

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



Numeca Turbomachinery Solutions: Design, Analysis & Multidisciplinary Optimization



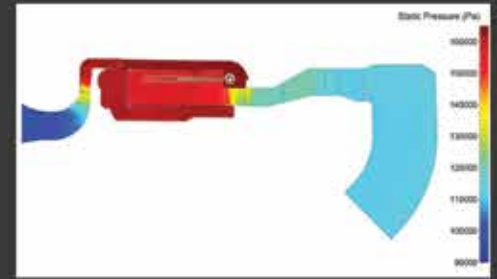
Full engine simulation, combining NLH power with our advanced combustion models, in one single run



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

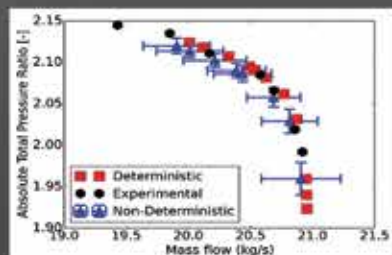


Fully coupled aero-vibro-acoustics suite with FINE™/Acoustics

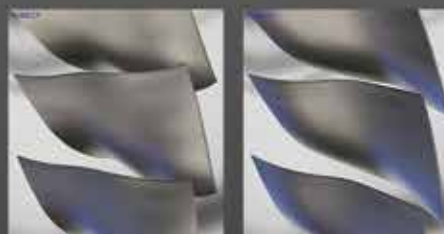
Wizard-based automation for tonal and broadband noise prediction.

Multidisciplinary & Robust Design Optimization

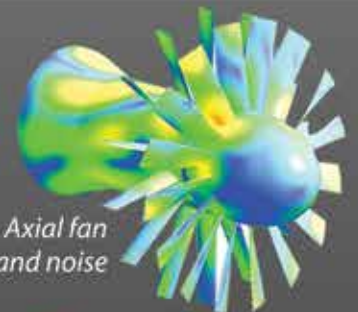
FINE™/Design3D - Uncertainty Quantification (UQ): considering geometrical, operational & manufacturing uncertainties



Rotor 37:
Total
pressure
ratio over
mass flow



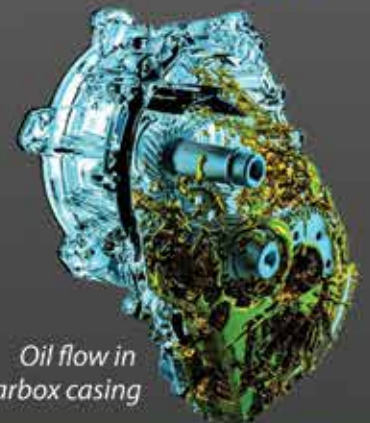
Deterministic (left) vs Robust Design (right)



Axial fan
broadband noise

Mesosopic scale simulations

with the new Lattice Boltzmann solver FINE™/LB



Oil flow in
gearbox casing

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



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Charlotte, NC

Welcome to The Queen City, from Mayor Roberts.



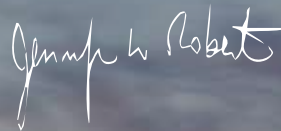
Greetings!

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.

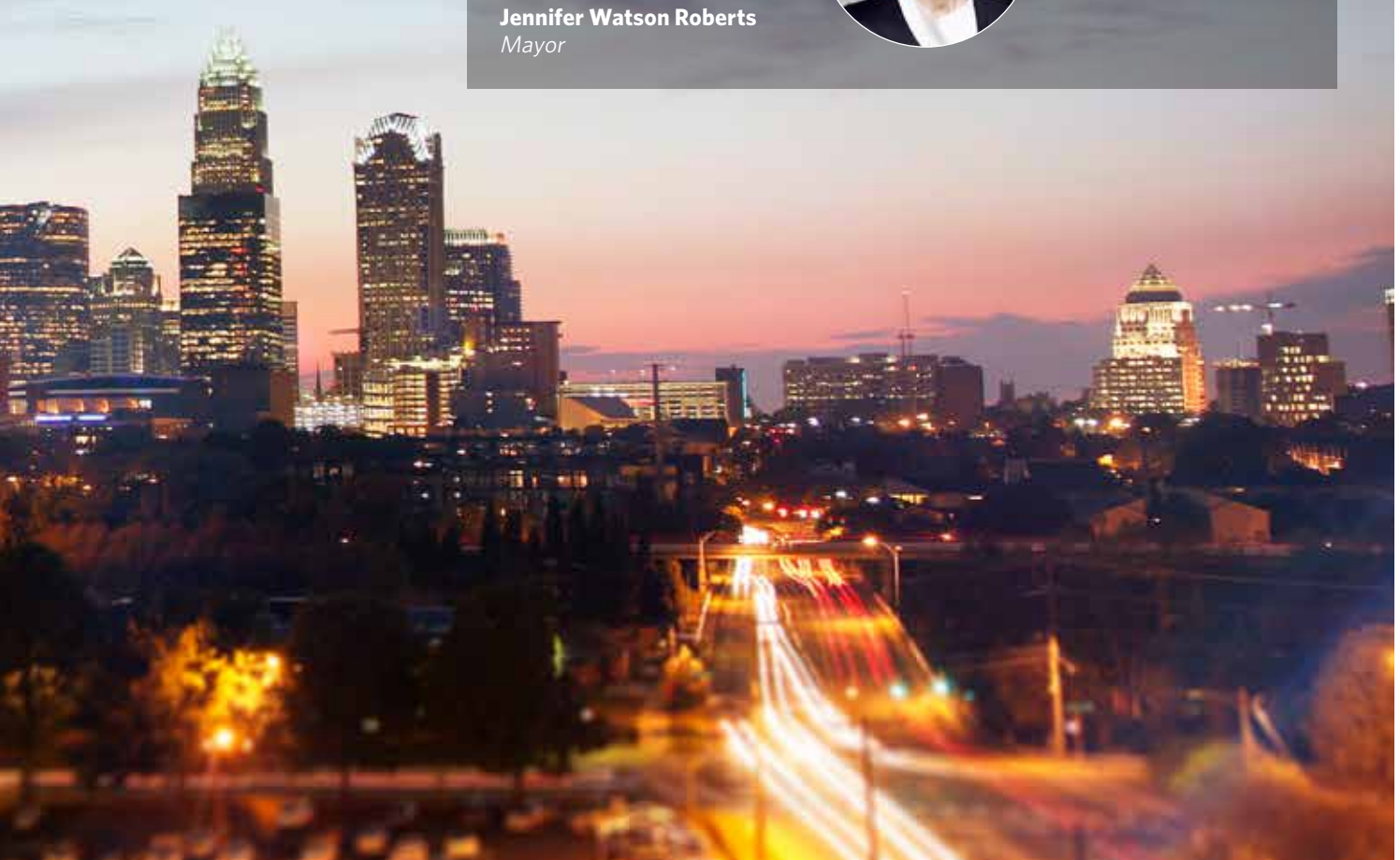
It gives me great pleasure to share our fast-growing, dynamic, and innovative city with such a diverse and impressive group. Charlotte continues to be recognized and selected as a meeting destination by an increasing number of organizations. It is a community of pleasant tree-lined neighborhoods, parks 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



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

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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



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 Offshore Applications: A Parametric Investigation with Different Power Rating Gas Turbines"

Rakesh Bhargava, *Innovative 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 4.0

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 Supérieure

Ruben Del Rosario

Advisor
NASA

Karen Thole

Advisor
Pennsylvania State University

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.

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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.



“The Future of Energy- Powering Change”

Master of Ceremonies:

Jeff Patterson, Chief Operating Officer, ASME
Welcome Remarks, ASME Incoming President

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

Power & Energy Plenary Sessions

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 than 320 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. Rohlifing, Acting Director,
Advanced Research Projects Agency-Energy (ARPA-E)

Dr. Eric A. Rohlifing serves as Acting Director at the Advanced Research Projects Agency-Energy (ARPA-E), responsible for oversight of the agency. Dr. Rohlifing also serves as Deputy Director for Technology, in which he oversees all technology issues relating to ARPA-E's programs. Dr. Rohlifing 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 400°C (580°C), 400°C and 580°C, 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. He 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.

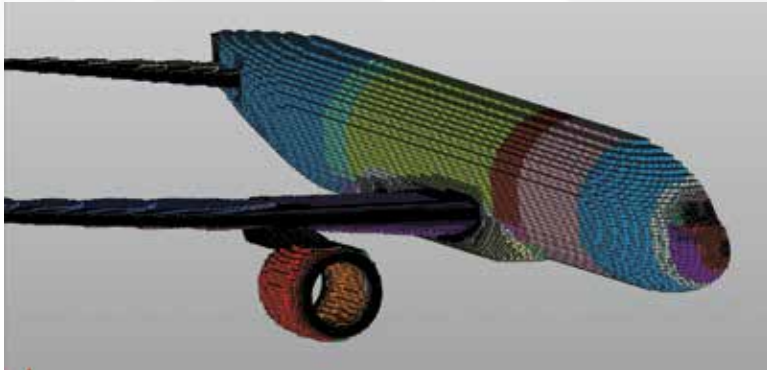


Yassin A. Hassan

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 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

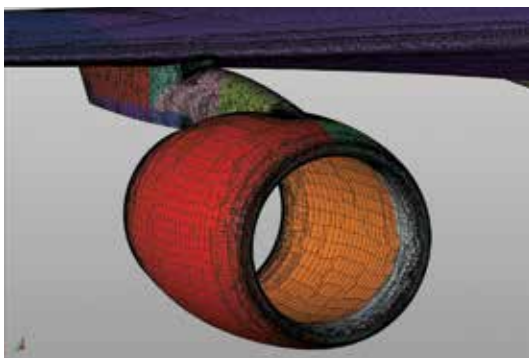
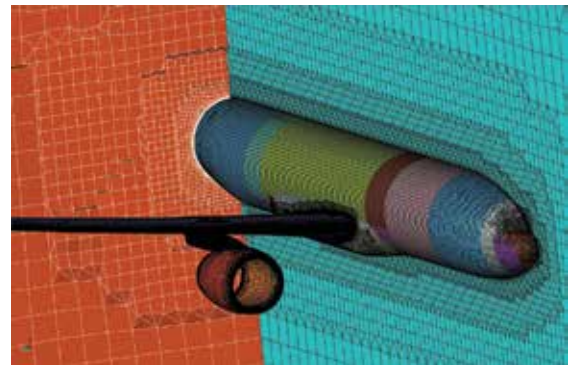
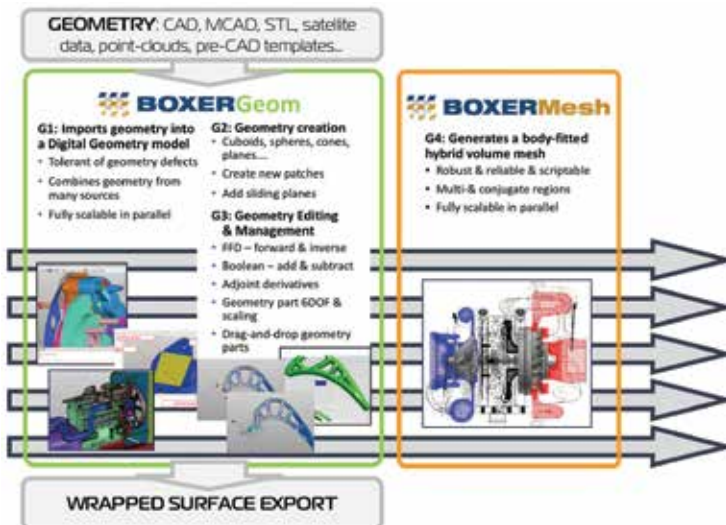
- Direct CAD import
- Very flexible geometry editing & management

Fast & Scalable

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

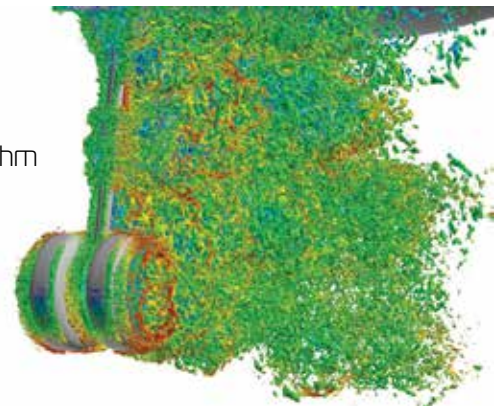
Intuitive & Easy to Use

- 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

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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
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

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Montonari Haraguchi
Mitsubishi Hitachi Power

Conference Co-Chair

Mingjiang Ni
Zhejiang University

Conference Co-Chair

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Siemens Energy Inc.

Technical Program Co-Chair

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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

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Mansour Zenouzi
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Asif Arastu
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Member

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POWER & ENERGY
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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

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?

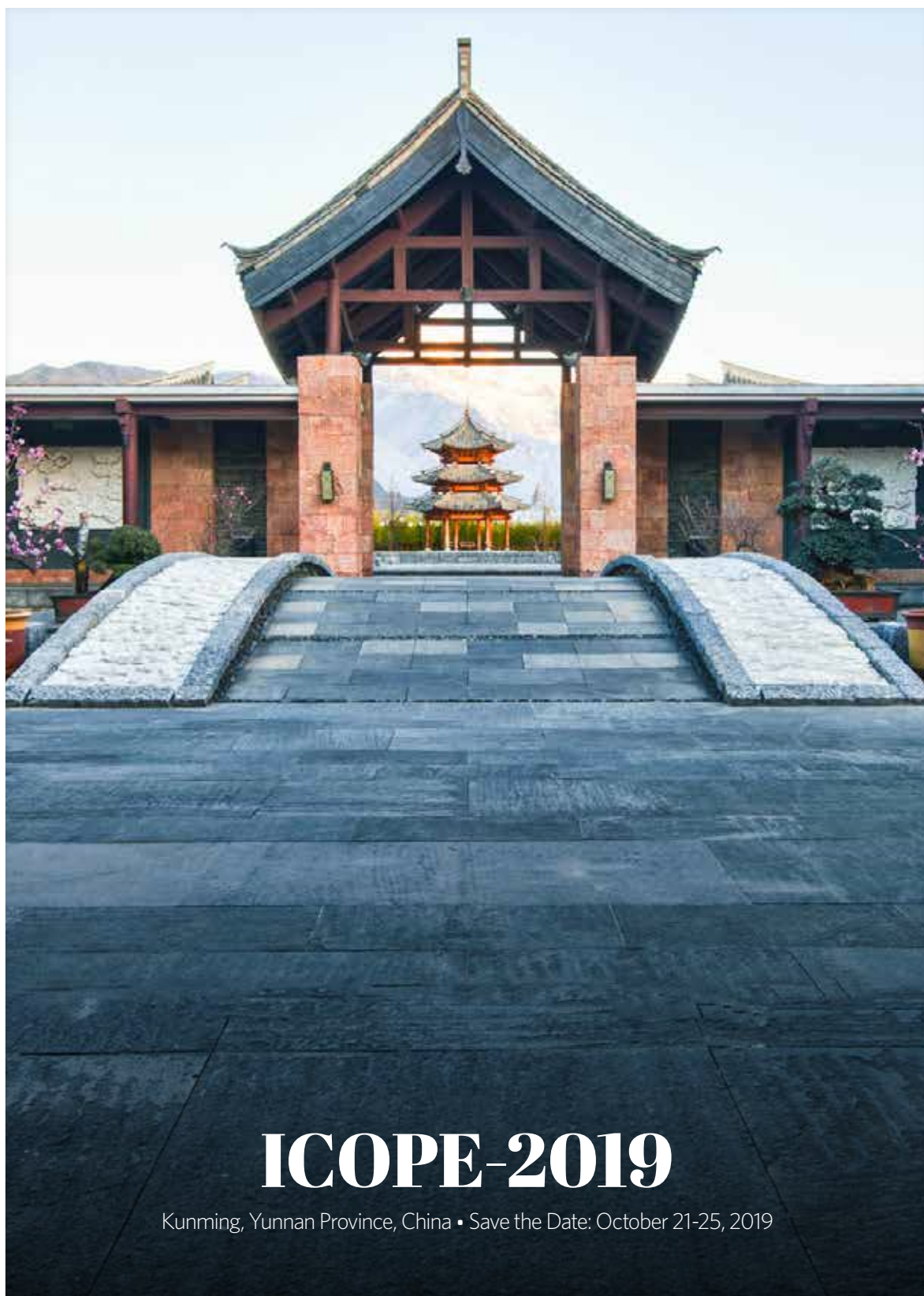
The workshop will be a practical look at some of the key

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

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.I 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, Uttarakhand, India, Rakesh. P Gakkhar, IIT Roorkee, Uttarakhand, 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

Roohbeh 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 Krizenga, 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)

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A photograph of two men in a professional setting, likely a conference. The man on the left is wearing a light-colored blazer and glasses, holding a beer. The man on the right is wearing a light blue button-down shirt and glasses, gesturing with his hands while speaking. Both are wearing lanyards with conference badges. The background is blurred, showing other attendees and a bright, indoor environment. The entire image has a blue-green color overlay.

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.

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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.



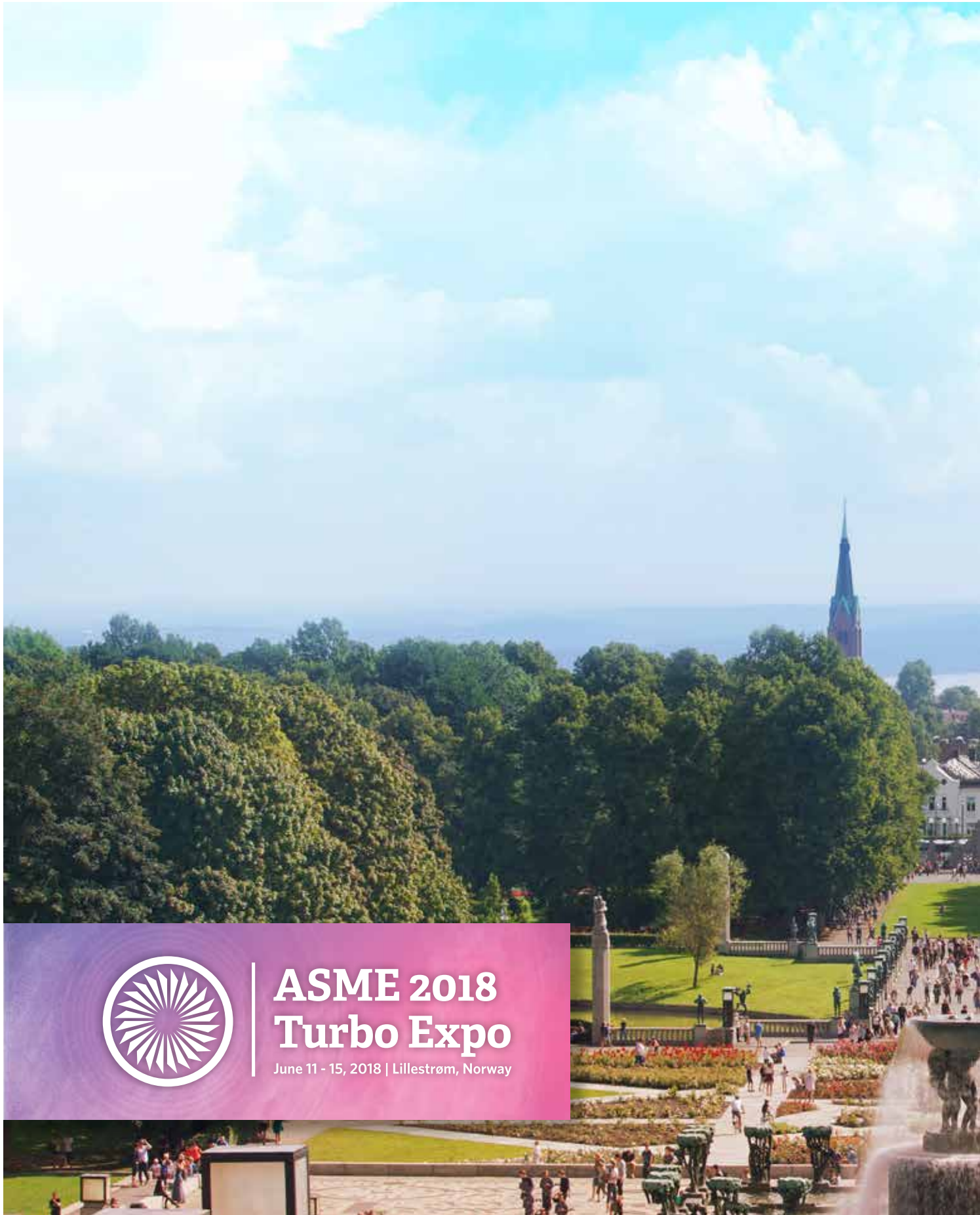
**ASME 2018
Turbo Expo**

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





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 Aero derivatives.

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.



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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 28 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 Alruzzihi, 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 University

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



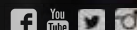
Pratt & Whitney is proud to sponsor the 2017 ASME Turbo Expo.

