seals	**Combustor Heat Transfer**	**Additive Manufacturing for Gas Turbines - Technology Enhancements**
	Technical Session • CCC, 219A • WB-15-3	**Technical Session • CCC, 207D • WB-17-2**	**Panel Session • CCC, 213CD • WB-24-10**
	Session Chair: **Neelesh Sarawate,** GE Global Research Session Co-Chair: **Aaron Bowsher**, Cross Mftg Co	Session Chair: **Nagaraja Rudrapatna**, Honeywell Session Co-Chair: **Esa Utriainen**, Siemens Industrial Turbomachinery Ab	Session Chair: **Dheepa Srinivasan**, GE Power, GE India Technology Center Session Co-Chair: **Nejib Chekir**, McGill University
10:15	GT2017-63091 **High Temperature Brush Seal Development** ***Tracey Kirk, Aaron Bowsher, Peter Crudgington,*** *Cross Manufacturing Company (1938) Ltd*	GT2017-64224 **An Acceleration Method for Numerical Studies of Conjugate Heat Transfer With a Self-Adaptive Coupling Time Step Method: Application to a Wall-Impinging Flame** ***Chaï Koren, Ronan Vicquelin, Olivier Gicquel,*** *CentraleSupélec*	GT2017-65394 **Direct Metal Laser Deposition - Applications** ***Bhaskar Dutta,*** *DM3D Technology*
10:45	GT2017-63423 **Experimental Investigation on the Influence of Geometrical Parameters on the Frictional Heat Input and Leakage Performance of Brush Seals** ***Manuel Hildebrandt, Hans-Jörg Bauer, Corina Schwitzke,*** *Institut of Thermal Turbomachinery (ITS) - Karlsruhe Institut of Technology (KIT)*	GT2017-64837 **Flow Field and Wall Temperature Measurements for Reacting Flow in a Lean Premixed Swirl Stabilized Can Combustor** ***Suhyeon Park, Siddhartha Gadiraju, Sandeep Kedukodi, Srinath Ekkad****, Virginia Tech;* ***David Gomez Ramirez,*** *Schlumberger;* ***Hee-Koo Moon, Yong Kim, Ram Srinivasan,*** *Solar Turbines*	GT2017-65396 **Direct Metal Laser Deposition - Applications** ***Jyoti Majumder****, University of Michigan*
11:15	GT2017-64864 **Flow Resistance Coefficients of Porous Brush Seal As a Function of Pressure Load** ***Yahya Dogu, Koray Gezer,*** *Kirikkale University;* ***Mustafa Cem Sertcakan****,* ***Mustafa Kocagul****, TEI Tusas Engine Industry*	T2017-64844 **High Fidelity Multiphysics Simulation of a Confined Premixed Swirling Flame Combining Large-Eddy Simulation, Wall Heat Conduction and Radiative Energy Transfer** ***Chaï Koren, Ronan Vicquelin, Olivier Gicquel,*** *CentraleSupélec*	GT2017-65397 **Additive Manufacturing - Process** ***Suman Das****, Georgia Institute of Technology*

WEDNESDAY, JUNE 28 — 10:15 - 11:45 AM

	MICROTURBINES, TURBOCHARGERS & SMALL TURBOMACHINES	OIL & GAS APPLICATIONS	STEAM TURBINES
	Turbochargers - Turbines 2	**Gas Turbine and Compressor Fouling**	**Valves & Seals**
	Technical • Westin Hotel, Providence III • WB-26-8	**Technical Session • CCC, 208B • WB-27-4**	**Technical • Westin Hotel, Providence II • WB-29-9**
	Session Chair: **Srithar Rajoo**, Universiti Teknologi Malaysia	Session Chair: **Klaus Brun,** Southwest Research Institute	Session Chair: **James McCracken**, Siemens Session Co-Chair: **Cosimo Bianchini**, Ergon Research
10:15	GT2017-63069 **Influence of Aerodynamic Mistuning and Aerodynamic Coupling on Vibration Behavior of Mistuned Small Radial Turbine Wheels** ***David Hemberger, Dietmar Filsinger,*** *IHI Charging Systems International;* ***Hans-Jörg Bauer****, Institut of Thermal Turbomachinery (ITS) - Karlsruhe Institut of Technology (KIT)*	GT2017-63025 **Gas Turbine Fouling Offshore: Correction Methodology Compressor Efficiency** ***Stian Madsen,*** *Statoil ASA;* ***Lars Eirik Bakken****, Norwegian Univ Of Sci & Tech*	GT2017-63405 **Measurements of the Leakage Through a High Pressure Steam Turbine Power Plant Gland Seal** ***Peter Stein,*** *General Electric (switzerland) Gmbh;* ***Dominik Born****, General Electric;* ***Martin Koenig****, ZHAW*
10:45	GT2017-63368 **Extremely Low Mass Flow at High Blade to Jet Speed Ratio in Variable Geometry Radial Turbines and its Influence on the Flow Pattern: A CFD Analysis** ***Jose Serrano****,* ***Antonio Gil****,* ***Roberto Navarro****,* ***L. B. Inhestern****, Universitat Politècnica de València*	GT2017-63563 **Quantitative CFD Analyses of Particle Deposition in a Heavy-Duty Subsonic Axial Compressor** ***Nicola Aldi, Nicola Casari, Devid Dainese, Pier Ruggero Spina, Alessio Suman, Michele Pinelli,*** *University of Ferrara;* ***Mirko Morini****, University of Parma*	GT2017-64141 **Numerical Investigation and Shape Design Improvement of a Turbine Inlet Combined Valve** ***Dongting Ye, Xi'an*** *Jiaotong University/Shanghai Electric Power Generation Equipment Co., LTD;* ***Jiaobin Ma, Di Zhang****, Xi'an Jiaotong University;* ***Yonghui Xie****, Inst of Turbomachinery;* ***Sihua Xu****, Shanghai Electric Power Generation Equipment Co.,Ltd.,*
11:15	GT2017-64218 **New Modular Test Rig for Unsteady Performance Assessment of Automotive Turbocharger Turbines** ***Paul Lyttek, Harald Roclawski,*** *Technical University Kaiserslautern;* ***Martin Boehle****, University of Kaiserslautern;* ***Marc Gugau****, BorgWarner TurboSystems Engineering GmbH*	GT2017-64425 **The Effects of Third Substances at the Particle/Surface Interface in Compressor Fouling** ***Nicola Aldi, Nicola Casari, Devid Dainese, Michele Pinelli, Pier Ruggero Spina, Alessio Suman,*** *University of Ferrara;* ***Mirko Morini****, University of Parma*	GT2017-64285 **Demonstration of a Dynamic Clearance Seal in a Rotating Test Facility** ***Andrew Messenger, Richard Williams, Grant Ingram, Simon Hogg,*** *Durham University; Stacie Tibos,* ***Bernard Charnley****, GE Power;* ***Jon Seaton****, GE Power, Steam Power Systems*

WEDNESDAY, JUNE 28 — 10:15 - 11:45 AM

	STRUCTURES & DYNAMICS: EMERGING METHODS IN DESIGN & ENGINEERING	STRUCTURES & DYNAMICS: ROTORDYNAMICS	STRUCTURES & DYNAMICS: STRUCTURAL MECHANICS, VIBRATION & DAMPING
	Emerging Design Methods	**Bearing, Seals, and Secondary Flow Effects**	**Introduction to Wavelet Transform and Applications to Vibration Data Processing**
	Technical Session • CCC, 207A • WB-30-2	**Technical Session • CCC, 216AB • WB-33-3**	**Tutorial Session • CCC, 217AB • WB-35-10**
	Session Chair: **Weizhe Wang,** Shanghai Jiao Tong University Session Co-Chair: **Nikola Kafedzhiyski**, Siemens Industrial Trubomachinery AB	Session Chair: **Jason Wilkes**, Southwest Research Institute	Session Chair: **Harald Schoenenborn,** MTU Aero Engines Session Co-Chair: **Luigi Carassale**, University of Genova
10:15	GT2017-64126 **Valve Body Thermal Stress Control While Warming Up** ***Jin He,*** *ShangHai Electric Group*	GT2017-64206 **The Influences of Unbalance Mass, Mesh Density, and Bearing Clearance on Unbalance Response: Measurements and Analysis on a Rigid Rotor Supported by Hybrid Bump-Metal Mesh Foil Bearings** ***Xueyuan Zhao, Tao Zhang, Kai Feng,*** *Hunan University*	GT2017-65423 **Introduction to wavelet transform and applications to vibration data processing** ***Luigi Carassale****, University of Genova*
10:45	GT2017-65045 **Estimation of Forcing Functions on a Mistuned Bladed Rotor From Harmonic Response** ***Alok Sinha****, Pennsylvania State Univ*	GT2017-65040 **Subsynchronous Vibration Patterns Under Reduced Oil Supply Flow Rates Bradley Nichols, Rotor Bearing Solutions International** ***Roger Fittro****, University of Virginia* ***Christopher Goyne****, University of Virginia*	TUTORIAL
11:15	GT2017-64064 **A Multi-Scale Data Fusion Method for Damage Detection of Rod Fastening Rotor in Modal Strain Energy** ***Tian Guo****,* ***Zili Xu****, Xi'an Jiaotong University*		

WEDNESDAY, JUNE 28 — 10:15 - 11:45 AM

	SUPERCRITICAL CO2 POWER CYCLES	TURBOMACHINERY: NOISE & INNOVATIVE NOISE REDUCTION (WITH AIRCRAFT ENGINE)	COMBUSTION, FUELS & EMISSIONS
	Supercritical CO_2 Material and Fluid Properties 2	**Fan, Compressor, and Open Rotor Noise**	**Combustion Dynamics: Damping & Controls II**
	Technical Session • CCC, 203A • WB-38-8	**Technical Session • CCC, 217CD • WB-43-2**	**Technical Session • CCC, 219B • WB-4-39**
	Session Chair: **Ganesan Subbaraman,** Gas Technology Institute Session Co-Chair: **Subith Vasu**, University of Central Florida	Session Chair: **Andreas Peters**, GE Aviation	Session Chair: **Bernd Prade**, Siemens AG KWU Session Co-Chair: **Wajid Chishty**, NRC Aerospace
10:15	GT2017-63570 **Effects of Real Gas Model Accuracy and Operating Conditions on Supercritical CO_2 Compressor Performance and Flow Field** ***Alireza Ameli, Ali Afzalifar, Teemu Turunen-Saaresti, Jari Backman,*** *Lappeenranta University of Technology*	GT2017-64162 **Application of a RANS-Informed Analytical Model for Fast Noise Prediction of Contra Rotating Open Rotors** ***Damiano Tormen, Pietro Giannattasio,*** *University of Udine;* ***Alessandro Zanon, Helmut Kühnelt, Michele De Gennaro,*** *AIT Austrian Institute of Technology GmbH*	GT2017-63542 **Characterization of Different Actuator Designs for the Control of the Precessing Vortex Core in a Swirl-Stabilized Combustor** ***Finn Lückoff, Moritz Sieber, Kilian Oberleithner,*** *Chair of Fluid Dynamics, TU Berlin;* ***C. Oliver Paschereit,*** *H.F.I TU Berlin*
10:45	GT2017-64641 **Characterization of Non-Equilibrium Condensation of Supercritical Carbon Dioxide in a de Laval Nozzle** ***Claudio Lettieri,*** *Delft University of Technology;* ***Derek Paxson, Zoltan Spakovszky,*** *MIT;* ***Peter Bryanston-Cross,*** *Warwick University*	GT2017-63449 **Numerical and Experimental Investigation of Acoustic Characteristics of a Fan Model With Struts Integrated in a Stator** ***Anton Rossikhin, Iaroslav Druzhinin, Iurii Khaletskii, Victor Mileshin,*** *Central Institute of Aviation Motors (CIAM)*	GT2017-64429 **Improvement of Impaired Combustion Conditions at Some Off-Design Operation by Driving a Precisely Controlled Modulation of the Burner Air Feed** ***Fabrice Giuliani, Lukas Pfefferkorn, Gerhard Kraft,*** *Combustion Bay One e. U.*
11:15	GT2017-65066 **Effect of Pressure and Thermal Cycling on Compatibility in CO_2 for Concentrated Solar Power Applications** ***Bruce Pint, Robert G. Brese, James R. Keiser,*** *Oak Ridge National Laboratory*	GT2017-65117 **Numerical Investigation of the Inclined Leading Edge Diffuser Vane Effects on the Flow Unsteadiness and Noise Characteristics in a Transonic Centrifugal Compressor** ***Ali Zamiri, Byung Ju Lee, Jin Taek Chung,*** *Korea University*	GT2017-64608 **Acoustic Combustor Forcing by Unsteady Air Injection Into a Nozzle With High Subsonic Mean Flow** ***Sebastian Niether, Niclas Hanraths,*** *Technische Universität Berlin;* ***C. Oliver Paschereit,*** *H.F.I TU Berlin;* ***Jonas P. Moeck,*** *TU Berlin;* ***Lukasz Panek,*** *Siemens AG*

WEDNESDAY, JUNE 28 — 10:15 - 11:45 AM

	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: RADIAL TURBOMACHINERY AERODYNAMICS	TURBOMACHINERY: UNSTEADY FLOWS IN TURBOMACHINERY
	Combustion Dynamics: Flame Response to Pertubations II	**Centrifugal Compressors - Methods & Tools**	**Unsteady Flows in Centrifugal Compressors**
	Technical Session • CCC, 207BC • WB-4-40	**Technical • CCC, Crown Ballroom • WB-44-8**	**Technical • CCC, Richardson Ballroom C • WB-46-7**
	Session Chair: **Rudolph Dudebout**, Honeywell Aerospace	Session Chair: **Michele Marconcini**, University of Florence Session Co-Chair: **Peter Harley**, Dyson	Session Chair: **Michael Barton,** Honeywell
10:15	GT2017-63476 **Lean-Premixed, Swirl-Stabilized Flame Response: Flame Structure and Response As a Function of Confinement** ***Alexander De Rosa,*** *Stevens Institute of Technology;* ***Stephen Peluso***, ***Bryan Quay***, ***Domenic Santavicca***, *Pennsylvania State Univ*	GT2017-63539 **Optimum Aerodynamic Design of Centrifugal Compressor Impeller Using an Inverse Method Based on Meridional Viscous Flow Analysis** ***Nobuhito Oka, Seiichi Ibaraki, Kenichiro Iwakiri, Yoshihiro Hayashi,*** *Mitsubishi Heavy Industries, Ltd;* ***Masato Furukawa***, ***Kazutoyo Yamada***, ***Sasuga Itou***, *Kyushu University*	GT2017-63748 **Unsteady Flow in a Centrifugal Compressor Stage Equipped With a Vaned Diffuser and Cavities** ***Mohand Younsi, Antoine Baldacci,*** *ANSYS* ***Christophe Corneloup***, ***Francois Moyroud***, *Genaral Electric, Oil & Gas*
10:45	GT2017-63874 **Effects of the Injector Design on the Transfer Function of Premixed Swirling Flames** ***Marco Gatti***, ***Renaud Gaudron***, ***Clément Mirat***, *Centrale Supelec;* ***Thierry Schuller***, *ECP*	GT2017-65230 **On the Assessment of Centrifugal Compressor Performance Parameters by Theoretical and Computational Models** ***Elias Sundström, Bertrand Kerres, Sergio Sanz, Mihai Mihaescu,*** *Royal Institute of Technology*	GT2017-64444 **Small Jet Engine Centrifugal Compressor Stability Margin Assessment** ***Jiri Pecinka, Adolf Jilek, Petr Kmoch***, *University of Defence*
11:15	GT2017-64929 **Convective Scaling of Intrinsic Thermo-Acoustic Eigenfrequencies of a Premixed Swirl Combustor** ***Alp Albayrak***, ***Thomas Steinbacher***, ***Thomas Komarek***, ***Wolfgang Polifke***, *TU München*	GT2017-63470 **Aerodynamic Optimization of a Transonic Centrifugal Compressor by Using Arbitrary Blade Surfaces** ***Alexander Hehn, Moritz Mosdzien,*** *Institute of Jet Propulsion and Turbomachinery, RWTH Aachen;* ***Daniel Grates***, ***Peter Franz Jeschke***, *RWTH Aachen University*	GT2017-64568 **Numerical Simulation of Dynamic Flow Characteristics in a Centrifugal Water Pump Considering Shaft Torsional Vibration** ***Shen Lv, Xiangyuan Zhang, Wanyou Li, Zhi jun Shuai, Chen Xing Jiang,*** *Harbin Engineering University;* ***An Yan***, *Tsinghua University*

WEDNESDAY, JUNE 28 — 10:15 - 11:45 AM

	TURBOMACHINERY: DEPOSITION, EROSION, FOULING, AND ICING	CONTROLS, DIAGNOSTICS & INSTRUMENTATION	ELECTRIC POWER
	Deposition Experiments	**Advances in Instrumentation 3**	**Gas Turbine Industry Update**
	Technical Session • CCC, 208A • WB-48-6	**Technical Session • CCC, 203B • WB-5-9**	**Panel Session • Westin Hotel, Providence I • WB-8-7**
	Session Chair: **Brett Barker**, Rolls-Royce Session Co-Chair: **Bruce Varney**, Rolls Royce	Session Chair: **William Allan,** Royal Military College Of Canada Session Co-Chair: **Marc LaViolette**, Royal Military College of Canada; **Richard Bunce**, Measurement Solutions	Session Chair: **S. Can Gülen**, Bechtel Infrastructure & Power Inc.
10:15	GT2017-64946 **Effects of Metal Surface Temperature on Deposition-Induced Flow Blockage in a Vane Leading Edge Cooling Geometry** ***Steven Whitaker, Ryan Lundgreen, Jeffrey Bons,*** *Ohio State Univ*	GT2017-64932 **Measuring Large Flow Angles Using Non-Nulling Multi-Hole Pressure Probes** ***Martin J. Conlon, Hamza Abo El Ella,*** *National Research Council Canada;* ***Alexander Wright****, Dalhousie*	GT2017-65544 **Legislative and Regulatory Landscape** ***Andrew Dicke****, GE Energy*
10:45	GT2017-63167 **Sand Transport and Deposition in Rotating Two-Passed Ribbed Duct With Coriolis and Centrifugal Buoyancy Forces at Re=100,000** ***Cody Dowd, Danesh Tafti,*** *Virginia Tech;* ***Kuahai Yu****, Henan University of Science and Technology*	GT2017-64863 **Integration of CFD to Design Experiments for Enhanced Spatial and Temporal Discretization** ***Cis De Maesschalck, Guillermo Paniagua,*** *Purdue University;* ***Sergio Lavagnoli****, Von Karman Inst for Fluid Dynamics*	GT2017-65532 **Special Cycles** ***Richard Dennis****, DoE National Energy Technology Lab*
11:15	GT2017-63419 **High-Speed Shadowgraphy Measurements of an Erosive Particle-Laden Jet Under High-Pressure Compressor Conditions** ***Max Hufnagel, Stephan Staudacher,*** *Institute of Aircraft Propulsion Systems, University of Stuttgart* ***Christian Werner-Spatz****, Lufthansa Technik AG;* ***Christian Koch****, University of Stuttgart*	GT2017-64680 **Design of Directional Probes for High-Frequency Turbine Measurements** ***Zhe Liu, Guillermo Paniagua,*** *Purdue University*	GT2017-65533 **Fuels in Electric Power Generation** ***Peter Baldwin****, Base E*

CYCLE INNOVATIONS

Introduction to Thermodynamics for Gas Turbine Cycles and Cycle Simulation

Tutorial • Westin Hotel, Trade • WB-6-16

Session Chair: **Alvise Pellegrini,** Cranfield University

10:15

10:45

11:15

TUTORIAL

WEDNESDAY, JUNE 28 — 2:30 - 5:30 PM

	STUDENT ADVISORY 2:30 - 4:00 PM	AIRCRAFT ENGINE	HEAT TRANSFER: INTERNAL AIR SYSTEMS & SEALS (WITH TURBOMACHINERY)
	Rethinking Scientific Presentations: The Assertion-Evidence Structure	**Whole Engine Performance and Novel Concepts I**	**Oil Systems**
	Tutorial • CCC, Richardson Ballroom A • WC-37-16	Technical Session • CCC, 208B • WC-1-15	Technical Session • CCC, 212AB • WC-15-4
	Session Chair: **Jacob Snyder,** Penn State Session Co-Chair: **Zhiping Mao**, Duke Univeristy	Session Chair: **Stefan Bretschneider,** MTU Aero Engines North America Session Co-Chair: **Alexios Alexiou**, National Technical University of Athens; **Christopher Perullo**, Georgia Institute of Technology	Session Chair: **J. Axel Glahn**, Pratt & Whitney, Aero Thermal Systems
2:30	GT2017-65420 **Rethinking Scientific Presentations: The Assertion-Evidence Structure** ***Michael Alley**, Penn State*	GT2017-63461 **Comparison of a Heat Soakage Model With Turbofan Transient Engine Data** ***Maximilian Vieweg**, **Florian Wolters**, **Richard-Gregor Becker**, German Aerospace Center (DLR)*	GT2017-64410 **Computational Study of a Customised Shallow-Sump Aero-Engine Bearing Chamber With Inserts to Improve Oil Residence Volume** ***Akinola Adeniyi**, University of Central Lancashire; **Budi W. Chandra**, University of the West of England; **Kathy Simmons**, The University of Nottingham*
3:00	**TUTORIAL**	GT2017-63277 **Development and Validation of an On-Wing Engine Thrust Measurement System** ***Marc Bauer**, **Jens Friedrichs**, **Detlev Wulff**, Technische Universität Braunschweig Institute of Jet Propulsion and Turbomachinery; **Christian Werner-Spatz**, Lufthansa Technik AG*	GT2017-64530 **Performance of Adaptive Lubricants in a Hybrid Journal Bearing Operating Under Fully Saturated Conditions** ***Ssu-Ying Chien**, **Mark Cramer**, **Gen Fu**, **Alexandrina Untaroiu**, Virginia Tech*
3:30		GT2017-63336 **Engine Fleet-Management: The Use of Digital Twins From a MRO Perspective** ***Joern Kraft**, **Stefan Kuntzagk**, Lufthansa Technik AG*	GT2017-64703 **Experimental Investigation on Power Losses due to Oil Jet Lubrication in High Speed Gearing Systems** ***daniele massini**, **Tommaso Fondelli**, **Bruno Facchini**, University of Florence; **Lorenzo Tarchi**, Ergon Research s.r.l; **Federico Leonardi**, GE Avio s.r.l.*
4:00		GT2017-63834 **Turboelectric Distributed Propulsion System As a Future Replacement for Turbofan Engines** ***Borys Lukasik**, Institute of Aviation*	GT2017-64917 **Computational Analysis of Windage Losses in an Epicyclic Gear Train** ***Cosimo Bianchini**, **Riccardo Da Soghe**, **Lorenzo Tarchi**, **Jacopo D'Errico**, Ergon Research*
4:30		GT2017-63320 **Commissioning of Split Power Offtake on a Twin-Spool More Electric Engine Demonstrator** ***Susanne Kreuzer**, **Reinhard Niehuis**, University of the Federal Armed Forces Munich*	GT2017-64948 **Experimental and Numerical Investigation on Windage Power Losses in High Speed Gears** ***Daniele Massini**, **Bruno Facchini**, **Tommaso Fondelli**, University of Florence; Antonio Andreini, Department of Industrial Engineering (DIEF)-University of Florence; **Lorenzo Tarchi**, Ergon Research s.r.l. **Federico Leonardi**, GE Avio s.r.l.*
5:00			

WEDNESDAY, JUNE 28 — 2:30 - 5:30 PM

	HEAT TRANSFER: EXPERIMENTAL FILM COOLING	CERAMICS	HEAT TRANSFER: GENERAL COMPUTATIONAL HEAT TRANSFER
	Endwall Film Cooling I	**CMC/Ceramic Component & Material Testing**	**General Computational Heat Transfer III**
	Technical Session • CCC, 213CD • WC-19-1	**Technical • Westin Hotel, Providence I • WC-2-2**	**Technical Session • CCC, 207A • WC-22-3**
	Session Chair: **Srinath Ekkad**, Virginia Tech Session Co-Chair: **Kapil Panchåal**, Elliott Group	Session Chair: **Jun Shi**, Rolls-Royce Corporation Session Co-Chair: **Sung Choi**, Naval Air Systems Command	Session Chair: **Jing Ren**, Tsinghua University Session Co-Chair: **Wing Ng**, Virginia Tech
2:30	GT2017-63119 **Turbine Blade Platform Film Cooling With Fan-Shaped Holes Under Simulated Swirl Purge Flow and Slashface Leakage Conditions** ***Andrew F Chen, Chao-Cheng Shiau, Je-Chin Han,*** *Texas A&M University*	GT2017-63045 **Inhomogeneous Strain Distribution in SiCf/SiC Coupons Under Tensile Loading** ***Christopher Newton, Jonathan Jones, Martin R. Bache,*** *Swansea University;* ***Adam Chamberlain,*** *ROLLS-ROYCE*	GT2017-63032 **High Pressure Gas Turbine Vane Turbulent Flows and Heat Transfer Predicted by RANS/LES/DES** ***Ryoichi Amano, Ping Dong,*** *University of Wisconsin-Milwaukee*
3:00	GT2017-63144 **Turbine Vane Endwall Film Cooling Study From Axial-Row Configuration With Simulated Upstream Leakage Flow** ***Nafiz Chowdhury, Chao-Cheng Shiau, Je-Chin Han,*** *Texas A&M University;* ***Luzeng Zhang, Hee-Koo Moon,*** *Solar Turbines*	GT2017-64370 **Damage Development in SICF/SIC Composites Through Mechanical Loading** ***Martin R. Bache, J. Paul Jones, Zak Quiney,*** *Swansea University;* ***Louise Gale,*** *Rolls-Royce plc*	GT2017-63306 **Numerical Investigation of a Laser-Drilled Cooling Hole** ***David Cerantola, A.M. Birk,*** *Queens University*
3:30	GT2017-63145 **Turbine Vane Endwall Film Cooling From Cross-Row Configuration With Simulated Upstream Leakage Flow** ***Nafiz Chowdhury, Chao-Cheng Shiau, Je-Chin Han,*** *Texas A&M University;* ***Luzeng Zhang, Hee-Koo Moon,*** *Solar Turbines*	GT2017-65168 **Study of Interlaminar Fracture Properties of Ceramic Matrix Composites at Room and Elevated Temperatures** ***Rabih Mansour, Yogesh Pratap Singh, Manigandan Kannan, Gregory Morscher,*** *The University of Akron;* ***Frank Abdi, Jalees Ahmad, Cody Godines, Saber DorMohammadi,*** *Alpha STAR Corporation;* ***Sung Choi,*** *Naval Air Systems Command*	GT2017-63875 **Effect of Cooling on the Aerodynamic Performance in the Intercooled Compressor Vanes** ***Longgang Liu, Xuesong Li, Xiaodong Ren, Chunwei Gu,*** *Tsinghua University*
4:00	GT2017-63896 **Measurement of Film Cooling Effectiveness for a First-Stage Vane and Endwall of Gas Turbine With Fan-Shaped Holes** ***Jung Shin Park, Jin Young Jeong, Jae Su Kwak,*** *Korea Aerospace University;* ***Kidon Lee,*** *Doosan Heavy Industries and Construction*	GT2017-65247 **Testing Advanced SiC Fiber Tows at Elevated Temperature in Silicic Acid-Saturated Steam** ***Scott Robertson, Kevin Sprinkle, Marina Ruggles-Wrenn,*** *Air Force Institute of Technology*	GT2017-64451 **Effect of Heat Transfer on Pipe Flow Stability** ***Ce Zhang, Wei Ma, Wensheng Yu, Jinfang Teng,*** *Shanghai Jiao Tong University*
4:30		GT2017-65089 **Crack Growth Resistance of CMC Attachment Element and Turbine Blade in Aircraft Engines** ***Frank Abdi, Saber DorMohammadi, Jalees Ahmad, Cody Godines,*** *Alpha STAR Corporation;* ***Gregory Morscher, Rabih Mansour,*** *The University of Akron;* ***Sung Choi,*** *Naval Air Systems Command;* ***Stephen Gonczy,*** *Gateway Material Technology;* ***Greg C. Ojard,*** *United Technologies Research Center*	GT2017-64913 **Modelling Impingement-Effusion Flow Inside Double-Walled Combustor Tile** ***Dalila Ammour, Gary J. Page,*** *Loughborough University*
5:00		GT2017-63264 **Design and Testing for Ceramic Matrix Composite Turbine Vane** ***Fumiaki Watanabe, Takeshi Nakamura, Yousuke Mizokami,*** *IHI Corporation*	GT2017-64982 **Heat Transfer Analysis of the Surface of Nonfilm-Cooled and Film-Cooled Nozzle Guide Vanes in Transonic Annular Cascade** ***Kasem Ragab, Lamyaa El-Gabry,*** *The American University In Cairo*

WEDNESDAY, JUNE 28 — 2:30 - 5:30 PM

	MANUFACTURING MATERIALS & METALLURGY	MICROTURBINES, TURBOCHARGERS & SMALL TURBOMACHINES	OIL & GAS APPLICATIONS
	Additive Manufacturing for Gas Turbines - Applications and Performance	**Turbochargers - Concepts & Performance**	**Compressor Surge**
	Panel Session • CCC, Crown Ballroom • WC-24-11	**Technical • Westin Hotel, Providence III • WC-26-6**	**Technical Session • CCC, 106 • WC-27-1**
	Session Chair: **Timothy Simpson,** The Pennsylvania State University Session Co-Chair: **Nejib Chekir**, McGill University	Session Chair: **Robert Griffith,** Caterpillar Inc. Session Co-Chair: **Richard W. Kruiswyk**, Caterpillar Inc.	Session Chair: **Mirko Morini,** University of Parma Session Co-Chair: **Alessio Suman**, University of Ferrara
2:30	GT2017-65464 **Gas Turbine Hot Gas Path Component Repair using Additive Manufacturing** ***Dheepa Srinivasan**, GE Power, GE India Technology Center* ***Shawn Kelly**, Oerlikon*	GT2017-63923 **Study on the Regulation Boundary for Two-Stage Turbocharging System at Different Altitudes** ***Zhang Huiyan, Mengyu Li, Lei Shi, Kangyao Deng**, Shanghai Jiao Tong University; **Hualei Li**, AECC Commercial Aircraft Engine CO.,LTD*	GT2017-63061 **Measurement and Prediction of Centrifugal Compressor Axial Forces During Surge: Part 1: Surge Force Measurements** ***Klaus Brun, Sarah Simons**, Southwest Research Institute; **Rainer Kurz**, Solar Turbines Inc; **Michele Pinelli**, Univ Of Ferrara Endif; **Enrico Munari**, University of Ferrara; **Mirko Morini**, University of Parma*
3:00	GT2017-65466 **Investigations into Additive Manufacturing at United Technologies** ***Sergey Mironets**, UTC Aerospace Systems*	GT2017-64825 **Conceptual Design of an Axial Inflow Turbocharger Turbine** ***Apostolos Pesiridis**, Brunel University; **Antonio Ferrara**, **Raffaele Tuccillo**, Univ Of Naples; **Hua Chen**, National Laboratory of Engine Turbocharging Technology North China Eng Rsrch Inst*	GT2017-63070 **Measurement and Prediction of Centrifugal Compressor Axial Forces During Surge: Part 2: Dynamic Surge Model** ***Enrico Munari, U**niversity of Ferrara; **Mirko Morini,** University of Parma; **Michele Pinelli,** Univ Of Ferrara Endif; **Klaus Brun**, **Sarah Simons**, Southwest Research Institute; **Rainer Kurz**, Solar Turbines Inc.*
3:30	GT2017-65508 **Accessible High-Caliber Metal Additive Manufacturing Systems** ***Matthew Woods**, Xact Metal*	GT2017-64960 **Implementing Full Electric Turbocharging Systems on Highly Boosted Gasoline Engines** ***Qingning Zhang, PENGFEI LU, Pavlos Dimitriou, Sam Akehurst, Colin Copeland**, University of Bath; **Mehrdad Zangeneh**, Advanced Design Technology Ltd; **Bryn Richards**, Aeristech Ltd; **Gavin Fowler**, Jaguar Land Rover Ltd*	GT2017-64894 **Experimental Investigation of Vibrational and Acoustic Phenomena for Detecting the Stall and Surge of a Multistage Compressor** ***Enrico Munari, Gianluca D'Elia, Emiliano Mucchi**, University of Ferrara; **Mirko Morini**, University of Parma; **Michele Pinelli**, Univ Of Ferrara Endif; **Pier Ruggero Spina**, Universita Degli Studi Di Ferrara*
4:00		GT2017-64927 **Regenerative Hydraulic Assisted Turbocharger** ***Tao Zeng, Guoming Zhu,** Michigan State University; **Harold Sun**, FiTech; **Devesh Upadhyay, Eric Curtis**, Ford Motor Company*	GT2017-63005 **Process Control for Compression Systems** ***Rainer Kurz**, Solar Turbines Inc; **Klaus Brun**, Southwest Research Institute*
4:30			GT2017-63212 **Development of Compression System Dynamic Simulation Code for Testing and Designing of Anti-Surge Control System** ***Abbas Mohajer, Eshagh Abbasi,** MAPNA Turbine Engineering and Manufacturing Company (TUGA)*
5:00			

WEDNESDAY, JUNE 28 — 2:30 - 5:30 PM

	OIL & GAS APPLICATIONS	STEAM TURBINES	STRUCTURES & DYNAMICS: EMERGING METHODS IN DESIGN & ENGINEERING
	Risk Assessment at Combined Cycle Power Plants	**Improving Steam Turbine Operations for Optimized Plant Output and Minimal Environmental Impact**	**Design Modelling and Optimization**
	Tutorial Session • CCC, 219B • WC-27-14	**Panel • CCC, Westin Hotel, Providence II • WC-29-1**	**Technical Session • CCC, 216AB • WC-30-1**
	Session Chair: **George Orme**, Berkshire Hathaway Specialty Insurance	Session Chair: **Thomas Thiemann,** Siemens AG Session Co-Chair: **Ivan McBean**, General Electric	Session Chair: **Thomas Weiss,** Rolls Royce Deutschland Ltd & Co. KG Session Co-Chair: **Afzal Pasha Mohammed**, Power Systems Mfg., LLC.
2:30	GT2017-65575 **Risk Assessment at Combined Cycle Power Plants** ***George Orme,*** *Berkshire Hathaway Specialty Insurance*	GT2017-65537 **Improving steam turbine operations for optimized plant output and minimal environmental impact** ***Reinhard Kloste**r, Siemens AG*	GT2017-63446 **Geometric Model Update of Blisks and its Experimental Validation for a Wide Frequency Range** ***Thomas Maywald, Arnold Kühhorn**, Brandenburg University of Technology; **Thomas Backhaus,** Technische Universität Dresden; **Sven Schrape**, Rolls-Royce Deutschland*
3:00	**T**	GT2017-65539 **Improving steam turbine operations for optimized plant output** ***John Basirico**, General Electric*	GT2017-64959 **Innovative Design of Attachment for Turbine Blade Rotating at High Speed** ***Daniele Botto, Farhad Alinejad,** Politecnico di Torino*
3:30	**U** **T**	GT2017-65540 **Improving steam turbine operations for optimized plant output** ***Yuki Enomoto**, Mitsubishi Hitachi Power Systems*	GT2017-64412 **Determining Stress in Turbocharger Impellers due to Component Machining Process** ***Simon Barrans, Md Shams E Tabriz,** University of Huddersfield; **Christian Ellis**, BorgWarner Ltd*
4:00	**O** **R**	GT2017-65541 **Improving steam turbine operations for optimized plant output** ***Qi Sun**, Dongfang Steam Turbine Co*	GT2017-63560 **Design of a Bimetallic Blisk Turbine for a Gas Turbine Engine and its Production Using Powder Metallurgy Methods** ***Liubov Magerramova, Ravil Nigmatullin, Boris Vasilyev, Vladimir Kinzburskiy,** Central Institute of Avation Motors*
4:30	**I** **A**	GT2017-65574 **Improving steam turbine operations for optimized plant output and minimal environmental impact** ***Luciano Cozza**, Ansaldo Energia SPA*	GT2017-65075 **An Aeromechanical Screening Tool for Turbine Blades** ***Suryarghya Chakrabarti**, GE Global Research; **Andrew Grafitti**, **Brian Potter**, GE Power*
5:00	**L**		GT2017-64377 **A General Ply Design for Aero Engine Composite Fan Blade** ***Jiaguangyi Xiao**, **Yong Chen, Qichen Zhu,** Shanghai Jiaotong University; **Jun Lee**, **Tingting Ma**, **Jiangsu** Xinyang New Material Co., Ltd.*

WEDNESDAY, JUNE 28 — 2:30 - 5:30 PM

	STRUCTURES & DYNAMICS: BEARING & SEAL DYNAMICS	STRUCTURES & DYNAMICS: STRUCTURAL MECHANICS, VIBRATION & DAMPING	SUPERCRITICAL CO2 POWER CYCLES
	Gas Bearings & Squeeze Film Dampers	**Nonlinearities and Rotor-Stator-Interaction**	**Supercritical CO2 Turbomachinery**
	Technical Session • CCC, 105 • WC-34-2	**Technical Session • CCC, 203A • WC-35-5**	**Technical Session • CCC, 207D • WC-38-1**
	Session Chair: **Mihai Arghir**, Universite De Poitiers - Instit Pprime, D3 Session Co-Chair: **Adolfo Delgado**, Texas A&M University	Session Chair: **Fabrice Thouverez**, Ecole Centrale de Lyon Session Co-Chair: **Kiran D'Souza**, The Ohio State University	Session Chair: **Douglas Hofer**, GE Global Research Session Co-Chair: **Timothy Allison,** Southwest Research Institute
2:30	GT2017-63495 **Rotordynamic Performance of Hybrid Air Foil Bearings With Regulated Hydrostatic Injection** ***Behzad Zamanian Yazdi, Daejong Kim**, University of Texas at Arlington*	GT2017-63629 **Non-Linear Modeling of Centrifugal Stiffening Effects for Accurate Bladed Component Reduced-Order Models** ***Elias Khalifeh, Elsa Piollet, Alain Batailly,** École Polytechnique de Montréal; **Antoine Millecamps**, Safran Aicraft Engines*	GT2017-63090 **The Impeller Exit Flow Coefficient As a Performance Map Variable for Predicting Centrifugal Compressor Off-Design Operation Applied to a Supercritical CO2 Working Fluid** ***Eric Liese, Stephen Zitney,** National Energy Technology Laboratory*
3:00	GT2017-65233 **Rotordynamics Performance of Hybrid Foil Bearing Under Forced Vibration Input** ***Daejong Kim,** University of Texas at Arlington; **Brian Nicholson,** Air Force Research Lab **Lewis Rosado,** USAF AFRL/PRTM; **Garry Givan,** Air Force Research Lab*	GT2017-63752 **Nonlinear Vibration of a Saturated Water Journal Bearing and Bifurcation Analysis** ***Tadayoshi Shoyama**, Panasonic Corporation*	GT2017-64631 **Design of a Centrifugal Compressor Stage and a Radial-Inflow Turbine Stage for a Supercritical CO2 Recompression Brayton Cycle by Using 3D Inverse Design Method** ***Jiangnan Zhang**, **Pedro Gomes**, **Benjamin Choo**, Advanced Design Technology; **Mehrdad Zangeneh**, Univ College London*
3:30	GT2017-65105 **Design Approach for Large Foil Bearings Considering Rotordynamics** ***Srikanth Honavara Prasad**, **Daejong Kim**, University of Texas at Arlington*	GT2017-63999 **Nodal Diameter-Dependent Modal Damping Method for Nonlinear Blade Dynamics Prediction Considering Variable Rotational Speed** ***Torsten Heinze, Joerg Wallaschek, Leibniz Universität Hannover; Lars Panning-von Scheidt,** LUH Hannover; **Dr. Andreas Hartung,** MTU Aero Engines AG*	GT2017-65172 **Design of a Wide-Range Centrifugal Compressor Stage for Supercritical CO2 Power Cycles** ***Robert Pelton, Sewoong Jung, Hanwha Techwin; Timothy Allison, Natalie Smith,** Southwest Research Institute*
4:00	GT2017-63152 **On the Force Coefficients of a Flooded, Open Ends Short Length Squeeze Film Damper: From Theory to Practice (and Back)** ***Luis San Andres,** Texas A & M Univ; **Sean Den**, Formosa Plastics Corp; **Sung-Hwa Jeung**, Ingersoll Rand*	GT2017-64023 **Frequency-Domain Sensitivity Analysis of Stability of Nonlinear Vibrations for High-Fidelity Models of Jointed Structures** ***Evgeny Petrov**, The University of Sussex*	GT2017-64349 **Partial Admission, Axial Impulse Type Turbine Design and Partial Admission Radial Turbine Test for S-CO2 Cycle** ***Hyungki Shin, Junhyun Cho, YOUNG-JIN BAIK, Jongjae Cho, Chulwoo Roh,** Korea Institute of Energy Research; **Ho-Sang Ra,** Korea Institute of Energy Research; **Young Seok Kang, Jaesung Huh,** Korea Aerospace Research Institute*
4:30	GT2017-63448 **Dynamic Characterization of an Integral Squeeze Film Bearing Support Damper for a Supercritical CO2 Expander** ***Bugra Ertas**, GE Global Research; **Adolfo Delgado,** Texas A&M University; **Jeffrey Moore**, Southwest Research Institute*	GT2017-63488 **Towards Full 3D Numerical Simulation of Whirl Motions Stemming From Unilateral Contact Constraints in Aircraft Engines** ***Jérémy Paltrinieri,** Ecole Centrale de Nantes; **Florence Nyssen**, **Alain Batailly**, École Polytechnique de Montréal; **Marie-Océane Parent**, Safran Aicraft Engines*	GT2017-65169 **A Novel Experimental Method for LCF Measurement of Nickle Base Super Alloys in High Pressure High Temperature Supercritical CO2** ***Azam Thatte, Etienne Martin, Timothy Hanlon**, GE Global Research*
5:00	GT2017-63276 **The Dynamic Characteristic Analysis of Elastic Ring Squeeze Film Damper by Fluid-Structure Interaction Approach** ***Zhenlin Wang, Ning Xu, XiangYu Yu, Zhang-sheng Liu, Guanghui Zhang,** Harbin Institute of Technology*	GT2017-64342 **Thermomechanical Component Mode Synthesis for Blade Casing Interaction Prediction** ***Nicolas GUERIN, Patricio Almeida,** Safran Helicopter Engines; **Fabrice Thouverez**, Ecole Centrale de Lyon **Claude Gibert**, Laboratory of Tribology and Systems Dynamics; **Mathias Legrand**, McGill University*	

WEDNESDAY, JUNE 28 — 2:30 - 5:30 PM

	COAL, BIOMASS & ALTERNATIVE FUELS	TURBOMACHINERY: AXIAL FLOW FAN & COMPRESSOR AERODYNAMICS	TURBOMACHINERY: AXIAL FLOW TURBINE AERODYNAMICS
	Advancements of Gasification and IGCC Technologies and Their Contributions to the World's Clean Environment	**Experiments**	**Tip Leakage Flows**
	Panel Session • CCC, 217AB • WC-3-9	**Technical • CCC, Richardson Ballroom C • WC-39-12**	**Technical Session • CCC, 208A • WC-40-1**
	Session Chair: **Ting Wang,** University Of New Orleans Session Co-Chair: **Ajay Agrawal**, University of Alabama	Session Chair: **Benjamin Walther,** GE Aviation Session Co-Chair: **Andreas Peters**, GE Aviation	Session Chair: **Guillermo Paniagua**, Purdue University Session Co-Chair: **Brennan Stults**, Rolls Royce Corporation; **Reid A. Berdanier**, Penn State University
2:30	GT2017-65555 **U.S. Department of Energy's Perspective on Clean Coal Technologies via Gasification and Advanced Turbine Systems** ***Lawrence Shadle,*** *U.S. Dept. of Energy, National Energy Technology Lab*	GT2017-63399 **Numerical Studies on the Intrusive Influence of a Five-Hole Pressure Probe in a High-Speed Axial Compressor** ***Christoph Sanders, Marius Terstegen, Magnus Hoelle,*** *Institute of Jet Propulsion and Turbomachinery, RWTH Aachen University;* ***Peter Franz Jeschke****, RWTH Aachen University;* ***Harald Schoenenborn****,* ***Tobias Froebel****, MTU Aero Engines AG*	GT2017-64312 **Aerodynamic Performance of an Unlocated High Pressure Turbine Rotor With Worn Tip Seal Fins** ***Lucas Pawsey, David John Rajendran, Vassilios Pachidis,*** *Cranfield University*
3:00	GT2017-65452 **EPRI's Perspective on the Outlook of Coal Gasification/IGCC on World's Environment** ***Jeffrey Phillips,*** *Electric Power Research Institute*	GT2017-64874 **A Methodology for Variable Geometry Optimization of Multistage Axial Compressors** ***Michael Lyall****, AFRL/RQT;* ***Fred J. Eisert****, Air Force Research Laboratory;* ***Douglas C. Rabe****, Universal Technology Corporation;* ***Patrick M. Fleisher,*** *University of Notre Dame*	GT2017-63083 **Blade Tip Leakage Loss Reduction by Means of Passive Tip Injection: Linear Cascade Wind Tunnel Results** ***Jonas Rejek,*** *Muenster University of Applied Sciences;* ***Stefan aus der Wiesche, Fachhochschule Münster, Fachbereich Maschinenbau; Reinhard Willinger,*** *Technische Universität Wien*
3:30	GT2017-65515 **Advancement of GE's Technologies for IGCC Applications** ***Paul Glaser****, GE*	GT2017-63283 **Low Reynolds Number Response of High Efficiency, Intermediate Pressure Compressor Profiles** ***Benigno J. Lazaro, Ezequiel Gonzalez,*** *Universidad Politecnica de Madrid;* ***David Cadrecha****,* ***Antonio Antoranz****, ITP;* ***Jorge Parra,*** *Industria de Turbo Propulsores S.A.*	GT2017-64705 **Effect of Active Modulation of Through-Casing Coolant Injection on Turbine Efficiency** ***Brian M.T. Tang, Marko Bacic,*** *University of Oxford, Dept. Engineering Science;* ***Peter Ireland****, University of Oxford*
4:00	GT2017-65516 **Siemens' Perspective on Syngas Fuels and IGCC Applications** ***Adam Foust****, Siemens*	GT2017-63246 **Experimental Investigations on the Efficiency of Active Flow Control in a Compressor Cascade With Periodic Non-Steady Outflow Conditions** ***Marcel Staats, Wolfgang Nitsche,*** *Technische Universität Berlin*	GT2017-64422 **On Scaling Method to Investigate High-Speed Over-Tip-Leakage Flow at Low-Speed Condition** ***Hongmei Jiang, Lipo Wang,*** *Shanghai Jiao Tong University;* ***Li He,*** *Oxford University;* ***Qiang Zhang,*** *University of London*
4:30	GT2017-65549 **Experience of Using Coal/ Biomass Gasification to Produce Fischer-Tropsch Liquids** ***Kunlei Liu****, University of Kentucky*	GT2017-63960 **Reduction of Pressure Losses in a Linear Cascade Using Herringbone Riblets** ***Qiang Liu****,* ***Shan Zhong****,* ***Lin Li,*** *Manchester University*	GT2017-64942 **Experimental and Numerical Study of Honeycomb Tip on Suppressing Tip Leakage Flow in Turbine Cascade** ***Yunfeng Fu, Fu Chen, Huaping Liu, Yanping Song,*** *Harbin Institute of Technology*
5:00	GT2017-65507 **Overview of Current Status and Outlook of Coal Gasificaiton and IGCC** ***Ting Wang****, University Of New Orleans*	GT2017-64054 **Influence of Leading Edge Tubercles in an Annular Compressor Cascade With Different Hub-Tip Ratios and Aspect Ratios** ***Tan Zheng, Mingmin Zhu, Xiao-qing Qiang, Jinfang Teng, Jin-zhang Feng,*** *Shanghai Jiao Tong University*	GT2017-63769 **Aerodynamic Performance of Tip Injections for a Winglet-Shrouded Linear Turbine Cascade** ***Min Zhang, Yan Liu, Meng Chao Zhang, Bao Xi Mo, Jin Guang Yang,*** *Dalian University of Technology*

WEDNESDAY, JUNE 28 — 2:30 - 5:30 PM

	TURBOMACHINERY: DESIGN METHODS & CFD MODELING FOR TURBOMACHINERY	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: RADIAL TURBOMACHINERY AERODYNAMICS
	LES and DNS Methods and Applications (2)	**Combustion Dynamics: Instability Analysis II**	**Harold W. Hipsky, Jr. Memorial Session "Design, Developments and Challenges in Radial Turbomachinery"**
	Technical Session • CCC, 217CD • WC-41-10	**Technical Session • CCC, 207BC • WC-4-22**	**Panel • CCC, Richardson Ballroom B • WC-44-10**
	Session Chair: **Rob Watson,** University of Cambridge Session Co-Chair: **Chunill Hah**, NASA Glenn Research Center	Session Chair: **Michael Koenig**, Siemens Energy Inc. Session Co-Chair: **Thomas Sattelmayer**, Technical Univ Munich	Session Chair: **William Cousins,** United Technologies Research Center
2:30	GT2017-64279 **Large Eddy Simulation of Transitional Flow in a Compressor Cascade** ***Syed Anjum Haider Rizvi, Joseph Mathew**, Indian Institute of Science*	GT2017-63479 **The Effect of Transient Fuel Staging on Self-Excited Instabilities in a Multi-Nozzle Model Gas Turbine Combustor** ***Wyatt Culler, Janith Samarasinghe, Bryan Quay, Domenic Santavicca, Jacqueline O'Connor,** Pennsylvania State University*	GT2017-65491 **Memorial Statement on Harold W. Hipsky, Jr.** ***Louis Bruno,** United Technologies Aerospace Systems*
3:00	GT2017-64622 **Comparison of Heterogeneous and Homogeneous Coolant Injection Models for Large Eddy Simulation of Multiperforated Liners Present in a Combustion Simulator** ***Martin Thomas, Laurent Gicquel, Florent Duchaine, Antoine Dauptain**, CERFACS; **Charlie Koupper,** Safran Helicopter Engines; **Franck Nicoud**, University of Montpellier*	GT2017-64717 **An Onion Peeling Reconstruction of the Spatial Characteristics of Entropy Waves in a Model Gas Turbine Combustor** ***Dominik Wassmer, Felix Pause,** TU Berlin, ISTA; **Bruno Schuermans**, GE (Switzerland) GmbH; C. **Oliver Paschereit**, H.F.I TU Berlin; **Jonas Moeck**, TU Berlin*	GT2017-65487 **Design Challenges In Auxiliary Power Unit Compressors - The Art Of Compromise** ***Tony Jones**, Pratt and Whitney AeroPower*
3:30	GT2017-64635 **The Effect of Non-Equilibrium Boundary Layers on Compressor Performance** ***Andrew P S Wheeler, Robert Miller**, University of Cambridge; **Anthony Dickens,** University of Cambridge Department of Engineering*	GT2017-65003 **Experimental Study of Transient Mechanisms of Bi-Stable Flame Shape Transitions in a Swirl Combustor** ***Michael Stöhr, Zhiyao Yin, Wolfgang Meier,** German Aerospace Center (DLR); **Kilian Oberleithner**, **Moritz Sieber**, Chair of Fluid Dynamics, TU Berlin*	GT2017-65488 **Design and Experimental Assessment of a Compact, High Work Factor Centrifugal Compressor** ***Om Sharma,** United Technologies Research Center*
4:00	GT2017-64648 **Advanced Statistical Analysis Estimating the Heat Load Issued by Hot Streaks and Turbulence on a High-Pressure Vane in the Context of Adiabatic Large Eddy Simulations** ***Martin Thomas, Laurent Gicquel, Florent Duchaine, Mael Harnieh,** CERFACS; **Charlie Koupper**, Safran Helicopter Engines*	GT2017-64527 **The Response to Incident Acoustic Waves of the Flow Field Produced by a Multi-Passage Lean-Burn Aero-Engine Fuel Injector** ***Nicholas Treleaven, Jialin Su, Andrew Garmory, Gary J. Page**, Loughborough University Technology Centre*	GT2017-65489 **Centrifugal Compressors in HVAC industry - Challenges and Opportunities** ***Vishnu Sishtla**, United Technologies Climate, Controls and Security*
4:30		GT2017-64614 **Experimental Investigation of Self-Excited Combustion Instabilities in a Lean, Premixed, Gas Turbine Combustor at High Pressure** ***Timo Buschhagen, Rohan Gejji, John Philo, Carson D. Slabaugh,** Purdue University; **Lucky Tran**, University of Central Florida; **J. Enrique E. Portillo Bilbao,** Siemens Power Generation, Inc.*	GT2017-65490 **Combustor Development of an Auxiliary Power Unit - A System Approach** ***Charlene Hu**, UTAS Aerostructures*
5:00			

WEDNESDAY, JUNE 28 — 2:30 - 5:30 PM

	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: MULTIDISCIPLINARY DESIGN APPROACHES, OPTIMIZATION & UNCERTAINTY QUANTIFICATION	COMBUSTION, FUELS & EMISSIONS
	Pollutant Emissions Formation & Control	**Uncertainty Quantification and Robust Design**	**High Hydrogen Combustion I**
	Technical Session • CCC, 203B • WC-4-7	**Technical Session • CCC, 211AB • WC-47-1**	**Technical Session • CCC, 219A • WC-4-9**
	Session Chair: **Jeffrey Bergthorson,** McGill University Session Co-Chair: **Gilles Bourque**, Siemens Canada Ltd	Session Chair: **Francesco Montomoli,** Imperial College London Session Co-Chair: **Shahrokh Shahpar**, Rolls-Royce Plc	Session Chair: **Jeffrey Goldmeer**, GE Power Session Co-Chair: **William York**, GE Power
2:30	GT2017-63182 **Gas Turbine Model Combustor Emissions of Liquid Single-Component Fuels** ***Jasper Grohmann, Wolfgang Meier,*** *German Aerospace Center (DLR);* ***Manfred Aigner****, Dlr*	GT2017-63157 **Robust Optimization Design of Compressor Blade Considering Machining Error** ***Chi MA, Limin Gao, Yutong CAI, Ruiyu LI,*** *Northwestern Polytechnical University*	GT2017-64401 **Effects of Hydrogen Fueling on NOx Emissions: A Reactor Model Approach for an Industrial Gas Turbine Combustor** ***Daniel Kroniger, Moritz Lipperheide, Manfred Wirsum,*** *RWTH-Aachen University*
3:00	GT2017-63787 **Modeling of Minimum NOx in Staged-Combustion Architectures at Elevated Temperatures** ***Edwin Goh, Matthew D. Sirignano, Vedanth Nair, Benjamin Emerson, Tim Lieuwen, Jerry Seitzman,*** *Georgia Institute of Technology*	GT2017-63704 **Quantification of X-Ray Measurement Uncertainty Based on Optical Measurement Data of Turbine Blades** ***Lars Högner, Sebastian Knebel,*** *TU Dresden;* ***Matthias Voigt****, University Dresden;* ***Ronald Mailach,*** *Technische Universität Dresden;* ***Marcus Meyer****, Rolls-Royce Deutschland Ltd & Co KG*	GT2017-64719 **Numerical Combustion and Heat Transfer Simulations and Validation for a Hydrogen Fueled "Micromix: Test Combustor in Industrial Gas Turbine Applications** ***Constantin J. D. Striegan, Anis Haj Ayed, Karsten Kusterer,*** *B&B-AGEMA GmbH;* ***Harald Funke, Sebastian Loechle,*** *Aachen University of Applied Sciences;* ***Masahide Kazari, Atsushi Horikawa, Kunio Okada, Kazuki Koga,*** *Kawasaki Heavy Industries*
3:30	GT2017-64609 **Catalytic Influence of Water Vapor on Lean Blowoff and NOx Reduction for Pressurised Swirling Syngas Flames** ***Daniel Pugh, Richard Marsh, Jon Runyon,*** *Cardiff University;* ***Phil Bowen, Steve Morris,*** *Gas Turbine Research Centre, Cardiff University;* ***Andrew Crayford, Anthony Giles,*** *Cardiff University School of Engineering*	GT2017-63238 **Comparative Analysis of Methodologies for Uncertainty Propagation and Quantification** ***Alessandra Cuneo, Alberto Traverso,*** *University of Genoa;* ***Shahrokh Shahpar****, Rolls-Royce Plc*	GT2017-64794 **Experimental Analysis of Confinement and Swirl Effects on Premixed CH4-H2 Flame Behavior in a Pressurized Generic Swirl Burner** ***Jon Runyon, Richard Marsh, Daniel Pugh, Agustin Valera-Medina,*** *Cardiff University;* ***Phil Bowen, Steve Morris,*** *Gas Turbine Research Centre, Cardiff University;* ***Anthony Giles,*** *Cardiff University School of Engineering*
4:00	GT2017-63063 **Model Based Prediction of Off-Design Operation Condition NOx Emission From DLE Gas Turbine Combustors** ***Martin Lauer, Jens Färber, Frank Reiß, Jaman El Masalme,*** *MAN Diesel & Turbo SE*	GT2017-64842 **Toward Affordable Uncertainty Quantification for Industrial Problems: Part I: Theory and Validation** ***Tiziano Ghisu,*** *University of Cagliari;* ***Shahrokh Shahpar****, Rolls-Royce Plc*	GT2017-64795 **Numerical and Experimental Evaluation of a Dual-Fuel Dry-Low-NOx Micromix Combustor for Industrial Gas Turbine Applications** ***Harald Funke, Jan Keinz,*** *Aachen University of Applied Sciences;* ***Nils Beckmann,*** *FH Aachen University of Applied Sciences;* ***Sylvester Abanteriba,*** *Royal Melbourne Institute of Technology*
4:30	GT2017-64271 **Review of Hybrid Emissions Prediction Tools and Uncertainty Quantification Methods for Gas Turbine Combustion Systems** ***Sajjad Yousefian,*** *National University of Ireland, Galway;* ***Gilles Bourque****, Siemens Canada Ltd;* ***Rory Monaghan****, Mechanical Engineering and Combustion Chemistry Centre*	GT2017-64845 **Toward Affordable Uncertainty Quantification for Industrial Problems: Part II: Turbomachinery Application** ***Tiziano Ghisu****, University of Cagliari;* ***Shahrokh Shahpar****, Rolls-Royce Plc*	GT2017-64849 **Experimental Investigation of Combustion Dynamics in a Turbulent Syngas Combustor** ***Nikhil Baraiya, Baladandayuthapani N,*** *Indian Institute of Technology Madras;* ***Satya Chakravarthy****, IIT Madras*
5:00	GT2017-63686 **Effects of Fuel Molecular Weight on Emissions in a Jet Flame and a Model Gas Turbine Combustor** ***Anandkumar Makwana, Milton Linevsky, Suresh Iyer, Robert Santoro, Thomas Litzinger, Jacqueline O'Connor,*** *Pennsylvania State University*	GT2017-64968 **An Autonomous Uncertainty Quantification Method for the Digital Age: Transonic Flow Simulations Using Multivariate PADE Approximations** ***Richard Ahlfeld, Mauro Carnevale, Francesco Montomoli,*** *Imperial College London;* ***Simone Salvadori****, Energy Engineering Dept., University of Firenze*	GT2017-64782 **Fuel Flexibility of a Multi-Staged Prototype Gas Turbine Burner** ***Atanu Kundu, Arman Ahamed Subash, Robert Collin, Jens Klingmann,*** *Lund Universitet*

WEDNESDAY, JUNE 28 — 2:30 - 5:30 PM

	WIND ENERGY	CONTROLS, DIAGNOSTICS & INSTRUMENTATION	
	Wind Turbine Flow Fields and Simulations	**Active Clearance in Hot Zone**	
	Technical Session • Westin Hotel, Harris • WC-49-9	**Panel Session • CCC, 213AB • WC-5-11**	
	Session Chair: **Xiaodong Wang,** North China Electric Power University	Session Chair: **Richard Bunce,** Measurement Solutions Session Co-Chair: **Kam Chana**, Oxford University	
2:30	GT2017-64004 **Comparison of Experimental and Numerically Predicted Three-Dimensional Wake Behaviour of a Vertical Axis Wind Turbine** ***Joseph Saverin, David Holst, George Pechlivanoglou,*** *TU Berlin;* ***Giacomo Persico, Vincenzo Dossena****, Politecnico Di Milano;* ***David Marten****, TU Berlin – ISTA; C.* ***Oliver Paschereit****, H.F.I TU Berlin*	GT2017-65524 **Active Clearance Measurement, State of the Technology** ***Kam Chana,*** *Oxford University;* ***Peter L Loftus****, Rolls-Royce plc*	
3:00	GT2017-64105 *A* **Hybrid Free Wake Simulation Comparison of Turbine Wake Steering With Innovative Turbine Designs** ***Keye Su, Donald Bliss,*** *Duke University*	GT2017-65528 **Active Clearance Measeurement, a Key to Engine Health** ***Neil P. Martin****, dstl Portsdown West*	
3:30	GT2017-64723 **Comparative Analysis of Different Numerical Techniques to Analyze the Wake of a Wind Turbine** ***Alessandro Bianchini, Francesco Balduzzi, Domenico Gentiluomo, Giovanni Ferrara, Alessandro Bianchini,*** *University of Florence;* ***Lorenzo Ferrari****, University of Pisa*	GT2017-65377 **Active Clearance Measurement, the New Fogale Capacitance Measurement Approaches** ***Nicolas Billiard****, FOGALE Nanotech*	
4:00	GT2017-64733 **Detailed Analysis of the Wake Structure of a Straight-Blade H-Darrieus Wind Turbine by Means of Wind Tunnel Experiments and CFD Simulations** ***Francesco Balduzzi, Giovanni Ferrara,*** *University of Florence;* ***Giacomo Persico, Vincenzo Dossena, Politecnico Di Milano; Lorenzo Battisti,*** *University of Trento;* ***Lorenzo Ferrari****, University of Pisa*	GT2017-65527 **Active Clearance Measurement, Pentair Thermal Management's Capacisense Product** ***Paul Seccombe****, Pentair Technical Solutions UK Ltd*	
4:30	GT2017-63129 **High Humidity Aerodynamic Effects Study on Offshore Wind Turbine Airfoil/Blade Performance Through CFD Analysis** ***Yu Xue,*** *CDT Science and Technology Research Institute;* ***Yan Liu****, North China Electric Power University*		
5:00	GT2017-63573 **CFD Simulation of Blade Flows With High Amplitude Pitching** ***Ramesh Kumar, John W. Chew, Dario Amirante, Nick Hills,*** *University of Surrey;* ***Joseba Murua****, Pilatus Aircraft Ltd*		

WEDNESDAY, JUNE 28 — 2:30 - 5:00 PM

	INDUSTRIAL & COGENERATION	OIL & GAS APPLICATIONS	
	Gas Turbine Inlet Fogging, Wet Compression, and Wet Media	**Risk Assessment at Combined Cycle Power Plants**	
	Tutorial • Westin Hotel, Tryon • WC-23-5	**Tutorial Session • CCC, 218B & 219B • WC-27-14**	
	Session Chair: **Mustapha Chaker,** CB&I	Session Chair: **George Orme,** Berkshire Hathaway Specialty Insurance	
2:30	T	T	
3:00	U	U	
3:30	T	T	
4:00	O	O	
4:30	R	R	
5:00	I	I	
	A	A	
	L	L	

THURSDAY, JUNE 29 — 8:00 - 10:00 AM

	HEAT TRANSFER: NUMERICAL FILM COOLING	HEAT TRANSFER: GENERAL EXPERIMENTAL HEAT TRANSFER	HEAT TRANSFER: INTERNAL AIR SYSTEMS & SEALS (WITH TURBOMACHINERY)
	Numerical Simulation of Vane Endwall & Blade Tip Film Cooling	**Thermal Systems Design and Research**	**Rotating Cavities**
	Technical Session • CCC, 213CD • ThA-12-3	**Technical Session • CCC, 219A • ThA-13-1**	**Technical Session • CCC, 212AB • ThA-15-5**
	Session Chair: **Ali Ameri,** The Ohio State University Session Co-Chair: **Antonio Andreini**, Department of Industrial Engineering (DIEF)-University of Florence	Session Chair: **James Downs,** Florida Turbine Technologies Inc Session Co-Chair: **Randall Mathison**, Ohio State University	Session Chair: **Alexander Mirzamoghadam**, Honeywell Aerospace Session Co-Chair: **Ding-Wei Zhou,** Honeywell Aerospace
8:00	GT2017-63337 **A Numerical Investigation on the Differences Between Annular and Flat Film Cooled Endwalls** ***Ran Yao, Wenshuo Yang, Wei Wang**, University of Science and Technology of China; **Jianhua Wang**, University of Science & Technology; **Zhineng Du, Ming Wang**, Aero-engine Institute of Aviation Industry Corporation of China*	GT2017-63123 **Measurement of the Mean Flow Field in a Smooth Rotating Channel With Coriolis and Buoyancy Effects** ***Ruquan You, Haiwang Li, Zhi Tao, Kuan Wei,** Beihang University*	GT2017-63060 **Theoretical Model of Buoyancy-Induced Heat Transfer in Closed Compressor Rotors** ***Hui Tang**, University of Bath, **J Michael Owen**, University of Bath*
8:30	GT2017-64293 **Rotating Effect on Transonic Squealer Tip Cooling Performance** ***Diwei Zhu, Haiteng Ma, Jinfang Teng,** Shanghai Jiao Tong University; **Shaopeng Lu,** School of Aeronautics and Astronautics, Shanghai Jiao Tong University; **Qiang Zhang**, University of London*	GT2017-64728 **State-of-The-Art Cooling Technology for a Turbine Rotor Blade** ***Jason Town, Karen Thole,** Pennsylvania State University; **Douglas Straub,** U.S. Dept of Energy; **Jim Black,** National Energy Technology Laboratory; **Tom Shih**, Purdue University*	GT2017-64884 **Experimental and Computational Investigation of Rayleigh-Benard Flow in the Rotating Cavities of a Core Compressor** ***Mark R. Puttock-Brown,** Thermo-Fluid Mechanics Research Centre; **Martin G. Rose,** Thermo-Fluid Mechanics Research Centre (TFMRC), University of Sussex; **Chris A. Long,** University of Sussex*
9:00	GT2017-65207 **On the Reliability of RANS Turbulence Models for Endwall Cooling Prediction** ***XUEYING LI,** Tsinghua University, Department of Thermal Engineering; **Jing Ren, Hongde Jiang,** Tsinghua University*	GT2017-64921 **Internal and External Cooling of a Full Coverage Effusion Cooling Plate: Effects of Double Wall Cooling Configuration and Conditions** ***Zhong Ren, Sneha Reddy Vanga, Nathan Rogers, Phil Ligrani, Keith Hollingsworth,** University of Alabama In Huntsville; **Frederico Liberatore, Rajeshriben Patel, Ram Srinivasan, Yin-hsiang Ho,** Solar Turbines Inc*	GT2017-64503 **Numerical Characterization of Flow and Heat Transfer in Pre-Swirl Systems** ***Riccardo Da Soghe, Cosimo Bianchini, Jacopo D'Errico,** Ergon Research*
9:30	GT2017-63168 **Numerical Study on Effects of Density Ratio on Film Cooling Flow Structure and Film Cooling Effectiveness** ***Eiji Sakai,** CRIEPI; **Toshihiko Takahashi,** Central Research Institute of Electric Power Industry*		GT2017-63951 **Numerical Simulations of Flow Fields and Heat Transfer Characteristics in Tenon Joint Gap Between Turbine Blade and Disk Under Rotating Conditions** ***DaWei Chen, Huiren Zhu, Yang Xu, XiaoMeng Jia, Cong Liu,** Northwestern Polytechnical University; **Haiying Lu,** Shenyang Aircraft Engine Design Institute*