When aviation technology reaches its limits, transform the technology. Airlines needed cleaner, greener, quieter engines. We bypassed conventional design and gave them the revolutionary PurePower® Geared Turbofan™ engine family. General aviation and defense need continuously higher-performing and ever more sustainable propulsion for jets, helicopters, turboprops – even auxiliary power units. Pratt & Whitney continues to transform our industry-wide applications, along with advanced support for our diverse global customers. See more of this proud U.S. company at pw.utc.com.



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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

Chiara Gastaldi
Politecnico di Torino

Thomas Jackowski
Karlsruhe Institute of Tech

Cori Watson
University of Virginia

James Braun
Purdue University

Simone Giorgetti
Universite Libre de Bruxelles

Salman Javed
Delhi Technological
University

Suo Yang
Georgia Institute of
Technology

Bogdan Cezar Cernat
von Karmen Institute/UCL

David Gonzalez Cuadrado
Purdue University

Nguyen LaTray
UT Arlington

Lv Ye
Xi'an Jiaotong University

Theofilos Efstathiadis
Aristotle University of
Thessaloniki

Niclas Hanraths
Technical University Berlin

Maria Rinaldi
KTH Royal Institute of
Technology

Lisa Zander
Technical University Berlin

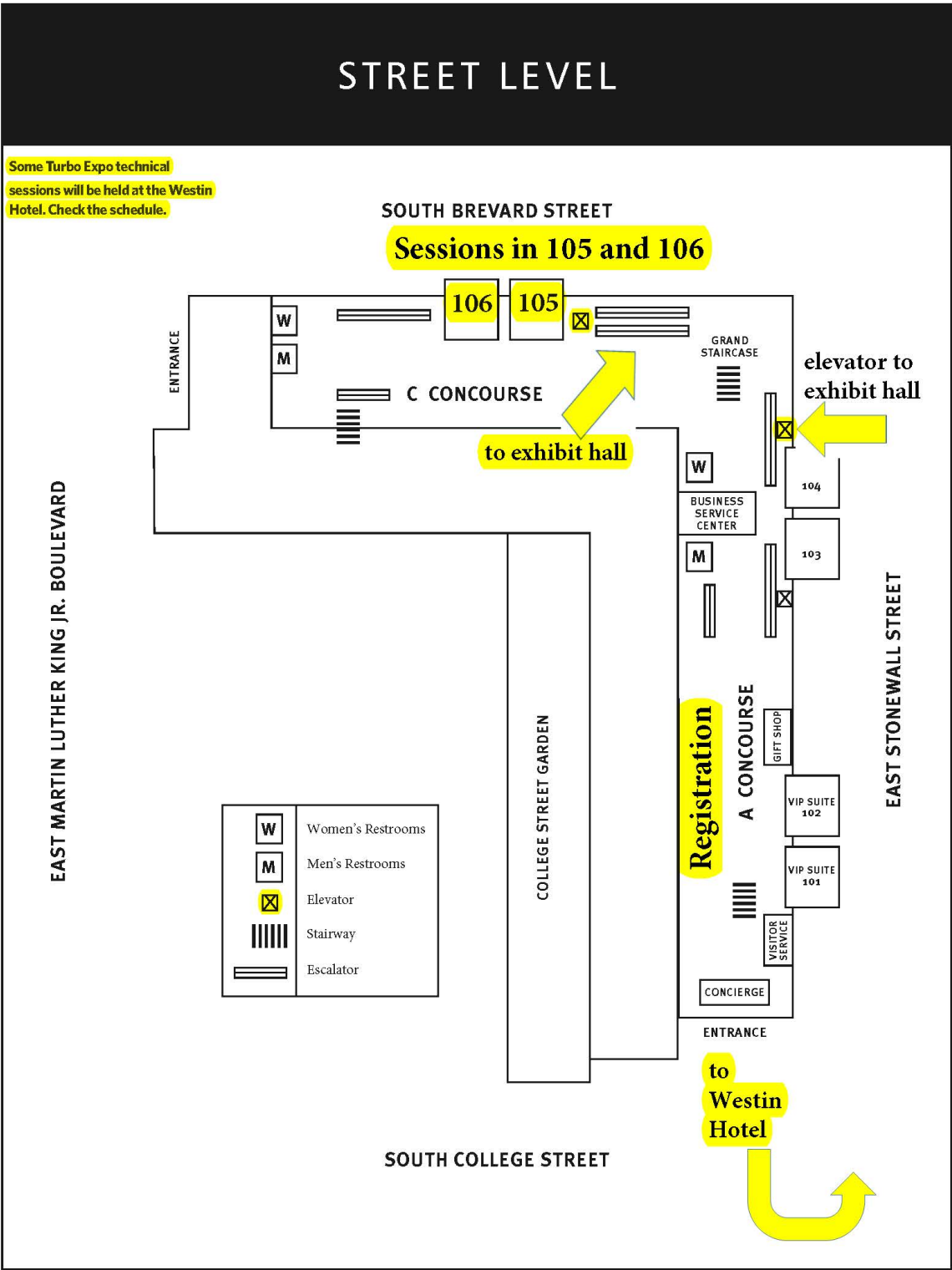
Masha Folk
University of Cambridge

Shane Haydt
Penn State

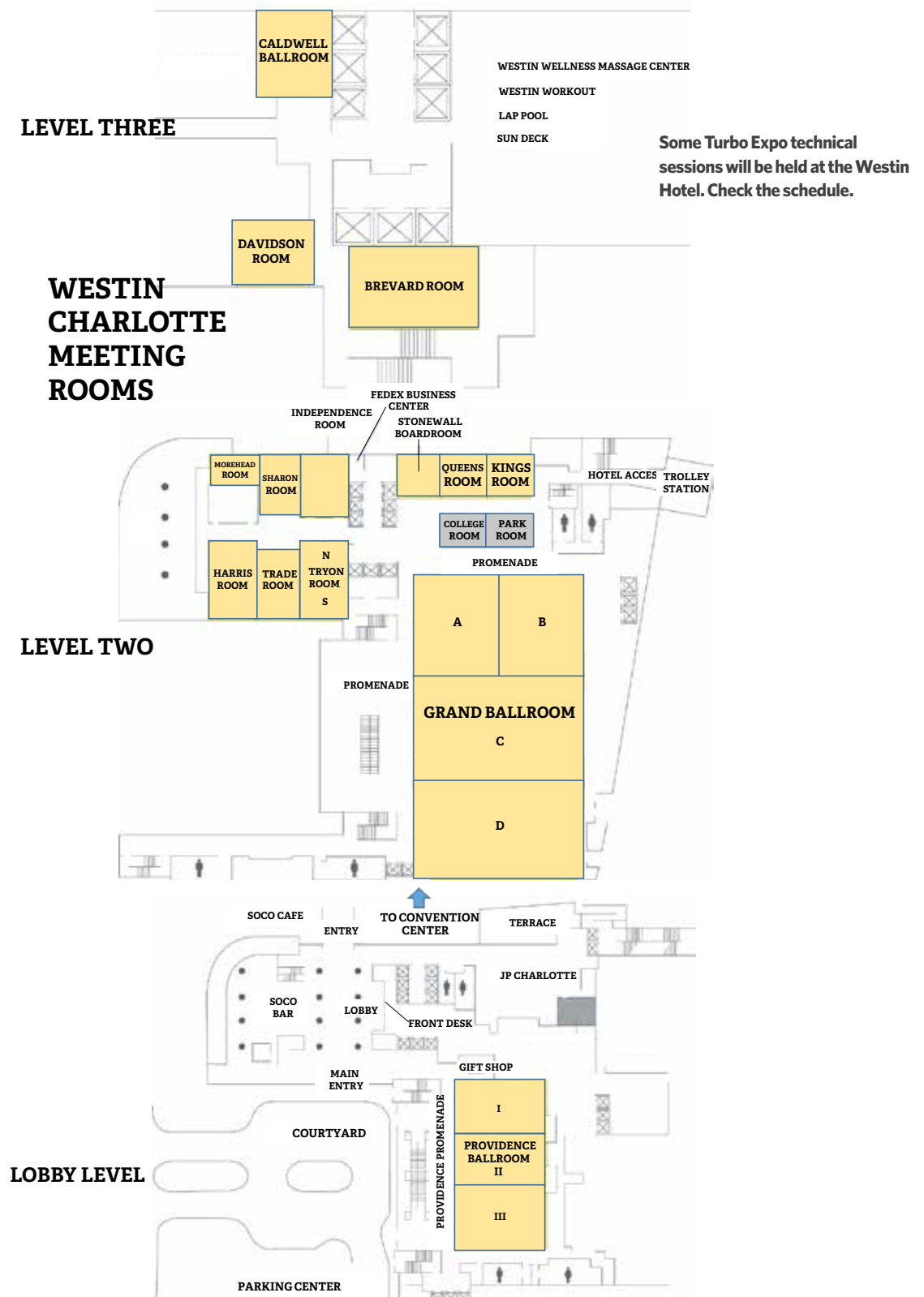
Deepanshu Singh
Indian Institute of Technology

Alexander Heinrich
Technical University Berlin

Convention Center Map



Westin Hotel Map



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

Exhibitor Booth Listings.....Pages 54-66
Product Categories..... Pages 68-71



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.

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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

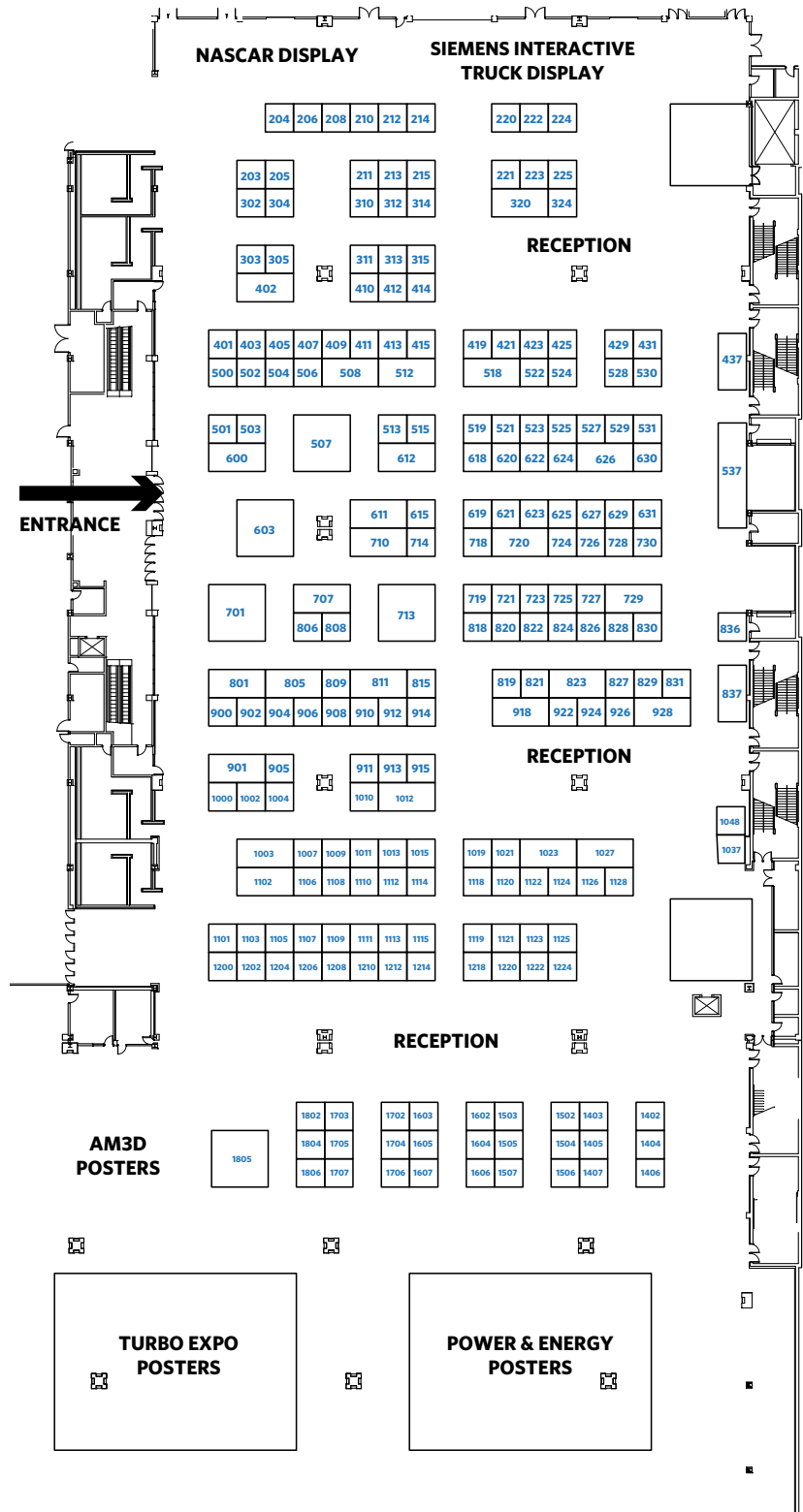
Dr. Benjamin O'Shea

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 |



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

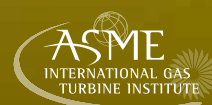
ASME Gas Turbine India Conference is the must-attend event for turbomachinery professionals. Over 500 leading experts will gather to present their peer-reviewed research and the latest technology advancements in the industry. If warranted by review, papers may also be recommended for publication in ASME's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



Exhibitor Social Media

| | | |
|---|--|--|
| ACTech North America, Inc. 500  ACTech GmbH | Celeroton AG 1009  Celeroton AG | HGL Dynamics 1115  facebook.com/HGLDynamics  @HGLDynamics  HGL Dynamics |
| Advanced Design Technology Ltd. 815  @ADT_TURBO  Advanced Design Technology, Ltd. | Concepts NREC 801  facebook.com/conceptsnrec  @conceptsnrec  Concepts NREC | Komax Systems, Inc. 1002  facebook.com/komaxsystem  @komaxinc  Komax Systems, Inc. |
| Aerodyn 720  facebook.com/Aerodyn-Engineering-134551636619274/  @aerodyneng  Aerodyn Engineering, Inc. | Conco Services Corporation 1007  facebook.com/ConcoSystems  @ConcoServices  Conco Services Corporation | Hydraulic Institute 827  facebook.com/Hydraulic.Institute/  @Hlpumps  Hydraulic Institute |
| Aeroprobe Corporation 1019  facebook.com/aeroprobe/  @AeroprobeCorp  Aeroprobe Corporation | Crane Inspection & Certification Bureau CICB 409  facebook.com/CICBTraining/  @CICBTraining | MMP Technology 507  @MTFinishing  MMP TECHNOLOGIES LTD |
| ANSYS 701  @ANSYS  ANSYS, Inc. | EOS GmbH - Electro Optical Systems 837  EOS - Electro Optical Systems | Kulite Semiconductor Products, Inc. 515  facebook.com/kulitesemiconductor/ |
| APEX Turbine Testing Technologies 518  facebook.com/APEXTurbine  @ApexTurbine  APEX Turbine Testing Technologies | Creare LLC 723  Creare | MTU Aero Engines 811  MTU Aero Engines North America |
| Applied Flow Technology 1119  facebook.com/appliedflowtechnology/  @appliedflowtech  Applied Flow Technology | EPRI 1023  facebook.com/search/top/?q=EPRI  @EPRInews  Electric Power Research Institute | National Research Council of Canada (NRC) 915  @NRC_CNRC  National Research Council Canada |
| ASME Turbo Expo 1037  facebook.com/ASMEIGTI  @IGTI  ASME International Gas Turbine Institute | Exa Corporation 1107  facebook.com/exacorp  @exacorp  Exa Corporation | NUMECA International 600  facebook.com/NUMECAIntl/  @Numecalnt  NUMECA International |
| AVL List GmbH 1101  facebook.com/AVL.List  @AVL_List | Extrude Hone 423  facebook.com/Extrude-Hone-619550368207706/  @ExtrudeHone  Extrude Hone | OPRA Turbines BV 900  OPRA Turbines |
| Calnetix Technologies 901  facebook.com/Calnetix9763296157131/  Calnetix Technologies | Field Industries LLC 630  facebook.com/pages/Field-Industries-LLC/354238007921769  @fieldindustries  Field Industries | Ophir Spiricon 1202  facebook.com/ophir.optronics  @OphirPhotonics  Ophir-Spiricon LLC |
| Atlas Copco 626  facebook.com/atlascopcousa  @AtlasCopcoUSA  atlas-copco-usa | Flownex Simulation Environment 1102  Flownex Simulation Environment | OROS 513  @OROS_NV  OROS |
| Bosal 910  BOSAL | | OSRAM 1027  facebook.com/osramheaters |

Exhibitor Social Media

| | | | | | |
|--|-----|---|------|---|-----|
| PCA Engineers Limited in PCA Engineers Limited | 806 | Siemens f facebook.com/cdadapco/ in CD-adapco f facebook.com/Siemens/ t @Siemens in Siemens | 303 | TEI - TUSAS Engine Industries, Inc in TEI - TUSAS Engine Industries, Inc. | 729 |
| Photron USA, Inc. f facebook.com/ Photron-126137154096758/ t @Photron_HSV in Photron | 506 | SLM Solutions t @SLMSolutions_NA in SLM Solutions NA, Inc. | 821 | Thermal Wave Imaging f facebook.com/thermalwaveimaging/ in Thermal Wave Imaging, Inc. | 912 |
| Pointwise, Inc. f facebook.com/pointwise/ t @pointwise in Pointwise, Inc | 619 | SmartUQ f facebook.com/SmartUQ/ t @SmartUQ in SmartUQ | 904 | Turbine Diagnostic Services, Inc. in Turbine Diagnostic Services | 320 |
| První brněnská strojírna Velká Bíteš, a.s. f facebook.com/PBS-Velka-Bites-200127596694856/ t @PBS_Velka_Bites in První brněnská strojírna Velká Bíteš, a. s. | 831 | Southwest Research Institute f facebook.com/southwestresearch t @swri in Southwest Research Institute | 512 | Torquemeters Ltd. in Torquemeters Limited | 805 |
| RetubeCo, Inc. f facebook.com/retubeco t @retubeco in Retubeco, Inc | 836 | Strategic Power Systems, Inc. in Strategic Power Systems, Inc. | 1021 | Turbocam International f facebook.com/Turbocam/ t @TurbocamIntl in Turbocam International | 612 |
| Scanivalve f facebook.com/Scanivalve-Corporation-161504233879144/ | 618 | Superheat FGH Services f facebook.com/superheatfgh t @SuperheatFGH in Superheat FGH | 425 | University of Notre Dame in Notre Dame Turbomachinery Laboratory | 911 |
| SETPOINT t @goSETPOINT in SETPOINT Vibration | 414 | TE Connectivity f facebook.com/teconnectivity t @teconnectivity in TE Connectivity | 918 | Vectoflow GmbH f facebook.com/vectoflow t @vectoflow in Vectoflow GmbH | 721 |
| | | | | Versa Integrity Group f facebook.com/versaintegritygroup/ t @Versa_Integrity in Versa Integrity Group, Inc. | 631 |
| | | | | Waukesha Bearings Corporation in Waukesha Bearings Corporation | 922 |



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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.

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

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: Vectroflow



People's Choice for Best

Turbo Expo Student Poster

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

Exhibitor Product Categories

3D INSPECTION AND MEASUREMENTS

Aerodyn
Creare LLC
MMP Technology
Muller-BBM Vbroakustik Systeme
Präwest Präzisionswerkstätten GmbH & Co. KG.
První brněnská 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 brněnská 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 brněnská 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 / Sciencetech
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 brněnská 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
Curtis-Wright/Sciencetech
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 & METHODOLOGIES

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 brněnská 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 brněnská 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 brněnská 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 brněnská 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 brněnská 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 brněnská 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
Create 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 brněnská 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 brněnská 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



Race Car Simulator

Come visit the Exhibit Hall to experience the NASCAR Simulator!

Cordell
RACING EXPERIENCE

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

Nicole Key

Purdue Univ

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
Hirosi 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 Stakenborgs
ILD Power

Track 5-8 Thermal Hydraulics and Computational Fluid Dynamics

Track Organizer

Blazenka Maslovic
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) certificate 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/asma-event-connect>

Conference Proceedings

Printed volumes of the official Conference Proceedings may be ordered after the Conference by emailing customer-care@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

Monday, June 26th 10:00 am - 1:00 pm

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

FULL

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

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

FULL

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

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

FULL

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

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

FULL

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



Global Gas Turbine News

Reach 140,000 ASME Members!

Write a technical article for the Global Gas Turbine News! ASME IGTI is looking for timely technical content related to the gas turbine/turbomachinery industry. Articles should be approximately 800 to 1,000 words and non-commercial in nature.

Submit your article today to
igtinews@asme.org.

NEW at Turbo Expo AM3D Day

Presented by ASME Gas Turbine

Wednesday, June 28, 2017

Join us at Turbo Expo for AM3D Day!
Learn how additive manufacturing (AM)
is impacting the gas turbine industry by:

- Enabling new design and material freedoms
- Shortening the development cycle of gas turbines
- Reducing prototype and testing costs
- Producing parts more easily
- Increasing speed-to-market
- Enabling increased performance through novel design

The day will consist of a plenary session from industry leaders, disciplinary panel sessions, specialized exhibits and a student competition.