THURSDAY, JUNE 29 — 8:00 - 10:00 AM

	AIRCRAFT ENGINE	HEAT TRANSFER: EXPERIMENTAL FILM COOLING	MANUFACTURING MATERIALS & METALLURGY
	Inlets I	**Experimental Methods & Evaluation**	**Application of Advanced Manufacturing Technologies for IGT Components**
	Technical Session • CCC, 207D • ThA-1-6	**Technical Session • CCC, 203A • ThA-19-2**	**Panel Session • CCC, 217AB • ThA-24-12**
	Session Chair: **John Spyropoulos,** Navair/ Propulsion & Power Session Co-Chair: **Aaron Byerley**, USAF Academy; **Kurt Rouser**, HQ USAFA/DFEI	Session Chair: **Andrew Nix**, West Virginia University Session Co-Chair: **Arnab Roy**, National Energy Technology Laboratory	Session Chair: **Joseph Janssen,** Metem Corp Session Co-Chair: **Justin Kuipers**, Liburdi Turbine Services
8:00	GT2017-64612 **Effect of Inlet Distortion Features on Transonic Fan Rotor Stall** ***James Page,*** *University of Cambridge, Whittle Laboratory;* ***Paul Hield,*** *Rolls-Royce plc;* ***Paul G. Tucker****, University of Cambridge*	GT2017-63585 **Introducing a New Test Rig for Film Cooling Measurements With Realistic Hole Inflow Conditions** ***Marc Fraas, Tobias Glasenapp,*** *Karlsruhe Institute of Technology (KIT);* ***Achmed Schulz,*** *KIT;* ***Hans-Jörg Bauer,*** *Institut of Thermal Turbomachinery (ITS) - Karlsruhe Institut of Technology (KIT)*	GT2017-65392 **Taking Turbine Blade and Vane Cooling Holes to New Depths and Widths** ***Eric Overholt,*** *Metem - A GE Power business*
8:30	GT2017-63868 **Fan Similarity Model for the Fan-Intake Interaction Problem** ***Mauro Carnevale, Feng Wang, Luca Di Mare,*** *Imperial College;* ***Jeffrey S. Green, Anthony Parry,*** *Rolls Royce plc.*	GT2017-64391 **Flow Statistics and Visualisation of Multi-Row Film Cooling Boundary Layers** ***Craig Fernandes, Michael T. Voet, Erik Fernandez, Jayanta Kapat,*** *University of Central Florida;* ***Zachary Little****, University of Central Florida - CATER*	GT2017-65393 **Advanced Manufacturing 4.0** ***Bill Cox,*** *Renishaw Inc.*
9:00	GT2017-63072 **Dynamic Inlet Simulation Demonstration for Airframe-Propulsion Integration Using HPCMP CREATE™-AV Kestrel** ***Jason Klepper, Jim Sirbaugh,*** *QuantiTech, Inc;* ***Milton Davis,*** *Arnold Air Force Base*	GT2017-64853 **Freestream Flow Effects on Film Effectiveness and Heat Transfer Coefficient Augmentation for Compound Angle Shaped Holes** ***Josh Anderson, John McClintic, David Bogard,*** *The University of Texas At Austin;* ***Tom Dyson****, GE Global Research;* ***Zachary Webster****, GE Aviation*	GT2017-65453 **Additive Friction Stir – A New Additive Manufacturing and Repair Technology for Metallic Structural Materials Including Ti64** ***Nanci Hardwick****, Aeroprobe Corporation*
9:30		GT2017-65019 **Experimental Evaluation of Thermal and Mass Transfer Techniques to Measure Adiabatic Effectiveness With Various Coolant to Freestream Property Ratios** ***Connor Wiese****, Air Force Research Laboratory;* ***James L. Rutledge,*** *Air Force Institute of Technology;* ***Marc Polanka****, AFIT/ENY*	GT2017-65482 **DMLM Technology Applied to Combustion Components for Gas Turbine Applications** ***Edoardo Gonfiotti****, GE OIL & GAS*

	OIL & GAS APPLICATIONS	STRUCTURES & DYNAMICS: PROBABILISTIC METHODS	STRUCTURES & DYNAMICS: BEARING & SEAL DYNAMICS
	Commissioning and Operation	**Concepts of Model Verification, Validation and Uncertainty Quantification**	**Tilting Pad Bearings**
	Technical Session • CCC, 105 • ThA-27-7	**Tutorial Session • CCC, 203B • ThA-32-2**	**Technical Session • CCC, 216AB • ThA-34-3**
	Session Chair: **Timothy Allison**, Southwest Research Institute	Session Chair: **Michael Gorelik**, Federal Aviation Administration	Session Chair: **Ilmar Ferreira Santos,** Technical University of Denmark
8:00	GT2017-64182 **Commissioning of Off-Shore Gas Compressor With 9-Axes Magnetic Bearing System: Commissioning Tools** ***Beat Aeschlimann, Michael Hubatka, Robert Stettler, Reza Housseini,*** *MECOS AG*	GT2017-65461 **Concepts of Model Verification, Validation and Uncertainty Quantification** ***Ben Thacker,*** *Southwest Research Institute*	GT2017-64822 **A Flow Starvation Model for Tilting Pad Journal Bearings and Evaluation of Frequency Response Functions: A Contribution Towards Understanding the Onset of Low Frequency Shaft Motions** ***Luis San Andres, Bonjin Koo,*** *Texas A&M Univ;* ***Makoto Hemmi,*** *Hitachi Research Laboratory*
8:30	GT2017-64327 **The Improvement of Air/Oil Separator Performance in the Aero-Engine Lubrication System** ***Yaguo Lyu, Jieyang Shen, Zhenxia Liu, Jianping Hu,*** *Northwestern Polytechnical University*	**T U T O R I A L**	GT2017-64263 **Influence of Bearing Load on the Performance of Tilting-Pad Journal Bearing Under High Surface Velocity** ***Binbin Liu, Wang Weimin, Jinji Gao,*** *Beijing University of Chemical Technology;* ***Jian Zhang,*** *Jinzhou NEWJCM Machinery Manufacture Co.,Ltd.*
9:00	GT2017-63332 **Development of Reliable NARX Models of Gas Turbine Cold, Warm and Hot Start-Up** ***Hilal Bahlawan, Pier Ruggero Spina, Mauro Venturini,*** *Università Degli Studi Di Ferrara;* ***Mirko Morini,*** *University of Parma;* ***Michele Pinelli,*** *Univ Of Ferrara Endif*		GT2017-65240 **Including Pivot Friction in Pad Motion for a Tilting Pad Journal Bearing With Ball-Socket Pivots** ***Feng He,*** *Dresser-Rand Co.*
9:30	GT2017-64698 **Modelling of Hot Surface Ignition Within Gas Turbines Subject to Flammable Gas in the Intake** ***Lea D. Pedersen,*** *Grundfos Holding A/S;* ***Kenny K. Nielsen,*** *Lloyds Register;* ***Chungen Yin, Henrik Sørensen,*** *Aalborg University;* ***Ingar Fossan,*** *ComputIT*		GT2017-64949 **Response Surface Mapping and Multi-Objective Optimization of Tilting Pad Bearing Designs** ***Michael Branagan, Neal R. Morgan, Brian Weaver, Houston G. Wood,*** *University of Virginia*

THURSDAY, JUNE 29 — 8:00 - 10:00 AM

	STRUCTURES & DYNAMICS: STRUCTURAL MECHANICS, VIBRATION & DAMPING	COAL, BIOMASS & ALTERNATIVE FUELS	SUPERCRITICAL CO2 POWER CYCLES
	Mistuned Blisks and Bladed Disks I	**Liquid Fuel Atomization and Combustion**	**Supercritical CO2 Power Cycle Heat Exchangers**
	Technical Session • CCC, 207A • ThA-35-1	**Tutorial • Westin Hotel, Trade • ThA-3-6**	**Tutorial Session • CCC, 208B • ThA-38-14**
	Session Chair: **Luigi Carassale,** University of Genova Session Co-Chair: **Bogdan Epureanu**, University of Michigan	Session Chair: **Ajay Agrawal,** University of Alabama Session Co-Chair: **Adel Ben Mansour,** Parker Hannifin Corp.	Session Chair: **Grant Musgrove,** Southwest Research Institute
8:00	GT2017-63027 **Vibration Response Analysis of Mistuned Bladed Disk With Under-Platform Damper: Effect of Variation of Contact Condition on Vibration Characteristics** ***Yasutomo Kaneko**, Ryukoku University*	GT2017-65529 **Basics of Liquid Fuel Atomization** ***Ajay Agrawal**, University of Alabama* GT2017-65530 **Practical Aspects of Liquid Fuel Atomization and Combustion** ***Adel Ben Mansour**, Parker Hannifin Corp*	GT2017-65426 **Supercritical CO2 Power Cycle Heat Exchanger Tutorial** ***Grant Musgrove**, Southwest Research Institute*
8:30	GT2017-63193 **Modal Analyses of an Axial Turbine Blisk With Intentional Mistuning** ***Bernd Beirow**, **Felix Figaschewsky**, **Arnold Kühhorn**, Brandenburg University of Technology Cottbus-Senftenberg; **Alfons Bornhorn**, MAN Diesel SE*	TUTORIAL	TUTORIAL
9:00	GT2017-63022 **Piezoelectric Passive Shunt Damping of Mistuned Bladed Disks** ***Bilal Mokrani**, **André Preumont**, Universit Libre de Bruxelles*		
9:30	GT2017-63835 **Multistage Blisk and Large Mistuning Modeling Using Fourier Constraint Modes and PRIME** ***Eric Kurstak**, **Kiran D'Souza**, The Ohio State University*		

THURSDAY, JUNE 29 — 8:00 - 10:00 AM

	SUPERCRITICAL CO2 POWER CYCLES	TURBOMACHINERY: AXIAL FLOW FAN & COMPRESSOR AERODYNAMICS	TURBOMACHINERY: DESIGN METHODS & CFD MODELING FOR TURBOMACHINERY
	Supercritical CO2 Cycle Modeling and Optimization 2	**Compressor Performance**	**Optimization Methods and Applications (2)**
	Technical Session • CCC, 213AB • ThA-38-6	**Technical • CCC, Crown Ballroom • ThA-39-1**	**Technical • CCC, Richardson Ballroom C • ThA-41-12**
	Session Chair: **Robin Ames,** DoE National Energy Technology Lab Session Co-Chair: **Nathan T. Weiland,** National Energy Technology Laboratory	Session Chair: **Bronwyn Power**, Rolls-Royce Corporation Session Co-Chair: **Sungho Yoon**, GE	Session Chair: **Jaeho Choi,** Hanwha Techwin Session Co-Chair: **Marcus Meyer**, Rolls-Royce Deutschland Ltd & Co KG
8:00	GT2017-63696 **Optimization of Supercritical CO2 Brayton Cycle for Simple Cycle Gas Turbines Exhaust Heat Recovery Using Genetic Algorithm** ***Akshay Khadse, Lauren Blanchette, Jayanta Kapat, Subith Vasu, Kareem Ahmed,*** *University of Central Florida*	GT2017-63020 **Impact of Wake Dispersion on Axial Compressor Performance** ***Chunill Hah,*** *NASA Glenn Research Center*	GT2017-63618 **Flow Topology Optimization of a Cooling Passage for a High Pressure Turbine Blade** **Jens Iseler, Dassault Systèmes** ***Thomas J. Martin,*** *United Technologies Research Center*
8:30	GT2017-63707 **Cycle Modeling and Optimization of an Integrally Geared sCO2 Compander** ***Jeffrey Bennett, Jason Wilkes, Timothy Allison,*** *Southwest Research Institute;* ***Robert Pelton, Karl Wygant,*** *Hanwha Techwin*	GT2017-63590 **High Aspect Ratio Blading in an Axial Compressor Stage** ***Tobias Schmidt, Markus Peters, Peter Franz Jeschke,*** *RWTH Aachen University;* ***Roland Matzgeller, Sven-Juergen Hiller,*** *MTU AeroEngines GmbH*	GT2017-63324 **Fast Optimisation of a Three-Dimensional Bypass System Using a New Aerodynamic Design Method** ***Fernando Barbarossa, Mauro Carnevale, Max Rife, Luca Di Mare,*** *Imperial College;* ***Anthony Parry, Jeffrey Green,*** *Rolls Royce*
9:00	GT2017-64418 **Analysis of the Thermodynamic Potential of Supercritical Carbon Dioxide Cycles: A Systematic Approach** ***Francesco Crespi, David Sanchez, Giacomo Gavagnin,*** *University of Seville;* ***Gonzalo S. Martínez,*** *AICIA*	GT2017-64292 **LES Loss Prediction in an Axial Compressor Cascade at Off-Design Incidences With Free Stream Disturbances** ***John Leggett,*** *University of Southampton;* ***Stephan Priebe,*** *GE Global Research;* ***Aamir Shabbir,*** *GE Aviation;* ***Richard Sandberg,*** *The University of Melbourne;* ***Edward S. Richardson,*** *University of Southampton;* ***Vittorio Michelassi,*** *General Electric Oil & Gas*	GT2017-64365 **Aerodynamic Optimization Process for Turbocharger Compressor Impellers** ***Rob Lotz,*** *BorgWarner Turbo Systems*
9:30	GT2017-64625 **Optimization of Operating Parameters of a Recompression sCO2 Cycle for Maximum Efficiency** ***Sharath Sathish, Adi Narayana Namburi, Pramod Chandra Gopi,*** *Triveni Turbine Limited;* ***Pramod Kumar,*** *Indian Institute of Science;* ***Matt Carlson,*** *Clifford Ho, Sandia National Laboratories*	GT2017-65139 **Computational Assessment of a 3-Stage Axial Compressor Which Provides Airflow to the NASA 11- by 11-Foot Transonic Wind Tunnel, Including Design Changes for Increased Performance** ***Sameer Kulkarni, Joseph Veres,*** *NASA Glenn Research Center;* ***Timothy A. Beach,*** *Vantage Partners, LLC;* ***Philip C. E. Jorgenson,*** *NASA*	GT2017-63403 *A* **Comparative Study of Contrasting Machine Learning Frameworks Applied to RANS Modeling of Jets in Crossflow** ***Jack Weatheritt, Richard Sandberg,*** *The University of Melbourne;* ***Julia Ling,*** *Sandia National Labs;* ***Gonzalo Saez-Mischlich, Julien Bodart,*** *DAEP, ISAE-Supaero*

THURSDAY, JUNE 29 — 8:00 - 10:00 AM

	TURBOMACHINERY: DESIGN METHODS & CFD MODELING FOR TURBOMACHINERY	COMBUSTION, FUELS & EMISSIONS	COMBUSTION, FUELS & EMISSIONS
	Cavity and Seal Design Methods and Applications	**Fundamental Combustion II**	**Microturbine Combustors I**
	Technical Session • CCC, 208A • ThA-41-8	**Technical Session • CCC, 211AB • ThA-4-28**	**Technical Session • CCC, 219B • ThA-4-30**
	Session Chair: **Chong Cha**, Rolls-Royce Corp	Session Chair: **Adnan Eroglu,** Siemens Switzerland Session Co-Chair: **Michael Duesing**, Ansaldo Energia	Session Chair: **Ertan Yilmaz,** Siemens SEI Session Co-Chair: **Vishal Acharya,** Georgia Institute of Technology
8:00	GT2017-64040 **Modeling Capability for Cavity Flows in an Axial Compressor** ***Syed Moez Hussain Mahmood, Mark Turner,*** *University of Cincinnati*	GT2017-64181 **Combustion Behavior of Jet a Droplets and its Blends With Butanol** ***Álvaro Muelas, Pilar Remacha, Adrián Martínez, Javier Ballester,*** *University of Zaragoza / LIFTEC*	GT2017-63165 **Preliminary Design, Ignition, and Fuel Injection for a High Temperature Recuperated Microturbine Combustor** ***Steven G. Tuttle, Katherine M. Hinnant, Michael Vick,*** *U.S. Naval Research Laboratory*
8:30	GT2017-64257 **Improved Prediction of Labyrinth Seal Performance Through Scale Adaptive Simulation and Stream Aligned Grids** ***Lars Wein,*** *Gottfried Wilhelm Leibniz University Hannover;* ***Joerg Seume,*** *Gottfried Wilhelm Leibniz Universitaet;* ***Florian Herbst,*** *Leibniz Universitaet Hannover*	GT2017-64547 **Effect of Rayleigh-Taylor Instability on Backward-Facing-Step Stabilized Turbulent Premixed Flames** ***Bradon Long,*** *University of Dayton;* ***Alejandro Briones, Scott Stouffer,*** *University of Dayton Research Institute;* ***Brent Rankin,*** *Air Force Research Laboratory*	GT2017-63317 **Experimental and Numerical Analysis of FLOX®-Based Combustor for a 3kW Micro Gas Turbine Under Atmospheric Conditions** ***Hannah Seliger, Michael Stöhr, Zhiyao Yin, Andreas Huber,*** *German Aerospace Center (DLR);* ***Manfred Aigner,*** *Dlr*
9:00	GT2017-64687 **Optimizing a Helical Groove Seal With Grooves on Both the Rotor and Stator Surfaces** ***Cori Watson, Houston G. Wood,*** *University of Virginia*	GT2017-64824 **Impact of Equation of State Model and CO2 Diluent on Combustion Characteristics of a Directly Heated Supercritical Oxy-Fuel Combustor** ***A.S.M. Arifur Chowdhury, Ahsan Choudhuri, Norman Love,*** *University of Texas El Paso;* ***Hwanho Kim, Jiefu Ma, Remi Tsiava,*** *Air Liquide*	GT2017-63572 **Small Radial Swirler Low NOx Combustors for Micro Gas Turbine Applications** ***Gordon E. Andrews,*** *University of Leeds;* ***Myeong Kim,*** *University of Leeds*
9:30	GT2017-63436 **Effect of Turbulence Damping in VOF Simulation of an Aero-Engine Bearing Chamber** ***Andrea Bristot, Hervé Morvan, Kathy Simmons,*** *The University of Nottingham;* ***Michael Klingsporn,*** *Rolls-Royce Deutschland Ltd & Co KG*	GT2017-64905 **Assessment of Biofuels/Jet A-1 Blends to Meet Cold Start and Altitude Relight Requirements** ***Joël Jean, Alain Fossi, Alain DeChamplain, Bernard Paquet,*** *Universite Laval*	GT2017-63846 **Adaptation of a 65kW Commercial Natural Gas Fired Microturbine for Operation on Diesel and Diesel-Water Emulsions** ***Danilo J. Aguilar Hernandez, Elliot Sullivan-Lewis, Vincent McDonell,*** *UCI Combustion Laboratory*

THURSDAY, JUNE 29 — 8:00 - 10:00 AM

	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: UNSTEADY FLOWS IN TURBOMACHINERY	TURBOMACHINERY: DEPOSITION, EROSION, FOULING, AND ICING
	Combustion Dynamics	**Unsteady Flows in Turbines**	**Water Droplets and Films - Modeling and Experiments**
	Tutorial • Westin Hotel, Providence I • ThA-4-35	**Technical Session • CCC, 217CD • ThA-46-1**	**Technical Session • CCC, 207BC • ThA-48-4**
	Session Chair: **Tim Lieuwen**, Georgia Institute of Technology	Session Chair: **Franz Malzacher,** Dachauer Straße 665 Session Co-Chair: **Emil Göttlich,** Graz University of Technology; **Florian Herbst,** Leibniz Universitaet Hannover	Session Chair: **Klaus Brun**, Southwest Research Institute
8:00	GT2017-65501 **Combustion Dynamics Tutorial** ***Tim Lieuwen**, Georgia Institute of Technology* **T U T O R I A L**	GT2017-64988 **Investigation of Aerodynamics and Heat Transfer of a Highly Loaded Turbine Blade Using the Universal Intermittency Function** ***Ali Nikparto, Meinhard T. Schobeiri,** Texas A & M University*	GT2017-63443 **Experimental Investigation Into Crater Morphology for Droplets Impinging on a Moving Film** ***Antony Mitchell, Kathy Simmons, David Hann,** University of Nottingham*
8:30		GT2017-64152 **DDES Analysis of Wake Vortex Related Unsteadiness and Losses in the Environment of High-Pressure Turbine Stage** ***Dun Lin**, Tsinghua University; **Xinrong Su,** Deparment of Thermal Engineering, Tsinghua University; **Xin Yuan**, Tsinghua University, Dept. of Thermal Eng.*	GT2017-64121 **An Experimentally Derived Model to Predict the Water Film in a Compressor Cascade With Droplet Laden Flow** ***Niklas Neupert**, HSU Hamburg; **Janneck Harbeck,** Helmut-Schmidt University; **Franz Joos**, Helmut-Schmidt-University Hamburg*
9:00		GT2017-63273 **Numerical Investigation of Stator Clocking Effects on the Downstream Stator in a 1.5-Stage Axial Turbine** ***Yalu Zhu, Jiaqi Luo,** Peking University; **Feng Liu,** University Of California Irvine*	GT2017-64155 **Investigation on the Effect of Surface Wettability on a Two-Phase Flow in a Compressor Cascade** ***Niklas Neupert**, HSU Hamburg; **Janneck Harbeck,** Helmut-Schmidt University; **Franz Joos**, Helmut-Schmidt-University Hamburg*
9:30		GT2017-63619 **The Unsteady Flow Field of a Purged High Pressure Turbine Based on Mode Detection** ***Stefan Zerobin, Sabine Bauinger, Andreas Marn, Franz Heitmeir, Emil Göttlich,** Graz University of Technology; **Andreas Peters**, GE Aviation*	GT2017-64332 **Two-Phase CFD-Calculations for the Design of Water-Based Turbine Cleaning Systems for Turbochargers** ***Magnus Fischer, Ansgar Weickgenannt**, ABB Turbo Systems Ltd -- ABB Turbocharging*

THURSDAY, JUNE 29 — 8:00 - 10:00 AM

	WIND ENERGY	CYCLE INNOVATIONS	CYCLE INNOVATIONS
	Vertical Axis and Small Wind Turbines	**Cyber-Physical Systems for Gas Turbines**	**mGT Novel Cycles I**
	Technical • Westin Hotel, Harris • ThA-49-2	Panel • Westin Hotel, Providence II • ThA-6-13	Technical • Westin Hotel, Providence III • ThA-6-4
	Session Chair: **Alessandro Bianchini**, Univ of Florence Session Co-Chair: **Abolfazl Pourrajabian**, K N Toosi Univ of Technology	Session Chair: **Paolo Pezzini**, Ames Laboratory	Session Chair: **Ward De Paepe,** Université Libre de Bruxelles Session Co-Chair: **Simone Giorgetti**, Université Libre de Bruxelles
8:00	GT2017-64137 **Arriving at the Optimum Overlap Ratio for an Elliptical-Bladed Savonius Rotor** ***Nur Alom,*** *National Institute of Technology Meghalaya;* ***Ujjwal K. Saha,*** *Indian Institute of Technology Guwahati*	GT2017-63685 **Hardware-in-the-Loop Operations With an Emulator Rig for SOFC Hybrid Systems** ***Mario Luigi Ferrari, Alessandro Sorce,*** *University of Genoa;* ***Aristide Fausto Massardo,*** *University of Genoa*	GT2017-64351 **Economic Competitiveness of Dish-mGT Solar Power Generators** ***Giacomo Gavagnin, David Sanchez, José M. Rodríguez, Antonio Muñoz,*** *University of Seville;* ***Gonzalo S. Martínez,*** *AICIA*
8:30	GT2017-64701 **Three Dimensional Aerodynamic Analysis of a Darrieus Wind Turbine Blade Using Computational Fluid Dynamics and Lifting Line Theory** ***Francesco Balduzzi, Alessandro Bianchini, Giovanni Ferrara,*** *Univ Of Florence;* ***David Marten,*** *TU Berlin – ISTA;* ***George Pechlivanoglou,*** *TU Berlin;* ***Christian Navid Nayeri, C. Oliver Paschereit,*** *H.F.I TU Berlin;* ***Jernej Drofelnik,*** *University of Glasgow;* ***Michele Campobasso,*** *University of Lancaster;* ***Lorenzo Ferrari,*** *University of Pisa*	GT2017-64881 **Cyber-Physical Observer for Fluidized Bed-Chemical Looping Control Applications** ***Larry Shadle, Justin M. Weber, Samuel Bayham,*** *US DOE;* ***Paolo Pezzini,*** *Ames National Laboratory* ***Esmail R. Monazam,*** *REM Engineering Services;* ***Ronald Breault,*** *US Dept Energy, National Energy Technology Laboratory;* ***Rupendranath Panday,*** *REM Engineering Services PLLC – NETL;* ***David Tucker,*** *National Energy Technology Laboratory;* ***Kenneth Mark Bryden,*** *Ames Laboratory at Iowa State University*	GT2017-64857 **Towards Higher Micro Gas Turbine Efficiency and Flexibility: Humidified MGTS: A Review** ***Ward De Paepe,*** *Université Libre de Bruxelles* ***Marina Montero Carrero,*** *Vrije Univ Brussel* ***Svend Bram,*** *Vrije Universiteit Brussel* ***Alessandro Parente,*** *Université Libre de Bruxelles* ***Francesco Contino,*** *Vrije Universiteit Brussel*
9:00	GT2017-64364 **Reproducible Inflow Modifications for a Wind Tunnel Mounted Research Hawt** ***Sirko Bartholomay, Wolf-Leonard Fruck, George Pechlivanoglou,*** *TU Berlin;* ***C. Oliver Paschereit, Christian Navid Nayeri,*** *H.F.I. TU Berlin*	GT2017-65242 R**eal-Time Fuel Cell Model Development Challenges for Cyber-Physical Systems in Hybrid Power Applications** ***David Tucker,*** *National Energy Technology Laboratory;* ***Valentina Zaccaria,*** *Oak Ridge Institute for Science and Education;* ***Nor Farida Harun,*** *Oak Ridge Institute for Science and Education;* ***Kenneth Mark Bryden,*** *Ames Laboratory at Iowa State University;* ***Comas Haynes,*** *Georgia Tech Research Institute*	GT2017-63551 **Evaluation of a Micro Gas Turbine With Post-Combustion CO2 Capture for Exhaust Gas Recirculation Potential With Two Experimentally Validation Models** ***Homam Nikpey Somehsaraei,*** *University of Stavanger;* ***Usman Ali,*** *University of Sheffield* ***Carolina Font-Palma,*** *University of Chester* ***Mohammad Mansouri Majoumerd,*** *International Research Institute of Stavanger* ***Muhammad Akram,*** *The University of Sheffield* ***Mohamed Pourkashanian,*** *University of Sheffield* ***Mohsen Assadi,*** *University of Stavanger*
9:30	GT2017-64385 **A Study of Power Production and Noise Generation of a Small Wind Turbine for an Urban Environment** ***Andrew Hays, Kenneth Van Treuren,*** *Baylor University*	GT2017-65486 **An Advanced Cyber-physical framework to accelerate the design process of new technologies development** ***Kenneth Mark Bryden,*** *Ames Laboratory at Iowa State University* *GT2017-65492* **The National Energy Technology Laboratory (NETL) perspective on cyber-physical systems** ***Sydni Credle,*** *US Dept of Energy/Netl*	GT2017-63987 **A Comparative Study of the Control Strategies for Pure Concentrated Solar Power Micro Gas Turbines** ***Mohsen Ghavami, Jafar Alzaili, Abdelnaser Sayma,*** *City University of London*

	ELECTRIC POWER	INDUSTRIAL & COGENERATION	
	Gas Turbine & Combined Cycle Optimization	**Design and Evaluation Considerations of Waste Heat Recovery Technologies**	
	Technical • Westin Hotel, Tryon • ThA-8-2	**Tutorial Session • CCC, 106 • ThA-23-6**	
	Session Chair: **Rajeev Aluru**, Duke Energy Session Co-Chair: **Richard Dennis**, DoE National Energy Technology Lab	Session Chair: **Leonid Moroz,** Softinway Inc. Session Co-Chair: **Abdul Nassar**, Softinway Turbomachinery Solutions Pvt Ltd; **Clement Joly**, SoftInWay Inc.	
8:00	GT2017-63301 **Using Dynamic Simulation to Evaluate Attemperator Operation in a Natural Gas Combined Cycle With Duct Burners in the Heat Recovery Steam Generator** ***Eric Liese**, National Energy Technology Laboratories* ***Stephen Zitney**, US Dept Of Energy Netl*	**T U T O R I A L**	
8:30	GT2017-65027 **Performance Analysis of a Combined Cycle Power Plant Through Exergetic and Environmental Indices** ***Edgar Vicente Torres González,** Universidad Autónoma Metropolitana - Iztapalapa* ***Raúl Lugo Leyte,** Universidad Autónoma Metropolitana - Iztapalapa* ***Helen Denise Lugo Méndez,** Universidad Autónoma Metropolitana - Iztapalapa* ***Martín Salazar Pereyra,** Tecnológico de Estudios Superiores de Ecatepec* ***Miguel Toledo Velazquez,** ESIME-Zacatenco, IPN* ***Juan José Ambriz García**, UAMI*		
9:00	GT2017-65261 **Gas Turbine Combined Cycle Optimized for Post-Combustion Carbon Capture** ***S. Can Gülen,** Bechtel Infrastructure & Power Inc.* ***Chris Hall**, Bechtel Oil, Gas & Chemicals* GT2017-63650 **Managing Gas Turbine Combustion System Fuel Manifold Distress Through Ultrasonic Inspections and Calibrated Fracture Analyses** ***Scott Keller, Afzal Pasha Mohammed**, Power Systems Mfg., LLC; **Khalid Oumejjoud**, PSM Ansaldo Energia Group*		
9:30	GT2017-63674 **Managing Compressor Rotor Rim Fatigue Damage** ***John Scheibel, Jay Richardson,** Electric Power Research Institute; **Robert Dewey,** Turbine Technology Intl; **Swami Swaminathan, huawei shi,** Turbine Technology International*		

THURSDAY, JUNE 29 — 10:15 AM - 12:15 PM

	HEAT TRANSFER: NUMERICAL INTERNAL COOLING	HEAT TRANSFER: NUMERICAL FILM COOLING	HEAT TRANSFER: GENERAL EXPERIMENTAL HEAT TRANSFER
	Passages with Turbulators and Bends III	**Numerical Simulation Modelling Techniques for Film Cooling**	**Internal Heat Transfer & Experimental Methods**
	Technical Session • CCC, 212AB • ThB-11-4	**Technical Session • CCC, 219A • ThB-12-5**	**Technical Session • CCC, 213CD • ThB-13-4**
	Session Chair: **Zhirui Dong,** GE Power Session Co-Chair: **Harika Kahveci**, Middle East Technical University (METU)	Session Chair: **Giovanna Barigozzi,** Universita' Di Bergamo Session Co-Chair: **Shailendra Naik**, Ansaldo Energia	Session Chair: **Jae Um,** Siemens Energy Inc. Session Co-Chair: **James Downs,** Florida Turbine Technologies Inc
10:15	GT2017-63737 **Numerical Study on the Flow and Heat Transfer Characteristics in Rectangular Channels With Grooves and Different Protrusions** ***Feng Zhang, Xinjun Wang, Jun Li, Daren Zheng, Junfei Zhou,*** *Xi'an Jiaotong University*	GT2017-63299 **A Machine Learning Approach for Determining the Turbulent Diffusivity in Film Cooling Flows** ***Pedro M. Milani, John K. Eaton,*** *Stanford University;* ***Julia Ling,*** *Sandia National Labs;* ***Gonzalo Saez-Mischlich, Julien Bodart,*** *DAEP, ISAE-Supaero*	GT2017-64052 **Investigations of Single Jet Impinging on Plates With Circular Dimples** ***Zhiqiang Guo, Mei Zheng, Yinze Liu, Wei Dong,*** *Shanghai Jiao Tong University*
10:45	GT2017-63515 **Large Eddy Simulation of Flow and Heat Transfer Mechanism in Matrix Cooling Channel** ***Yigang Luan, Lianfeng Yang, Bo Wan, Tao Sun,*** *Harbin Engineering University*	GT2017-63398 **Effects of Oscillations in the Mainstream on Film Cooling at Various Blowing Ratios** ***Seung Il Baek, Savash Yavuzkurt,*** *Penn State University*	GT2017-64991 **Heat Transfer Analysis of Jet Impingement Cooling on a Simulated Ceramic Matrix Composite Surface** ***Karthik Krishna, Mark Ricklick,*** *Embry Riddle Aeronautical University*
11:15	GT2017-64574 **Effect of Uneven Wall Heating Conditions Under Different Buoyancy Numbers for a One Side Rib-Roughened Rotating Channel** ***Zhi Wang,*** *E.T.S.I. Aeronautia y del Espacio, UPM;* ***Roque Corral,*** *ITP*	GT2017-64234 **Influence of Mainstream Cross Flow on Film Cooling Performance and Jet Flow Field** ***Yifei Li, Yang*** *Zhang, Xinrong Su,* ***Xin Yuan,*** *Tsinghua University, Dept. of Thermal Eng.*	GT2017-64915 **Experimental Investigation of Two Competitive High Pressure Turbine Blade Cooling Systems** ***Sergiy Riznyk, Andriy Artushenko, Igor Kravchenko, Sergii Borys,*** *SE Ivchenko-Progress*
11:45		GT2017-63308 **Large Eddy Simulation of Axial and Compound Angle Holes With Varying Hole Length-to-Diameter Ratio** ***Weihong Li, Wei Shi, Jing Ren, Hongde Jiang,*** *Tsinghua University;* ***Xueying Li,*** *Tsinghua University, Department of Thermal Engineering*	

THURSDAY, JUNE 29 — 10:15 AM - 12:15 PM

	HEAT TRANSFER: INTERNAL AIR SYSTEMS & SEALS (WITH TURBOMACHINERY)	AIRCRAFT ENGINE	CERAMICS
	Rim Seals 1	**Whole Engine Performance and Novel Concepts II**	**CMC Tutorials**
	Technical Session • CCC, 207A • ThB-15-6	**Technical Session • CCC, 208B • ThB-1-9**	**Tutorial Session • CCC, Room 105• ThB-2-4**
	Session Chair: **Bruce Johnson,** Consultant	Session Chair: **Anders Lundbladh,** GKN Aerospace Session Co-Chair: **Harald Funke,** Aachen University of Applied Sciences; **Ioannis Goulos**, Cranfield University	Session Chair: **Gregory Morscher,** The University of Akron Session Co-Chair: **Sai Sarva,** GE Global Research
10:15	GT2017-63531 **A Rim Seal Ingress Model Based on Turbulent Transport** ***Svilen Savov**, University of Cambridge, Whittle Laboratory; **Nicholas Atkins,** Cambridge University*	GT2017-63776 **Analytical Model for the Performance Estimation of Pre-Cooled Pulse Detonation Turbofan Engines** ***Carlos Xisto, Fakhre Ali, Olivier Petit,** Chalmers University of Technology; **Tomas Grönstedt**, Chalmers University; **Andrew Rolt,** Cranfield University; **Anders Lundbladh**, GKN Aerospace*	GT2017-65432 **Introduction to Ceramic Matrix Composites** ***Gregory Morscher,** The University of Akron*
10:45	GT2017-63512 **Analysis of the Influence of Geometric Structure on the Rotationally Induced Ingress** ***Zhenxia Liu, Ma Jun, Jianping Hu**, Northwestern Polytechnical University; **Zhang Lifen**, School of Power and Energy, Northwestern Polytechnical University*	GT2017-64545 **Characterization of a Three-Dimensional Leading-Edge Separation Bubble on Swept, Low Aspect-Ratio Propeller Blades** ***Ye-Bonne Koyama Maldonado,** Safran Aircraft Engines / ONERA The French Aerospace Lab; **Gregory Delattre, Laurent Jacquin, Cédric Illoul**, ONERA The French Aerospace Lab; **Clément Dejeu**, Safran Aircraft Engines*	GT2017-65433 **Processing-Property Relationships in CMCs** ***Gregory Morscher**, The University of Akron*
11:15	GT2017-63505 **Effect of Outer Fin Axial Gap on the Sealing Effectiveness and Fluid Dynamics of Radial Rim Seal** ***Zhigang Li, Liming Song, Tieyu Gao, Xin Yan,** Xian JiaotongUniverity; **Jun Li**, Institute of Turbomachinery, Xi'an Jiaotong Univ; **Qing Gao**, Energy Saving Center, Xi'an Thermal Power Research Institute Company Limited*	GT2017-63523 **Experimental Investigation of Cycle Properties, Noise and Air Pollutant Emissions of an APS3200 Auxiliary Power Unit** ***Teresa Siebel, Jan Zanger,** German Aerospace Center; **Karsten Knobloch, Manfred Aigner,** DLR; **Friedrich Bake, Andreas Huber,** German Aerospace Center (DLR)*	GT2017-65434 **Updating CMH-17 Vol 5 - Ceramic Matrix Composites** ***Rachael Andrulonis**, Wichita State University - NIAR*
11:45		GT2017-64214 **Plausibility Study of Hecto Pressure Ratio Concepts in Large Civil Aero Engines** ***Felix Klein, Stephan Staudacher,** Institute of Aircraft Propulsion Systems, University of Stuttgart*	

THURSDAY, JUNE 29 — 10:15 AM - 12:15 PM

	MANUFACTURING MATERIALS & METALLURGY	MICROTURBINES, TURBOCHARGERS & SMALL TURBOMACHINES	STEAM TURBINES
	Gas Turbine Component Degradation and Life Prediction	**MT: Design and Testing of Microturbines**	**Experimental Wet Steam Project**
	Technical • CCC, 217AB • ThB-24-4	**Technical • Westin Hotel, Trade • ThB-26-1**	**Discussion • Westin Hotel, Providence II • ThB-29-4**
	Session Chair: **Xijia Wu,** National Research Council Canada Session Co-Chair: **Andrea Riva**, Ansaldo Energia	Session Chair: **Charlene Hu,** UTAS Aerostructures Session Co-Chair: **Vince McDonell,** UCI Combustion Laboratory	Session Chair: **Shigeki Senoo,** Mitsubishi Hitachi Power Systems, Ltd.
10:15	GT2017-63675 **Further Development of Modified Theta Project Creep Models With Life Fraction Hardening** ***W. David Day**, PSM - Ansaldo Energia Group; **Ali Gordon**, Univ Of Central Florida*	GT2017-63661 **CFD Study of a Micro-Combustor Under Variable Operating Conditions** ***Maria Cristina Cameretti,** D.I.I., Universita' Di Napoli Federico II; **Raffaele Tuccillo,** Univ Of Naples; **Roberta De Robbio,** Università di Napoli Federico II*	GT2017-65518 **Summary of results of the International Wet Steam Modeling Project (IWSMP)** ***Joerg Starzmann**, University of Cambridge; **Sebastian Schuster**, University of Cambridge and University of Duisburg*
10:45	GT2017-63698 **Rejuvenation Heat Treatment of Single Crystal Gas Turbine Blades** ***Justin Kuipers, Kevin Wiens,** Liburdi Turbine Services; **Barry Ruggiero**, TransCanada Corp.*	GT2017-64562 **Continuous Closed-Loop Transonic Linear Cascade for Aero-Thermal Performance Studies in Micro-Turbomachinery** ***Eli Yakirevich, Ron Miezner, Boris Leizeronok,** Technion – IIT; **Beni Cukurel**, Technion - Israel Institute of Technology*	GT2017-65519 **Presentation of the nozzle test case for further experimental studies on condensing steam flows** ***Markus Schatz**, ITSM, University of Stuttgart*
11:15	GT2017-63024 **Methodology to Develop Geometric Modeling of Accurate Drilled Cooling Holes on Turbine Blades** ***Yiwei Dong, Qi Zhao, Xiaolin Li, Xiaoji Li,** Xiamen University; **Jun Yang**, Massachusetts Institute of Technology*	GT2017-64329 **A Comparison of Small-Scale Gas Turbine Control Schemes** ***Ahti Jaatinen-Värri, Jari Backman, Juha Honkatukia**, Lappeenranta University of Technology; **Matti Malkamäki**, Aureliaturbines*	GT2017-65520 **Open discussion** ***Shigeki Senoo**, Mitsubishi Hitachi Power Systems, Ltd.*
11:45		GT2017-64361 **Three Spool High Efficiency Small Scale Gas Turbine Concept** ***Matti Malkamäki, Toni Hartikainen, Aureliaturbines Ahti Jaatinen-Värri, Jari Backman, Juha Honkatukia, Antti Uusitalo,** Lappeenranta University of Technology; **Aki Grönman**, Lappeenranta University of Technology*	

THURSDAY, JUNE 29 — 10:15 AM - 12:15 PM

	STRUCTURES & DYNAMICS: PROBABILISTIC METHODS	STRUCTURES & DYNAMICS: BEARING & SEAL DYNAMICS	STRUCTURES & DYNAMICS: STRUCTURAL MECHANICS, VIBRATION & DAMPING
	PACE Consortium Overview	**Bearings - Predictions and Experiments 1**	**Vibration Measurement Techniques I**
	Panel Session • CCC, 213AB • ThB-32-3	**Technical Session • CCC, 203A • ThB-34-6**	**Technical Session • CCC, 203B • ThB-35-7**
	Session Chair: **Jeff Brown,** US Air Force Research Laboratory	Session Chair: **Aaron Rimpel,** Southwest Research Institute	Session Chair: **Virginie Chenaux**, German Aerospace Center Session Co-Chair: **Teresa Berruti,** Politecnico di Torino
10:15	GT2017-65462 **Non-Deterministic Kriging for Engineering Design Exploration** ***Ha-Rok Bae,*** *Wright State University*	GT2017-63451 **Towards Investigation of External Oil Flow From a Journal Bearing in an Epicyclic Gearbox** ***Martin Berthold, Hervé Morvan, Richard Jefferson-Loveday,*** *The University of Nottingham; Colin Young, Rolls-Royce plc*	GT2017-63138 **A Discussion on the Advancement of Blade Tip Timing Data Processing** ***Vsevolod Kharyton****, Siemens;* ***Grigorios Dimitriadis****,* ***Colin Defise****, Liege University*
10:45	GT2017-65463 **Building Large Scale Emulators using a DOE Enhanced Divide and Combine Method** ***Mark Andrews****, SmartUQ*	GT2017-63662 **Dynamic and Thermal Analysis of Rotor Drop on Sleeve Type Catcher Bearings in Magnetic Bearing Systems** ***Xiao Kang****,* ***Alan Palazzolo****, Texas A&m University*	GT2017-63287 **Mistuning and Damping Experiments at Design Speed Combined With Computational Tools** ***Kiran D'Souza, Michael Dunn,*** *Ohio State University;* ***Bogdan Epureanu,*** *University of Michigan*
11:15	GT2017-65484 **Probabilistic Methods for Epistemic and Aleatory Uncertainty Quantification** ***John McFarland****, Southwest Research Institute*	GT2017-64050 **Performance and Cost Reduction of Permanent Magnet Biased Magnetic Bearings** ***Bradley Nichols, Paul Allaire, Timothy Dimond, Jianming Cao, Saeid Dousti,*** *Rotor Bearing Solutions International, LLC*	GT2017-63922 **Experimental Study on Controlling the Vibration of Rotor System With Elastic Damping Support** ***Dongdong Yu, Lidong He,*** *Beijing University of Chemical Technology;* ***Lihui He****, Harbin Normal University*
11:45	GT2017-65485 **Rapid Generation of Parameterized Multi-Fidelity Turbine Engine Geometry for Probabilistic Simulations** ***Christopher Meckstroth****, University of Dayton Research Institute*	GT2017-64665 **Understanding the Effect of Systematic Errors on the Accuracy of Experimental Measurements of Fluid-Film Bearing Dynamic Coefficients** ***Benstone Schwartz, Roger Fittro, Carl Knospe,*** *University of Virginia*	GT2017-63897 **Blade Incipient Crack Determination for Centrifugal Compressor Based on CWT-Stochastic Resonance Method** ***Hongkun Li,*** *Dalian University;* ***Changbo He, Qiang Zhou,*** *Dalian University of Technology;* ***Fuan Lu,*** *Shenyang Blower Works Group Co.Ltd*

THURSDAY, JUNE 29 — 10:15 AM - 12:15 PM

	SUPERCRITICAL CO2 POWER CYCLES	TURBOMACHINERY: AXIAL FLOW FAN & COMPRESSOR AERODYNAMICS	TURBOMACHINERY: DESIGN METHODS & CFD MODELING FOR TURBOMACHINERY
	Supercritical CO2 Cycle Modeling and Optimization 1	**Endwall Flows & Corner Separations**	**LES and DNS Methods and Applications (3)**
	Technical Session • CCC, 216AB • ThB-38-5	**Technical Session • CCC, 208A • ThB-39-6**	**Technical • CCC, Richardson Ballroom C • ThB-41-11**
	Session Chair: **Anthony Eastland,** Gas Technology Institute Session Co-Chair: **David Sanchez**, University of Seville	Session Chair: **Sameer Kulkarni**, NASA Glenn Research Center	Session Chair: **Chunill Hah,** NASA Glenn Research Center Session Co-Chair: **Rob Watson,** University of Cambridge
10:15	GT2017-63279 **Transient Modeling of a Supercritical CO2 Power Cycle and Comparison With Test Data** ***Vamshi Avadhanula, Timothy Held,*** *Echogen Power Systems (DE), Inc*	GT2017-63454 **Hybrid RANS/LES Simulation of Corner Stall in a Linear Compressor Cascade** ***Guoping Xia, Gorazd Medic,*** *United Technologies Research Center*	GT2017-65250 **Large-Eddy and Unsteady Reynolds-Averaged Navier-Stokes Simulations of an Axial Flow Pump for Cardiac Support** ***Benjamin Torner, Sebastian Hallier, Matthias Witte, Frank-Hendrik Wurm,*** *University Rostock*
10:45	GT2017-63549 **Transient Simulation of Critical Flow With Thermal-Hydraulic System Analysis Code for Supercritical CO2 Applications** ***Min Seok Kim, Bong Seong Oh, Jinsu Kwon, Hwa-Young Jung, Jeong Ik Lee,*** *Korea Advanced Institute of Science and Technology (KAIST)*	GT2017-64400 **A High-Loaded Axial Compressor Bifurcate Stator Blade Aerodynamic Design and Vorticity Dynamics Diagnosis for Flow Structure** ***Huanlong Chen, Menghan Yu, Linxi Li, Huaping Liu,*** *Harbin Institute of Technology*	GT2017-64889 **Large Eddy Simulation of Roughened NACA65 Compressor Cascade** ***Jongwook Joo, Gorazd Medic, Om Sharma,*** *United Technologies Research Center*
11:15		GT2017-65158 **Control of the Corner Separation in a Linear Cascade by Trailing Gaps** ***Wenfeng Zhao, Bin Jiang, Qun Zheng,*** *Harbin Engineering University*	GT2017-64979 **Very Large Eddy Simulation (VLES) of a Squealer Tipped Axial Turbine Stage** ***Ryan Kelly,*** *University of Notre Dame;* ***Jesse M. Coffman,*** *Air Force Research Laboratory;* ***Aleksandar Jemcov, Joshua Cameron, Scott Morris,*** *Notre Dame Turbomachinery Laboratory;* ***Malak Malak,*** *Honeywell Engine and Air Management*
11:45		GT2017-65192 **A Study of Loss Mechanism in a Linear Compressor Cascade at the Corner Stall Condition** ***Zhiyuan Li,*** *Institute of Engineering Thermophysics, University of Chinese Academy of Sciences;* ***Juan Du, Feng Lin,*** *Institute of Engineering Thermophysics;* ***Aleksandar Jemcov,*** *Notre Dame Turbomachinery Laboratory;* ***Xavier Ottavy,*** *CNRS - LMFA*	GT2017-64694 **Effect of Combustion on Turbulence in a Gas Turbine Combustion Chamber** ***Richard Adoua, Gary J. Page,*** *Loughborough University*

THURSDAY, JUNE 29 — 10:15 AM - 12:15 PM

	COMBUSTION, FUELS & EMISSIONS	COMBUSTION, FUELS & EMISSIONS	COMBUSTION, FUELS & EMISSIONS
	Ignition & Auto-Ignition	**Combustion Dynamics: Damping & Controls I**	**Microturbine Combustors II**
	Technical Session • CCC, 219B • ThB-4-13	**Technical Session • CCC, 207D • ThB-4-25**	**Technical Session • CCC, 211AB • ThB-4-41**
	Session Chair: **Subith Vasu**, University of Central Florida Session Co-Chair: **Frank Barnes**, University of Central Florida	Session Chair: **Wajid Chishty,** NRC Aerospace Session Co-Chair: **Gilles Bourque,** Siemens Canada Ltd	Session Chair: **Michael Klassen,** Combustion Science & Engrg
10:15	GT2017-63216 **Influence of Main Stage Air Splits on the Ignition Performance of TeLESS-II Combustor** ***Xiaotong Mi, Chi Zhang, Bo Wang, Yuzhen Lin,*** *Beihang University*	GT2017-63338 **Thermoacoustic Damping Rate Determination From Combustion Noise Using Bayesian Statistics** ***Nicolai V. Stadlmair,*** *Technische Universität München;* ***Tobias Hummel,*** *Technical University of Munich, Chair of Thermodynamics;* ***Thomas Sattelmayer,*** *Technical Univ Munich*	GT2017-63885 **Effects of Equivalence Ratio on the Off-Design Combustion Performance of Adjustable Fuel Feeding Combustor for a Micro-Gas Turbine** ***Chang Xing, Penghua Qiu, Li Liu, Wenkai Shen, Yajin Lyu, Zhuo Zhang, Jingyi Sun, Shaohua Wu, Yukun Qin,*** *Harbin Institute of Technology*
10:45	GT2017-64154 **Mixture Quality of a Vortex Generator Premixer and Alternative Premixer Designs in the Auto-Ignition Regime of Hydrogen Air Flames** ***Stefan Bauer, Simon Bässler, Balbina Hampel,*** *Lehrstuhl für Thermodynamik;* ***Christoph Hirsch, Thomas Sattelmayer,*** *Technical University of Munich*	GT2017-63477 **Plasma-Assisted Combustor Dynamics Control at Ambient and Realistic Gas Turbine Conditions** ***Wookyung Kim, Jeffrey Cohen,*** *United Technologies Research Center*	GT2017-64396 **Investigation of a FLOX®-Based Combustor for a Micro Gas Turbine With Exhaust Gas Recirculation** ***Stefan Hasemann, Andreas Huber, Clemens Naumann,*** *German Aerospace Center (DLR);* ***Manfred Aigner,*** *Dlr*
11:15	GT2017-65001 E**xperimental and Modeling Study of C1 to C3 Hydrocarbon Ignition in the Presence of Nitric Oxide** ***Ponnuthurai Gokulakrishnan, Casey Fuller, Michael Klassen,*** *Combustion Science & Engineering, Inc.*	GT2017-64239 **Impact of Damper Parameters on the Stability Margin of an Annular Combustor Test Rig** ***Michael Betz, Michael Wagner, Max Zahn, Moritz Schulze, Christoph Hirsch,*** *Technical University of Munich;* ***Thomas Sattelmayer,*** *Technical Univ Munich;* ***Nicolai V. Stadlmair,*** *Technische Universität München*	GT2017-64477 **Detailed Examination of a Modified Two-Staged Micro Gas Turbine Combustor** ***Andreas Schwärzle, Thomas Monz, Andreas Huber,*** *German Aerospace Center (DLR);* ***Manfred Aigner,*** *Dlr*
11:45	GT2017-64476 **Experimental Study of Aeronautical Ignition in a Swirled Confined Jet-Spray Burner** ***Javier Marrero-Santiago, Antoine Verdier, Clément Brunet, Alexis Vandel, Gilles Godard, Mourad Boukhalfa, Bruno Renou,*** *Normandie Univ, INSA Rouen;* ***Gilles*** *Cabot, CORIA INSA DE ROUEN*	GT2017-64238 **Predicting the Influence of Damping Devices on the Stability Margin of an Annular Combustor** ***Max Zahn, Michael Betz, Moritz Schulze, Christoph Hirsch,*** *Technical University of Munich;* ***Thomas Sattelmayer,*** *Technical Univ Munich*	

THURSDAY, JUNE 29 — 10:15 AM - 12:15 PM

	TURBOMACHINERY: UNSTEADY FLOWS IN TURBOMACHINERY	TURBOMACHINERY: MULTIDISCIPLINARY DESIGN APPROACHES, OPTIMIZATION & UNCERTAINTY QUANTIFICATION	TURBOMACHINERY: DEPOSITION, EROSION, FOULING, AND ICING
	Stall and Surge II	**Preliminary Design Methods & Tools**	**Deposition/Erosion Fundamental Modeling & Experiments**
	Technical Session • CCC, Crown Ballroom • ThB-46-6	**Technical Session • CCC, 217CD • ThB-47-2**	**Technical Session • CCC, 207BC • ThB-48-5**
	Session Chair: **Nateri Madavan**, NASA Ames Research Center	Session Chair: **Mark Anderson,** Concepts NREC Session Co-Chair: **John Trevino,** Johnson Controls, Inc.	Session Chair: **Pepe Palafox,** GE Aviation Session Co-Chair: **Andrew Nix**, West Virginia University
10:15	GT2017-63655 **The Role of Tip Leakage Flow in Spike-Type Rotating Stall Inception** ***Max Hewkin-Smith, Graham Pullan,*** *University Of Cambridge;* ***S.D. Grimshaw****, Whittle Laboratory, University of Cambridge;* ***Edward Greitzer, Zoltan Spakovszky,*** *Massachusetts Institute Of Technology*	GT2017-63153 **Accurate Method to Reproduce Throughflow Results With a Meanline Solver** ***Jose M. Chaquet, Alfredo Fernandez****, Industria de Turbopropulsores SA;* ***Roque Corral****, ITP*	GT2017-63792 **Size and Temperature Dependent Deposition Model of Micro-Sized Sand Particles** ***Kuahai Yu****, Henan University of Science and Technology;* ***Danesh Tafti****, Virginia Tech*
10:45	GT2017-63245 **Validation of a Numerical Model for Predicting Stalled Flows in a Low-Speed Fan** ***Kuen-Bae Lee, Mehdi*** *Vahdati, Imperial College London;* ***Mark Wilson****, Rolls-Royce*	GT2017-63589 **Selecting Rational Parameters for Ultra-Low Power Two-Stage Axial Turbine With Pressure Stages** ***Dmitry S. Kalabukhov, Vladimir A. Grigoriev, Vladislav M. Rad'ko,*** *Samara National Research University*	GT2017-64421 **An Experiment-Based Sticking Model for Heated Sand** ***Brett Barker, Kwen Hsu, Bruce Varney****, Rolls Royce;* ***Andrew Boulanger, Wing Ng, John Hutchinson,*** *Virginia Tech*
11:15	GT2017-63432 **Experimental Investigation of Stall Inception and its Propagation in a Contra Rotating Axial Fan Under Radial Inflow Distortion** ***Tegegn Dejene Toge, Pradeep A M****, Indian Institute of Technology Bombay*	GT2017-65222 **Comparing Human Driven and Automatic Blade Row Aerodynamic Designs** ***Ricardo Puente,*** *Universidad Politecnica De Madrid;* ***Roque Corral,*** *ITP;* ***Jorge Parra****, Industria de Turbo Propulsores S.A.*	GT2017-64480 **Experimental Based Empirical Model of the Initial Onset of Sand Deposits on Hastelloy-X From 1000˚C to 1100˚C Using Particle Tracking** ***Andrew Boulanger, John Hutchinson, Weibin Xu, Matthew Keefe, Wing Ng, Srinath Ekkad,*** *Virginia Tech;* ***Brett Barker, Kwen Hsu,*** *Rolls-Royce Corporation*
11:45	GT2017-63286 **Investigation Into Flow Mechanism Leading to the Step Change in Aerodynamic Modes of Rotating Instabilities in a Subsonic Axial Compressor Rotor** ***Zhiyang Chen, Yanhui Wu, Guowei Yang, Guangyao An,*** ***Bo Wang,*** *Northwestern Polytechnical University*	GT2017-64975 **Validation of a Gas Turbine Thermodynamic Model Without Accurate Component Maps** ***Anthony Jarrett, Ying Chen,*** *Life Prediction Technologies Inc.*	GT2017-64961 **Dynamic Similarity in Turbine Deposition Testing and the Role of Pressure** ***Craig Sacco, Chris Bowen, Ryan Lundgreen, Jeffrey Bons,*** *Ohio State University;* ***Eric Ruggiero, Jason Allen, Jeremy C Bailey,*** *GE Aviation*

THURSDAY, JUNE 29 — 10:15 AM - 12:15 PM

	WIND ENERGY	CONTROLS, DIAGNOSTICS & INSTRUMENTATION	CYCLE INNOVATIONS
	Real-Time Aeroelastic Modeling of Open-Rotors with Slender Blades	**Diagnostics-Oriented Modeling of Gas Turbines**	**mGT Novel Cycles II**
	Tutorial Session • Westin Hotel, Harris • ThB-49-13	**Technical • Westin Hotel, Providence III • ThB-5-5**	**Technical Session • CCC, 106 • ThB-6-5**
	Session Chair: **Ioannis Goulos,** Cranfield University Session Co-Chair: **George Pechlivanoglou**, TU Berlin	Session Chair: **Pierre Dewallef,** University of Liege	Session Chair: **Jafar Alzaili,** City University of London Session Co-Chair: **Iacopo Rossi**, University of Genoa
10:15	GT2017-65521 **Real-Time Aeroelastic Modeling of Open-Rotors with Slender Blades** ***Ioannis Goulos,*** *Cranfield University*	GT2017-64464 **The Degradation Simulation of Compressor Salt Fog Fouling for Marine Gas Turbine** ***Yunpeng Cao, Lie Chen, Qingcai Yang, Minghao Wu,*** *Harbin Engineering University;* ***Jianwei Du, Fang Yu,*** *China Ship Research and Development Academy*	GT2017-63579 **Experimental Analysis on a T100 Microturbine Connected With Different Volume Sizes** ***Mario Luigi Ferrari,*** *Paolo Silvestri,* ***Matteo Pascenti, Federico Reggio, Aristide Fausto Massardo,*** *University of Genoa*
10:45	**T U T O R I A L**	GT2017-64071 **Health Estimation of Gas Turbine: A Symbolic Linearization Model Approach** ***Qingcai Yang, Yunpeng Cao, Shuying Li,*** *Harbin Engineering University;* ***Fang Yu, Jianwei Du,*** *China Ship Research and Development Academy*	GT2017-64029 **Simulation of CHP System Based on Micro Gas Turbine With Inverted Brayton Cycle** ***Kirill Abrosimov, Alexander Ustinov,*** *Skoltech;* ***Dmitrii Galkin, Ramil Tumashev,*** *BMSTU*
11:15		GT2017-64376 **A Thermodynamic Transient Model for Performance Analysis of a Twin Shaft Industrial Gas Turbine** ***Samuel Cruz-Manzo, Yu Zhang,*** *University of Lincoln;* ***Vili Panov, Anthony Latimer, Festus Agbonzikilo,*** *Siemens Industrial Turbomachinery*	GT2017-64619 **Fault Detection Through Model Based Diagnostics of AE-T100 Micro Gas Turbine** ***Mariam Mahmood,*** *unige* ***Alessio Martini, Alberto Traverso,*** *University of Genova*
11:45			GT2017-64028 **Preliminary Design Optimization of an Organic Rankine Cycle Radial Turbine Rotor** ***Edna R. Da Silva, Konstantinos G. Kyprianidis,*** *Mälardalen University;* ***Michael Säterskog,*** *Saab AB;* ***Ramiro Gustavo Ramirez Camacho,*** *UNIFEI - Universidade Federal de Itajubá;* ***Angie Lizeth Espinosa Sarmiento,*** *CEFET/RJ CAMPUS ANGRA DOS REIS*

EDUCATION

Education

Technical • Westin Hotel, Providence I • ThB-7-1

Session Chair: **Sabri Deniz,** Lucerne University of Applied Sciences
Session Co-Chair: **Devin O'Dowd**, United State Air Force

10:15

GT2017-63465 **Exploring GasTurb 12 for Supplementary Use on an Introductory Propulsion Design Project**

Aaron Byerley, *USAF Academy;* ***Kurt Rouser,*** *HQ USAFA/DFEI;* ***Devin O'Dowd,*** *United State Air Force*

10:45

GT2017-64082 **Oral Assessments of Student Learning in Undergraduate Aerospace Propulsion and Power Courses**

Kurt Rouser*, HQ USAFA/DFEI*

11:15

GT2017-64664 **The Implementation of WikL: An Educational Wiki Supporting Collaborative Learning in Engineering University Courses**

Lisa Zander, Tom Tanneberger, Juliane Peukert, Georg Atta Mensah*, Technische Universität Berlin*

11:45

GT2017-65058 **Project Based Learning Applied in Turbopump Discipline at ITA Using 1D and 3D Numerical Simulations of a Booster Turbine Installed in the Space Shuttle Main Engine**

Luiz Henrique Lindquist Whitacker, *ITA;* ***Jesuino Takachi Tomita,*** *Technological Institute of Aeronautics - ITA/DCTA;* ***Cleverson Bringhenti****, Aeronautics Institute of Technology*

THURSDAY, JUNE 29 — 2:30 - 5:30 PM

	HEAT TRANSFER: NUMERICAL INTERNAL COOLING	AIRCRAFT ENGINE	HEAT TRANSFER: INTERNAL AIR SYSTEMS & SEALS (WITH TURBOMACHINERY)
	New Concepts	**Transient Engine Simulation - Its Role in Design and Development**	**Rim Seals 3**
	Technical Session • CCC, 211AB • ThC-11-5	**Tutorial Session • CCC, 216AB • ThC-1-2**	**Technical Session • CCC, 212AB • ThC-15-8**
	Session Chair: **Ting Wang,** University Of New Orleans Session Co-Chair: **Gong-nan Xie**, University of Minnesota	Session Chair: **Syed Khalid,** Gas Turbine Systems Solutions, LLC	*Session Chair:* **Oliver Schneider,** *Siemens AG Energy* *Session Co-Chair:* **Michael Rabs**, *MAN Diesel and Turbo SE*
2:30	GT2017-63191 **The Effect of the Pocket on the Heat Transfer of Endwall With Bluff Body in the Rear Part of Gas Turbine** ***Bengt Sunden, Jian Liu, Safeer Hussain, Lei Wang,*** *Lund University;* ***Gong-nan Xie****, University of Minnesota at Twin Cities;* ***Hans Abrahamsson****,* ***Carlos Arroyo****, GKN Aerospace Engine Systems*	GT2017-63799 **Basic Tutorial: Transient Engine Simulation - Its Role In Design and Development** ***Syed Khalid,*** *Gas Turbine Systems Solutions, LLC;* ***Wilfried Visser****, Delft U of Tech*	GT2017-63734 **Experimental and Analytical Assessment of Cavity Modes in a Gas Turbine Wheelspace** ***Rachel Berg****, GE Aviation;* ***Choon Sooi Tan****, MIT* ***Zhongman Ding****, General Electric Company;* ***Gregory Laskowski,*** *GE Aviation;* ***Rinaldo Miorini,*** *GE Global Research Center;* ***Pepe Palafox,*** *GE Aviation*
3:00	GT2017-63739 **Numerical Investigation on the Cooling Effectiveness Among Air and Steam and Mist/Steam for a Gas Turbine Vane** ***Junfei Zhou, Xinjun Wang, Jun Li, Feng Zhang, Daren Zheng****, Xi'an Jiaotong University*	**T U T O R I A L**	GT2017-63910 **Effects of Purge Flow Configuration on Sealing Effectiveness in a Rotor-Stator Cavity** ***Kenneth Clark, Michael Barringer, David Johnson, Karen Thole,*** *Pennsylvania State University;* ***Christopher Robak, Eric Grover,*** *Pratt & Whitney*
3:30	GT2017-63840 **Numerical Investigation on Mist/Air Cooling in Rectangular Ribbed Channels with Various Aspect Ratios** ***Junxiong Zeng, Tieyu Gao, Jianying Gong,*** *Xian Jiaotong University;* ***Jun Li,*** *Institute of Turbomachinery, Xi'an Jiaotong Univ.*		GT2017-64297 **Unsteady Measurement of Core Penetration Flow in a Turbine Rotor-Stator Disc Cavity** ***Youil Kim****, Agency for Defense Development;* ***Seung Jin Song****, Seoul National University*
4:00	GT2017-63970 **Numerical Study of Pyrolysis Effects on Supercritical-Pressure Flow and Conjugate Heat Transfer of N-Decane in the Square Channel** ***Xizhuo Hu, Zhi Tao, Jianqin Zhu, Haiwang Li,*** *Beihang University*		GT2017-64620 **Re-Ingestion of Upstream Egress in a 1.5-Stage Gas Turbine Rig** ***James Scobie, Fabian Hualca, Mario Patinios, Carl Sangan, J Michael Owen, G.D. Lock,*** *University of Bath*
4:30			GT2017-64632 **Egress Interaction Through Turbine Rim Seals** ***James Scobie, Fabian Hualca, Carl Sangan, G.D. Lock,*** *University of Bath*
5:00			

THURSDAY, JUNE 29 — 2:30 - 5:30 PM

	HEAT TRANSFER: EXPERIMENTAL FILM COOLING	HEAT TRANSFER: GENERAL COMPUTATIONAL HEAT TRANSFER	MICROTURBINES, TURBOCHARGERS & SMALL TURBOMACHINES
	Hole Geometry Effects I	**General Computational Heat Transfer I**	**MT: Innovative Microturbine Design and Uses**
	Technical Session • CCC, 208B • ThC-19-3	**Technical Session • CCC, 213CD • ThC-22-1**	**Technical Session • Westin Hotel, Trade • ThC-26-2**
	Session Chair: **Beni Cukurel**, Technion - Israel Institute of Technology Session Co-Chair: **Man Yeong Ha**, Pusan National University	Session Chair: **Guillermo Paniagua**, Purdue University Session Co-Chair: **Gong-nan Xie**, University of Minnesota	Session Chair: **Lou Fangyuan**, Purdue University Session Co-Chair: **Xinqian Zheng**, Tsinghua University
2:30	GT2017-63740 **Interaction of Flow and Film-Cooling Effectiveness Between Double-Jet Film-Cooling Holes With Various Spanwise Distances** ***Jiaxu Yao**, **Jin Xu**, **Ke Zhang**, **Jiang Lei**, Xi'an Jiaotong University; **Lesley Wright**, Baylor University*	GT2017-63480 **A Thermodynamic Model to Quantify the Impact of Cooling Improvements on Gas Turbine Efficiency** ***Selcuk Can Uysal**, **Eric Liese**, **Jim Black**, National Energy Technology Laboratory; **Andrew Nix**, West Virginia University*	GT2017-64007 **Superalloy Cooling System for the Composite Rim of an Inside-Out Ceramic Turbine** ***Nicolas Courtois**, **Frédéric Ebacher**, **Patrick K. Dubois**, **Nidal Kochrad**, **Céderick Landry**, **Miguel Charette**, **Alexandre Landry-Blais**, **Luc Fréchette**, **Jean-Sébastien Plante**, **Mathieu Picard**, Université de Sherbrooke; **Benoit Picard**, Ceragy Engines, inc.*
3:00	GT2017-63968 **Investigations on the Influence of Rib Orientation Angle on Film Cooling Performance of Cylindrical Holes** ***Lin Ye**, **Cunliang Liu**, **Huiren Zhu**, **Jianxia Luo**, Northwestern Polytechnical University; **Ying-ni Zhai**, Xi'an University of Architecture & Technology*	GT2017-63504 **Numerical Investigation on the Effect of Slot Leakage on a NGV With 2D Contoured Endwall: Adiabatic Effectiveness and Aerodynamic Loss** ***Pingting Chen**, **Jing Ren**, **Hongde Jiang**, Tsinghua University; **Xueying Li**, Tsinghua University, Department of Thermal Engineering*	GT2017-64490 **Experimental Investigation of an Inverted Brayton Cycle Micro Gas Turbine for CHP Application** ***Eleni Agelidou**, **Thomas Monz**, **Andreas Huber**, German Aerospace Center (DLR); **Manfred Aigner**, Dlr*
3:30	GT2017-64275 **Heat Transfer Coefficients of Forward and Backward Cylindrical Hole Film Cooling Using Transient IR Technique** ***Bo Shi**, **Jing Ren**, **Hongde Jiang**, Tsinghua University; **Xueying Li**, Tsinghua University, Department of Thermal Engineering*	GT2017-63581 **Prediction of Heat Transfer for a Highly Loaded Transonic Turbine Guide Vane With the Usage of a GPU Based 3D RANS Solver** ***Marwick Sembritzky**, **Derek Micallef**, **David Engelmann**, Ruhr-Universität Bochum*	GT2017-64695 **Inverted Brayton Cycle With Exhaust Gas Condensation** ***Ian Kennedy**, **Zhihang Chen**, **Colin Copeland**, University of Bath; **Bob Ceen**, Axes Design Ltd; **Simon Jones**, HiETA Technologies Ltd*
4:00	GT2017-64731 **Experimental Characterization of Reverse-Oriented Film Cooling** ***Robin Prenter**, **Mohammad Arif Hossain**, **Lucas Agricola**, **Ali Ameri**, **Jeffrey Bons**, Ohio State Univ*	GT2017-63949 **Research on Cooling Uniformity Based on Image Analysis Method** ***Hong Wu**, **Deng Wen Yang**, Beijing University of Aeronautics and Astronautics*	
4:30	GT2017-64645 **Nozzle Guide Vane Film Cooling Effectiveness for Radial Showerheads With Restricted Cooling Hole Surface Angles** ***Nicholas Holgate**, Oxford University; **Peter Ireland**, University of Oxford; **Kevin Self**, Rolls-Royce plc.*	GT2017-64205 **Evaluation of Numerical Methods to Predict Temperature Distributions of an Experimentally Investigated Convection-Cooled Gas-Turbine Blade** ***Erik Findeisen**, **Beate Woerz**, **Mark Wieler**, **Peter Franz Jeschke**, RWTH Aachen University **Michael Rabs**, MAN Diesel and Turbo SE*	
5:00		GT2017-64520 **Preliminary CFD Simulations of Lubrication and Heat Transfer in a Gearbox** ***Evgenia Korsukova**, Gas Turbine and Transmissions Research Centre; **Hervé Morvan**, University of Nottingham*	

THURSDAY, JUNE 29 — 2:30 - 5:30 PM

	OIL & GAS APPLICATIONS	STEAM TURBINES	COAL, BIOMASS & ALTERNATIVE FUELS
	Wet Gas Compression	**LSB Aerodynamic Aspects**	**Alternative Gaseous Fuels and Technologies for Better Usage of Low-Grade Fuels**
	Technical Session • CCC, 105 • ThC-27-3	**Technical • Westin Hotel, Providence II • ThC-29-6**	**Technical Session • CCC, 203A • ThC-3-2**
	Session Chair: **Grant Musgrove**, Southwest Research Institute Session Co-Chair: **William Maier**, Dresser-Rand	Session Chair: **Markus Schatz,** ITSM, University of Stuttgart Session Co-Chair: **Shigeki Senoo,** Mitsubishi Hitachi Power Systems, Ltd., **Marius Grübel,** ITSM University of Stuttgart	Session Chair: **Lei-Yong Jiang,** National Research Council of Canada Session Co-Chair: **Jeffrey Phillips**, Electric Power Research Institute; **Yinghua Han**, NRCC
2:30	GT2017-65094 **An Experimental Investigation on the Impact of Inlet Slugging on Wet Gas Compressor Performance** ***Martin Bakken**, Norwegian University of Science and Technology; **Tor Bjorge**, NTNU*	GT2017-63502 **Aerodynamic Optimization Design of Last Stage Long Blade for Steam Turbine Using Self-Adaptive Differential Evolution Algorithms and RANS Solutions** ***Mingyan YIN, Jun Li, Bin LI**, Institute of Turbomachinery, Xi `An Jiaotong University; **Gangyun Zhong, Xiaoping Fan, Qi Sun,** Dongfang Steam Turbine Co; **Zhenping Feng, Liming Song**, Xian Jiaotong University*	GT2017-64215 **A Review of the Experience Achieved at the Yugadanavi 300 MW CCGT in Sri Lanka: Increasing the Firing Temperature of Gas Turbines Using a Novel Vanadium Inhibitor** ***Matthieu Vierling**, GE Energy Product; **Nuhuman Marikkar,** West Coast Power (LTL); **Tharindu Jayath,** LTL; **Kithsiri Egodawatta,** LTL; **Maher Aboujaib, Dmitry Sokolov, Robert Russell, Donald Meskers**, GE; **Michel Moliere**, UTBM*
3:00	GT2017-64541 **Wet Gas Compression: Characterizing Two-Phase Flow Inside a Compressor With Flow Visualization** ***David Ransom, Melissa Poerner, Craig Nolen, Grant Musgrove**, Southwest Research Institute; **Ryan Cater**, SwRI*	GT2017-63130 **Development of Improvements to "Controlled Flow" Technology for Large Steam Turbines** ***Brian Haller, Peter Millington, Gurnam Singh, Friederike Mund, Kris Vernon**, GE Power*	GT2017-64821 **The Effect of Lewis Number on Instantaneous Flamelet Speed and Position Statistics in Counter-Flow Flames With Increasing Turbulence** ***Sean D. Salusbury, Ehsan Abbasi-Atibeh, Jeffrey Bergthorson,** McGill University*
3:30	GT2017-64783 **Variable Inlet Guide Vane Losses and Their Effect on Downstream Impeller and Diffuser in Wet Gas Flow** ***Levi Andre Berg Vigdal, Lars Eirik Bakken,** NTNU*	GT2017-63325 **Development of 1500-r/min 75-Inch Ultra-Long Last Stage Blades for Nuclear Steam Turbine** ***Deqi Yu, Jiandao Yang, Kai Cheng, Rui Yang,** Shanghai Turbine Works Co. Ltd; **Wei Lu, Daiwei Zhou,** Shanghai Electric Power Generation, Turbine Plant*	GT2017-63033 **SPH Simulation of an Air-Assisted Atomizer Operating at High Pressure: Influence of Non-Newtonian Effects** ***Geoffroy Chaussonnet, Rainer Koch, Hans-Jörg Bauer**, Institut of Thermal Turbomachinery (ITS) - Karlsruhe Institut of Technology (KIT); **Alexander Saenger, Tobias Jakobs, Thomas Kolb**, Institute of Technical Chemistry - Karlsruhe Institute of Technology*
4:00	GT2017-64785 **The Use of Variable Inlet Guide Vane or Speed Control to Maintain Constant Compressor Pressure Ratio in Wet Gas Flow and Their Effect on Diffuser Stability** ***Levi Andre Berg Vigdal, Lars Eirik Bakken,** NTNU*	GT2017-63404 **A Methodology for a Detailed Loss Prediction in Low Pressure Steam Turbines** ***Marius Grübel, Robin M. Dovik, Markus Schatz,** ITSM, University of Stuttgart; **Damian Vogt,** University of Stuttgart*	GT2017-64947 **Biomass Microturbine Based EFGT and IPRP Cycles: Environmental Impact Analysis and Comparison** ***Mauro Zampilli, Paolo Laranci, Michele D'Amico,** Biomass Research Center - University of Perugia; **Gianni Bidini, Pietro Bartocci**, University of Perugia; **Francesco Fantozzi**, University of Perugia, Dip. Ingegneria Industriale*
4:30	GT2017-64374 **Wet Gas Compression: Test Conditions and Similitude** ***Dagfinn Maeland**, Statoil ASA; **Lars E Bakken,** NTNU*	GT2017-64278 **Quantification of Stator Blade Shape Influence on Non-Equilibrium Condensation in Low-Pressure Steam Turbine** ***Giteshkumar Patel, Yogini Patel, Teemu Turunen-Saaresti, Aki Grönman,** Lappeenranta University of Technology*	GT2017-64507 **The History of Integrated Gasification Combined-Cycle Power Plants** ***Jeffrey Phillips, George Booras, Jose Marasigan,** Electric Power Research Institute*
5:00			GT2017-65246 **Evaluation of Using Supercritical Rankine Cycles in Integrated Coal Gasification Combined Cycles (IGCC)** ***Henry A. Long, Ting Wang, Arian S. Thomas,** University of New Orleans*

THURSDAY, JUNE 29 — 2:30 - 5:30 PM

	STRUCTURES & DYNAMICS: PROBABILISTIC METHODS	STRUCTURES & DYNAMICS: BEARING & SEAL DYNAMICS	STRUCTURES & DYNAMICS: STRUCTURAL MECHANICS, VIBRATION & DAMPING
	Probabilistic Method Application and Developments	**Seals - Predictions and Experiments 1**	**Frictional Joints**
	Technical Session • CCC, 219A • ThC-32-1	**Technical Session • CCC, 203B • ThC-34-4**	**Technical Session • CCC, 207A • ThC-35-4**
	Session Chair: **Michael Enright,** Southwest Research Institute Session Co-Chair: **Liping Wang**, GE Corporate Res & Develop	Session Chair: **Keun Ryu,** Hanyang University Session Co-Chair: **Thomas Chirathadam,** Bearings Plus, Waukesha Bearings; **Timothy Dimond**, Rotor Bearing Solutions Internationa	Session Chair: **Evgeny Petrov,** The University of Sussex Session Co-Chair: **Vsevolod Kharyton,** Siemens
2:30	GT2017-63289 **Robust Design Optimization of a Low Pressure Turbine Rotor Discs Secondary Air System** ***Giulia Antinori, Andreas Fischersworring-Bunk***, *MTU Aero Engines AG* ***Ilya Arsenyev***, *Ferchau Engineering*	GT2017-63012 **On the Thermodynamic Process in the Bulk-Flow Model for the Estimation of the Dynamic Coefficients of Labyrinth Seals** ***Filippo Cangioli, Paolo Pennacchi, Andrea Vania, Steven Chatterton,*** *Politecnico di Milano - Dept. of Mech. Eng;* ***Giuseppe Vannini, Lorenzo Ciuchicchi,*** *GE Oil&Gas;* ***Phuoc Vinh Dang,*** *Dept. of Mechanical Engineering - The University of Danang - University of Science and Technology*	GT2017-64928 **An Experimental Investigation of the Dynamic of a Blade With Two Under-Platform Dampers** ***Daniele Botto, Muhammad Umer, Chiara Gastaldi, Muzio Gola,*** *Politecnico di Torino*
3:00	GT2017-63431 **Investigation of Fan Blade off Events Using a Bayesian Framework** ***Bogdan Profir,*** *University of Southampton;* ***Ron Bates,*** *Rolls-Royce plc*	GT2017-63014 **Sensitivity Analysis of the One-Control Volume Bulk-Flow Model for a 14 Teeth-on-Stator Straight-Through Labyrinth Seal** ***Filippo Cangioli, Paolo Pennacchi, Giacomo Riboni, Andrea Vania, Steven Chatterton,*** *Politecnico di Milano - Dept. Mech. Engineering;* ***Giuseppe Vannini, Lorenzo Ciuchicchi,*** *GE Oil&Gas*	GT2017-64877 **Academic Blade Geometries for Baseline Comparisons of Industry-Specific Forced Response Simulations** ***James H. Little II, Jeffrey Kauffman,*** *University of Central Florida; Matthias Huels, Siemens AG*
3:30	GT2017-64243 **A Parametrization Describing Blisk Airfoil Variations Referring to Modal Analysis** ***Thomas Backhaus, Matthias Voigt, Ronald Mailach,*** *Technische Universität Dresden;* ***Sven Schrape,*** *Rolls-Royce Deutschland*	GT2017-64745 **A Numerical Investigation of the Effect of Inlet Preswirl Ratio on Rotordynamic Characteristics of Labyrinth Seal** ***Tomohiko Tsukuda, Toshio Hirano,*** *Toshiba Corporation;* ***Cori Watson, Neal R. Morgan, Brian Weaver, Houston Wood,*** *University of Virginia*	GT2017-64269 **Analysis of Micro-Slip Properties for Models of Bladed Disc Friction Joints** ***Junjie Chen, Chaoping Zang, Biao Zhou,*** *Nanjing University of Aeronautics and Astronautics; Evgeny Petrov, The University of Sussex*
4:00	GT2017-64408 **Probabilistic LCF Risk Evaluation of a Turbine Vane by Combined Size Effect and Notch Support Modeling** ***Lucas Maede, Sebastian Schmitz,*** *Siemens AG;* ***Georg Rollmann,*** *Siemens Energy;* ***Hanno Gottschalk,*** *Bergische Universtiät Wuppertal;* ***Tilmann Beck,*** *University of Kaiserslautern*	GT2017-63380 **CFD-Based Prediction of Rotordynamic Performance of Smooth Stator-Grooved Rotor (SS-GR) Liquid Annular Seals** ***Farzam Mortazavi, Alan Palazzolo,*** *Texas A&m University*	GT2017-64402 **The Relevance of Damper Pre-Optimization and its Effectiveness on the Forced Response of Blades** ***Chiara Gastaldi, Teresa Berruti, Muzio Gola,*** *Politecnico di Torino*
4:30	GT2017-64811 **Probabilistic Fracture Mechanics for Heavy Duty Gas Turbine Rotor Forgings** ***Kai Kadau, Christian Amann,*** *Siemens;* ***Phillip Gravett,*** *Siemens Energy Inc*	GT2017-63492 **A Computational Fluid Dynamics Modified Bulk Flow Analysis for Circumferentially Shallow Grooved Liquid Seals** ***Luis San Andres, Tingcheng Wu,*** *Texas A&M University;* ***Hideaki Maeda, Tomoki ONO,*** *Torishima Pump MFG. Co., LTD.*	GT2017-64814 **Reduced Order Modeling for Multi-Stage Bladed Disks With Friction Contacts at the Flange Joint** ***Giuseppe Battiato, Christian M. Firrone, Teresa Berruti,*** *Politecnico di Torino;* ***Bogdan Epureanu,*** *University of Michigan*
5:00		GT2017-63891 **Investigations on Rotordynamic Characteristics of a Floating Ring Seal Considering Structural Elasticity** ***Xia Peng, Guanghui Zhang, Zhao Jing-ming, Zhang-sheng Liu,*** *Harbin Institute of Technology*	

	SUPERCRITICAL CO2 POWER CYCLES	TURBOMACHINERY: AXIAL FLOW FAN & COMPRESSOR AERODYNAMICS	TURBOMACHINERY: AXIAL FLOW TURBINE AERODYNAMICS
	Supercritical CO2 Recuperator Path Forward	**Tip Flows**	**Low Pressure Turbine Aerodynamics**
	Panel • CCC, Richardson Ballroom A • ThC-38-17	**Technical • CCC, Crown Ballroom • ThC-39-5**	**Technical • CCC, Richardson Ballroom C • ThC-40-4**
	Session Chair: **Seth Lawson**, US Department of Energy Session Co-Chair: **Grant Musgrove**, Southwest Research Institute	Session Chair: **Nick Nolcheff**, Honeywell Session Co-Chair: **Kiran Auchoybur**, University of Cambridge	Session Chair: **Inga Mahle**, MTU Aero Engines AG Session Co-Chair: **Reinhard Niehuis**, University of the Federal Armed Forces Munich
2:30	GT2017-65401 **Brayton Energy Perspective on Recuperator Path Forward** ***Shaun Sullivan**, Brayton Energy LLC*	GT2017-65114 **Measurements and Characterization of Turbulence in the Tip Region of an Axial Compressor Rotor** ***Yuanchao Li**, **Huang Chen**, **Joseph Katz**, Johns Hopkins University*	GT2017-63407 **Highly Resolved LES Study of Gap Size Effect on Low-Pressure Turbine Stage** ***Richard Pichler**, **Richard Sandberg**, The University of Melbourne; **Vittorio Michelassi**, General Electric Oil & Gas; **Jonathan Ong**, GE*
3:00	GT2017-65402 **Comprex Perspective on Recuperator Path Forward** ***Zhijun Jia**, Comprex, LLC*	GT2017-64533 **On Improving the Surge Margin of a Tip-Critical Axial Compressor Rotor** ***Marcus Lejon**, **Niklas Andersson**, **Tomas Grönstedt**, Chalmers University; **Hans Mårtensson**, GKN Aerospace; **Lars Ellbrant**, GKN Aerospace*	GT2017-64580 **The Effect of Turning Angle on the Loss Generation of LP Turbines** ***Diego Torre**, Industria De Turbopropulsores; **Guillermo Garcia Valdecasas**, **David Cadrecha**, ITP*
3:30	GT2017-65403 **Altex Technologies Perspective on Recuperator Path Forward** ***John Kelly**, Altex Technologies Corporation*	GT2017-63468 **Numerical Research on Effects of Shroud Contraction on Tip Leakage Flow and Overall Performance of Axial Compressors** ***Yufan Zhang**, **Lucheng Ji**, **Jiabin Li**, Beijing Institute of Technology*	GT2017-64778 **Part Load Behavior of the LP Part of an Industrial Gas Turbine** ***Milan V. Petrovic**, **Univ of Belgrade; Alexander Wiedermann**, Man Diesel & Turbo SE; **Srecko Nedeljkovic**, **Milan Banjac**, University of Belgrade Faculty of Mech Eng*
4:00	GT2017-65404 **Mezzo Technologies Perspective on Recuperator Path Forward** ***Kevin Kelly**, Mezzo Technologies*	GT2017-64115 **Comparison of Stall Characteristics of Multi-Stage and Single-Stage Transonic Axial Compressors** ***Young Seok Kang**, **Tae Choon Park**, **Byeung Jun Lim**, Korea Aerospace Research Institute; **Hyung Soo Lim**, Korea Institute of Machinery and Materials*	GT2017-64867 **Analysis of the Performance of Plasma Actuators Under Low-Pressure Turbine Conditions Based on Experiments and URANS Simulations** ***D. S. Martínez**, **Elisa Pescini**, **Fedele Marra**, **Maria Grazia De Giorgi**, **Antonio Ficarella**, University of Salento*
4:30	GT2017-65405 **Thar Energy Perspective on Recuperator Path Forward** ***Marc Portnoff**, Thar Energy, LLC*	GT2017-63777 **Numerical Investigation of Stall Mechanism of an Axial Compressor at Three Different Rotating Speeds** ***Haoguang Zhang**, **Feng Tan**, **Kang An**, **Yanhui Wu**, **Wuli Chu**, Northwestern Polytechnical University*	GT2017-63772 **Investigation of 3D Blade Design on Flow Field and Performance of a Low Pressure Turbine Stage** ***Zhiyuan Zhao**, **Xin Du**, **Fengbo Wen**, **Zhongqi Wang**, Harbin Institute of Technology*
5:00	GT2017-65406 **VPE Perspective on Recuperator Path Forward** ***Aaron Wildberger**, Vacuum Process Engineering*	GT2017-63783 **Numerical Investigation of Self-Driven Fan Performance With Tip-Jet** ***Lei Li**, **Guoping Huang**, **Jie Chen**, **Jin-Chun Wang**, Nanjing University of Aeronautics & Astronautics*	

THURSDAY, JUNE 29 — 2:30 - 5:30 PM

	TURBOMACHINERY: DESIGN METHODS & CFD MODELING FOR TURBOMACHINERY	COMBUSTION, FUELS & EMISSIONS	COMBUSTION, FUELS & EMISSIONS
	Methods and CFD Modelling for Turbomachinery Design (2)	**Combustion Dynamics: Modeling II**	**Novel Combustor Concepts III**
	Technical Session • CCC, 217CD • ThC-41-18	**Technical Session • CCC, 207D • ThC-4-24**	**Technical Session • CCC, 207BC • ThC-4-29**
	Session Chair: **Raul Vazquez Diaz**, Rolls-Royce plc Session Co-Chair: **Akin Keskin**, Rolls-Royce plc	Session Chair: **Bruno Schuermans**, GE Session Co-Chair: **Owen Graham**, GE GRC	Session Chair: **Peter Stuttaford,** PSM Ansaldo Energia Session Co-Chair: **Ibrahim Yimer,** Natl Res Council Canada
2:30	GT2017-63084 **Total Temperature Based Correction of the Turbulence Production in Hot Jets** ***Jens Trümner, Christian Mundt,*** *Universität der Bundeswehr München*	GT2017-63147 **Low-Order Modelling of Combustion Noise in an Aero-Engine: The Effect of Entropy Dispersion** ***Yasser Mahmoudi, Andrea Giusti, Epaminondas Mastorakos, Ann Dowling,*** *University of Cambridge*	GT2017-63821 **A CFD Simulation of Coal Syngas Oxy-Combustion in a High-Pressure Supercritical CO2 Environment** ***Hassan Abdul Sater, James Lenertz, Chris Bonilha,*** *Creative Power Solutions;* ***Xijia Lu, Jeremy Fetvedt****, 8 Rivers Capital*
3:00	GT2017-63237 **Implementation of a Surface Roughness-Based Transition Onset Correction in the γ-Rfθt T Transition Model** ***Alexandre Minot, Safran Tech; Julien Marty, Jean Perraud, Grégoire Casalis,*** *ONERA*	GT2017-63247 **Predicting Thermoacoustic Instability in an Industrial Gas Turbine Combustor: Combining a Low Order Network Model With Flame LES** ***Yu Xia, Aimee S. Morgans, William P. Jones,*** *Imperial College London;* ***Jim Rogerson, Ghenadie Bulat,*** *Siemens Industrial Turbomachinery Ltd;* ***Xingsi Han,*** *Nanjing University of Aeronautics and Astronautics*	GT2017-64013 **Low Load Operation Range Extension by Autothermal On-Board Syngas Generation** ***Max H. Baumgärtner****, Technische Universität München - Lehrstuhl für Thermodynamik;* ***Thomas Sattelmayer****, Technical Univ Munich*
3:30	GT2017-63294 **Experimental and Numerical Investigation of Transition Effects on a Low Reynolds Number Airfoil** ***Michael Collison, Peter Harley, Domenico Di Cugno,*** *Dyson*	GT2017-63805 **Multi Scale Computational Simulation of Combustion Instability and Transition in a Model Afterburner** ***Sriram Kalathoor****, National Center for Combustion Research & Development, and Indian Institute of Technology* ***Madras; Satya Chakravarthy****, IIT Madras*	GT2017-64227 **Exhaust Gas Recirculation at Elevated Pressure Using a FLOX® Combustor** ***Peter Kutne, Judith Richter, James D. Gounder, Clemens Naumann, Wolfgang Meier,*** *German Aerospace Center (DLR)*
4:00	GT2017-63296 **On Boundary Layer Relaminarization in an Highly Accelerated High Pressure Turbine Stator Flow** ***Pascal Bader, Wolfgang Sanz,*** *Graz University of Technology*	GT2017-63271 **Two Way Hybrid LES/CAA Approach Including Acoustic Feedback Loop for the Prediction of Thermoacoustic Instabilities in Technical Combustors** ***Timo Klenke, Kilian Lackhove, Amsini Sadiki, Johannes Janicka, Federico Lo Presti,*** *Technical University Darmstadt;* ***Francesca di Mare,*** *DLR*	GT2017-64447 **Development of a Jet-Stabilized Combustion System for the Use of Low-Caloric SOFC Off-Gas** ***Sandro Bücheler, Andreas Huber,*** *German Aerospace Center (DLR);* ***Manfred Aigner****, Dlr*
4:30	GT2017-63499 **The Impact of the Multiple Reference Frame Interface on Modelling the Interaction Between IGVs and the Impeller in Turbocharger Compressors** ***Xiangjun Li,*** *Northwestern Polytechnical University;* ***Stephen Spence,*** *Queen's University Belfast*	GT2017-65123 **LES-Based Scattering Matrix Method for Low-Order Acoustic Network Models** ***Changjin Yoon, Owen Graham, Fei Han,*** *GE Global Research Center;* ***Kwanwoo Kim,*** *GE Aviation;* ***Jong Guen Lee, Katsuo Maxted, Thomas Caley,*** *University of Cincinnati*	GT2017-64556 **High Momentum Jet Flames at Elevated Pressure, B: Detailed Investigation of Flame Stabilization With Simultaneous PIV and OH-LIF** ***Michael Severin, Oliver Lammel, Holger Ax, Rainer Lueckerath, Wolfgang Meier, Johannes Heinze,*** *German Aerospace Center (DLR);* ***Manfred Aigner****, Dlr*
5:00		GT2017-65200 **Large Eddy Simulation of Combustion Instability of Low-Swirl Flames in a Multi-Nozzle Combustor** ***Weijie Liu, Bing Ge, Zang Shusheng,*** *Shanghai Jiao Tong University;* ***Mingjia Li,*** *Harbin Marine Boiler and Turbine Research Institute;* ***Wenyan Xu,*** *Harbin Marine Boiler and Turbine Research Institute*	GT2017-64615 **High Momentum Jet Flames at Elevated Pressure, A: Experimental and Numerical Investigation for Different Fuels** ***Oliver Lammel, Michael Severin, Holger Ax, Rainer Lueckerath, Andrea Tomasello, Yeshawini Emmi, Berthold Noll,*** *German Aerospace Center (DLR);* ***Manfred Aigner****, Dlr;* ***Lukasz Panek****, Siemens AG*

THURSDAY, JUNE 29 — 2:30 - 5:30 PM

	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: MULTIDISCIPLINARY DESIGN APPROACHES, OPTIMIZATION & UNCERTAINTY QUANTIFICATION	WIND ENERGY
	Atomization & Sprays	**Optimization Methods: Surrogate-Assisted and Collaborative Strategies**	**Industry Panel Session**
	Technical Session • CCC, 219B • ThC-4-31	**Technical Session • CCC, 208A • ThC-47-3**	**Panel Session • CCC, 217AB • ThC-49-12**
	Session Chair: **Steven Smith**, United Technologies Aerospace Systems Session Co-Chair: **Kwasi Foli,** Woodward, Inc; **Ajay Agrawal**, University of Alabama	Session Chair: **Marcus Meyer,** Rolls-Royce Deutschland Ltd & Co KG Session Co-Chair: **Benjamin Walther**, GE Aviation	Session Chair: **George Pechlivanoglou**, TU Berlin
2:30	GT2017-63041 **Time-Response of Recent Prefilming Airblast Atomization Models in an Oscillating Air Flow Field** ***Geoffroy Chaussonnet, Simon Holz, Rainer Koch, Hans-Jörg Bauer**, Institut of Thermal Turbomachinery (ITS) - Karlsruhe Institut of Technology (KIT); **Armin Mueller**, JENOPTIK Robot GmbH*	GT2017-64610 **Tackling Highly Constrained Design Problems: Efficient Optimisation of a Highly Loaded Transonic Compressor** ***Lieven Baert, Paul Beaucaire, Michael Leborgne, Caroline Sainvitu, Ingrid Lepot, Ingrid Lepot**, Cenaero; **Tariq Benamara, Piotr Breitkopf**, Université de Technologie de Compiègne*	GT2017-65471 **Wind Turbine Industry Panel** ***George Pechlivanoglou**, TU Berlin*
3:00	GT2017-63135 **Effects of Fluid Properties on Spray Characteristics of a Flow-Blurring Atomizer** ***Brian T. Fisher, Steven G. Tuttle, Katherine M. Hinnant**, Naval Research Laboratory; **Michael R. Weismiller**, National Research Council*	GT2017-65106 **LPC Blade and Non Axisymmetric Hub Profiling Optimization Using Multi-Fidelity Non-Intrusive Pod Surrogates** ***Caroline Sainvitu**, Cenaero*	GT2017-65522 **Industry Panel Session** ***George Pechlivanoglou**, TU Berlin*
3:30	GT2017-64149 **A Numerical Study of the Internal Flow in a Pressure Swirl Atomizer** ***Weijia Qian, Xin Hui, Chi Zhang, Yuzhen Lin, Quanhong Xu**, Beihang University; **Chih Jen Sung**, University of Connecticut*	GT2017-63738 **Design Optimization of a 3D Parameterized Vane Cascade With Non-Axisymmetric Endwall Based on a Modified Ego Algorithm and Data Mining Techniques** ***Chenxi Li, Zhendong Guo, Liming Song, Zhenping Feng**, Xian Jiaotong University; **Jun Li**, Institute of Turbomachinery, Xi'an Jiaotong Univ*	**PANEL**
4:00	GT2017-64846 **Experimental Study of Superheated Kerosene Jet Fuel Sprays From a Pressure-Swirl Nozzle** ***Shaji Manipurath**, National Research Council of Canada*	GT2017-64135 **Optimization of Coupled System Components Using Approximations of Interface Quantities** ***Michael Lockan**, Brandenburg University of Technology; **Dieter Bestle**, Brandenburg University of Technology Cottbus-Senftenberg; **Christian Janke, Marcus Meyer**, Rolls-Royce Deutschland Ltd & Co KG*	
4:30	GT2017-64939 **Characterization of Spray Formed by Diesel-Water Mixture Jet Injected Into an Air Crossflow** ***Jinkwan Song, Jong Guen Lee**, University of Cincinnati*	GT2017-64177 **A Newly Improved Collaborative Optimization Strategy: Application to Conceptual Multidisciplinary Design Optimization of a Civil Aero-Engine** ***Cheng Yan, Zeyong Yin, Xiuli Shen**, School of Energy and Power Engineering, Beihang University; **Jun Fan**, School of Energy and Power Engineering, Beihang University; **Fushui Guo**, AECC Commercial Aircraft Engine Co., Ltd; **Ju Luo**, AECC Commercial Aircraft Engine Co., Ltd.*	
5:00			

THURSDAY, JUNE 29 — 2:30 - 5:30 PM

	ADDITIVE MANUFACTURING: K14	CONTROLS, DIAGNOSTICS & INSTRUMENTATION	CYCLE INNOVATIONS
	Challenges and Opportunities in Using Additive Manufacturing for Turbine Cooling	**Advances in Instrumentation 2**	**Performance of Gas Turbines with Inter-turbine Reheat, Theory and Applications**
	Panel • CCC, Richardson Ballroom B • ThC-52-16	**Technical • Westin Hotel, Providence III • ThC-5-8**	**Panel Session • CCC, 213AB • ThC-6-14**
	Session Chair: **Karen Thole,** Pennsylvania State Univ Session Co-Chair: **Kenneth Suder**, NASA Glenn Research Center	Session Chair: **Vivek Badami,** General Electric	Session Chair: **Vassilios Pachidis**, Cranfield University Session Co-Chair: **Alvise Pellegrini**, Cranfield University
2:30	GT2017-65371 **Heat Transfer in the Age of Additive Manufacturing - GE Power Perspective** ***Kevin Kirtley**, GE Power & Water*	GT2017-63413 **Quantitative CO PLIF Measurements in Aeroengine Gas Turbine Combustion Chambers Under Realistic Conditions** ***Lena Voigt, Johannes Heinze, Thomas Aumeier**, German Aerospace Center (DLR); **Thomas Behrendt**, Francesca di Mare, DLR*	GT2017-65498 **Inter-turbine Reheat Combustion** ***Khawar Syed,** Alstom (Switzerland) Ltd.*
3:00	GT2017-65372 **Siemens Energy, Inc. Perspective** ***Jose Rodriguez**, Siemens Energy, Inc.*	GT2017-63671 **Measuring Water Film Thickness in a Wet Gas Compressor Diffuser: Design, Calibration, and Testing of Electromagnetic Probes** ***Craig Nolen, Melissa Poerner**, Southwest Research Institute*	GT2017-65572 **Numerical Simulation of the Multistage Ultra-High Efficiency Gas Turbine Engine, UHEGT** ***Seyed Ghoreyshi**, Texas A & M Univ*
3:30	GT2017-65373 **Additive Manufacturing for the New Generation of Ansaldo Energia Gas Turbines** ***Uwe Ruedel,** Ansaldo Energia Switzerland Ltd.*	GT2017-63773 **A Hybrid Approach for 3D Full-Field Measurement on a Closed Slinger Combustor by Hydraulic Simulations** ***Lichao Jia, LiLi Yang, Huijing Yuan,** Peking University; **Yongxia Jia**, Tsinghua University; **Yiyang Wang**, **Yang Feng**, AECC HuNan Aviation Powerplant Research Institute*	GT2017-65494 **Performance Optimisation of an Inter-turbine Reheat Engine** ***Alvise Pellegrini**, Cranfield University*
4:00	GT2017-65374 **Pratt & Whitney Perspective** ***Dominic Mongillo**, Pratt & Whitney*	GT2017-63788 **Computational and Experimental Study of a Platinum Thin-Film Based Oil Condition and Contamination Sensor** ***Vikram Sridhar, Kam Chana,** Oxford University; **Deepanshu Singh**, Indian Institute of Technology*	**PANEL**
4:30	**PANEL**	GT2017-64597 **Planar Velocity Measurements at 100 kHz in Gas Turbine Combustors With a Continuous Laser Source** ***Marek Mazur, Philippe Scouflaire, Franck Richecoeur,** Leo Cunha Caldeira Mesquita, Laboratoire EM2C, CNRS, CentraleSupelec, Université Paris-Saclay*	
5:00		GT2017-64597 **Planar Velocity Measurements at 100 kHz in Gas Turbine Combustors With a Continuous Laser Source** ***Aymeric Vié**, **Sebastien Ducruix**, Laboratoire EM2C, CNRS, CentraleSupelec, Université Paris-Saclay*	

THURSDAY, JUNE 29 — 2:30 - 5:30 PM

	ELECTRIC POWER	FANS & BLOWERS	OIL & GAS APPLICATIONS
	Path Forward: Gas Turbine Technology	**Numerical Methods**	**Gas Turbines and Centrifugal Compressors in Oil and Gas Applications**
	Panel • Westin Hotel, Providence I • ThC-8-4	**Technical • Westin Hotel, Tryon • ThC-9-1**	**Tutorial Session • CCC, 106 • ThC-27-9**
	Session Chair: **Richard Dennis,** DoE National Energy Technology Lab Session Co-Chair: **Sy Ali**, Clean Energy Consulting	Session Chair: **Chunill Hah,** NASA Glenn Research Center Session Co-Chair: **Gregory Wagner**, Morrison Products	Session Chair**: Rainer Kurz,** Solar Turbines Inc. Session Co-Chair: **Klaus Brun**, Southwest Research Institute
2:30	GT2017-65430 **MHPS Path Forward: Gas Turbine Technology** ***Eisaku Ito,*** *MHI Takasago R&D Center*	GT2017-63680 **URANS Simulations and Experimental Investigations on Unsteady Aerodynamic Effects in the Blade Tip Region of a Shrouded Fan Configuration** ***Gi-Don Na, Frank Kameier,*** *HS Düsseldorf (ISAVE);* ***Michael Mauß, Nils Springer,*** *Brose Fahrzeugteile GmbH;* ***C. Oliver Paschereit****, H.F.I TU Berlin*	**TUTORIAL**
3:00	GT2017-65449 **Ansaldo Energia Path Forward: Gas Turbine Technology** ***Stefan Florjancic,*** *Ansaldo Energia Switzerland*	GT2017-63952 **Development and Validation of a Novel Synthetic Blade Model for Axial Flow Fans in Unsteady CFD** ***Tommaso Bonanni, Alessandro Corsini, Giovanni Delibra, David Volponi,*** *Sapienza University of Rome*	
3:30	GT2017-65451 **Siemens Energy Path Forward: Gas Turbine Technology** ***Bonnie Marini,*** *Siemens*	GT2017-64679 **Numerical Testing of a Trailing Edge Passive Morphing Control for Large Axial Fan Blades** ***Alessio Castorrini, Alessandro Corsini, Franco Rispoli,*** *Sapienza University of Rome;* ***Anthony Sheard,*** *AGS Consulting LLC*	
4:00	GT2017-65450 **GE Path Forward: Gas Turbine Technology** ***Joseph Citeno****, GE*	GT2017-63795 **Preliminary Investigation on the Effect of the Modification of the Sweep Angle at the Blade Tip of Forward Swept Axial Fans** ***Massimo Masi,*** *University of Padova – DTG;* ***Andrea Lazzaretto****, University of Padova*	
4:30	**PANEL**	GT2017-63965 **Partially Vaned Diffuser With Variable Cross-Section for Centrifugal Fans** ***Tore Fischer, Joerg Seume,*** *Gottfried Wilhelm Leibniz Universitaet;* ***Sebastian Burgmann,*** *Bergische Universität Wuppertal;* ***Manuel Rudersdorf****, The Fuel Cell Research Centre ZBT GmbH*	
5:00			

FRIDAY, JUNE 30 — 8:00 - 10:00 AM

	AIRCRAFT ENGINE	HEAT TRANSFER: NUMERICAL FILM COOLING	HEAT TRANSFER: INTERNAL AIR SYSTEMS & SEALS (WITH TURBOMACHINERY)
	Inlets II	**CFD Simulation of Novel Film Cooling and Film Cooling Hole Shape Optimization**	**Rim Seals 2**
	Technical Session • CCC, 219A • FA-1-10	**Technical Session • CCC, 211AB • FA-12-6**	**Technical Session • CCC, 203A • FA-15-7**
	Session Chair: **Theoklis Nikolaidis**, Cranfield University Session Co-Chair: **Milton Davis**, Arnold Air Force Base; **Bruce Bouldin**, Honeywell Aerospace	Session Chair: **James L. Rutledge**, Air Force Institute of Technology Session Co-Chair: **Stephen Lynch**, Penn State University	Session Chair: **James Scobie**, University of Bath Session Co-Chair: **Jens Fridh**, KTH Royal Institute of Technology
8:00	GT2017-63977 **Identifying Opportunities for Reducing Nacelle Drag** ***Maverick Zawislak, David Cerantola**, A.M. Birk, Queens University*	GT2017-63552 **Numerical Study on the Influence of Trench Width on Film Cooling Characteristics of Double-Wave Trench** ***Bolun Zhang, Li Zhang, Huiren Zhu, Jiansheng Wei, Zhong-yi Fu**, Northwestern Polytechnical University*	GT2017-63841 **Unsteady 360 Computational Fluid Dynamics Validation of a Turbine Stage Mainstream/Disc Cavity Interaction Using Lattice-Boltzmann Method** ***Alexander Mirzamoghadam, Khosro MollaHosseini, Alexander Mirzamoghadam**, Honeywell Aerospace; **Ignacio Gonzalez-Martino**, Francesco Polidoro, Exa Corporation*
8:30	GT2017-63978 **Reducing Nacelle Pressure Drag** ***David Cerantola, Maverick Zawislak**, A.M. Birk, Queens University*	GT2017-63741 **The Effect of Upstream Ramps With Different Shapes on Film Cooling Efficiency** ***Daren Zheng, Xinjun Wang, Feng Zhang, Junfei Zhou**, Xian Jiaotong University; **Qi Yuan**, Xi'an Jiaotong University School of Energy & Power*	GT2017-63844 **Unsteady Pressure Characteristics in the Mainstream/Disc Cavity of a Turbine-Stage** ***Jagdish Harihara Balasubramanian**, Rolls Royce; **Ramendra P Roy, Mukilan Michael**, Arizona State University*
9:00	GT2017-64379 **A 3D Shape Design and Optimization Method for Natural Laminar Flow Nacelle** ***Yongjian Zhong, Songyang Li**, AECC Commercial Aircraft Engine Co., Ltd*	GT2017-63886 **Research on Film Cooling Mechanism of Vortex Reconstruction Induced by Swirling Coolant Flow** ***Guoqiang Yue, Ping Dong, Yuting Jiang, Jie Gao, Qun Zheng**, Harbin Engineering University*	GT2017-64169 **Effects of Rotor Disc Growth on Flow and Heat Transfer Characteristics of Rim Seal** ***Xingyun Jia, Qun Zheng, Hai Zhang, Yuting Jiang**, Harbin Engineering University*
9:30	GT2017-63427 **Inlet Compatibility and Fan Aeromechanics of HBP Turbofan Engine** ***Zhonglin Wang, Jingjing Chen, Yong Chen**, Shanghai Jiao Tong University*	GT2017-65063 **Numerical Optimization of Geometry Parameters for Shaped Film Cooling Holes** ***Mohammad Alshehaby, Kasem Ragab, Lamyaa El-Gabry**, The American University in Cairo*	GT2017-64388 **Simplified Ingestion Model Assessment for 1D Gas Turbine Engine Secondary Flow Network** ***Ashish Negi, Sushilkumar Thamke, Balakrishnan Thangavel**, Honeywell; **Alexander Mirzamoghadam**, Honeywell Aerospace*

FRIDAY, JUNE 30 — 8:00 - 10:00 AM

	HEAT TRANSFER: COMBUSTORS (WITH COMBUSTION, FUELS & EMISSIONS)	HEAT TRANSFER: EXPERIMENTAL FILM COOLING	MANUFACTURING MATERIALS & METALLURGY
	Combustor Turbine Interactions	**Shaped Holes - External Effects**	**Repair Development**
	Technical Session • CCC, 217AB • FA-17-3	**Technical Session • CCC, 213CD • FA-19-5**	**Technical • CCC, Richardson Ballroom C • FA-24-6**
	Session Chair: **Uwe Ruedel,** Ansaldo Energia Switzerland Ltd. Session Co-Chair: **Stephen Lynch,** Penn State University	Session Chair: **Eric Ruggiero,** GE Aviation Session Co-Chair: **Sanjay Chopra,** General Electric	Session Chair: **Douglas Nagy,** Liburdi Turbine Serv Inc Session Co-Chair: **Dheepa Srinivasan,** GE Power, GE India Technology Center
8:00	GT2017-63460 **Experimental and Numerical Investigation of the Mutual Interaction Between Liner Film Cooling and Combustor Swirl Flow** ***Antonio Andreini,*** *Department of Industrial Engineering (DIEF)-University of Florence;* ***Riccardo Becchi,*** *University of Florence;* ***Bruno Facchini, Lorenzo Mazzei, Alessio Picchi,*** *University of Florence;* ***Ignazio Vitale,*** *AvioAero -- GE AVIO srl;* ***Anil Tolpadi,*** *GE Aviation*	GT2017-63694 **Influence of Turbine Blade Leading Edge Profile on Film Cooling With Shaped Holes** ***Mingjie Zhang, Nian Wang, Andrew F Chen, Je-Chin Han,*** *Texas A&M University*	GT2017-65479 **Creation and use of Generic Repair Process to Level the Playing Field for all Vendors** ***John Scheibel,*** *EPRI*
8:30	GT2017-64911 **Numerical and Experimental Investigations for Flow Fields Under Non-Reacting and Reacting Conditions Through a Lean Premixed Fuel Nozzle** ***Sandeep Kedukodi, Suhyeon Park, Siddhartha Gadiraju, Srinath Ekkad,*** *Virginia Tech;* ***Yong Kim, Ram Srinivasan,*** *Solar Turbines*	GT2017-63818 **Effect of Flow Acceleration on Mainstream-to-Coolant Flow Interaction for Round and Shaped Film Cooling Holes** ***Kyle Vinton,*** *Baylor University;* ***Lesley Wright,*** *Baylor University*	GT2017-65480 **Generation and Use of Generic Repair Vendor Qualification Process** ***Paul Keener,*** *Duke Energy*
9:00	GT2017-63319 **Computational Analysis of a Novel Cooling Scheme for Ultra Compact Combustor Turbine Vanes** ***Brian Bohan, James L. Rutledge,*** *Air Force Institute of Technology;* ***Marc Polanka,*** *AFIT/ENY*	GT2017-64616 **Effect of Internal Crossflow Velocity on Film Cooling Effectiveness: Part I: Axial Shaped Holes** ***John McClintic, Josh Anderson, David Bogard,*** *The University of Texas At Austin;* ***Tom Dyson,*** *GE Global Research;* ***Zachary Webster,*** *GE Aviation*	GT2017-65481 **Developing Repair Solutions for Major Stuctural Components from Large Gas Turbines** ***Matija Kolonic,*** *INPIRIO*
9:30	GT2017-63204 **Investigation of Lean Combustion Stability, Pressure Drop, and Material Durability in Porous Media Burners** ***Sadaf Sobhani,*** *Stanford University;* ***Bret Haley, David Bartz, John Sullivan,*** *ALZETA Corporation;* ***Jared Dunnmon, Matthias Ihme,*** *Stanford University*	GT2017-64624 **Effect of Internal Crossflow Velocity on Film Cooling Effectiveness: Part II: Compound Angle Shaped Holes** ***John McClintic, Josh Anderson, David Bogard,*** *The University of Texas At Austin;* ***Tom Dyson,*** *GE Global Research;* ***Zachary Webster,*** *GE Aviation*	GT2017-65483 **Effects of Heat Treatments on Microstructure-Mechanical Properties in GTD-111 Alloy in Heavy Frame Gas Turbines** ***Rajeev Aluru,*** *Duke Energy*

FRIDAY, JUNE 30 — 8:00 - 10:00 AM

	MICROTURBINES, TURBOCHARGERS & SMALL TURBOMACHINES	STEAM TURBINES	STRUCTURES & DYNAMICS: BEARING & SEAL DYNAMICS
	MT: Innovative Fuels and Concepts in Microturbines	**HP/IP Turbines**	**Bearings - Predictions and Experiments 2**
	Technical Session • CCC, 105• FA-26-3	**Technical Session • CCC, 208B • FA-29-5**	**Technical Session • CCC, 206AB • FA-34-7**
	Session Chair: **Raffaele Tuccillo,** Univ of Naples	Session Chair: **Alexander Stein,** GE Power Session Co-Chair: **Xianhong Wu,** PCA Engineers Ltd	Session Chair: **Martin J. Conlon,** National Research Council Canada
8:00	GT2017-63526 **Introduction of an Integrated Turbo-Electrical Machine** ***Sebastian Schuster, Dieter Brillert,*** *University of Duisburg-Essen;* ***Christian Kreischer,*** *TU Dortmund University*	GT2017-63667 **The Use of Air-Measured Profile Data for Application in a High Pressure Steam Turbine** ***Marcus Britz,*** *Institute of Jet Propulsion and Turbomachinery, RWTH Aachen University;* ***Peter Franz Jeschke,*** *RWTH Aachen University;* ***Oliver Brunn, Thomas Polklas,*** *MAN Diesel & Turbo SE*	GT2017-63444 **Effect of Vortex Shedding on the Performance of Scoop Based Lubrication Devices** ***Arun Prabhakar, Yousif A Abakr,*** *The University of Nottingham, Malaysia;* ***Kathy Simmons,*** *The University of Nottingham*
8:30	GT2017-63801 **Micro-Gas Turbine Feed With Natural Gas and Synthesis Gas: Variation of the Turbomachines' Operative Conditions With and Without Steam Injection** ***Massimiliano Renzi, Carlo Caligiuri, Mosè Rossi,*** *Free University of Bozen/Bolzano*	GT2017-63466 **Optimization Designs of Front Stage Nozzles in a LP Steam Turbine** ***Xianhong Wu,*** *PCA Engineers Ltd;* ***Deng Guoliang, Xiaoqin Du, Pengfei Zhang,*** *Dongfang Turbine Co. Ltd*	GT2017-63687 **Dynamic Properties of Multi-Lobe Water Lubricated Bearings With Temporal and Convective Inertia Considerations** ***Saeid Dousti, Paul Allaire, Jianming Cao, Timothy Dimond, Bradley Nichols,*** *Rotor Bearing Solutions International*
9:00	GT2017-64250 **Operation and Flame Observation of Micro Gas Turbine Firing Ammonia** **Norihiko Iki, AIST** ***Osamu Kurata, Takayuki Matsunuma, Takahiro Inoue, Taku Tsujimura, Hirohide FURUTANI,*** *National Institute of Advanced Industrial (AIST);* ***Hideaki Kobayashi, Akihiro Hayakawa,*** *Tohoku University*	GT2017-64561 **Experimental and Numerical Investigation of the Performance Impact of a Heavily Off-Design Inlet Swirl Angle in a Steam Turbine Stage** ***Berardo Paradiso, Giacomo Gatti, Alessandro Mora,*** *Energy Department - Politecnico di Milano;* ***Juri Bellucci,*** *Department of Industrial Engineering - University of Florence;* ***Vincenzo Dossena,*** *Politecnico Di Milano;* ***Lorenzo Arcangeli, Nicola Maceli,*** *GE Oil & Gas;* ***Yong Li,*** *Northeast Electric Power University*	GT2017-63847 **Investigation of Air-Oil-Thermal Distribution in Floating Bush Bearing** ***Yan Wang, Xiaodong Ren,*** *Tsinghua University*
9:30		GT2017-63946 **Analysis on Solid Particle Erosion in the Governing Stage of a High-Parameter Steam Turbine** ***Lihua Cao, Tao Zhang,*** *Northeast Electric Power University*	GT2017-64251 **Comparison of Experimentally and Numerically Determined Dynamic Coefficients of the Hydrodynamic Slide Bearings Operating in the Nonlinear Rotating System** ***Lukasz Brenkacz, Grzegorz Zywica,*** *The Szewalski Institute of Fluid-Flow Machinery Polish Academy of Sciences*

	STRUCTURES & DYNAMICS: STRUCTURAL MECHANICS, VIBRATION & DAMPING	SUPERCRITICAL CO2 POWER CYCLES	SUPERCRITICAL CO2 POWER CYCLES
	Mistuned Blisks and Bladed Disks II	**Supercritical CO2 CSP and Dry Cooling**	**Supercritical CO2 Power Cycle Fundamentals**
	Technical Session • CCC, 201AB • FA-35-2	**Technical • CCC, Richardson Ballroom B • FA-38-10**	**Tutorial Session • CCC, 216AB • FA-38-12**
	Session Chair: **Bernd Beirow,** Brandenburg University Of Technology Cottbus-Senftenberg Session Co-Chair: **Christian Siewert,** Siemens AG - Power and Gas Division	Session Chair: **Jeffrey Phillips,** Electric Power Research Institute Session Co-Chair: **Douglas Hofer,** GE Global Research	Session Chair: **Jason Wilkes,** Southwest Research Institute Session Co-Chair: **Aaron McClung,** Southwest Research Institute
8:00	GT2017-63867 **Combinatorial Optimization of Mistuned Blade Rearrangement Based on Reduced-order FEA Model** ***Tianyuan Liu, Ding Guo, Di Zhang,*** *Xian Jiaotong University;* ***Yonghui Xie,*** *Inst of Turbomachinery*	GT2017-63187 **Heat Exchanger Options for Dry Air Cooling for the sCO2 Brayton Cycle** ***Anton Moisseytsev, Qiuping Lv, James Sienicki,*** *Argonne National Laboratory*	GT2017-65424 **Supercritical CO2 Power Cycles Fundamentals** ***Jason Wilkes,*** *Southwest Research Institute*
8:30	GT2017-63972 **Double Nodal Diameter Spectrum Method and its Application in Quantification of Vibration Localization of Impellers With Splitter Blades** ***Kaicheng Liu, Jianjun Wang,*** *Beihang University*	GT2017-63322 **A Study of s-CO2 Power Cycle for CSP Applications Using an Isothermal Compressor** ***Jin Young Heo, Yoonhan Ahn, Jeong Ik Lee,*** *Korea Advanced Institute of Science and Technology (KAIST)*	TUTORIAL
9:00	GT2017-64973 **Resonance Frequency Detuning With Application Towards Blade Mistuning** ***Garrett Lopp, Jeffrey Kauffman,*** *University of Central Florida*	GT2017-64042 **Dry Air Cooling and the sCO2 Brayton Cycle** ***James Sienicki, Anton Moisseytsev, Qiuping Lv,*** *Argonne National Laboratory*	
9:30	GT2017-63437 **The Influence of Mistuning and Coriolis Effects on the Modal Parameters of Bladed Discs: An Experimental Study** ***Valentina Ruffini, Christoph W. Schwingshackl,*** *Imperial College London;* ***Jeffrey S. Green,*** *Rolls Royce plc.*	GT2017-64958 **Lowering the Levelized Cost of Electricity of a Concentrating Solar Power Tower With a Supercritical Carbon Dioxide Power Cycle** ***Joshua Schmitt, Jason Wilkes, Timothy Allison, Jeffrey Bennett,*** *Southwest Research Institute;* ***Karl Wygant, Robert Pelton,*** *Hanwha Techwin*	

FRIDAY, JUNE 30 — 8:00 - 10:00 AM

	COMBUSTION, FUELS & EMISSIONS	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: DESIGN METHODS & CFD MODELING FOR TURBOMACHINERY
	Chemical Kinetics	**Pollutant Emissions: Soot and Particulates II**	**Fan Design Methods and Applications**
	Technical Session • CCC, 213AB • FA-4-10	**Technical Session • CCC, 203B • FA-4-16**	**Technical Session • CCC, 217CD • FA-41-9**
	Session Chair: **Ponnuthurai Gokulakrishnan,** Combustion Science & Engineering, Inc.	Session Chair: **Waldo Acosta,** Army Research Laboratory Session Co-Chair: **Vishal Acharya,** Georgia Institute of Technology	Session Chair: **Garth V. Hobson,** Naval Postgraduate School
8:00	GT2017-64407 **HEEDS Optimized HyChem Mechanisms** ***Graham Goldin,*** *CD-adapco;* ***Hai Wang, Rui Xu,*** *Stanford University;* ***Tianfeng Lu, Yang Gao,*** *University of Connecticut;* ***Zhuyin Ren,*** *Tsinghua Univ.*	GT2017-63131 **Characterization of Fuel Composition and Altitude Impact on Gaseous and Particle Emissions From a Turbojet Engine** ***Tak Chan,*** *Environment and Climate Change Canada;* ***Pervez Canteenwalla,*** *NRC Canada;* ***Wajid Chishty,*** *NRC Aerospace*	GT2017-63577 **A Review of Inlet-Fan Coupling Methodologies** ***Benjamin Godard, Edouard De Jaeghere,*** *Safran Aircraft Engines;* ***Nabil Ben Nasr, Julien Marty, Raphael Barrier,*** *ONERA;* ***Nicolas Gourdain,*** *ISAE - Universite de Toulouse*
8:30	GT2017-64978 **CO and H2O Time-Histories in Shock-Heated Blends of Methane and Ethane for Assessment of a Chemical Kinetics Model** ***Olivier Mathieu, Clayton Mulvihill, Eric Petersen,*** *Texas A&M University;* ***Yingjia Zhang,*** *Xi'an Jiaotong University;* ***Henry Curran,*** *NUI Galway*	GT2017-63293 **Large-Eddy Simulation and Detailed Modeling of Soot Evolution in a Model Aero Engine Combustor** ***Achim Wick, Frederic Priesack, Heinz Pitsch,*** *Institute for Combustion Technology, RWTH Aachen University*	GT2017-65223 **Improved Hierarchical Modelling for Aerodynamically Coupled Systems** ***Rob Watson, Jiahuan Cui, Yunfei Ma, Yushuang Dai, James Tyacke, Mohammed F. Alam, Paul G. Tucker,*** *University of Cambridge;* ***Nagabhushana Rao Vadlamani, Teng Cao,*** *University of Cambridge, Whittle Laboratory;* ***Paul Hield, Mark Wilson, Kevin Menzies, Christopher Sheaf,*** *Rolls Royce plc.*
9:00	GT2017-64995 **Thermochemical Mechanism Optimization for Accurate Predictions of CH Concentrations in Premixed Flames of C1-C3 Alkane Fuels** ***Philippe Versailles, Antoine Durocher, Jeffrey Bergthorson,*** *McGill University;* ***Graeme M.G. Watson,*** *Siemens Canada, Power Generation, Distributed Generation;* ***Gilles Bourque,*** *Siemens Canada Ltd*	GT2017-63620 **Investigation of Flame Structure and Soot Formation in a Single Sector Model Combustor Using Experiments and Numerical Simulations Based on the LES/CMC Approach** ***Andrea Giusti, Epaminondas Mastorakos,*** *University of Cambridge;* ***Christoph Hassa, Johannes Heinze, Eggert Magens,*** *German Aerospace Center (DLR);* ***Marco Zedda,*** *Rolls-Royce plc*	GT2017-64630 **Aeromechanical Design and Test of a Modern Highly Loaded Fan** ***Jens Nipkau, Bronwyn Power, Matthew Jordan,*** *Rolls-Royce Corporation*
9:30		GT2017-64770 **Formation of Soot in Ethylene-Air Partially Premixed Flames Over a Wide Range of Premixedness** ***Aritra Chakraborty,*** *Dept. of Aerospace Engineering and The National Centre for Combustion Research and Development;* ***Satya Chakravarthy,*** *IIT Madras*	GT2017-65174 **Transonic Fan Performance Evaluated With Different Solution Limiters** ***Forrest L. Carpenter, Paul Cizmas,*** *Texas A & M University*

FRIDAY, JUNE 30 — 8:00 - 10:00 AM

	TURBOMACHINERY: DUCTS & COMPONENT INTERACTIONS	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: RADIAL TURBOMACHINERY AERODYNAMICS
	Gas Turbine Engine Intakes, Exhaust Diffusers and Ejectors	**Combustion Dynamics: Modeling III**	**Centrifugal Compressors - Performance Optimization**
	Technical Session • CCC, 207BC • FA-42-1	**Technical Session • CCC, 219B • FA-4-38**	**Technical Session • CCC, 208A • FA-44-9**
	Session Chair: **David Cerantola,** Queen's University Session Co-Chair: **Berardo Paradiso,** Energy Department - Politecnico di Milano	Session Chair: **Rudolph Dudebout,** Honeywell Aerospace Session Co-Chair: **Andrew Caswell,** Air Force Research Laboratory	Session Chair: **Luca Porreca,** MAN Diesel&Turbo Schweiz AG Session Co-Chair: **Bobby Sirakov,** Honeywell Turbo Technologies
8:00	GT2017-63126 **A Sensitivity Study of Gas Turbine Exhaust Diffuser-Collector Performance at Various Inlet Swirl Angles and Strut Stagger Angles** ***Michal Siorek,*** *Solar Turbines Incorporated;* ***Stephen Guillot,*** *Techsburg Inc;* ***Song Xue,*** *Concepts NREC;* ***Wing Ng,*** *Virginia Tech*	GT2017-64817 **Limit Cycles of Spinning Thermoacoustic Modes in Annular Combustors: A Bloch-Wave and Adjoint-Perturbation Approach** ***Georg Atta Mensah,*** *Technische Universität Berlin;* ***Jonas P. Moeck,*** *TU Berlin*	*GT2017-63047* **Characterising the Influence of Impeller Exit Recirculation on Centrifugal Compressor Work Input** ***Charles Stuart, Stephen Spence, Sung in Kim,*** *Queen's University Belfast;* ***Dietmar Filsinger,*** *IHI Charging Systems;* ***Andre Starke,*** *IHI Charging Systems International Gmbh*
8:30	GT2017-63250 **Wall Pressure and Temperature Distribution in Bent Oblong Exhaust Ejectors** ***Asim Maqsood, A.M. Birk,*** *Queens University*	GT2017-63649 **Stability and Sensitivity Analysis of Hydrodynamic Instabilities in Industrial Swirled Injection Systems** ***Thomas Ludwig Kaiser, Thierry Poinsot,*** *IMFT;* ***Kilian Oberleithner,*** *Chair of Fluid Dynamics, TU Berlin*	GT2017-63268 **Effect of Free-Stream Velocity Definition on Boundary Layer Thickness and Losses in Centrifugal Compressors** ***Jonna Tiainen, Ahti Jaatinen-Värri, Aki Grönman, Teemu Turunen-Saaresti, Jari Backman,*** *Lappeenranta University of Technology*
9:00	GT2017-64714 **Installation Effects on Highly Loaded Turboprop S-Duct Intake Proximity** ***Caglar Atalayer, Detlev Wulff,*** *TU Braunschweig;* ***Jens Friedrichs,*** *TU Braunschweig Inst of Aircraft Propulsion & Turbomachinery*	GT2017-64130 **Analytical Study of Low-Frequency Helmholtz Mode Oscillation in a Model Combustor** ***Man ZHANG, Wenjie TAO,*** *AECC Commerical Aircraft Engine CO., LTD;* ***Yuzhen Lin,*** *Beihang University*	GT2017-64724 **Impeller Manufacturing: Design for Machining** ***Michael Cave, Min Ji,*** *Solar Turbines, Inc*
9:30	GT2017-64338 **Influence of Cross-Sectional Shape on the Flow in a Highly Bent Research Intake Duct for Jet Engines** ***Jakob P. Haug, Rudolf P.M. Rademakers,*** *Universität der Bundeswehr München;* ***Marcel Stößel,*** *Wehrtechnische Dienststelle für Luftfahrzeuge und Luftfahrtgerät der Bundeswehr;* ***Reinhard Niehuis,*** *University of the Federal Armed Forces Munich*	GT2017-65125 **Mode Shapes and Dominant Frequency Predictions in a Swirl Stabilized Premixed Air-Methane Combustor Using Modal Analysis and Large Eddy Simulations (LES)** ***Tushar Jadhav, Saurabh Patwardhan, Stefano Orsino, Pravin Nakod,*** *ANSYS Inc*	GT2017-64923 **Cast Impeller Quality and its Effects on Performance** ***Edward Fowler,*** *Solar Turbines Incorporated*