Additive Manufacturing Plenary Panel Session:
"Disruptive Technologies and Accelerating Innovation in Gas Turbines - The Role of Additive Manufacturing"

Other disciplinary panels will focus on:

- Processes & Materials for Additive Manufacturing
- Design & Performance for Additive Manufacturing
- Challenges and Opportunities in Using AM for Turbine Cooling
- Compressor/Fuel Injector applications for AM

Who should attend?

- Industry experts in gas turbines
- Suppliers/producers of AM machinery
- Suppliers to the gas turbine industry
- QC/QA Technicians
- AM specialists interested in turbine repair
- Industry experts in AM
- Program and Project Managers
- Designers
- Manufacturing Engineers



Top 5 reasons to be there:

1. Learn about the state-of-the-art AM methods and gas turbine application
2. Gain knowledge by attending focused panels and sessions on AM
3. Create new synergies and identify new opportunities that benefit both gas turbine and AM industries
4. Network with leading AM experts and companies to understand the potential value propositions for AM in your own industry
5. Support the future of ASME by attending the ASME student competition on AM3D



Don't miss AM3D Day at Turbo Expo, and stay with us throughout the week to visit companies that are showcasing their additive manufacturing technologies on the expo floor.

SIEMENS
Ingenuity for life

Please visit us at Turbo Expo
at Booth 303

Discover better
designs, faster.

Simulation-enabled Design
Exploration for improved Gas
Combustion

siemens.com/mdx

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

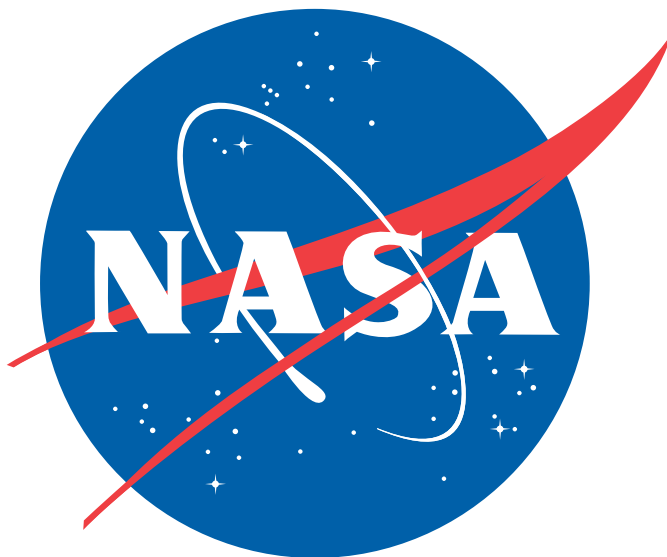
Role and attendance ribbons are available at the Information Desk in Registration. See the display for available options.

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

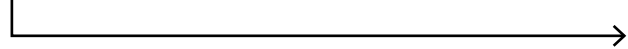
June 17 – 21, 2019 | Phoenix Convention Center
Headquarters Hotel: Sheraton Grand Phoenix



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 4:00pm – 5:30pm | 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

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

Example

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

| 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 | |
| <div>8:00</div> <div>8:30</div> <div>9:00</div> <div>9:30</div> <div>T U T O R I A L</div> | GT2017-65431 What is that hole in the back of the airplane? <i>Joe Howard, Honeywell</i> | | GT2017-65382 Comm-19 Heat Transfer Track Overview - Experimental Film Cooling <i>Srinath Ekkad, Virginia Tech</i> | | GT2017-65457 Base Metals <i>Paul Lowden, Liburdi Engineering Ltd</i> |
| | GT2017-65369 Comm-20 Heat Transfer Track Overview - Multiphysics Modeling & Optimization <i>Guillermo Paniagua, Purdue University</i> | | GT2017-65458 High Temperature Coatings <i>Henry Bernstein, Gas Turbine Materials Associates</i> | | |
| | GT2017-65381 Comm-21 Heat Transfer Track Overview - Additive Manufacturing <i>Changmin Son, Pusan National University</i> | | GT2017-65459 Failure Analysis <i>Ronald Munson, Ron Munson Associates</i> | | |
| | GT2017-65383 COMM-22 Heat Transfer Track Overview - General Computational Heat Transfer <i>Li He, Oxford University</i> GT2017-65366 Comm-16 Heat Transfer Track Overview - Experimental Internal Cooling <i>Andrew Nix, West Virginia University</i> | | GT2017-65460 Repair <i>Ronald Natole, Natole Enterprises</i> | | |
| | | | | | |

| 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 <i>Zygfryd Domachowski, Marek Dzida, Gdansk University of Technology</i> | GT2017-65386 Introduction to foil bearing technology <i>Daniel Lubell, Oil-Free Machinery</i> | GT2017-63409 Optimization of Statistical Methodologies for Anomaly Detection in Gas Turbine Dynamic Time Series <i>Giuseppe Fabio Ceschini, Siemens AG; Nicolo' Gatta, Mauro Venturini, Università degli Studi di Ferrara; Thomas Hubauer, Alin Murarasu, Siemens</i> | | |
| | GT2017-64048 The United States Navy "Standard Day" for Marine Gas Turbines <i>Dan Groghan, BAI, Inc., John J. Hartranft, Naval Sea, Bruce Thompson, Southwest Regional Maint Ctr</i> | GT2017-65387 Design consideration of foil bearing supported rotor systems <i>Daniel Lubell, Oil-Free Machinery</i> | GT2017-63410 Resistant Statistical Methodologies for Anomaly Detection in Gas Turbine Dynamic Time Series: Development and Field Validation <i>Giuseppe Fabio Ceschini, Thomas Hubauer, Alin Murarasu, Siemens AG; Nicolo' Gatta, Mauro Venturini, Università degli Studi di Ferrara</i> | | |
| 8:30 | | | | | |
| 9:00 | GT2017-63651 Optimized Gas Turbine Control System for Improved US Navy Landing Craft Air Cushion (LCAC) Operation <i>Sunit Oliver, Martin Engber, Vericor Power Systems; James Hampshire, Alan Louie, US Navy</i> | GT2017-65388 Practical Performance of Foil Bearings <i>Keun Ryu, Hanyang University</i> | GT2017-63411 A Comprehensive Approach for Detection, Classification and Integrated Diagnostics of Gas Turbine Sensors (DCIDS) <i>Giuseppe Fabio Ceschini, Thomas Hubauer, Alin Murarasu, Siemens; Nicolo' Gatta, Mauro Venturini, Università degli Studi di Ferrara</i> | | |
| | | | | | |
| 9:30 | GT2017-65281 The Increasing Complexity of Hot Corrosion <i>David Shifler, Office of Naval Research</i> | GT2017-65389 Introduction to Rigid Gas Bearings <i>Keun Ryu, Hanyang University</i> | GT2017-64906 RT61 Power Turbine 100K MTBO Life Extension - Life Cycle Cost Reduction <i>Deepak Thirumurthy, Jaskirat Singh, Mark Peng, Siemens Energy, Inc.</i> | | |
| | | | | | |

| 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 <i>Mirko Morini, University of Parma</i> | | GT2017-63547 Integrated Approach for Steam Turbine Thermo-Structural Analysis and Lifetime Prediction at Transient Operations <i>Leonid Moroz, Roman Kochurov, Boris Frolov, Softinway Inc; Glenn Doerksen, Fernando Romero, Sulzer Turbo Services Houston Inc.</i> | | GT2017-65087 Connecting Computed-Tomography-Assisted Discontinuity Detection in Ni-Base Superalloys to Engineering Simulation <i>Adrian Loghin, Albert Cerrone, Anjali Singhal, Ying Zhou, GE Corporate Research & Development</i> |
| | GT2017-65400 Component characterization by means of CFD simulations <i>Michele Pinelli, Univ Of Ferrara Endif</i> | | GT2017-63592 Assessment of Unsteadiness Modelling for Transient Natural Convection <i>Mohamed Fadl, Li He, Oxford University; Peter Stein, Gabriel Marinescu, General Electric</i> | | GT2017-65189 A Probabilistic Simulation of Grain Size Effect on Small Crack Growth in a Nickel Based Superalloy <i>Dianyin Hu, Beihang University; Jianxing Mao, Beihang University; Rongqiao Wang, Beihang University; Jun Song, McGill University; Xiyuan Wang, Beihang University</i> |
| 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 <i>Dennis Toebben, Piotr Luczynski, Manfred Wirsum, Mathias Diefenthal, RWTH Aachen University; Klaus Helbig, Wolfgang F. D. Mohr, Stefan Reitschmidt, GE Germany</i> | | GT2017-63871 Study of Constraint Issues in Elasto-Plastic Fracture Analysis Using Experimental and Finite Element Simulation <i>MD IBRAHIM KITTUR, Mangalore Institute of Technology and Engineering; Krishnaraja G Kodancha, KLE Technological University; C R Rajashekar, Mangalore Institute of Technology and Engineering</i> |
| | | | GT2017-64890 Application of 3D Fracture Mechanics for Improved Crack Growth Predictions of Gas Turbine Components <i>Kanwardeep Bhachu, Siemens Energy Inc.; Santosh B Narasimhachary, Siemens Corporate Technology; Sachin Shinde, Siemens Energy, Inc.; Phillip Gravett, Siemens Energy Inc</i> | | |

| 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 <i>Yuan Huang, Robert Kielb, Jing Li, Duke University; Grigorios Dimitriadis, University of Liege</i> | | T U T O R I A L | | GT2017-63575 Investigation of the Influence of Leakages on Non Axisymmetric Endwall Contouring Applied on 3D Steam Turbine Airfoils <i>Tobias W. Zimmermann, Institute for Powerplant Technology Steam and Gas Turbines; Manfred Wirsum, RWTH-Aachen University; Andrew Fowler, Kush Patel, GE Power</i> | |
| | GT2017-64633 Mistuned Higher-Order Mode Forced Response of an Embedded Compressor Rotor: Part I: Steady and Unsteady Aerodynamics <i>Jing Li, Robert Kielb, Duke University; Nyansafo Aye-Addo, Nicholas Kormanik III, Douglas Matthews, Nicole Key, Purdue University</i> | | | | GT2017-63898 The Aerodynamic Optimization Design of Turbine Cascade With Nonaxisymmetric Endwall and Experimental Validations <i>Hao Liu, Xin Shen, Xiaocheng Zhu, Zhaohui Du, Shanghai Jiao Tong University; Hong Yang, Rui Yang, Shanghai Turbine Works Co. Ltd</i> | |
| | GT2017-64647 Mistuned Higher-Order Mode Forced Response of an Embedded Compressor Rotor: Part II: Mistuned Forced Response Prediction <i>Jing Li, Robert Kielb, Duke University; Nyansafo Aye-Addo, Nicole Key, Purdue University</i> | | | | 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 <i>Martin Sinkwitz, David Engelmann, Ruhr- Universität Bochum; Ronald Mailach, Technische Universität Dresden</i> | |
| | GT2017-64657 Forcing Superposition and Decomposition of an Embedded Compressor Rotor <i>Jing Li, Robert Kielb, Duke University</i> | | | | GT2017-63790 Effect of Stage Axial Distances on the Aerodynamic Performance of Three-Stage Axial Turbine Using Experimental Measurements and Numerical Simulations <i>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.</i> | |
| 9:30 | | | | | | |

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

| 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 , NUA |
| | 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 |
| | 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 <i>Ilias Vasilopoulos, Peter Flassig, Marcus Meyer, Rolls-Royce Deutschland</i> | GT2017-63571 Sliding Controller Design for Aero-Engines With the Rate Limitation of Actuators <i>Shubo Yang, Wang Xi, Beihang University</i> | GT2017-63859 Performance Evaluation of a Molten Carbonate Fuel Cell/Micro Gas Turbine Hybrid System With Oxy-Combustion Carbon Capture <i>Ji Ho Ahn, Tong Seop Kim, Inha University</i> |
| 8:30 | GT2017-64116 High-Loaded Compressor Blisk-Type Impeller Multidisciplinary Optimization <i>Tatiana Buyukli, Anton Salnikov, Yury Fedorchenko, Central Institute of Aviation Motors</i> | GT2017-64840 Model Reference Adaptive Control of a Turbofan Engine Using Output-Feedback <i>C. Harvey O. Cline, Richard J. Skertic, Donald M. Silverstein, Rolls-Royce Corporation; Stanislaw Zak, Purdue University</i> | GT2017-65036 Active Control of Fuel Cell Degradation in an SOFC/GT Hybrid System <i>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</i> |
| 9:00 | GT2017-63009 Selection of the Optimum Control Parameters for Compressor Design Optimization Algorithm <i>Viktor Kilchyk, Ahmed Abdelwahab, Praxair Inc; Emily Senay, University of Buffalo</i> | GT2017-64987 Multiple Model Adaptive Control of a Hybrid Solid Oxide Fuel Cell Gas Turbine Power Plant Simulator <i>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</i> | GT2017-65060 Integrating Anode Recycle in a Solid Oxide Fuel Cell for Hybrid Applications: Design Considerations <i>Amelia McIlvenna, University of Tennessee; Valentina Zaccaria, Nor Farida Harun, Oak Ridge Institute for Science and Education; David Tucker, National Energy Technology Laboratory</i> |
| 9:30 | | | GT2017-65074 Steady State Analysis of Direct Thermal Energy Storage in Solid Oxide Fuel Cells (SOFC) <i>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</i> |

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 <i>Yogi Sheoran, Bruce Bouldin, Robert Hoover, Mark Matwey, Honeywell Int.</i> | GT2017-65362 Comm-11 Heat Transfer Track Overview - Numerical Internal Cooling <i>Domenico Borello, Sapienza University of Rome</i> | GT2017-64225 Experimental Investigation of Rotating Rib Roughened Two-Pass Square Duct With Two Different Channel Orientations <i>Prashant Singh, Virginia Tech</i> |
| 3:00 | GT2017-63082 Non-Axisymmetric Stator Design for Boundary Layer Ingesting Fans <i>Ewan Gunn, Turbostream Ltd; Cesare Hall, University of Cambridge</i> | GT2017-65363 Comm-12 Heat Transfer Track Overview - Numerical Film Cooling <i>Ardeshir (Ardy) Riahi, Honeywell</i> | 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 <i>Tong Miin Liou, Yi-An Lan, Shu-Po Chan, National Tsing Hua Univ; Shyy Woei Chang, National Kaohsiung Marine University</i> |
| 3:30 | GT2017-63369 Numerical Investigation of Effect of Inlet Distortion on Compressor Flow Field and Stability <i>Haoguang Zhang, Kang An, Feng Tan, Yanhui Wu, Wuli Chu, Northwestern Polytechnical University</i> | GT2017-65364 Comm-13 Heat Transfer Track Overview - General Experimental Heat Transfer <i>James Downs, Florida Turbine Technologies Inc</i> | GT2017-64508 Heat Transfer in a Rotating Rib-Roughened Wedge-Shaped U-Duct <i>Liang Ding, Shuqing Tian, AECC Commercial Aircraft Engine Co., LTD; Hongwu Deng, Beijing University of Aeronautics and Astronautics</i> |
| 4:00 | GT2017-64525 Effect of Inflow Circumferential Distortion on a Transonic Axial Compressor <i>Yuyun Li, Zhiheng Wang, Guang Xi, Xi'an Jiaotong University</i> | GT2017-65365 Comm-15 Heat Transfer Track Overview - Internal Air Systems and Seals <i>J. Axel Glahn, Pratt & Whitney, Aero Thermal Systems</i> | GT2017-64879 Rotation Effects on the Heat Transfer Distribution in a Two- Pass Rotating Internal Cooling Channel Equipped With Triangular Ribs <i>Ignacio Mayo, Tony Arts, Nicolas Van De Wyer, Von Karman Institute for Fluid Dynamics</i> |
| 4:30 | GT2017-65031 Fourier Descriptors for Improved Analysis of Distortion Transfer and Generation <i>Marshall Peterson, Steven Gorrell, Brigham Young University; Michael G. List, Air Force Research Laboratory</i> | GT2017-65367 Comm-17 Heat Transfer Track Overview - Combustors (with Combustion, Fuels & Emissions <i>Marc Polanka, AFIT/ENY</i> | GT2017-64095 Effect of Missing Fin on Endwall Heat Transfer in a Rotating Cooling Channel <i>Chen Chih Wang, Szu Chi Huang, Yao Hsien Liu, National Chiao-Tung University</i> |
| 5:00 | | GT2017-65380 COMM-18 Heat Transfer Track Overview - Special Sessions <i>Karen Thole, Pennsylvania State Univ</i> | |

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

| 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 <i>Benjamin Doebele</i> , Laboratory for Machine Tools and Production Engineering | GT2017-63658 Transient Thrust Forces on a Twin Scroll Turbocharger <i>Janakiraman Thiagarajan, Erik Halldorf</i> , Scania CV AB; <i>Jens Fridh</i> , KTH Royal Institute of Technology | GT2017-63026 Development of a 350kW Marine Organic Rankine Power Module for Ship Waste Steam <i>Chris Sellers</i> , Calnetix Technologies; <i>Larry Hawkins</i> , Calnetix Technologies |
| 3:00 | GT2017-65436 Session 2: Unconventional Processes <i>David Welling</i> , Makino GmbH | GT2017-63185 The Wing Foil: A Novel Compliant Radial Foil Bearing Design <i>Erik Swanson, P. Shawn O'Meara</i> , 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 <i>Zhixin Sun, Shujia Wang, Fuquan Xu</i> , Fuzhou University; <i>Tielong Wang</i> , Fujian Snowman Co., Ltd. |
| 3:30 | GT2017-65437 Session 3: Additive Manufacturing <i>Robin J. Day</i> , Fraunhofer Institute for Laser Technology | GT2017-64628 Experimental and Numerical Investigations of Turbocharger Rotors on Full-Floating Ring Bearings With Circumferential Oil-Groove <i>Ioannis Chatzisavvas, Gerrit Nowald, Bernhard Schweizer</i> , TU Darmstadt; <i>Panagiotis Koutsovasilis</i> , 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 <i>Jian Song, Chunwei Gu</i> , Tsinghua University |
| 4:00 | GT2017-65438 Session 4: Process Monitoring and Certification <i>Sascha Gierlings</i> , 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 <i>Luis San Andres</i> , Texas A & M Univ; <i>Feng Yu</i> , Honghua America LLC; <i>Kostandin Gjika</i> , Honeywell Turbo Technologies | GT2017-64246 Performance Simulation of an Integrated Organic Rankine Cycle and Air Inter-Cooling System for Heavy-Duty Diesel Truck Engines <i>Haoxiang Chen, Weilin Zhuge, Yangjun Zhang, Tao Chen, Lei Zhang</i> , Tsinghua University |
| 4:30 | | | GT2017-65096 Analytical Investigation of a Thermal-Supercharged Internal Combustion Engine Compounded With Organic Rankine Cycle for Waste Heat Recovery <i>Manuel Jimenez-Arreola, Fabio Dal Magro, Alessandro Romagnoli</i> , Nanyang Technological University; <i>Meng Soon Chiong, Srithar Rajoo</i> , Universiti Teknologi Malaysia; <i>Ricardo Martinez-Botas</i> , 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 <i>Fabian F. Müller, Markus Schatz, ITSM University Stuttgart; Damian Vogt, University of Stuttgart; Jens Aschenbruck, Siemens AG, Power and Gas</i> | GT2017-63341 Efficient Lifetime Prediction of High Pressure Turbine Blades in Real Life Conditions <i>Marinus Johannus van Enkhuizen, Christian Dresbach, Stefan Reh, German Aerospace Center; Stefan Kuntzagk, Lufthansa Technik AG</i> | 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 <i>Harald Schoenenborn, MTU Aero Engines; Johann Gross, Malte Krack, University of Stuttgart</i> |
| 3:00 | GT2017-63401 On the Impact of Simulation Approaches on the Predicted Aerodynamic Damping of a Low Pressure Steam Turbine Rotor <i>Christopher Fuhrer, Damian Vogt, University of Stuttgart</i> | GT2017-63857 Plastic Effects on High Cycle Fatigue at the Edge of Contact of Turbine Blade Fixtures <i>Christoph H. Richter, Ulrich Krupp, Michaela Zeissig, Osnabrueck University of Applied Sciences; Gerd Telljohann, DYNATEC GmbH</i> | GT2017-64564 Research on Failure of Semi-Open Centrifugal Impeller Under Aerodynamic Load <i>Xudong Chen, Shengli Xu, Xiaofang Wang, Wenying Ju, Shuhua Yang, Dalian University of Technology; Jigang Meng, Shenyang Blower Works Group Corporation</i> |
| 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 <i>Bertold Luebbe, Christian Siewert, Siemens AG - Power and Gas Division</i> | GT2017-63775 Development of a Fatigue Damage and Lifing Assessment Method for Inconel 625 and Aluminum 6061-T6 <i>Mo-How Shen, Dino Celli, The Ohio State University; Tommy George, Onome Scott-Emuakpor, Casey Holycross, Air Force Research Laboratory</i> | GT2017-64468 Aerodynamic Excitation Analysis of Radial Turbine Blades due to Unsteady Flow From Vaneless Turbine Housings <i>Stephan Netzhammer, Stephan Krätschmer, Johannes Leweux, Andreas Köngeter, Daimler AG; Damian Vogt, University of Stuttgart</i> |
| 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 <i>Christian Siewert, Frank Sieverding, Siemens AG - Power and Gas Division; William J. McDonald, Manish Kumar, James McCracken, Siemens</i> | GT2017-64634 Distinguishing Primary and Secondary Loads to Support Gas Turbine Blades and Vanes Design <i>Andrea Riva, Stefano Elli, Julien Nussbaum, Ansaldo Energia Switzerland AG</i> | GT2017-64502 Influence of Detailing on Aerodynamic Forcing of a Transonic Axial Turbine Stage and Forced-Response Prediction for Low-Engine-Order (LEO) Excitation <i>Tobias R. Müller, Damian Vogt, University of Stuttgart; Klemens Vogel, Bent A. Phillipsen, Peter Hönisch, ABB Turbo Systems Ltd</i> |
| 4:30 | GT2017-64021 Investigation of Tip Clearance Flow Effects on an Open 3D Steam Turbine Flutter Test Case <i>Tianrui Sun, Paul Petrie-Repar, Di Qi, KTH Royal Institute of Technology</i> | GT2017-64598 Low Cycle Fatigue Life Prediction Model of Single Crystal Nickel-Based Superalloys Using Critical Plane Approach Combined With Crystallographic Slip Theory <i>Li-juan Mu, Xue-zhi Dong, Qing Gao, Yong-sheng Tian, Chun-qing Tan, Institute of Engineering Thermophysics, Chinese Academy of Sciences</i> | |
| 5:00 | GT2017-64047 Experimental Investigation of the Grouped Blade Vibration for Steam Turbine by Non-Contact Sensors <i>Tomomi Nakajima, Kiyoshi Segawa, Hiromichi Kitahara, Akimitsu Seo, Yutaka Yamashita, Takeshi Kudo, Mitsubishi Hitachi Power Systems, Ltd.</i> | | |