FRIDAY, JUNE 30 — 8:00 - 10:00 AM

	TURBOMACHINERY: UNSTEADY FLOWS IN TURBOMACHINERY	CONTROLS, DIAGNOSTICS & INSTRUMENTATION	CYCLE INNOVATIONS
	Unsteady Flows in Compressors III	**Topics in Controls**	**Combined Cycles**
	Technical • CCC, Richardson Ballroom A • FA-46-10	**Technical Session • CCC, 106 • FA-5-3**	**Technical Session • CCC, 212AB • FA-6-10**
	Session Chair: **Roy Fulayter,** Rolls-Royce Corporation Session Co-Chair: **Yoon Choi,** GE Aviation	Session Chair: **Bill Rhoden,** UTC Session Co-Chair: **Jonathan Jennings,** University of Missouri Columbia	Session Chair: **David Sanchez,** University of Seville
8:00	GT2017-63548 **Research on the Unsteady Flow in an Axial Flow Compressor Rotor Based on PVDF Piezoelectric-Film Sensor Array** ***Cong Jiqing, Jing Jianping,*** *Shanghai Jiao Tong University*	GT2017-64761 **Improving Disturbance Compensation in Gas Turbines by Incorporating Event-Triggered Logic Signals From Switchgear** ***Robert Moroto, Robert Bitmead,*** *University of California-San Diego;* ***Chad Holcomb,*** *Solar Turbines Inc.*	GT2017-63307 **Dry Air Injection for Gas Turbines: Implementation and Operating Experience** ***Sergio Arias Quintero, Bob Kraft, Scott Auerbach,*** *Powerphase LLC*
8:30	GT2017-63786 **Numerical Study of Flow Control in a Diffuser by Vibration Wall and Mechanism Analysis by Establishment of a Nonlinear Simplified Model** ***Lu Weiyu, Guoping Huang, Xin Fu, Jin-Chun Wang, Shuli Hong,*** *Nanjing University of Aeronautics & Astronautics*	GT2017-63222 **A Practical Approach From the MEE Toward Hybrid Propulsion** ***Noriko Morioka,*** *IHI Corporation, Engine Technology Dept;* ***Hitoshi Oyori, Tomoaki Asako, Katsuyuki Takahashi, Takumi Ando,*** *IHI Corporation*	GT2017-63375 **Semi-Closed Recuperated Cycle With Wet Compression** ***Hans Wettstein,*** *HEW Consulting*
9:00	GT2017-65265 **Absolute and Convective Instabilities of a Separated Boundary Layer Near the Leading Edge of an Aerofoil** ***Subrata Sarkar, K. S. Jadhav,*** *Indian Institute of Technology Kanpur*	GT2017-63472 **A Parametric Study of Actuator Requirements for Active Turbine Tip Clearance Control of a Modern High Bypass Turbofan Engine** ***Jonathan Kratz,*** *NASA Glenn Research Center;* ***Jeffryes Chapman,*** *Vantage Partners, LLC;* ***Ten-Huei Guo,*** *NASA*	GT2017-64387 **Process Analysis of Selective Exhaust Gas Recirculation for CO2 Capture in Natural Gas Combined Cycle Power Plants Using Amines** ***Maria Elena Diego, Jean-Michel Bellas, Mohamed Pourkashanian,*** *University of Sheffield*
9:30	GT2017-63831 **A Comprehensive Investigation of Blade Row Interaction Effects on Stator Loss Utilizing Vane Clocking** ***Natalie Smith,*** *Southwest Research Institute;* ***Nicole Key,*** *Purdue Univ*	GT2017-63529 **An Integral Type μ Synthesis Method for Temperature and Pressure Control of Flight Environment Simulation Volume** ***Zhu Meiyin, Wang Xi,*** *Beihang University*	GT2017-65227 **Optimisation of a Low-Tit Combined Cycle Gas Turbine With Application to New Generation Solar Thermal Power Plants** ***Frédéric Siros,*** *Electricité de France;* ***Gonzalo Fernandez Campos,*** *Centrale Supelec*

FRIDAY, JUNE 30 — 10:15 - 12:45 PM

	HEAT TRANSFER: INTERNAL AIR SYSTEMS & SEALS (WITH TURBOMACHINERY)	HEAT TRANSFER: EXPERIMENTAL INTERNAL COOLING	HEAT TRANSFER: EXPERIMENTAL FILM COOLING
	Shaft and Strip Seals	**Special Topics**	**Endwall Film Cooling II**
	Technical Session • CCC, 203A • FB-15-9	**Technical Session • CCC, 219A • FB-16-5**	**Technical Session • CCC, 213CD • FB-19-7**
	Session Chair: **Aaron Bowsher,** Cross Mftg Co (1938) Ltd Session Co-Chair: **Neelesh Sarawate,** GE Global Research	Session Chair: **Carlo Carcasci,** University of Florence Session Co-Chair: **Sung in Kim,** Queen's University Belfast	Session Chair: **Hee-Koo Moon,** Solar Turbines Session Co-Chair: **Hongzhou Xu,** Solar Turbines Inc
10:15	GT2017-63163 **CFD Leakage Predictions of Unworn and Worn Labyrinth Seals With and Without Tooth Axial Offset** ***Hasham Chougule,*** *Honeywell Technology Solutions;* ***Alexander Mirzamoghadam,*** *Honeywell Aerospace*	GT2017-63491 **Transport of Microparticles in a Turbulated Serpentine Passage** ***Daniel D. Borup, Christopher J. Elkins, John K. Eaton,*** *Stanford University*	GT2017-63226 **An Experimental Investigation on the Overall Cooling Performances of Two Turbine End-Wall Structures** ***Wei Wang, Jian Pu, Rui-ming Yuan,*** *University of Science and Technology of China;* ***Jianhua Wang,*** *University of Science & Technology;* ***Yong-xian Luan, Bin-peng Kang,*** *Aero-engine Institute of Aviation Industry Corporation of China*
10:45	GT2017-63562 **Numerical Investigation on the Leakage and Static Stability Characteristics of Pocket Damper Seals at High Eccentricity Ratios** ***Zhigang LI, Zhenping Feng,*** *Xi'An Jiaotong University;* ***Jun Li,*** *Institute of Turbomachinery, Xi'an Jiaotong Univ.*	GT2017-64539 **A Novel Test Rig for Assessing Advanced Rotor Blade Cooling Concepts, Measurement Technique and First Results** ***Maximilian Elfner, Achmed Schulz,*** *Karlsruhe Institute for Technology KIT;* ***Hans-Jörg Bauer,*** *Institut of Thermal Turbomachinery (ITS) - Karlsruhe Institut of Technology (KIT);* ***Knut Lehmann,*** *Rolls-Royce Deutschland Ltd & Co KG*	GT2017-64397 **Effects of Inlet Swirl on Endwall Film Cooling in Neighboring Vane Passages** ***Yang Zhang, Xin Yuan,*** *Deparment of Thermal Engineering, Tsinghua University;* ***Yifei Li, Xiutao Bian,*** *Tsinghua University;* ***Francesco Ornano,*** *University of Oxford*
11:15	GT2017-63565 **Dry Gas Face Seal Design With Arbitrary Gap Shape** ***Alexander Vinogradov, Sergey Falaleev, Renat Badykov,*** *Samara National Research University*	GT2017-64039 **Scaling Heat-Transfer Coefficients Measured Under Laboratory Conditions to Engine Conditions** ***Tom Shih, Chien-Shing Lee,*** *Purdue University;* ***Kenneth Mark Bryden,*** *Ames Laboratory at Iowa State University*	GT2017-64229 **Experimental and Computational Study of the Effect of Momentum-Flux Ratio on High Pressure NGV Endwall Cooling Systems** ***Thomas Povey,*** *Univ Of Oxford*
11:45	GT2017-64440 **Investigation of Strip Seal Leakage With Special Focus on Seal Groove Design and Relative Displacement of Sealing Surfaces** ***Thomas Huber, Cyrille J. Bricaud, Thomas Zierer,*** *Ansaldo Energia Switzerland AG*	GT2017-63973 **Investigation of Heat Transfer and Flow Characteristics in Fractal Tree-Like Microchannel With Steam Cooling** ***Linqi Shui, Bo Huang, Kunkun Dong,*** *Xi'an University of Technology;* ***Chunyan Zhang,*** *Xi'an Aerospace Composite Materials Research Institute*	GT2017-64994 **Film Cooling Effectiveness Comparison on Full-scale Turbine Vane Endwalls Using PSP Technique** ***Chao-Cheng Shiau, Andrew F Chen, Je-Chin Han,*** *Texas A&M University;* ***Salam Azad, Siemens; Ching-Pang Lee,*** *Siemens Energy Inc.*
12:15			

FRIDAY, JUNE 30 — 10:15 - 12:45 PM

	HEAT TRANSFER: GENERAL COMPUTATIONAL HEAT TRANSFER	MANUFACTURING MATERIALS & METALLURGY	STRUCTURES & DYNAMICS: BEARING & SEAL DYNAMICS
	General Computational Heat Transfer II	**Advances In Gas Turbine Materials**	**Seals - Predictions and Experiments 2**
	Technical Session • CCC, 207A • FB-22-2	**Technical • CCC, Richardson Ballroom C • FB-24-5**	**Technical Session • CCC, 206AB • FB-34-5**
	Session Chair: **Cunliang Liu,** Northwestern Polytechnical University Session Co-Chair: **Bhamidi Prasad,** IIT Madras	Session Chair: **Dheepa Srinivasan,** GE Power, GE India Technology Center Session Co-Chair: **Richard Kearsey,** National Research Council of Canada	Session Chair: **Adolfo Delgado,** Texas A&M University Session Co-Chair: **Alexandrina Untaroiu,** Virginia Tech
10:15	GT2017-63243 **Sensitivity Analysis of Heat Transfer in a Honeycomb Acoustic Liner to Inlet Conditions With Large Eddy Simulation** ***Florent Duchaine,*** *CERFACS*	GT2017-63621 **Introduction of L12-Ordered Precipitation to Alumina-Forming Austenitic Heat-Resistant Steels With Low Ni Content** ***Bingbing Zhao, Xianping Dong, Feng Sun, Lanting Zhang,*** *Shanghai Jiao Tong University*	GT2017-63254 **Leakage, Drag Power and Rotordynamic Force Coefficients of an Air in Oil (Wet) Annular Seal** ***Luis San Andres, Xueliang Lu,*** *Texas A&M University*
10:45	GT2017-63842 **Heat Transfer Deterioration Onset of Hydrocarbon Fuel at Supercritical Pressure** ***Zeyuan Cheng, Zhi Tao, Jianqin Zhu, Haiwang Li, Longyun Wang,*** *Beihang University*	GT2017-64104 **Morphological Changes in γ' Phase by Creep, Aging and Aging After Creep for Polycrystalline Nickel-Based Superalloy** ***Haruhisa Shigeyama, Mitsutoshi Okada, Toshihiko Takahashi, Susumu Yamada, Takayuki Sakai, Terutaka Fujioka,*** *Central Research Institute of Electric Power Industry*	GT2017-63988 **Experimental Study of the Static and Dynamic Characteristics of a Long Smooth Seal With Two-Phase, Mainly-Air Mixtures** ***Min Zhang, James E. McLean, Dara Childs,*** *Texas A&M University*
11:15	GT2017-63908 **A New Heat Transfer Correlation for Supercritical RP-3 Flowing in Vertical Tubes** ***Longyun Wang, Zhi Tao, Jianqin Zhu, Haiwang Li, Zeyuan Cheng,*** *Beihang University*	GT2017-64043 **A Physically Based Model for High Temperature Deformation of Inconel 718PLUS™** ***Utkudeniz Ozturk, Jose Maria Cabrera, Jessica Calvo,*** *Polytechnic University of Catalonia*	GT2017-64875 **Effect of Surface Patterning on the Dynamic Response of Annular Hole-Pattern Seals** ***Hanxiang Jin, Gen Fu, Alexandrina Untaroiu,*** *Virginia Tech*
11:45	GT2017-64080 **Prediction of the Turbine Tip Convective Heat Flux Using Discrete Green Functions** ***Valeria Andreoli, David Gonzalez Cuadrado, Guillermo Paniagua,*** *Purdue University*	GT2017-64605 **Long-Term Oxidation Resistance of Several Precipitation Strengthened Ni-Based Superalloys** ***Joseph Meyer, Vinay Deodeshmukh,*** *Haynes International*	GT2017-63894 **Using the Honeycomb Seal Technology to Overcome the Axial Overload of a Centrifugal Supercharger** ***Lihao Zhang, Lidong He, Hangling Hu, Kuan Li, Jinji Gao,*** *Beijing University of Chemical Technology*
12:15	GT2017-64711 **An Integrated Conjugate Computational Approach for Evaluating the Aerothermal and Thermomechanical Performance of Double-Wall Effusion Cooled Systems** ***Alexander V. Murray, Peter Ireland,*** *University of Oxford;* ***Anton J. Rawlinson,*** *Rolls-Royce PLC*		GT2017-65055 **Investigation on Intelligent Rotor Vibration Control Based on Electromagnetic Damping Seal** ***Xing Shao, Wang Weimin, Fengli Jie, Xing'an Jiang,*** *Beijing University of Chemical Technology*

	STRUCTURES & DYNAMICS: STRUCTURAL MECHANICS, VIBRATION & DAMPING	SUPERCRITICAL CO2 POWER CYCLES	SUPERCRITICAL CO2 POWER CYCLES
	Vibration Measurement Techniques II	**Supercritical CO2 Power Cycle Materials**	**Supercritical CO2 Heat Exchangers**
	Technical Session • CCC, 201AB • FB-35-11	**Tutorial Session • CCC, 219B • FB-38-15**	**Technical • CCC, Richardson Ballroom B • FB-38-3**
	Session Chair: **Ibrahim Sever,** Rolls-Royce Plc Session Co-Chair: **Christoph W. Schwingshackl,** Imperial College London	Session Chair: **Ganesan Subbaraman,** Gas Technology Institute	Session Chair: **Grant Musgrove,** Southwest Research Institute Session Co-Chair: **Darryn Fleming,** Sandia National Labs
10:15	GT2017-63200 **Asynchronous Response Analysis of Non-Contact Vibration Measurements on Compressor Rotor Blades** ***Christoph Krause, Marco Stelldinger, Benjamin Hanschke, Arnold Kühhorn,*** *Brandenburg University of Technology Cottbus-Senftenberg;* ***Thomas Giersch,*** *Rolls-Royce Deutschland Ltd & Co KG*	GT2017-65427 **Supercritical CO2 Power Cycle Materials Tutorial** ***Ganesan Subbaraman,*** *Gas Technology Institute*	GT2017-63058 **Response of a Compact Recuperator to Thermal Transients in a Supercritical Carbon Dioxide Brayton Cycle** ***Eric Clementoni, Tim Cox, Martha King,*** *Naval Nuclear Laboratory*
10:45	GT2017-63986 **New Step to Improve the Accuracy of Blade Synchronous Vibration Parameters Identification Based on Combination of GARIV and LM Algorithm** ***Wang Weimin, Sanqun Ren, Shan Huang, Qihang Li, Kang Chen,*** *Beijing University of Chemical Technology*	TUTORIAL	GT2017-63639 **Mechanical Design and Validation Testing for a High-Performance Supercritical Carbon Dioxide Heat Exchanger** ***Shaun Sullivan, Jason Farias, James S. Nash, James Kesseli,*** *Brayton Energy*
11:15	GT2017-63980 **Investigation on the Turbine Blade Tip Clearance Measurement and Active Clearance Control Based on Eddy Current Pulse-Trigger Method** ***Wang Weimin, Huajin Shao, Xing Shao, Kailiang Song,*** *Beijing University of Chemical Technology*		GT2017-64560 **Printed Circuit Heat Exchanger Flow Distribution Measurements** ***Blake Lance, Matt Carlson,*** *Sandia National Laboratories*
11:45	GT2017-63628 **One Exciter per Sector Test Bench for Bladed Wheels Harmonic Response Analysis** ***Paolo Neri, Ciro Santus,*** *University of Pisa;* ***Leonardo Bertini,*** *Univ of Pisa – DICI;* ***Alberto Guglielmo,*** *GE Oil&Gas*		GT2017-64908 **The Conductance Ratio Method for Off-Design Heat Exchanger Modeling and its Impact on an sCO2 Recompression Cycle** ***Francesco Crespi, David Sanchez,*** *University of Seville;* ***Kevin Hoopes,*** *Southwest Research Institute;* ***Nicole Kuek, Brian Choi,*** *Alfa Laval CorHex Ltd*
12:15	GT2017-63901 **Experimental Study on Magnetorheological Fluid Dampers in a Pipe System** ***Yunmeng Zhou, Lidong He,*** *Beijing University of Chemical Technology*		

FRIDAY, JUNE 30 — 10:15 - 12:45 PM

	SUPERCRITICAL CO2 POWER CYCLES	TURBOMACHINERY: AXIAL FLOW FAN & COMPRESSOR AERODYNAMICS	TURBOMACHINERY: AXIAL FLOW TURBINE AERODYNAMICS
	Supercritical CO2 Oxycombustion	**Stators**	**Turbine Cascade Aerodynamics**
	Technical Session • CCC, 208B • FB-38-9	**Technical Session • CCC, 217CD • FB-39-2**	**Technical Session • CCC, 208A • FB-40-5**
	Session Chair: **Aaron McClung,** Southwest Research Institute Session Co-Chair: **Karl Wygant,** Hanwha Techwin	Session Chair: **Reid A. Berdanier,** Penn State University Session Co-Chair: **Kenneth Suder,** NASA Glenn Research Center	Session Chair: **Alexander Stein,** GE Power Session Co-Chair: **Michael Henke,** Leibniz Universitaet Hannover
10:15	GT2017-65217 **Testing of a Novel Post Combustion Acid Removal Process for the Direct-Fired, Oxy-Combustion Allam Cycle Power Generation System** ***Xijia Lu, Scott Martin, Mike McGroddy,*** *8 Rivers Capital;* ***Mike Swanson, Josh Stanislowski, Jason D. Laumb,*** *Energy & Environmental Research Center*	GT2017-63235 **Experimental Investigations of the Aerodynamics of Highly Loaded Tandem Vanes in a High-Speed Stator Cascade** ***Alexander Heinrich, Christine Tiedemann, Dieter Peitsch,*** *Technische Universität Berlin*	GT2017-64684 **Experimental Investigation of Total Pressure Loss Development in a Highly Loaded Low Pressure Turbine Cascade** ***Philip Bear, Mitch Wolff,*** *Wright State University;* ***Andreas Gross,*** *New Mexico State University;* ***Christopher Marks, Rolf Sondergaard,*** *U.S. Air Force Research Laboratory*
10:45	GT2017-64952 **Direct Fired Oxy-Fuel Combustor for sCO2 Power Cycles: 1MW Scale Design and Preliminary Bench Top Testing** ***Jacob Delimont, Aaron McClung,*** *Southwest Research Institute;* ***Marc Portnoff,*** *Thar Energy, LLC*	GT2017-64286 **Large Eddy Simulation of Tandem Blade Stator Cascades** ***Pratik Mitra, Jahnavi Kantharaju, Rohan Rayan, Joseph Mathew,*** *Indian Institute of Science*	GT2017-63081 **Prediction of Profile Losses by Means of Large-Eddy Simulation Including Turbulence Modeling Assessment** ***Karsten Hasselmann,*** *Muenster University of Applied Sciences;* ***Stefan aus der Wiesche,*** *Fachhochschule Münster, Fachbereich Maschinenbau*
11:15	GT2017-63311 **Thermal Properties for the Simulation of Direct-Fired sCO2 Combustor** ***K. R. V. Manikantachari, Subith Vasu, Jose O. Bobren-Diaz,*** *University of Central Florida;* ***Scott Martin,*** *Embry-Riddle Aeronautical University*	GT2017-64956 **Technology Demonstration of a Splittered Transonic Rotor With a Downstream Variable Geometry Tandem Stator** ***Sabine Bauinger,*** *Graz University of Technology;* ***Anthony Gannon, Garth V. Hobson, Aaron D. Terrell,*** *Naval Postgraduate School*	GT2017-63359 **A Numerical Investigation of the Impact of Part-Span Connectors on the Flow Field in a Linear Cascade** ***Christoph Brüggemann, Markus Schatz,*** *ITSM, University of Stuttgart;* ***Damian Vogt,*** *University of Stuttgart;* ***Frederik Popig,*** *Siemens AG*
11:45		GT2017-63771 **Secondary Flow in Variable Stator Vanes With Penny-Cavities** ***Simon Stummann,*** *IST RWTH Aachen University;* ***Daniel Pohl,*** *Institute of Jet Propulsion and Turbomachinery;* ***Peter Franz Jeschke,*** *RWTH Aachen University;* ***Hannes Wolf, Alexander Halcoussis,*** *MTU Aero Engine GmbH;* ***Matthias Franke,*** *MTU Aero Engines AG*	GT2017-63521 **Effect of Spanwise Variation of Chord on the Performance of a Turbine Cascade** ***Srikanth Deshpande,*** *Lund University;* ***Pradeep A M,*** *Indian Institute of Technology Bombay;* ***Marcus Thern,*** *Lund University, Faculty of Engineering;* ***Magnus Genrup,*** *Lund University*
12:15		GT2017-63261 **Different Effects of Cantilevered and Shrouded Stators on Axial Compressor Performance** ***Xia-yi Si, Jinfang Teng, Xiao-qing Qiang, Jin-zhang Feng,*** *Shanghai Jiao Tong University*	GT2017-63865 **An Experimental Investigation of the Effects of Grooved Tip Geometry on the Flow Field in a Turbine Cascade Passage Using Stereoscopic PIV** ***Yangtao Tian, Lixiang Wang,*** *Beihang University;* ***Hongwei Ma,*** *Beijing Univ Of Aeronautics*

FRIDAY, JUNE 30 — 10:15 - 12:45 PM

	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: DESIGN METHODS & CFD MODELING FOR TURBOMACHINERY	COMBUSTION, FUELS & EMISSIONS
	Fundamental Combustion I	**Preliminary Design Methods**	**Combustor Noise**
	Technical Session • CCC, 207D • FB-4-14	**Technical • CCC, Richardson Ballroom A • FB-41-5**	**Technical Session • CCC, 213AB • FB-4-17**
	Session Chair: **Michael Huth,** Siemens Session Co-Chair: **Michael Duesing,** Ansaldo Energia	Session Chair: **Sunil Patil,** ANSYS Inc Session Co-Chair: **Akin Keskin,** Rolls-Royce plc	Session Chair: **Friedrich Bake,** German Aerospace Center (DLR) Session Co-Chair: **Christoph Hirsch,** Technical University of Munich
10:15	GT2017-63316 **High-Speed Imaging and Measurements of Ignition Delay Times in Oxy-Syngas Mixtures with High CO2 Dilution in a Shock Tube** ***Samuel Barak, Joseph Lopez, Erik Ninnemann, Subith Vasu,*** *University of Central Florida;* ***Owen Pryor,*** *UCF-CATER;* ***Batikan Koroglu,*** *Lawrence Livermore National Laboratory*	GT2017-63993 **Multall: An Open Source, CFD Based, Turbomachinery Design System** ***John Denton,*** *University of Cambridge*	GT2017-64985 **Fractal Characteristics of Combustion Noise** ***Aditya Saurabh,*** *Institut Für Strömungsmechanik Und Technische Akustik;* ***Hassan Imran,*** *University of Manchester;* ***Holger Nawroth,*** *Technische Universitaet Berlin;* ***C. Oliver Paschereit,*** *H.F.I TU Berlin;* ***Lipika Kabiraj,*** *Chair of Fluid Dynamics, ISTA, TU Berlin*
10:45	GT2017-63344 **Time-Resolved Measurements of Intermediate Concentrations in Fuel-Rich n-Heptane Oxidation Behind Reflected Shock Waves** ***Zachary Loparo, Joseph Lopez, Sneha Neupane, Konstantin L. Vodopyanov, Subith Vasu,*** *University of Central Florida;* ***William Partridge,*** *Oak Ridge National Lab*	GT2017-63856 **A Two-Dimensional Analytical Method for Turbine Blade Cooling Design** ***Chen Li, Jian-jun Liu, Bai-tao AN, Zhi-qiang Yu,*** *Institute of Engineering Thermophysics, Chinese Academy of Sciences*	GT2017-65211 **A Framework to Predict Combustion Noise and Instability: Case Study of a Partially Premixed Flame in a Backward Facing-Step Combustor** ***Ashwin Kannan,*** *National Centre for Combustion Research & Development, and Indian Institute of Technology Madras;* ***Satya Chakravarthy,*** *IIT Madras*
11:15	GT2017-63666 **Ignition Delay Times of High Pressure Oxy-Methane Combustion With High Levels of CO2 Dilution** ***Owen Pryor,*** *UCF-CATER;* ***Batikan Koroglu,*** *Lawrence Livermore National Laboratory;* ***Samuel Barak, Joseph Lopez, Erik Ninnemann, Leigh Nash, Subith Vasu,*** *University of Central Florida*	GT2017-63614 **Aero-Thermal Coupled Throughflow Method With Cooling Model Based on Flow Network Analysis** ***Wei Ba, Xiaodong Ren,*** *Tsinghua University*	GT2017-64300 **Prediction of Combustion Noise in a Model Combustor Using a Network Model and a LNSE Approach** ***Wolfram Ullrich, Christoph Hirsch, Thomas Sattelmayer,*** *Technical University of Munich;* ***Yasser Mahmoudi, Ann Dowling, Nedunchezhian Swaminathan,*** *University of Cambridge;* ***Kilian Lackhove, Amsini Sadiki,*** *Technische Universität Darmstadt;* ***André Fischer, Max Staufer,*** *Rolls-Royce Deutschland Ltd & Co KG*
11:45	GT2017-64111 **Study of Experimental and Calculated Flame Speed of Methane/Oxygen-Enriched Flame in Gas Turbine Conditions As a Function of Water Dilution: Application to CO2 Capture by Membrane Processes** ***Juan Pablo Chica Cano,*** *CORIA CNRS 6614 Normandy University;* ***Gilles Cabot,*** *CORIA INSA DE ROUEN;* ***Stéphanie de Persis,*** *ICARE UPR3021-Orléans University;* ***Fabrice Foucher,*** *PRISME - Orléans University*	GT2017-63929 **Modeling and Analysis of the Inlet Circumferential Fluctuations in Subsonic Rotors** ***Mingzhi Tang, Donghai Jin, Xingmin Gui,*** *Beihang University*	GT2017-63418 **Prediction of Combustion Noise of a Swirl-Stabilized Flame Using Laser Interferometric Vibrometry Validated by Acoustic Measurements** ***Felix Greiffenhagen, Johannes Peterleithner, Jakob Woisetschlaeger,*** *Graz University of Technology*
12:15	GT2017-64172 **Prediction of Flammability Limits of Gas Mixtures Containing Inert Gases Under Variable Temperature and Pressure Conditions** ***Roda Bounaceur, PIERRE ALEXANDRE GLAUDE, Baptiste Sirjean, René Fournet,*** *CNRS LRGP;* ***Pierre Montagne,*** *GE Power & Water;* ***Matthieu Vierling,*** *GE Energy Product;* ***Michel Molière,*** *UTBM (Universite De Technologie De Belfort Montbél)*	GT2017-64693 **A Coupled 1D Film Hydrodynamics and Core Gas Flow Model for Air-Oil Flows in Aero-Engine Bearing Chambers** ***Bruce Kakimpa, Stephen Hibberd,*** *Gas Turbine & Transmissions Research Centre (G2TRC);* ***Hervé Morvan,*** *University of Nottingham*	GT2017-64467 **Experimental Investigation of the Influence of the Shear Layer on Direct Combustion Noise of a Turbulent Jet Flame** ***Holger Nawroth,*** *Technische Universitaet Berlin;* ***C. Oliver Paschereit,*** *H.F.I TU Berlin*

FRIDAY, JUNE 30 — 10:15 - 12:45 PM

	TURBOMACHINERY: RADIAL TURBOMACHINERY AERODYNAMICS	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: DEPOSITION, EROSION, FOULING, AND ICING
	Centrifugal Compressors - Map Width Enhancement	**Combustor Diagnostics and Micro Devices**	**CFD with Deposition and/or Erosion**
	Technical Session • CCC, 207BC • FB-44-3	**Technical Session • CCC, 203B • 4-6**	**Technical Session • CCC, 211AB • FB-48-1**
	Session Chair: **Hideaki Tamaki,** IHI Corporation Session Co-Chair: **Srithar Rajoo,** Universiti Teknologi Malaysia	Session Chair: J**acqueline O'Connor,** Pennsylvania State University Session Co-Chair: **Janith Samarasinghe,** Pennsylvania State University	Session Chair: **Danesh Tafti,** Virginia Tech Session Co-Chair: **Christian Koch,** University of Stuttgart
10:15	GT2017-63071 **An Investigation of the Stability Enhancement of a Centrifugal Compressor Stage Using a Porous Throat Diffuser** ***Lee Galloway, Stephen Spence, Sung in Kim,*** *Queen's University Belfast;* ***Daniel Rusch, Klemens Vogel, René Hunziker,*** *ABB Turbo Systems Ltd*	GT2017-63300 **High Speed Imaging of Forced Ignition Kernels in Non-Uniform Jet Fuel/Air Mixtures** ***Sheng Wei, Brandon Sforzo, Jerry Seitzman,*** *Georgia Institute of Technology*	GT2017-63295 **Development and Applications of a Coupled Particle Deposition Dynamic Mesh Morphing Approach for the Numerical Simulation of Gas Turbine Flows** ***Peter Forsyth, David Gillespie, Matthew McGilvray,*** *University of Oxford*
10:45	GT2017-63372 **Numerical Investigation of an Asymmetric Double Suction Centrifugal Compressor With Different Backswept Angle Matching for a Wide Operating Range** ***Hanzhi Zhang, Longyu Wei,*** *Institute of Turbomachinery, School of Mechanical Engineering, Beijing Institute of Technology;* ***Dazhong Lao,*** *School of Aerospace Engineering, Beijing Institute of Technology;* ***Ce Yang, Mingxu Qi,*** *Beijing Institute of Technology*	**GT2017-63722 Simultaneous Spectral Imaging of C2•/CH• at Low-to-High Pressure Combustion** ***Jonathan E. Reyes, Kareem Ahmed,*** *University of Central Florida*	GT2017-64629 **Numerical Simulation of a Particle-Laden Impinging Jet: Effect of Wall Curvature on Particle Deposition** ***Paolo Venturini, Domenico Borello, Giuliano Agati, Alessandro Salvagni, Franco Rispoli,*** *Sapienza University of Rome*
11:15	GT2017-63535 **Aerodynamic Performances of a Centrifugal Compressor With Discrete Cavities** ***Sang-Bum Ma,*** *Kwang-yong Kim, Inha University*	GT2017-65067 **Assessment of UV Sensors for Flameout Detection** ***Edouard Bahous, Ram Srinivasan, Priyank Saxena, John Bowen,*** *Solar Turbines*	GT2017-64649 **Pressure and Temperature Effects on Particle Deposition in an Impinging Flow** ***Ryan Lundgreen,*** *Ohio State University*
11:45	GT2017-63918 **Influence of Adjustable Inlet Guide Vanes on the Performance Characteristics of a Shrouded Centrifugal Compressor** ***Yubao Tian, Yonghong Tang, Zhiheng Wang, Guang Xi,*** *Xi'an Jiaotong University*	GT2017-65271 **Development of a Recuperated Flameless Combustor for an Inverted Brayton Cycle Microturbine Used in Residential Micro-CHP** ***Michel Delanaye, Rabia Nacereddine, Mehdi Rouabah,*** *MITIS;* ***Andres Giraldo,*** *MITIS/University of Liege;* ***Valentina Fortunato, Alessandro Parente,*** *Universiy of Brussels*	GT2017-64675 **Numerical Simulation With Adaptive Boundary Method for Predicting Time Evolution of Erosion Processes** ***Alessio Castorrini, Alessandro Corsini, Franco Rispoli, Paolo Venturini, Francescogiuseppe Morabito,*** *Sapienza University of Rome*
12:15		GT2017-64769 **Time-Resolved Three-Component PIV Investigation of Flashback in Stratified Flames** ***Rakesh Ranjan, Noel Clemens,*** *The University Of Texas At Austin*	

	CONTROLS, DIAGNOSTICS & INSTRUMENTATION	CYCLE INNOVATIONS	COAL, BIOMASS & ALTERNATIVE FUELS
	Topics in Vibration and Combustion Monitoring	**Cycle Performance Simulation II**	**CFD Workshop**
	Technical Session • CCC, 106 • FB-5-4	**Technical Session • CCC, 212AB • FB-6-12**	**Tutorial Session • CCC, 105 • FB-3--8**
	Session Chair: **Syed Khalid,** Gas Turbine Systems Solutions, LLC Session Co-Chair: **Igor Loboda,** Instituto Politécnico Nacional	Session Chair: **Gang Xiao,** Zhejiang University	Session Chair: **Pierre Gauthier,** Siemens Energy Canada
10:15	GT2017-64443 **Application of Cyclo-Non-Stationary Indicators for Bearing Monitoring Under Varying Operating Conditions** ***Konstantinos Gryllias, Simona Moschini,*** *KU Leuven;* ***Jerome Antoni,*** *INSA de Lyon*	GT2017-63705 **Exergy Analysis and Performance Assessment for Different Recuperative Thermodynamic Cycles for Gas Turbine Applications** ***Christina Salpingidou, Zinon Vlahostergios, Apostolos Goulas, Kyros Yakinthos,*** *Aristotle University of Thessaloniki;* ***Stefan Donnerhack, Michael Flouros,*** *MTU Aero Engines AG;* ***Dimitrios Misirlis,*** *TEI of Central Macedonia*	TUTORIAL
10:45	GT2017-63181 **Long-Term NOx Emission Behavior of Heavy Duty Gas Turbines: An Approach for Model-Based Monitoring and Diagnostics** ***Moritz Lipperheide, Frank Weidner, Manfred Wirsum,*** *RWTH-Aachen University;* ***Martin Gassner,*** *GE Power;* ***Stefano Bernero,*** *GE Power*	GT2017-63881 **Hydraulic Fuel System Simulation Using Newton-Raphson Method and its Integration With a Gas Turbine Performance Model** ***Yi-Guang Li, Chen Wang,*** *Cranfield University*	
11:15	GT2017-64288 **Condition Monitoring of Combustion System on Industrial Gas Turbines Based on Trend and Noise Analysis** ***Yu Zhang, Miguel Martinez-Garcia, Samuel Cruz-Manzo,*** *University of Lincoln;* ***Mike Garlick, Anthony Latimer,*** *Siemens Industrial Turbomachinery Ltd*	GT2017-63990 **Thermodynamic Modeling and Comparative Analysis of Supercritical Carbon Dioxide Brayton Cycle** ***Apostolos A. Gkountas, Anastassios M. Stamatelos,*** *University of Thessaly;* ***Anestis Kalfas,*** *Aristotle Univ Of Thessaloniki*	
11:45	GT2017-63253 **A Fault Diagnosis Approach for Rolling Element Bearing Based on S-Transform and Artificial Neural Network** ***Ningbo Zhao, Hongtao Zheng, Zhitao Wang,*** *Harbin Engineering University;* ***Lei Yang,*** *No. 96317 Unit of PLA*	GT2017-64699 **Dynamic Simulation of Startup Characteristics for the Advanced Humid Air Turbine System** ***Yutaka Watanabe, Toru Takahashi, Masashi Nakamoto,*** *Central Research Institute of Electric Power Industry*	
12:15	GT2017-64899 **Improving Turbomachinery Health Monitoring Using Advanced Shaft Telemetry System** ***Stephen Hesler,*** *Electric Power Research Institute;* ***Christopher Suprock,*** *Suprock Technologies LLC*		

FRIDAY, JUNE 30 — 2:30 - 5:00 PM

	STRUCTURES & DYNAMICS: BEARING & SEAL DYNAMICS	STRUCTURES & DYNAMICS: STRUCTURAL MECHANICS, VIBRATION & DAMPING	TURBOMACHINERY: AXIAL FLOW FAN & COMPRESSOR AERODYNAMICS
	Bearings - Predictions and Experiments 3	**Dynamics of Blades and Bladed Disks**	**Flow Control 1**
	Technical Session • CCC, 206AB • FC-34-8	**Technical Session • CCC, 201AB • FC-35-6**	**Technical • CCC, Richardson Ballroom A • FC-39-8**
	Session Chair: **Sung-Hwa Jeung,** Ingersoll Rand	Session Chair: **Malte Krack,** University of Stuttgart Session Co-Chair: **Alain Batailly,** École Polytechnique de Montréal	Session Chair: **William Solomon,** GE Aviation Session Co-Chair: **Anthony Gannon,** Naval Postgraduate School
2:30	GT2017-63813 **Oil Film Thickness Measurements on Surfaces Close to an Aero-Engine Ball Bearing Using Optical Techniques** ***Jee Loong Hee, Santhosh Rudrasetty, Graham Johnson,*** *Gas Turbine Transmissions Research Centre;* ***Kathy Simmons, David Hann,*** *University of Nottingham;* ***Michael Walsh,*** *Rolls Royce plc*	GT2017-64653 **Numerical and Experimental Comparison of Forced Response of Free-Standing and Single-Connected Last Stage Blades** ***Francesco Piraccini,*** *GE;* ***Tim Rice, Alexey Evtushenko, Michael Mossom,*** *GE Power;* ***Jury Auciello,*** *GE Oil & Gas*	GT2017-63217 **Influence of Tailored Boundary Layer Suction on Aerodynamic Performance in Bowed Compressor Cascades** ***Ding Jun, Xin Du, Shaowen Chen, Zhou Xun, Songtao Wang,*** *Harbin Institute of Technology;* ***Shen Jiaqi,*** *Zhejiang Yuexiu University of Foreign Languages*
3:00	GT2017-63815 **Experimental Investigation of Oil Shedding From an Aero-Engine Ball Bearing at Moderate Speeds** ***Santhosh Rudrasetty, Jee Loong Hee, Graham Johnson,*** *Gas Turbine Transmissions Research Centre;* ***Kathy Simmons, David Hann,*** *University of Nottingham;* ***Michael Walsh,*** *Rolls Royce plc*	GT2017-64583 **Interface Reduction in Craig-Bampton Component Mode Synthesis by Orthogonal Polynomial Series** ***Luigi Carassale, Mirko Maurici,*** *University of Genova*	GT2017-63781 **Vortex Structures for Highly-Loaded Subsonic Compressor Cascades With Slot Injection** ***Huanlong Chen, Huaping Liu, Dongfei Zhang, Linxi Li,*** *Harbin Institute of Technology*
3:30	GT2017-64151 **Numerical Study of Cage Dynamics Focused on Hydrodynamic Effects of Guidance Land Clearances for Different Ball-Pocket Clearances in Cryogenic Environments** ***Bok Seong Choe,*** *Sogang University-KIST;* ***Jeon-Kook Lee, Yong-Bok Lee,*** *Korea Institute of Science and Technology;* ***Doyoung Jeon,*** *Sogang Univ*	GT2017-64636 **An Explicit-Implicit Time Integration Approach for Finite Element Evaluation of Engine Load Following an FBO Event** ***Yiliu Weng, Lipeng Zheng,*** *AECC Commercial Aircraft Engine Co., Ltd*	GT2017-63935 **Numerical Investigation on Effect of Compressor Performance in Single Rotor With Micro-Vortex Generator** ***Shan Ma, Wuli Chu, Haoguang Zhang, Jinhua Lang, Haiyang Kuang,*** *Northwestern Polytechnical University*
4:00	GT2017-63909 **Validation of Turbulence Models for the Superlaminar Flows in Journal Bearings** ***Aoshuang Ding, Xiaodong Ren,*** *Tsinghua University*	GT2017-64108 **Frequency Analysis Performed on Compressor Blades of Two Types of Gas Turbines Using Campbell and SAFE Diagrams** ***saeed bab,*** *Mechanical Rotary Equipment Department, Niroo Research Institute;* ***Mohsen Behzadi, Ahmad Ahmadi, Ali Ramesh, Ali Reza Shahrabi,*** *Turbotec;* ***Jalal Fathi Sola,*** *University of Texas at Arlington*	GT2017-63948 **Impact of Vortex Produced by a Novel Curve-Micro Vortex Generator on Secondary Flow in Compressor Cascade** ***Shan Ma, Wuli Chu, Haoguang Zhang, Lanpan Li, Jinhua Lang,*** *Northwestern Polytechnical University*
4:30		GT2017-63702 **Identification of Vibrational Resonances of Centrifugal Compressor and Radial Turbine Impellers Interacting With General Pressure Pulsations** ***Zhusan Luo, Mike Stanko, Carl Schwarz, Zhihong Annie Wang,*** *Praxair, Inc.*	GT2017-63953 **Effect of Blade Aspiration Slot Configuration on the Aerodynamic Performance of a Highly Loaded Aspirated Compressor Cascade** ***Zhang Longxin, le Cai, Bao Liu, Ding Jun, Songtao Wang,*** *Harbin Institute of Technology*

FRIDAY, JUNE 30 — 2:30 - 5:00 PM

	TURBOMACHINERY: AXIAL FLOW TURBINE AERODYNAMICS	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: DESIGN METHODS & CFD MODELING FOR TURBOMACHINERY
	Aerodynamic Investigations	**Combustion Modeling I**	**Turbine Design Methods and Applications**
	Technical • CCC, Richardson Ballroom C • FC-40-6	**Technical Session • CCC, 203B • FC-4-11**	**Technical • CCC, Richardson Ballroom B • FC-41-3**
	Session Chair: **Thomas Povey,** Univ Of Oxford Session Co-Chair: **Guillermo Paniagua,** Purdue University	Session Chair: **Khawar Syed,** Alstom (Switzerland) Ltd. Session Co-Chair: **A. C. Benim,** Duesseldorf University of Applied Sciences	Session Chair: **Sami Girgis,** Pratt & Whitney Session Co-Chair: **Vikram Shyam,** NASA
2:30	GT2017-63471 **Loss Generation in Transonic Turbine Blading** ***Penghao Duan,*** *University of Oxford;* ***Choon Sooi Tan,*** *MIT;* ***Andrew Scribner,*** *Siemens Energy, Inc;* ***Anthony Malandra,*** *Siemens Power Generation*	GT2017-63203 **Prediction of CO and NOx Pollutants in a Stratified Bluff Body Burner** ***Pascal Gruhlke, Fabian Proch, Andreas Kempf,*** *University of Duisburg-Essen;* ***Enric Illana Mahiques, Stefan Dederichs, Christian Beck,*** *Siemens AG*	GT2017-65251 **A Numerical Study of Secondary Flows in a 1.5 Stage Axial Turbine Guiding the Design of a Non-Axisymmetric Hub** ***Hayder M.B. Obaida, Hakim Kadhim, Aldo Rona, Katrin Leschke, Jonathan P. Gostelow,*** *University of Leicester*
3:00	GT2017-63220 **Numerical Investigation on Loss Mechanism and Performance Improvement for a Zero Inlet Swirl Turbine Rotor** ***Wei Zhao,*** *Inst.Of Eng. Therm., Chinese Academy of Sciences;* ***Qingjun Zhao, Jianzhong Xu,*** *Key Laboratory of Light-Duty-Gas-Turbine;* ***Xiuming Sui, Weiwei Luo,*** *IET*	GT2017-64446 **A Generalized FGM Progress Variable Weight Optimization Using HEEDS** ***Graham Goldin, Yongzhe Zhang,*** *CD-adapco*	GT2017-63055 **Numerical Study of the Flow Past an Axial Turbine Stator Casing and Perspectives for its Management** ***Hakim Kadhim, Aldo Rona, Hayder M.B. Obaida, Jonathan P. Gostelow,*** *University of Leicester*
3:30	GT2017-64244 **Accurate Estimation of Profile Losses and Analysis of Loss Generation Mechanisms in a Turbine Cascade** ***Davide Lengani, Marina Ubaldi, Pietro Zunino,*** *Università di Genova;* ***Daniele Simoni,*** *DIME University of Genova;* ***Francesco Bertini,*** *GE AvioAero;* ***Vittorio Michelassi,*** *General Electric Oil & Gas*	GT2017-64489 **Two-Phase Flow Large Eddy Simulations of a Staged Multipoint Swirling Burner: Comparison Between Euler-Euler and Euler-Lagrange Descriptions** ***Leo Cunha Caldeira Mesquita,*** *Laboratoire EM2C, CNRS, CentraleSupelec, Université Paris-Saclay* ***Aymeric Vié,*** *Laboratoire EM2C, CNRS, CentraleSupelec, Université Paris-Saclay* ***Sébastien Ducruix,*** *CNRS*	GT2017-64075 **The Effect of Manufacturing Variations on Unsteady Interaction in a Transonic Turbine** ***John Clark,*** *US Air Force Reseaerch Laboratory AFRL;* ***Joseph Beck,*** *AFRL/RXMS;* ***Alex Kaszynski, Angela Still,*** *Universal Technology Corporation;* ***Ron-Ho Ni,*** *AeroDynamic Solutions*
4:00	GT2017-64478 **Multi-Fidelity Modeling of a Fully-Featured HP Turbine Stage** ***Giorgio Occhioni, Shahrokh Shahpar, Haidong Li,*** *Rolls Royce Plc*	GT2017-65030 **A Hybrid Flamelet Generated Manifold Model for Modeling Partially Premixed Turbulent Combustion Flames** ***Rakesh Yadav, Sandeep Jain,*** *ANSYS;* ***Ashoke De,*** *Indian Institute of Technology*	GT2017-64727 **Influence of Tip Geometry on Over Tip Leakage in Shrouded Rotor Blades With Cooling** ***Jeff Tessier, Gregory Vogel,*** *PSM*
4:30	GT2017-63079 **High-Fidelity Simulations of a Linear HPT Vane Cascade Subject to Varying Inlet Turbulence** ***Richard Pichler, Richard Sandberg,*** *The University of Melbourne;* ***Gregory Laskowski,*** *GE Aviation;* ***Vittorio Michelassi,*** *General Electric Oil & Gas*	GT2017-65104 **Comparison of Temperature Fields and Emissions Predictions Using Both an FGM Combustion Model, With Detailed Chemistry, and a Simple Eddy Dissipation Combustion Model With Simple Global Chemistry** ***Pierre Gauthier,*** *Siemens Energy Canada*	GT2017-64697 **Scale-Resolving Simulations of Bypass Transition in a High-Pressure Turbine Cascade Using a Spectral-Element Discontinuous-Galerkin Method** ***Anirban Garai, Laslo Diosady,*** *Science and Technology Corporation;* ***Scott Murman, Nateri Madavan,*** *NASA Ames Research Center*

FRIDAY, JUNE 30 — 2:30 - 5:00 PM

	COMBUSTION, FUELS & EMISSIONS	COMBUSTION, FUELS & EMISSIONS	TURBOMACHINERY: MULTIDISCIPLINARY DESIGN APPROACHES, OPTIMIZATION & UNCERTAINTY QUANTIFICATION
	Combustion Dynamics: Flame Response to Pertubations	**High Hydrogen Combustion II**	**Automated Design Optimization Applications: Radial Turbomachinery, Valves and Bearings**
	Technical Session • CCC, 207D • FC-4-20	**Technical Session • CCC, 213AB • FC-4-32**	**Technical Session • CCC, 207BC • FC-47-7**
	Session Chair: **Ghenadie Bulat,** Siemens Industrial Turbomachinery Ltd. Session Co-Chair: **Ramanarayanan Balachandran,** University College London	Session Chair: **Bernd Prade,** Siemens AG KWU Session Co-Chair: **Jenny Larfeldt,** Siemens Industrial Turbomachinery AB	Session Chair: **Swati Saxena,** ESI Group
2:30	GT2017-63812 **Flame Response to Transverse Acoustic Forcing With Minimal Axial Coupling** ***Travis Smith, Benjamin Emerson, Tim Lieuwen,*** *Georgia Institute of Technology;* ***William Proscia,*** *Pratt & Whitney*	GT2017-63080 **Boundary Layer Flashback in Premixed Hydrogen-Air Flames With Acoustic Excitation** ***Vera Hoferichter,*** *TU München – Thermodynamik;* ***Thomas Sattelmayer,*** *Technical Univ Munich*	GT2017-65005 **CAD-Based Adjoint Optimization of the Stresses in a Radial Turbine** ***Tom Verstraete, Jens-Dominik Mueller,*** *Queen Mary University of London;* ***Lasse Mueller,*** *Von Karman Institute*
3:00	GT2017-63843 **Measurements and Modeling of the Dynamic Response of a Pilot Stabilized Premixed Flame Under Dual-Input Perturbation** ***Chunyan LI, Suhui LI, Xu Cheng, Min Zhu,*** *Tsinghua University, Department of Thermal Engineering*	GT2017-63249 **Influence of Carrier Air Preheating on Autoignition of Inline-Injected Hydrogen-Nitrogen Mixtures in Vitiated Air of High Temperature** ***Christoph Schmalhofer, Peter Griebel,*** *German Aerospace Center (DLR);* ***Manfred Aigner,*** *Dlr*	GT2017-64123 **A Centrifugal Compressor Impeller: a Multidisciplinary Optimization to Improve its Mass, Strength, and Gas-Dynamic Characteristics** ***Anton Salnikov, Maxim Danilov,*** *Central Institute of Aviation Motors (CIAM) called P.I. Baranov*
3:30	GT2017-63936 **Velocity Field Response of a Forced Swirl Stabilized Premixed Flame** ***Kiran Manoharan,*** *Indian Institute of Science;* ***Travis Smith, Benjamin Emerson, Christopher M. Douglas, Tim Lieuwen,*** *Georgia Institute of Technology;* ***Santosh Hemchandra,*** *Department of Aerospace Engineering*	GT2017-63414 **Experimental Investigation of a Bluff Body Burner for Distributed Hydrogen Injection** ***James D. Gounder, Peter Kutne,*** *German Aerospace Center (DLR);* ***Andrea Gruber,*** *SINTEF Energy Research*	GT2017-63262 **Optimization of the Operation Characteristic of a Highly Stressed Centrifugal Compressor Impeller Using Automated Optimization and Metamodeling Methods** ***Marius Geller, Christoph Schemmann, Norbert Kluck,*** *Dortmund University of Applied Scences and Arts*
4:00	GT2017-63441 **Experimental Sensitivity Analysis and the Equivalence of Pulsed Forcing and Feedback Control in Thermoacoustic Systems** ***Nicholas P. Jamieson, Matthew P. Juniper,*** *University of Cambridge*	GT2017-63924 **Investigation of Hydrogen Enriched Methane Flame in a Dry Low Emission Industrial Prototype Burner at Atmospheric Pressure Conditions** ***Arman Ahamed Subash, Atanu Kundu, Robert Collin, Jens Klingmann, Marcus Aldén,*** *Lund University*	GT2017-64535 **Effect of Foil Geometry on the Static Performance of Thrust Foil Bearings** ***Gen Fu,*** *Alexandrina Untaroiu, Virginia Tech;* ***Erik Swanson,*** *Xdot Engineering and Analysis*
4:30		GT2017-64885 **Hydrogen Enriched Methane Combustion Diluted With Exhaust Gas and Steam: Fundamental Investigation on Laminar Flames and NOx Emissions** ***Charles Lhuillier, Romain Paul Alexis Oddos, Lisa Zander, Neda Djordjevic,*** *Technische Universität Berlin;* ***Finn Lückoff,*** *Chair of Fluid Dynamics, TU Berlin;* ***Katharina Göckeler,*** *FDX Fluid Dynamix GmbH;* ***C. Oliver Paschereit,*** *H.F.I TU Berlin*	GT2017-64872 **Design for Additive Manufacturing: Valves Without Moving Parts** ***Audrey Gaymann, Francesco Montomoli, Marco Pietropaoli,*** *Imperial College of London*

CONTROLS, DIAGNOSTICS & INSTRUMENTATION

Controls-Oriented Modeling of Gas Turbines

Technical Session • CCC, 106 • FC-5-1

Session Chair: **Jeffrey Simmons,** Pratt & Whitney

2:30

GT2017-63543 **A Physics-Based Dynamic Model for Boilers: Part 1: Model Development and Validation**

Matthew Blom, Michael Brear, Chris Manzie, Ashley Wiese, *University of Melbounre*

3:00

GT2017-63546 **A Physics-Based Dynamic Model for Boilers: Part 2: Model Reduction in a Cogeneration Application**

Matthew Blom, Michael Brear, Chris Manzie, Ashley Wiese, *University of Melbounre*

3:30

GT2017-64777 **Multi-Stage System Identification of a Gas Turbine**

Amit Pandey, Mauricio de Oliveira, *University of California San Diego;* ***Chad Holcomb,*** *Solar Turbines Inc.*

4:00

GT2017-65110 **Simulation of Pneumatic Volumes for a Gas Turbine Transient State Analysis**

Sergiy Yepifanov, Roman Zelenskyi, Feliks Sirenko, *National Aerospace University;* ***Igor Loboda,*** *Instituto Politécnico Nacional*

4:30

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Notes

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

Turbo Expo Session Participant Index

ASME 2017 Power & Energy Conferences Joint With ICOPE-17

ASME 2017 Power Conference Joint with ICOPE-17
ASME 2017 11th International Conference on Energy Sustainability
ASME 2017 15th International Conference on Fuel Cell, Science, Engineering and Technology
ASME 2017 Nuclear Forum
ASME 2017 Energy Storage Forum

MONDAY, JUNE 26 — 11:00 AM - 12:30 PM

ASME 2017 NUCLEAR FORUM	ASME 2017 NUCLEAR FORUM	ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 5-1: PANEL- ADVANCED MANUFACTURING	**TRACK 5-1: PANEL- ADVANCED MANUFACTURING**	**TRACK 1-8: HEAT EXCHANGERS, CONDENSERS, COOLING SYSTEMS, AND BALANCE-OF-PLANT**
Session 5-1-1 PANEL- Advanced Manufacturing- I	**Session 5-1-2 PANEL- Advanced Manufacturing - II**	**Session 1-8-1: Steam Condenser Design - Guidelines, Enhancements and Efficiency**
Charlotte Convention Center West, 210B	**Charlotte Convention Center West, 210B**	**Charlotte Convention Center West, 209B**
Session Organizer: **Robert Stakenborghs,** ILD Power, Baton Rouge, LA, United States Session Co-Organizer: **Craig Stover**, EPRI, Charlotte, NC, United States, **Jovica Riznic**, Canadian Nuclear Safety Commission, Ottawa, ON, Canada	Session Organizer: **Robert Stakenborghs,** ILD Power, Baton Rouge, LA, United States Session Co-Organizer: **Craig Stover**, EPRI, Charlotte, NC, United States, **Jovica Riznic**, Canadian Nuclear Safety Commission, Ottawa, ON, Canada	Session Organizer: **Bill Bieber**, Webco Industries, Sand Springs, OK, United States Session Co-Organizer: Earl Proud, Tei Services, Royersford, PA, United States
PANEL **10:30am - 11:30am**	**PANEL** **11:30am - 12:30pm**	**Design Guidelines for the Safe Operation of Steam Surface Condenser Turbine Bypass on Combined Cycle Power Plants** Technical Paper Publication. PowerEnergy2017-3002 ***Darren Nightingale,*** *Thermal Engineering International, Santa Fe Springs, CA, United States* **Development of a Durable Vapor Phase Deposited Superhydrohobic Coating for Steam Cycle Power Generation Condenser Tubes** Technical Paper Publication: PowerEnergy2017-3080 ***Christopher M. Duron, Jie Zhong, Allan E. David, William R. Ashurst, Sushil H. Bhavnani, Jacob R. Morris, Andrew C. Bates,*** *Auburn University, Auburn University, AL, United States* **Removal of Calcium Carbonate Build-Up in Condenser Tubes Restores Peak Efficiency** Technical Paper Publication: PowerEnergy2017-3398 ***Larry Lervoline****, Conco Services Corporation, Verona, PA, United States*

11:00 AM - 12:30 PM

ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	
TRACK 1-14: STUDENT COMPETITION	**TRACK 2-10: SUSTAINABLE BUILDING ENERGY SYSTEMS**	
Session 1-14-1: Student Competition	**Session 2-10-1: Advances in HVAC System Design and Optimization-I**	
Charlotte Convention Center East, 214	**Charlotte Convention Center West, 202A**	
Session Organizer: **Steven Greco,** We Energies, Milwaukee, WI, United States Session Co-Organizer: **Thomas Cavalcante**, Sargent & Lundy, Glen Ellyn, IL, United States	Session Organizer: **M. Keith Sharp,** University of Louisville, Louisville, KY, United States	

11:00 AM - 12:30 PM

Multicriteria Synthesis of Trigeneration Systems Assisted with Renewable Energy Sources and Thermal Energy Storage
Technical Paper Publication.
PowerEnergy2017-3103
***Eduardo Pina**, Universidad de Zaragoza, Zaragoza, Zaragoza, Spain, **Miguel Lozano, Luis Serra**, Universidad de Zaragoza, Zaragoza Spain*

Structural Analysis of a Novel Ducted Wind Turbine
Technical Paper Publication:
PowerEnergy2017-3392
***Shruti Menon**, University of North Carolina at Charlotte, Charlotte, NC, United States, **Navid Goudarzi**, UNCC, Charlotte, NC, United States*

Solar Thermal Collector with Multifunctional Absorber Layers
Technical Paper Publication:
PowerEnergy2017-3545
***Sarvenaz Sobhansarbandi**, University of Texas at Dallas, Dallas, TX, United States, **Patricia M. Martinez, Alexios Papadimitratos, Anvar Zakhidov, Fatemeh Hassanipour,** University of Texas at Dallas, Richardson, TX, United States*

Intelligent Approaches for Modeling and Optimizing HVAC Systems Energy Use
Technical Paper Publication:
PowerEnergy2017-3105
***Raymond C. Tesiero III**, The University of West Alabama, Livingston, AL, United States, **Nabil Nassif**, NC A&T State University, Greensboro, NC, United States, **Balakrishna Gokaraju**, **Daniel A. Doss**, University of West Alabama, Livingston, AL, United States*

Enhancing the Performance of the Building's Vapor Compression Air Cooling System Using the Earth-Air Heat Exchanger
Technical Paper Publication:
PowerEnergy2017-3200
***Fadi Ghaith, Heriot Watt** University Dubai Campus, Dubai, United Arab Emirates, **Fadi Alsouda**, Johnson Controls, Dubai, United Arab Emirates*

Control Strategies for a Combined Passive Heating and Cooling System
Technical Presentation:
PowerEnergy2017-3654
***Adrienne M Parsons,** University of Louisville, Louisville, KY, United States, **M. Keith Sharp**, University of Louisville, Louisville, KY, United States*

The Effects of Condensation and Optical Degradation of a Polyethylene Cover on the Performance of a Sky Cooling System
Technical Presentation:
PowerEnergy2017-3525
***Adrienne M Parsons,** University of Louisville, Louisville, KY, United States, **M. Keith Sharp,** University of Louisville, Louisville, KY, United States*

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-8: HEAT EXCHANGERS, CONDENSERS, COOLING SYSTEMS, AND BALANCE-OF-PLANT	**TRACK 1-1: PLANT OPERATIONS, MAINTENANCE, AGING MANAGEMENT, RELIABILITY AND PERFORMANCE**	**TRACK 1-13: ENERGY WATER SUSTAINABILITY**
Session 1-8-2: Cooling Systems	**Session 1-11-11: The Revolution to End Energy Poverty (REEP)**	**Session 1-13-1: High Salinity Brine Treatment I**
Charlotte Convention Center West, 209B	**Charlotte Convention Center East, 215**	**Charlotte Convention Center West, 204**
Session Organizer: **Kellen Muldoon,** American Exchanger Services, West Allis, WI, United States Session Co-Organizer: **David Nesbitt**, Retubeco Inc, Ooltewah, TN, United States	Session Organizer: **Wenhu Yang,** Huaibei Shenergy Power Generation Co.,LTD (Pingshan Phase II Project), Shanghai, China Session Co-Organizer: **Christopher Marcella** C.E.M., Wheelabrator, Methuen, MA, United States, **Bo Zemin**, Shanghai Jiao Tong University, Shanghai, China, **Noman Sadi**, Arkansas State University, Jonesboro, AR, United States, **Tarannom Parhizkar**, Sharif University of Technology, Los Angeles, CA, United States, **Lele Yu**, Shanghai University of Electric Power, Shanghai, China	Session Organizer: **Nicholas Siefert,** US DOE / National Energy Technology Laboratory, Pittsburgh, PA, United States
2:00 - 3:30 PM **The Oriented Spray Cooling System for Supplementing Cooling Lakes** Technical Paper Publication: PowerEnergy2017-3011 ***Chuck Bowman,*** *Chuck Bowman Associates, Inc., Knoxville, TN, United States* **The Inlet Air Pre-cooling of Natural Draft Dry Cooling Towers-wetted Medium Issue** Technical Paper Publication: PowerEnergy2017-3235 ***Suoying He, Guanhong Zhang, Yi Xu, Fengzhong Sun,*** *Shandong University, Jinan, China*	**PANEL** **2:00pm - 3:30pm** A type of panel discussion, with strong audience participation encouraged, in which the Revolution to End Energy Poverty (REEP) initiative will be introduced. It is based on the foundational ASME principles of collaboration and cooperation among diverse people and organizations. The REEP initiative is intended to bring attention to the fact that the best way to eliminate poverty for the one to two billion people worldwide that don't have access to a reliable source of electricity is to make available the most-advanced environmentally-responsible electricity sources, including Ultra-High Efficiency Low Emission (U-HELE) clean coal, to them. We are honored to have China's Thomas Edison, Professor Weizhong Feng, contribute to this session. He received the ASME Power Division's top honor in 2016, the Prime Mover Award, for his work related to U-HELE clean coal technology. His Pingshan II project is extremely important to the US energy industry, as well as worldwide, because it is expected to be able to meet the US EPA's New Source Performance Standard (NSPS) for CO_2 without using Carbon Capture or Reduction processes due to its extremely high efficiency (while using state-of-the-art NOx, SOx, and particulate removal systems), when it becomes operational in 2019.	**Dewatering of High Salinity Brines by Osmotically Assisted Reverse Osmosis** Technical Presentation: PowerEnergy2017-3610 ***Jason Arena,*** *US DOE National Energy Technology Laboratory, Pittsburgh, PA, United States,* ***Jinesh Jain***, ***Timothy Bartholomew,*** *National Energy Technology Laboratory, Pittsburgh, PA, United States,* ***Meagan S Mauter,*** *Carnegie Mellon University, Pittsburgh, PA, United States,* ***Nicholas Siefert****, US DOE / National Energy Technology Laboratory, Pittsburgh, PA, United States*
Dry Air Turbo-Compressor Cooling Test Results Technical Presentation: PowerEnergy2017-3642 ***Kevin Eisemann,*** *Barber-Nichols Inc., Arvada, CO, United States*		**Integrated Forward Osmosis/Membrane Distillation Process Technology** Technical Paper Publication: PowerEnergy2017-3767 ***Young Chul Choi, Gyu Dong Kim, Zachary Hendren, Lora Toy, Markus Lesemann,*** *RTI International, Research Triangle Park, NC, United States,* ***Herve Buisson****, Veolia, Cary, NC, United States*
Hybrid Cooling for Power Generation and Water Scarcity in the South African Context Technical Presentation: PowerEnergy2017-3796 ***Mubenga Carl Tshamala,*** *Stellenbosch University, Stellenbosch, South Africa*		**Water Desalination and Power Generation by an Integrated Supercritical System** Technical Presentation: PowerEnergy2017-3386 ***Seyed Dastgheib, Hafiz Salih****, University of Illinois, Champaign, IL, United States,* ***Ali Ashraf,*** *University of Illinois At Urbana Champaign, Urbana, IL, United States,* ***Hong Lu,*** *University of Illinois, Champaign, IL, United States,* ***SungWoo Nam,*** *University of Illinois, Urbana, IL, United States*
		A Membrane-Based Alternative to Thermal Treatment of High Salinity Wastewater Technical Presentation: PowerEnergy2017-3885 ***Rick Peterson, Vince Contini, Darwin Argumedo****, Battelle Memorial Institute, Columbus, OH, United States*

MONDAY, JUNE 26 — 2:00 - 3:30 PM

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 ENERGY STORAGE FORUM
TRACK 1-14: STUDENT COMPETITION	**TRACK 2-10: SUSTAINABLE BUILDING ENERGY SYSTEMS**	**TRACK 4-1: COMMERCIAL APPLICATIONS OF ENERGY STORAGE**
Session 1-14-2: Student Competition	**Session 2-10-2: Advances in Building Energy Modeling and Management**	**Session 4-1-1: Commercial-Scale Energy Storage**
Charlotte Convention Center East, 214	**Charlotte Convention Center West, 202A**	**Charlotte Convention Center West, 205**
Session Organizer: **Moritz Hübel,** University of Rostock, Rostock, Germany Session Co-Organizer: **Joseph Ciras**, JRC PAS, Westminster, MA, United States	Session Organizer: **Marco Sanjuan**, Universidad del Norte, Barranquilla, Colombia Session Co-Organizer: **Ali Al-Alili**, The Petroleum Institute, Abu Dhabi, United Arab Emirates	
2:00 - 3:30 PM **Experimental and Numerical Investigation of Vibration Damping using a Thin Layer Coating** Technical Paper Publication: PowerEnergy2017-3723 ***Imran Aziz,*** *National University of Sciences & Technology, Rawalpindi, Pakistan,* ***Sajjad Hussain****, University of Engineering and Technology, Texila, Punjab, Pakistan,* ***Wasim Tarar****,* ***Imran Akhtar****, National University of Sciences and Technology, Rawalpindi, Pakistan* **Comparative Assessment of Different Types of Ocean Compressed Air Energy Storage Systems based on Exergy Analysis** Technical Paper Publication: PowerEnergy2017-3630 ***Vikram Patil****, Paul Ro, North Carolina State University, Raleigh, NC, United States* **Degradation Based Methodology for Long-Term Analysis and Optimization of Energy Conversion Systems. Case Study: Gas Turbine power plant** Technical Paper Publication: PowerEnergy2017-3150 ***Tarannom Parhizkar****, Sharif University of Technology, Los Angeles, CA, United States,* ***Ramin Roshandel****, Sharif University of Technology, Tehran, Iran*	**Data Mining Approach for Estimating Residential Attic Thermal Resistance from Aerial Thermal Imagery, Utility Data, and Housing Data** Technical Paper Publication: PowerEnergy2017-3092 ***Salahaldin Alshatshati, Kevin Hallinan, Abdulrahman Alrobaian,*** *University of Dayton, Dayton, OH, United States,* ***Adel Naji****, University of Dayton, Fairborn, OH, United States,* ***Badr Altarhuni****, University of Dayton, Miamisburg, OH, United States* **Detailed Dynamic Model of an Institutional building in Hot and Humid Climate Conditions** Technical Paper Publication: PowerEnergy2017-3582 ***Junaid Bin Masood, Sajid Hussain, Ali Al-Alili, Sara Zaidan,*** *The Petroleum Institute, Abu Dhabi, United Arab Emir.,* ***Ebrahim Al-Hajri,*** *Petroleum Institute of Abu Dhabi, Abu Dhabi, United Arab Emirates* **Modeling and Programing Adaptive Climate Control Systems in Buildings** Technical Presentation: PowerEnergy2017-3681 ***Christopher Fernandez****, Georgia Institute of Technology, Atlanta, GA, United States,* ***Sheldon Jeter****, Georgia Institute of Technology, Atlanta, GA, United States* **Estimating Residential Wall Thermal Resistance from Exterior Thermal Imaging** Technical Paper Publication: PowerEnergy2017-3666 ***Salahaldin Alshatshati, Kevin Hallinan, Abdulrahman Alrobaian,*** *University of Dayton, Dayton, OH, United States,* ***Adel Naji****, University of Dayton, Fairborn, OH, United States,* ***Badr Altarhuni****, University of Dayton, Miamisburg, OH, United States* **Analysis of Reduced Parameter Wall Constructions for Energy Transfer Simulation** Technical Presentation: PowerEnergy2017-3952 ***Christopher Fernandez, Sheldon M. Jeter****, Georgia institute of technology, Atlanta, GA, United States*	**Small Scale Energy Storage for Peak Demand Shaving** Technical Paper Publication. PowerEnergy2017-3053 ***Zara L'Heureux,*** *Columbia University, New York, NY, United States,* ***Klaus Lackner****, Arizona State University, Tempe, AZ, United States* **Impact of Utilizing PV Surplus Electricity on CO_2 Emissions from Residential Energy Systems** Technical Paper Publication: PowerEnergy2017-3288 ***Toshiyuki Nagai, Akira Yoshida, Yoshiharu Amano,*** *Waseda University, Shinjuku, Tokyo, Japan* **Liquid Air Power & Storage** Technical Presentation: PowerEnergy2017-3954 ***William M. Conlon,*** *Pintail Power LLC, Palo Alto, CA United States* **Thermoeconomic Analysis of Liquid Air Energy Storage System** Technical Paper Publication: PowerEnergy2017-3370 ***Tonguç Gökçeer, Gökmen Demirkaya,*** *GAMA Power Systems Engineering and Contracting, Inc., Ankara, Turkey,* ***Ricardo Vasquez Padilla,*** *Southern Cross University, Lismore, Australia*

MONDAY, JUNE 26

2:00 - 3:30 PM

ASME 2017 NUCLEAR FORUM

TRACK 5-3: CODES, STANDARDS, LICENSING AND REGULATORY COMPLIANCE

Session 5-3-1: Codes, Standards, Licensing and Regulatory Compliance

Charlotte Convention Center West, 210B

Session Organizer: **Jovica Riznic**, Canadian Nuclear Safety Commission, Ottawa, ON, Canada
Session Co-Organizer: **John Bendo**, ASME, New York, NY, United States, **Guoqiang Wang**, Westinghouse, Pittsburgh, PA, United States

2:00 - 3:30 PM

The Relationship between Arc Strikes and Premature Failure of Metals
Technical Presentation: PowerEnergy2017-3039
Michael Kowatch, *pes, Latrobe, PA, United States*

ASME PTC 46 Performance Tests in Digital Plant Context
Technical Paper Publication: PowerEnergy2017-3245
Olivier Le Galudec*, GE Steam Power System, Cravanche, France*

Second License Renewal for Nuclear Power Plants in the United States
Technical Presentation: PowerEnergy2017-3816
Andrew Taylor*, Sargent & Lundy Corporation, Chattanooga, TN, United States,* ***Brian Jelke, C. Michael Launi****, Sargent & Lundy, Chicago, IL, United States*

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-8: HEAT EXCHANGERS, CONDENSERS, COOLING SYSTEMS, AND BALANCE-OF-PLANT	**TRACK 1-11: PLANT OPERATIONS, MAINTENANCE, AGING MANAGEMENT, RELIABILITY AND PERFORMANCE**	**TRACK 1-13: ENERGY WATER SUSTAINABILITY**
Session 1-8-3: Feedwater Heater and Air-Cooled Condensers	**Session 1-11-2: Gas Turbine: Reliability, Availability and Maintenance**	**Session 1-13: High Salinity Brine Treatment II**
Charlotte Convention Center West, 209B	**Charlotte Convention Center East, 215**	**Charlotte Convention Center, Building, 204**
Session Organizer: **Wendy McGowan,** Neotiss, Morristown, TN, United States Session Co-Organizer: **Jeff Williams**, Neotiss, Morristown, TN, United States	Session Organizer: **Brian Wodka**, RMF Engineering, York, PA, United States Session Co-Organizer: **Edward Dundon**, Dominion Power, Clinton, CT, United States	Session Organizer: **Nicholas Siefert**, US DOE / National Energy Technology Laboratory, Pittsburgh, PA, United States
3:45 - 5:15 PM **Evaluation of the Tube to Tubesheet Joining Process in an AL6XN Feedwater Heater** Technical Paper Publication: PowerEnergy2017-3190 ***Eric Svensson,*** *Powerfect, Inc., Brick, NJ, United States,* ***Michael Catapano****, Powerfect, Brick, NJ, United States*	**3:45 - 5:15 PM** **Simulating Pressure Transient Events in the Fuel Gas Supply to a Multi-Block Combined Cycle Plant** Technical Paper Publication: PowerEnergy2017-3431 ***Robert Schroeder, Sargent & Lundy,*** *Wheaton, IL, United States,* ***Matthew Zitkus****,* ***Michael Czyszczewski****,* ***Beniamino Rovagnati****, Sargent & Lundy, Chicago, IL, United States*	**3:45 - 5:15 PM** **Advanced Thermally Robust Membranes for High Salinity Brine Treatment via Direct Waste Heat Integration** Technical Presentation: PowerEnergy2017-3941 ***Rajinder Singh, Kathryn A. Berchtold,*** *Los Alamos National Lab, Los Alamos, NM, United States*
The Practical Application of Tracer Gas Leak Detection for Air Cooled Condensers Technical Presentation: PowerEnergy2017-3605 ***Christopher Van Name****, Conco Services Corporation, Verona, PA, United States,* ***Gary Fischer****, Conco Systems Inc, Verona, PA, United States,* ***Andrew Leavitt****, Conco Services Corporation, Verona, PA, United States*	**Modification of Torque Converter Operation in GE Gas Turbine Fr7E** Technical Presentation: PowerEnergy2017-3867 ***Alishaikh Kaabi****, Saudi Electricity Company, Jazan, Saudi Arabia*	**Advancements in Membrane Technologies for Power Plant Water Management** Technical Presentation: PowerEnergy2017-3944 ***Jeffery B. Preece,*** *Electric Power Research Institute, Charlotte, NC, United States,* ***Richard Breckenridge,*** *EPRI, Charlotte, NC, United States,* ***Kirk Ellison****, Electric Power Research Institute, Charlotte, NC, United States*
Wind Effects on Air-Cooled Condensers: Wind-Tunnel 2-D Flow Fields for Base Case, Wind Screens, and Louvers Technical Paper Publication: PowerEnergy2017-3646 ***Ryan S. Parker,*** *University of California Davis, Davis, CA, United States*	**Blade Faults Diagnosis in Power Generation Gas Turbines** Technical Paper Publication: PowerEnergy2017-3716 ***Meng Hee Lim, Salman Leong,*** *Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia,* ***Kar Hoou Hui****, Institute of Noise and Vibration, Kuala Lumpur, Wilayah Persekutuan, Malaysia*	
	Cooling Tower Life Extension: Evaluation, Repair, and Maintenance of Reinforced Concrete Elements Technical Presentation: PowerEnergy2017-3887 ***Thomas Kline,*** *Structural Technologies, Deer Park, TX, United States,* ***Eyad Alhariri****,* ***Anna Pridmore****, Structural Technologies, Columbia, MD, United States*	

ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 ENERGY STORAGE FORUM
TRACK 2-2: CONCENTRATING SOLAR POWER	**TRACK 2-10: SUSTAINABLE BUILDING ENERGY SYSTEMS**	**TRACK 4-2: BATTERIES AND ELECTROCHEMICAL ENERGY STORAGE**
Session 2-2-8: SunShot CSP Symposium	**Session 2-10-3: Advances in Energy Sustainability in the Building Sector - I**	**Session 4-2-1: Batteries and Electrochemical Energy Storage**
Charlotte Convention Center West, 209A	**Charlotte Convention Center West, 202A**	**Charlotte Convention Center West, 205**
Session Organizer: **Clifford Ho**, Sandia National Laboratories, Albuquerque, NM, United States	Session Organizer: **Ravi Gorthala**, University of New Haven, West Haven, CT, United States	

3:45 - 5:15 PM

Mission Driven Technical Accomplishments: Research Focal Points of Concentrating Solar Power's SunShot
Technical Presentation: PowerEnergy2017-3569
Matthew Bauer, *ManTech International, Washington D.C., United States,* ***Mark Lausten****, U.S. Department of Energy Solar Office, Washington, DC, United States*

Parameterization for Optimized Dispatch of Concentrating Solar Power Production Using Transient Rankine Modeling
Technical Presentation: PowerEnergy2017-3948
William Hamilton*,* ***Alexandra Newman****,* ***Robert Braun****, Colorado School of Mines, Golden, CO, United States*

Installed Capacity and Price Competitiveness of CSP Versus PV
Technical Paper Publication: PowerEnergy2017-3677
Troy McBride*,* ***Joel Stettenheim****, Norwich Technology, White River Junction, VT, United States*

Techno-economic Comparison of Solar-Driven sCO2 Brayton Cycles Using Component Cost Models Baselined with Vendor Data and Estimates
Technical Paper Publication: PowerEnergy2017-3590
Matt Carlson*, Sandia National Labs, Albuquerque, NM, United States,* ***Bobby Middleton****,* ***Clifford Ho****, Sandia National Laboratories, Albuquerque, NM, United States*

Heat Transfer to Immersed Heat Exchangers with Different Baffle Should Configurations
Technical Presentation: PowerEnergy2017-3513
Julia Haltiwanger Nicodemus, Jackson Jeffrey, Jacob Haase, *Lafayette College, Easton, PA, United States*

Discoveries from the Field - Energy Saving and Sustainability Opportunities Uncovered through Navy In-house Retrocommissioning
Technical Presentation: PowerEnergy2017-3338
Michael Holland, *Navfac Washington, Washington, DC, United States,* ***Andrew Boyd****, U S Navy - NAVFAC, Washington, DC, United States*

Development of a Fiber-Optic Hybrid Day-Lighting for Mobile Applications
Technical Paper Publication: PowerEnergy2017-3563
Sean Lawless*, University of New Haven, Milford, CT, United States,* ***Ravi Gorthala****, University of New Haven, West Haven, CT, United States*

Indoor Air Quality of an Educational Building and its Effects on Occupants' Comfort and Performance
Technical Paper Publication: PowerEnergy2017-3601
Ahmed Al-Rawahi, Ali Al-Alili*, The Petroleum Institute, Abu Dhabi, United Arab Emirates*

Design and Development of a Battery Internal Short Circuit Test Machine
Technical Paper Publication: PowerEnergy2017-3407
Scott C. DeLaney, Mary B. Burbules, *Penn State Behrend, Erie, PA, United States,* ***Mayank Garg****, The Pennsylvania State University, State College, PA, United States,* ***Adam S. Hollinger,*** *Penn State Behrend, Erie, PA, United States,* ***Christopher Rahn****, Penn State University, University Park, PA, United States*

Structure and Composition Changes in Copper-Tin Alloy Anodes Observed with X-ray Microtomography and Nanotomography
Technical Presentation: PowerEnergy2017-3727
Hernando Gonzalez-Malabet, Logan Ausderau, Joseph Buckley*, University of Alabama in Huntsville, Huntsville, AL, United States,* ***Xianghui Xiao****, Argonne National Laboratory, Lemont, IL, United States,* ***Yijin Liu****, Stanford Synchrotron Radiation Lightsource, Menlo Park, CA, United States,* ***George Nelson****, University of Alabama in Huntsville, Huntsville, AL, United States*

Multiphysics Analysis of Lithium Ion Cathode Active Materials Based on 3D Imaging Data
Technical Presentation: PowerEnergy2017-3731
SeungYoon Shin*, University of Alabama in Huntsville, Huntsville, AL, United States,* ***Partha Mukherjee****, Texas A&M University, College Station, TX, United States,* ***George Nelson****, University of Alabama in Huntsville, Huntsville, AL, United States*

Cost Analysis of Flow Batteries: Current and Projected Costs
Technical Presentation. PowerEnergy2017-3720
Jie Sun*, Zhejiang University, Hangzhou, Zhejiang, China,* ***Menglian Zheng****, Zhejiang University, Hangzhou, Zhejiang, China,* ***Tao Wang, Baichen Liu,*** *Zhejiang University, Hangzhou, Zhejiang, China,* ***Zitao Yu****, Zhejiang University, Hangzhou/Zhejiang, China*

ASME 2017 NUCLEAR FORUM

TRACK 5-7: PLANT OPERATIONS, MAINTENANCE, AGING MANAGEMENT, RELIABILITY AND PERFORMANCE

Session 5-7-1: Plant Operations, Maintenance and Aging Management

Charlotte Convention Center West, 210B

Session Organizer: **Robert Stakenborghs,** ILD Power, Baton Rouge, LA, United States
Session Co-Organizer: **Jovica Riznic**, Canadian Nuclear Safety Commission, Ottawa, ON, Canada, **Guoqiang Wang**, Westinghouse, Pittsburgh, PA, United States

3:45 - 5:15 PM

Removal of Iodine by Venturi Scrubber in Filtered Containment Venting System
Technical Presentation: PowerEnergy2017-3059
Manisha Bal, *Indian Institute of Technology Kharagpur, Kharagpur, India*

CAP Series PWR RCS Vacuum Ejector Package Development
Technical Presentation: PowerEnergy2017-3257
Shuan Xia, Xinzhuang Wu, *Shanghai Nuclear Engineering Research and Design Institute, Shanghai, China*

An Analytical Method for Assessing Structural Integrity of Plug Welds in Nuclear Heat Exchangers
Technical Presentation: PowerEnergy2017-3769
Rosha Banan, Dan Vlaicu, *Ontario Power Generation, Pickering, ON, Canada,* ***Ernest Mileta****, Ontario Power Generation Pickering, ON, Canada,* ***Sang-Hwan Kim****,* ***Mike Stojakovic****, Ontario Power Generation, Pickering, ON, Canada*

TUESDAY, JUNE 27 — 11:00 AM - 12:30 PM

ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING	**TRACK 1-3: BOILERS & HEAT RECOVERY STEAM GENERATOR**	**TRACK 1-4: RISK MANAGEMENT, SAFETY AND CYBER SECURITY**
Session 1-1-1: Advanced Combustion Systems and Issues - I	**Session 1-3-1: STEAM GENERATOR DESIGN I**	**Session 1-4-1: Risk Analysis Valuation, Metrics and Insurance Loss Exposure**
Charlotte Convention Center West, 205	**Charlotte Convention Center West, 209A**	**Charlotte Convention Center West, 206B**
Session Organizer: **Ashwani Gupta,** University of Maryland, College Park, MD, United States Session Co-Organizer: **Chun Zou**, Huzhong University of Science and Technology, Wuhan, Hubei, China	Session Organizer: **Paul Weitzel,** Retired, Canal Fulton, OH, United States	Session Organizer: **Frank Michell,** American Electric Power, Columbus, OH, United States
Study of Effects of Confinement Ratio on Swirl Stabilized Flame Macrostructures Technical Paper Publication: PowerEnergy2017-3064 ***Yiheng Tong, Mao Li,*** *Lund University, Lund, Sweden,* ***Marcus Thern****, Lund University, Faculty of Engineering, Lund, Sweden,* ***Jens Klingmann****, Lund Universitet, Lund, Sweden*	**Design of Manual Oven with Forward and Reverse Staged Combustion Way and Exchange Filter** Technical Paper Publication: PowerEnergy2017-3014 ***Yan Zhao****, Heilongjiang Polytechnic, Harbin, China,* ***Fuqiang Zhang****, Harbin Hongguang Boiler Group Co., Ltd, Harbin, China,* ***Chunhua Sun****, Heilongjiang Polytechnic, Harbin, China,* ***Yang Liu****, Haijiang Song, Heilongjiang Polytechnic, Harbin, China*	**Addressing Risk in the Valuation of Energy Systems** Technical Paper Publication: PowerEnergy2017-3526 ***Arun Veeramany, Donald J. Hammerstrom, James T. Woodward, James G O'Brien,*** *Pacific Northwest National Laboratory, Richland, WA, United States*
Experimental Investigation on the Influences of Bluff-body's Position on Diffusion Flame Structures Technical Paper Publication: PowerEnergy2017-3090 ***Yiheng Tong, Mao Li,*** *Lund University, Lund, Sweden,* ***Jens Klingmann****, Lund Universitet, Lund, Sweden,* ***Shuang Chen****, China Aerodynamics Research and Development Center, Mianyang, China,* ***Zhongshan Li****, Lund University, Lund, Sweden*	**Development of CFB Technology in Zhejiang University** Technical Presentation: PowerEnergy2017-3787 ***Leming Cheng****, Zhejiang University, Hangzhou, China*	**Risk Analysis of Power-Gen Gas Turbines with GADS Outage Data** Technical Paper Publication: PowerEnergy2017-3086 ***Bin Zhou****, FM Global, Norwood, MA, United States*
The Effects of the Air-Fuel Velocity Ratio on Turbulent Non-Premixed Bluff-Body Flames Technical Paper Publication: PowerEnergy2017-3107 ***Tao Yang, Jian Zhang****, Chinese Academy of Sciences, Beijing, China*		**ASME B31 Hydrostatic Valve Testing Technologies** Technical Presentation: PowerEnergy2017-3864 ***Kurt Stridinger****, Calder, Parker, CO, United States*
Experimental Study on Combustion Characteristic of Biomass Micron Fuel Technical Paper Publication: PowerEnergy2017-3149 ***Zhang Qi, Xiao Bo, Jin Shiping, Wang Xun, Liu Xiaokang, Shu Liangsuo, Huang Fenxia, Ye Ting, Wang Qiannan, Luo Yuye,*** *Huazhong University of Science and Technology, Wuhan, China*		

11:00 AM - 12:30 PM

TUESDAY, JUNE 27 — 11:00 AM - 12:30 PM

11:00 AM - 12:30 PM

ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-8: HEAT EXCHANGERS, CONDENSERS, COOLING SYSTEMS, AND BALANCE-OF-PLANT	**TRACK 1-11: PLANT OPERATIONS, MAINTENANCE, AGING MANAGEMENT, RELIABILITY AND PERFORMANCE**	**TRACK 1-12: THERMAL HYDRAULICS AND COMPUTATIONAL FLUID DYNAMICS**
Session 1-8-4: Heat Exchanger and Component Design, Evaluation and Life-Cycle Management	**Session 1-11-1: Clean-Coal: Ultra-Hi Efficiency Low Emission (U-HELE) Part 1**	**Session 1-12-1: TH and CFD 1**
Charlotte Convention Center West, 209B	**Charlotte Convention Center West, 206A**	**Charlotte Convention Center West, 210B**
Session Organizer: **Andrew Rister**, Duke Energy, Owensville, IN, United States Session Co-Organizer: **Zachary Godish**, Conco Services Corporation, Verona, PA, United States	Session Organizer: **Wenhu Yang,** Huaibei Shenergy Power Generation Co., LTD (Pingshan Phase II Project), Shanghai, China Session Co-Organizer: **Christopher Marcella** C.E.M., Wheelabrator, Methuen, MA, United States, **Noman Sadi**, Arkansas State University, Jonesboro, AR, United States, **Bo Zemin**, Shanghai Jiao Tong University, Shanghai, China, **Lele Yu**, Shanghai University of Electric Power, Shanghai, Shanghai, China	Session Organizer: **Biplab Kumar Debnath,** National Institute of Technology Meghalaya, Shillong, Meghalaya, India Session Co-Organizer: **Zhenkun Sang**, Shanghai Jiaotong University, Shanghai, Shanghai, China
Methods to Define Failure Probability for Power Plant Heat Exchangers Technical Paper Publication: PowerEnergy2017-3367 ***Carolyn John, Consuelo Guzman-Leong,*** *LPI, Inc., Richland, WA, United States,* ***Thomas C. Esselman,*** *LPI, Inc., Amesbury, MA, United States,* ***Sam Harvey****, EPRI, Charlotte, NC, United States*	**A High Efficiency Coal-Fired Power Technology with Elevated and Conventional Turbine Layout** Technical Paper Publication: PowerEnergy2017-3035 ***Weizhong Feng,*** *Shanghai Waigaoqiao No.3 Power Generation Co., Ltd, Shanghai, China*	**Large-Eddy Simulation of Alkali Metal Reacting Dynamics in a Preheated Pulverized-Coal Jet Flame Using Tabulated Chemistry** Technical Paper Publication: PowerEnergy2017-3212 ***Kaidi Wan, Zhihua Wang,*** *Zhejiang University, Hangzhou, China,* ***Luc Vervisch****, INSA de Rouen & CORIA, Saint-Etienne-du-Rouvray, France,* ***Jun Xia****, Brunel University London, Uxbridge, United Kingdom,* ***Yingzu Liu, Yong He, Kefa Cen,*** *Zhejiang University, Hangzhou, China*
PED Certified Recuperator for Micro Gas Turbines Technical Paper Publication: PowerEnergy2017-3466 ***Yves De Vos, Jean-Paul Janssens,*** *Bosal ECS NV, Lummen, Belgium,* ***Leo van Kooten****, Bosal Netherlands BV, Vianen, Netherlands,* ***Jörg Alexnat****, Bosal ECS NV, Lummen, Belgium*	**A Modified Master Cycle off-Design Performance and Heat Rate Improvement Optimization** Technical Paper Publication: PowerEnergy2017-3063 ***Chenghao Fan****, Shanghai Power Equipment Research Institute, Shanghai, China,* ***Dongsheng Pei****, Xi'an Thermal Power Research Institute, Shaanxi, China,* ***Xiang He****, Wentai Zhou, Zengtao Wei, Shanghai Power Equipment Research Institute, Shanghai, China*	**Investigating the Flow Characteristics of an Air-Biogas Mixing Device through Computational Fluid Dynamics** Technical Paper Publication: PowerEnergy2017-3254 ***Akash Chandrabhan Chandekar****, ME Department, National Institute of Technology Meghalaya, Shillong, Meghalaya, India,* ***Biplab Kumar Debnath****, National Institute of Technology Meghalaya, Shillong, Meghalaya, India*
Instrumentation for the Advancement of Shell and Tube Heat Exchanger Design or for Implementing an Upgrade via a Retrofit Process Technical Paper Publication: PowerEnergy2017-3552 ***Timothy Harpster, Joseph Harpster****, Intek Inc, Westerville, OH, United States*	**Combustion, Reliability, and Heatrate Improvements thru Mill Performance and Applying the Essentials** Technical Paper Publication: PowerEnergy2017-3087 ***Adam McClellan****, Storm Technologies, Inc., Albemarle, NC, United States,* ***Oscie Brown****, South Carolina Electric & Gas, Eastover, SC, United States*	**Investigation of Sub-Models in CFD Simulation of a Large-Scale Pulverized Coal Fired Boiler** Technical Paper Publication: PowerEnergy2017-3789 ***Juwei Zhang, Takamasa Ito, Toshiyuki Suda,*** *IHI Corporation, Yokohama, Japan*
Study on Performance and Manufacture of Wave-type Vanes used in Moisture Separator Reheater Technical Presentation: PowerEnergy2017-3728 ***Youjun Zhu,*** *Shanghai Power Equipment Research Institute, Shanghai, China*	**Experimental Study of Closing-to-wall Air Retrofit for High Temperature Corrosion Control on Coal-fired Boiler** Technical Paper Publication. PowerEnergy2017-3213 ***Lichun Qiu, Xiaozhong Tong****, Jian Guan,* ***Qunyang Xiang, Li Shen,*** *Zhejiang Energy Group R&D, Hangzhou, China*	**Numerical Investigation of Spray Freezing- A Renewable Phase-Change Air Heating System** Technical Presentation: PowerEnergy2017-3742 ***Saad Akhtar****, McGill University, Montreal, QC, Canada,* ***Ali Ghoreishi-Madiseh****, University of British Columbia, Vancouver,, BC, Canada,* ***Agus Sasmito****, McGill University, Montreal, QC, Canada*

TUESDAY, JUNE 27 — 11:00 AM - 12:30 PM

ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY
TRACK 2-1: BIOFUELS, HYDROGEN, SYNGAS, AND ALTERNATE FUELS	**TRACK 2-2: CONCENTRATING SOLAR POWER**	**TRACK 2-5: WIND ENERGY SYSTEMS AND TECHNOLOGIES**
Session 2-1-1: Fuel Processing and Biofuel Production Technologies	**Session 2-2-1: Concentrators and Optics**	**Session 2-5-1: Wind Energy Systems 1**
Charlotte Convention Center West, 204	**Charlotte Convention Center West, 201B**	**Charlotte Convention Center West, 201A**
Session Organizer: **Sheng Li,** Institute of Engineering Thermophysics, Haidian, China	Session Organizer: **Sheldon Jeter,** Georgia Institute of Technology, Atlanta, GA, United States	Session Organizer: **Weifei Hu,** Cornell University, Ithaca, NY, United States Session Co-Organizer: **Ali Mehmani**, Columbia University, New York, NY, United States
11:00 AM - 12:30 PM **Stabilizing Anaerobic Digestion of Food Waste for Biomethane Production** Technical Paper Publication: PowerEnergy2017-3097 ***Swati Hegde, Thomas Trabold, Shwe Sin Win,*** *Rochester Institute of Technology, Rochester, NY, United States*	**Inverse Analysis of Flux Maps for the Characterization of High-flux Sources** Technical Presentation: PowerEnergy2017-3185 ***Clemens Suter****, EPFL, Lausanne, Vaud, Switzerland,* ***Gaël Levêque****, EPFL-LRESE, Lausanne, Switzerland,* ***Sophia Haussener****, École Polytechnique Federale de Lausanne EPFL, Lausanne, Vaud, Switzerland*	**Parametric Study of Vertical Axis Wind Turbine Rotor Configurations using CFD** Technical Paper Publication: PowerEnergy2017-3441 ***John Keithley Difuntorum,*** *Energy Engineering Graduate Program, Quezon City, Philippines,* ***Louis Angelo Danao****, University of the Philippines - Department of Mechanical Engineering, Quezon City, Philippines*
A Novel Coal Gasification System through Thermochemical Regenerative Process of Syngas Sensible Heat to Enhance Cold Gas Efficiency Technical Paper Publication: PowerEnergy2017-3167 ***Sheng Li,*** *Institute of Engineering Thermophysics, Haidian, China,* ***Wang Dandan****, University of Chinese Academy of Sciences, Beijing, China,* ***Lin Gao****, Institute of Engineering Thermophysics, Chinese Academy of Sciences, Beijing, China*	**Heat Flux Distribution over a Solar Central Receiver using an Aiming Strategy based on a Conventional Closed Control Loop** Technical Paper Publication: PowerEnergy2017-3615 ***Jesus Garcia****, Universidad del Norte, Barranquilla, Atlantico, Colombia,* ***Yen Chean Soo Too,*** *CSIRO Energy Technology, Newcastle,, NSW, Australia,* ***Ricardo Vasquez Padilla****, Southern Cross University, Lismore, NSW, Australia,* ***Rodrigo Barraza Vicencio****, Universidad Técnica Federico Santa María, Valparaíso, Chile,* ***Andrew Beath****, CSIRO, Newcastle, Australia,* ***Marco Sanjuan****, Universidad del Norte, Barranquilla, Colombia*	**Optimization Design of Composite Wind Turbine Blades Integrating Lighting Strike Analysis** Technical Paper Publication: PowerEnergy2017-3544 ***Weifei Hu****, Cornell University, Ithaca, NY, United States,* ***Yeqing Wang****, University of Florida, Shalimar, FL, United States*
A Spatially Resolved Physical Model for Dynamic Modeling of a Novel Hybrid Reformer-Electrolyzer-Purifier (REP) for Production of Hydrogen Technical Paper Publication: PowerEnergy2017-3192 ***Derek McVay, Li Zhao, Jack Brouwer,*** *National Fuel Cell Research Center, Irvine, CA, United States,* ***Fred Jahnke, Matt Lambrech,*** *FuelCell Energy, Danbury, CT, United States*	**Mechanical Modal Phenomena of a Ganged Heliostat** Technical Paper Publication: PowerEnergy2017-3635 *Kenneth Armijo, Jesus D. Ortega, Adam C. Moya,* ***Joshua Christian, Gregory Peacock, Charles Andraka, Julius Yellowhair,*** *Sandia National Laboratories, Albuquerque, NM, United States,* ***Jim Clair****, Skysun, LLC, Bay Village, OH, United States*	**Bayesian Identification of Structural Parameters and Instabilities in Aeroelastic Wind Turbines** Technical Presentation: PowerEnergy2017-3460 ***Rakesh Sarma****,* ***Richard P. Dwight, Axelle Viré****, Delft University of Technology, Delft, Netherlands*
	Evaluation of Heliostat Standby Aiming Strategies to Reduce Avian Flux Hazards and Impacts on Operational Performance Technical Paper Publication: PowerEnergy2017-3628 ***Clifford Ho****, Sandia National Laboratories, Albuquerque, NM, United States,* ***Tim Wendelin****, National Renewable Energy Laboratory (NREL), Golden, CO, United States,* ***Luke Horstman****, Sandia National Laboratories, Albuquerque, NM, United States*	
	Design and Experimental Characterization of a 10 kWe Metal Halide High Flux Solar Simulator Technical Presentation: PowerEnergy2017-3920 ***Jeff Roba, Nathan Siegel,*** *Bucknell University, Lewisburg, PA, United States*	

TUESDAY, JUNE 27 — 11:00 AM - 12:30 PM

ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 15TH FUEL CELL SCIENCE, ENGINEERING, AND TECHNOLOGY CONFERENCE
TRACK 2-8 THERMODYNAMIC ANALYSIS OF ENERGY SYSTEMS	**TRACK 2-9: ENVIRONMENTAL, ECONOMIC, AND POLICY CONSIDERATIONS OF ADVANCED ENERGY SYSTEMS**	**TRACK 3-2: POLYMER ELECTROLYTE MEMBRANE, DIRECT METHANOL, & ALKALINE FUEL CELLS**
Session 2-8-1 Organic Cycles	**Session 2-9-2: Environmental Engineering Panel**	**Session 3-2-1: Polymer Electrolyte Membrane, Direct Methanol, & Alkaline Fuel Cells**
Charlotte Convention Center West, 202A	**Charlotte Convention Center West, 210A**	**Charlotte Convention Center East, 215**
Session Organizer: **Alireza Javanshir,** University of North Carolina at Charlotte, Charlotte, NC, United States		Session Organizer: **Adam S. Hollinger**, Penn State Behrend, Erie, PA, United States Session Co-Organizer: **Prodip K. Das**, Newcastle University, Newcastle Upon Tyne, United Kingdom
11:00 AM - 12:30 PM **Comparing the Measured Heat Transfer Coefficient with the Some Presented Models in Flow Boiling of R-600a in Horizontal Smooth Tube** Technical Presentation: PowerEnergy2017-3873 ***Farzam Alimardani, Maziar Shafaee, Saeed Mohseni,*** *University of Tehran, Tehran, Iran*	**Environmental Engineering** Panel Presentation: PowerEnergy2017-3960 ***Frank Princiotta****, Retired - USEPA, Chapel Hill, NC, United States*	**Hybrid Direct Methanol Fuel Cells for Wearable- and Portable-Power Applications** Technical Presentation: PowerEnergy2017-3399 ***Kyle Grew,*** *U.S. Army Research Laboratory, Adelphi, MD, United States,* ***Joshua P. McClure****, U.S. Army Research Laboratory, Adelphi, MD, United States,* ***Deryn Chu,*** *U.S. Army Research Laboratory, Adelphi, MD, United States*
Effect of the Working Fluid on Performance of the ORC and Combined Brayton/ORC Cycle Technical Paper Publication: PowerEnergy2017-3174 ***Alireza Javanshir****, University of North Carolina At Charlotte, Charlotte, NC, United States,* ***Nenad Sarunac****, UNC Charlotte, Charlotte, NC, United States*	**Environmental Engineering** Panel Presentation: PowerEnergy2017-3961 ***George Koperna****, Advanced Resources International, Inc., Arlington, VA, United States*	**Modeling of Heat Removal in a Single-channel Microscale Fuel Cell** Technical Paper Publication: PowerEnergy2017-3405 ***Liyong Sun, Adam S. Hollinger,*** *Penn State Behrend, Erie, PA, United States*
Integration of Organic Rankine Cycle and Scroll Expander Models for Effective Design and Performance Using Organic Working Fluids Technical Paper Publication: PowerEnergy2017-3640 ***Arun Kumar Narasimhan, Chatura Wickramaratne, Rajeev Kamal,*** *University of South Florida, Tampa, FL, United States,* ***Punit Singh****, Indian Institute of Science, Bengaluru, Karnataka, India,* ***D. Yogi Goswami,*** *University of South Florida, Tampa, FL, United States*	**Environmental Engineering** Panel Presentation: PowerEnergy2017-3962 ***Margaret Thompson****, Clemson University, Clemson, SC, United States*	**Minimization of Stack Mass in Miniature PEM Fuel Cell Systems with DC/DC Converters** Technical Paper Publication: PowerEnergy2017-3713 ***Yijin Wei,*** *Massachusetts Institute of Technology, Cambridge, MA, United States,* ***Denise McKahn****, Smith College, Northampton, MA, United States*
New Correlation of Heat Transfer Coefficient for Evaporating Flow of R-600a in Horizontal Coiled Wire Inserted Tubes Technical Presentation: PowerEnergy2017-3871 ***Farzam Alimardani, Maziar Shafaee, Saeed Mohseni****, University of Tehran, Tehran, Iran*	**Environmental Engineering** Panel Presentation: PowerEnergy2017-3963 ***Robert Sommerlad, Robert E. Sommerlad****, Gurnee, IL, United States* **Environmental Engineering** Panel Presentation: PowerEnergy2017-3964 ***Thomas Houlihan****, Reno, NV, United States*	**Technology Maturation of High Reliability Compact Air Independent PEMFC Power Systems for Space Applications** Technical Presentation: PowerEnergy2017-3942 ***Robert Utz, Dave Svrjcek, Bob Wynne, Mike Miller, Thomas Valdez, Bob Sievers,*** *Teledyne Energy Systems, Hunt Valley, MD, United States*

TUESDAY, JUNE 27 — 11:00 AM - 12:30 PM

ASME 2017 ENERGY STORAGE FORUM	ASME NUCLEAR FORUM	ASME NUCLEAR FORUM
TRACK 4-3: COMPRESSED AIR & MECHANICAL ENERGY STORAGE SYSTEMS	**TRACK 5-2: PANEL- RENEWAL AND REINFORCEMENT OF STRUCTURES**	**TRACK 5-2: PANEL- RENEWAL AND REINFORCEMENT OF STRUCTURES**
Session 4-3-1: Compressed Air Energy Storage Systems	**Session 5-2-1: PANEL- Renewal and Reinforcement of Structures -I**	**Session 5-2-2: PANEL- Renewal and Reinforcement of Structures -II**
Charlotte Convention Center West, 202B	**Charlotte Convention Center, East, 214**	**Charlotte Convention Center East, 214**
Session Organizer: **Mark Lausten,** U.S. Department of Energy Solar Office, Washington, DC, United States	Session Organizer: **Anna Pridmore,** Structural Technologies, Columbia, MD, United States Session Co-Organizer: **Robert Stakenborghs**, ILD Power, Baton Rouge, LA, United States, **Jovica Riznic**, Canadian Nuclear Safety Commission, Ottawa, ON, Canada	Session Organizer: **Anna Pridmore,** Structural Technologies, Columbia, MD, United States Session Co-Organizer: **Robert Stakenborghs**, ILD Power, Baton Rouge, LA, United States, **Jovica Riznic**, Canadian Nuclear Safety Commission, Ottawa, ON, Canada
11:00 AM - 12:30 PM **CAES with Integrated CO2 Capture** Technical Presentation: PowerEnergy2017-3593 ***Richard Boudreault,*** *Sigma Energy Storage Inc., Dorval, QC, Canada,* ***Isabella Bozzo, Marjan Dalil, Martin Aralov,*** *Sigma Energy Storage, Dorval, QC, Canada* **Hybrid Thermal-Compressed Air Energy Storage: A Numerical Model** Technical Presentation: PowerEnergy2017-3598 ***Mostafa Najafiyazdi, Alireza Najafi-Yazdi,*** *Sigma Energy Storage, Dorval, QC, Canada,* ***Richard Boudreault****, Sigma Energy Storage Inc., Dorval, QC, Canada* **A New Bifunctional Energy Storage Solution for Conventional and Renewable Energy Power Plants** Technical Presentation: PowerEnergy2017-3795 ***Ahmad Arabkoohsar, Gorm Bruun Andresen,*** *Aarhus University, Aarhus, Denmark* **Analysis and Optimization of the Heat Management in Compressed Air Energy Storage** Technical Presentation: PowerEnergy2017-3810 ***Inigo Ortega-Fernández,*** *CIC Energigune, Miñano, Alava, Spain,* ***Simone A. Zavattoni****, SUPSI - Scuola Universitaria Professionale della Svizzera Italiana, Manno, Ticino, Switzerland,* ***Javier Rodriguez-Aseguinolaza****, CIC Energigune, Minano, Alava, Spain,* ***Maurizio Barbato****, SUPSI - Scuola Universitaria Professionale della Svizzera Italiana, Manno, Ticino, Switzerland,* ***Bruno D'Aguanno****, CIC Energigune, Minano, Alava, Spain* **Preliminary Performance Evaluation of a Hybrid Compressed-Air/Pumped-Hydro Energy Storage Prototype System** Technical Presentation: PowerEnergy2017-3956 ***Adewale Odukomaiya,*** *Georgia Institute of Technology, Atlanta, GA, United States,* ***Ahmad Abu-Heiba****, Oak Ridge National Laboratory, Oak Ridge, TN, United States,* ***Samuel Graham****, Georgia Institute of Technology, Lithonia, GA, United States,* ***Ayyoub M. Momen,*** *Oak Ridge National Lab, Oak Ridge, TN, United States*	**PANEL** **10:30am - 11:30am**	**PANEL** **11:30am - 12:30pm**

2:00 - 3:30 PM

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING	**TRACK 1-3: BOILERS & HEAT RECOVERY STEAM GENERATORS**	**TRACK 1-7: RENEWABLE ENERGY SYSTEMS: SOLAR, WIND, HYDRO AND GEOTHERMAL**
Session 1-1-2: Advanced Combustion Systems and Issues - II	**Session 1-3-2: Steam Generator Design II**	**Session 1-7-3: Advanced Technologies for Solar Energy I**
Charlotte Convention Center West, 205	**Charlotte Convention Center West, 209A**	**Charlotte Convention Center West, 201B**
Session Organizer: **Ashwani Gupta,** University of Maryland, College Park, MD, United States Session Co-Organizer: **Yiheng Tong**, Lund University, Lund, Sweden	Session Organizer: **Paul Weitzel,** retired, Canal Fulton, OH, United States	Session Organizer: **David MacPhee,** University of Alabama, Tuscaloosa, AL, United States Session Co-Organizer: **Navid Goudarzi**, UNCC, Charlotte, NC, United States
Catalytic Combustion of Ultra-Low Heating Value Fuels over 0.5% Pd/ZrO2/-Al2O3 Catalyst Technical Paper Publication: PowerEnergy2017-3274 ***Xiaojing Lv, Xiaoyi Ding, Yiwu Weng,*** *Shanghai Jiao Tong University, Shanghai, China*	**Analysis of Risk Factors Affecting Safety of Supercritical Steam Generator** Technical Paper Publication: PowerEnergy2017-3296 ***Chang Che, Guo Yuanliang, Gong Qian, XinZhong Chen, Linfeng Qian****, China Special Equipment Inspection and Research Institute, Beijing, China*	**A Theoretical and Experimental Study of HFE-7000 in a Small Scale Solar Organic Rankine Cycle as a Thermofluid** Technical Paper Publication: PowerEnergy2017-3194 *Huseyin Utku Helvaci, Bournemouth University, Bournemouth, United Kingdom, Zulfiqar Ahmad Khan, Bournemouth University, Poole, United Kingdom*
The Characteristics and Mechanism of NO Formation for Methane Flames Doped with HCN During Oxy-steam Combustion Technical Presentation: PowerEnergy2017-3290 ***Yizhuo He, Chun Zou****, Huzhong University of Science and Technology, Wuhan, Hubei, China,* ***Yu Song, Siliang Liu, Wuzhong Chen, Chuguang Zheng,*** *Huazhong University of Science and Technology, Wuhan, Hubei, China*	**Study on Operation Characteristics of the Dongfang's 350 MW Supercritical CFB Boiler** Technical Presentation: PowerEnergy2017-3753 ***Cheng Wei,*** *Dongfang Electric Corporation Dongfang Boiler Co.Ltd., ChengDu, China*	**An Innovative 3-D Model Simulation of High Temperature Solar Cavity Receiver** Technical Paper Publication: PowerEnergy2017-3307 ***Huayi Feng,*** *Huazhong University of Science and Technology, Wuhan, China,* ***Yanping Zhang****, Huazhong University of Science.& Technology, Wuhan, Hubei, China,* ***Chongzhe Zou****, Huazhong University of Science and Technology, Wuhan, China*
Conversion of Bituminous Coal-char Particles under the Oxy-fuel Environments Technical Presentation: PowerEnergy2017-3294 ***Wenkang Wang, Changsheng Bu, Guilin Piao,*** *Nanjing Normal University, Nanjing, China*	**Key Technologies for the 1000MW-Class Ultra-Supercritical Double-Reheat Two-Pass Boiler** Technical Presentation: PowerEnergy2017-3836 ***Yongjie Wang,*** *Harbin Boiler Company Limited, Harbin, China,* ***Zhang Yanjun,*** *Haerbin Boiler Company, Haerbin, China,* ***Song Baojun,*** *Haerbin Boiler Company, Haerbin, China,* ***Xia Liangwei, Huang Ying,*** *Haerbin Boiler Company, Haerbin,, China*	**Evacuated Tube Solar Collectors Integrated with Phase Change Materials and Silicon Oil** Technical Paper Publication: PowerEnergy2017-3520 ***Alexios Papadimitratos****, University of Texas at Dallas, Richardson, TX, United States,* ***Sarvenaz Sobhansarbandi****, University of Texas at Dallas, Dallas, TX, United States,* ***Vladimir Pozdin****, Solarno Inc., Coppell, TX, United States,* ***Anvar Zakhidov****, Fatemeh Hassanipour, University of Texas at Dallas, Richardson, TX, United States*
A Unified Approach for the Explosion Limits of the Hydrogen-Oxygen System Technical Paper Publication: PowerEnergy2017-3331 ***Alon Lidor, Daniel Weihs, Eran Sher,*** *Technion - Israel Institute of Technology, Haifa, Israel*	**Coupled High-low Energy Level Flue Gas Heat Recovery System and Its Application in 1000MW Ultra-Supercritical Double Reheat Coal-fired Unit** Technical Paper Publication: PowerEnergy2017-3463 ***Jiayou Liu, Fengzhong Sun,*** *Shandong University, Jinan, China,* ***Wei Wei,*** *Shandong University, Jinan City, China,* ***Lei Ma,*** *Shandong University, JiNan, ShanDong, China*	**Simulation and Characterization of a Hybrid Concentrated Solar Tower System for Co-generation of Power and Fresh Water** Technical Paper Publication: PowerEnergy2017-3758 ***Kasra Mohammadi****, University of Massachusetts, Amherst, MA, United States,* ***Jon G. McGowan,*** *University of Massachusetts, Amherst, Northfield, MA, United States*
		Heat Transfer Performance of LiFNaFKF Salt in a Corrugated Receiver Tube with Non-uniform Solar Flux Technical Paper Publication: PowerEnergy2017-3210 ***C.X Guo, D.W Zhang, J.J Zhou,*** *Zhengzhou University, Zhengzhou, China,* ***W.J. Zhang,*** *Henan Tite Engineering Technology CO.&LTD, Zhengzhou, Henan, China,* ***X.L Wei,*** *Zhengzhou University, Zhengzhou, Henan, China*
		Retrofit Photovoltaic Thermal Systems Technical Presentation: PowerEnergy2017-3815 ***Tejaswini Lakkaraju****, California State University, Fresno, Fresno, CA, United States*

TUESDAY, JUNE 27 — 2:00 - 3:30 PM

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-8: HEAT EXCHANGERS, CONDENSERS, COOLING SYSTEMS, AND BALANCE-OF-PLANT	**TRACK 1-11: PLANT OPERATIONS, MAINTENANCE, AGING MANAGEMENT, RELIABILITY AND PERFORMANCE**	**TRACK 1-12: THERMAL HYDRAULICS AND COMPUTATIONAL FLUID DYNAMICS**
Session 1-8-5: Panel Discussion - Existing Heat Exchanger Challenges and Their Resolution	**Session 1-11-5: Clean-Coal: Ultra-Hi Efficiency Low Emission (U-HELE) Part 2**	**Session 1-12-2: TH and CFD 2**
Charlotte Convention Center West, 209B	**Charlotte Convention Center West, 206A**	**Charlotte Convention Center West, 210B**
Session Organizer: **Gail Jackson**, Plymouth Tube Company, Warrenville, IL, United States	Session Organizer: **Noman Sadi,** Arkansas State University, Jonesboro, AR, United States Session Co-Organizer: **Bo Zemin**, Shanghai Jiao Tong University, Shanghai, China, **Wenhu Yang**, Huaibei Shenergy Power Generation Co.,LTD (Pingshan Phase II Project), Shanghai, China	Session Organizer: **Yesaswi N. Chilamkurti,** North Carolina State University, Raleigh, NC, United States Session Co-Organizer: **Christopher Chi-Ming Chu**, University Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia
2:00 - 3:30 PM **PANEL** **2:00pm - 3:30pm** *This session will initiate with some examples of problems with existing heat exchangers and systems and how they were resolved. Those examples will be used to encouraging attendees to discuss some of their problems with support from the panel. All attendees offering reasonable questions to the Panel will be given an opportunity to draw their name to win an iPad at the end of the session (iPad provided by a sponsor).*	**Researching the Mechanism of the Decomposition Behavior of $(NH_4)_2SO_4$ on V_2O_5/TiO_2 SCR Catalysts** Technical Paper Publication: PowerEnergy2017-3313 ***Dong Ye, Ruiyang Qu, Chenghang Zheng, Xiang Gao,*** *Zhejiang University, Hangzhou, Zhejiang, China* **Design and Performance Analysis of Power Cycle with Process of Coal Gasification in Supercritical Water** Technical Paper Publication: PowerEnergy2017-3318 ***Wei Wang, Chenxu Mao, Xiaofang Wang, Jinguang Yang,*** *Dalian University of Technology, Dalian City, China* **Influences of Load Command Signals on the Operation Characteristics of Coal-fired Power Plants during Loading up Processes** Technical Paper Publication: PowerEnergy2017-3422 ***Chaoyang Wang, Yiwen Liu, Ming Liu, Daotong Chong, Junjie Yan,*** *Xi'an Jiaotong University, Xi'an, China* **Performance Monitoring of Regenerative System Based on Dominant Factor** Technical Paper Publication: PowerEnergy2017-3534 ***Cheng Chen, Xiaobo Zhong, Jun Xiao,*** *China Energy Engineering Group JiangSu Power Design Institute Co., Ltd., Nanjing, China,* ***Yong Zhu,*** *China Energy Engineering Group Jiangsu Power Design Institute, Nanjing, China,* ***Jiao Jiang,*** *China Energy Engineering Group Jiangsu Power Design Institute Co., Ltd., Nanjing, China*	**Simulation of Effective Plume-Chimney above Natural Draft Air-Cooled Heat Exchangers** Technical Paper Publication: PowerEnergy2017-3435 ***Christopher Chi-Ming Chu, Robert Hieng Yik Tie,*** *University Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia,* ***Md Mizanur Rahman,*** *University Malaysia Sabah, Kota Kinabalu Sabah, Malaysia* **Investigation of Catalytic Combustion in the Rotary Regenerator Type of Catalytic Combustor at Different Inlet Velocity** Technical Paper Publication: PowerEnergy2017-3414 ***Zhenkun Sang,*** *Shanghai Jiaotong University, Shanghai, China,* ***Xiaojing Lv, Bo Zemin, Yiwu Weng,*** *Shanghai Jiao Tong University, Shanghai, China* **Smart Ventilation System for a Parked Car** Technical Presentation: PowerEnergy2017-3848 ***Ahmed Medani, Ahmed Abdallah, Dania Ahmed,*** *University of Khartoum, Khartoum, Sudan,* ***Obai Younis Taha Elamin,*** *Prince Sattam Bin Abdulaziz University, Wadi Eldawsir, Saudi Arabia* **Characterizing Particle-wall Contact Behavior and Fluctuations in Gravity-driven Dense Granular Flows in Cylindrical Tubes using DEM** Technical Paper Publication: PowerEnergy2017-3527 ***Yesaswi N. Chilamkurti,*** *North Carolina State University, Raleigh, NC, United States,* ***Richard Gould,*** *North Carolina State University, Raleigh, NC, United States*

TUESDAY, JUNE 27 — 2:00 - 3:30 PM

ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY
TRACK 2-1: BIOFUELS, HYDROGEN, SYNGAS, AND ALTERNATE FUELS	**TRACK 2-3: PHOTOVOLTAICS**	**TRACK 2-5: WIND ENERGY SYSTEMS AND TECHNOLOGIES**
Session 2-1-2: Study and Characterization of Various Types of Biodiesel Engines	**Session 2-3-1: Photovoltaics Session I**	**Session 2-5-2: Wind Energy Systems 2**
Charlotte Convention Center West, 204	**Charlotte Convention Center East, 214**	**Charlotte Convention Center West, 201A**
Session Organizer: **Choongho Yu,** Texas A&M College Station, College Station, TX, United States	Session Organizer: **Bing Guo,** Mechanical Engineering Program, Texas A&M University at Qatar, Doha, Qatar	Session Organizer: **Weifei Hu**, Cornell University, Ithaca, NY, United States Session Co-Organizer: **Jie Zhang**, University of Texas at Dallas, Richardson, TX, United States
2:00 - 3:30 PM **Performance and Emissions Characteristics of Philippine CME-Diesel Blends** Technical Paper Publication: PowerEnergy2017-3393 ***Edwin N. Quiros**, University of the Philippines, Quezon City, National Capital Region, Philippines, **Jeffrey James C. Laguitao**, AVL/TH, Bangkok, Thailand*	**Light Weight Solar Panel** Technical Presentation: PowerEnergy2017-3069 ***Amanda Michelle Simran,** Karunya University, Chennai Tamil Nadu, Tamil Nadu, India*	**Wind Gust Quantification using Seismic Measurements** Technical Paper Publication: PowerEnergy2017-3568 ***Frederick Letson, Weifei Hu, Rebecca J. Barthelmie,** Cornell University, Ithaca, NY, United States, **Jonathan Tytell**, University of California at San Diego, La Jolla, CA, United States, **Sara C. Pryor**, Cornell University, Ithaca, NY, United States*
Effects of Philippine Coconut Methyl Ester on the Performance and Emissions of a Heavy Duty CRDI Engine Technical Paper Publication: PowerEnergy2017-3464 ***Job Immanuel Encarnacion,** University of the Philippines Diliman, Quezon City, National Capital Region, Philippines, **Edwin N. Quiros,** University of the Philippines, Quezon City, National Capital Region, Philippines*	**Characterization of an Electrodynamic Dust Shield Device for PV Panel Soiling Mitigation** Technical Paper Publication: PowerEnergy2017-3270 ***Bing Guo**, Mechanical Engineering Program, Texas A&M University at Qatar, Doha, Qatar, **Eugene Yu-Ta Chen, Wasim Javed,** Texas A&M University at Qatar, Doha, Qatar, **Benjamin Figgis**, Qatar Environment and Energy Research Institute, Doha, Qatar*	**Innovative Load Control on Utility-scale Wind Turbines using Flow-Control Devices** Technical Presentation: PowerEnergy2017-3923 ***Muraleekrishnan Menon**, **Fernando L. Ponta,** Michigan Technological University, Houghton, MI, United States*
Parametric Optimization of Exergy Destruction in Small DI Diesel Engine Fuelled with Neem Biodiesel using Taguchi Method Technical Presentation: PowerEnergy2017-3542 ***Veena Chaudhary,** Indian Institute of Technology Roorkee, Roorkee, Uttrakhand, India*		**Performance Analysis of Stall Controlled Variable Speed Wind Turbines under Gust Loading Conditions** Technical Presentation: PowerEnergy2017-3927 ***Sarah Jalal**, **Fernando L. Ponta,** Michigan Technological University, Houghton, MI, United States*

2:00 - 3:30 PM

ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 15TH FUEL CELL SCIENCE, ENGINEERING, AND TECHNOLOGY CONFERENCE
TRACK 2-8: THERMODYNAMIC ANALYSIS OF ENERGY SYSTEMS	**TRACK 2-10: SUSTAINABLE BUILDING ENERGY SYSTEMS**	**TRACK 3-2: POLYMER ELECTROLYTE MEMBRANE, DIRECT METHANOL, & ALKALINE FUEL CELLS**
Session 2-8-2: Power Cycles	**Session 2-10-4: Advances in Energy Sustainability in the Building Sector-II**	**Session 3-2-2: Polymer Electrolyte Membrane, Direct Methanol, & Alkaline Fuel Cells -II**
Charlotte Convention Center West, 202A	**Charlotte Convention Center West, 210A**	**Charlotte Convention Center East, 215**
Session Organizer: **Ali Al-Alili,** The Petroleum Institute, Abu Dhabi, United Arab Emirates	Session Organizer: **Jorge Gonzalez,** City College of New York, New York, NY, United States Session Co-Organizer: **Antonio Bula**, Universidad del Norte, Barranquilla, Colombia	Session Organizer: **Adam S. Hollinger,** Penn State Behrend, Erie, PA, United States Session Co-Organizer: **Prodip K. Das,** Newcastle University, Newcastle Upon Tyne, United Kingdom
Dual Stage Sodium Thermo-Electro-Chemical Converter (Na-TEC) Technical Presentation: PowerEnergy2017-3876 ***Alexander Limia, Jong Ha, Andrey Gunawan, Seung Woo Lee,*** *Georgia Institute of Technology, Atlanta, GA, United States,* ***Andrei Fedorov****, Georgia Inst of Technology, Atlanta, GA, United States,* ***Shannon K. Yee****, Georgia Tech, Atlanta, GA, United States*	**An AHP-based Life Cycle Analysis for Sustainability of Heating and Cooling Systems in the Cold Winter/ hot Summer Zone** Technical Presentation: PowerEnergy2017-3683 ***Tao Wang, Yite Wang, Jie Sun****, Zhejiang University, Hangzhou, Zhejiang, China,* ***Menglian Zheng****, Zhejiang University, Hangzhou, Zhejiang, China,* ***Zitao Yu****, Zhejiang University, Hangzhou/Zhejiang, China*	**A Non-Conventional Approach to Measure the Porosity of Gas Diffusion Component in PEMFC Stack** Technical Presentation. PowerEnergy2017-3878 **Arunkumar Jayakumar,** *AUT, Auckland, New Zealand*
Optimization of a Small Size CHP System by Means of a Fully Transient Numerical Approach Technical Paper Publication: PowerEnergy2017-3369 ***Massimo Milani, Luca Montorsi, Matteo Stefani, Luigi Chiantera,*** *University of Modena and Reggio Emilia, Reggio Emilia, Reggio Emilia, Italy*	**Assessing Impacts of Urban Heat Island on Building Energy Consumption for Beijing** *Technical Presentation: PowerEnergy2017-3432* ***Jorge Gonzalez****, City College of New York, New York, NY, United States*	**The Impact of Transition Metal Cations Dissolved from System Components on Fuel Cell Performance and Durability** Technical Presentation: PowerEnergy2017-3896 **Ruichun Jiang,** *General Motors, Pontiac, MI, United States,* **Zach Green****, Giner INC., Newton, MA, United States,* **Frank Coms****, General Motors, Pontiac, MI, United States*
Thermal and Electrical Performance of a Flat Plate Photovoltaic/Thermal Collector Technical Paper Publication: PowerEnergy2017-3462 ***Mohamad Modrek, Ali Al-Alili,*** *The Petroleum Institute, Abu Dhabi, United Arab Emirates.*	**WRF- Solar Validation and Potential Power Forecast in New York City** Technical Presentation: PowerEnergy2017-3436 ***Harold Gamarro****, The City College of New York, Richmond Hill, NY, United States,* ***Luis Ortiz****, The City College of New York, New York, NY, United States,* ***Jorge Gonzalez****, City College of New York, New York, NY, United States*	**Investigating Different Break-in Procedures on an HT-PEM Fuel Cell** Technical Presentation: PowerEnergy2017-3922 **Sobi Thomas, Samuel Simon Araya, Jakob Rabjerg Vang, Christian Jeppesen, Søren Knudsen Kær,** *Aalborg University, Aalborg, Denmark*
Dynamic Modeling of a Flat-Plate Photovoltaic/Thermal Collector Technical Paper Publication: PowerEnergy2017-3469 ***Xuan Li, Ali Al-Alili,*** *The Petroleum Institute, Abu Dhabi, United Arab Emirates.*	**Analysis of Climate Variability on Energy Demands for Indoor Human Comfort Levels in Tropical Urban Environments** Technical Paper Publication: PowerEnergy2017-3617 ***Rabindra Pokhrel****, City College of New York, New York, NY, United States,* ***Moises Angeles****,* ***Luis Ortiz****, The City College of New York, New York, NY, United States,* ***Jorge Gonzalez****, City College of New York, New York, NY, United States*	
	Analysis of Optimization Parameters for District Heating System Using Low Grade Industrial Waste Heat Technical Presentation: PowerEnergy2017-3809 ***Tao Sun, Xiling Zhao, Xiaoyin Wang,*** *Tsinghua University, Beijing, China*	
	Passive Design Strategies to Minimize Building Energy Use in Hot and Humid Climates Technical Presentation: PowerEnergy2017-3951 ***Dervis Demirocak,*** *Texas A&M University - Kingsville, Kingsville, TX, United States*	

TUESDAY, JUNE 27 — 2:00 - 3:30 PM

ASME 2017 ENERGY STORAGE FORUM	ASME 2017 NUCLEAR FORUM	
TRACK 4-4: THERMAL ENERGY STORAGE SYSTEMS	**TRACK 5-8: THERMAL HYDRAULICS AND COMPUTATIONAL FLUID DYNAMICS**	
Session 4-4-1: Thermal Energy Storage I: Materials and Components	**Session 5-8-1: Thermal Hydraulics and CFD Challenges-1**	
Charlotte Convention Center West, 202B	**Charlotte Convention Center West, 206B**	
Session Organizer: **Sean Babiniec**, Sandia National Laboratories, Albuquerque, NM, United States	Session Organizer: **George Mesina,** Idaho National Laboratory, Idaho Falls, ID, United States Session Co-Organizer: **Jovica Riznic**, Canadian Nuclear Safety Commission, Ottawa, ON, Canada, **Guoqiang Wang**, Westinghouse, Pittsburgh, PA, United States	
2:00 - 3:30 PM **How Smart Can a Natural Material Get? Magnetite for Thermal Energy Storage: Excellent Thermophysical Properties, Reversible Latent Heat Transition and Controlled Thermal Conductivity** Technical Presentation: PowerEnergy2017-3845 *Yaroslav Grosu, Inigo Ortega-Fernández, Abdessamad Faik, CIC Energigune, Miñano, Spain*	**A Statistical Method for Benchmarking Nuclear Reactor Plant Models, Using ACAP** Technical Paper Publication: PowerEnergy2017-3266 ***John McCloskey, Richard Smith,*** *Bechtel Marine Propulsion Corporation, West Mifflin, PA, United States*	
Effects of Thermal Cycling on the Thermal and Mechanical Stability of Rocks for High-temperature Thermal Energy Storage Technical Presentation: PowerEnergy2017-3905 ***Viola Becattini,*** *ETH Zurich, Zürich, Zürich, Switzerland,* ***Thomas Motmans****, Alba Zappone, Claudio Madonna, ETH Zurich, Zurich, Switzerland,* ***Andreas Haselbacher****, ETH Zürich, Zürich, Switzerland,* ***Aldo Steinfeld****, ETH Zurich, Zürich, Switzerland*	**Improvement of the RELAP5-3D Model of Condensation in the Presence of Noncondensables** Technical Paper Publication: PowerEnergy2017-3401 ***Nolan Anderson****,* ***George Mesina****, Idaho National Laboratory, Idaho Falls, ID, United States*	
Investigation into the Performance Characteristics of a Sensible Heat Storage Device Technical Presentation: PowerEnergy2017-3921 ***Najeem Peleowo, Jan Hendrik Jacobus Coetzee,*** *Vaal University of Technology, Vanderbijlpark, Gauteng, South Africa*	**Closure of Governing Equations for Six-Field System Code** Technical Paper Publication: PowerEnergy2017-3515 ***Glenn Roth****, ISL, Idaho Falls, ID, United States,* ***George Mesina****, Idaho National Laboratory, Idaho Falls, ID, United States,* ***Fatih Aydogan****, University of Idaho, Idaho Falls, ID, United States*	
Evaluating Rates of Thermochemical Energy Storage and Release in Redox Cycles of Sr-doped CaMNO3 Technical Presentation: PowerEnergy2017-3924 ***Luca Imponenti, Kevin Albrecht, Jake Wands, Gregory Jackson,*** *Colorado School of Mines, Golden, CO, United States*		
Design, Fabrication, and Testing of a Phase Change Condenser Technical Presentation: PowerEnergy2017-3949 ***Anne Mallow,*** *Oak Ridge National Laboratory, Oak Ridge, TN, United States,* ***Yiyuan Qiao****, University of Maryland, College Park, MD, United States,* ***Kyle Gluesenkamp****, Oak Ridge National Laboratory, Oak Ridge, TN, United States,* ***Jan Muehlbauer,*** *Yunho Hwang, University of Maryland, College Park, MD, United States*		

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING	**TRACK 1-3: BOILERS & HEAT RECOVERY STEAM GENERATORS**	**TRACK 1-7: RENEWABLE ENERGY SYSTEMS: SOLAR, WIND, HYDRO AND GEOTHERMAL**
Session 1-1-3: Advanced Combustion Systems and Issues - III	**Session 1-3-3: Steam Generator Technology I**	**Session 1-7-4: Energy Storage and Technical Economical Analysis of Systems**
Charlotte Convention Center West, 205	**Charlotte Convention Center West, 209A**	**Charlotte Convention Center West, 202B**
Session Organizer: **Ashwani Gupta**, University of Maryland, College Park, MD, United States Session Co-Organizer: **Jin Shiping**, Huazhong University of Science and Technology, Wuhan, China	Session Organizer: **Paul Weitzel,** retired, Canal Fulton, OH, United States	Session Organizer: **Douglas Reed,** Dominion Power, Midlothian, VA, United States Session Co-Organizer: **Reza Arghandeh** Jouneghani, Florida State University, Tallahassee, FL, United States, **David MacPhee**, University of Alabama, Tuscaloosa, AL, United States
3:45 - 5:15 PM **Effect of a Transition in a Fuel Species Fraction on the Behavior of a Bunsen-type Premixed Flame** Technical Paper Publication: PowerEnergy2017-3459 ***Takuya Ishibashi, Takuya Tomidokoro, Takashi Suzuki,*** *Keio University, Yokohama, Kanagawa, Japan,* ***Shuichi Umezawa,*** *Tokyo Electric Power Company Holdings, Inc., Yokohama, Kanagawa, Japan,* ***Takeshi Yokomori,*** *Keio University, Yokohama, Kanagawa, Japan,* ***Toshihisa Ueda,*** *Keio University, Yokohama, Japan*	**Experimental Investigation on Heat Transfer and Fractional Characteristics of Vertical Upward Rifled Tube in the Ultra Supercritical CFB Boiler** Technical Paper Publication: PowerEnergy2017-3292 ***Siyang Wang, Mofeng Qu, Huiqing Jiang, Yunjie Zhao, Dong Yang,*** *Xi'an Jiaotong University, Xi'an, Shaanxi, China*	**Dynamic Simulation and Performance Evaluation of the Compressed Air Energy Storage System** Technical Paper Publication: PowerEnergy2017-3357 ***Shang Chen, Tong Zhu, Huayu Zhang, Tao Zhang,*** *Tongji University, Shanghai, China*
MILD Combustion Regimes of Hot Diluted Methane in Opposed Flow with a WSGGM Model under Air and Oxy-fuel Combustion Conditions Technical Paper Publication: PowerEnergy2017-3015 ***Lin Wang,*** *Xi'an Thermal and Power Research Institute, Xi'an, China,* ***Liu Zhaohui,*** *Huazhong University of Science and Technology, Wuhan, China,* ***Richard L Axelbaum,*** *Washington University in St.Louis, St.Louis, MO, United States*	**Experimental Study on the Density Wave Oscillations of Supercritical Water in vertical Upward Tubes** Technical Paper Publication: PowerEnergy2017-3471 ***Xiangfei Kong,*** *Xi'An Jiaotong University, Xi'An, China,* ***Xin Liu,*** *Xi'an Jiaotong University, Xi'an, China,* ***Kaikai Guo, Yuan Feng,*** *Xi'an Jiaotong University, Xi'an, China,* ***Huixiong Li,*** *Xi'an Jiaotong University, Xi'an, China*	**Techno-Economic Evaluation of Low-Temperature Stirling Engine Powered Using Evacuated Tube Solar Collector** Technical Paper Publication: PowerEnergy2017-3550 ***Khaled Asfar,*** *Jordan University of Science & Technology, Irbid, Jordan,* ***Anas Nawafleh,*** *Jordan University of Science & Technology, Irbid, Jordan*
Success of Ammonia-fired, Regenerator-heated, Diffusion Combustion Gas Turbine Power Generation and Prospect of Low NOx Combustion with High Combustion Efficiency Technical Paper Publication: PowerEnergy2017-3277 ***Osamu Kurata,*** *National Institute of Advanced Industrial Science and Technology, Ibaraki, Japan,* ***Norihiko IKI,*** *Advanced Industrial Science and Technology, Tsukuba, Ibaraki, Japan,* ***Takayuki Matsunuma,*** *National Institute of Advanced Industry Science & Technology, Ibaraki, Japan,* ***Takahiro Inoue,*** *National Institute of Advanced Industrial Science, Tsukuba, Ibaraki, Japan,* ***Taku Tsujimura,*** *The Fukushima Renewable Energy Institute, AIST, Fukushima, Japan,* ***Hirohide Furutani,*** *Advanced Industrial Science and Technology, Tsukuba, Ibaraki, Japan,* ***Hideaki Kobayashi,*** *Tohoku University, Sendai, Japan,* ***Akihiro Hayakawa,*** *Tohoku University, Miyagi, Japan*	**A New Universal Correlation Developed for the Frictional Pressure Drop of Steam-Water Two-Phase Flows in Spirally Ribbed Tubes under Subcritical Pressures** Technical Presentation: PowerEnergy2017-3698 ***Weiqiang Zhang,*** *Xi'an Jiaotong University, Xi'an, China,* ***Huixiong Li,*** *Xi'an Jiaotong University, Xi'an, China,* ***Jinkai Wu,*** *Xi'an Jiaotong University, Xi'an, Shaanxi, China,* ***Qing Zhang,*** *China Huaneng Clean Energy Research Institute, Beijing, China,* ***Qian Zhang,*** *Xiangfei Kong, Xi'an Jiaotong University, Xi'an, China*	**Techno-economic Assessment of Utilizing Wind Energy for Hydrogen Production through Electrolysis** Technical Paper Publication: PowerEnergy2017-3675 ***Reza Ziazi,*** *Oregon State University, Corvallis, OR, United States,* ***Kasra Mohammadi,*** *University of Massachusetts, Amherst, MA, United States,* ***Navid Goudarzi,*** *UNCC, Charlotte, NC, United States*
		Modeling of a Low Cost Thermal Energy Storage System to Enhance Generation from Small Hydropower Systems Technical Paper Publication: PowerEnergy2017-3684 ***Peggy Ip,*** *University of California, Los Angeles , CA, United States,* ***Sammy Houssainy,*** *University of California, Los Angeles, CA, United States,* ***H. Pirouz Kavehpour,*** *University of California, Los Angeles, CA, United States*
		Visibility Study on 3 KW Solar Driven Inline Alpha Stirling Engine Technical Presentation: PowerEnergy2017-3820 ***Joseph Soliman,*** *Youssef Attai, Helwan University, Cairo, Cairo, Egypt*