| 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 <i>Junhyun Cho, Hyunki Shin, Jongjae Cho, Ho-Sang Ra, Chulwoo Roh, Beomjoon Lee, Gilbong Lee, YOUNG-JIN BAIK</i> , 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 <i>Matthias Rolles, Martin Lange, Konrad Vogeler, Ronald Mailach</i> , Technische Universität Dresden | GT2017-64738 Design and Operational Development a Pneumatic Braking System for a Gas-Turbine Units Test Bench <i>Valeriy Matveev, Yulia Novikova, Grigori Popov, Oleg Baturin, Evgenii Goriachkin</i> , Samara National Research University |
| | GT2017-63056 Transient Power Operation of a Supercritical Carbon Dioxide Brayton Cycle <i>Eric Clementoni, Tim Cox, Martha King, Kevin Rahner</i> , Naval Nuclear Laboratory | GT2017-63767 Numerical Investigation of Effect of Recess Vane Casing Treatments on an Axial Lift Fan Performance <i>Xiangyi Chen, Wuli Chu, Haoguang Zhang, Jing Li, Jinhua Lang</i> , 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 <i>Qingdong Yan, Yuanyuan An, Wei Wei</i> , Beijing Institute of Technology |
| 3:00 | GT2017-64933 Comparison of Supercritical CO2 Power Cycles to Steam Rankine Cycles in Coal-Fired Applications <i>Jason Miller, David Buckmaster, Timothy Held, Katherine Hart, Echogen Power Systems (DE), Inc; David Thimsen, Andrew Maxson, Jeffrey Phillips, Scott Hume</i> , 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 <i>Huang Chen, Yuanchao Li, Subhra Shankha Koley, Nick Doeller, Joseph Katz</i> , Johns Hopkins University | GT2017-63594 Smoothed Particle Hydrodynamics Simulation of Oil-Jet Gear Interaction <i>Marc C. Keller, Samuel Braun, Lars Wieth, Geoffroy Chaussonnet, Thilo F. Dauch, Rainer Koch, Corina Schwitzke, Hans-Jörg Bauer</i> , Institut of Thermal Turbomachinery - Karlsruhe Institut of Technology |
| 3:30 | GT2017-65224 300 MW Boiler Design Study for Coal-Fired Supercritical CO2 Brayton Cycles <i>Wengang Bai, Yifan Zhang, Yu Yang, Hongzhi Li, Mingyu Yao</i> , Xi'an Thermal Power Research Institute Co., Ltd. | GT2017-65226 Design of Casing Treatment on a Mixed-Flow Compressor <i>Juan Du</i> , Institute of Engineering Thermophysics; <i>Joerg Seume</i> , Gottfried Wilhelm Leibniz Universitaet | GT2017-64362 Development, Numerical Investigation and Experimental Validation of a New Recuperator Design for Aero Engines Applications <i>Zinon Vlahostergios, Christina Salpingidou, Apostolos Goulas, Kyros Yakinthos</i> , Aristotle University of Thessaloniki; <i>Dimitrios Misirlis</i> , TEI of Central Macedonia; <i>Michael Flouros, Stefan Donnerhack</i> , MTU Aero Engines AG |
| 4:00 | GT2017-65219 Study on a Modified Supercritical CO2 Brayton Cycle for the Thermal Power Generation <i>Yifan Zhang, Hongzhi Li, Yueming Wang, Mingyu Yao, Wei Gao</i> , 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 <i>Max David Collao, Robert Webster, Kidambi Sreenivas</i> , University of Tennessee at Chattanooga | GT2017-64166 CFD Driven Analysis of a Multi-Port Pressure Probe for Real Engine Testing <i>Aude Lahalle, Fabrizio Fontaneto, Tony Arts</i> , Von Karman Inst |
| 4:30 | GT2017-65214 A Novel S-CO2 and ORC Combined System for Exhaust Gases <i>Wei Gao, Hongzhi Li, Peng Nie, Yu Yang, Chun Zhang</i> , Xi'an Thermal Power Research Institute Co., Ltd. | GT2017-64403 Fan Blade Tip Aerodynamics With Realistic Operational Casing Geometries and Clearances <i>Alistair John, Ning Qin</i> , University of Sheffield; <i>Shahrokh Shahpar</i> , Rolls-Royce Plc | GT2017-64213 Modeling Surface Variation and Assessment of its Impact on Aerodynamic Performance in Turbomachinery Applications <i>Saurya Ray</i> , General Electric; <i>Ravi Avancha</i> , GE Aviation; <i>Sriram Shankaran, Lyle Dailey</i> , GE |
| 5:00 | | | |

| 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 <i>Thomas A. Epalle, Olivier Gicquel, CentraleSupélec; Fabien Gaugain, Vincent Melot, DCNS; Nasser Darabiha, CNRS EM2C</i> | GT2017-64079 Effect of Pilot Flame on Flame Macrostructure and Combustion Instability <i>Jihang Li, Stephen Peluso, Bryan Quay, Domenic Santavicca, Pennsylvania State University; James W. Blust, Ram Srinivasan, Solar Turbines</i> | GT2017-63076 Species Dependency of the Compositional Indirect Noise Mechanism <i>Jeffrey O'Brien, Stanford University - Center for Turbulence Research; Matthias Ihme, Stanford University</i> |
| 3:00 | GT2017-64325 Numerical Simulation of a Reacting Jet in a Vitiated Cross Flow Using a Novel Progress Variable Approach <i>Rohit Kulkarni, Mario Zuber, John Wood, General Electric GmbH; Hasan Karim, General Electric</i> | GT2017-64518 Experimental and LES Analysis of a Premix Swirl Burner Under Acoustic Excitation <i>Fernando Biagioli, Stefan Wysocki, Panduranga Reddy Alemela, GE (Switzerland) GmbH; Shivakumar Srinivasan, GE Energy; Alexey Denisov, Hochschule für Technik FHNW</i> | GT2017-64428 Direct and Indirect Noise Generated by Injected Entropic and Compositional Inhomogeneities <i>Erwan Rolland, Francesca De Domenico, Simone Hochgreb, University of Cambridge</i> |
| 3:30 | GT2017-65016 Mixing and Combustion Characterization of a Staged Combustor With Multiple, High Mass-Ratio Jets in Crossflow <i>Nishant Jain, Jerry Seitzman, Georgia Institute of Technology</i> | GT2017-64943 Flame Dynamics Intermittency in the Bi-Stable Region Near a Subcritical Hopf Bifurcation <i>Dominik Ebi, Paul Scherrer Institut; Alexey Denisov, Hochschule für Technik FHNW; Giacomo Bonciolini, Edouard Boujo, Nicolas Noiray, CAPS Lab, ETHZ</i> | GT2017-63382 Effects of Nozzle Helmholtz Number on Indirect Combustion Noise by Compositional Perturbations <i>Luca Magri, University of Cambridge; Jeffrey O'Brien, Stanford University - Center for Turbulence Research; Matthias Ihme, Stanford University</i> |
| 4:00 | GT2017-65252 Experimental and Computational Characterization of Flow Rates in a Multiple-Passage Gas Turbine Combustor Swirler <i>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</i> | GT2017-64438 A Study of Spontaneous Transition in Swirl-Stabilized Flames <i>Isaac Boxx, Klaus-Peter Geigle, Wolfgang Meier, German Aerospace Center; Campbell D Carter, Air Force Research Laboratory; Benjamin Akih Kumgeh, Jacques Lewalle, Syracuse University</i> | GT2017-63525 Budgets of Disturbances Energy for Nozzle Flows at Subsonic and Choked Regimes <i>Maxime Huet, ONERA</i> |
| 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 <i>Sheng-Chieh Lin, Xionghui Wang, Wessam Estefanos, Samir Tambe, San-Mou Jeng, University of Cincinnati</i> | GT2017-64856 Effect of Acoustic Feedback on Lagrangian Coherent Structures in a Backward Facing Step Combustor With a Partially Premixed Flame <i>Ramgopal Sampath, Sathyanarayanan. R. Chakravarthy, Indian Institute of Technology Madras</i> | GT2017-63640 CAA Study of Entropy Noise in Nozzle Flow for the Validation of a 2D Semi-Analytical Model <i>Ariane Emmanuelli, Maxime Huet, Thomas Le Garrec, ONERA; Sébastien Ducruix, CNRS</i> |
| 5:00 | | GT2017-64691 Impact of PVC Dynamics on Shear Layer Response in a Swirling Jet <i>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</i> | GT2017-64378 Measurements of the Effect of Boundary Conditions on Upstream and Downstream Noise Arising From Entropy Spots <i>Francesca De Domenico, Erwan Rolland, Simone Hochgreb, University of Cambridge</i> |

| MONDAY, JUNE 26 | | | 2:30 - 5:30 PM |
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| | 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 <i>Xuefei Chen, Zijian Ai, Yunfeng Ji, Guoliang Qin, Xi'an Jiaotong University</i> | GT2017-63089 Verification of Single Digit Emission Performance of a 24 MW Gas Turbine: SGT-600 3rd Generation DLE <i>Arturo Manrique Carrera, Anders Larsson, Rikard Magnusson, Siemens Industrial Turbomachinery</i> | GT2017-63174 Stall Inception Analysis of Transonic Compressors With Chordwise and Axial Sweep <i>Chen He, Dakun Sun, Beihang University; Xiaofeng Sun, Beijing University of Aeronautics and Astronautics</i> |
| 3:00 | GT2017-63352 Numerical Prediction of Centrifugal Compressor Stability Limit <i>Carlo Cravero, Davide Marsano, Mauro Carretta, DIME - Università di Genova</i> | GT2017-63412 SGT-750 Fuel Flexibility: Engine and Rig Tests <i>Olle Lindman, Mats Andersson, Anders Larsson, Alessio Bonaldo, Jacek Janczewski, Magnus Persson, Siemens Industrial Turbomachinery AB</i> | GT2017-63974 Effects of Increasing Blade Hub Loading on Instability Evolution in a Low-Speed Compressor <i>Qiushi Li, Simin Li, Ali Arshad, Beihang University; Tianyu Pan, Duke University; Yifang Gong, Anhui KEDA Air Compressor</i> |
| 3:30 | GT2017-63356 Investigation of the Coupling Mechanism Between Bent Pipes and Volute on the Stall Inception at the Centrifugal Compressor Inlet <i>Ce Yang, Yingjun Wang, Dazhong Lao, Hanzhi Zhang, Mingxu Qi, Beijing Institute of Technology; Ding Tong, China North Engine Research Institute</i> | GT2017-63998 Staged Combustion System for Improved Emissions Operability and Flexibility for 7HA Class Heavy Duty Gas Turbine Engine <i>Hasan Karim, Joseph Citen, General Electric; Jayaprakash Natarajan, Venkat Narra, Jun Cai, Jonathan Kegley, Shreekrishna Rao, GE Power</i> | GT2017-63759 Investigation of In-Stall Behavior in a Transonic Compressor Rotor <i>Jinhua Lang, Wuli Chu, Haoguang Zhang, Shan Ma, Xiangyi Chen, Northwestern Polytechnical University</i> |
| 4:00 | GT2017-63568 Evolution of Reverse Flow in a Transonic Centrifugal Compressor at Near-Surge <i>Kazutoyo Yamada, Masato Furukawa, Hiromitsu Arai, Kyushu University; Dai Kanzaki, IHI Corporation</i> | GT2017-64289 Ansaldo GT26 Sequential Combustor Performance in Long-Term Commercial Operation <i>Selma Zahirovic, Klaus Knapp, Ansaldo Energia Switzerland AG</i> | GT2017-64066 Numerical Investigations on Partial Surge Initiated Inception and Stall Evolution in a Transonic Compressor <i>Jiaguo Hu, Wenqian Wu, Qiushi Li, Beihang University; Tianyu Pan, Duke University; Yifang Gong, Anhui KEDA Air Compressor</i> |
| 4:30 | GT2017-63758 Study on a Subsonic Micro-Centrifugal Compressor Stall Mechanism <i>Shuli Hong, Guoping Huang, Lu Weiyu, Nanjing University of Aeronautics and Astronautics</i> | GT2017-64588 Fuel and Combustion System Capabilities of GE's F and HA Class Gas Turbines <i>Jeffrey Goldmeer, William York, Paul Glaser, GE Power</i> | GT2017-64685 Statistical Anomaly Based Study of Rotating Stall in a Transonic Axial Compressor Stage <i>Gregory S. Heinlein, Chun-Ming Chen, Soumya Dutta, Jen-Ping Chen, Han-Wei Shen, The Ohio State University</i> |
| 5:00 | GT2017-64499 Stall Inception in a High Speed Centrifugal Compressor During Speed Transients <i>Lou Fangyuan, John Fabian, Nicole Key, Purdue Univ</i> | GT2017-64790 An Introduction to the Ansaldo GT36 Constant Pressure Sequential Combustor <i>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</i> | GT2017-64901 Characteristics of Stable Rotating Stall Cells in an Axial Compressor <i>Adam Hickman, University of Notre Dame; Scott Morris, Notre Dame Turbomachinery Laboratory</i> |

| MONDAY, JUNE 26 | | | 2:30 - 5:30 PM | | |
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| 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 <i>Ndaona Chokani, ETH Zurich</i> | L E C T U R E | | GT2017-64089 Design of Fault Detection System for a Heavy Duty Gas Turbine With State Observer and Tracking Filter <i>Yongwen Liu, Shanghai Jiao Tong University</i> | |
| | GT2017-64373 Fault Diagnosis of Gas Turbine Based on Complex Networks Theory <i>Yunpeng Cao, Dongyang Yan, Qingcai Yang, Shuying Li, Minghao Wu, Lie Chen, Harbin Engineering University</i> | | | | |
| | GT2017-64455 Health Condition Assessment of Gas Turbine Generator on Offshore Platform <i>Yunpeng Cao, Minghao Wu, Qingcai Yang, Shuying Li, Dongyang Yan, Lie Chen, Harbin Engineering University</i> | | | | |
| | GT2017-64755 Gas Turbine Machinery Diagnostics: A Brief Review and a Sample Application <i>Cody Allen, Chad Holcomb, Solar Turbines Inc; Mauricio de Oliveira, University of California San Diego</i> | | | | |
| 3:00 | GT2017-65469 Introduction to Wind Energy Part 2 <i>George Pechlivanoglou, TU Berlin</i> | | | GT2017-64940 Online health monitoring system using dynamic structural responses <i>Amit Paspulati, Kashinath Akki, Krishna Veluru, Siemens Energy Inc.</i> | |
| | GT2017-65470 Introduction to Wind Energy Part 3 <i>C. Oliver Paschereit, H.F.I TU Berlin</i> | | | | |
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| 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 <i>Alessio Castorrini, Alessandro Corsini, Franco Rispoli, Manuel Lamperini, Sapienza University of Rome; Anthony Sheard, AGS Consulting LLC</i> | 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 <i>Charles H.O. Lombard, Daniel N.J. Els, Jacques Muysen, Stellenbosch University; Albert Zapke, ENEXIO Management GmnH</i> | | | | |
| 3:30 | GT2017-64417 Aeroacoustic Analysis of Low-Speed Axial Fans With Different Rotational Speeds in the Design Point <i>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</i> | | | | |
| 4:00 | GT2017-63172 A Semantic Differential for Evaluating the Sound Quality of Fan Systems <i>Carolin Feldmann, Thomas Carolus, University of Siegen; Marc Schneider, ebm-papst Mulfingen GmbH & Co. KG</i> | | | | |
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| MONDAY, JUNE 26 | | 2:30 - 5:00 PM |
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| | 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: Jason Ostanek , NSWCPD |
| 2:30 | P A N E L | |
| 3:00 | | |
| 3:30 | | |
| 4:00 | | GT2017-65563 A Recipe for Success in New Roles <i>Keye Su, Duke University</i> |
| 4:30 | | GT2017-65564 Leveraging Industry Experience for Success in an Academic Career <i>Ankur Jain, The University of Texas at Arlington</i> |
| | | GT2017-65565 An Economic and Business Case for Diversity in Engineering <i>Shane Haydt, The Pennsylvania State University</i> |
| 5:00 | | GT2017-65566 Question & Answer <i>Jason Ostanek, NSWCPD</i> GT2017-65567 Social Meetup: Speed Networking Activity <i>Jason Ostanek, NSWCPD</i> |

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

GT2017-63205 **Evolution of Turbine
Cooling**

Ronald Bunker, Consultant

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5:45 - 7:00

| TUESDAY, JUNE 27 | | 8:00 - 10:00 AM | |
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| | 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 <i>Li Yang, Zheng Min, Sarwesh Narayan Parbat, Minking Chyu, University of Pittsburgh</i> | GT2017-63088 Assessment of Real Turbine Blade Roughness Parameters for the Design of a Film Cooling Test Rig <i>Tobias Glaserapp, Franz Puetz, Achmed Schulz, Karlsruhe Institute of Technology; Hans-Jörg Bauer, Institut of Thermal Turbomachinery (ITS) - Karlsruhe Institut of Technology (KIT)</i> | GT2017-63010 Assessment of Bearing Heat Generation Prediction by the Program ADORE With Respect to Experimental Results and SHABERTH Predictions <i>Brian Nicholson, Garry Givan, Kevin Thompson, Justin Mason, Air Force Research Lab; Pradeep Gupta, Pkg Inc; Hitesh Trivedi, UES Inc</i> |
| 8:30 | GT2017-64073 Investigation of Heat Transfer and Pressure Field of Jet Impingement on the Side of a Dimpled Surface <i>lijian cheng, Weijiang Xu, Hui ren Zhu, Ru Jiang, Northwestern Polytechnical University</i> | GT2017-64266 Heat Transfer Analysis Over a Film Cooled Platform of a Vane Cascade With a Non Uniform Inlet Flow <i>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.</i> | GT2017-63208 Classification of Fluid Dynamic Loss in Aeroengine Transmission Gears: Experimental Analysis and CFD Validation <i>Hiddenori Arisawa, Yuji Shinoda, Mitsuaki Tanaka, Tatsuhiko Goi, Hirofumi Akahori, Mamoru Yoshitomi, Kawasaki Heavy Industries, LTD.</i> |
| 9:00 | GT2017-64159 Characterization of the Surface Curvature Effect Using LES for a Single Round Impinging Jet <i>Pierre Aillaud, Florent Duchaine, Laurent Gicquel, CERFACS; Sheddia Didorally, Safran Helicopter Engines</i> | GT2017-65091 Effect of Combustor-Turbine Platform Misalignment on the Aerodynamics and Heat Transfer of an Axisymmetric Converging Vane Endwall at Transonic Conditions <i>David Mayo, Allan Arisi, Wing Ng, Virginia Tech; ZHIGANG LI, Jun Li, Xian Jiaotong Univerity; Hee- Koo Moon, Luzeng Zhang, Solar Turbines Inc.</i> | GT2017-63561 Experimental Investigation of the Influence of Chamber Geometry on Bearing Chamber Oil Leakage <i>Felix Von Plehwe, Benedikt Brox, Corina Schwitzke, Karlsruhe Institute of Technology; Hans-Jörg Bauer, Institut of Thermal Turbomachinery - Karlsruhe Institut of Technology</i> |
| 9:30 | GT2017-64336 A Combined Experimental and Numerical Investigation of the Flow and Heat Transfer Inside a Turbine Vane Cooled by Jet Impingement <i>Emmanuel Laroche, ONERA; Matthieu Fenot, Eva Dorignac, Laurent E. Brizzi, Jean Jacques Vuillermé, PPRIME INSTITUTE, CNRS, ENSMA, POITIERS UNIVERSITY; Juan-Carlos Larroya, SAFRAN AIRCRAFT ENGINES</i> | GT2017-65037 Vane Suction Surface Heat Transfer in Regions of Secondary Flows: The Influence of Turbulence Level, Reynolds Number and the Endwall Boundary Condition <i>Justin Varty, University of North Dakota Loren Soma, Forrest Ames, University of North Dakota; Sumanta Acharya, Illinois Institute of Technology</i> | GT2017-64030 Experimental Optimization of Rolls-Royce AE3007 Sump Design <i>Budi W. Chandra, University of the West of England; Steven H. Collicott, Purdue University; John Munson, Rolls Royce Corporation</i> |