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-8: HEAT EXCHANGERS, CONDENSERS, COOLING SYSTEMS, AND BALANCE-OF-PLANT	**TRACK 1-11: PLANT OPERATIONS, MAINTENANCE, AGING MANAGEMENT, RELIABILITY AND PERFORMANCE**	**TRACK 1-12: THERMAL HYDRAULICS AND COMPUTATIONAL FLUID DYNAMICS**
Session 1-8-6: Heat Exchanger Performance Modeling and Behavior	**Session 1-11-8: Clean-Coal: Ultra-Hi Efficiency Low Emission (U-HELE) Part 3**	**Session 1-12-3: TH and CFD 3**
Charlotte Convention Center West, 209B	**Charlotte Convention Center West, 206A**	**Charlotte Convention Center West, 210B**
Session Organizer: **Gary Fischer**, Conco Systems Inc, Verona, PA, United States	Session Organizer: **Lele Yu,** Shanghai University of Electric Power, Shanghai, Shanghai, China Session Co-Organizer: **Noman Sadi**, Arkansas State University, Jonesboro, AR, United States, **Tarannom Parhizkar**, Sharif University of Technology, Los Angeles, CA, United States, **Bo Zemin**, Shanghai Jiao Tong University, Shanghai China	Session Organizer: **Xiang Xiaofeng**, Xi'an Thermal Power Research Institute Co. Ltd, Xi'an, China Session Co-Organizer: **George Mesina**, Idaho National Laboratory, Idaho Falls, ID, United States
3:45 - 5:15 PM **A Numerical Study on Thermal Performance and Air Leakage of Quad-Section Air Preheater** Technical Paper Publication: PowerEnergy2017-3231 ***Xueyi Wang, Yuetao Shi, Fengzhong Sun, Ming Gao,*** *Shandong University, Jinan, China*	**Simulation of Ancillary Services in Thermal Power Plants in Energy Systems with High Impact of Renewable Energy** Technical Paper Publication: PowerEnergy2017-3258 ***Moritz Hübel,*** *University of Rostock, Rostock, Germany,* ***Jens Prause****, FVTR GmbH, Rostock, Mecklenburg-Vorpommern, Germany,* ***Conrad Gierow****, University of Rostock, Rostock, Mecklenburg-Vorpommern, Germany,* ***Sebastian Meinke****, Lausitz Energie Kraftwerke AG, Cottbus, Germany,* ***Egon Hassel****, University of Rostock, Rostock, Mecklenburg-Vorpommern, Germany*	**Rxperimental Investigation of Performance Effect of Working Parameters on Bi-evaporator Compression/ejection Refrigeration Syste***m* Technical Paper Publication: PowerEnergy2017-3198 ***Huadong Liu, X.I Wei, Zhenzhen Wang, Lihong Geng,*** *Chunhe Li, Zhengzhou University, Zhengzhou, China*
Effect of Flow Direction of Heating Medium on Heat Transfer Performance of Single-Path Plate-Fin Evaporator Technical Paper Publication: PowerEnergy2017-3278 ***Kazuaki Shikichi****, The Kansai Electric Power Co., Inc., Amagasaki, Japan,* ***Takayuki Ueno****, Hitoshi Asano, Kobe University, Kobe, Japan*	**Exergo-environmental Evaluation for a Coal-fired Power Plant of Near-zero Air Pollutant Emission** Technical Paper Publication: PowerEnergy2017-3309 ***Xiliang Hong, Jianhong Chen, Deren Sheng, Wei Li,*** *Zhejiang University, Hangzhou, Zhejiang, China*	**Flow Characteristics in the Improved Impinging Stream Reactor by Means of Particle Image Velocimetry PIV** Technical Paper Publication: PowerEnergy2017-3227 ***Liu Xue Qing,*** *Huazhong University of Science and Technology, Wu Han, China,* ***Lu Lu YI,*** *Huazhong University of Science and Technology, Wu Han, China*
Two-phase Flow Behavior and Heat Transfer Characteristics in Kettle Reboiler Technical Paper Publication: PowerEnergy2017-3293 ***Takeru Miyazaki, Misaki Baba, Hideki Murakawa, Hitoshi Asano, Katsumi Sugimoto,*** *Kobe university, Kobe, Hyogo, Japan,* ***Daisuke Ito****, Kyoto university, Kumatori, Sennnan, Osaka, Japan*	**Numerical Study on the Erosion Characteristics of U-type Bend for Gas Solid Flow** Technical Paper Publication: PowerEnergy2017-3412 ***Yu Wang, Qi He, Ming Liu, Weixiong Chen, Junjie Yan,*** *Xi'an Jiaotong University, Xi'an, China*	**Experimental Investigation for Several Influencing Factors to Discharge Coefficient of Throat Tapped Flow Nozzle** Technical Paper Publication: PowerEnergy2017-3281 ***Noriyuki Furuichi, Takashi Shimada, Yoshiya Terao,*** *AIST, NMIJ, Tsukuba, Japan*
Study on a New Humidifier Model of PEMFC Technical Presentation: PowerEnergy2017-3648 ***Chunliang Zhou****, Harbin Engineering University, Heilongjiang Province, Heilongjiang, China*	**Characterization of Crack Tip Damage Zone Formation on Alloy 625 during Fatigue Crack Growth at 750˚C by Transmission EBSD Method** Technical Paper Publication: PowerEnergy2017-3458 ***Yuji Ozawa, Tatsuya Ishikawa, Yoichi Takeda,*** *Tohoku University, Fracture and Reliability Research Institute, Sendai-shi, Miyagi-ken, Japan*	**Pilot Experimental Study of New Urea Hydrolysis for DeNOx in Coal Plant** Technical Paper Publication: PowerEnergy2017-3021 ***Xiang Xiaofeng****, Xi'an Thermal Power Research Institute Co. Ltd, Xi'an, China*

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY
TRACK 1-14: STUDENT COMPETITION	**TRACK 2-1: BIOFUELS, HYDROGEN, SYNGAS, AND ALTERNATE FUELS**	**TRACK 2-2: CONCENTRATING SOLAR POWER**
Session 1-14-3: Student Competition	**Session 2-1-3: Study and Characterization of Flow and Combustion of Biodiesel in Diesel Engines**	**Session 2-2-2: Receivers I**
Charlotte Convention Center, West Building, 202A	**Charlotte Convention Center West, 204**	**Charlotte Convention Center West, 201B**
Session Organizer: **André Teixeira**, Soja De Portugal, Amarante, Portugal Session Co-Organizer: **Marta Hatzell**, Georgia Institute of Technology, Atlanta, GA, United States, **Andrey Gunawan**, Georgia Institute of Technology, Atlanta, GA, United States	Session Organizer: **Gisuk Hwang,** Wichita State University, Wichita, KS, United States	Session Organizer: **Justin Lapp**, German Aerospace Center, Köln, Germany
Designing of Micro Gravitational Vortex Turbines Vortex Pool Technical Paper Publication: PowerEnergy2017-3186 ***Wajiha Rehman, Masooma Ijaz**, UET Lahore, KSK Campus, Lahore, Punjab, Pakistan, **Asma Munir**, University of Engineering and Technology, Lahore, Lahore, Punjab, Pakistan*	**Prediction of Diesel Combustion and Emission Characteristics in CI Engine Using Computational Fluid Dynamics Simulations** Technical Paper Publication: PowerEnergy2017-3058 ***Meshack Hawi,** Egypt-Japan University for Science and Technology(E-JUST), Alexandria, Egypt, **Ali K. Abdelrahman, Mahmoud Bady**, Egypt-Japan University of Science and Technology, New Borg El-Arab, Egypt, **Shinichi Ookawara**, Tokyo Institute of Technology, Tokyo, Japan*	**Numerical Evaluation of Novel Particle Release Patterns in High-Temperature Falling Particle Receivers** Technical Paper Publication: PowerEnergy2017-3689 ***Brantley Mills, Clifford Ho,** Sandia National Laboratories, Albuquerque, NM, United States*
Research Concerning Water Wall Slagging Problems in Pulverized Coal Fired Boilers at Low Load Technical Paper Publication: PowerEnergy2017-3114 ***Lele Yu,** Shanghai University of Electric Power, Shanghai, Shanghai, China, **Weizhong Feng**, Shanghai Waigaoqiao No.3 Power Generation Co.,Ltd, Shanghai, China*	**Analytical Evaluation of Heat Flow Pattern in Biodiesel Operated Engine Cylinder** Technical Paper Publication: PowerEnergy2017-3378 ***Chidiebere Nwaiwu**, University of Manitoba, Winnipeg, MB, Canada, **Kevin Nwaigwe**, University of South Africa, Johannesburg, South Africa, **Nnamdi Ogueke**, Coventry University, Coventry, United Kingdom*	**Demonstration of Indirect Particle Receiver Concept with Inert Oxide and Reactive Perovskite Particles** Technical Presentation: PowerEnergy2017-3926 ***Luca Imponenti, Daniel Miller,** Colorado School of Mines, Golden, CO, United States, **Judy Netter**, **Janna Martinek**, NREL, Golden, CO, United States, **Zhiwen Ma**, National Renewable Energy Laboratory, Lakewood, CO, United States, **Kevin Albrecht**, **Robert Braun**, **Gregory Jackson**, Colorado School of Mines, Golden, CO, United States*
Experimental Investigation of a Simplified Model of a Transformer Cooling System Technical Paper Publication: PowerEnergy2017-3406 ***Iurii Lokhmanets**, **Bantwal R. (Rabi) Baliga**, Heat Transfer Laboratory, Department of Mechanical Engineering, McGill University, Montreal, QC, Canada*	**Numerical Study of the Effect of a Biodiesel on the Cylinder Liner of Compression Ignition Engine** Technical Paper Publication: PowerEnergy2017-3380 ***Chidiebere Nwaiwu**, University of Manitoba, Winnipeg, MB, Canada, **Olisaemeka Nwufo**, **Johnson Igbokwe**, Federal University of Technology Owerri, Imo State, Nigeria, Owerri, Imo State, Nigeria, **Nnamdi Ogueke**, Coventry University, Coventry, United Kingdom, **Emmanuel Enyioma Anyanwu**, Federal University of Technology, Owerri Imo State, Nigeria*	**Design and Modeling of the Solar Thermochemical Inclined Granular Flow Reactor for Concentrated Solar Power Applications** Technical Presentation: PowerEnergy2017-3906 ***Andrew J. Schrader**, Georgia Institute of Technology, Atlanta, GA, United States, **Gianmarco De Dominicis,** ETH-Zurich, Zurich, Switzerland, **Garrett L. Schieber, Peter G. Loutzenhiser,** Georgia Institute of Technology, Atlanta, GA, United States*
	Determination of Static and Dynamic Injection Characteristics of a Common-Rail Direct Injection Diesel Engine Fueled by CME-Diesel Blends Technical Paper Publication: PowerEnergy2017-3503 ***Ervin Santos**, University of the Philippines Diliman, Quezon City, Metro Manila, Philippines, **Edwin N. Quiros,** University of the Philippines, Quezon City, National Capital Region, Philippines*	**Design and Testing of a Novel Bladed Receiver** Technical Paper Publication: PowerEnergy2017-3524 ***Jesus D. Ortega, Joshua Christian, Clifford Ho,** Sandia National Laboratories, Albuquerque, NM, United States*

3:45 - 5:15 PM

ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY
TRACK 2-3: PHOTOVOLTAICS	**TRACK 2-5: WIND ENERGY SYSTEMS AND TECHNOLOGIES**	**TRACK 2-10: SUSTAINABLE BUILDING ENERGY SYSTEMS**
Session 2-3-2: Photovoltaics Session II	**Session 2-5-3: Wind Energy Systems 3**	**Session 2-10-5: Advances in HVAC System Design and Optimization-II**
Charlotte Convention Center East, 214	**Charlotte Convention Center, West, 201A**	**Charlotte Convention Center West, 210A**
Session Organizer: **Scott Tippens,** Kennesaw State University, Marietta, GA, United States	Session Organizer: **Ali Mehmani**, Columbia University, New York, NY, United States Session Co-Organizer: **Weifei Hu**, Cornell University, Ithaca, NY, United States	Session Organizer: **Marco Sanjuan**, Universidad del Norte, Barranquilla, Colombia
3:45 - 5:15 PM		
An Investigation of a Novel Structure Polycrystalline Silicon Solar Cell for Concentrated Solar Power Technical Paper Publication: PowerEnergy2017-3388 ***Mahmoud Ahmed,*** *Assiut University, Assiut, Egypt,* ***Ali Radwan****, Egypt-Japan University of Science and Technology, Alexandria, Egypt,* ***Mohamed Emam****, Egypt-Japan University of Science and Technology, Alexandria, Egypt,* ***Radwan Elzoheiry****, Egypt-Japan University of Science and Technology, Alexandria, Egypt*	**Wind Turbine Drivetrain Test Bench Capability to Replicate Design Loads - Part I: Evaluation Methodology** Technical Paper Publication: PowerEnergy2017-3595 ***Philippe Giguere,*** *GE Renewables Energy, Greenville, SC, United States,* ***John Wagner****, Clemson University, Clemson, SC, United States*	**Modeling and Simulation of Hybrid Cogeneration System for Institutional Tropical Buildings, Part I: Natural Gas Microturbines and Absorption Cooling.** Technical Presentation: PowerEnergy2017-3692 ***Santiago Sierra, Guillermo Camargo, William Samper, Lesme Corredor, Andy Castillo,*** *Universidad del Norte, Barranquilla, Atlántico, Colombia*
	Wind Turbine Drivetrain Test Bench Capability to Reproduce Design Loads - Part II: Case Study of a Multi-MW Drivetrain Technical Paper Publication: PowerEnergy2017-3611 ***Philippe Giguere****, GE Renewables Energy, Greenville, SC, United States,* ***John Wagner****, Clemson University, Clemson, SC, United States*	**Modelling and Simulation of a Hybrid Cogeneration System for Institutional Tropical Buildings, Part II: Solar Energy** Technical Presentation: PowerEnergy2017-3706 ***Jose D Tejeda, Jorge Echeverry, Ricardo Mejia, Andy Castillo, Santiago Sierra, Lesme Corredor,*** *Universidad del Norte, Barranquilla, Colombia*
A Novel Photovoltaic Module with Cell Strands that Track the Sun Technical Paper Publication: PowerEnergy2017-3397 ***Bill Diong, Wesley Carlsen, Brian Avit, Kevin McFall****, Kennesaw State University, Marietta, GA, United States,* ***Scott Tippens****, Kennesaw State University, Marietta, GA, United States*	**Comparison of Different Modelling Strategies for Wind Farm Simulations** Technical Presentation: PowerEnergy2017-3537 ***Shaafi Mohamed Kaja Kamaludeen, A.H. van Zuijlen****, Hester Bijl, Delft University of Technology, Delft, Zuid Holland, Netherlands*	**Modeling and Simulation of Hybrid Cogeneration System, Part III: Latent Heat Removal through Desiccant Wheel.** Technical Presentation: PowerEnergy2017-3710 ***Farid Naissir, Andy Castillo, William Samper, Guillermo Camargo, Lesme Corredor,*** *Universidad del Norte, Barranquilla, Colombia*
		Experimental Study on Cooling Performance of Plate Encapsulated RT25, RT27 and SP24E for Office Building Ventilation Application Technical Presentation: PowerEnergy2017-3850 ***Tichaona Kumirai,*** *CSIR, Pretoria, Gauteng, South Africa,* ***Jaco Dirker****, UP, Pretoria, Gauteng, South Africa*

ASME 2017 15TH FUEL CELL SCIENCE, ENGINEERING, AND TECHNOLOGY CONFERENCE	ASME 2017 NUCLEAR FORUM	
TRACK 3-3: PHOSPHORIC ACID, MOLTEN CARBONATE, & SOLID OXIDE FUEL CELLS	**TRACK 5-8: THERMAL HYDRAULICS AND COMPUTATIONAL FLUID DYNAMICS**	
Session 3-3-1: Phosphoric Acid, Molten Carbonate, and Solid Oxide Fuel Cells	**Session 5-8-2: Thermal Hydraulics and CFD Challenges-II**	
Charlotte Convention Center East, 215	**Charlotte Convention Center West, 206B**	
Session Organizer: Eon Soo Lee, New Jersey Institute of Technology (NJIT), Newark, NJ, United States Session Co-Organizer: Chengguo Li, University of California Riverside, Riverside, CA, United States	Session Organizer: **Jovica Riznic,** Canadian Nuclear Safety Commission, Ottawa, ON, Canada Session Co-Organizer: **George Mesina**, Idaho National Laboratory, Idaho Falls, ID, United States, **Robert Stakenborghs**, ILD Power, Baton Rouge, LA, United States	
3:45 - 5:15 PM **2D Modeling and Optimization of Solid Oxide Fuel Cells** Technical Presentation: PowerEnergy2017-3089 ***Grgigorios Panagakos***, *U.S. Department of Energy (DOE), National Energy Technology Laboratory (NETL), Pittsburgh, PA, United States,* ***Martin Søgaard***, *Meneta Advanced Shims Technology A/S, Odense N, Denmark,* ***Henrik Lund Frandsen***, *Technical University of Denmark, Roskilde, Denmark,* ***Fridolin Okkels***, *Fluidan ApS, Kongens Lyngby, Denmark,* ***Harry Abernathy***, *U.S. Department of Energy (DOE), National Energy Technology Laboratory (NETL), AECOM, Morgantown, WV, United States,* ***Gregory Hackett***, *U.S. Department of Energy (DOE), National Energy Technology Laboratory (NETL), Morgantown, WV, United States,* ***Vyacheslav Romanov***, *U.S. Department of Energy (DOE), National Energy Technology Laboratory (NETL), Pittsburgh, PA, United States* **Numerical Study of Thermal Stresses in a Planar Solid Oxide Fuel Cell Stack** Technical Paper Publication: PowerEnergy2017-3176 ***Cun Wang, Tao Zhang,*** *Huazhong University of Science and Technology, Wuhan, China,* ***Cheng Zhao, Jian Pu,*** *Huazhong University of Science & Technology, Wuhan, China* **Flow Distribution Analysis in the SOFC Stack Using CFD Technique** Technical Paper Publication: PowerEnergy2017-3177 ***Cheng Zhao,*** *Huazhong University of Science & Technology, Wuhan, China,* ***Tao Zhang, Cun Wang,*** *Huazhong University of Science and Technology, Wuhan, China,* ***Jian Pu***, *Huazhong University of Science & Technology, Wuhan, China* **Comparative Study of the Physico-chemical Properties of Ce1-XSmXO2 (x = 0.1 - 0.4), Ce0.8Sm0.2O2/Na2CO3, Ce0.8Sm0.2O2/ LiCO3 and Ce0.8Sm0.2O2 / Na2CO3/LiCO3 Electrolytes for Application in Low Temperatures** Technical Presentation: PowerEnergy2017-3801 ***Njoku Chima,*** *Durban University of Technology, Durban, South Africa* **SOFC Micro-CHP System with Thermal Energy Storage in Residential Applications** Technical Paper Publication: PowerEnergy2017-3142 ***Alejandra Hormaza-mejia***, *UCI, Irvine, CA, United States, Li Zhao,* ***Jack Brouwer***, *National Fuel Cell Research Center, Irvine, CA, United States*	**Investigation of Transient Flow and Heat Transfer for Passive Nuclear Reactor Direct Safety Injection** Technical Paper Publication: PowerEnergy2017-3452 ***Yu Weng***, *Xi'an Jiaotong University, Xi'an, Shanxi, China,* ***Lang Liu***, ***Yang Jiang***, *Xi'an Jiaotong University, Xi'an, Shaanxi, China,* ***Hongfang Gu***, ***Haijun Wang***, *Xi'an Jiaotong University, Xi'an, Shaanxi, China* **Flow Testing and Analysis of the FSP-1 Experiment** Technical Paper Publication: PowerEnergy2017-3639 ***Grant Hawkes***, ***Warren Jones,*** *Idaho National Laboratory, Idaho Falls, ID, United States,* ***Wade Marcum***, ***Aaron Weiss, Trevor Howard***, *Oregon State University, Corvallis, OR, United States* **Experimental Study on Heat Transfer to Supercritical CO2 Flowing in Vertical Upward Tube at Medium Mass Flux** Technical Paper Publication: PowerEnergy2017-3664 ***Qian Zhang***, *Xi'an Jiaotong University, Xi'an, China,* ***Huixiong Li***, *Xi'an Jiaotong University, Xi'an, China,* ***Xiangfei Kong***, *Xi'an Jiaotong University, Xi'an, China,* ***Jun Zhang***, *Xi'an Jiaotong University, Xi'an, China,* ***Xianliang Lei***, *North Carolina State University, Charlotte, NC, United States,* ***Weiqiang Zhang***, *Xi'an Jiaotong University, Xi'an, China*	

WEDNESDAY, JUNE 28 — 11:00 AM - 12:30 PM

ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING	**TRACK 1-2: COMBUSTION TURBINES**	**TRACK 1-3: BOILERS & HEAT RECOVERY STEAM GENERATORS**
Session 1-1-4: Advanced Biomass Combustion Issues - I	**Session 1-2-1: Combined and Simple Cycle Plant Performance**	**Session 1-3-4: Steam Generator Technology II**
Charlotte Convention Center West, 205	**Charlotte Convention Center West, 206A**	**Charlotte Convention Center West, 209A**
Session Organizer: **Ezra Bar-Ziv,** Michigan Technological University, Houghton, MI, United States Session Co-Organizer: **Wu Zhiqiang**, **Xi'an** Jiaotong University, Xi'an, China	Session Organizer: **Himanshu Bhatnagar**, Siemens Energy, Charlotte, NC, United States	Session Organizer: **Paul Weitzel**, retired, Canal Fulton, OH, United States
Chlorine Release Characteristics during Biomass Reburning in an Entrained Flow Reactor Technical Paper Publication: PowerEnergy2017-3127 ***Ping Lu, Jiateng Shi, Xinyi Yin**, Nanjing Normal University, Nanjing, Jiangsu, China*	**Vibration Analysis and Measurement Investigation of Gas Turbine Combustor Liner** Technical Paper Publication: PowerEnergy2017-3301 ***Weibing Liu, Shizhi Zhao, Lu Cheng, Song Ai, Xiaoping Fan,** Dongfang Electric Corporation, Deyang, Sichuan, China*	**Experimental Investigation on Gas-Particle Flow Characteristics in Particle Curtain Heat Exchanger** Technical Paper Publication. PowerEnergy2017-3491 ***Donglin Chen, Ying Xiong, Heng Li, Tuo Ye, Cong Wen**, Changsha University of Science and Technology, Changsha, Hunan, China*
Investigation of Thermal Conductivity Variation of Biomass Products with Moisture Technical Paper Publication: PowerEnergy2017-3195 ***Birce Dikici**, Embry-Riddle Aeronautical University, Daytona Beach, FL, United States, **Parvesh Reddy Bommi Narasimha, Shruti Kamdar,** Embry Riddle Aeronautical University, Daytona Beach, FL, United States*	**Stress Distribution and Deformation Analysis of Gas Turbine Blades and Disk with FEM Method** Technical Paper Publication: PowerEnergy2017-3409 ***Yang Fengna,** Shanghai Electric Gas Turbine Co., Ltd, Shanghai, China, **Pan Chengxiong,** Shanghai Electric Gas Turbine Co., Ltd, Shanghai, China, **Zhang Dongfang, Tang Jian, Yan Jing,** Shanghai Electric Gas Turbine Co., Ltd, Shanghai, China*	**Investigation of Cold-forming Properties of Sanicro 25 - A Potential Candidate for Superheater and Reheaters in High Efficiency AUSC Fossil Power Plants** Technical Paper Publication: PowerEnergy2017-3416 ***Yanyan Bi**, Sandvik, Shanghai, China, **Guocai Chai**, Sandvik Materials Technology, Sandviken Sweden, **Urban Forsberg**, Sandvik Materials Technology, Sanoviken, Sweden, **Glenn Darley**, Sandvik, Shanghai, China*
Investigation on K, Na and Cl Release and Migration during Rice Straw Gasification Technical Presentation: PowerEnergy2017-3233 ***Tianyu Chen, Baosheng Jin, Jun Cao**, Southeast University, Nanjing, China*	**Development of Turbine and Combustor for a Semi-closed Recuperated Brayton Cycle of Supercritical Carbon Dioxide** Technical Paper Publication: PowerEnergy2017-3419 ***Takashi Sasaki,** Toshiba Corp, Yokohama, Kanagawa, Japan, **Masao Itoh, Hideyuki Maeda, Junichi Tominaga, Yoshiki Niizeki, Daizo Saito,** Toshiba Corporation, Yokohama, Japan*	**Numerical Analysis of the steam-side oxide scale failure in the presence of oxide creep and oxide defects** Technical Presentation. PowerEnergy2017-3240 ***Jing Qi,** Southeast University, Nanjing, Jiangsu, China, **Jianwen Xie**, Shenhua Guohua (Beijing) Electric Power Research Institute Company, Ltd, Beijing, China, **Keyi Zhou**, **Xiaodong Si**, Southeast University, Nanjing, China*
Experimental Investigation on the Influence of Air Velocity on the Particle Dispersion Behavior of Rice Husk In a Fuel-Rich/Lean Burner Technical Paper Publication: PowerEnergy2017-3329 ***Weichen Ma, Hao Zhou, Kefa Cen**, Zhejiang University, Hangzhou, Zhejiang, China*	**The Optimization of Exhaust Gas Temperature Operation Strategy for CCPP** Technical Presentation: PowerEnergy2017-3780 ***Shuhong Peng, Keliang Wu,** Shanghai Electric Gas Turbine Co., Ltd, Shanghai, China, **Dequan Zuo,** Shanghai Electric Gas Turbine Co.,Ltd., Shanghai, China, **Jingjin Ji,** Bo sun, Shanghai Electric Gas Turbine Co., Ltd., Shanghai, China*	

11:00 AM - 12:30 PM

WEDNESDAY, JUNE 28 — 11:00 AM - 12:30 PM

ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-7: RENEWABLE ENERGY SYSTEMS: SOLAR, WIND, HYDRO AND GEOTHERMAL	**TRACK 1-7: RENEWABLE ENERGY SYSTEMS: SOLAR, WIND, HYDRO AND GEOTHERMAL**	**TRACK 1-8: HEAT EXCHANGERS, CONDENSERS, COOLING SYSTEMS, AND BALANCE-OF-PLANT**
Session 1-7-1: Advanced Technologies for Wind Energy	**Session 1-7-2: Hydro Power, Distributed Power, and Small Scale Generation**	**Session 1-8-7: Investigation and Analysis of Corrosion and Other Phenomena Affecting Power Plant Heat Exchange**
Charlotte Convention Center, West 201A	**Charlotte Convention Center, West 202A**	**Charlotte Convention Center, West 209B**
Session Organizer: **Weifei Hu**, Cornell University, Ithaca, NY, United States Session Co-Organizer: **Navid Goudarzi**, UNCC, Charlotte, NC, United States	Session Organizer: **Navid Goudarzi**, UNCC, Charlotte, NC, United States Session Co-Organizer: **Ossama Abdelkhalik**, Michigan Technological University, Houghton, MI, United States	Session Organizer: **Eric Svensson**, Powerfect, Inc., Brick, NJ, United States
11:00 AM - 12:30 PM		
Wind Turbine Pitching System Design and Control in the Context of North-East India Technical Paper Publication: PowerEnergy2017-3295 ***Krushna Mohan Das, Bikash Kr. Sarkar,*** *NIT Meghalaya, Shillong, Meghalaya, India*	**Position Control of the Hydraulically Actuated Francis Turbine Inlet Guide Vane** Technical Paper Publication: PowerEnergy2017-3170 ***Paladugu Venkaiah, Bikash Kr. Sarkar****, NIT Meghalaya, Shillong, Meghalaya, India*	**Visualized Measurement on Evolution of Bubble Patterns in a Direct-contact Heat Exchanger Using Image Entropy** Technical Paper Publication: PowerEnergy2017-3084 ***Qingtai Xiao, Shibo Wang, Jianxin Xu, Hua Wang,*** *Kunming University of Science and Technology, Kunming, Yunnan, China*
A Spot Check Information Management System of Wind Farm Technical Paper Publication: PowerEnergy2017-3308 ***Sheng Guo, Yifan Liu, Jiahao He, Tao Yang, Guoqiang He****, Huazhong University of Science and Technology, Wuhan, Hubei, China,* ***Shuxiang Guo, Jian Zhao****, China HuaDian Engineering(Group) Company, LTD., Beijing, China,* ***Haisheng Yang****, Guangdong Yudean Zhanjiang Wind Power Company, Ltd, Zhanjiang, Guangdong, China*	**Computational Analysis of a Wells Turbine for Wave Power Generation** Technical Paper Publication: PowerEnergy2017-3376 ***David MacPhee, Kellis Kincaid****, University of Alabama, Tuscaloosa, AL, United States*	**Energy Analysis of a Lignite-Fueled Power Plant with a Two-Stage Predrying System** Technical Paper Publication: PowerEnergy2017-3180 ***Xin Zhu, Chang'an Wang, Chunli Tang, Defu Che****, Xi'an Jiaotong University, Xi'an, China*
Advanced Direct Drive Electric Machine: Enabling High Torque at Low Speeds Technical Paper Publication: PowerEnergy2017-3506 ***Colin Tschida****, ABB US Corporate Research, Raleigh, NC, United States,* ***Wen Ouyang, Steve Englebretson****, ABB, Inc. US Corporate Research, Raleigh, NC, United States*	**Optimization of Kaplan Hydro-Turbine at Very Low Head with Rim-Driven Generator** Technical Paper Publication: PowerEnergy2017-3564 ***Ryo Amano****, University of Wisconsin Milwaukee, Milwaukee, WI, United States,* ***Ahmad Abbas****, University of Wisconsin, Milwaukee, Milwaukee, WI, United States,* ***Tomoki Sakamoto****, Mandana Saravani, University of Wisconsin, Milwaukee, Glendale, WI, United States,* ***Joseph Millevolte****, Millevolte Technology Incorporated, New York, NY, United States,* ***Bruno Lequesne****, E-Motors Consulting, LLC, Menomonee Falls, WI, United States*	**Experimental Investigation on the Ash Deposition and Corrosion of Low-Temperature Heating Surface in a Large Scale Coal-fired Boiler** Technical Presentation: PowerEnergy2017-3223 ***Heng Chen,*** *Xi'an Jiaotong University, Xi'an, China,* ***Peiyuan Pan, Qinxin Zhao, Yungang Wang****, Xi'an Jiaotong University, Xi'an, China*
Use of Seismic Analyses for the Wind Energy Industry Technical Paper Publication: PowerEnergy2017-3538 ***Weifei Hu, Sara C. Pryor, Frederick Letson, Rebecca J. Barthelmie,*** *Cornell University, Ithaca, NY, United States*	**Hydro Power: The Potential of a Novel Marine Hydrokinetic Turbine Technology** Technical Paper Publication: PowerEnergy2017-3756 ***Navid Goudarzi****, UNCC, Charlotte, NC, United States,* ***Kyung Soo Han****, DD Motion, Owings Mills, MD, United States*	**Corrosion Analysis of Candidate Steels for the Flue Gas Reheater in Coal-fired Power Plants** Technical Presentation: PowerEnergy2017-3298 *Peiyuan Pan, Qinxin Zhao, Yungang Wang, Zhiyuan Liang, Xi'an Jiaotong University, Xi'an, Shaanxi, China*
A Spare Parts Demand Prediction Method for Wind Farm Based on Periodic Maintenance Strategy Technical Paper Publication: PowerEnergy2017-3077 ***Chen Zhang, Tao Yang, Wei Gao,*** *Huazhong University of Science and Technology, Wuhan, China,* ***Weiqiu Chen, Jing He, Xingwang Yang****, Guangdong Yuedian Zhanjiang Wind Power Company. Ltd, Guangzhou, China*	**Design and Analysis of a Portable Solar Thermal Heat Generation Unit for Remote Communities** Technical Presentation: PowerEnergy2017-3889 ***Ramy Imam, Alex Gomez, Milan Smart****, Georgia Institute of Technology, Atlanta, GA, United States*	**Two-Level Iterative Finite Element Method for Heat-Conduction Equations and 3D Temperature Field Realization** Technical Presentation: PowerEnergy2017-3786 ***Yarong Zhang, Hongbin Chen****, Xi'an Jiaotong University, Xi'an, China*

WEDNESDAY, JUNE 28 — 11:00 AM - 12:30 PM

ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY
TRACK 1-9: STEAM TURBINE-GENERATORS, ELECTRIC GENERATORS, TRANSFORMERS, SWITCHGEAR, AND ELECTRIC BOP & AUXILIARIES	**TRACK 1-12: THERMAL HYDRAULICS AND COMPUTATIONAL FLUID DYNAMICS**	**TRACK 2-1: BIOFUELS, HYDROGEN, SYNGAS, AND ALTERNATE FUELS**
Session 1-9-1: Turbine Blading Design and Flow Path Enhancement	**Session 1-12-4: TH and CFD 4**	**Session 2-1-4: Biomass Processing and Treatment**
Charlotte Convention Center West, 210A	**Charlotte Convention Center West, 210B**	**Charlotte Convention Center West, 204**
Session Organizer: **Michael Smiarowski,** Siemens Energy Inc, Orlando, FL, United States Session Co-Organizer: **Steven Greco**, We Energies, Milwaukee, WI, United States	Session Organizer: **Ming Gao**, Shandong University, Jinan, China Session Co-Organizer: **George Mesina**, Idaho National Laboratory, Idaho Falls, ID, United States	Session Organizer: **Ben Xu**, The University of Texas Rio Grande Valley, Edinburg, TX, United States
11:00 AM - 12:30 PM		
Numerical Investigations of the Long Blade Performance Using Rans Solution and FEA Method Coupled With One-Way and Two-Way Fluid-Structure Interaction Models Technical Paper Publication: PowerEnergy2017-3100 ***Minyan Yin,*** *Institute of Turbomachinery, Xi'an Jiaotong University, Xi'an, China,* ***Jun Li****, Institute of Turbomachinery, Xi'an Jiaotong Univ., Xi'an, Shaanxi, China,* ***Liming Song****, Xi'an Jiaotong University, Xi'an, China,* ***Zhenping Feng****, Xi'an Jiaotong University, Shaanxi, China*	**New Correlations of Weighted Sum of Grey Gases Model Applicable to Computational Fluid Dynamics for Oxy-fuel Combustion and Implementation** Technical Paper Publication: PowerEnergy2017-3171 ***Xueli Ge,*** *Shanghai Jiao Tong University, Shanghai, China,* ***Zhang Zhongxiao****,* ***Hu Xinglei****, SJTU, Shanghai, China,* ***Wu Xiao Jiang****, Shanghai Boiler Works Company., Ltd. (SHWS), Shanghai, China,* ***Zhang jian****, SJTU, Shanghai, China*	**Feasibility Assessment of Low-volume Anaerobic Digestion Systems for Institutional Food Waste Producers** Technical Paper Publication: PowerEnergy2017-3126 ***Shwe Sin Win, Swati Hegde, Thomas Trabold, Roger B., Chen,*** *Rochester Institute of Technology, Rochester, NY, United States*
Economic Analysis for Nozzle Governing with Overload Valve Regulation Technology Technical Paper Publication: PowerEnergy2017-3322 ***Jing Fangbo****, Dongfang Turbine Company., LTD, DeYang, China,* ***Lai Qiang****, Dongfang Turbine Company., Ltd., DeYang, China,* ***Wei Dongliang****,* ***Chen Xianhui****, Dongfang Turbine Company.,LTD, DeYang, China,* ***Yuan Yongqiang****, Dongfang Turbine Co, Ltd., DeYang,, China*	**Prediction Model of Flow-induced Noise in Large-scale Centrifugal Pumps based on BP Neural Network** Technical Paper Publication: PowerEnergy2017-3280 ***Chang Guo, Ming Gao,*** *Shandong University, Jinan, China,* ***Peixin Dong****, Queensland University, Brisbane, Australia,* ***Yuetao Shi****,* ***Fengzhong Sun****, Shandong University, Jinan, China*	**Investment Opportunities in Domestic Energy Fuels in Nigeria: An Economic Analysis of Fuel Pellet Production from Agricultural Crop Residues for Conditions found in North-eastern Nigeria** Technical Presentation: PowerEnergy2017-3849 ***Aikawa Usman Ibrahim****, Kano State Polytechnic, Kano, Nigeria*
New Structure and Manufacturing Process of Intergral Nozzle Block *Technical* Paper *Publication:* PowerEnergy2017-3410 ***Zhenming Cai****, Shanghai Electric Power Generation Equipment Company, Ltd. Turbine Plant, Shanghai, Shanghai, China,* ***Huifeng Zhou****, Shanghai Electric Power Generation Equipment Company., Ltd., Shanghai, Shanghai, China*	**A Numerical Solution for the Transient Inverse Heat Conduction Problem** Technical Paper Publication: PowerEnergy2017-3347 ***Benan Cai****,* ***Qi Zhang, Yu Weng, Hongfang Gu, Haijun Wang,*** *Xi'an Jiaotong University, Xi'an, Shaanxi, China*	**Design and Construction of a Solar Mobile Anaerobic Digestor for Rural Communities** Technical Presentation: PowerEnergy2017-3886 ***Cesar Moreira****, Escuela Superior Politécnica del Litoral, ESPOL, Guayaquil, Ecuador,* ***Marco Pazmiño-Hernández****,* ***Marco A. Pazmiño-Barreno****,* ***Kyle Griffin****,* ***Pratap Pullammanappallil,*** *University of Florida, Gainesville, FL, United States*
Nonlinear Dynamics Analysis of Mistuned Turbine Bladed Disks with Damped Shrouds Technical Paper Publication: PowerEnergy2017-3433 ***Wei Zhao****, Di Zhang, Lei Sun, Xi'an Jiaotong University, Xi'an, China,* ***Yonghui Xie****, Xi'an Jiaotong University, Xi'an Shaanxi Province, China*	**Numerical Simulation of Methane Hydrate Dissociation in Glass Micro Channels by Depressurization** Technical Paper Publication: PowerEnergy2017-3447 ***Xin Wang, Weizhong Li, Minghao Yu,*** *Dalian University of Technology, Dalian, China*	

11:00 AM - 12:30 PM

ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 15TH FUEL CELL SCIENCE, ENGINEERING, AND TECHNOLOGY CONFERENCE	ASME 2017 ENERGY STORAGE FORUM
TRACK 2-2: CONCENTRATING SOLAR POWER	**TRACK 3-4: FUEL CELL ANCILLARY SYSTEMS AND BALANCE-OF-PLANT**	**TRACK 4-4: THERMAL ENERGY STORAGE SYSTEMS**
Session 2-2-3: Receivers II	**Session 3-4-1: Controls and Hydrogen Production for Fuel Cell Systems**	**Session 4-4-2: Thermal Energy Storage II: Systems**
Charlotte Convention Center West, 201B	**Charlotte Convention Center East, 215**	**Charlotte Convention Center West, 202B**
Session Organizer: **Antoni Gil Pujol,** Massachusetts Institute of Technology, Cambridge, MA, United States	Session Organizer: **David Tucker,** National Energy Technology Laboratory, Morgantown, WV, United States	Session Organizer: **Siamak Farhad,** University of Akron, Akron, Ohio, United States
Volume Element Model for Modeling, Simulation, and Optimization of Parabolic Trough Solar Collectors Technical Paper Publication: PowerEnergy2017-3597 ***Tugba S. Sensoy, Sam Yang, Juan C. Ordonez,*** *Florida State University, Tallahassee, FL, United States*	**Active Control of Stack Inlet and Outlet Coolant Temperature for the PEM Fuel Cell System** Technical Paper Publication: PowerEnergy2017-3197 ***Fengxiang Chen, Jieran Jiao, Yang Yu, Yuan Gao, Sichuan Xu,*** *Tongji University, Shanghai, China*	**Optimization of the Thermal Energy Storage System** Technical Presentation: PowerEnergy2017-3154 ***Zahra Razzaghpanah,*** *University of North Carolina at Charlotte, Charlotte, NC, United States,* ***Nenad Sarunac****, UNC Charlotte, Charlotte, NC, United States*
Wind Load Analysis of a Linear Fresnel Receiver Assembly Technical Presentation: PowerEnergy2017-3394 ***Abhishek Parikh****, National Renewable Energy Laboratory, Golden, CO, United States,* ***Greg Mungas****, Hyperlight Energy, Lakeside, CO, United States,* ***Guangdong Zhu****, National Renewable Energy Laboratory, Golden, CO, United States*	**Producing Hydrogen from Jet-A Fuel in a Reactor with Integrated Autothermal Reforming and Water-Gas Shift** Technical Paper Publication: PowerEnergy2017-3225 ***Shuyang Zhang****,* ***Xiaoxin Wang****,* ***Peiwen Li****, University of Arizona, Tucson, AZ, United States,* ***Xinhai Xu****, Harbin Institute of Technology, Shengzhen, China*	**Development in Paraffin Based Thermal Storage System through Shell and Tubes Heat Exchanger with Vertical Fins** Technical Paper Publication: PowerEnergy2017-3276 ***Zakir Khan****, Bournemouth University, UK, Bournemouth, Dorset, United Kingdom,* ***Zulfiqar Ahmad Khan****, Bournemouth University, Poole, United Kingdom*
Supercritical Carbon Dioxide Experimental Facility for On-sun Testing a Microchannel Solar Receiver Technical Presentation: PowerEnergy2017-3957 ***Erfan Rasouli****,* ***Vinod Narayanan****, UC Davis, Davis, CA, United States,* ***Kevin Drost****, Oregon State University, Corvallis, OR, United States*	**Hydrogen Production from Various Heavy Hydrocarbons by Steam Reforming** Technical Paper Publication: PowerEnergy2017-3455 ***Yasuyoshi Takeda****,* ***Masaki Kusumi****,* ***Masaaki Kamizono,*** *Doshisha University, Kyoto, Japan,* ***Toshio Shinoki****, Mitsubishi Electric, Hyogo, Japan,* ***Hirochika Tanigawa****, NIT. Maizuru, Kyoto, Japan,* ***Katsuya Hirata****, Doshisha University, Kyoto, Japan*	**Experimental Study of a Novel PCM Open Cycle Engine** Technical Presentation: PowerEnergy2017-3371 ***Alon Lidor****,* ***Jonathan Fuchs****,* ***Alexander Zibitsker****,* ***Daniel Weihs****,* ***Eran Sher****, Technion - Israel Institute of Technology, Haifa, Israel*
	Transient Analysis of Simultaneous Multivariable Signals on Fuel Cell/Gas Turbine Hybrid to Define Control Strategies for Cathode Parameters and Compressor Stall Technical Paper Publication: PowerEnergy2017-3555 ***Bernardo Restrepo****, Universidad del Turabo, Gurabo, PR, United States,* ***David Tucker****, National Energy Technology Laboratory, Morgantown, WV, United States*	**Guidelines for an Optimized Design and Management of Packed-Bed Sensible Thermal Energy Storage Systems** Technical Presentation: PowerEnergy2017-3832 ***Inigo Ortega-Fernández, Irantzu Uriz, Asier Ortuondo, Ana Belén Hernández, Abdessamad Faik,*** *CIC Energigune, Miñano, Alava, Spain,* ***Iñaki Loroño,*** *Universidad del País Vasco, Portugalete, Bizkaia, Spain,* ***Javier Rodriguez-Aseguinolaza****, CIC Energigune, Minano, Alava, Spain,* ***Bruno D'Aguanno****, CIC Energigune, Miñano, Alava, Spain*
		Thermocline Control for Sensible Thermal Energy Storage Technical Presentation: PowerEnergy2017-3934 ***Lukas Geissbühler, Adrian Mularczyk,*** *ETH Zürich, Zürich, Switzerland,* ***Viola Becattini****, ETH Zurich, Zürich, Switzerland,* ***Anoop Mathur****, Terrafore Technologies LLC, Minneapolis, MN, United States,* ***Andreas Haselbacher,*** *ETH Zürich, Zürich, Switzerland,* ***Aldo Steinfeld****, ETH Zurich, Zürich, Switzerland*

WEDNESDAY, JUNE 28		11:00 AM - 12:30 PM
ASME 2017 NUCLEAR FORUM	**ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)**	
TRACK 5-5: STRUCTURES, COMPONENTS AND MATERIALS	**TRACK 1-10: I&C, DIGITAL CONTROLS, AND INFLUENCE OF HUMAN FACTORS**	
Session 5-5-1: Structures, Components and Materials - I	**Session 1-10-1: Topics on Instrumentation and Controls**	
Charlotte Convention Center West, 206B	**Charlotte Convention Center East, 214**	
Session Organizer: **Hakan Ozaltun,** Idaho National Laboratory, Idaho Falls, ID, United States Session Co-Organizer: **Efe G. Kurt**, Idaho National Laboratory, Idaho Falls, ID, United States, **Jovica Riznic**, Canadian Nuclear Safety Commission, Ottawa, ON, Canada		
11:00 AM - 12:30 PM **Investigation on Creep Mechanisms of Alloy 709** Technical Paper Publication: PowerEnergy2017-3649 ***Abdullah Alomari,*** *North Carolina State University, Cary, NC, United States,* ***Nilesh Kumar****,* ***K.L. Murty****, North Carolina State University, Raleigh, NC, United States*	**Upgrading the Existing 400/220 kv Sub-Stations Automation by Using IEC 61850 Standard** Technical Presentation: PowerEnergy2017-3030 ***Ramadan El Mshamer,*** *General Electricity Company of Libya, Tripoli, Libyan Arab Jamahiriya*	
Safety Enhancement Study of CAP1400 Spent Fuel Storage Racks Technical Paper Publication: PowerEnergy2017-3164 ***Xiaoming He, Ziqiang Zhu, Changlei Shao, Ran Huang,*** *Shanghai Nuclear Engineering Research and Design Institute, Shanghai, China*	**Development and Application of a New Multi - functional Simulation System for Double-reheat Ultra Supercritical Units** Technical Presentation: PowerEnergy2017-3504 ***Cai Baoling,*** *Xian Thermal Power Research Institute Co., Ltd., Xi'an, Shaanxi, China*	
Critical Nuclear Structure Roofing: Condition Assessment and Rehabilitation Approach Technical Presentation: PowerEnergy2017-3959 ***Anna Pridmore, Erik Wagner,*** *Structural Technologies, Columbia, MD, United States*	**Manual vs. Automatic Boiler Controls: a Historical Perspective from Relevant Codes and Standards** Technical Paper Publication: PowerEnergy2017-3616 ***Brock Bobbitt, Stephen Garner, Brenton Cox,*** *Exponent, Warrenville, IL, United States,* ***John Martens,*** *Exponent, Chicago, IL, United States,* ***Mark Fecke****, Exponent Failure Analysis Associates, Warrenville, IL, United States*	
Thermo-mechanical Performance Assessment of Selected Plates from MP-1 Irradiation Experiments Technical Paper Publication: PowerEnergy2017-3271 ***Hakan Ozaltun, Barry H. Rabin,*** *Idaho National Laboratory, Idaho Falls, ID, United States*		

ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING	**TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING**	**TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING**
Session 1-1-5: Advanced Gasification and Pyrolysis Systems	**Session 1-1-8: Advanced and Alternative Fuels - I**	**Session 1-1-12: Advanced Emission Control Technology I**
Charlotte Convention Center West, 205	**Charlotte Convention Center West, 204**	**Charlotte Convention Center West, 206B**
Session Organizer: **Ezra Bar-Ziv**, Michigan Technological University, Houghton, MI, United States Session Co-Organizer: **Richard Scenna**, DOD, Aberdeen Proving Ground, MD, United States	Session Organizer: **Boris Chudnovsky,** Israel Electric Corporation, Haifa, Israel Session Co-Organizer: **Ming Zhai**, Harbin Institute of Technology, Harbin, China	Session Organizer: **Christopher Blazek,** Benetech Inc., Oswego, IL, United States Session Co-Organizer: **Chuanwen Zhao**, Nanjing Normal University, Nanjing, China
2:00 - 3:30 PM **The Effect of Alkali Metal Sodium on Ash Fusion Characteristics and Mineral Evolution of Zhundong Coal** Technical Presentation: PowerEnergy2017-3456 ***Xiao P. Zhang, Cheng Zhang,*** *Huazhong University of Science & Technology, Wuhan, Hubei, China,* ***Peng Tan****, Huazhong University of Science and Technology, Wuhan, Hubei, China,* ***Sheng H. Yu, Hong G. Ding,*** *Huazhong University of Science & Technology, Wuhan, Hubei, China,* ***Xin Li, Gang Chen****, Huazhong University of Science and Technology, Wuhan, Hubei, China*	**Upgradation of Low Grade Coal to High Quality Coal by Chemical Beneficiation Technique** Technical Paper Publication: PowerEnergy2017-3057 ***Sushanta Kumar Behera,*** *Indian Institute of Technology Kharagpur, Kharagpur, India,* ***Sudipto Chakraborty****, Indian Institute of Technology Kharagpur, Kharagpur, India,* ***Bhim Charan Meikap****, Indian Institute of Technology Kharagpur, Kharagpur, India*	**Study on Optimization of Selective Non-catalytic Reduction for W-flame Boiler** Technical Paper Publication: PowerEnergy2017-3110 ***Bo Zhang, Hongjie Xu,*** *Xi'an Thermal Power Research Institute Co., Ltd, Xi'an, Shaanxi, China,* ***Xiangyu Zhang****, Xi'an Thermal Power Research Institute, Xi'an, China,* ***Xiang Xiaofeng****, Xi'an Thermal Power Research Institute Co. Ltd, Xi'an, China,* ***Ning Gao****,* ***Xu Lu****, Xi'an Thermal Power Research Institute, Xi'an, China*
Co-pyrolysis of Low Rank Coal and Microalgae Biomass Technical Presentation: PowerEnergy2017-3866 ***Wu Zhiqiang****,* ***Wangcai Yang****,* ***Bolun Yang****, Xi'an Jiaotong University, Xi'an, China*	**Effect of Different Pyrolysis Conditions on the Grindability of Two Low Rank Coal** Technical Presentation: PowerEnergy2017-3359 ***Yumeng Yang, Jianzhong Liu, Jiefeng Zhu, Zhihua Wang, Junhu Zhou, Kefa Cen,*** *Zhejiang University, Hangzhou, China*	**Improve SO_2 Tolerance of SCR Catalysts by Aluminogermanate Zeolite RHO Membrane** Technical Presentation: PowerEnergy2017-3335 ***Xin Li,*** *Huazhong University of Science and Technology, Wuhan, Hubei, China,* ***Zhuang Y. Li, Xiu L. He,*** *Shajiao C Power Station of Guangdong Yuedian Grid Co, Ltd, Dongguan, Guangdong, China,* ***Ting X. Wang****,* ***Cheng Zhang, Gang Chen,*** *Huazhong University of Science and Technology, Wuhan, Hubei, China*
Co-gasification of Low-rank Coal and Biomass: Kinetic Analysis and Product Distribution Technical Presentation: PowerEnergy2017-3880 ***Wu Zhiqiang****, Xi'an Jiaotong University, Xi'an, China,* ***Wang Shuzhong, Lin Chen,*** *Xi'an Jiaotong University, Xi'an, China,* ***Haiyu Meng****,* ***Jun Zhao****, Xi'an Jiaotong University, Xi'an, China*	**Combustion Properties of Biomass Pellets Prepared with Binders of Coal Tar Residues** Technical Presentation: PowerEnergy2017-3755 ***Jun Cheng, Tingting Si, Jianzhong Liu,*** *Zhejiang University, Hangzhou, China*	**Simultaneous Removal of NOx and SO_2 by Low Temperature Catalytic Oxidation** Technical Presentation: PowerEnergy2017-3445 ***Fawei Lin, Zhihua Wang, Jiaming Shao, Dingkun Yuan, Yong He, Yanqun Zhu, Kefa Cen,*** *Zhejiang University, Hangzhou, Zhejiang, China*
High-temperature Flash Pyrolysis of Maize Straw and Its Thermodynamic Analysis Technical Presentation: PowerEnergy2017-3826 ***Ming Zhai, Xinyu Wang, Ze Wang, Yanan Wang, Peng Dong,*** *Harbin Institute of Technology, Harbin, China*	**Characteristics of Maize Straw Char and Ash Melting** Technical Presentation: PowerEnergy2017-3828 ***Xinyu Wang, Ze Wang, Lin Sun, Ming Zhai, Peng Dong,*** *Harbin Institute of Technology, Harbin, China*	**Experimental Investigation of Activation Solution for On-line Activating SCR-DeNOx Catalyst** Technical Paper Publication: PowerEnergy2017-3476 ***Dong Lin Chen, Tuo Ye, Xi Zeng****, Changsha University of Science and Technology, Changsha, Hunan, China*

WEDNESDAY, JUNE 28 — 2:00 - 3:30 PM

ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-2: COMBUSTION TURBINES	**TRACK 1-3: BOILERS & HEAT RECOVERY STEAM GENERATORS**	**TRACK 1-8: HEAT EXCHANGERS, CONDENSERS, COOLING SYSTEMS, AND BALANCE-OF-PLANT**
Session 1-2-2: Gas Turbine Upgrades	**Session 1-3-5: Steam Generator Operation**	**Session 1-8-8: Study and Exploration of Heat Transfer**
Charlotte Convention Center West, 206A	**Charlotte Convention Center West, 209A**	**Charlotte Convention Center West, 209B**
Session Organizer: **Nick Gritz,** Power Engineers, Inc., Duluth, GA, United States Session Co-Organizer: **Bob Aslin**, FM Global, Wildwood, MO, United States	Session Organizer: **Paul Weitzel,** retired, Canal Fulton, OH, United States	Session Organizer: **Kim Massey**, Day & Zimmermann, Norfolk, VA, United States
2:00 - 3:30 PM **Numerical Analysis of Stator Vane Inner Ring Influence on Aerodynamics Performance and Dynamic Stress** Technical Paper Publication: PowerEnergy2017-3111 ***Xiaowen Deng, Hong Yin, Shi Liu,*** *EPRI of Guangdong Power Grid Corporation, Guangzhou, China*	**Exergo-economic Study of Dual Pressure HRSG in Gas/Steam Combined Cycle Plants** Technical Presentation: PowerEnergy2017-3368 ***Meeta Sharma****, Amity University, Noida, India,* ***Onkar Singh****, M.M.M.University of Technology, Gorakhpur (U.P.), India*	**Pool Boiling Mechanism Investigation of Gradient Metal Foams** Technical Presentation: PowerEnergy2017-3251 ***Zhiguo Xu,*** *Shanghai Jiao Tong University, Shanghai, China,* ***Meiqin Wang****, CCDC Changqing Downhole Technology Company, Xi'an, China*
Large Eddy Simulation with a New Flamelet Model for Partially Premixed Combustion in a Gas Turbine Combustor Technical Paper Publication: PowerEnergy2017-3141 ***Keisuke Tanaka****,* ***Tomonari Sato****,* ***Jiun Kim****, Hokkaido University, Sapporo, Hokkaido, Japan,* ***Nobuyuki Oshima****, Mechanical and Space Engineering, Hokkaido University, Sapporo, Hokkaido, Japan,* ***Yusuke Takahashi****, Hokkaido University, Sapporo, Hokkaido, Japan,* ***Yasunori Iwai****, Toshiba Corporation, Yokohama, Japan*	**A Study on Acoustic Leakage Detection Technology for Power Plant Boiler Tubes** Technical Presentation: PowerEnergy2017-3839 ***Peng Xiaolan****, Hunan Special Equipment Inspection & Testing Institute, Changsha, Charlotte, China*	**Experimental Study of Heat Transfer and Resistance Characteristics of Single H-type and Double H-type Finned Tubes** Technical Paper Publication: PowerEnergy2017-3289 ***Wei Wei,*** *Shandong University, Jinan City, China,* ***Fengzhong Sun****,* ***Yuetao Shi, Lei Ma, Jiayou Liu,*** *Shandong University, Jinan, China*
Application of Large-eddy Simulation and the Multi-scalar Flamelet Approach to a Methane-hydrogen Mixed-combustion-type Industrial Gas-turbine Combustor Technical Paper Publication: PowerEnergy2017-3247 ***Ryosuke Kishine,*** *Mechanical and Space Engineering, Hokkaido University, Sapporo, Hokkaido, Japan,* ***Saad Sibawayh****, Aeronautical and Mechanical Engineering, ISAE-ENSMA, Chasseneuil-du-Poitou, France,* ***Tenshi Sasaki****,* ***Nobuyuki Oshima****, Mechanical and Space Engineering, Hokkaido University, Sapporo, Hokkaido, Japan,* ***Kohshi Hirano****, Takeo Oda, Kawasaki Heavy Industries, Ltd., Akashi, Japan* **Numerical Investigation on Combustion Performance of a Novel Micro Gas Turbine Combustor under Low Load** Technical Paper Publication: PowerEnergy2017-3317 ***hao Zong****,* ***Tong Zhu****,* ***Yaya Lyu****, Tongji University, Shanghai, Shanghai, China*	**Economic Analysis of Advanced Boiler Flue Gas Heat Recovery System in Power Plant** Technical Presentatio: PowerEnergy2017-3299 ***Wanpeng Lu****, Shandong Jianzhu University, Jinan, Shandong, China,* ***Fengzhong Sun****, Shandong University, Jinan, China*	**A High Order Approximate Factorization Method for Solving the Heat Conduction Problems** Technical Paper Publication: PowerEnergy2017-3660 ***Yarong Zhang, Hongbin Chen,*** *Xi'an Jiaotong University, Xi'an, China,* ***Jie Zheng****, Xi"an Shiyou University, Xi'an, China* **Cool Storage for Power Plant Dry Cooling** Technical Presentation: PowerEnergy2017-3936 ***Chien-Hua Chen****, Advanced Cooling Technologies, Inc., Lancaster, PA, United States,* ***Sean Hoenig****,* ***Rich Bonner****, Advanced Cooling Technologies, Lancaster, PA, United States*

	ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/ INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
	TRACK 1-9: STEAM TURBINE-GENERATORS, ELECTRIC GENERATORS, TRANSFORMERS, SWITCHGEAR, AND ELECTRIC BOP & AUXILIARIES	**TRACK 1-11: PLANT OPERATIONS, MAINTENANCE, AGING MANAGEMENT, RELIABILITY AND PERFORMANCE**	**TRACK 1-12: THERMAL HYDRAULICS AND COMPUTATIONAL FLUID DYNAMICS**
	Session 1-9-2: Instrumentation and Controls Tutorial on Plant Coordination a Holistic Approach	**Session 1-11-3: Wind Turbine: RAM and Real-time Blade Deformation Recognition, and Speed Matching Fan Rotors**	**Session 1-12-5: TH and CFD 5**
	Charlotte Convention Center West, 210A	**Charlotte Convention Center West, 201A**	**Charlotte Convention Center West, 210B**
	Session Organizer: **Michael Smiarowski**, Siemens Energy Inc, Orlando, FL, United States Session Co-Organizer: **Bob Scott,** GE Power, Midlothian, VA, United States	Session Organizer: **Brian Wodka,** RMF Engineering, York, PA, United States	Session Organizer: **Saleh Etaig,** Northumbria University, University of Benghazi, Newcastle upon Tyne, Tyne and Wear, United Kingdom Session Co-Organizer: **Rabia Jamshaid**, National University of Sciences and Technology, Islamabad, Pakistan, Rawalpindi, Pakistan/ Punjab, Pakistan
2:00 - 3:30 PM	**TUTORIAL** **2:00pm - 3:30pm** *A major Steam Turbine OEM will present strategies to more fully coordinate plant operations across typical islands of automation. This approach results in more optimum use of assets and improved flexibility of operation. The discussion will span Boiler, Turbine, Balance of Plant and Electrical. It will present knowledge gathered through extensive project experience. The tutorial will highlight specific technical needs and how this approach has created benefits. The combining of process knowledge with various control approaches continues to show potential for solving future problems as well as past needs. Areas of discussion will include improved ramp rates, minimum load requirements, stress considerations, fuel usage and operational flexibility.*	**Reliability, Availability, Maintainability (RAM) for Wind Turbines** Technical Paper Publication: PowerEnergy2017-3045 ***Nikhil Kumar, David Rogers,*** *Intertek Aim, Santa Clara, CA, United States,* ***Thomas Burnett****, Intertek Aptech, Houston, TX, United States,* ***Eric V. Sullivan,*** *Intertek AIM, Santa Clara, CA, United States,* ***Martin Gascon****, Intertek, Santa Clara, CA, United States* **Experimental Study on Real-Time Deformation 3D Recognition of Wind Turbine Blade** Technical Presentation: PowerEnergy2017-3120 ***Lei Zhang, GuoQiang He, Wei Gao, XiaoPing Zhang,*** *HuaZhong University of Science and Technology, Wuhan, China,* ***WeiQiu Chen, JiXiu Wu,*** *Guangdong Yuedian Zhanjiang Wind Power Company, Ltd, ZhanJiang, China* **Speed Matching of the Second Rotor in A Counter-rotating Fan Under Off-design Conditions** Technical Paper Publication: PowerEnergy2017-3232 ***Zijian Ai,*** *Xi'an Jiaotong University, Xi'an, Shaanxi, China,* ***Guoliang Qin, Xuefei Chen, Jingxiang Lin, Wenqiang He****, Xi'an Jiaotong University, Xi'an, Shaanxi, China*	**Investigation of the Flow Characteristics of Titanium Oxide -Water Nanofluid in Microchannel with Circular Cross Section** Technical Paper Publication: PowerEnergy2017-3479 ***Saleh Etaig,*** *Northumbria University, University of Benghazi, Newcastle upon Tyne, Tyne and Wear, United Kingdom,* ***Reazul Hasan****, Northumbria University, Newcastle Upon Tyne, United Kingdom,* ***Noel Perera****, Northumbria University, Newcastle, United Kingdom,* ***Gamal Hashem****, University of Benghazi, Benghazi, Libyan Arab Jamahiriya* **Numerical Studies of Double Emulsions in a Coaxial Flow-Focusing Microfluidic Device** Technical Paper Publication: PowerEnergy2017-3451 ***Zhenyu Zhao, Bo Dong, Cong Chen, Weizhong Li****, Dalian University of Technology, Dalian, China* **Splitting Behaviors of Double Emulsion Droplet through a Microfluidic Y-junction** Technical Presentation: PowerEnergy2017-3910 ***Wei Yu, S****outheast University, Nanjing, China,* ***Xiangdong Liu****, Yangzhou University, Yangzhou, Jiangsu, China,* ***Chengbin Zhang****, Southeast University, Nanjing, Jiangsu, China*

ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY
TRACK 2-2: CONCENTRATING SOLAR POWER	**TRACK 2-6: GEOTHERMAL POWER, HYDRO/OCEAN POWER, AND EMERGING ENERGY TECHNOLOGIES**	**TRACK 2-11: SUSTAINABLE INFRASTRUCTURE AND TRANSPORTATION**
Session 2-2-4: Heat and Mass Transfer Analysis	**Session 2-6-2: Hydro/Ocean Power - I**	**Session 2-11-1: Sustainable Infrastructure & Transportation**
Charlotte Convention Center West, 201B	**Charlotte Convention Center West, 202A**	**Charlotte Convention Center East, 214**
Session Organizer: **Nathan Siegel**, Bucknell University, Lewisburg, PA, United States	Session Organizer: **Bang Fuh Chen**, National Sun Yat Sen University, Kaohsiung, Taiwan	Session Organizer: **Dervis Demirocak,** Texas A&M University - Kingsville, Kingsville, TX, United States Session Co-Organizer: **Maurizio Manzo**, Texas A&M University-Kingsville, Kingsville, TX, United States
2:00 - 3:30 PM **Fluidized-bed Heat Transfer Modeling for the Development of Particle/Supercritical-CO2 Heat Exchanger** Technical Paper Publication: PowerEnergy2017-3098 ***Zhiwen Ma,*** *National Renewable Energy Laboratory, Lakewood, CO, United States,* ***Janna Martinek****, NREL, Golden, CO, United States*	**On the Control of Three-Degree-of-Freedom Wave Energy Converters** Technical Paper Publication: PowerEnergy2017-3038 ***Shangyan Zou,*** *Michigan Technological University, Houghton, MI, United States,* ***Ossama Abdelkhalik****, Michigan Technological University, Houghton, MI, United States*	**Exhaust Systems: CO2 Emission Reduction Using Zeolite Catalyst** Technical Paper Publication: PowerEnergy2017-3389 ***Shruti Menon****, University of North Carolina at Charlotte, Charlotte, NC, United States,* ***Navid Goudarzi****, UNCC, Charlotte, NC, United States*
Heat Transfer in Novel Fluidized Bed Particle Receiver for Concentrating Solar Applications Technical Presentation: PowerEnergy2017-3940 ***Daniel Miller****,* ***Gregory Jackson,*** *Colorado School of Mines, Golden, CO, United States*	**Simulation of Tethered Underwater Kites Moving in Three Dimensions for Power Generation** Technical Paper Publication: PowerEnergy2017-3425 ***Amirmahdi Ghasemi****, Worcester Polytechnic Institute, Worcester, MA, United States,* ***David Olinger,*** *Worcester Polytechnic Institute, Upton, MA, United States,* ***Gretar Tryggvason,*** *University of Notre Dame, Notre Dame, IN, United States*	**Cyber-Physical System Development Environment for Energy Applications** Technical Paper Publication: PowerEnergy2017-3589 ***Thomas Roth, Eugene Song, Martin Burns,*** *National Institute of Standards and Technology, Gaithersburg, MD, United States,* ***Himanshu Neema****,* ***William Emfinger, Janos Sztipanovits,*** *Vanderbilt University, Nashville, TN, United States*
Heat Transfer to Vertical Dense Granular Flows at High Operating Temperatures Technical Paper Publication: PowerEnergy2017-3272 ***Megan Watkins,*** *NC State University, Raleigh, NC, United States,* ***Richard Gould,*** *North Carolina State University, Raleigh, NC, United States*	**Numerical Analysis of Centrifugal Pumps Running in Turbine Mode under Dynamic Operating Conditions** Technical Paper Publication: PowerEnergy2017-3372 ***Massimo Milani, Luca Montorsi, Vincenzo De Rose, Francesca Martelli,*** *University of Modena and Reggio Emilia, Reggio Emilia, Reggio Emilia, Italy*	**A Comparative Assessment on Static and Dynamic PCA for Fault Detection in Natural Gas Transmission Systems** Technical Paper Publication: PowerEnergy2017-3613 ***Horacio Pinzon, Marco Sanjuan, Cinthia Audivet, Melitsa Torres, Javier Alexander,*** *Promigas S.A. E.S.P., Barranquilla, Colombia*
Heat Transfer Models of Moving Packed-Bed Particle-to-sCO2 Heat Exchangers Technical Paper Publication: PowerEnergy2017-3377 ***Kevin Albrecht, Clifford Ho,*** *Sandia National Laboratories, Albuquerque, NM, United States*		
Developing a Plug Flow Heat Transfer Model for Moving Bed Heat Exchanger Technical Presentation: PowerEnergy2017-3657 ***Lu Shen,*** *Georgia Institute of Technology, Atlanta, GA, United States,* ***Sheldon Jeter****, Georgia Institute of Technology, Atlanta, GA, United States,* ***Clayton Nguyen****,* ***Matthew Golob****, Georgia Institute of Technology, Atlanta, GA, United States*		

ASME 2017 15TH FUEL CELL SCIENCE, ENGINEERING, AND TECHNOLOGY CONFERENCE	ASME 2017 ENERGY STORAGE FORUM	
TRACK 3-4: FUEL CELL ANCILLARY SYSTEMS AND BALANCE-OF-PLANT	**TRACK 4-4: THERMAL ENERGY STORAGE SYSTEMS**	
Session 3-4-2: Controls and Hydrogen Production for Fuel Cell Systems - II	**Session 4-4-3: Thermal Energy Storage III: Combined Cycles**	
Charlotte Convention Center East, 215	**Charlotte Convention Center West, 202B**	
Session Organizer: **Nor Farida Harun,** National Energy Technology Laboratory, Morgantown, WV, United States	Session Chair: **Anne Mallow,** Oak Ridge National Lab, Morgantown, WV, United States	
2:00 - 3:30 PM		
Membrane Electrolyte Assembly Health Estimation Method for Proton Exchange Membrane Fuel Cells Technical Presentation: PowerEnergy2017-3877 ***Alexander Headley**, Sandia National Laboratory, Albuquerque, NM, United States, **Martha M. Gross**, University of Texas at Austin, Austin, TX, United States, **Dongmei Chen**, The University of Texas at Austin, Austin, TX, United States*	**An Integrated Energy System with Large-scale Electrical and Thermal Energy Storage Devices** Technical Paper Publication: PowerEnergy2017-3094 ***Qun Chen, Tian Zhao**, Tsinghua University, Beijing, China*	
Assessment of a Cryogenic Cycle System for Improved Hydrogen Liquefaction through Heisenberg Vortex Separation Technical Presentation: PowerEnergy2017-3895 ***Zhiwen Ma,** National Renewable Energy Laboratory, Lakewood, CO, United States, **Chris Ainscough**, NREL, Golden, CO, United States, **Dustin McLarty**, Washington State University, Pullman, WA, United States, **Jacob Leachman**, Washington State University Pullman, Pullman, WA, United States*	**Effect of Multi Injection Process on Zeolite Boiler in Thermochemical Energy Storage and Transport System of Unused Heat from Bagasee Boiler** Technical Paper Publication: PowerEnergy2017-3253 ***Shoma Fujii,** Waseda University, Shinjuku-ku, Japan, **Yuichiro Kanematsu**, **Yasunori Kikuchi**, The university of Tokyo, Bunkyo-ku, Tokyo, Japan, **Takao Nakagaki**, Waseda University, Shinjyuku, Tokyo, Japan*	
Non-Uniform Control Volume Sizing Methodology for Relative Humidity Control of Proton Exchange Membrane Fuel Cells Technical Presentation: PowerEnergy2017-3899 ***Alexander Headley**, Sandia National Laboratory, Albuquerque, NM, United States, **Dongmei Chen**, The University of Texas at Austin, Austin, TX, United States, **Wei Li**, University of Texas at Austin, Austin, TX, United States*	**Dispatchable Solar Combined Cycle** Technical Paper Publication: PowerEnergy2017-3578 ***William M. Conlon**, Pintail Power LLC, Palo Alto, CA, United States*	
	Numerical Investigation and Optimization Study of a Novel Seasonal Energy Storage System for Air-Conditioning Application Technical Presentation: PowerEnergy2017-3741 ***Matthew Fong, Saad Akhtar, Agus Sasmito,** McGill University, Montreal, QC, Canada*	

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING	**TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING**	**TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING**
Session 1-1-6: Advanced Chemical Looping Systems	**Session 1-1-9: Advanced and Alternative Fuels - II**	**Session 1-1-13: Advanced Emission Control Technology II**
Charlotte Convention Center West, 205	**Charlotte Convention Center West, 204**	**Charlotte Convention Center West, 206B**
Session Organizer: **Ezra Bar-Ziv**, Michigan Technological University, Houghton, MI, United States Session Co-Organizer: **Xing Zhu**, Kunming University of Science and Technology, Kunming, China	Session Organizer: **George D. Dumbaugh**, PE, Kinergy Corporation, Louisville, KY, United States Session Co-Organizer: **Jun Cheng**, Zhejiang University, Hangzhou, China	Session Organizer: **Christopher Blazek**, Benetech Inc., Oswego, IL, United States Session Co-Organizer: **Fawei Lin**, Zhejiang University, Hangzhou, Zhejiang, China
Heat Management Strategies in Chemical-looping Combustion of Methane using a Thermal Storage Functional Oxygen Carrier Technical Presentation: PowerEnergy2017-3074 ***Kongzhai Li, Hua Wang, Xing Zhu,*** *Kunming University of Science and Technology, Kunming, China*	**Evaluation of Methanol and Light Fuel Oil Blends Firing at a 50 MW Gas Turbine** Technical Paper Publication: PowerEnergy2017-3018 ***Boris Chudnovsky,*** *Israel Electric Corporation, Haifa, Israel,* ***Alexander Talanker****, Israel Electric Company, Haifa, Israel,* ***Mordechay Reshef****, Israel Electric Corporation, Haifa, Israel*	**Amine-modified Wood Ash Sorbents for CO2 Capture from Post-combustion Flue Gas** Technical Presentation: PowerEnergy2017-3812 ***Peng Wang, Xinru Wang, Chuanwen Zhao,*** *Nanjing Normal University, Nanjing, China,* ***Yafei Guo****, University of Science and Technology of China, Hefei, China,* ***Ping Lu****, Nanjing Normal University, Nanjing, Jiangsu, China*
Synthesis of CeO2 supported BaCoO3 Perovskites for Chemical-looping Steam Methane Reforming to Syngas and Hydrogen Co-production Technical Paper Publication: PowerEnergy2017-3246 ***Haoran Ding, Yongqing Xu, Linyi Xiang, Qiyao Wang, Cheng Shen, Cong Luo, Liqi Zhang,*** *Huazhong University of Science and Technology, Wuhan, China*	**Carbonization and Combustion Characteristics of Palm Fiber** Technical Presentation: PowerEnergy2017-3827 ***Xinyu Wang, Ze Wang, Lin Sun, Ming Zhai, Peng Dong****, Harbin Institute of Technology, Harbin, China*	**Studies on Several Fly Ashes and their Modified Materials for CO2 Capture** Technical Paper Publication: PowerEnergy2017-3420 ***Junjie Yan, Chuanwen Zhao, Peng Wang, Ping Lu****, Nanjing Normal University, Nanjing, China*
Sorption Enhanced Steam Reforming of Propane Using Calcium Looping Technical Paper Publication: PowerEnergy2017-3621 ***Kiran Raj Goud Burra,*** *University of Maryland, College Park, College Park, MD, United States,* ***Ashwani Gupta****, University of Maryland, College Park, MD, United States*	**Lanthanum-Calcium-Iron Perovskite Membrane for Hydrogen Production from Water Splitting: Effect of Reduction Atmospheres** Technical Presentation: PowerEnergy2017-3070 ***Xing Zhu, Hua Wang, Kongzhai Li,*** *Kunming University of Science and Technology, Kunming, China*	**An Experiment for Separation of Carbon Dioxide using Vortex Tube** Technical Paper Publication: PowerEnergy2017-3443 ***YoungHyeon Kim, Yun Jinwon, Sangseok Yu,*** *Chungnam National University, Daejeon, Korea (Republic)*
Cyclic CO2 Capture Behavior of Limestone Modified by Qinghai Lake Salt during Long-term Calcium Looping Cycles Technical Paper Publication: PowerEnergy2017-3337 ***Yongqing Xu,*** *Huazhong University of Science and Technology, Charlotte, NC, United States,* ***Haoran Ding, Cong Luo, Ying Zheng, Qiyao Wang, Huiying Sang, Tingxu Wang, Liqi Zhang****, Huazhong University of Science and Technology, Wuhan, China*		**Design and Experimentation on a Microalgae Carbon-capture System - Preliminary Results** Technical Presentation: PowerEnergy2017-3938 ***Farshid Zabihian, Timothy M Davidson,*** *California State University, Sacramento, Sacramento, CA, United States,* ***Jon Ball,*** *West Virginia University Institute of Technology, Madison, WV, United States,* ***Joel Kouakou****, West Virginia University Institute of Technology, Montgomery, WV, United States,* ***Brendon Rankou****, California State University, Sacramento, Montgomery, WV, United States,* ***Jerod Taylor****, West Virginia University Institute of Technology, Montgomery, WV, United States*

3:45 - 5:15 PM

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING	**TRACK 1-2: COMBUSTION TURBINES**	**TRACK 1-3: BOILERS & HEAT RECOVERY STEAM GENERATORS**
Session 1-1-16: Advanced Internal Combustion Engines - I	**Session 1-2-3: Gas Turbine Upgrades (Part 2)**	**Session 1-3-6: Steam Generator Performance and Testing I**
Charlotte Convention Center East, 215	**Charlotte Convention Center West, 206A**	**Charlotte Convention Center West, 209A**
Session Organizer: **Jose Gabriel Mercado**, University of the Philippines Diliman, Quezon City, Manila, Philippines Session Co-Organizer: **Jose Moncada**, Georgia Southern University, Statesboro, GA, United States	Session Organizer: **Lilia Papadopoulos**, Sargent & Lundy, Chicago, IL, United States	Session Organizer: **Paul Weitzel,** retired, Canal Fulton, OH, United States
3:45 - 5:15 PM **An Investigation on Turbulence Generation in Split-Diesel Engine** Technical Presentation: PowerEnergy2017-3834 ***Youssef Attai,*** *Helwan University, Cairo, Egypt*	**Mist Injection in Turbine Blade Cooling System** Technical Presentation: PowerEnergy2017-3830 ***Hamad Alhajeri,*** *College of Technical Studies, PAAET, Adylia, Kuwait,* ***Joao Amaral Teixeira****, Cranfield University, Cranfield, United Kingdom*	**The Interaction Effect Study of Ash Deposition and Acid Condensation on Low-Temperature Heat Transfer Surface in Boiler Flue Gas** Technical Paper Publication: PowerEnergy2017-3291 ***Lei Ma, Fengzhong Sun, Wei Wei, Jiayou Liu, Yuetao Shi,*** *Shandong University, JiNan, ShanDong, China*
Can Propane Displace Diesel as a Fuel for Power Generation? Technical Paper Publication: PowerEnergy2017-3078 ***Michael Welch****, Siemens Industrial Turbomachinery Ltd, Lincoln, Lincolnshire, United Kingdom,* ***Rajan Patel****, Siemens, Lincoln, United Kingdom*	**Assessment of First Stage Blades Material Degradation after Engine Service** Technical Presentation: PowerEnergy2017-3846 ***Yongqing Wang****, Duke Energy, Charlotte, NC, United States,* ***Kevin Redmond****, Duke Energy, Huntersville, NC, United States,* ***Rajeev Aluru****,* ***Jeffrey Biega****,* ***Roger Harding****, Duke Energy, Raleigh, NC, United States,* ***John Scheibel****, EPRI, Palo Alto, CA, United States,* ***Hans Van Esch****, TEServices, LA Porte, TX, United States,* ***Robert Steele****, EPRI, Charlotte, NC, United States*	**Demonstration Test of Wood pellet Co-firing for Pulverized Coal fired Boiler** Technical Paper Publication: PowerEnergy2017-3782 ***Hiroki Ishii, Kentaro Nariai, Daisuke Inoue, Hitoshi Fukushima, Hidekazu Kasai, Emi Ohno****, IHI Corporation, Koto-ku, Tokyo, Japan*
Determination of the Start and End of Combustion in a Common Rail Direct Injection Diesel Engine Using the Apparent Heat Release Rate Technical Paper Publication: PowerEnergy2017-3446 ***Joseph Gerard Reyes****, University of the Philippines College of Engineering, Quezon City, Philippines,* ***Edwin N. Quiros****, University of the Philippines, Quezon City, National Capital Region, Philippines*	**Energy Audit and Subsequent Identification of Best Alternative for Thermal Power Plant Using Promethee MCDA APPROACH** Technical Presentation: PowerEnergy2017-3884 ***Prasun Chakraborty,*** *National Institute of Technology, Agartala., Agartala, Tripura, India., India,* ***Ashis Acharjee****, NIT Agartala, AGARTALA, Tripura, India., India*	**Experimental Study of Mercury Removal and Electrolytic Regeneration by Ca(ClO)2 solutions** Technical Paper Publication: PowerEnergy2017-3264 ***Qinlan Luo****, Xi'an Jiaotong University, Xi'an, ShanXi, China,* ***Ruiya Jia****, Weifu High-Technology Group Co., Ltd, Wuxi, Jiangsu, China,* ***Bin Feng****, Xi'an Jiaotong University, Xi'an, ShanXi, China,* ***Qulan Zhou****, Xi'an Jiaotong University, Xi'an, Shaanxi, China,* ***Na Li****, Xi'an Jiaotong University, Xi'an, ShanXi, China*
	Simulation Study on Steam Injected Solarized Micro Gas Turbine System Technical Presentation: PowerEnergy2017-3345 ***Gang Xiao****,* ***Xin Zhou****,* ***Jinli Chen****,* ***Tianfeng Yang****,* ***Huanlei Liu****, Zhejiang University, Hangzhou, China*	**Performance Analysis of a New Type Economizer System for Active Control of Exhaust Flue Gas Temperature in a 600 MW Power Plant** Technical Paper Publication: PowerEnergy2017-3303 ***Pengcheng Xiao,*** *Huazhong University of Science and Technology, Wuhan, Hubei, China,* ***Jizhou Wang****, Envision Energy Lt. Co., Shanghai, China,* ***Yanping Zhang****, Huazhong University of Science and Technology, Wuhan, Hubei, China*

3:45 - 5:15 PM

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-7: RENEWABLE ENERGY SYSTEMS: SOLAR, WIND, HYDRO AND GEOTHERMAL	**TRACK 1-9: STEAM TURBINE-GENERATORS, ELECTRIC GENERATORS, TRANSFORMERS, SWITCHGEAR, AND ELECTRIC BOP & AUXILIARIES**	**TRACK 1-11: PLANT OPERATIONS, MAINTENANCE, AGING MANAGEMENT, RELIABILITY AND PERFORMANCE**
Session 1-7-5: Advanced Technologies for CHP Systems	**Session 1-9-3: Generator Operations and Maintenance**	**Session 1-11-4: Advances in Turbine and Boiler Systems: Design and Inspection**
Charlotte Convention Center East, 214	**Charlotte Convention Center West, 210A**	**Charlotte Convention Center West, 201A**
Session Organizer: **Victor Osorio,** San Francisco State University, San Francisco, CA, United States Session Co-Organizer: **John Fall**, American Electric Power, Columbus, OH, United States	Session Organizer: **John McPhearson, Lectrodryer,** Richmond, KY, United States Session Co-Organizer: **Russ Chetwynd**, United States	Session Organizer: **Tarannom Parhizkar,** Sharif University of Technology, Los Angeles, *CA,* United States Session Co-Organizer: **Bo Zemin**, Shanghai Jiao Tong University, Shanghai, China, **Noman Sadi**, Arkansas State University, Jonesboro, AR, United States
Working Fluid Analysis for Supercritical Organic Rankine Cycles for Medium Geothermal Reservoir Temperatures Technical Paper Publication: PowerEnergy2017-3618 ***Francesca Moloney**, University of South Florida Clean Energy Research Center, Tampa, FL, United States, **Eydhah Almatrafi**, University of South Florida, Tampa, FL, United States, **D. Yogi Goswami**, University of South Florida, Tampa, FL, United States, **Elias Stefanakos**, University of South Florida, Tampa, FL, United States* **Performance Analysis of a Shell-and-Tube Latent Heat Storage Unit under Condition of Heat Flux** Technical Paper Publication: PowerEnergy2017-3209 *C.X Guo, X.L Wei, Zhengzhou University, Zhengzhou, China* **Experimental Investigation on the Performance of the Organic Working Fluid Scroll Expander under the Variable Conditions** Technical Paper Publication: PowerEnergy2017-3320 ***Bo Zemin, Yuping Wang**, Shanghai Jiao Tong University, Shanghai, Shanghai, China, **Zhenkun Sang,** Shanghai Jiaotong University, Shanghai, Shanghai, China, **Xiaojing Lv**, **Yiwu Weng**, Shanghai Jiao Tong University, Shanghai, China* **Performance Study on Intermediate Temperature Solid Oxide Fuel Cell and Gas Turbine Hybrid System Fueled with Biomass Gas** Technical Paper Publication: PowerEnergy2017-3346 ***Xiaoyi Ding**, **Xiaojing Lv**, **Yiwu Weng**, Shanghai Jiao Tong University, Shanghai, shanghai, China* **Thermal Performance of Steam Receiver in Tower-type Solar Power Plants** Technical Paper Publication: PowerEnergy2017-3482 ***Kai Yan**, Shanghai Boiler Works, Ltd., Shanghai, China, **Wu Xiao Jiang**, Shanghai Boiler Works Co., Ltd. (SBWS), Shanghai, China, **Jianbin Liu**, Shanghai Boiler Works, Ltd., Shanghai, China*	**A GPSS Based on Active Power Signal and Its Effective Frequency Boundary** Technical Paper Publication: PowerEnergy2017-3165 ***Yanghai Li,** State Grid Hubei Electric Power Research Institute, Wuhan, China, **Tao Yang**, Huazhong University of Science and Technology, Wuhan, China* **Reliable Analysis on Fast Valving of Ultra-Supercritical Unit under Transient Fault Conditions** Technical Paper Publication: PowerEnergy2017-3230 ***Yu Cai**, **Wei Li**, Zhejiang University, Hangzhou, China, **Bao Zhang**, **Wenjian Wu**, Zhejiang Electric Power Research Institute of State Grid Corporation, Hangzhou, China, **Deren Sheng**, Jianhong Chen, Zhejiang University, Hangzhou, Zhejiang, China* **The Analysis Of UHV Transmission's Impact On Steam Turbine Operation** Technical Paper Publication: PowerEnergy2017-3147 ***Jinlong Liao**, Zhejiang University, Hangzhou in China, **Zhihao Luo**, Electric Power Research Institute of State Grid, Zhejiang Electric Power Company, Hangzhou, China, **Feng Yin**, Electric Power Research Institute of State Grid, Zhejiang Electric Power Company, Hang Zhou, China, **Bo Cheng**, Electric Power Research Institute of State Grid Zhejiang Electric Power Company, Hangzhou, China, **Zitao Yu**, Zhejiang University, Hangzhou/Zhejiang, China, **Wei Li**, Deren Sheng, Zhejiang University, Hangzhou, Zhejiang, China*	**Influence of Feedwater TOC on Steam Cation Conductivity** Technical Paper Publication: PowerEnergy2017-3023 ***Hong Xu,** Jiangsu Frontier Electric Technology Company, LTD, Nanjing, Jiangsu, China* **Evaluation and Application of Hard Coatings for Steam Turbine** Technical Paper Publication: PowerEnergy2017-3440 ***Liang Yan,** Toshiba Corporation Power and Industrial Systems R&D Center, Yokohama, Japan, **Yujiro Nakatani**, **Masayuki Yamada**, Toshiba Corporation / Power & Industrial Systems R&D Center, Yokohama, Japan, **Toru Abe**, Toshiba Corporation / Keihin Product Operations / Turbine Design and Assembling Department, Yokohama, Japan, **Koichi Kitaguchi**, **Yasunori Ono**, Toshiba Corporation / Thermal Power Services Engineering Department, Kawasaki, Japan, **Kenji Yamamoto**, KOBE Steel, LTD /Materials Research Laboratory, Kobe, Hyogo, Japan, **Jun Munemasa**, KOBE Steel, LTD / Advanced Products & Technology Department, Takasago-city, Hyogo, Japan* **Advanced Corrosion Mapping System for Entergy Boiler Tube Inspection.** Technical Presentation: PowerEnergy2017-3478 ***Todd Edwards**, Team Industrial Services, Alvin, TX, United States, **Damian Shaheen**, Team Industrial Services, Lafayette, LA, United States, **John Dofflemyer**, Team Industrial Services, Sulphur, LA, United States, **Shelley Hacker**, Nisco, Westlake, LA, United States* **Stress Analysis vs. Risk Analysis for Determinng Locations for Inspection on High Energy Piping Systems** Technical Presentation: PowerEnergy2017-3903 ***Pamela Hamblin**, Thielsch Engineering Inc., Boca Raton, FL, United States*

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY
TRACK 1-12: THERMAL HYDRAULICS AND COMPUTATIONAL FLUID DYNAMICS	**TRACK 1-13: ENERGY WATER SUSTAINABILITY**	**TRACK 2-2: CONCENTRATING SOLAR POWER**
Session 1-12-6: TH and CFD 6	**Session 1-13-3: Effluent Discharge Management at Thermal Power Plants I**	**Session 2-2-5: Thermal Energy Storage**
Charlotte Convention Center West, 210B	**Charlotte Convention Center West, 202B**	**Charlotte Convention Center West, 201B**
Session Organizer: **George Mesina,** Idaho National Laboratory, Idaho Falls, ID, United States	Session Organizer: **Jessica Mullen**, US DOE/ National Energy Technology Laboratory, Pittsburgh, PA, United States	Session Organizer: **Nathan Schuknecht**, SkyFuel, Lakewood, CO, United States
3:45 - 5:15 PM **Effect of Apex Dimension on the Performance of a Newly Designed Ribbed Hydrocyclone** Technical Presentation: PowerEnergy2017-3088 ***Gayatree Patra,*** *Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, India* **The Hydraulic Characteristics of a Submersible Pump System with Two-Way Passage** Technical Presentation: PowerEnergy2017-3825 ***Chao Liu****, Yangzhou University, Yangzhou, China,* ***Qinglian Zhou****, Lianyungang Water Resources Planning and Design Institute Ltd., Lianyungang, Jiangsu, China* **Computational Fluid Dynamics Study of the Effect of Piston Head Crevice Width in a Rapid Compression Machine.** Technical Presentation: PowerEnergy2017-3750 ***Oku Nyong****,* ***Simon Blakey****, University of Sheffield, Sheffield, United Kingdom,* ***Robert Woolley****, The University of Sheffield, Sheffield, United Kingdom* **Energy Absorption Performance of a Zeolite-Liquid System Enhanced by Nanoporous Material Thermal Theatment** Technical Presentation: PowerEnergy2017-3777 ***Yafei Zhang****, Xi'an Shiyou University, Xi'an, China,* ***Rui Luo****, Xi'an Thermal Power Research Institute, Xi'an, China,* ***Jie Zheng****, Xi'an Shiyou University, Xi'an, China,* ***Yanbin Qin****,* ***Yihua Dou****, Xi'an Shiyou University, Xi'an, China,* ***Qulan Zhou****, Xi'an Jiaotong University, Xi'an, Shaanxi, China*	**Wireless Networked Sensors in Water for Heavy Metal Detection** Technical Presentation: PowerEnergy2017-3549 ***Yuhong Kang****,* ***Liz Gladwin****,* ***Michelle Homer****,* ***Lee Williams****,* ***William Harrison****,* ***Richard Claus****,* ***Hang Ruan,*** *NanoSonic, Inc., Pembroke, VA, United States* **Online Monitoring of Regulated Constituents in FGD Wastewater** Technical Presentation: PowerEnergy2017-3626 ***Curtis Thompson,*** *Southern Research, Birmingham, AL, United States,* ***Samuel Misko****,* ***Lee Moradi****, University of Alabama at Birmingham, Birmingham, AL, United States,* ***Corey Tyree****, Southern Research, Birmingham, AL, United States* **Recovered Water Quality from Pilot-Scale Volume Reduction Technologies for Flue Gas Desulfurization Wastewater** Technical Presentation: PowerEnergy2017-3868 *Jay Renew, Southern Research, Cartersville, GA, United States* **Technoeconomic Optimization of Waste Heat Driven Forward Osmosis for Flue Gas Desulfurization Wastewater Treatment** Technical Presentation: PowerEnergy2017-3208 ***Daniel B Gingerich****,* ***Tim Bartholomew****,* ***Meagan S Mauter****, Carnegie Mellon University, Pittsburgh, PA, United States* **Corrosion of Heat-Exchanger Alloys in Flue Gas Desulfurization Wastewater Treatment Systems** Technical Presentation: PowerEnergy2017-3900 ***Steven C. Kung, John P. Shingledecker, Jeffery B. Preece,*** *Electric Power Research Institute, Charlotte, NC, United States*	**Parametric Study of Cascade Latent Heat Thermal Storage System for Concentrating Solar Power Plants** Technical Paper Publication: PowerEnergy2017-3096 ***Ben Xu,*** *The University of Texas Rio Grande Valley, Edinburg, TX, United States,* ***Yawen Zhao****, Institute of Engineering Thermophysics, Chinese Academy of Sciences, Beijing, China,* ***Hermes Chirino****, University of Texas Rio Grande Valley, Edinburg, TX, United States,* ***Peiwen Li****, University Of Arizona, Tucson, AZ, United States* **Design of Particle-Based Thermal Energy Storage for a Concentrating Solar Power System** Technical Paper Publication: PowerEnergy2017-3099 ***Zhiwen Ma****, National Renewable Energy Laboratory, Lakewood, CO, United States,* ***Ruichong Zhang****, Colorado School Of Mines, Golden, CO, United States,* ***Fadi Sawaged****, CSM, Golden, CO, United States* **Modeling of a Counter-Flow Re-Oxidation Reactor for Extraction of Thermochemical Energy Stored in Particulate Media** Technical Presentation: PowerEnergy2017-3904 ***Sean Babiniec****,* ***Kevin Albrecht****,* ***Andrea Ambrosini****,* ***James Miller****, Sandia National Laboratories, Albuquerque, NM, United States* **Dynamic Model of a Particle/sCO2 Heat Exchanger for Transient Analysis and Control** Technical Presentation: PowerEnergy2017-3913 ***Maria Fernández-Torrijos****, Universidad Carlos III de Madrid, Madrid, Spain,* ***Kevin Albrecht****,* ***Clifford Ho****, Sandia National Laboratories, Albuquerque, NM, United States* **Development of Test Unit for Open Channel Fluidized Particulate Heat Exchanger** Technical Presentation: PowerEnergy2017-3950 ***Clayton Nguyen****, Georgia Institute of Technology, Atlanta, GA, United States,* ***Clifford Ho****, Sandia National Laboratories, Albuquerque, NM, United States,* ***Sheldon M. Jeter****, Georgia Institute of Technology, Atlanta, GA, United States,* ***Zhiwen Ma****, National Renewable Energy Laboratory, Lakewood, CO, United States*

ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY

TRACK 2-6: GEOTHERMAL POWER, HYDRO/OCEAN POWER, AND EMERGING ENERGY TECHNOLOGIES

Session 2-6-3: Hydro/Ocean Power - II

Charlotte Convention Center West, 202A

Session Organizer: **Ben Xu,** The University of Texas Rio Grande Valley, Edinburg, TX, United States

3:45 - 5:15 PM

Evaluation of s Model Helical Bladed Hydrokinectic Turbine Characteristics from In-situ Experiments
Technical Paper Publication: PowerEnergy2017-3490
Parag Talukdar, *Indian Institute of Technology Guwahati, Assam, India,* ***Vinayak Kulkarni****, Indian Institute of Technology Guwahati, Guwahati, India,* ***Dipankar Dehingia****, Assam Power Generation Corporation Limited, Guwahati, India,* ***Ujjwal K. Saha****, Indian Institute of Technology Guwahati, Guwahati, India*

The Deployment of the Taiwan First Tidal Energy Capture System
Technical Presentation: PowerEnergy2017-3881
Bang Fuh Chen*, National Sun Yat Sen University, Kaohsiung, Taiwan*

11:00 AM - 12:30 PM

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING	**TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING**	**TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING**
Session 1-1-7: Coal Combustion Systems	**Session 1-1-10: Advanced Power Plant Concepts**	**Session 1-1-14: Advanced Emission Control Technology III**
Charlotte Convention Center West, 205	**Charlotte Convention Center West, 204**	**Charlotte Convention Center West, 206B**
Session Organizer: **Boris Chudnovsky,** Israel Electric Corporation, Haifa, Israel Session Co-Organizer: **Xiao P. Zhang**, Huazhong University of Science and Technology, Wuhan, Hubei, China	Session Organizer: **Ezra Bar-Ziv,** Michigan Technological University, Houghton, MI, United States Session Co-Organizer: **Jianwen Xie**, Shenhua Guohua (Beijing) Electric Power Research Institute Co., Ltd, Beijing, China	Session Organizer: **Christopher Blazek**, Benetech Inc., Oswego, IL, United States Session Co-Organizer: **Sangseok Yu**, Chungnam National University, Daejeon, Korea (Republic)
Study of Gas Temperature Characteristics at the Bottom of the Platen Heaters of Boiler Employing Shenhua Bituminous Coal Based on Two-Level Air Staging Combustion System Technical Paper Publication: PowerEnergy2017-3118 ***Jianwen Xie**, Shenhua Guohua (Beijing) Electric Power Research Institute Company, Ltd, Beijing, China, **Weidong Fan**, Shanghai Jiao Tong University, Shanghai, China, **Jianwen Zhang**, Shanghai Boiler Works Ltd., Shanghai, China* **The Effect of Calcium-bearing Mineral on Ash Melting Behavior during Zhundong Coal Combustion** Technical Paper Publication: PowerEnergy2017-3221 ***Haidong Ma**, Xi'an Jiaotong University, Xi'an, Shaanxi, China, **Yungang Wang**, Qinxin Zhao, Xi'an Jiaotong University, Xi'an, Shaanxi, China* **Ash Melting Behavior of Blended Coal with Chinese Xinjiang High-Alkali Coal** Technical Paper Publication: PowerEnergy2017-3495 ***Wu Xiao Jiang**, Shanghai Boiler Works Co., Ltd. (SBWS), Shanghai, China, **Jianwen Zhang**, Shanghai Boiler Works Ltd., Shanghai, China, **Xiang Zhang**, Shanghai Boiler Works, Ltd, Shanghai, China, **Nan Chen**, **Kai Yan**, Shanghai Boiler Works, Ltd., Shanghai, China* **Effect of Hydrothermal Dewatering on the Spontaneous Combustion Propensity of Ximeng Lignite** Technical Presentation: PowerEnergy2017-3571 ***Shao Yuan**, **Jianzhong Liu**, **Qingqing Zhou**, **Zhihua Wang**, **Junhu Zhou**, Kefa Cen, Zhejiang University, Hangzhou, Zhejiang, China*	**Improving Efficiency of Simple Cycle Power Plants** Technical Presentation: PowerEnergy2017-3869 ***Ali Bisher,** Saudi Electrical Company, Najran, Najran, Saudi Arabia* **Development of a Standalone, Liquid Fueled Miniature Power Generation System** Technical Paper Publication: PowerEnergy2017-3327 ***Naman Jain**, Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, India, **Vaibhav Arghode**, Indian Institute of Technology Kanpur, Kanpur, UP, India* **Advanced Power Plant Concept with Application of Exhaust CO_2 to Liquid Fuel Production** Technical Paper Publication: PowerEnergy2017-3037 ***Boris Chudnovsky**, Israel Electric Corporation, Haifa, Israel, **Alexander Talanker**, Israel Electric Company, Haifa, Israel, **Leonid Levin**, **Jacob Cohen**, **Alina Kunin**, Israel Electric Corporation, Haifa, Israel, **Jacob Karni**, Weizmann Institute, Rehovot, Israel, **Roi Harpaz**, NewCO2 Fuels, Rehovot, Israel* **Fast, Low Cost Unloading of Fuels from 100-Ton Car Unitrains** Technical Paper Publication: PowerEnergy2017-3566 ***George D. Dumbaugh,** PE, Kinergy Corporation, Louisville, KY, United States*	**Simultaneous Removal of SO_2 and NO by using Fenton Reagent Solution in a Lab-scale Bubbling Reactor** Technical Paper Publication: PowerEnergy2017-3044 ***Hua Xiaoyu, Xie Weiyang,** Zhejiang Energy Group R&D, Hangzhou, China, **Lv Hongbing**, Zhejiang Energy Group Fuxing Fuel Company, Ltd, Hangzhou, China, **Hu Qing**, **Yang Yang**, Zhejiang Energy Group R&D, Hangzhou, China/Hangzhou, China* **Influence of Wall-Sofa on the Gas Temperature Deviation of a 660 MW Tangentially Coal-Fired Boiler** Technical Paper Publication: PowerEnergy2017-3411 ***Qian M. Chen**, Shajiao C Power Plant of Guangdong Yudean Group CO., LTD, Dongguan, Guangdong, China, **Peng Tan**, Huazhong University of Science and Technology, Wuhan, Hubei, China, **Xiu L. He**, Shajiao C Power Station of Guangdong Yuedian Grid Co, Ltd, Dongguan, Guangdong, China, **Yu N. Liu,** Shajiao C Power Plant of Guangdong Yudean Group CO., LTD, Dongguan, Guangdong, China, **Zhuang Y. Li**, Shajiao C Power Station of Guangdong Yuedian Grid Co, Ltd, Dongguan, Guangdong, China, **Cheng Zhang**, **Qing Y. Fang, Gang Chen**, Huazhong University of Science and Technology, Wuhan, Hubei, China* **An investigation on NO Removal using Na_2CO_3 Wet Scrubbing after Deep Oxidation by Ozone** **Technical Presentation: PowerEnergy2017-3465** ***Jiaming Shao, Zhihua Wang, Ye Yang, Fawei Lin, Yong He, Yanqun Zhu, Kefa Cen,** Zhejiang University, HangZhou, Zhejiang, China* **Synergetic Denitrification and Desulfurization at Low Temperature Using a Superoxide Absorbent** **Technical Presentation: PowerEnergy2017-3535** ***Yinghui Han**, North China Electric Power University, Baoding, Hebei, China, **Ye Wu**, Nanjing University of Science and Technology, Nanjing, Jiangsu, China*

11:00 AM - 12:30 PM

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING	**TRACK 1-2: COMBUSTION TURBINES**	**TRACK 1-3: BOILERS & HEAT RECOVERY STEAM GENERATORS**
Session 1-1-17: Advanced Internal Combustion Engines - II	**Session 1-2-4: Gas Turbine Compressor Upgrades**	**Session 1-3-7: Steam Generator Performance and Testing II**
Charlotte Convention Center East, 215	**Charlotte Convention Center West, 206A**	**Charlotte Convention Center West, 209A**
Session Organizer: **Youssef Attai,** Helwan University, Cairo, Egypt Session Co-Organizer: **Fashe Li**, Kunming University of Science and Technology, Kunming, China	Session Organizer: **Thomas Cavalcante,** Sargent & Lundy Consulting, Chicago, IL, United States	Session Organizer: **Paul Weitzel**, retired, Canal Fulton, OH, United States
Comparison of Single and Multiple Injection Strategies in a Butanol Diesel Dual Fuel Engine Technical Paper Publication: PowerEnergy2017-3211 ***Jaykumar Yadav,*** *Ramesh A, Department of Mechanical Engineering, Chennai, Tamilnadu, India*	**Axial Flow Compressor Real-Time Tip Clearance Analysis and Experimental Verification** Technical Paper Publication: PowerEnergy2017-3304 ***Lu Cheng, Shizhi Zhao, Weibing Liu, Song Ai, Xiaoping Fan,*** *Dongfang Electric Corporation, Deyang, Sichuan, China*	**Numerical Simulation of Combustion Performance for Swirl Burner with Adjustable Flaring Appling to 600 MW Opposed Firing Boiler** Technical Presentation: PowerEnergy2017-3776 ***Rui Luo****, Xi'an Thermal Power Research Institute, Xi'an, China,* ***Qulan Zhou****, Xi'an Jiaotong University, Xi'an, Shaanxi, China,* ***Tao Wu****,* ***Zhiwei Wang****, Xi'an Thermal Power Research Institute, Xi'an, China*
Experimental Study of Performance and Exhaust Emissions of a VCR Diesel Engine Fuelled with Oxygenated Additives Technical Paper Publication: PowerEnergy2017-3236 ***Ashish Nayyar****, Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur, Rajasthan, India,* ***Dilip Sharma****, Shyam Lal Soni, MNIT Jaipur, Jaipur, Rajasthan, India,* ***Alok*** *Mathur, Swami Keshvanand Institute of Technology, Management and Gramothan, Jaipur, Rajasthan, India*	**Shear-Driven Gas Compression for Ultra-High Speed Compliant Foil-Based Bladeless Turbocompressors Part 1: Experimental Proof of Concept** Technical Paper Publication: PowerEnergy2017-3374 ***Hooshang Heshmat****, Mohawk Innovative Tech Inc., Albany, NY, United States,* ***James F. Walton II****, Mohawk Innovative Technology, Inc., Albany, NY, United States*	**Using On-Line Acoustic Monitoring to Locate Tube Leaks** Technical Presentation: PowerEnergy2017-3865 ***Ian du Bois****, Mistras Group, Princeton Junction, NJ, United States*
Experimental study on the Quantitative Relationship between Oxidation Stability and Composition of Biodiesel Technical Presentation: PowerEnergy2017-3287 ***Fashe Li****, Yundi Huang, Kunming University of Science and Technology, Kunming, China*	**A Bladeless Turbocompressor Concept: Shear Driven Gas Compression with Deformable Structures—PART 2 Operating Principles and Theory** Technical Paper Publication: PowerEnergy2017-3375 ***Hooshang Heshmat,*** *Mohawk Innovative Tech Inc, Albany, NY, United States,* ***Jose Luis Cordova,*** *Mohawk Innovative Technology, Inc., Albany, NY, United States*	

THURSDAY, JUNE 29 — 11:00 AM - 12:30 PM

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-9: STEAM TURBINE-GENERATORS, ELECTRIC GENERATORS, TRANSFORMERS, SWITCHGEAR, AND ELECTRIC BOP & AUXILIARIES	**TRACK 1-11: PLANT OPERATIONS, MAINTENANCE, AGING MANAGEMENT, RELIABILITY AND PERFORMANCE**	**TRACK 1-12: THERMAL HYDRAULICS AND COMPUTATIONAL FLUID DYNAMICS**
Session 1-9-4: New Methods for Power Generation	**Session 1-11-6: Asset Performance, Management and Reliability Optimization, and Generator Capability Coordination with NERC Standard PRC-019-2**	**Session 1-12-7: TH and CFD 7**
Charlotte Convention Center West, 210A	**Charlotte Convention Center West, 201A**	**Charlotte Convention Center West, 210B**
Session Organizer: **James Wieters**, EPRI, Charlotte, NC, United States Session Co-Organizer: **Bob Scott**, GE Power, Midlothian, VA, United States	Session Organizer: **Bo Zemin,** Shanghai Jiao Tong University, Shanghai, China Session Co-Organizer: **Noman Sadi**, Arkansas State University, Jonesboro, AR, United States, **Lele Yu**, Shanghai University of Electric Power, Shanghai, Shanghai, China	Session Organizer: **Cheng Xu,** FS-elliott, Export, PA, United States Session Co-Organizer: Imran Aziz, National University of Sciences and Technology, Rawalpindi, Pakistan
Reliability Design and Compliance Methods of a Complete Set of 1000MW Ultra-supercritical Thermal Generating Units Technical Paper Publication: PowerEnergy2017-3163 ***Jinyuan Shi,*** *Shanghai Power Equipment Research Institute, Shanghai, China,* ***DENG Zhicheng****, Shanghai Power Equipment Research Institute, Shanghai, China*	**Enhancement of an Equipment Reliability Program with Smart, Connected Power Plant Assets** Technical Paper Publication: PowerEnergy2017-3269 ***Michael Reid, Tony File,*** *Duke Energy, Charlotte, NC, United States*	**The Flow Characteristic Investigation on working fluid of Capillary Pump in AMTEC** Technical Presentation: PowerEnergy2017-3651 ***Chunliang Zhou****, Harbin Engineering University, Heilongjiang Province, Heilongjiang, China*
Dynamic Modeling and System Performance Prediction for Waste Heat Recovery Organic Rankine Cycles Technical Paper Publication: PowerEnergy2017-3260 ***Liuchen Liu, Tong Zhu, Jiacheng Ma, Tongji*** *University, Shanghai, China*	**Knowledge Management in Managing/ Optimizing Performance of Power Generating Assets** Technical Paper Publication: PowerEnergy2017-3760 ***Komandur Sunder Raj****, Power & Energy Systems Services, Oradell, NJ, United States*	**The Development of High Performance Centrifugal Compressor using CFD and Other Design Considerations** Technical Paper Publication: PowerEnergy2017-3607 ***Cheng Xu,*** *FS-elliott, Export, PA, United States,* ***Michael Muller****, FS-elliott, Pittsburgh, PA, United States*
Energy Efficiency Matrix Optimization Analysis for 700 H-USC Steam Turbine using BEST Turbine System Technical Presentation: PowerEnergy2017-3752 ***Tao Chen, Shiwang Fan****, Shanghai Turbine Works Company, Ltd, Shanghai, Shanghai, China*	**Coordination of Generating Unit Capabilities with Excitation Limiters, Voltage Controls, and Protection** Technical Presentation: PowerEnergy2017-3841 ***Ric Austria, Francis Luces, Ted Christopher Garcia, Cherry Mae Bautista,*** *Pterra Consulting, Albany, NY, United States*	
The Technology Development of High Efficiency Steam Turbine Technical Paper Publication: PowerEnergy2017-3339 ***Gang Yu, Mingjun*** *Hou, Xuan Zhai, DongFang Turbine Company, Ltd., Deyang SiChuan, China*		

11:00 AM - 12:30 PM

THURSDAY, JUNE 29 — 11:00 AM - 12:30 PM

ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY
TRACK 2-2: CONCENTRATING SOLAR POWER	**TRACK 2-6: GEOTHERMAL POWER, HYDRO/OCEAN POWER, AND EMERGING ENERGY TECHNOLOGIES**	**TRACK 2-7: CHP AND HYBRID POWER & ENERGY SYSTEMS**
Session 2-2-6: Advanced Power Cycles	**Session 2-6-1: Geothermal Power and Emerging Technologies**	**Session 2-7-1: CHP & CCHP I**
Charlotte Convention Center West, 201B	**Charlotte Convention Center West, 202A**	**Charlotte Convention Center East, 214**
Session Organizer: **Zhiwen Ma,** National Renewable Energy Laboratory, Lakewood, CO, United States	Session Organizer: **Craig Turchi,** National Renewable Energy Laboratory (NREL), Golden, CO, United States	Session Organizer: **Alta Knizley,** Mississippi State University, Mississippi State, MS, United States
11:00 AM - 12:30 PM **Dynamic Model of Supercritical CO2 Brayton Cycles Driven by Concentrated Solar Power** Technical Paper Publication: PowerEnergy2017-3573 ***Rodrigo Barraza Vicencio**, Universidad Técnica Federico Santa María, Valparaíso, Chile, **Gregory Berthet Couso**, Universidad Tecnica Federico Santa Maria, Valparaiso, Chile, **Ricardo Vasquez** Padilla, Southern Cross University, Lismore, NSW, Australia, **Yen Chean Soo Too**, CSIRO Energy Technology, Newcastle,, NSW, Australia, **John Pye**, Australian National University, Canberra, ACT, Australia* **Simulation of Supercritical Carbon Dioxide Brayton Recompression Cycles with Regenerative Heat Exchangers** Technical Presentation: PowerEnergy2017-3946 ***Evan Reznicek, Robert Braun**, Colorado School of Mines, Golden, CO, United States* **Experimental Testing of Periodic Flow Regenerators for use in a Supercritical CO2 Brayton Cycle** Technical Presentation: PowerEnergy2017-3943 ***Jacob Hinze,** University of Wisconsin-Madison, Madison, WI, United States, **Gregory Nellis**, University of Wisconsin, Madison, WI, United States, **Mark Anderson**, University of Wisconsin, Madison, WI, United States* **Design and Solar Operation of a Supercritical Carbon Dioxide Test Loop** Technical Presentation: PowerEnergy2017-3805 ***Robbie McNaughton**, CSIRO, Newcastle, NSW, Australia* **CFD simulation and Numerical Study on 3 KW Driven Inline Alpha Stirling Engine** Technical Presentation: PowerEnergy2017-3821 ***Joseph Soliman**, **Youssef Attai**, Helwan University, Cairo, Cairo, Egypt*	**Investigation of Thermal Storage Integration into a Geothermal Plant with Solar Hybridization** Technical Presentation: PowerEnergy2017-3426 ***Guangdong Zhu,** National Renewable Energy Laboratory, Golden, CO, United States, **Greg Mungas**, Hyperlight Energy, Lakeside, CO, United States* **Report on the Latest Progress of DOE's Geothermal Electricity Technology Evaluation Model (GETEM)** Technical Presentation: PowerEnergy2017-3510 ***Guangdong Zhu**, National Renewable Energy Laboratory, Golden, CO, United States, **Tom Williams**, NREL, Golden, CO, United States* **Heat Transfer with Thermal Waves and Resonance** Technical Presentation: PowerEnergy2017-3031 ***Liqiu Wang**, University of Hong Kong, Hong Kong* **Method to Design a Hydro Tesla Turbine for Sensitivity to Varying Laminar Reynolds Number Modulated By Changing Working Fluids Viscosity** Technical Paper Publication: PowerEnergy2017-3442 ***Mubarak Alrabie**, Faisal Altamimi, Muhammad Altarrgerny, Fatemeh Hadi, **Muhammad Akbar**, Tennessee State University, Nashville, TN, United States, **Matthew Traum**, Engineer Inc, Nashville, TN, United States*	**Integration of CHP into a Microgrid for Highest Resiliency, Reliability and Redundancy** Technical Presentation: PowerEnergy2017-3046 ***Nandini Mouli,** eSai LLC, Reisterstown, MD, United States* **Use of an Artificial Neural Network Trained by Complimentary Quadratic Programming for Real Time Dispatch Optimization and Control of Microgrids** Technical Presentation: PowerEnergy2017-3916 ***Nadia Panossian**, **Dustin McLarty**, Washington State University, Pullman, WA, United States* **Peak-shaving Ratio Analysis of the Natural Gas Combined Heat and Power Plant with Distributed Peak-shaving Heat Pumps** Technical Paper Publication: PowerEnergy2017-3119 ***Xiling Zhao**, **Xiaoyin Wang**, **Tao Sun**, Tsinghua University, Beijing, China* **Influence of Seasonal Heat Load Variation on Daily Optimal Scheduling Of CHP System with Renewable Energy and Heat Storage** Technical Paper Publication: PowerEnergy2017-3095 ***Qun Chen**, **Kang Hu**, **Mengqi Zhang**, **Lei Chen**, **Fei Xu**, **Yong Min**, Tsinghua University, Beijing, China*

THURSDAY, JUNE 29 — 2:00 - 3:30 PM

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING	**TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING**	**TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING**
Session 1-1-11: Advanced Instrumentation	**Session 1-1-15: Advanced Emission Control Technology IV**	**Session 1-1-18: Advanced Internal Combustion Engines - III**
Charlotte Convention Center West, 204	**Charlotte Convention Center West, 206B**	**Charlotte Convention Center East, 215**
Session Organizer: **Boris Chudnovsky,** Israel electric corporation, Haifa, Israel Session Co-Organizer: **Bo Zhang,** Xi'an Thermal Power Research Institute Co., Ltd, Xi'an, Shaanxi, China	Session Organizer: **Christopher Blazek,** Benetech Inc., Oswego, IL, United States Session Co-Organizer: **Peng Tan**, Huazhong University of Science and Technology, Wuhan, Hubei, China	Session Organizer: **Joseph Gerard Reyes,** University of the Philippines College of Engineering, Quezon City, Philippines Session Co-Organizer: **Chien Pin Chen**, Manhattan College, Riverdale, NC, United States
2:00 - 3:30 PM **In-situ Measurement of Multiple Parameters in Flame Environments Using Tunable Diode Laser Absorption Spectroscopy** Technical Presentation: PowerEnergy2017-3344 ***Yunchu Zhai, Fei wang, Qi Wu, Meiyi LI,*** *Zhejiang University, Hangzhou, Zhejiang, China,* ***Huiping Xiao, Ke Yuan,*** *Nantong Wanda Boiler Co. Ltd, Nantong, China,* ***Mingjiang Ni, Kefa Cen****, Zhejiang University, Hangzhou, China,* ***Yanming Xuan****, Nantong Wanda Boiler Co. Ltd, Nantong, China,* ***Hong Dong****, Zhejiang University, Hangzhou, Zhejiang, China*	**Effects of Potassium Compounds on Transformation Behavior of Sulfur during Pyrolysis of Petroleum Sludge** Technical Presentation: PowerEnergy2017-3133 ***Bingcheng Lin, Qunxing Huang****, Zhejiang University, Hangzhou, Zhejiang, China*	**Emission and Performance Analysis of a Light Duty Common Rail Direct Inject Engine Fueled by CME-Diesel Blends** Technical Paper Publication: PowerEnergy2017-3496 ***Jose Gabriel Mercado,*** *University of the Philippines Diliman, Quezon City, Manila, Philippines,* ***Edwin N. Quiros****, University of the Philippines, Quezon City, National Capital Region, Philippines*
	The effect of O2 on Ca-Mg-Al hydrotalcites-like compounds (HTLs) for the removal of HCl at high temperature Technical Presentation. PowerEnergy2017-3134 ***Jun Cao, Baosheng Jin, Tianyu Chen,*** *Southeast University, Nanjing, China*	**Performance of a Supercharged Engine Fueled with a CTL Binary Mixture at Different Injection Pressures** Technical Paper Publication: PowerEnergy2017-3619 ***Valentin Soloiu, Jose Moncada,*** *Georgia Southern University, Statesboro, GA, United States,* ***Martin Muinos****, Georgia Southern University, Cumming, GA, United States,* ***Remi Gaubert****,* ***Johnnie Williams****,* ***Mary Breen-Lyles****,* ***Mindy Wagenmaker****, Georgia Southern University, Statesboro, GA, United States*
Experimental Study of Spray Flame Characteristics in Hot-diluted Oxidant through Advanced Image Processing Technique Technical Paper Publication: PowerEnergy2017-3351 ***Yuan Li, Hao Zhou, Ning Li, Kefa Cen,*** *Zhejiang University, Hangzhou, Zhejiang, China*	**A Comparative CFD Simulation Study of Two-channel and Three-channel Claus Reactors** Technical Paper Publication: PowerEnergy2017-3262 ***Shan Huang,*** *Xi'an Jiaotong University, Xi'an, China,* ***Qulan Zhou****, Xi'an Jiaotong University, Xi'an, Shaanxi, China,* ***Na Li****, Xi'an Jiaotong University, Xi'an, Shanxi, China,* ***Fangyong Tian****, Zhongyuan Oilfield Company, Puyang, China,* ***Lisheng Zhang****, Natural Gas Purification Plant of Puguang Gasfield in Dazhou, Dazhou, China*	
Study on the Detection of Three-dimensional Particle Temperature, Particle Concentration and H2O Concentration Distributions by Multispectral Imaging System Technical Presentation: PowerEnergy2017-3814 ***Zhengchao Xie, Fei Wang,*** *Zhejiang University, Hangzhou, Zhejiang, China*	**The Regeneration Effect of H_2SO_4 on V-W-TiO_2 SCR Catalyst Deactivated by Alkali Metal** Technical Paper Publication: PowerEnergy2017-3144 ***Yongbo Du****,* ***Chang'an Wang****,* ***Xiaoyang Wei****, Xi'an Jiaotong University, Xi'an, China,* ***Yonggang Zhao****, Shenhua Shendong Power Company LTD., Shenmu, China,* ***Qiang Lv****, Xi'an Jiaotong University, Xi'an, China,* ***Peiqing Cao****, Shenhua Shendong Power Company LTD., Shenmu, China,* ***Lei Deng****,* ***Defu Che****, Xi'an Jiaotong University, Xi'an, China*	**Prediction Study of Split-Diesel Engine Performance** Technical Presentation: PowerEnergy2017-3835 ***Youssef Attai,*** *Helwan University, Cairo, Egypt*

THURSDAY, JUNE 29 — 2:00 - 3:30 PM

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING	**TRACK 1-2: COMBUSTION TURBINES**	**TRACK 1-7: RENEWABLE ENERGY SYSTEMS: SOLAR, WIND, HYDRO AND GEOTHERMAL**
Session 1-1-20: Advanced Gasification and Pyrolysis Systems II	**Session 1-2-5: Gas Turbine Performance Enhancements**	**Session 1-7-6: Advanced Technologies Solar II**
Charlotte Convention Center West, 205	**Charlotte Convention Center West, 206A**	**Charlotte Convention Center, West, 210B**
Session Organizer: **Ashwani Gupta**, University of Maryland, College Park, MD, United States Session Co-Organizer: **Haoran DING**, Huazhong University of Science and Technology, Wuhan, China	Session Organizer: **Tony Clark,** Power Engineers, Inc., Meridian, ID, United States	Session Organizer: **Antoni Gil Pujol**, Massachusetts Institute of Technology, Cambridge, MA, United States Session Co-Organizer: **Ben Xu**, The University of Texas Rio Grande Valley, Edinburg, TX, United States
Outline of the Osaki Coolgen Project Technical Paper Publication: PowerEnergy2017-3333 ***Keiichi Ishida,*** *Osaki Coolgen Corporation, Hiroshima-Prefecture, Japan*	**New Tech Combined Cycle Gas Turbines (CCGT) - Analysis of Water Swirled Into Gas Turbine Technology** Technical Presentation: PowerEnergy2017-3191 ***Leonard Andersen,*** *Gas Turbine Water Swirled Into, New York, NY, United States*	**Modular Solar Systems for 24/7 Scalable, Flexible, Affordable Electricity** Technical Paper Publication: PowerEnergy2017-3155 ***Bruce Anderson,*** *247Solar Inc., Great Falls, VA, United States*
Development of High Efficiency Oxy-fuel IGCC System Technical Paper Publication: PowerEnergy2017-3024 ***Yuso Oki, Hiroyuki Hamada, Makoto Kobayashi, Isao Yuri, Saburo Hara,*** *CRIEPI, Yokosuka, Kanagawa, Japan*	**Analysis of the Aerodynamic Losses in a Supersonic Turbine** Technical Paper Publication: PowerEnergy2017-3624 ***Jorge Sousa,*** *Stanford University, Palo Alto, CA, United States,* ***Guillermo Paniagua,*** *Purdue University, West Lafayette, IN, United States,* ***Elena Collado-Morata,*** *Safran Helicopter Engines, Bordes, France*	**Numerical Simulation of High Temperature Solar Receiver and Thermal Receiver for Solar Micro Gas Turbine** Technical Paper Publication: PowerEnergy2017-3162 ***Koji Matsubara, Sho Isojima, Mitsuho Nakakura, Yuji Yamada, Shota Kawagoe,*** *Niigata University, Niigata, Japan*
Numerical Study of Effects of Operation Condition for Oxygen Blown Coal Gasifier in Oxy-Fuel IGCC Technical Paper Publication: PowerEnergy2017-3311 ***Kenji Tanno, Seongyool Ahn,*** *Central Research Institute of Electric Power Industry, Yokosuka, Kanagawa, Japan,* ***Hiroaki Watanabe,*** *Kyushu University, Fukuoka, Fukuoka, Japan*	**Effect of Nozzle Exit Conditions on the Near-Field Behavior of a Liquid Jet in a Uniform Cross Airflow** Technical Presentation: PowerEnergy2017-3811 ***Mohsen Broumand, Mahmoud Abdelazim Moussa, Graham Rigby, Madjid Birouk,*** *University of Manitoba, Winnipeg, MB, Canada*	**Conductivity Enhancement of PEDOT:PSS Transparent Electrode Via Addition Of Solid Acid For Flexible Solar Cells** Technical Presentation: PowerEnergy2017-3203 ***Falin Wu,*** *Chongqing University, Chongqing, China,* ***Pengcheng Li,*** *National University of Singapore, Singapore, Singapore,* ***Yongli Zhou, Wei Chen,*** *Chongqing University, Chongqing, China,* ***Jianyong Ouyang,*** *National University of Singapore, Singapore, Singapore,* ***Kuan Sun,*** *Chongqing University, Chongqing, China*
	Effect of Heat Soakage on Start-up Procedure of Heavy Duty Gas Turbines Technical Presentation: PowerEnergy2017-3955 ***Jeong ho Kim,*** *Inha University, Nam-gu, Incheon, Korea (Republic),* ***Tong-seop Kim,*** *Inha University, Incheon, Korea (Republic)*	**Optimization of the Solar Flux Distribution on a Finned Central Receiver Absorber for CSP Applications** Technical Presentation: PowerEnergy2017-3793 ***Philip Hoskinson,*** *SDSU, San Diego, CA, United States*
		Simulation of a High Temperature Particulate Hoist for Proposed Particle Heating Concentrator Solar Power Systems. Technical Presentation: PowerEnergy2017-3704 ***Kenzo Repole,*** *Georgia Institute of Technology, Roswell, GA, United States,* ***Sheldon Jeter,*** *Georgia Institute of Technology, Atlanta, GA, United States*
		The Experiment Equipment of Saving Water Consumption and Utilization of Solar Thermal Power Plants Cleaning Mirror Technology Technical Presentation: PowerEnergy2017-3863 ***Bayarjargal Enkhtaivan,*** *Huazhong University of Science and Technology, Wuhan, Hubei, China*

THURSDAY, JUNE 29 — 2:00 - 3:30 PM

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON PAOWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON PAOWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON PAOWER ENGINEERING (ICOPE-17)
TRACK 1-9: STEAM TURBINE-GENERATORS, ELECTRIC GENERATORS, TRANSFORMERS, SWITCHGEAR, AND ELECTRIC BOP & AUXILIARIES	**TRACK 1-11: PLANT OPERATIONS, MAINTENANCE, AGING MANAGEMENT, RELIABILITY AND PERFORMANCE**	**TRACK 1-13: ENERGY WATER SUSTAINABILITY**
Session 1-9-5 :Mechanical Aspects of Turbines, Generators and Auxiliaries	**Session 1-11-7: Gas Turbine and CHP Management and Fault Diagnosis, along with Gas Distribution Network Max Flow Prediction Modeling**	**Session 1-13-5: Water Consumption & Withdrawal at Thermal Power Plants**
Charlotte Convention Center West, 210A	**Charlotte Convention Center West, 201A**	**Charlotte Convention Center West, 202B**
Session Organizer: **Lyle Branagan,** Pioneer Motor Bearing Co., Kings Mountain, NC, United States Session Co-Organizer: **Thomas Bauer**, Svobatech, Inc., Wuerenlingen, Switzerland	Session Organizer: **Tarannom Parhizkar,** Sharif University of Technology, Los Angeles, CA, United States Session Co-Organizer: **Bo Zemin**, Shanghai Jiao Tong University, Shanghai, China	Session Organizer: **Erik Shuster,** US DOE/ National Energy Technology Laboratory, Pittsburgh, PA, United States
2:00 - 3:30 PM **Modeling and Nonlinear Dynamics Study on Rub-Impact Rotor System of 9F Gas Turbine with Temperature influence** Technical Presentation: PowerEnergy2017-3803 ***Rui Zhu, sumin wang, Qunkai Niu, Jianxing Ren, Yanru Zhang,*** *Shanghai University of Electric Power, Shanghai, Shanghai, China*	**Spray Properties with Various Spray Nozzles for Cooling Suction Air Of Gas Turbine by Means of a Phase Doppler Anemometry** Technical Paper Publication: PowerEnergy2017-3417 ***Asuka Takatsuki, Keitaro Motoi,*** *Gunma University, Kiryu, Gunma, Japan,* ***Katsuhiko Sugita,*** *Tokyo Electric Power Company Holdings, inc., Chiyoda-ku, Tokyo, Japan,* ***Shuichi Umezawa,*** *Tokyo Electric Power Company Holdings, Inc., Yokohama, Kanagawa, Japan,* ***Hisanobu Kawasima****, Tsuneaki Ishima, Gunma University, Kiryu, Gunma, Japan*	**Effects of Cooling Systems Operations on Withdrawal for Thermoelectric Power** Technical Paper Publication: PowerEnergy2017-3763 ***Zachary Clement,*** *Department of Energy, Washington, DC, United States,* ***Fletcher Fields****, U.S. Department of Energy, Washington, DC, United States,* ***Vincent Tidwell****, Sandia National Laboratory, Albuquerque, NY, United States,* ***Diana Bauer****, US DOE, Washington, DC, United States,* ***Calvin Ray Shaneyfelt****,* ***Geoff Klise****, Sandia National Laboratory, Albuquerque, NM, United States*
Research on the Vibration Characteristic of Composite Rotor for 1000MW Nuclear Power Turbine-Generator Technical Paper Publication: PowerEnergy2017-3152 ***X.J. Wang,*** *Shanghai Power Equipment Research Institute, Shanghai, Shanghai, China*	**Determination of Maximum Flow Rates and Diversity Factors of Populations: Colombian Caribbean Region** Technical Paper Publication: PowerEnergy2017-3033 ***Maicol M. Marenco Marriaga,*** *Gases del Caribe S.A E.S.P, Barranquilla, Atlantico, Colombia,* ***Guillermo Cujar****, Gases del Caribe S.A., Barranquilla, Atlantico, Colombia*	**A Comparison of Three Federal Datasets for Thermoelectric Water Withdrawals in the United States for 2010** Technical Presentation: PowerEnergy2017-3879 ***Melissa Harris,*** *U.S. Geological Survey, Nashville, TN, United States,* ***Tim Diehl****, US Geological Survey, Nashville, TN, United States*
	A Numerical Investigation of Aerodynamic Characteristics of a Deteriorated Gas Turbine Technical Paper Publication: PowerEnergy2017-3444 ***Koichi Yonezawa, Genki Nakai,*** *Kazuyasu Sugiyama, Osaka University, Osaka, Japan,* ***Katsuhiko Sugita,*** *Tokyo Electric Power Company Holdings, Inc., Chiyoda-ku, Tokyo, Japan,* ***Shuichi Umezawa****, Tokyo Electric Power Company Holdings, Inc., Yokohama, Kanagawa, Japan*	**Thermoelectric Power Technology Choices Based on Water Availability** Technical Presentation: PowerEnergy2017-3897 ***Erik Shuster****, US DOE/National Energy Technology Laboratory, Pittsburgh, PA, United States*
	Economic Load Dispatch for Combined Heat and Power in Gas Steam Combined Cycle Power Plant Technical Presentation: PowerEnergy2017-3507 ***Jianxin Zhou****,* ***Zhuang Shao****,* ***Huan Ma****,* ***Fengqi Si****,* ***Zhigao Xu****, Southeast University, Nanjing, Jiangsu, China*	
	Case Study: Failure of Compressor Air Bleed Valve GE FR7 EA - Operational Effects, Problem and Solutions Technical Presentation: PowerEnergy2017-3852 ***Mohammed Okayri****, Saudi Electricity Company, Jazan City, Saudi Arabia*	