| TUESDAY, JUNE 26 | | 8:00 - 10:00 AM | |
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| 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. |
| <div>8:00</div> <div>8:30</div> <div>9:00</div> <div>9:30</div> | T U T O R I A L | GT2017-65236 Introduction to cooling design and heat transfer technologies for gas turbine vanes and blades <i>Kenichiro Takeishi</i> , Tokushima Bunri University | GT2017-63073 Foreign Object Damage Behavior of a SiC Fibrous Ceramic Composite <i>Nesredin Kadir, D. Calvin Faucett, Luis Sanchez, Sung Choi</i> , Naval Air Systems Command |
| | | GT2017-63442 Effects of Geometry and Spacing in Additively Manufactured Microchannel Pin Fin Arrays <i>Katharine Ferster, Kathryn Kirsch, Karen Thole</i> , Pennsylvania State University | GT2017-63475 Foreign Object Damage in 3-D Woven SiC/SiC Ceramic Matrix Composites of Varying Architectures at Ambient and High Temperatures <i>Michael Presby, Gregory Morscher</i> , The University of Akron; <i>Craig Iwano, Brian Sullivan</i> , Materials Research & Design, Inc |
| | | GT2017-63582 Analysis of Aerothermal Characteristics of Surface Micro-Structures <i>Marios Kapsis, Li He</i> , Univerisity of Oxford | GT2017-63736 Erosion Properties of Ceramic Composite Material Based on Nano-Mullite Whisker and Zirconia-Toughened Alumina <i>Fabian Erazo, Taylor Robertson, Xiao Huang</i> , Carleton University; <i>Richard Kearsey, Qi Yang</i> , National Research Council of Canada |
| | | GT2017-64903 Effectiveness Measurements of Additively Manufactured Film Cooling Holes <i>Curtis Stimpson, Jacob Snyder, Karen Thole</i> , Pennsylvania State University; <i>Dominic Mongillo</i> , Pratt & Whitney | GT2017-64944 Development and Evaluation of Foreign Object Damage Resistant Ceramic Matrix Composites <i>Craig Iwano, Brian Sullivan</i> , Materials Research & Design, Inc; <i>Michelle Hoo Fatt</i> , The University of Akron |
| | | GT2017-64934 Experimental Investigation of Numerically Optimized Wavy Microchannels Created Through Additive Manufacturing <i>Kathryn Kirsch, Karen Thole</i> , Pennsylvania State University | |

| TUESDAY, JUNE 27 | | 8:00 - 10:00 AM | |
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| | 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 <i>Mustapha Chaker, CB&I</i> | GT2017-63603 Optimizing Thermal Barrier Coating Design Using Structural Optimization Methods <i>Robert Eriksson, Bo Torstenfelt, Anders Klarbring, Kjell Simonsson, Linköping University</i> | GT2017-63043 Flow Interactions Between Shrouded Power Turbine and Nonaxisymmetric Exhaust Volute for Marine Gas Turbines <i>Jie Gao, Xiying Niu, Qun Zheng, Guoqiang Yue, Weiliang Fu, Ming Wei, Harbin Engineering University; Feng Lin, China Shipbuilding Industry Corporation</i> |
| 8:30 | GT2017-64189 Water Injection Evaporation in Frame 7EA Gas Turbine Wrapper <i>Francesco Melino, Michele Bianchi, Antonio Peretto, Andrea De Pascale, University of Bologna; Sasha Savic, SSA POWER</i> | GT2017-63883 Analysis of Thermal-Mechanical Behavior in the Thermal Barrier Coatings With Cooling Hole Structure <i>Jishen Jiang, Zhenwei Cai, Weizhe Wang, Yingzheng Liu, Shanghai Jiao Tong University</i> | GT2017-63176 Gas-Dynamics Design of Reversible Turbine for Marine Gas Turbine Engine <i>Xiying Niu, Weishun Li, Chen Liang, Shunwang Yu, Bo Xu, Harbin Marine Boiler & Turbine Research Institute; Feng Lin, China Shipbuilding Industry Corporation</i> |
| 9:00 | GT2017-63267 Influence of Non-Equilibrium Fluid Properties During Fogging on Intake Duct and Compressor Characteristics <i>Christoph Günther, Franz Joos, Helmut-Schmidt-University Hamburg</i> | GT2017-63610 A Study on Crack Configurations in Thermal Barrier Coatings <i>Robert Eriksson, Krishna Praveen Jonnalagadda, Linköping University</i> | GT2017-64381 Analysis of the Vortex Series Around Tabs in the Bent Marine Exhaust Ejector <i>Aoyu Ren, Hai'ou Sun, Zhongyi Wang, Xudong Chen, Harbin Engineering University</i> |
| 9:30 | GT2017-64193 Renewable Energy Systems Integration for Efficiency Improvement of a CHP Unit <i>Maria Alessandra Ancona, Lisa Branchini, University of Bologna; Andrea De Pascale, University of Bologna; Francesco Melino, University of Bologna; Biagio Di Pietra, ENEA</i> | GT2017-63683 The Fabrication, High Heat Flux Testing, and Failure Analysis of Thermal Barrier Coatings for Power Generation Gas Turbines <i>Mary Helen McCay, Pei-Feng Hsu, D. Edward Croy, David Moreno, Mengqi Zhang, Florida Inst of Technology</i> | GT2017-63503 Industrial and Marine Development Policy Study and Practices for GT28 Gas Turbine <i>Xueyou Wen, Dongming Xiao, Harbin Marine Boiler & Turbine Research Institute; Ningbo Zhao, Harbin Engineering University</i> |

| TUESDAY, JUNE 27 | | | 8:00 - 10:00 AM | | |
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| 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 <i>John Mason, Rainer Kurz, Solar Turbines Inc.</i> | GT2017-63059 Validation Analysis of High Pressure Turbine Creep Deformation for Ultra-Super Critical Steam Turbine <i>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</i> | | GT2017-63366 Life Extension of Power Turbine Disks Exposed to In-Service Corrosion Damage <i>Dipankar Dua, Mohammad Reza Khajavi, Siemens Energy; Matthew Hill, Siemens Industrial Turbine Company</i> | |
| | GT2017-65511 Siemens <i>Michael Welch, Siemens Industrial Turbomachinery Ltd</i> | GT2017-63902 Thermal Stress and Deformation Analysis of HP Casing During Shutdown of CPR1000 Nuclear Steam Turbine <i>Yanan Guo, Danmei Xie, Wuhan University</i> | | GT2017-63599 The Effect of Foreign Object Damage on Compressor Blade High Cycle Fatigue Strength <i>Benjamin Hanschke, Arnold Kühhorn, Brandenburg University of Technology Cottbus-Senftenberg; Thomas Klauke, Rolls-Royce Deutschland</i> | |
| 9:00 | GT2017-65512 General Electric Gas Turbines <i>Dave Wolf, General Electric</i> | GT2017-64281 Investigation Into the Thermal Limitations of Steam Turbines During Start-Up Operation <i>Monika Topel, Björn Laumert, KTH Royal Institute of Technology; Åsa Nilsson, Markus Jöcker, Siemens Industrial Turbomachinery</i> | | GT2017-63789 Effect of Laser Shock Peening on Fatigue Life of Full Scale Turbine Blades <i>Cao Chen, Xiaoyong Zhang, Lei Han, Xiaojun Yan, Beihang University</i> | |
| | GT2017-65543 MAN Diesel & Turbo <i>Robert Krewinkel, MAN Diesel & Turbo SE</i> | | | GT2017-64147 Investigation of Advanced Lifetime Calculation Procedure for Steam Turbines in Flexible Operation <i>Klaus Helbig, Dennis Jarmowski, Jan Vogt, GE Germany; Paolo Capozzi, GE Switzerland</i> | |
| 9:30 | | | | | |

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

| 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 <i>Zhitao Tian, Bin Jiang, Qun Zheng, Qingfang Zhu, Harbin Engineering University</i> | GT2017-63785 Influence of Combustor Flow With Swirl on Integrated Combustor Vane Concept Full-Stage Performance <i>Simon Jacobi, Budimir Rosic, Oxford University</i> | GT2017-63358 Towards High-Order Large Eddy Simulation of Aero-Thermal Flows for Turbomachinery Applications <i>Rathakrishnan Bhaskaran, Umesh Paliath, General Electric Co. Global Research Center; Feilin Jia, Zhi Jian Wang, University of Kansas; Gregory Laskowski, GE Aviation</i> |
| | 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 <i>Zhitao Tian, Bin Jiang, Qun Zheng, Qingfang Zhu, Harbin Engineering University</i> | GT2017-64153 InterTurb – High-Pressure Turbine Rig for the Investigation of Combustor-Turbine Interaction <i>Torsten Wolf, Knut Lehmann, Lars Willer, Rolls-Royce Deutschland Ltd & Co KG; Andreas Pahs, Marcel Rößling, Lothar Dorn, German Aerospace Center (DLR)</i> | GT2017-63473 Integrated Large Eddy Simulation of Combustor and Turbine Interactions: Effect of Turbine Stage Inlet Condition <i>Florent Duchaine, Laurent Gicquel, Jérôme Dombard, CERFACS; Charlie Koupper, Safran Helicopter Engines</i> |
| 9:00 | GT2017-63673 Complete Characterization of a Highly Loaded Low Pressure Compressor at Different Reynolds Numbers for CFD Simulations <i>Ruzbeh Hadavandi, Fabrizio Fontaneto, Julien Dessel, Von Karman Institute for Fluid Dynamics</i> | GT2017-64504 Numerical Studies on Combustor-Turbine Interaction at the Large Scale Turbine Rig (LSTR) <i>Jonathan Hilgert, Martin Bruschewski, Holger Werschnik, Heinz-Peter Schiffer, Technical University of Darmstadt</i> | GT2017-63611 Turbulent Energy Budget in a Tip Leakage Flow: A Comparison Between RANS and LES <i>Jean-François Monier, Jérôme Boudet, Ecole Centrale de Lyon; Joëlle Caro, Liang Shao, CNRS</i> |
| | GT2017-64964 Simulation of Multi-Stage Compressor at Off-Design Conditions <i>Feng Wang, Mauro Carnevale, Luca Di Mare, Imperial College; Simon Gallimore, Rolls Royce Plc</i> | GT2017-63490 Predicting Efficiency of a Turbine Driven by Pulsing Flow <i>Mark Fernelius, Steven Gorrell, Brigham Young University</i> | GT2017-64195 Development and Validation of a Compressible Large-Eddy Simulation Code With Overset Mesh Method <i>Atsushi Tateishi, Toshinori Watanabe, Takehiro Himeno, University of Tokyo</i> |
| 9:30 | | | |

| | 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 <i>Pierre MALBOIS, Erwan SALAUN, Felix FRINDT, Gilles Cabot, Bruno RENOU, Frédéric GRISCH, CORIA; Lisa BOUHERAOUA, Hubert VERDIER, Stephane Richard, SAFRAN Helicopter Engines</i> | GT2017-65478 Overview of Gas Turbine Operation and Impact of Fuel on Lean-Blow-Out and Ignition <i>Tim Lieuwen, Georgia Institute of Technology</i> | GT2017-64200 Reduction of Soot Emitted by Gas Turbines Fired on Gasoil <i>Matthieu Vierling, GE Energy Product; Bernard Galantine, Philippe Lepante, Alex Angebert, EDF; Maher Aboujaib, Dmitry Sokolov, Mickael Plouhinec, GE; Michel Moliere, UTBM</i> |
| 8:30 | GT2017-64249 Analysis of Performance Sensitivity to Geometrical Variations of a Modern Helicopter Engine Combustor Using LES Simulations <i>Guillaume Vignat, Guillaume Taliercio, Jean Lamouroux, Sébastien DA VEIGA, Nicolas Savary, Patrick Duchaine, Safran Helicopter Engines</i> | GT2017-65474 Overview of DLR's Fuels Combustion Programs and Status of the European Alternate Fuels Program <i>Patrick Le Clercq, DLR Stuttgart</i> | 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 <i>Jean Lamouroux, Stephane Richard, Quentin Male, SAFRAN Helicopter Engines; Gabriel Staffelbach, Antoine Dauplain, Anthony Misdariis, CERFACS</i> |
| 9:00 | GT2017-64280 Investigation of the Reacting Flow Field of a Lean Burn Injector With Varying Degree of Swirl at Elevated Pressure Condition <i>Christoph Hassa, Ulrich Meier, Johannes Heinze, Eggert Magens, Michael Schroll, DLR German Aerospace Center Institute of Propulsion Technology; Imon Bagchi, Rolls-Royce Deutschland</i> | GT2017-65476 Impact of Fuel Properties on Altitude Ignition and Overview of Canadian Efforts in Alternative Fuels Integration <i>Wajid Chishty, NRC Aerospace</i> | GT2017-65061 An Emerging Technique for Low-Concentration Measurement of Particulate Emissions From Gas-Fired Gas Turbines <i>Kevin Crosby, Montrose Air Quality Services, LLC; Glenn England, Ramboll Environ</i> |
| 9:30 | GT2017-63242 CFD Analysis of the Combustion Chamber of a Commercial Aircraft Engine of Medium Thrust Class From a Maintenance Perspective <i>Stefan Kuntzagk, Joern Kraft, Ina Esemann, Lufthansa Technik AG</i> | GT2017-65477 Fuel and Combustor Concerns for Future Commercial Combustors <i>Clarence Chang, NASA</i> GT2017-65475 Engine Company Perspective on the National Jet Fuel Combustor Program and Fuel Concerns for Future Combustors <i>Jeffery Lovett, Pratt & Whitney</i> | |

| 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 <i>Hua Chen</i> , 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 <i>Yingjie Song, Zhendong Guo, LIMING SONG, Jun Li, Zhenping Feng</i> , Xi'an Jiaotong University | | GT2017-63362 Wind Tunnel Study of a Generic Wind Turbine Nacelle Model <i>Marinos Manolesos</i> , Flowfield <i>Panagiotis Chaviaropoulos</i> , iWind Renewables |
| | GT2017-63538 Free-Form Versus Ruled Inducer Design in a Transonic Centrifugal Impeller <i>Hamid Hazby, Chris Robinson, Michael Casey</i> , PCA Engineers Ltd; <i>Daniel Rusch, René Hunziker</i> , ABB Turbo Systems | | GT2017-63991 Metamodel-Assisted Optimization of a High-Lift Low Pressure Turbine Blade <i>Fabio Bigoni, Roberto Maffulli, Tony Arts, Tom Verstraete</i> , Von Karman Institute for Fluid Dynamics | | GT2017-63557 Techno-Economic Study of Wind Farm Forecast Error Compensation by Flexible Heat-Driven CHP Units <i>Thomas Bexten, Manfred Wirsum, Björn Roscher, Ralf Schelenz, Georg Jacobs, Daniel Weintraub, Peter Franz Jeschke</i> , RWTH Aachen University |
| 9:00 | GT2017-63678 Ported Shroud Flow Processes and Their Effect on Turbocharger Compressor Operation <i>Sidharath Sharma, Martyn Jupp, J.M. Allport</i> , University of Huddersfield; <i>A.K. Nickson</i> , BorgWarner Turbo Systems | | GT2017-64776 Robust Detection and Characterization of Cooling Holes Based on Surface Meshes of Turbine Blades <i>Sebastian Knebel, Oliver Baum, Lars Högner, Matthias Voigt, Ronald Mailach</i> , Technische Universität Dresden; <i>Marcus Meyer</i> , Rolls-Royce Deutschland Ltd & Co KG | | T2017-65145 Real Time Conditioning Monitoring for Failure Prediction <i>J. Alejandro Franco-Piña, Luis Contreras, Juan Jauregui</i> , University of Queretaro |
| | GT2017-63213 Investigation on Effect of Curvilinear Element Blades on Centrifugal Impeller Performance <i>Kiyotaka Hiradate</i> , Research & Development Group, Hitachi Ltd; <i>Takahiro Nishioka</i> , Hiromi Kobayashi, Hitachi, Ltd. | | GT2017-64843 Multidisciplinary Optimization of the Working Process of Uncooled Axial Turbine According to Efficiency and Strength Criteria <i>Evgeny Yu. Marchukov, Igor Egorov</i> , Lyulka Design Bureau; <i>Grigorii Popov, Evgenii Goriachkin, Daria Kolmakova</i> , Samara National Research University; <i>Anton Salnikov</i> , Central Institute of Aviation Motors | | GT2017-63161 Aeroelastic Analysis of NREL Wind Turbine <i>Yaozhi Lu, Fanzhou Zhao, Loic Salles, Mehdi Vahdati</i> , Imperial College London |

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

| TUESDAY, JUNE 27 | | | 10:15 - 11:45 AM |
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| | 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 <i>Dong-Ho Rhee, Young Seok Kang, Bong Jun Cha, Korea Aerospace Research Institute; Sanga Lee, Seoul National University</i> | GT2017-63646 Flow Computations of Rib-Roughened Cooling Channels With RANS and Scale Resolving Simulation Models <i>Ilhan Görgülü, Ender Hepkaya, TUSAS, Engine Industries, Inc.</i> | GT2017-63624 A Detailed Study of the Interaction Between Two Rows of Cooling Holes <i>Yuewen Jiang, Peter Ireland, University of Oxford; Luigi Capone, Eduardo Romero, Rolls-Royce, plc.</i> |
| 10:45 | GT2017-64566 Effects of Hole Pitch to Diameter Ratio P/D of Impingement and Film Hole on Laminated Cooling Effectiveness <i>Weilun ZHOU, Qinghua DENG, Wei HE, Zhenping Feng, Xi'An Jiaotong University</i> | GT2017-64241 Large Eddy Simulations of Static and Rotating Ribbed Channels in Adiabatic and Isothermal Conditions <i>Thomas Grosnickel, Laurent Gicquel, Florent Duchaine; Charlie Koupper, Safran Helicopter Engines</i> | GT2017-63855 Numerical Investigation of Coolant-to-Mainstream Scaling Parameters With Film Cooling on Pressure and Suction Side of a Gas Turbine Blade <i>Lingyu Zeng, XUEYING LI, Jing Ren, Hongde Jiang, Tsinghua University, Department of Thermal Engineering</i> |
| 11:15 | GT2017-64596 Comparison of 3D Unsteady Transient Conjugate Heat Transfer Analysis on a High Pressure Cooled Turbine Stage With Experimental Data <i>Jong-shang Liu, Mark Morris, Honeywell Aerospace; Malak Malak, Honeywell Engine and Air Management; Randall Mathison, Michael Dunn, Ohio State University</i> | GT2017-64637 LES Analysis of Flow and Heat Transfer in a Rib-Roughened Duct in Clockwise and Anti-Clockwise Rotation Regimes <i>Alessandro Salvagni, Domenico Borello, Sapienza University of Rome</i> | GT2017-65208 Parametric Cooling Study of Single-Row Cylindrical Film Holes on Pressure Side of a Rotor Blade <i>Zhongran Chi, Zang Shusheng, Shanghai Jiao Tong University; Haiging Liu, Shanghai Advanced Research Institute</i> |

| 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 Bringhamti , 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, Ryoza 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 , Linköping 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 |
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| | 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 <i>Jose Serrano, L. M. Garcia-Cuevas, L. B. Inhestern, Universitat Politècnica de València; Holger Mai, A. Rinaldi, Kratzer Automation; A. Miguel-Sanchez, CRITT M2A</i> | GT2017-63106 ASME PTC-10 and Heat Capacity Relations for Polytropic and Isentropic Compression Process of Real Gas <i>Matt Taher, Bechtel Oil & Gas Chemical</i> | GT2017-63269 Detailed Numerical Study of the Main Sources of Loss and Flow Behavior in Low Pressure Steam Turbine Exhaust Hoods <i>Dickson Munyoki, Damian Vogt, University of Stuttgart; Markus Schatz, ITSM, University of Stuttgart</i> |
| 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 <i>Uswah Khairuddin, Aaron Costall, Imperial College London</i> | GT2017-65235 Centrifugal Compressor Polytropic Performance: Consistently Accurate Results From Improved Real Gas Calculations <i>B Fred Evans, Spencer Huble, Chiyoda International Corporation</i> | GT2017-63576 Numerical Investigation and Validation of the 1 090 MW Steam Turbine Exhaust Hood Flow Field <i>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</i> |
| 11:15 | GT2017-64190 3-D Computational Loss Analysis of an Asymmetric Volute Twin-Scroll Turbocharger <i>Torsten Palenschat, Markus Müller, Johannes Leweux, Daimler AG; Peter Newton, Ricardo Martinez-Botas, Imperial College London</i> | GT2017-63385 Static Load Performance of a Water Lubricated Hydrostatic Thrust Bearing <i>Michael Rohmer, ExxonMobil Research & Engineering; Luis San Andres, Scott M Wilkinson, Texas A&M University</i> | GT2017-63964 Numerical Tests on the Effect Factors of the Last Stage Blade for Low Pressure Exhaust Hood Simulation <i>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</i> |

| TUESDAY, JUNE 27 | | | 10:15 - 11:45 AM | | |
|--|--|--|--|--|--|
| 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: Jaroslav 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 <i>Robert Laycock, Thomas Fletcher, Brigham Young University</i> | | GT2017-65429 Torsional Vibration Measurement and Model-Based Monitoring in Today's Reality of Power Generation Business <i>Mateusz Golebiowski, GE Power</i> | GT2017-63660 Influence of Rotor Tip Blockage on Near Stall Blade Vibrations in an Axial Compressor Rig <i>Daniel Möller, Maximilian Jüngst, Heinz-Peter Schiffer, Technische Universität Darmstadt; Thomas Giersch, Frank Heinichen, Rolls-Royce Deutschland Ltd & Co KG</i> | |
| | GT2017-64941 Investigation of Effect of Biomass Torrefaction Temperature on Volatile Energy Recovery Through Combustion <i>Oladapo S. Akinyemi, Lulin Jiang, Prashanth R. Buchireddy, Stanislav O. Barskov, John L. Guillory, William Holmes, University of Louisiana at Lafayette</i> | | | GT2017-64576 Measurements of Radial Vortices, Spill Forward and Vortex Breakdown in a Transonic Compressor <i>Christoph Brandstetter, Maximilian Jüngst, Heinz-Peter Schiffer, Technische Universität Darmstadt</i> | |
| 10:45 | GT2017-64902 Characterization of Spark- and Laser-Ignition of Bio- and Natural Gas <i>Nathan D. Peters, Benjamin Akih Kumgeh, Syracuse University</i> | | T U T O R I A L | GT2017-65244 Numerical Examination of Lock-in Hypothesis of Non-Synchronous Vibration in an Axial Compressor <i>Jiaye Gan, Ge-Cheng Zha, University of Miami; Hongsik Im, Honeywell</i> | |
| 11:15 | | | | | |