THURSDAY, JUNE 29 — 2:00 - 3:30 PM

ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY
TRACK 2-2: CONCENTRATING SOLAR POWER	**TRACK 2-4: SOLAR CHEMISTRY**	**TRACK 2-7: CHP AND HYBRID POWER & ENERGY SYSTEMS**
Session 2-2-7: System Design and Analysis	**Session 2-4-1: Solar Thermochemical Fuel Production**	**Session 2-7-2: CHP & CCHP II**
Charlotte Convention Center West, 201B	**Charlotte Convention Center West, 202A**	**Charlotte Convention Center East, 214**
Session Organizer: **Matt Carlson**, Sandia National Labs, Albuquerque, NM, United States	Session Organizer: **Justin Lapp**, German Aerospace Center, Köln, Germany	Session Organizer: **Jian Zhang**, Mississippi State University, Mississippi State, MS, United States
2:00 - 3:30 PM **Experimental Results of a 25 kW Volumetric Receiver with Integrated Thermal Energy Storage Prototype** Technical Presentation: PowerEnergy2017-3701 ***Antoni Gil Pujol**, Massachusetts Institute of Technology, Cambridge, MA, United States, **Benjamin Grange**, Masdar Institute of Science and Technology, Masdar, Abu Dhabi, United Arab Emirates, **Victor Gutierrez Perez**, Masdar Institute, Masdar, United Arab Emirates, **Daniel S Codd**, University of San Diego, San Diego, CA, United States, **Nicolas Calvet**, Masdar Institute of Science and Technology, Masdar City, Abu Dhabi, United Arab Emirates, **Alexander Slocum**, Massachusetts Inst of Technology, Cambridge, MA, United States* **The Economic Potential and Technical Feasibility of Hybridizing Coal Power Plants with Parabolic Troughs** Technical Paper Publication: PowerEnergy2017-3140 ***Nathan Schuknecht**, **Deven O'Rourke**, **Pamela Kulbeik**, SkyFuel, Lakewood, CO, United States* **Evaluation of a Prototype Integrated Solar Combined-Cycle Power Plant Using a Linear Fresnel Reflector** Technical Paper Publication: PowerEnergy2017-3634 ***Fernando Altmann**, A. S. (Ed) Cheng, San Francisco State University, San Francisco, CA, United States* **Seasonal Performance Evaluation of ISCCS solar field in Kureimat, Egypt** Technical Presentation: PowerEnergy2017-3883 ***Ayman Temraz**, MTC, Cairo, Egypt* **Development of a Hybrid Concentrator Solar Power Cycle at RTV Solar Site** Technical Presentation: PowerEnergy2017-3953 ***Matthew Golob**, **Clayton Nguyen**, Georgia Institute of Technology, Atlanta, GA, United States, **Sheldon Jeter**, Georgia Institute of Technology, Atlanta, GA, United States, **Hany Al-Ansary**, **Abdelrahman Elleathy**, King Saud University, Riyadh, Saudi Arabia, Said Abdel-Khalik, Georgia Institute of Technology, Atlanta, GA, United States, **Eldwin Djajadiwinata**, King Saud University, Riyadh, Saudi Arabia*	**A Pressurized High-flux Solar Reactor for the Efficient Thermochemical Gasification of Carbonaceous Feedstock** Technical Presentation: PowerEnergy2017-3364 ***Fabian Müller**, ETH Zürich, Zürich, Zürich, Switzerland, **Peter Pozivil**, ETHZ, Zürich, Switzerland, **Philip J. van Eyk**, University of Adelaide, Adelaide, Australia, **Andrés Villarrazo**, Universidad Tecnologica Nacional, Buenos Aires, Argentina, **Philipp Haueter**, ETH Zürich, Zürich, Zürich, Switzerland, **Christian Wieckert**, PSI, Villigen, Switzerland, Graham Nathan, University of Adelaide, Adelaide, Australia, Aldo Steinfeld, ETH Zurich, Zürich, Switzerland* **Moving Particle Beds for Solar Thermochemical Fuel Production** Technical Presentation: PowerEnergy2017-3749 ***Justin Lapp**, German Aerospace Center, Köln, Germany, **Johannes Grobbel**, Deutsches Zentrum für Luft und Raumfahrt, Jülich, Germany, **Stefan Brendelberger**, German Aerospace Center DLR, Köln, Germany, **Sebastian Richter**, Deutsches Zentrum für Luft-und Raumfahrt, Köln, Germany, **Brendan Bulfin**, German Aerospace Center, Cologne, Germany, **Martin Roeb**, Deutsches Zentrum für Luft und Raumfahrt, Koeln, Germany, **Christian Sattler**, German Aerospace Center DLR, Koeln, Germany* **Sustainable Production of Ammonia using Solar Power, Water, and Air** Technical Presentation: PowerEnergy2017-3818 ***Brendan Bulfin**, **Josua Vieten**, **Matthias Lange**, German Aerospace Center, Cologne, Germany, **Martin Roeb**, Deutsches Zentrum für Luft und Raumfahrt, Koeln, Germany, **Christian Sattler**, German Aerospace Center DLR, Koeln, Germany* **Pre-Commercial Scale Liquid Fuels from Concentrated Sunlight: An Overview of the Sun-to-Liquid Project** Technical Presentation: PowerEnergy2017-3893 ***Erik Koepf**, **Stefan Zoller**, ETH Zurich, Zurich, Switzerland, **Aldo Steinfeld**, ETH Zurich, Zürich, Switzerland*	**Lifetime Multi-objective Optimization of Combined Cycle Design for Cogeneration of Power and Heat in Offshore Oil and Gas Installations** Technical Presentation: PowerEnergy2017-3468 ***Luca Riboldi**, **Lars O. Nord**, Norwegian University of Science and Technology, Trondheim, Norway* **A Hybrid Cooling, Heating and Power System for Distributed Energy Applications** Technical Paper Publication: PowerEnergy2017-3575 ***Hailei Wang**, **Sean Kissick**, **Chuankai Song**, Oregon State University, Corvallis, OR, United States* **Optimal Design of a DER System That Minimizes Cost While Reducing Carbon Emissions** Technical Paper Publication: PowerEnergy2017-3638 ***Robert Flores**, University of California, Irvine, Irvine, CA, United States, **Jack Brouwer**, National Fuel Cell Research Center, Irvine, CA, United States* **Effect of Prime Movers in CCHP Systems for Different Building Types on Energy Efficiency** Technical Paper Publication: PowerEnergy2017-3670 ***Kibria Roman**, State University of New York at Canton, Canton, NY, United States, **Jedediah B. Alvey**, U.S. Army Corps of Engineers Engineer Research and Development Center, Champaign, IL, United States, **William Tvedt**, Manhattan College, Riverdale, NY, United States, **Hossain M. Azam**, Department of Civil and Environmental Engineering, Manhattan College, Rivedale, NY, United States*

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING	**TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING**	**TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING**
Session 1-1-19: Advanced Internal Combustion Engines - IV	**Session 1-1-21 Fuel Related Boiler Corrosion**	**Session 1-1-22: Advanced Combustion Systems and Issues - IV**
Charlotte Convention Center East, 215	**Charlotte Convention Center West, 205**	**Charlotte Convention Center West, 209B**
Session Organizer: **Youssef Attai**, Helwan University, Cairo, Egypt	Session Organizer: **Richard Scenna,** DOD, Aberdeen Proving Ground, MD, United States Session Co-Organizer: **Kiran Raj Goud Burra**, University of Maryland, College Park, College Park, MD, United States	Session Organizer: **Boris Chudnovsky,** Israel Electric Corporation, Haifa, Israel Session Co-Organizer: **Kiran Raj Goud** Burra, University of Maryland, College Park, College Park, MD, United States
3:45 - 5:15 PM **Computer Simulation of Diesel Fueled Engine Processes Using MATLAB and Experimental Investigations on Research Engine** Technical Paper Publication: PowerEnergy2017-3498 ***Shankar Venkataraman,*** *Mechanical Engineering Department, Faculty of Engineering, Christ University, Bangalore, India,* ***Reghu Ramawarrier****, Faculty of Engineering, Christ University, Bangalore, India,* ***Nikhil Mathew*** *Mundupalam, Christ University, Bangalore, India,* ***Vivek Kozhikkoottungal*** *Satheesh, Christ University, Bengaluru, India,* ***Siddaling Bhure****, Christ University, Bangalore, India* **Exergy Analysis of Small Direct Injection Diesel Engine at Varying Operating Parameters** Technical Paper Publication: PowerEnergy2017-3554 ***Veena Chaudhary****,* ***Rakesh P Gakkhar,*** *Indian Institute of Technology Roorkee, Roorkee, Uttrakhand, India* **Investigation of the Performance of a Diesel Engine Fueled by Biodiesel-Diesel Fuel Mixture with Addition of Nanoparticles** Technical Paper Publication: PowerEnergy2017-3055 ***Ahmed I. EL-Seesy****, Egypt-Japan University of Science and Technology, Alexandria, Alexandria, Egypt,* ***Ali K. Abdelrahman****, Egypt-Japan University of Science and Technology, New Borg El-Arab, Egypt,* ***Shinichi Ookawara****, Tokyo Institute of Technology, Tokyo, Japan,* ***Hamdy Hassan****,* ***Meshack Hawi****, Egypt-Japan University for Science and Technology(E-JUST), Alexandria, Egypt* **A Simulation Model for the Performance Enhancement of Turbo-Charged Diesel Engine** Technical Paper Publication: PowerEnergy2017-3439 ***Farrukh Ahmad****, National University of Sciences and Technology, Islamabad, Pakistan,* ***Imran Aziz****, National University of Sciences & Technology, Rawalpindi, Pakistan, Samiur Rahman Shah, National University of Sciences and Technology, Islamabad, Pakistan*	**Analysis on High Temperature Corrosion Behaviors of Boiler Steels under High-chlorine Coal Ash** Technical Paper Publication: PowerEnergy2017-3215 ***yacheng liu,*** *Shanghai Jiaotong University, Shanghai, China,* ***Weidong Fan****, Shanghai Jiao Tong University, Shanghai, China,* ***Xiang Zhang****,* ***Naixing Wu****, Shanghai Boiler Works, Ltd, Shanghai, China* **Study on the Effects of External Stress on Hot Corrosion Behavior of Steel T91 in the Oxidizing Atmosphere Containing SO2** Technical Paper Publication: PowerEnergy2017-3241 ***Zhuhan Liu****,* ***Na Li,*** *Xi'an Jiaotong University, Xi'an, ShanXi, China,* ***Qulan Zhou****, Xi'an Jiaotong University, Xi'an, Shaanxi, China,* ***Liu Taisheng****, Dongfang Boiler Group Co.,Ltd., Chengdu, Sichuan, China*	**Effect of Oxygen Concentrations on Distributed Flame Regime** Technical Paper Publication: PowerEnergy2017-3798 ***Richard Scenna,*** *DOD, Aberdeen Proving Ground, MD, United States,* ***Ashwani Gupta****, University of Maryland, College Park, MD, United States* **Effect of Oxygen Injection on Hydrogen Sulfide Pyrolysis** Technical Paper Publication: PowerEnergy2017-3791 ***Ahmed Mahmoud ElMelih****, University of Maryland, College Park, MD, United States,* ***Ashwani Gupta****, University of Maryland, College Park, MD, United States,* ***Ahmed Al Shoaibi,*** *The Petroleum Institute, Abu Dhabi, United Arab Emirates* **Acoustic Noise Reduction under Distributed Combustion** Technical Paper Publication: PowerEnergy2017-3788 ***Ahmed EE Khalil,*** *University of Maryland, College Park, MD, United States,* ***Ashwani Gupta****, University of Maryland, College Park, MD, United States*

THURSDAY, JUNE 28 — 3:45 - 5:15 PM

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-1: FUELS, COMBUSTION & MATERIAL HANDLING	**TRACK 1-6: PLANT CONSTRUCTION ISSUES AND SUPPLY CHAIN MANAGEMENT**	**TRACK 1-7: RENEWABLE ENERGY SYSTEMS: SOLAR, WIND, HYDRO AND GEOTHERMAL**
Session 1-1-23: Advanced Emission Control Technology V	**Session 1-6-1: Procurement and Supply Chain Management**	**Session 1-7-7: Small Power Systems and Presentations**
Charlotte Convention Center West, 206B	**Charlotte Convention Center West, 206A**	**Charlotte Convention Center West, 210B**
Session Organizer: **Bingcheng Lin, Zhejiang** University, Hangzhou, Zhejiang, China Session Co-Organizer: **Kenji Tanno**, Central Research Institute of Electric Power Industry, Yokosuka, Kanagawa, Japan	Session Organizer: **Navid Goudarzi,** UNCC, Charlotte, NC, United States Session Co-Organizer: **Shuichi Umezawa**, Tokyo Electric Power Company Holdings, Inc., Yokohama, Kanagawa, Japan, **Chen Yang**, Chongqing University, Chongqing, China	Session Organizer: **Ben Xu**, The University of Texas Rio Grande Valley, Edinburg, TX, United States
3:45 - 5:15 PM		
Brief Analysis on Ultra-low Emission Technical Route for 2×300 MW Coal-Fired Units Technical Presentation: PowerEnergy2017-3851 ***Gao Yuan, Xue Lei, An Yan,*** *Harbin Boiler Company Limited, Harbin, China*	**Study on the Management Optimization of Design Interface about TG Package for HPR1000** Technical Paper Publication: PowerEnergy2017-3117 ***Zelei Wang, Yigong Zhou,*** *Shanghai Electric Power Generation Group, Shanghai, China*	**Thermo-electrochemical Cell for Cooling and Power Generation** Technical Presentation: PowerEnergy2017-3608 ***Ali Hussain Kazim,*** *Georgia Institute of Technology, Atlanta, GA, United States,* ***Baratunde Cola,*** *Georgia Institute of Technology, Atlanta, GA, United States*
Effect of Chlorine on the Structure and Reactivity of Pyrolysis Char Derived from Solid Waste Technical Presentation: PowerEnergy2017-3136 ***Binhang Hu, Qunxing Huang,*** *Zhejiang University, Hangzhou, Zhejiang, China*	**A Novel Model for Man-hour Evaluation of Nuclear Power Equipment Procurement: Practice from China Nuclear Power Projects** Technical Paper Publication: PowerEnergy2017-3656 ***Rongxin Zhang,*** *University of Pittsburgh, Pittsburgh, PA, United States,* ***Hui Zhou,*** *Yueliang Zong, China Nuclear Power Engineering Co., Ltd, Beijing, Beijing, China*	**Experimental Study on Heat Transfer Characteristic of Carbon Dioxide at High Temperature and High Pressure under Solar Radiation** Technical Presentation: PowerEnergy2017-3353 ***Gang Xiao, Wen Yang, Zhongyang Luo, Kefa Cen, Mingjiang Ni, Zhejiang*** *University, Hangzhou, China*
The Enlightenment of Updated Development of the USC Coal Fired Units Technical Paper Publication: PowerEnergy2017-3148 ***Wenhao Ji, Daolin Li, Xingsheng Hu,*** *Shanghai Power Equipment Research Institute, Shanghai, China,* ***Peng Wan,*** *Shanghai Power Equipment Research Institute, Shanghai, China*	**A Dynamic Measurement Model of Equipment Procurement Progress for Nuclear Power Project Based on EVM** Technical Paper Publication: PowerEnergy2017-3662 ***Ming Li, Hui Zhou,*** *China Nuclear Power Engineering Co., Ltd, Beijing, Beijing, China,* ***Rongxin Zhang,*** *University of Pittsburgh, Pittsburgh, PA, United States*	**Experimental and Numerical Study of Cold Gas-Solid Flow Regimes in a Fluidized Bed Gasifier** Technical Paper Publication: PowerEnergy2017-3263 ***Anton Pylypenko, Yevgenii Rastigejev, Lijun Wang, Abolghasem Shahbazi,*** *North Carolina Agricultural and Technical State University, Greensboro, NC, United States*
Experiment and Mechanism Study on the Effect of Coal Ash on the Capture of Alkali Metals in Zhundong Coal Technical Paper Publication: PowerEnergy2017-3570 ***Hu Xinglei,*** *Shanghai Jiaotong University, Shanghai, Shanghai, China*	**Power Plant Construction Management - How to Survive For New-Build, Re-Build, and Re-Power Projects** Technical Presentation: PowerEnergy2017-3925 ***Peter Hessler,*** *Construction Business Associates, LLC, West End, NC, United States*	**A Novel High-temperature Solar Air Receiver for Micro-gas Turbine Systems** Technical Presentation: PowerEnergy2017-3365 ***Mingjiang Ni, Jinli Chen, Zhongyang Luo, Gang Xiao,*** *Zhejiang University, Hangzhou, China*

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)
TRACK 1-9: STEAM TURBINE-GENERATORS, ELECTRIC GENERATORS, TRANSFORMERS, SWITCHGEAR, AND ELECTRIC BOP & AUXILIARIES	**TRACK 1-11: PLANT OPERATIONS, MAINTENANCE, AGING MANAGEMENT, RELIABILITY AND PERFORMANCE**	**TRACK 1-11: PLANT OPERATIONS, MAINTENANCE, AGING MANAGEMENT, RELIABILITY AND PERFORMANCE**
Session 1-9-6: Topics in Steam Turbine and Generator Auxiliaries	**Session 1-11-9: New Developments in P91 Root to Cap Welds, Radial Turbines for Waste Heat, and Dempster Shafer-based Sensor Fusion Fault Diagnosis**	**Session 1-11-10: Supports and Foundations, Generator Stiffness, and Cement Cooling Tower Life Extension: Reliability, Availability and Maintenance**
Charlotte Convention Center West, 210A	**Charlotte Convention Center West, 201A**	**Charlotte Convention Center West, 204**
Session Organizer: **Thomas Bauer,** Svobatech, Inc., Wuerenlingen, Switzerland Session Co-Organizer: **James Wieters**, EPRI, Charlotte, NC, United States	Session Organizer: **Noman Sadi,** Arkansas State University, Jonesboro, AR, United States Session Co-Organizer: **Christopher Marcella** C.E.M., Wheelabrator, Methuen, MA, United States	Session Organizer: **Brian Wodka,** RMF Engineering, York, PA, United States
3:45 - 5:15 PM **Study on Calculation Method of Cooling Oil Flow Rate Allocation for Natural Oil Circulation Transformer** Technical Paper Publication: PowerEnergy2017-3319 ***Rong Xie, Na Wang,*** *Dalian University of Technology, Dalian, China,* ***Zifu Lu****, Hangzhou Steam Turbine Co., Ltd., Hangzhou, China,* ***Zhonglin Cheng****,* ***Baopeng Xu****, Dalian University of Technology, Dalian, China*	**Dempster-Shafer-based Sensor Fusion Approach for Machinery Fault Diagnosis** Technical Paper Publication: PowerEnergy2017-3715 ***Kar Hoou Hui,*** *Institute of Noise and Vibration, Kuala Lumpur, Wilayah Persekutuan, Malaysia,* ***Meng Hee Lim****,* ***Salman Leong****, Universiti Teknologi Malaysia, Kuala Lumpur, Kuala Lumpur, Malaysia*	**Generator Stiffness Change Diagnostic and Solutions** Technical Presentation: PowerEnergy2017-3856 ***Ahmed Alabdan,*** *Saudi Electricity Company, ABHA, Saudi Arabia*
An Energy Compressed Repetitive High-voltage Pulse Generator for Electrostatic Precipitation Technical Paper Publication: PowerEnergy2017-3321 ***Yishan Guo, Chenghang Zheng, Jun Zhang, Yongxin Zhang, Yi Wang,*** *Xiang Gao, Zhejiang University, Hangzhou, China*	**Effect of Mixture R600a/R601a on Performance of Radial Turbine for Low Temperature Waste Heat** Technical Paper Publication: PowerEnergy2017-3323 ***Bo Zemin,*** *Shanghai Jiao Tong University, Shanghai, Shanghai, China,* ***Zhenkun Sang****, Shanghai Jiaotong University, Shanghai, Shanghai, China,* ***Xiaojing Lv, Yiwu Weng,*** *Shanghai Jiao Tong University, Shanghai, China*	**Evaluation, Repair, and Maintenance of Rotating Equipment Foundations** Technical Presentation: PowerEnergy2017-3888 ***Thomas Kline,*** *Structural Technologies, Deer Park, TX, United States,* ***Jonathan Sommer****, Structural, Deer Park, TX, United States,* ***Anna Pridmore****, Structural Technologies, Columbia, MD, United States*
Study on Assessment Method and Influential Factors of Low Cycle Fatigue for Steam Turbine Blades Technical Presentation: PowerEnergy2017-3751 ***Gong-cheng Cao****, Shanghai Turbine Works Company, Ltd., Shanghai, Shanghai, China,* ***Gongyi Wang****, Shanghai Electric Power Generation R&D Centre, Shanghai, China*	**P91 Welds from Root to Cap with Tip TIG** Technical Presentation: PowerEnergy2017-3833 *Charles Patrick, Brad Berglan, Rajan Varughese,* ***Ramon Solo, Jose Leza, Sammy Lloyd,*** *ALS Maverick Testing Laboratories, Inc., La Porte, TX, United States,* ***William Newell****, Euroweld, Ltd., Mooresville, NC, United States,* ***Juvenal Calvo****, TIPTIG USA, Runnemede, NJ, United Statess*	**In-Place Pipe Support Load Testing and Hanger Surveys- Part of a Best in Class Fitness for Service Program** Technical Presentation: PowerEnergy2017-3075 ***Lange Kimball****, Stress Engineering Services Inc, Spring, TX, United States,* ***Joe Frey****,* ***Britt Bettell****, Stress Engineering Services Inc, Houston, TX, United States*
		Sensitive and Selective On-line Monitoring of PCDD/Fs Indicators by Self-developed TOFMS Technical Presentation: PowerEnergy2017-3855 ***Xuan Cao, Shengyong Lu, Xiaodong Li, Jianhua Yan****, Zhejiang University, Hangzhou, Zhejiang, China*

THURSDAY, JUNE 28 — 3:45 - 5:15 PM

ASME 2017 POWER CONFERENCE/INTERNATIONAL CONFERENCE ON POWER ENGINEERING (ICOPE-17)	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY	ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY
TRACK 1-13: ENERGY WATER SUSTAINABILITY	**TRACK 2-4: SOLAR CHEMISTRY**	**TRACK 2-7: CHP AND HYBRID POWER & ENERGY SYSTEMS**
Session 1-13-6: Panel Discussion on Future Energy-Water R&D Needs	**Session 2-4-2: Solar Thermochemistry**	**Session 2-7-3: Hybrid Power & Energy Systems**
Charlotte Convention Center West, 202B	**Charlotte Convention Center West, 202A**	**Charlotte Convention Center East, 214**
Session Organizer: **Jessica Mullen,** US DOE/ National Energy Technology Laboratory, Pittsburgh, PA, United States	Session Organizer: **Erik Koepf,** ETH Zurich, Zurich, Switzerland	Session Organizer: **Wahiba Yaici,** Canmet Energy Research Centre / Natural Resources Canada, Ottawa, ON, Canada
3:45 - 5:15 PM **PANEL** **3:45pm - 5:15pm** Short presentations from various sectors on the future R&D needs in the Energy-Water Nexus related to thermal power plants. Open discussion / Q&A will follow the presentations.	**Design and Characterization of a Novel Upward Flow Reactor for Determining High-Temperature Thermal Reduction Kinetics for Solar-Driven Processes** Technical Presentation: PowerEnergy2017-3891 ***H. Evan Bush,*** *Georgia Institute of Technology, Atlanta, GA, United States,* ***Karl-Philipp Schlichting****, ETH Zurich, Zurich, Switzerland,* ***Robert J. Gill****,* ***Sheldon M. Jeter, Peter G. Loutzenhiser,*** *Georgia Institute of Technology, Atlanta, GA, United States* **Experimental and Numerical Analyses of an Integrated Solar Receiver and High-temperature Electrolyzer for Synthesis Gas Production** Technical Presentation: PowerEnergy2017-3911 ***Meng Lin,*** *École Polytechnique Fédérale De Lausanne, Renens, Switzerland,* ***Sophia Haussener****, École Polytechnique Federale De Lausanne EPFL, Lausanne, Vaud, Switzerland* **Model of a Rotary Kiln Solar Reactor for the Reduction of Cobalt Oxide Particles in a Two-step, Hybrid Thermochemical Water Splitting Cycle** Technical Presentation: PowerEnergy2017-3915 ***Samantha Kopping, Jack Hoeniges, Jesse Greenhagen, Robert Palumbo, Luke Venstrom,*** *Valparaiso University, Valparaiso, IN, United States*	**Flexible Natural Gas / Intermittent Renewable Hybrid Power Plants** Technical Paper Publication: PowerEnergy2017-3079 ***Michael Welch, Andrew Pym,*** *Siemens Industrial Turbomachinery Ltd, Lincoln, Lincolnshire, United Kingdom* **Cost Benefit Analysis of Waste Heat to Power Option for Multistage Air Compressor** Technical Paper Publication: PowerEnergy2017-3396 ***Hanfei Tuo,*** *Praxair Inc., Tonawanda, NY, United States,* ***Maulik Shelat****, Praxair Inc, Tonawanda, NY, United States,* ***Vijayaraghavan Chakravarthy****, University at Buffalo, Williamsville, NY, United States*

ASME 2017 11TH INTERNATIONAL CONFERENCE ON ENERGY SUSTAINABILITY

TRACK 2-9: ENVIRONMENTAL, ECONOMIC, AND POLICY CONSIDERATIONS OF ADVANCED ENERGY SYSTEMS

Session 2-9-1: Environmental and economic consideration of advanced energy systems

Charlotte Convention Center West, 209A

Session Organizer: **Pouria Ahmadi,** University of Illinois at Urbana-Campaign, Urbana, IL, United States

3:45 - 5:15 PM

Do Green-certified Commercial Buildings Save Energy? Empirical Evidence from Arizona
Technical Presentation: PowerEnergy2017-3224
Yueming (Lucy) Qiu, *Arizona State University, Gilbert, AZ, United States*

An Evaluation of Financial Incentive Policies for Solar Photovoltaic Systems in the U.S.
Technical Paper Publication: PowerEnergy2017-3693
Jian Zhang, ***Alta Knizley***, ***Heejin Cho,*** *Mississippi State University, Mississippi State, MS, United States*

Implications of Coal based Indigenous Generation in Pakistan
Technical Presentation: PowerEnergy2017-3784
Jalal Awan*, Engro (ex-Exxon) Fertilizers, Sind, Pakistan*

Power & Energy Author Index

Power & Energy Author Index

Power & Energy Author Index

Power & Energy Author Index

Power & Energy Author Index

Power & Energy Author Index

Power & Energy Session Chairs

Fuels, Combustion & Material Handling
Session 1-1-1 Advanced Combustion Systems and Issues - I
Ashwani Gupta

Fuels, Combustion & Material Handling
Session 1-1-1 Advanced Combustion Systems and Issues - I
Chun Zou

Fuels, Combustion & Material Handling
Session 1-1-2 Advanced Combustion Systems and Issues - II
Ashwani Gupta

Fuels, Combustion & Material Handling
Session 1-1-2 Advanced Combustion Systems and Issues - II
Yiheng Tong

Fuels, Combustion & Material Handling
Session 1-1-3 Advanced Combustion Systems and Issues - III
Ashwani Gupta

Fuels, Combustion & Material Handling
Session 1-1-3 Advanced Combustion Systems and Issues - III
Jin Shiping

Fuels, Combustion & Material Handling
Session 1-1-4 Advanced Biomass Combustion Issues - I
Ezra Bar-Ziv

Fuels, Combustion & Material Handling
Session 1-1-4 Advanced Biomass Combustion Issues - I
Wu Zhiqiang

Fuels, Combustion & Material Handling
Session 1-1-5 Advanced Gasification and Pyrolysis Systems
Ezra Bar-Ziv

Fuels, Combustion & Material Handling
Session 1-1-5 Advanced Gasification and Pyrolysis Systems
Richard Scenna

Fuels, Combustion & Material Handling
Session 1-1-6 Advanced Chemical Looping Systems
Ezra Bar-Ziv

Fuels, Combustion & Material Handling
Session 1-1-6 Advanced Chemical Looping Systems
Xing Zhu

Fuels, Combustion & Material Handling
Session 1-1-7 Coal Combustion Systems
Boris Chudnovsky

Fuels, Combustion & Material Handling
Session 1-1-7 Coal Combustion Systems
Xiao P. Zhang

Fuels, Combustion & Material Handling
Session 1-1-8 Advanced and Alternative Fuels - I
Boris Chudnovsky

Fuels, Combustion & Material Handling
Session 1-1-8 Advanced and Alternative Fuels - I
Ming Zhai

Fuels, Combustion & Material Handling
Session 1-1-9 Advanced and Alternative Fuels - II
George D. Dumbaugh, PE

Fuels, Combustion & Material Handling
Session 1-1-9 Advanced and Alternative Fuels - II
Jun Cheng

Fuels, Combustion & Material Handling
Session 1-1-10 Advanced Power Plant Concepts
Ezra Bar-Ziv

Fuels, Combustion & Material Handling
Session 1-1-10 Advanced Power Plant Concepts
Jianwen Xie

Fuels, Combustion & Material Handling
Session 1-1-11 Advanced Instrumentation
Boris Chudnovsky

Fuels, Combustion & Material Handling
Session 1-1-11 Advanced Instrumentation
Bo Zhang

Fuels, Combustion & Material Handling
Session 1-1-12 Advanced Emission Control Technology I
Christopher Blazek

Fuels, Combustion & Material Handling
Session 1-1-12 Advanced Emission Control Technology I
Chuanwen Zhao

Fuels, Combustion & Material Handling
Session 1-1-13 Advanced Emission Control Technology II
Christopher Blazek

Fuels, Combustion & Material Handling
Session 1-1-13 Advanced Emission Control Technology II
fawei lin

Fuels, Combustion & Material Handling
Session 1-1-14 Advanced Emission Control Technology III
Christopher Blazek

Fuels, Combustion & Material Handling
Session 1-1-14 Advanced Emission Control Technology III
Sangseok Yu

Fuels, Combustion & Material Handling
Session 1-1-15 Advanced Emission Control Technology IV
Christopher Blazek

Fuels, Combustion & Material Handling
Session 1-1-15 Advanced Emission Control Technology IV
Peng Tan

Fuels, Combustion & Material Handling
Session 1-1-16 Advanced Internal Combustion Engines - I
Jose Gabriel Mercado

Fuels, Combustion & Material Handling
Session 1-1-16 Advanced Internal Combustion Engines - I
Jose Moncada

Power & Energy Session Chairs

Fuels, Combustion & Material Handling
Session 1-1-17 Advanced Internal Combustion Engines - II
Youssef Attai

Fuels, Combustion & Material Handling
Session 1-1-17 Advanced Internal Combustion Engines - II
Fashe Li

Fuels, Combustion & Material Handling
Session 1-1-18 Advanced Internal Combustion Engines - III
Joseph Gerard Reyes

Fuels, Combustion & Material Handling
Session 1-1-18 Advanced Internal Combustion Engines - III
Chien Pin Chen

Fuels, Combustion & Material Handling
Session 1-1-19 Advanced Internal Combustion Engines - IV
Youssef Attai

Fuels, Combustion & Material Handling
Session 1-1-20 Advanced Gasification and Pyrolysis Systems II
Ashwani Gupta

Fuels, Combustion & Material Handling
Session 1-1-20 Advanced Gasification and Pyrolysis Systems II
Haoran Ding

Fuels, Combustion & Material Handling
Session 1-1-21 Fuel Related Boiler Corrosion
Richard Scenna

Fuels, Combustion & Material Handling
Session 1-1-21 Fuel Related Boiler Corrosion
Kiran Raj Goud Burra

Fuels, Combustion & Material Handling
Session 1-1-22 Advanced Combustion Systems and Issues - IV
Boris Chudnovsky

Fuels, Combustion & Material Handling
Session 1-1-22 Advanced Combustion Systems and Issues - IV
Kiran Raj Goud Burra

Fuels, Combustion & Material Handling
Session 1-1-23 Advanced Emission Control Technology V
Bingcheng Lin

Fuels, Combustion & Material Handling
Session 1-1-23 Advanced Emission Control Technology V
Kenji Tanno

Combustion Turbines
Session 1-2-1 Combined and Simple Cycle Plant Performance
Himanshu Bhatnagar

Combustion Turbines
Session 1-2-2 Gas Turbine Upgrades
Nick Gritz

Combustion Turbines
Session 1-2-2 Gas Turbine Upgrades
Bob Aslin

Combustion Turbines
Session 1-2-3 Gas Turbine Upgrades (Part 2)
Lilia Papadopoulos

Combustion Turbines
Session 1-2-4 Gas Turbine Compressor Upgrades
Thomas Cavalcante

Combustion Turbines
Session 1-2-5 Gas Turbine Performance Enhancements.
Tony Clark

Boilers & Heat Recovery Steam Generators
Session 1-3-1 STEAM GENERATOR DESIGN I
Paul Weitzel

Boilers & Heat Recovery Steam Generators
Session 1-3-2 STEAM GENERATOR DESIGN II
Paul Weitzel

Boilers & Heat Recovery Steam Generators
Session 1-3-3 STEAM GENERATOR TECHNOLOGY I
Paul Weitzel

Boilers & Heat Recovery Steam Generators
Session 1-3-4 STEAM GENERATOR TECHNOLOGY II
Paul Weitzel

Boilers & Heat Recovery Steam Generators
Session 1-3-5 STEAM GENERATOR OPERATION
Paul Weitzel

Boilers & Heat Recovery Steam Generators
Session 1-3-6 STEAM GENERATOR PERFORMANCE AND TESTING I
Paul Weitzel

Boilers & Heat Recovery Steam Generators
Session 1-3-7 STEAM GENERATOR PERFORMANCE AND TESTING II
Paul Weitzel

Risk Management, Safety and Cyber Security
Session 1-4-1 Risk Analysis Valuation, Metrics and Insurance Loss Exposure
Frank Michell

Plant Construction Issues and Supply Chain Management
Session 1-6-1 Procurement and Supply Chain Management
Navid Goudarzi

Plant Construction Issues and Supply Chain Management
Session 1-6-1 Procurement and Supply Chain Management
Shuichi Umezawa

Plant Construction Issues and Supply Chain Management
Session 1-6-1 Procurement and Supply Chain Management
Chen Yang

Power & Energy Session Chairs

Renewable Energy Systems: Solar, Wind, Hydro and Geothermal
Session 1-7-1 Advanced Technologies for Wind Energy
Weifei Hu

Renewable Energy Systems: Solar, Wind, Hydro and Geothermal
Session 1-7-1 Advanced Technologies for Wind Energy
Navid Goudarzi

Renewable Energy Systems: Solar, Wind, Hydro and Geothermal
Session 1-7-2 Hydro Power, Distributed Power, and Small Scale Generation
Navid Goudarzi

Renewable Energy Systems: Solar, Wind, Hydro and Geothermal
Session 1-7-2 Hydro Power, Distributed Power, and Small Scale Generation
Ossama Abdelkhalik

Renewable Energy Systems: Solar, Wind, Hydro and Geothermal
Session 1-7-3 Advanced Technologies for Solar Energy I
David MacPhee

Renewable Energy Systems: Solar, Wind, Hydro and Geothermal
Session 1-7-3 Advanced Technologies for Solar Energy I
Navid Goudarzi

Renewable Energy Systems: Solar, Wind, Hydro and Geothermal
Session 1-7-4 Energy Storage and Technical Economical Analysis of Systems
Douglas Reed

Renewable Energy Systems: Solar, Wind, Hydro and Geothermal
Session 1-7-4 Energy Storage and Technical Economical Analysis of Systems
Reza Arghandeh Jouneghani

Renewable Energy Systems: Solar, Wind, Hydro and Geothermal
Session 1-7-4 Energy Storage and Technical Economical Analysis of Systems
David MacPhee

Renewable Energy Systems: Solar, Wind, Hydro and Geothermal
Session 1-7-5 Advanced Technologies for CHP Systems
Victor Osorio

Renewable Energy Systems: Solar, Wind, Hydro and Geothermal
Session 1-7-5 Advanced Technologies for CHP Systems
John Fall

Renewable Energy Systems: Solar, Wind, Hydro and Geothermal
Session 1-7-6 Advanced Technologies Solar II
Antoni Gil Pujol

Renewable Energy Systems: Solar, Wind, Hydro and Geothermal
Session 1-7-6 Advanced Technologies Solar II
Ben Xu

Renewable Energy Systems: Solar, Wind, Hydro and Geothermal
Session 1-7-7 Small Power Systems and Presentations
Ben Xu

Heat Exchangers, Condensers, Cooling Systems, and Balance-of-Plant
Session 1-8-1 Steam Condenser Design - Guidelines, Enhancements and Efficiency
Bill Bieber

Heat Exchangers, Condensers, Cooling Systems, and Balance-of-Plant
Session 1-8-1
Steam Condenser Design - Guidelines, Enhancements and Efficiency
Earl Proud

Heat Exchangers, Condensers, Cooling Systems, and Balance-of-Plant
Session 1-8-2 Cooling Systems
Kellen Muldoon

Heat Exchangers, Condensers, Cooling Systems, and Balance-of-Plant
Session 1-8-2 Cooling Systems
David Nesbitt

Heat Exchangers, Condensers, Cooling Systems, and Balance-of-Plant
Session 1-8-3 Feedwater Heater and Air-Cooled Condensers
Wendy McGowan

Heat Exchangers, Condensers, Cooling Systems, and Balance-of-Plant
Session 1-8-3 Feedwater Heater and Air-Cooled Condensers
Jeff Williams

Heat Exchangers, Condensers, Cooling Systems, and Balance-of-Plant
Session 1-8-4 Heat Exchanger and Component Design, Evaluation and Life-Cycle Management
Andrew Rister

Heat Exchangers, Condensers, Cooling Systems, and Balance-of-Plant
Session 1-8-4 Heat Exchanger and Component Design, Evaluation and Life-Cycle Management
Zachary Godish

Power & Energy Session Chairs

Heat Exchangers, Condensers, Cooling Systems, and Balance-of-Plant
Session 1-8-5 Panel Discussion - Existing Heat Exchanger Challenges and Their Resolution
Gail Jackson

Heat Exchangers, Condensers, Cooling Systems, and Balance-of-Plant
Session 1-8-6 Heat Exchanger Performance Modeling and Behavior
Gary Fischer

Heat Exchangers, Condensers, Cooling Systems, and Balance-of-Plant
Session 1-8-7 Investigation and Analysis of Corrosion and Other Phenomena Affecting Power Plant Heat Exchange
Eric Svensson

Heat Exchangers, Condensers, Cooling Systems, and Balance-of-Plant
Session 1-8-8 Study and Exploration of Heat Transfer
Kim Massey

Steam Turbine-Generators, Electric Generators, Transformers, Switchgear, and Electric BOP & Auxiliaries
Session 1-9-1 Turbine Blading Design and Flow Path Enhancement
Michael Smiarowski

Steam Turbine-Generators, Electric Generators, Transformers, Switchgear, and Electric BOP & Auxiliaries
Session 1-9-1 Turbine Blading Design and Flow Path Enhancement
Steven Greco

Steam Turbine-Generators, Electric Generators, Transformers, Switchgear, and Electric BOP & Auxiliaries
Session 1-9-2 Instrumentation and Controls Tutorial on Plant Coordination a Holistic Approach
Michael Smiarowski

Steam Turbine-Generators, Electric Generators, Transformers, Switchgear, and Electric BOP & Auxiliaries
Session 1-9-2 Instrumentation and Controls Tutorial on Plant Coordination a Holistic Approach
Bob Scott

Steam Turbine-Generators, Electric Generators, Transformers, Switchgear, and Electric BOP & Auxiliaries
Session 1-9-3 Generator Operations and Maintenance
John McPhearson

Steam Turbine-Generators, Electric Generators, Transformers, Switchgear, and Electric BOP & Auxiliaries
Session 1-9-3 Generator Operations and Maintenance
Russ Chetwynd

Steam Turbine-Generators, Electric Generators, Transformers, Switchgear, and Electric BOP & Auxiliaries
Session 1-9-4 New Methods for Power Generation
James Wieters

Steam Turbine-Generators, Electric Generators, Transformers, Switchgear, and Electric BOP & Auxiliaries
Session 1-9-4 New Methods for Power Generation
Bob Scott

Steam Turbine-Generators, Electric Generators, Transformers, Switchgear, and Electric BOP & Auxiliaries
Session 1-9-5 Mechanical Aspects of Turbines, Generators and Auxiliaries
Lyle Branagan

Steam Turbine-Generators, Electric Generators, Transformers, Switchgear, and Electric BOP & Auxiliaries
Session 1-9-5 Mechanical Aspects of Turbines, Generators and Auxiliaries
Thomas Bauer

Steam Turbine-Generators, Electric Generators, Transformers, Switchgear, and Electric BOP & Auxiliaries
Session 1-9-6 Topics in Steam Turbine and Generator Auxiliaries
Thomas Bauer

Steam Turbine-Generators, Electric Generators, Transformers, Switchgear, and Electric BOP & Auxiliaries
Session 1-9-6 Topics in Steam Turbine and Generator Auxiliaries
James Wieters

I&C, Digital Controls, and Influence of Human Factors
Session 1-10-1 Topics on Instrumentation and Controls

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-1
Clean-Coal: Ultra-Hi Efficiency Low Emission (U-HELE) Part 1
Wenhu Yang

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-1 Clean-Coal: Ultra-Hi Efficiency Low Emission (U-HELE) Part 1
Christopher Marcella C.E.M.

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-1 Clean-Coal: Ultra-Hi Efficiency Low Emission (U-HELE) Part 1
Noman Sadi

Power & Energy Session Chairs

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-1 Clean-Coal: Ultra-Hi Efficiency Low Emission (U-HELE) Part 1
Bo Zemin

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-1 Clean-Coal: Ultra-Hi Efficiency Low Emission (U-HELE) Part 1
Lele Yu

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-2 Gas Turbine: Reliability, Availability and Maintenance
Brian Wodka

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-2 Gas Turbine: Reliability, Availability and Maintenance
Edward Dundon

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-3 Wind Turbine: RAM and Real-time Blade Deformation Recognition, and Speed Matching Fan Rotors
Brian Wodka

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-4 Advances in Turbine and Boiler Systems: Design and Inspection
Tarannom Parhizkar

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-4 Advances in Turbine and Boiler Systems: Design and Inspection
Bo Zemin

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-4 Advances in Turbine and Boiler Systems: Design and Inspection
Noman Sadi

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-5 Clean-Coal: Ultra-Hi Efficiency Low Emission (U-HELE) Part 2
Noman Sadi

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-5 Clean-Coal: Ultra-Hi Efficiency Low Emission (U-HELE) Part 2
Bo Zemin

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-5 Clean-Coal: Ultra-Hi Efficiency Low Emission (U-HELE) Part 2
Wenhu Yang

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-6 Asset Performance, Management and Reliability Optimization, and Generator Capability Coordination with NERC Standard PRC-019-2
Bo Zemin

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-6 Asset Performance, Management and Reliability Optimization, and Generator Capability Coordination with NERC Standard PRC-019-2
Noman Sadi

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-6 Asset Performance, Management and Reliability Optimization, and Generator Capability Coordination with NERC Standard PRC-019-2
Lele Yu

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-7 Gas Turbine and CHP Management and Fault Diagnosis, along with Gas Distribution Network Max Flow Prediction Modeling
Tarannom Parhizkar

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-7 Gas Turbine and CHP Management and Fault Diagnosis, along with Gas Distribution Network Max Flow Prediction Modeling
Bo Zemin

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-8 Clean-Coal: Ultra-Hi Efficiency Low Emission (U-HELE) Part 3
Lele Yu

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-8 Clean-Coal: Ultra-Hi Efficiency Low Emission (U-HELE) Part 3
Tarannom Parhizkar

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-8 Clean-Coal: Ultra-Hi Efficiency Low Emission (U-HELE) Part 3
Bo Zemin

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-8 Clean-Coal: Ultra-Hi Efficiency Low Emission (U-HELE) Part 3
Noman Sadi

Power & Energy Session Chairs

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-9 New Developments in P91 Root to Cap Welds, Radial Turbines for Waste Heat, and Dempster?Shafer-based Sensor Fusion Fault Diagnosis
Noman Sadi

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-9 New Developments in P91 Root to Cap Welds, Radial Turbines for Waste Heat, and Dempster?Shafer-based Sensor Fusion Fault Diagnosis
Christopher Marcella C.E.M.

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-10 Supports and Foundations, Generator Stiffness, and Cement Cooling Tower Life Extension: Reliability, Availability and Maintenance
Brian Wodka

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-11 The Revolution to End Energy Poverty (REEP)
Wenhu Yang

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-11 The Revolution to End Energy Poverty (REEP)
Christopher Marcella C.E.M.

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-11 The Revolution to End Energy Poverty (REEP)
Bo Zemin

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-11 The Revolution to End Energy Poverty (REEP)
Noman Sadi

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-11 The Revolution to End Energy Poverty (REEP)
Tarannom Parhizkar

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 1-11-11 The Revolution to End Energy Poverty (REEP)
Lele Yu

Thermal Hydraulics and Computational Fluid Dynamics
Session 1-12-1 TH and CFD 1
Biplab Kumar Debnath

Thermal Hydraulics and Computational Fluid Dynamics
Session 1-12-1 TH and CFD 1
Zhenkun Sang

Thermal Hydraulics and Computational Fluid Dynamics
Session 1-12-2 TH and CFD 2
Yesaswi N. Chilamkurti

Thermal Hydraulics and Computational Fluid Dynamics
Session 1-12-2 TH and CFD 2
Christopher Chi-Ming Chu

Thermal Hydraulics and Computational Fluid Dynamics
Session 1-12-3 TH and CFD 3
Xiang Xiaofeng

Thermal Hydraulics and Computational Fluid Dynamics
Session 1-12-3 TH and CFD 3
George Mesina

Thermal Hydraulics and Computational Fluid Dynamics
Session 1-12-4 TH and CFD 4
Ming Gao

Thermal Hydraulics and Computational Fluid Dynamics
Session 1-12-4 TH and CFD 4
George Mesina

Thermal Hydraulics and Computational Fluid Dynamics
Session 1-12-5 TH and CFD 5
Saleh Etaig

Thermal Hydraulics and Computational Fluid Dynamics
Session 1-12-5 TH and CFD 5
Rabia Jamshaid

Thermal Hydraulics and Computational Fluid Dynamics
Session 1-12-6 TH and CFD 6
George Mesina

Thermal Hydraulics and Computational Fluid Dynamics
Session 1-12-7 TH and CFD 7
cheng Xu

Thermal Hydraulics and Computational Fluid Dynamics
Session 1-12-7 TH and CFD 7
Imran Aziz

Power & Energy Session Chairs

Biofuels, Hydrogen, Syngas, and Alternate Fuels
Session 2-1-1 Fuel processing and biofuel production technologies
Sheng Li

Biofuels, Hydrogen, Syngas, and Alternate Fuels
Session 2-1-2 Study and characterization of various types of biodiesel engines
Choongho Yu

Biofuels, Hydrogen, Syngas, and Alternate Fuels
Session 2-1-3 Study and characterization of flow and combustion of biodiesel in diesel engines
Gisuk Hwang

Biofuels, Hydrogen, Syngas, and Alternate Fuels
Session 2-1-4 Biomass processing and treatment
Ben Xu

Concentrating Solar Power
Session 2-2-1 Concentrators and Optics
Sheldon Jeter

Concentrating Solar Power
Session 2-2-2 Receivers I
Justin Lapp

Concentrating Solar Power
Session 2-2-3 Receivers II
Antoni Gil Pujol

Concentrating Solar Power
Session 2-2-4 Heat and Mass Transfer Analysis
Nathan Siegel

Concentrating Solar Power
Session 2-2-5 Thermal Energy Storage
Nathan Schuknecht

Concentrating Solar Power
Session 2-2-6 Advanced Power Cycles
Zhiwen Ma

Concentrating Solar Power
Session 2-2-7 System Design and Analysis
Matt Carlson

Concentrating Solar Power
Session 2-2-8 SunShot CSP Symposium
Clifford Ho

Photovoltaics
Session 2-3-1 Photovoltaics Session I
Bing Guo

Photovoltaics
Session 2-3-2 Photovoltaics Session II
Scott Tippens

Solar Chemistry
Session 2-4-1 Solar Thermochemical Fuel Production
Justin Lapp

Solar Chemistry
Session 2-4-2 Solar Thermochemistry
Erik Koepf

Wind Energy Systems and Technologies
Session 2-5-1 Wind Energy Systems 1
Weifei Hu

Wind Energy Systems and Technologies
Session 2-5-1 Wind Energy Systems 1
Ali Mehmani

Wind Energy Systems and Technologies
Session 2-5-2 Wind Energy Systems 2
Weifei Hu

Wind Energy Systems and Technologies
Session 2-5-2 Wind Energy Systems 2
Jie Zhang

Wind Energy Systems and Technologies
Session 2-5-3 Wind Energy Systems 3
Ali Mehmani

Wind Energy Systems and Technologies
Session 2-5-3 Wind Energy Systems 3
Weifei Hu

Geothermal Power, Hydro/Ocean Power, and Emerging Energy Technologies
Session 2-6-1 Geothermal Power and Emerging Technologies
Craig Turchi

Geothermal Power, Hydro/Ocean Power, and Emerging Energy Technologies
Session 2-6-2 Hydro/Ocean Power - I
Bang Fuh Chen

Geothermal Power, Hydro/Ocean Power, and Emerging Energy Technologies
Session 2-6-3 Hydro/Ocean Power - II
Ben Xu

CHP and Hybrid Power & Energy Systems
Session 2-7-1 CHP & CCHP I
Alta Knizley

CHP and Hybrid Power & Energy Systems
Session 2-7-2 CHP & CCHP II
Jian Zhang

CHP and Hybrid Power & Energy Systems
Session 2-7-3 Hybrid Power & Energy Systems
Wahiba Yaici

Thermodynamic Analysis of Energy Systems
Session 2-8-1 Organic Cycles
Alireza Javanshir

Power & Energy Session Chairs

Thermodynamic Analysis of Energy Systems
Session 2-8-2 Power Cycles
Ali Al-Alili

Environmental, Economic, and Policy Considerations of Advanced Energy Systems
Session 2-9-1 Environmental and economic consideration of advanced energy systems
Pouria Ahmadi

Environmental, Economic, and Policy Considerations of Advanced Energy Systems
Session 2-9-2 Environmental Engineering Panel

Sustainable Building Energy Systems
Session 2-10-1 Advances in HVAC System Design and Optimization-I
M. Keith Sharp

Sustainable Building Energy Systems
Session 2-10-2 Advances in Building Energy Modeling and Management
Marco Sanjuan

Sustainable Building Energy Systems
Session 2-10-2 Advances in Building Energy Modeling and Management
Ali Al-Alili

Sustainable Building Energy Systems
Session 2-10-3 Advances in Energy Sustainability in the Building Sector - I
Ravi Gorthala

Sustainable Building Energy Systems
Session 2-10-4 Advances in Energy Sustainability in the Building Sector-II
Jorge Gonzalez

Sustainable Building Energy Systems
Session 2-10-4 Advances in Energy Sustainability in the Building Sector-II
Antonio Bula

Sustainable Building Energy Systems
Session 2-10-5 Advances in HVAC System Design and Optimization-II
Marco Sanjuan

Sustainable Infrastructure and Transportation
Session 2-11-1 Sustainable Infrastructure & Transportation
Dervis Demirocak

Sustainable Infrastructure and Transportation
Session 2-11-1 Sustainable Infrastructure & Transportation
Maurizio Manzo

Batteries and Electrochemical Energy Storage
Session 3-1-1 Session: Batteries
George Nelson

Polymer Electrolyte Membrane, Direct Methanol, & Alkaline Fuel Cells
Session 3-2-1 Polymer Electrolyte Membrane, Direct Methanol, & Alkaline Fuel Cells
Adam S. Hollinger

Polymer Electrolyte Membrane, Direct Methanol, & Alkaline Fuel Cells
Session 3-2-1 Polymer Electrolyte Membrane, Direct Methanol, & Alkaline Fuel Cells
Prodip K. Das

Polymer Electrolyte Membrane, Direct Methanol, & Alkaline Fuel Cells
Session 3-2-2 Polymer Electrolyte Membrane, Direct Methanol, & Alkaline Fuel Cells -II
Adam S. Hollinger

Polymer Electrolyte Membrane, Direct Methanol, & Alkaline Fuel Cells
Session 3-2-2 Polymer Electrolyte Membrane, Direct Methanol, & Alkaline Fuel Cells -II
Prodip K. Das

Phosphoric Acid, Molten Carbonate, & Solid Oxide Fuel Cells
Session 3-3-1 Phosphoric Acid, Molten Carbonate, and Solid Oxide Fuel Cells
Eon Soo Lee

Phosphoric Acid, Molten Carbonate, & Solid Oxide Fuel Cells
Session 3-3-1 Phosphoric Acid, Molten Carbonate, and Solid Oxide Fuel Cells
Chengguo Li

Fuel Cell Ancillary Systems and Balance-of-Plant
Session 3-4-1 Controls and Hydrogen Production for Fuel Cell Systems
David Tucker

Fuel Cell Ancillary Systems and Balance-of-Plant
Session 3-4-2 Controls and Hydrogen Production for Fuel Cell Systems - II
Nor Farida Harun

Commercial Applications of Energy Storage
Session 4-1-1
Commercial-Scale Energy Storage

Batteries and Electrochemical Energy Storage
Session 4-2-1
Batteries and Electrochemical Energy Storage

Power & Energy Session Chairs

Compressed Air & Mechanical Energy Storage Systems
Session 4-3-1 Compressed Air Energy Storage Systems

Therma l Energy Storage Systems
Session 4-4-1 Thermal Energy Storage I: Materials and Components
Sean Babiniec

Thermal Energy Storage Systems
Session 4-4-2 Thermal Energy Storage II: Systems
Siamak Farhad

Thermal Energy Storage Systems
Session 4-4-3 Thermal Energy Storage III: Combined Cycles
Anne Mallow

Nuclear Steam Supply Systems Including Advanced and Small Modular Reactors
Session 5-1-1
Computational Fluid Dynamics

Codes, Standards, Licensing and Regulatory Compliance
Session 5-3-1 Codes, Standards, Licensing and Regulatory Compliance
Jovica Riznic

Codes, Standards, Licensing and Regulatory Compliance
Session 5-3-1 Codes, Standards, Licensing and Regulatory Compliance
Guoqiang Wang

Codes, Standards, Licensing and Regulatory Compliance
Session 5-3-1 Codes, Standards, Licensing and Regulatory Compliance
John Bendo

Structures, Components and Materials
Session 5-5-1 Structures, Components and Materials - I
Hakan Ozaltun

Structures, Components and Materials
Session 5-5-1 Structures, Components and Materials - I
Efe G. Kurt

Structures, Components and Materials
Session 5-5-1 Structures, Components and Materials - I
Jovica Riznic

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 5-7-1 Plant Operations, Maintenance and Aging Management
Robert Stakenborghs

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 5-7-1 Plant Operations, Maintenance and Aging Management
Jovica Riznic

Plant Operations, Maintenance, Aging Management, Reliability and Performance
Session 5-7-1 Plant Operations, Maintenance and Aging Management
Guoqiang Wang

Thermal Hydraulics and Computational Fluid Dynamics
Session 5-8-1 Thermal Hydraulics and CFD Challenges-1
George Mesina

Thermal Hydraulics and Computational Fluid Dynamics
Session 5-8-1 Thermal Hydraulics and CFD Challenges-1
Jovica Riznic

Thermal Hydraulics and Computational Fluid Dynamics
Session 5-8-1 Thermal Hydraulics and CFD Challenges-1
Guoqiang Wang

Thermal Hydraulics and Computational Fluid Dynamics
Session 5-8-2 Thermal Hydraulics and CFD Challenges-II
Jovica Riznic

Thermal Hydraulics and Computational Fluid Dynamics
Session 5-8-2 Thermal Hydraulics and CFD Challenges-II
George Mesina

Thermal Hydraulics and Computational Fluid Dynamics
Session 5-8-2 Thermal Hydraulics and CFD Challenges-II
Robert Stakenborghs

Student Competition
Session 1-14-1 Student Competition
Steven Greco

Student Competition
Session 1-14-1 Student Competition
Thomas Cavalcante

Student Competition
Session 1-14-2 Student Competition
Moritz H^{n}bel

Student Competition
Session 1-14-2 Student Competition
Joseph Ciras

Student Competition
Session 1-14-3 Student Competition
AndrΘ Teixeira

Student Competition
Session 1-14-3 Student Competition
Marta Hatzell

Student Competition
Session 1-14-3 Student Competition
Andrey Gunawan

Power & Energy Session Chairs

Posters
Session 1-15-1 Posters

Posters
Session 3-6-1 Posters

Posters
Session 4-5-1 Energy Storage Forum Poster Session

Posters
Session 2-12-1 Poster Session

Energy Water Sustainability
Session 1-13-1 High Salinity Brine Treatment I
Nicholas Siefert

Energy Water Sustainability
Session 1-13-2 High Salinity Brine Treatment II
Nicholas Siefert

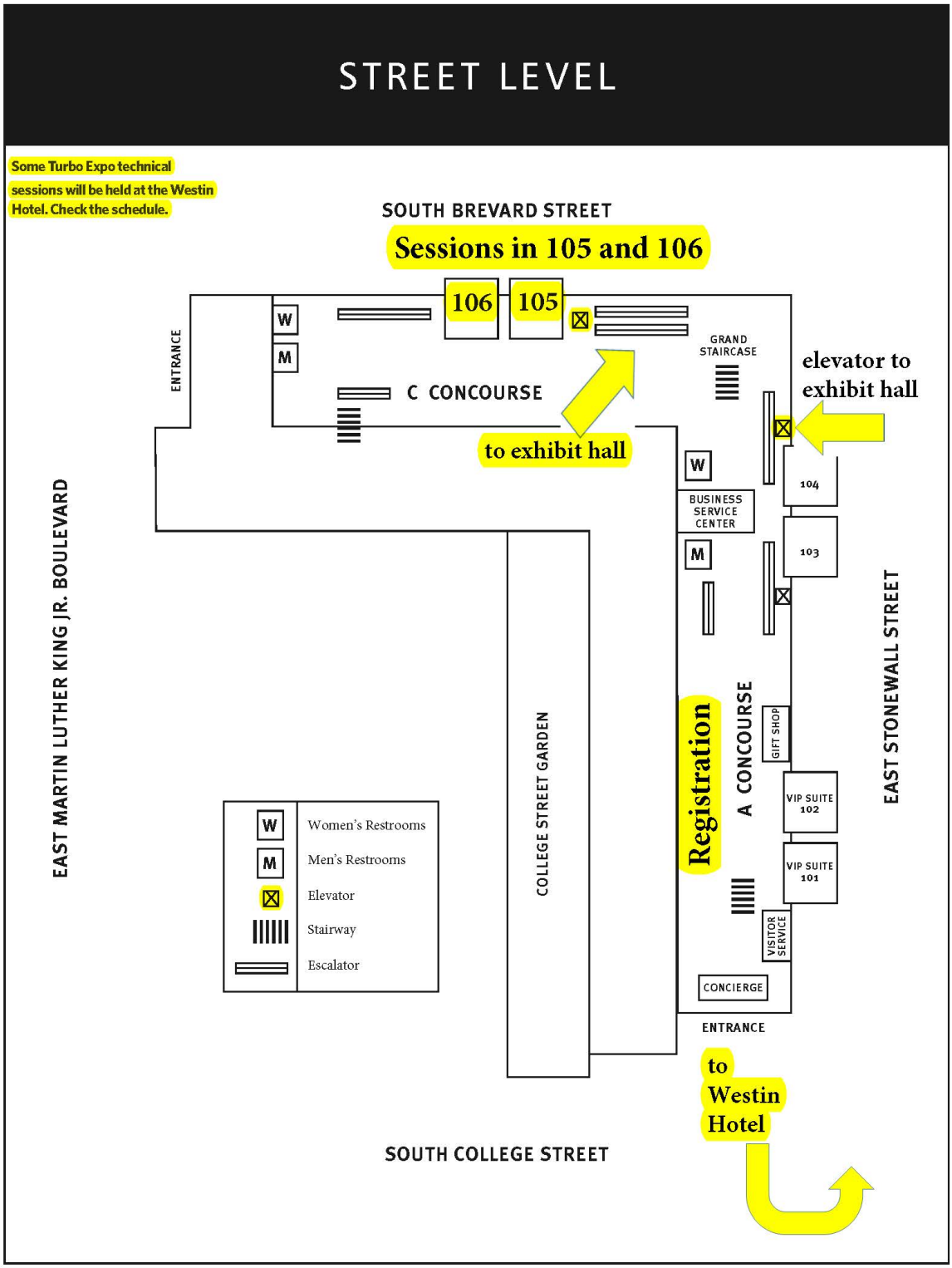
Energy Water Sustainability
Session 1-13-3 Effluent Discharge Management at Thermal Power Plants I
Jessica Mullen

Energy Water Sustainability
Session 1-13-4 Effluent Discharge Management at Thermal Power Plants II
Jessica Mullen

Energy Water Sustainability
Session 1-13-5 Water Consumption & Withdrawal at Thermal Power Plants
Erik Shuster

Energy Water Sustainability
Session 1-13-6 Panel Discussion on Future Energy-Water R&D Needs
Jessica Mullen

Convention Center Map



Notes

Thank You Sponsors

Platinum Sponsors

Women in Turbomachinery Event

Silver Sponsors

Bronze Sponsors

Attendee Bag

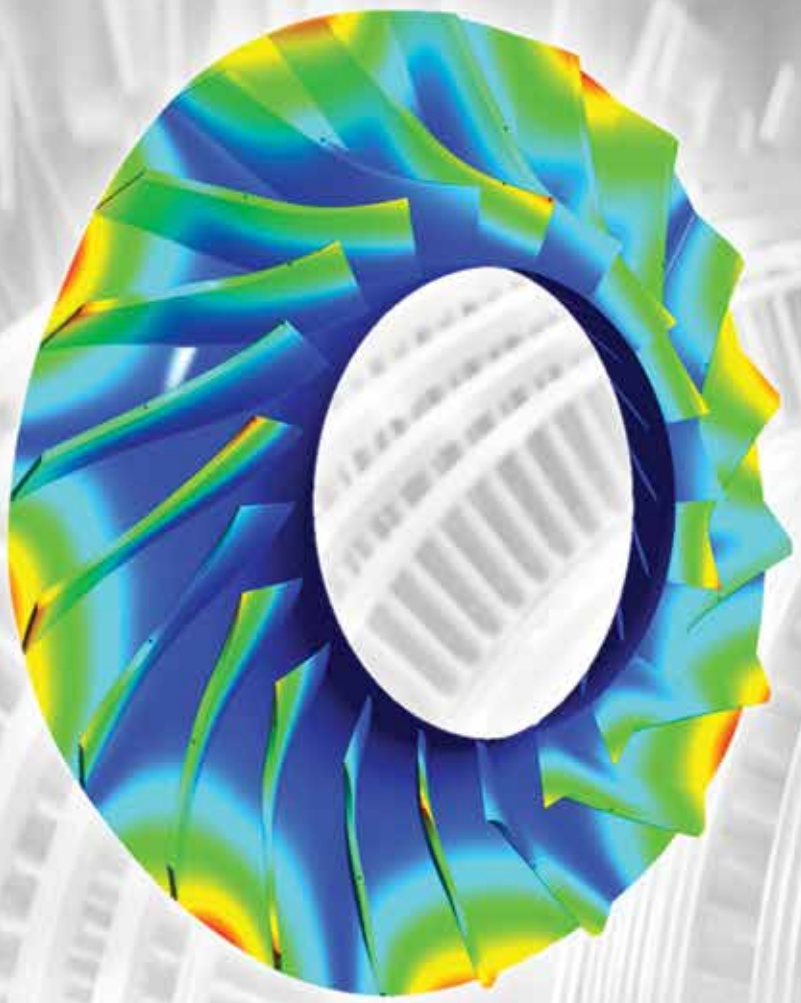
Additional Sponsors

Student Mixer & Attendee Bag

Lanyards

The Experts in Turbomachinery

Name Badge Insert



Turbocharge Your Time to Market

You've already solved your easy problems. Now, only the toughest challenges remain. But even the hardest problems can be solved using ANSYS engineering simulation.

ANSYS solutions help you design your turbo and power products with the highest levels of efficiency and durability, and the lowest emissions and noise, while reducing development time and costs. With ANSYS, you'll get your innovations to market faster than you ever thought possible.

Visit us at Booth #701

ANSYS®