STUDENT ADVISORY

TURBOMACHINERY: AXIAL FLOW
TURBINE AERODYNAMICSCOMBUSTION, 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

GT2017-65419 **The Art of the Peer Review
Process: Best Practices for Crafting and
Responding to Paper Reviews**

Karen Thole, Pennsylvania State Univ

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*

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*

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*

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| 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 <i>Shunsaku Oide, Masanao Iwakura, Mai Takaoka, Shigeru Hayashi, Hosei University; Shunsuke Kasuga, Toyota Motor Corporation</i> | GT2017-63770 Design and Optimization of Multi-Stage Centrifugal Compressors With Uncertainty Quantification of Off Design Performance <i>Alessandro Romei, Roberto Maffulli, Clara Garcia Sanchez, Sergio Lavagnoli, Von Karman Inst for Fluid Dynamics</i> | GT2017-63400 Unsteady Behavior of Diffuser Stall in a Centrifugal Compressor With Vaned Diffuser <i>Nobumichi Fujisawa, Daiki Ema, Yutaka Ohta, Waseda University</i> |
| 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 <i>Arman Ahamed Subash, Atanu Kundu, Robert Collin, Jens Klingmann, Marcus Aldén, Lund University</i> | GT2017-65062 Novel Centrifugal Compressor Architecture for Wide-Range Operation: A Feasibility Assessment <i>Eric M. Krivitzky, Concepts NREC; Louis M. Larosiliere, Elliot Group</i> | GT2017-63913 Numerical Investigation of Diffuser Flow Field and Rotating Stall in a Centrifugal Compressor With Vaned Diffuser <i>Yang Zhao, Jiayi Zhao, Zhiheng Wang, Guang Xi, Xi'an Jiaotong University</i> |
| 11:15 | GT2017-64129 Numerical and Experimental Investigations of the Siemens SGT-800 Burner Fitted to a Water Rig <i>Daniel Moëll, Daniel Lörstad, Annika Lindholm, David Christensen, Siemens Industrial Turbomachinery AB; Xue-Song Bai, Lund University</i> | GT2017-64210 Experimental and Numerical Verification of Effect of Using Curvilinear Element Blades for Low-Solidity Cascade Diffuser in Centrifugal Compressor <i>Kazuhiro Tsukamoto, Kiyotaka Hiradate, Kiyohide Sakamoto, Research & Development Group, Hitachi,Ltd; Yasushi Shinkawa, Industrial Products Business Unit, Hitachi, Ltd.</i> | GT2017-64452 Numerical Study on the Influence of Tip Clearance on Rotating Stall in an Unshrouded Centrifugal Compressor <i>Wenying Ju, Shengli Xu, Xiaofang Wang, Xudong Chen, Shuhua Yang, Dalian University of Technology; Jigang Meng, Shenyang Blower Works Group Corporation</i> |

| TUESDAY, JUNE 27 | | | 10:15 - 11:45 AM | | |
|---|---|--|--|--|---|
| 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 <i>Alexander Bucknell, Matthew McGilvray,</i> <i>University of Oxford; David Gillespie, University</i> <i>of Oxford; Geoff Jones, Alasdair Reed, Rolls-</i> <i>Royce Plc; David R Buttsworth, University of</i> <i>Southern Queensland</i> | | GT2017-65467 Wind Turbine Condition Monitoring <i>Juan Jauregui, University of Queretaro</i> | | GT2017-65361 Where Have all the Years Gone, 1961-2017? <i>Michael Dunn, Ohio State University</i> |
| | GT2017-63202 Modeling of a Turbofan Engine With Ice Crystal Ingestion in the NASA Propulsion System Laboratory <i>Joseph Veres, Scott Jones, Samaun Nili, NASA</i> <i>Glenn Research Center; Philip C. E. Jorgenson,</i> <i>NASA</i> | | T U T O R I A L | | L E C T U R E |
| | GT2017-65128 A Dynamic Model for the Evaluation of Aircraft Engine Icing Detection and Control-Based Mitigation Strategies <i>Donald L. Simon, Scott Jones, NASA Glenn</i> <i>Research Center; Aidan Rinehart, NASA Glenn /</i> <i>Vantage Partners</i> | | | | |
| 11:15 | | | | | |

| 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 Tutorial Session • Westin Hotel, Providence I • TB-8-6 Session Chair: John Scheibel , Electric Power Research Institute Session Co-Chair: David Noble , Electric Power Research Institute | Dry Gas Seal Systems and Failure Prevention Tutorial Session • CCC, 216AB • TB-27-11 Session Chair: Meera Day , Southwest Research Institute Session Co-Chair: Timothy Allison , Southwest Research Institute | Introduction to Dynamic Analysis and Modelling of Plant Systems Tutorial Session • Westin Hotel, Trade • TB-6-15 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 |
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| 10:15 | GT2017-65545 Compressor Life Monitoring & Inspection <i>Matt Ballew, Luminant Power</i> | T U T O R I A L | T U T O R I A L |
| 10:45 | GT2017-65546 HRSR Pressure Wave Cleaning Assessment <i>Jacob Pursley, Southern Power</i> | | |
| 11:15 | GT2017-65547 Rotor Life Management <i>Mark Lozier, Exelon Generation</i> GT2017-65548 Air Filter Life Analysis <i>Josh Barron, Power Generation, Southern Company Services</i> | | |

| 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 Cho , Yonsei University Session Co-Chair: Salam Azad , Siemens |
| 2:30 | GT2017-65568 Sensor Selection and Other Considerations <i>Steve Carter</i> , Kulite Semiconductor Products, Inc. | T U T O R I A L | GT2017-63053 Experimental Study of Impingement Heat Transfer Characteristics in a Convergent Channel With Pin Fin <i>Yang Xu, Weijiang Xu, Hui ren Zhu, Cunliang Liu</i> , Northwestern Polytechnical University; <i>Haiying Lu</i> , Shenyang Aircraft Engine Design Institute |
| | GT2017-65569 Data Filtering and Sample Rate During Data Acquisition <i>David Kidman</i> , U.S. Air Force | | GT2017-63140 Experimental Investigation of Dynamically Forced Impingement Cooling <i>Arne Berthold, Frank Haucke</i> , Technische Universität Berlin |
| | GT2017-65570 Miscellaneous Instrumentation Topics <i>David Beale</i> , 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 <i>Yi Ye, Xueying Li, Jing Ren, Hongde Jiang</i> , Tsinghua University |
| | GT2017-65571 Advanced Measurement Technologies <i>Michel Mansour</i> , Limmat Scientific AG | | GT2017-63809 Turbine Blade Leading Edge Cooling With One Row of Normal or Tangential Impinging Jets <i>Nian Wang, Andrew F Chen, Mingjie Zhang, Je- Chin Han</i> , Texas A&M University |
| | | | GT2017-63994 Flow and Heat Transfer Analysis in a Single Row Narrow Impingement Channel: Comparison of PIV, LES, and RANS to Identify RANS Limitations <i>Jahed Hossain, Erik Fernandez, Christian Garrett, Jayanta Kapat</i> , University of Central Florida |
| 5:00 | | | GT2017-63044 Rib Turbulated Pin Fin Array for Trailing Edge Cooling <i>Marcel Otto</i> , CATER University of Central Florida; <i>Erik Fernandez, Jayanta Kapat</i> , University of Central Florida; <i>Shantanu Mhetras</i> , Siemens; <i>Mark Ricklick</i> , 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 Soechting Memorial Session Part A <i>Om Sharma</i> , United Technologies Research Center; <i>Joel Wagner</i> , 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 <i>Zhong-yi Fu, Hui ren Zhu, Cong Liu, Zheng Li</i> , Northwestern Polytechnical University | GT2017-65448 Low K Thermal Barrier Coatings using Nanostructured YSZ powders <i>Alan Burgess</i> , SprayWerx Technologies Inc |
| 3:00 | GT2017-65416 Fred Soechting Memorial Session Part B <i>David Bogard</i> , Univ Of Texas At Austin; <i>James Downs</i> , Florida Turbine Technologies Inc; <i>Thomas A. Auxier</i> | GT2017-63679 Pitfalls of Fan-Shaped Hole Design: Insights From Experimental Measurement of In-Hole Flow Through MRV <i>Emin Issakhanian</i> , Loyola Marymount University; <i>Christopher J. Elkins</i> , John K. Eaton, Stanford University | GT2017-65454 Honeywell's Approach to Low Thermal Conductivity TBC Coatings <i>Vladimir Tolpygo</i> , Honeywell Aerospace Materials and Process Engineering |
| 3:30 | GT2017-65417 Fred Soechting Memorial Session Part C <i>Michael Dunn</i> , Ohio State University; <i>Atul Kohli</i> , Pratt & Whitney | GT2017-63692 The Effect of Area Ratio Change via Increased Hole Length for Shaped Film Cooling Holes With Constant Expansion Angles <i>Shane Haydt, Stephen Lynch</i> , Pennsylvania State University; <i>Scott Lewis</i> , Pratt & Whitney | GT2017-65455 GE's Approach to Low K TBC Coatings <i>Surinder Pabla</i> , GE Energy |
| 4:00 | GT2017-65418 Fred Soechting Memorial Session Part D <i>AJ Fredmonski</i> , Ansaldo Power Systems Mfg. | GT2017-64479 Experimental and Numerical Investigation of Sweeping Jet Film Cooling <i>Mohammad Arif Hossain, Robin Prenter, Ryan Lundgreen, Ali Ameri, James Gregory, Jeffrey Bons</i> , Ohio State University | GT2017-65456 Low K Thermal Barrier Coatings <i>Eric Jordan</i> , 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 <i>Ken-ichi Funazaki</i> , 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 <i>Jiaxu Yao, Jin Xu, Ke Zhang, Jiang Lei</i> , Xi'an Jiaotong University; <i>Lesley Wright</i> , 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 Fischersworing-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 <i>Holger Mai</i> , Kratzer Automation AG; <i>André Kaufmann</i> , Ravensburg-Weingarten University of Applied Sciences | GT2017-65558 Leakage Losses and Labyrinth Sealing <i>Jayanta Kapat</i> , University of Central Florida | GT2017-63422 Innovative Material Testing Based on Small-Scale Specimens and Application for Turbomachinery Components <i>Mario Raddatz</i> , <i>Uwe Gampe</i> , Dresden University; <i>Dirk Hollaender</i> , TU Dresden |
| 3:00 | GT2017-64283 Correcting Turbocharger Performance Measurements for Heat Transfer and Friction <i>Mario Schinnerl</i> , <i>Jan Ehrhard</i> , <i>Mathias Bogner</i> , Continental Automotive GmbH; <i>Joerg Seume</i> , Gottfried Wilhelm Leibniz Universitaet | GT2017-65562 Beyond Labyrinth Seals. <i>Peter Crudgington</i> , Cross Manufacturing Company (1938) Ltd | GT2017-63229 A New Temperature Based Method for Determination of Lifetime Consumption of Turbo-Machinery Components During Operation <i>Meisam Sistaninia</i> , <i>Diego Ugel</i> , <i>Sven Olmes</i> , Ansaldo Energia Switzerland |
| 3:30 | GT2017-64743 A One-Dimensional Gas Dynamics Code for Turbocharger Turbine Pulsating Flow Performance Modelling <i>Adam Feneley</i> , <i>Apostolos Pesiridis</i> , Brunel University London; <i>Hua Chen</i> , National Laboratory of Engine Turbocharging Technology North China Eng Rsrch Inst | GT2017-65573 Turbine Sealing Service Experience <i>Ivan McBean</i> , General Electric | GT2017-64414 A Processing Method for Combined Fatigue Accelerated Test Data <i>Songwang Zheng</i> , <i>Cao Chen</i> , <i>Lei Han</i> , <i>Xiaoyong Zhang</i> , <i>Xiaojun Yan</i> , Beihang University |
| 4:00 | GT2017-63195 Validation of a Heat Transfer Prediction Approach Inside Turbochargers and its Application on Turbocharged Engine Performance Analysis <i>Uwe Tomm</i> , <i>Sascha Weiske</i> , <i>Ahmet Coksen</i> , <i>Youness Rafaa</i> , <i>Stefan Muenz</i> , BorgWarner Turbo Systems Engineering GmbH | GT2017-65561 Innovative Future Turbomachinery Seal Designs <i>Simon Hogg</i> , School of Engineering | GT2017-64435 A New Modified Contrast Method for Life Prediction in Combined Cycle Fatigue Test <i>Lei Han</i> , <i>Cao Chen</i> , <i>Xiaoyong Zhang</i> , <i>Xiaojun Yan</i> , Beihang University |
| 4:30 | | | GT2017-64791 Multiscale Investigation of Strain Energy Density for Fatigue Life Prediction <i>Casey Holycross</i> , Air Force Research Laboratory; <i>Mo-How Shen</i> , Ohio State University; <i>Onome Scott-Emuakpor</i> , AFRL/RQTI; <i>Tommy George</i> , AFRL |
| 5:00 | | | |

| TUESDAY, JUNE 27 | | | 2:30 - 5:30 PM |
|------------------|---|---|--|
| | STRUCTURES & DYNAMICS: ROTOR DYNAMICS | 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 <i>Leonid Moroz, Leonid Romanenko, Roman Kochurov, Evgen Kashtanov, SoftInWay Inc.</i> | GT2017-63198 Influence of Nozzle Design Upon the Primary Jet Breakup of High-Viscosity Fuels for Entrained Flow Gasification <i>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.</i> | 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 <i>Klemens Vogel, Aravin Dass Naidu, Magnus Fischer, ABB Turbo Systems Ltd.</i> |
| 3:00 | GT2017-63142 Investigation of the American Petroleum Institute's Support Stiffness Ratio Specification <i>David J. Griffin, Roger L. Fittro, Robert D. Rockwell, Christopher P. Goyné, University of Virginia</i> | GT2017-65199 Computational Analysis of Two-Phase Mixing Inside a Twin-Fluid, Fuel-Flexible Atomizer <i>Nathan Vardaman, Ajay Agrawal, University of Alabama</i> | GT2017-63376 Interaction of Concurrent Forced Response and Flutter Phenomena in a Compressor Stage <i>Zhiping Mao, Robert Kielb, Duke University</i> |
| 3:30 | GT2017-63926 Dynamic Analysis of Flexible Rotor Systems Subjected to Time-Varying Base Excitations <i>Liqiang Chen, Jianjun Wang, Beihang University; Qinkai Han, Fulei Chu, Tsinghua University</i> | GT2017-64420 A Numerical Study of Ethanol-Water Droplet Evaporation <i>Giandomenico Lupo, Christophe Duwig, KTH - Royal Institute of Technology</i> | GT2017-64621 Design and Analysis of an Intentional Mistuning Experiment Reducing Flutter Susceptibility and Minimizing Forced Response of a Jet Engine Fan <i>Felix Figaschewsky, Bernd Beirrow, Arnold Kühhorn, Brandenburg University of Technology Cottbus-Senftenberg; Jens Nipkau, Thomas Giersch, Bronwyn Power, Rolls-Royce Corporation</i> |
| 4:00 | GT2017-64353 Investigation on the Excitation Characteristics and Dynamic Response of the Multi-Support Flexible Rotor With Misalignment <i>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</i> | GT2017-65191 Twin-Fluid Atomized Spray Combustion of Straight Vegetable Oil at Elevated Pressures <i>Yonas Niguse, University of Louisiana at Lafayette; Ajay Agrawal, University of Alabama</i> | GT2017-64167 On the Importance of Engine-Representative Models for Fan Flutter Predictions <i>Sina Stapelfeldt, Mehdi Vahdati, Imperial College London</i> |
| 4:30 | | GT2017-63364 Thermal Stability Measurement of Alternative Jet Fuels Using Ellipsometry <i>Leigh Nash, Subith Vasu, University of Central Florida</i> | GT2017-64211 Unsteady Pressure Measurement on Oscillating Blade in Transonic Flow Using Fast-Response Pressure-Sensitive Paint <i>Toshinori Watanabe, Toshihiko Azuma, Seiji Uzawa, Takehiro Himeno, Chihiro Inoue, The University of Tokyo</i> |
| 5:00 | | GT2017-64551 An Investigation of Combustion Properties of Butanol and its Potential for Power Generation <i>Marina Braun-Unkhoff, Torsten Methling, Sandra Richter, Trupti Kathrotia, Clemens Naumann, Uwe Riedel, German Aerospace Center (DLR), Institute of Combustion Technology</i> | |

| 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 <i>Jeffrey Phillips</i> , Electric Power Research Institute | GT2017-64528 Turbomachinery Active Subspace Performance Maps <i>Pranay Seshadri</i> , <i>Geoffrey Parks</i> , University of Cambridge; <i>Shahrokh Shahpar</i> , <i>Mike Adams</i> , Rolls-Royce Plc; <i>Paul G. Constantine</i> , Colorado School of Mines | GT2017-64466 Multidisciplinary Design of a Three Stage High Speed Booster <i>Marcus Lejon</i> , <i>Tomas Grönstedt</i> , Chalmers University; <i>Magnus Genrup</i> , Lund University <i>Nenad Glodic</i> , <i>Paul Petrie-Repar</i> , Royal Institute of Technology, KTH; <i>Alexander Mann</i> , Swerea IVF |
| 3:00 | GT2017-65505 Clean Power Generation for Sustainable Future with Super Critical CO₂ Cycle <i>Sungho Chang</i> , KEPKO Research Institute | GT2017-64585 Development of Direct-Driven and Geared Fan Stages With Reduced Tip Speeds <i>Sergey Pankov</i> , <i>Victor Milesin</i> , <i>Igor Orekhov</i> , <i>Victor Fateev</i> , Central Institute of Aviation Motors | GT2017-64660 An Approach for Efficient CFD Simulations of an Ejector Air Injection System for Active Aerodynamic Compressor Stabilization <i>Sebastian Brehm</i> , <i>Felix Kern</i> , <i>Jonas Raub</i> , <i>Reinhard Niehuis</i> , University of the Federal Armed Forces Munich |
| 3:30 | GT2017-65408 Commercialization of sCO₂ power cycles <i>Douglas Hofer</i> , GE Global Research GT2017-65410 Application Considerations for Integrally Geared Supercritical CO₂ Power Cycles <i>Karl Wygant</i> , Hanwha Techwin | GT2017-63031 Numerical Efforts of Aerodynamic Re-Design in a Single-Stage Transonic Axial Compressor: Part 1: Stator Design <i>Justin Jongsik Oh</i> , Danfoss Turbocor | GT2017-64708 Effect of RANS Method on Stall Inception Eigenvalue Approach <i>Zhe Xie</i> , <i>Yangwei Liu</i> , <i>Xiaohua Liu</i> , <i>Lipeng Lu</i> , <i>Xiaofeng Sun</i> , Beijing University of Aeronautics and Astronautics |
| 4:00 | GT2017-65412 Novel Oxy-Combustion Power Cycle <i>Lalit Chordia</i> , Thar Energy, LLC GT2017-65506 Oxy Fuel Combustion Turbine for SCO₂ Power Cycles <i>Takashi Sasaki</i> , TOSHIBA Corporation | GT2017-63536 Effects of a Circumferential Feed-Back Channel on Aerodynamic Performance of a Single-Stage Transonic Axial Compressor <i>Cong Truong Dinh</i> , <i>Sang-Bum Ma</i> , <i>Kwang-yong Kim</i> , Inha Univ | GT2017-65194 Aerodynamic Inverse Blade Design of Axial Compressors in Three-Dimensional Flow Using a Commercial CFD Program <i>Araz Arbabi</i> , <i>Wahid Ghaly</i> Concordia University; <i>Adam Medd</i> , Honeywell |
| 4:30 | GT2017-65409 Commercial WHR Applications <i>Timothy Held</i> , Echogen Power Systems (DE), Inc GT2017-65413 50 MWth Direct SCO₂ Power Cycle (Allam Cycle) <i>Walker Dimming</i> , 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 <i>Shijun Sun</i> , <i>Songtao Wang</i> , <i>Shaowen Chen</i> , Harbin Institute of Technology | |
| 5:00 | GT2017-65407 The Plan to Design, Build & Operate the STEP 10 MWe sCO₂ Pilot Plant <i>Michael McDowell</i> , Gas Technology Institute | GT2017-64202 Numerical Research of Aerodynamic Sweep on Leading Edge in the Ram-Rotor <i>Jian Guan</i> , <i>Ji-ang Han</i> , <i>Jingjun Zhong</i> , <i>Chenguang Yuan</i> , 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 <i>Luis Tay-Wo-Chong, Alessandro Scarpato, ANSALDO Energia Switzerland AG; Wolfgang Polifke, TU München</i> | GT2017-63128 NOx-Formation and Co-Burnout in Water Injected, Premixed Natural Gas Flames at Typical Gas Turbine Combustor Residence Times <i>Stephan Lellek, TUM - Lehrstuhl für Thermodynamik; Thomas Sattelmayer, Technical Univ Munich</i> | | GT2017-63184 The Effect of Axial Flow Velocity on Annular Gap Windage Power Loss <i>Erik Swanson, P. Shawn O'Meara, Xdot Engineering and Analysis; Hsin-Hua Tsuei, Tsuei Engineering LLC</i> | |
| | GT2017-64569 Modelling Strategies for Large-Eddy Simulation of Lean Burn Spray Flames <i>Stefano Puggelli, Davide Bertini, Antonio Andreini, Department of Industrial Engineering, University of Florence; Lorenzo Mazzei, University of Florence</i> | GT2017-63435 The Design and Characteristics of a Novel Injector: A Lobed Swirl Injector <i>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</i> | | GT2017-63351 Influence of Backward and Forward Facing Steps on the Flow Through a Turning Mid Turbine Frame <i>Sabine Bauinger, Emil Göttlich, Franz Heitmeir, Graz University of Technology; Franz Malzacher, Dachauer Straße 665</i> | |
| | GT2017-65256 Large Eddy Simulations of a Pressurized, Partially-Premixed Swirling Flame With Finite-Rate Chemistry <i>Sandeep Jella, Gilles Bourque, Siemens Canada; Jeffrey Berghthorson, McGill University; Ghenadie Bulat, Jim Rogerson, Suresh Sadasivuni, Siemens Industrial Turbomachinery Ltd; Pierre Gauthier, Siemens Energy Canada</i> | GT2017-63976 Development of Porous Injection Technology to Reduce Emissions for Dry Low NOx Combustors: Micromixer and Swirl Injectors <i>Umesh Bhayaraju, Mahmoud Hamza, San-Mou Jeng, University of Cincinnati</i> | | GT2017-63962 Preliminary Investigation Into the Effects of a Compressor Rim Purge Flow on OGV/Pre-Diffuser and Combustion System Aerodynamics <i>A Duncan Walker, Bharat Koli, Loughborough University; Peter A Beecroft, Rolls-Royce plc</i> | |
| | GT2017-64744 Investigation of an Industrial Gas Turbine Combustor and Pollutant Formation Using LES <i>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.</i> | GT2017-63981 Characterization of a Novel Porous Injector for Multi-Lean Direct Injection (M-LDI) Combustor <i>Jianing Li, Umesh Bhayaraju, San-Mou Jeng, University of Cincinnati</i> | | GT2017-64756 Complex Flow Generation and Development in a Full-Scale Turbofan Inlet <i>Tamara Guimarães, K. Todd Lowe, Walter Obrien, Virginia Tech.</i> | |
| | GT2017-64835 Uncertainty Quantification in Large Eddy Simulations of a Rich-Dome Aviation Gas Turbine <i>Matthieu Masquelet, Jin Yan, GE Global Research; Anne Dord, Gregory Laskowski, GE Aviation; Lee Shunn, Cascade Technologies, Inc; Lluis Jofre, Gianluca Iaccarino, Stanford University</i> | GT2017-63037 Short Helical Combustor: Flow Control in a Combustion System With Angular Air Supply <i>Behdad Ariatabar, Karlsruhe Institute of Technology (KIT), Rainer Koch, Institut of Turbomachinery (ITS) - Karlsruhe Institut of Technology (KIT)</i> <i>Hans-Jörg Bauer, Institut of Thermal Turbomachinery (ITS) - Karlsruhe Institut of Technology (KIT)</i> | | GT2017-64779 Experimental Quantification of Fan Rotor Effects on Inlet Swirl Using Swirl Distortion Descriptors <i>Dustin J. Frohnapfel, Walter Obrien, K. Todd Lowe, Virginia Tech Mechanical Engineering</i> | |
| 5:00 | GT2017-64145 Large Eddy Simulation of Light-Round in an Annular Combustor With Liquid Spray Injection and Comparison With Experiments <i>Thea Lancien, EM2C Laboratory, CNRS, CentraleSupélec; Kevin Prieur, Safran Tech, E8P; Daniel Durox, Laboratoire EM2C, CNRS, CentraleSupélec; Sébastien Candel, Laboratoire EM2C, CNRS and Ecole Centrale Paris; Ronan Vicquelin, CNRS-EM2C, ECP</i> | GT2017-64485 Numerical Study on the Reduction of NOx Emissions From Pulse Detonation Combustion <i>Neda Djordjevic, Niclas Hanraths, Joshua Gray, P. Berndt, Jonas Moeck, Technische Universität Berlin</i> | | | |

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

| | 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 <i>Gerhard Kraft, Fabrice Giuliani, Lukas Pfefferkorn, Nina Paulitsch, Combustion Bay One e. U.; Lukas Andracher, FH Joanneum GmbH</i> | GT2017-64950 Economic Viability of On-Line Compressor Washing for Different Rated Capacity <i>Gali Musa, Uyioghosa Igie, Pericles Pilidis, Sule Gownon, Cranfield University</i> | GT2017-63333 Performance Improvement Program for Kawasaki Gas Turbine <i>Tomoki Taniguchi, Ryoji Tamai, Yoshihiko Muto, Satoshi Takami, Ryoza Tanaka, Masanori Ryu, Kawasaki Heavy Industries, Ltd</i> |
| 3:00 | GT2017-63803 Tip-Clearance Measurements on an Engine High Pressure Turbine Using an Eddy Current Sensor <i>Vikram Sridhar, Kam Chana, Oxford University</i> | GT2017-64780 Case for Exploring Compressor Water Injection for Airport Emission Reduction <i>David Alejandro Block Novelo, Uyioghosa Igie, Cranfield University</i> | GT2017-64404 GT36 Turbine Aero-Thermal Development and Validation <i>Shailendra Naik, Willy Hofmann, Ansaldo Energia; Joerg Krueckels, Marc Henze, Martin Schnieder, Ansaldo Energia Switzerland AG</i> |
| 3:30 | GT2017-63807 Development of a Combined Eddy Current and Pressure Sensor for Gas Turbine Blade Health Monitoring <i>Vikram Sridhar, Kam Chana, Oxford University</i> | GT2017-63429 Integrated Electrical Machine-Turbo Machinery <i>Mahir Alani, S. P. Lee, J.M. Allport, University of Huddersfield</i> | GT2017-64893 Development of the New Ansaldo Energia Gas Turbine Technology Generation <i>Uwe Ruedel, Vasileios Stefanis, Stefan Florjancic, Ansaldo Energia Switzerland; Alessandro Ramaglia, Ansaldo Energia</i> |
| 4:00 | GT2017-64513 Gas Thermometry Using Two-Thermocouple Radiation Correction <i>Christopher Martin, Penn State; Stephen LePera, Consultant; Uri Vandsburger, Virginia Tech</i> | GT2017-63917 Installed Performance Assessment of an Array of Distributed Propulsors Ingesting Boundary Layer Flow <i>Chana Goldberg, Devaiah Nalianda, Pericles Pilidis, Cranfield University</i> | GT2017-65266 Optimal Gas Turbine Power Plant Operation Regarding Fuel- and Maintenance Cost <i>Phillip Waniczek, Dirk Therkorn, Darrel S. Lilley, General Electric (GE)</i> |
| 4:30 | GT2017-64669 Development of High Frequency Virtual Thermocouples <i>James Braun, Shengqi Lu, Guillermo Paniagua, Purdue University</i> | GT2017-65029 Numerical Simulation of the Multistage Ultra-High Efficiency Gas Turbine Engine, UHEGT <i>Seyed Ghoreyshi, Meinhard T. Schobeiri, Texas A & M University</i> | |
| 5:00 | | GT2017-63905 Design Parameters Prediction of New Type Gas Turbine Based on a Hybrid GRA-SVM Prediction Model <i>Tingting Wei, Dengji Zhou, Jinwei Chen, Huisheng Zhang, Shanghai Jiao Tong Univ; Yaixin Cui, Shanghai Turbine Company</i> | |

| TUESDAY, JUNE 27 | | 2:30 - 5:30 PM | |
|--|--|---|--|
| INDUSTRIAL & COGENERATION | | OIL & GAS APPLICATIONS | |
| Gas Turbine Applications Involving Heavy Fuel Oils and Crude Oils | | Compressor Fouling Mechanisms and Modeling | |
| Tutorial Session • Westin Hotel, Tryon • TC-23-7 | | Tutorial Session • CCC, 207BC • TC-27-12 | |
| 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 | |
| T U T O R I A L | | P A N E 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 <i>Mohamed Fadl, Li He, Oxford University</i> | GT2017-63304 Quantifying Blowing Ratio for Shaped Cooling Holes <i>David Cerantola, A.M. Birk, Queen's University</i> | GT2017-64510 Design and Analysis of a Sliding Mode Parameter Limit Regulating System for Turbo Fan Engine <i>Yuansuo Zhang, Jinwei Tao, Xin-chen MAI, AECC Commercial Aircraft engine co.,Ltd</i> |
| | GT2017-63622 Nonlinear Harmonic Method Applied to Turbine Conjugate Heat Transfer Analysis for Efficient Simulation of Hot Streak Clocking and Unsteady Heat Transfer <i>Omid Z. Mehdizadeh, Stephane Vilmin, Benoit Tartinville, Charles Hirsch, NUMECA International</i> | GT2017-64607 A Study of Source Term Model for Full Coverage Film Cooling Simulation <i>Yufang ZHANG, Ke WANG, AECC Commercial Aircraft Engine CO, LTD.</i> | GT2017-65218 First and Second Law Analysis of Radical Intercooling Concepts <i>Oskar Thulin, Olivier Petit, Carlos Xisto, Xin Zhao, Tomas Grönstedt, Chalmers University of Technology</i> |
| 9:00 | GT2017-63837 Uncertainty Quantification of Conjugate Heat Transfer of a Cooled Turbine Vane: Roughness Effect <i>Wei Shi, Weihong Li, Bo Shi, XUEYING LI, Jing Ren, Hongde Jiang, Tsinghua University</i> | GT2017-65050 Simulations of Slot Film-Cooling With Freestream Acceleration and Turbulence <i>Yousef Kanani, Sumanta Acharya, Illinois Institute of Technology; Forrest Ames, Univ Of North Dakota</i> | GT2017-63591 A Fully Coupled Approach for the Integration of 3D-CFD Component Simulation in Overall Engine Performance Analysis <i>Carsten Klein, Stanislaus Reitenbach, Dirk Schoenweitz, Florian Wolters, German Aerospace Center (DLR)</i> |
| | GT2017-64873 Conjugate Heat Transfer Scaling for Inconel 718 <i>William Stewart, Tom Dyson, GE Global Research</i> | GT2017-63314 Implicit LES for Shaped-Hole Film Cooling Flow <i>Todd Oliver, Josh Anderson, Robert Moser, David Bogard, Univ Of Texas At Austin; Gregory Laskowski, GE Aviation</i> | GT2017-63858 Analytical Dynamic Model of Statically Indeterminate Rotor System and Misalignment <i>Guang Zhao, Shengxiang Li, Yunqiu Zhang, Zhiliang xiong, Qingkai Han, Dalian University of Technology</i> |
| 9:30 | | | |

| 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 <i>Francesco Maiuolo, Carmine Carmicino, Emanuele Rizzo, GE Oil & Gas</i> | GT2017-65046 Heat Transfer and Pressure Drop Measurements in a High Solidity Pin Fin Array With Variable Hole Size Incremental Impingement <i>Abdulqadir Sheikhmohamed, Loren Soma, Forrest Ames, University of North Dakota; Sumanta Acharya, Illinois Institute of Technology</i> | GT2017-63335 Development of a Simulation Model of Transient Operation of Micro-CHP Systems in a Microgrid <i>Francesco Ippolito, Mauro Venturini, Università Degli Studi Di Ferrara</i> |
| | GT2017-63647 A System Integration Approach for Heavy-Duty Gas Turbine Upgrades Using Improved Rotor Thrust Predictions and Application of Advanced Thrust Bearing Designs <i>Francesco Bavassano, Marco Mantero, Riccardo Traverso, Ansaldo Energia; Richard Livermore-Hardy, Barry Blair, Waukesha Bearings</i> | GT2017-63761 Heat Transfer and Pressure Loss Characteristics of Pin-Fins With Different Shapes in a Wide Channel <i>Jin Xu, Jiaxu YAO, Jiang Lei, Junmei Wu, Tieyu Gao, Xian Jiaotong University; Pengfei Su, Dongfang Turbine Co. Ltd</i> | GT2017-64296 Multiobjective Optimal Design of a Gas Turbine Cogeneration Plant by a Revised Hierarchical Optimization Method <i>Yuji Shinano, Zuse Institute Berlin; Ryohei Yokoyama, Yuki Wakayama, Tetsuya Wakui, Osaka Prefecture University</i> |
| 9:00 | GT2017-64512 Transient Thermal Modelling of Whole GT Engine With a Partly Coupled FEM-Fluid Network Approach <i>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</i> | GT2017-64809 An Experimental Investigation of an Array of Inline Impinging Jets on a Surface With Varying Rib Orientations and Blockages <i>Justin Hodges, Andrea Osorio, Erik Fernandez, Jayanta Kapat, University of Central Florida; Tryambak Gangopadhyay, Swarnendu Sen, Achintya Mukhopadhyay, Jadavpur University</i> | GT2017-63854 Modeling and Optimal Operation of a Network of Energy Hubs System With Distributed Energy Resources <i>Shixi Ma, Dengji Zhou, Huisheng Zhang, Zhenhua Lu, Shanghai Jiao Tong University</i> |
| | GT2017-63001 Research on Active Control Strategy of Gas Turbine Secondary Air System in Different Ambient Temperature Conditions <i>Jingjin Ji, Danping Huang, Bo Sun, Shuhong Peng, Chengxiong Pan, Shanghai Electric Gas Turbine Co., Ltd.</i> | | GT2017-63516 Heat and Mass Transfer Characteristics of Water Droplets in Wet Compression Process <i>Xiang Li, Shanghai Institute of Aerospace Systems Engineering; Chunlei Liu, Hai Zhang, Qun Zheng, Harbin Engineering University</i> |
| 9:30 | | | |

| | 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 Dhinakaran 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 Brighenti , 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 |
| | 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 |
| | 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 |
| 9:00 | 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 |
| 9:30 | | | | | |

| 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 <i>Sumathi V, Homi Bhabha National Institute; S Jalaldeen, S.D Sajish, P Selvaraj, S Murugan, Indira Gandhi Centre for Atomic Research</i> | GT2017-65542 Basics of Alternative Fuel Combustion and Emissions <i>Jeffrey Bergthorson, McGill University</i> | | GT2017-65425 Supercritical CO2 Power Cycle Turbomachinery Tutorial <i>Jeffrey Moore, Southwest Research Institute</i> | |
| | GT2017-63633 Characterization of the Modal Characteristics of Structures Operating in Dense Liquid Turbopumps <i>Joseph Chiu, City College of New York; Andrew Brown, NASA/MSFC</i> | | | | |
| | GT2017-64260 Computing Fluid Structure Interaction Coupling Time Spectral Method (TSM) and Harmonic Balance Method (HBM) <i>Aude Cadel, Marie-Océane Parent, Safran Aircraft Engines; Ghislaine Ngo Boum, Fabrice Thouverez, Ecole Centrale de Lyon; Alain Dugeai, ONERA</i> | | | | |
| 9:00 | GT2017-64586 Analysis of a Turbine Bladed Disk With Structural and Aerodynamic Mistuning <i>Dimitri Franz, Royal Institute of Technology; Loic Salles, Sina Stapelfeldt, Imperial College of London</i> | | | | |
| 8:30 | | T U T O R I A L | | T U T O R I A L | |
| 9:30 | | | | | |

| 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 Research 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 <i>Tânia S. Cação Ferreira, Tony Arts, Von Karman Inst</i> | | GT2017-63240 Facing the Challenges in CFD Modelling of Multistage Axial Compressors <i>Lorenzo Cozzi, Filippo Rubechini, Michele Marconcini, Andrea Arnone, University of Florence; Pio Astrua, Andrea Schneider, Andrea Silingardi, Ansaldo Energia</i> | | GT2017-63305 Blowout Sensitivities in a Liquid Fueled Combustor: Fuel Composition and Preheat Temperature Effects <i>Nicholas Rock, Benjamin Emerson, Jerry Seitzman, Tim Lieuwen, Georgia Institute of Technology; Ianko Chterev, Ben T. Zinn Combustion Laboratory</i> | |
| | GT2017-64409 Next Generation Turbine Testing at DLR <i>Hans-Juergen Rehder, Andreas Pahs, Martin Bittner, Frank Kocian, German Aerospace Center (DLR)</i> | | GT2017-63879 Experimental and Numerical Investigation on the Aerodynamic Performance of a Compressor Cascade Using Blended Blade and End Wall <i>Jiabin LI, Weilin YI, Ji Lu-cheng, Beijing Institute of Technology</i> | | GT2017-63367 Experimental Study to Enhance Resistance for Boundary Layer Flashback in Swirl Burners Using Microsurfaces <i>Mohammed Al-fahham, Fares Hatem, Ali Alsaegh, Agustin Valera-Medina, Samuel Bigot, Richard Marsh, Cardiff University</i> | |
| 8:30 | GT2017-64736 ECAT: An Engine Component Aerothermal Facility at the University of Oxford <i>Benjamin Kirolos, Roderick Lubbock, Paul Beard, Thomas Povey, University of Oxford; Frederic Goenaga, Anton Rawlinson, Erik Janke, Rolls-Royce Deutschland Ltd. & Co KG</i> | | GT2017-63189 An Implicit Off-Design Deviation Angle Correlation of Axial Flow Compressor Blade Elements <i>Dong-run Wu, Jinfang Teng, Xiao-qing Qiang, Jin- zhang Feng, Shanghai Jiao Tong University</i> | | GT2017-63507 Towards Predicting Lean Blow-Off Based on Damkohler Number and Practical Reaction Zone <i>Wang Zhonghao, University of Chinese Academy of Sciences; Hu Bin, Qingjun Zhao, Jianzhong Xu, Key Laboratory of Light-Duty-Gas-Turbine</i> | |
| 9:00 | | | GT2017-63023 Centrifugal Pump Performance Enhancement by Blade Shape Modification <i>Ahmed Farid Ayad Hassan, H.M. Abdalla, Ahmed S. Abou El-Azm Aly, Military Technical College</i> | | GT2017-64248 Stabilization Mechanisms of Swirling Premixed Flames With an Axial- Plus-Tangential Swirler <i>Paul Jourdain, EM2C laboratory; Clément Mirat, Centrale Supélec; Jean Caudal, Air Liquide; Thierry Schuller, Laboratoire EM2C, CNRS, CentraleSupélec</i> | |
| 9:30 | | | | | | |

| 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 < | | | | | |

| 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 <i>Anthony Dent, Liping Xu, Whittle Laboratory, University of Cambridge; Roger Wells, Siemens Industrial Turbomachinery Ltd</i> | T2017-63544 Predicting the Temporal Progression of Aircraft Engine Compressor Performance Deterioration due to Particle Deposition <i>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</i> | <div>T</div> <div>U</div> <div>T</div> <div>O</div> <div>R</div> <div>I</div> <div>A</div> <div>L</div> |
| | GT2017-64065 Numerical Investigation Into the Mechanism of Tip Flow Unsteadiness in a Transonic Compressor <i>Guangyao An, Yanhui Wu, Jinhua Lang, Zhiyang Chen, Bo Wang, Guowei Yang, Northwestern Polytechnical University</i> | GT2017-64051 Microstructure Based Material-Sand Particulate Interactions and Assessment of Coatings for High Temperature Turbine Blades <i>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</i> | |
| | GT2017-64256 Periodical Unsteady Tip Clearance Vortex Development in a Low Speed Axial Research Compressor at Different Tip Clearances <i>Martin Lange, Matthias Rolfes, Ronald Mailach, Technische Universität Dresden; Henner Schrapp, Rolls-Royce Deutschland</i> | GT2017-64180 Surface Roughness Impact on Low-Pressure Turbine Performance due to Operational Deterioration <i>Andreas Kellersmann, TU Braunschweig; Sarah Weiler, Airbus Defence & Space; Christoph Bode, Technische Universität Braunschweig; Jens Friedrichs, TU Braunschweig Inst of Aircraft Propulsion & Turbomachinery; Guenter Ramm, MTU Joern Staeding, MTU Maintenance GmbH</i> | |
| 9:30 | | GT2017-64526 EBFOG: Deposition, Erosion and Detachment on High Pressure Turbine Vanes <i>Nicola Casari, Michele Pinelli, Alessio Suman, University of Ferrara; Luca Di Mare, Francesco Montomoli, Imperial College London</i> | |

| 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 <i>Nor Farida Harun</i> , Oak Ridge Institute for Science and Education; <i>Lawrence Shadle, Danylo Oryshchyn, David Tucker</i> , U.S. Dept. of Energy, National Energy Technology Lab | GT2017-65495 AEP Fleet Overview <i>Dan George</i> , 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 <i>Iacopo Rossi, Alberto Traverso</i> , Univ Of Genova; <i>Martina Hohloch, Andreas Huber</i> , German Aerospace Center (DLR); <i>David Tucker</i> , National Energy Technology Laboratory | GT2017-65496 Southern Company Fleet Overview <i>Josh Barron</i> , Power Generation, Southern Company Services | | |
| 9:00 | GT2017-64194 Advanced Control for Clusters of SOFC/GT Hybrid Systems <i>Iacopo Rossi, Alberto Traverso</i> , Univ Of Genova; <i>Valentina Zaccaria</i> , Oak Ridge Institute for Science and Education | GT2017-65497 Duke Fleet Overview <i>Joe Miller</i> , Duke | | |
| 9:30 | GT2017-65013 Analysis of Operational Strategies of a SOFC/MGT Hybrid Power Plant <i>Martina Hohloch, Andreas Huber</i> , German Aerospace Center (DLR); <i>Manfred Aigner</i> , Dlr | | | |

| WEDNESDAY, JUNE 28 | | | 10:15 - 11:45 AM |
|--------------------|---|---|--|
| | 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 <i>Lv Ye, Zhao Liu, Chun Gao, Xing Yang, Zhenping Feng, Xi'An Jiaotong University</i> | GT2017-63440 Assessment of the Effect of Environmental Conditions on Rotorcraft Pollutant Emissions at Mission Level <i>Jesus Ortiz Carretero, Alejandro Castillo Pardo, Vassilios Pachidis, Ioannis Goulos, Cranfield University</i> | GT2017-64216 Effects of Unsteady Wakes on Heat Transfer of Blade Tip and Shroud <i>Minho Bang, Seok Min Choi, Hyung-Hee Cho, Yonsei University; Ho-Seong Sohn, Republic Korea/ Yonsei University; Jun Su Park, Korea National University of Transportation</i> |
| 10:45 | GT2017-65083 Numerical Investigation of Local Cooling Enhancement Using Pin-Finned Channel With Incremental Impingement <i>Susheel Singh, Louisiana State University; Sumanta Acharya, Illinois Institute of Technology; Forrest Ames, Univ Of North Dakota</i> | GT2017-65044 Small Aircraft Turbine Noise From Combustion of Synthetic Kerosene Fuels <i>Aliyah Knowles, Valentin Soloiu, Emerald Simons, Martin Muinos, Jose Moncada, Huong Kim NGO, Georgia Southern University</i> | GT2017-65102 Turbine Shroud Heat Transfer and Cooling With Blade Rotation: Part I: Forward, Backward and Lateral Injection <i>Onieluan Tamunobere, Heat Pipe Technology; Sumanta Acharya, Illinois Institute of Technology</i> |
| 11:15 | GT2017-64018 Rib Cross Section Optimization of a Ribbed Turbine Internal Cooling Channel With Experimental Validation <i>Firat Kiyici, Sefa Yilmazturk, Ercan Arican, Tusas Engine Industries Inc; Kahraman Coban, Tusas Engine Industries; Stefano Porziani, Emiliano Costa, D'Appolonia</i> | | GT2017-65107 Turbine Shroud Heat Transfer and Cooling With Blade Rotation: Part II: Effect of Trenched Holes With Forward, Backward and Lateral Injection <i>Onieluan Tamunobere, Heat Pipe Technology; Sumanta Acharya, Illinois Institute of Technology</i> |

| 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 <i>Tracey Kirk, Aaron Bowsher, Peter Crudgington, Cross Manufacturing Company (1938) Ltd</i> | 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 <i>Chaï Koren, Ronan Vicquelin, Olivier Gicquel, CentraleSupélec</i> | GT2017-65394 Direct Metal Laser Deposition - Applications <i>Bhaskar Dutta, DM3D Technology</i> |
| 10:45 | GT2017-63423 Experimental Investigation on the Influence of Geometrical Parameters on the Frictional Heat Input and Leakage Performance of Brush Seals <i>Manuel Hildebrandt, Hans-Jörg Bauer, Corina Schwitzke, Institut of Thermal Turbomachinery (ITS) - Karlsruhe Institut of Technology (KIT)</i> | GT2017-64837 Flow Field and Wall Temperature Measurements for Reacting Flow in a Lean Premixed Swirl Stabilized Can Combustor <i>Suhyeon Park, Siddhartha Gadiraju, Sandeep Kudukodi, Srinath Ekkad, Virginia Tech; David Gomez Ramirez, Schlumberger; Hee-Koo Moon, Yong Kim, Ram Srinivasan, Solar Turbines</i> | GT2017-65396 Direct Metal Laser Deposition - Applications <i>Jyoti Majumder, University of Michigan</i> |
| 11:15 | GT2017-64864 Flow Resistance Coefficients of Porous Brush Seal As a Function of Pressure Load <i>Yahya Dogu, Koray Gezer, Kirikkale University; Mustafa Cem Sertcakan, Mustafa Kocagul, TEI Tusas Engine Industry</i> | T2017-64844 High Fidelity Multiphysics Simulation of a Confined Premixed Swirling Flame Combining Large-Eddy Simulation, Wall Heat Conduction and Radiative Energy Transfer <i>Chaï Koren, Ronan Vicquelin, Olivier Gicquel, CentraleSupélec</i> | GT2017-65397 Additive Manufacturing - Process <i>Suman Das, Georgia Institute of Technology</i> |

| 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 <i>David Hemberger, Dietmar Filsinger, IHI Charging Systems International; Hans-Jörg Bauer, Institut of Thermal Turbomachinery (ITS) - Karlsruhe Institut of Technology (KIT)</i> | GT2017-63025 Gas Turbine Fouling Offshore: Correction Methodology Compressor Efficiency <i>Stian Madsen, Statoil ASA; Lars Eirik Bakken, Norwegian Univ Of Sci & Tech</i> | GT2017-63405 Measurements of the Leakage Through a High Pressure Steam Turbine Power Plant Gland Seal <i>Peter Stein, General Electric (switzerland) GmbH; Dominik Born, General Electric; Martin Koenig, ZHAW</i> |
| 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 <i>Jose Serrano, Antonio Gil, Roberto Navarro, L. B. Inhestern, Universitat Politècnica de València</i> | GT2017-63563 Quantitative CFD Analyses of Particle Deposition in a Heavy-Duty Subsonic Axial Compressor <i>Nicola Aldi, Nicola Casari, Devid Dainese, Pier Ruggero Spina, Alessio Suman, Michele Pinelli, University of Ferrara; Mirko Morini, University of Parma</i> | GT2017-64141 Numerical Investigation and Shape Design Improvement of a Turbine Inlet Combined Valve <i>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.,</i> |
| 11:15 | GT2017-64218 New Modular Test Rig for Unsteady Performance Assessment of Automotive Turbocharger Turbines <i>Paul Lyttek, Harald Roelawski, Technical University Kaiserslautern; Martin Boehle, University of Kaiserslautern; Marc Gugau, BorgWarner TurboSystems Engineering GmbH</i> | GT2017-64425 The Effects of Third Substances at the Particle/Surface Interface in Compressor Fouling <i>Nicola Aldi, Nicola Casari, Devid Dainese, Michele Pinelli, Pier Ruggero Spina, Alessio Suman, University of Ferrara; Mirko Morini, University of Parma</i> | GT2017-64285 Demonstration of a Dynamic Clearance Seal in a Rotating Test Facility <i>Andrew Messenger, Richard Williams, Grant Ingram, Simon Hogg, Durham University; Stacie Tibos, Bernard Charnley, GE Power; Jon Seaton, GE Power, Steam Power Systems</i> |

| 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 <i>Jin He, ShangHai Electric Group</i> | 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 <i>Xueyuan Zhao, Tao Zhang, Kai Feng, Hunan University</i> | GT2017-65423 Introduction to wavelet transform and applications to vibration data processing <i>Luigi Carassale, University of Genova</i> |
| 10:45 | GT2017-65045 Estimation of Forcing Functions on a Mistuned Bladed Rotor From Harmonic Response <i>Alok Sinha, Pennsylvania State Univ</i> | GT2017-65040 Subsynchronous Vibration Patterns Under Reduced Oil Supply Flow Rates Bradley Nichols, Rotor Bearing Solutions International <i>Roger Fittro, University of Virginia Christopher Goyne, University of Virginia</i> | T U T O R I A L |
| 11:15 | GT2017-64064 A Multi-Scale Data Fusion Method for Damage Detection of Rod Fastening Rotor in Modal Strain Energy <i>Tian Guo, Zili Xu, Xi'an Jiaotong University</i> | | |

| WEDNESDAY, JUNE 28 | | | 10:15 - 11:45 AM |
|--------------------|---|--|---|
| | SUPERCRITICAL CO2 POWER CYCLES | TURBOMACHINERY: NOISE & INNOVATIVE NOISE REDUCTION (WITH AIRCRAFT ENGINE) | COMBUSTION, FUELS & EMISSIONS |
| | Supercritical CO2 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 CO2 Compressor Performance and Flow Field <i>Alireza Ameli, Ali Afzalifar, Teemu Turunen-Saaresti, Jari Backman, Lappeenranta University of Technology</i> | GT2017-64162 Application of a RANS-Informed Analytical Model for Fast Noise Prediction of Contra Rotating Open Rotors <i>Damiano Tormen, Pietro Giannattasio, University of Udine; Alessandro Zanon, Helmut Kühnelt, Michele De Gennaro, AIT Austrian Institute of Technology GmbH</i> | GT2017-63542 Characterization of Different Actuator Designs for the Control of the Precessing Vortex Core in a Swirl-Stabilized Combustor <i>Finn Lückoff, Moritz Sieber, Kilian Oberleithner, Chair of Fluid Dynamics, TU Berlin; C. Oliver Paschereit, H.F.I TU Berlin</i> |
| 10:45 | GT2017-64641 Characterization of Non-Equilibrium Condensation of Supercritical Carbon Dioxide in a de Laval Nozzle <i>Claudio Lettieri, Delft University of Technology; Derek Paxson, Zoltan Spakovszky, MIT; Peter Bryanston-Cross, Warwick University</i> | GT2017-63449 Numerical and Experimental Investigation of Acoustic Characteristics of a Fan Model With Struts Integrated in a Stator <i>Anton Rossikhin, Iaroslav Druzhinin, Iurii Khaletskii, Victor Mileshin, Central Institute of Aviation Motors (CIAM)</i> | GT2017-64429 Improvement of Impaired Combustion Conditions at Some Off-Design Operation by Driving a Precisely Controlled Modulation of the Burner Air Feed <i>Fabrice Giuliani, Lukas Pfefferkorn, Gerhard Kraft, Combustion Bay One e. U.</i> |
| 11:15 | GT2017-65066 Effect of Pressure and Thermal Cycling on Compatibility in CO2 for Concentrated Solar Power Applications <i>Bruce Pint, Robert G. Brese, James R. Keiser, Oak Ridge National Laboratory</i> | GT2017-65117 Numerical Investigation of the Inclined Leading Edge Diffuser Vane Effects on the Flow Unsteadiness and Noise Characteristics in a Transonic Centrifugal Compressor <i>Ali Zamiri, Byung Ju Lee, Jin Taek Chung, Korea University</i> | GT2017-64608 Acoustic Combustor Forcing by Unsteady Air Injection Into a Nozzle With High Subsonic Mean Flow <i>Sebastian Niether, Niclas Hanraths, Technische Universität Berlin; C. Oliver Paschereit, H.F.I TU Berlin; Jonas P. Moeck, TU Berlin; Lukasz Panek, Siemens AG</i> |

| 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 Perturbations 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 <i>Alexander De Rosa</i> , Stevens Institute of Technology; <i>Stephen Peluso</i> , Bryan Quay, <i>Domenic Santavicca</i> , Pennsylvania State Univ | GT2017-63539 Optimum Aerodynamic Design of Centrifugal Compressor Impeller Using an Inverse Method Based on Meridional Viscous Flow Analysis <i>Nobuhito Oka</i> , <i>Seiichi Ibaraki</i> , <i>Kenichiro Iwakiri</i> , <i>Yoshihiro Hayashi</i> , Mitsubishi Heavy Industries, Ltd; <i>Masato Furukawa</i> , <i>Kazutoyo Yamada</i> , <i>Sasuga Itou</i> , Kyushu University | GT2017-63748 Unsteady Flow in a Centrifugal Compressor Stage Equipped With a Vaned Diffuser and Cavities <i>Mohand Younsi</i> , <i>Antoine Baldacci</i> , ANSYS <i>Christophe Corneloup</i> , <i>Francois Moyroud</i> , Genaral Electric, Oil & Gas |
| | GT2017-63874 Effects of the Injector Design on the Transfer Function of Premixed Swirling Flames <i>Marco Gatti</i> , <i>Renaud Gaudron</i> , <i>Clément Mirat</i> , Centrale Supelec; <i>Thierry Schuller</i> , ECP | GT2017-65230 On the Assessment of Centrifugal Compressor Performance Parameters by Theoretical and Computational Models <i>Elias Sundström</i> , <i>Bertrand Kerres</i> , <i>Sergio Sanz</i> , <i>Mihai Mihaescu</i> , Royal Institute of Technology | GT2017-64444 Small Jet Engine Centrifugal Compressor Stability Margin Assessment <i>Jiri Pecinka</i> , <i>Adolf Jilek</i> , <i>Petr Kmoch</i> , University of Defence |
| 10:45 | GT2017-64929 Convective Scaling of Intrinsic Thermo-Acoustic Eigenfrequencies of a Premixed Swirl Combustor <i>Alp Albayrak</i> , <i>Thomas Steinbacher</i> , <i>Thomas Komarek</i> , <i>Wolfgang Polifke</i> , TU München | GT2017-63470 Aerodynamic Optimization of a Transonic Centrifugal Compressor by Using Arbitrary Blade Surfaces <i>Alexander Hehn</i> , <i>Moritz Mosdzien</i> , Institute of Jet Propulsion and Turbomachinery, RWTH Aachen; <i>Daniel Grates</i> , <i>Peter Franz Jeschke</i> , RWTH Aachen University | GT2017-64568 Numerical Simulation of Dynamic Flow Characteristics in a Centrifugal Water Pump Considering Shaft Torsional Vibration <i>Shen Lv</i> , <i>Xiangyuan Zhang</i> , <i>Wanyou Li</i> , <i>Zhi jun Shuai</i> , <i>Chen Xing Jiang</i> , Harbin Engineering University; <i>An Yan</i> , Tsinghua University |
| | | | |
| 11:15 | | | |

| 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 <i>Steven Whitaker, Ryan Lundgreen, Jeffrey Bons, Ohio State Univ</i> | GT2017-64932 Measuring Large Flow Angles Using Non-Nulling Multi-Hole Pressure Probes <i>Martin J. Conlon, Hamza Abo El Ella, National Research Council Canada; Alexander Wright, Dalhousie</i> | GT2017-65544 Legislative and Regulatory Landscape <i>Andrew Dicke, GE Energy</i> |
| 10:45 | GT2017-63167 Sand Transport and Deposition in Rotating Two-Passed Ribbed Duct With Coriolis and Centrifugal Buoyancy Forces at Re=100,000 <i>Cody Dowd, Danesh Tafti, Virginia Tech; Kuahai Yu, Henan University of Science and Technology</i> | GT2017-64863 Integration of CFD to Design Experiments for Enhanced Spatial and Temporal Discretization <i>Cis De Maesschalck, Guillermo Paniagua, Purdue University; Sergio Lavagnoli, Von Karman Inst for Fluid Dynamics</i> | GT2017-65532 Special Cycles <i>Richard Dennis, DoE National Energy Technology Lab</i> |
| 11:15 | GT2017-63419 High-Speed Shadowgraphy Measurements of an Erosive Particle-Laden Jet Under High-Pressure Compressor Conditions <i>Max Hufnagel, Stephan Staudacher, Institute of Aircraft Propulsion Systems, University of Stuttgart</i> <i>Christian Werner-Spatz, Lufthansa Technik AG; Christian Koch, University of Stuttgart</i> | GT2017-64680 Design of Directional Probes for High-Frequency Turbine Measurements <i>Zhe Liu, Guillermo Paniagua, Purdue University</i> | GT2017-65533 Fuels in Electric Power Generation <i>Peter Baldwin, Base E</i> |

WEDNESDAY, JUNE 28

10:15 - 11:45 AM

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

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| 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 <i>Michael Alley, Penn State</i> | GT2017-63461 Comparison of a Heat Soakage Model With Turbofan Transient Engine Data <i>Maximilian Vieweg, Florian Wolters, Richard-Gregor Becker, German Aerospace Center (DLR)</i> | GT2017-64410 Computational Study of a Customised Shallow-Sump Aero-Engine Bearing Chamber With Inserts to Improve Oil Residence Volume <i>Akinola Adeniyi, University of Central Lancashire; Budi W. Chandra, University of the West of England; Kathy Simmons, The University of Nottingham</i> |
| 3:00 | TUTORIAL | GT2017-63277 Development and Validation of an On-Wing Engine Thrust Measurement System <i>Marc Bauer, Jens Friedrichs, Detlev Wulff, Technische Universität Braunschweig Institute of Jet Propulsion and Turbomachinery; Christian Werner- Spatz, Lufthansa Technik AG</i> | GT2017-64530 Performance of Adaptive Lubricants in a Hybrid Journal Bearing Operating Under Fully Saturated Conditions <i>Ssu-Ying Chien, Mark Cramer, Gen Fu, Alexandrina Untaroiu, Virginia Tech</i> |
| 3:30 | | GT2017-63336 Engine Fleet-Management: The Use of Digital Twins From a MRO Perspective <i>Joern Kraft, Stefan Kuntzagk, Lufthansa Technik AG</i> | GT2017-64703 Experimental Investigation on Power Losses due to Oil Jet Lubrication in High Speed Gearing Systems <i>daniele massini, Tommaso Fondelli, Bruno Facchini, University of Florence; Lorenzo Tarchi, Ergon Research s.r.l.; Federico Leonardi, GE Avio s.r.l.</i> |
| 4:00 | | GT2017-63834 Turboelectric Distributed Propulsion System As a Future Replacement for Turbofan Engines <i>Borys Lukasik, Institute of Aviation</i> | GT2017-64917 Computational Analysis of Windage Losses in an Epicyclic Gear Train <i>Cosimo Bianchini, Riccardo Da Soghe, Lorenzo Tarchi, Jacopo D'Errico, Ergon Research</i> |
| 4:30 | | GT2017-63320 Commissioning of Split Power Offtake on a Twin-Spool More Electric Engine Demonstrator <i>Susanne Kreuzer, Reinhard Niehuis, University of the Federal Armed Forces Munich</i> | GT2017-64948 Experimental and Numerical Investigation on Windage Power Losses in High Speed Gears <i>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.</i> |
| 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 Panchaal , 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 <i>Andrew F Chen, Chao-Cheng Shiau, Je-Chin Han, Texas A&M University</i> | GT2017-63045 Inhomogeneous Strain Distribution in SiCf/SiC Coupons Under Tensile Loading <i>Christopher Newton, Jonathan Jones, Martin R. Bache, Swansea University; Adam Chamberlain, ROLLS-ROYCE</i> | GT2017-63032 High Pressure Gas Turbine Vane Turbulent Flows and Heat Transfer Predicted by RANS/LES/DES <i>Ryoichi Amano, Ping Dong, University of Wisconsin-Milwaukee</i> |
| 3:00 | GT2017-63144 Turbine Vane Endwall Film Cooling Study From Axial-Row Configuration With Simulated Upstream Leakage Flow <i>Nafiz Chowdhury, Chao-Cheng Shiau, Je-Chin Han, Texas A&M University; Luzeng Zhang, Hee-Koo Moon, Solar Turbines</i> | GT2017-64370 Damage Development in SICE/ SIC Composites Through Mechanical Loading <i>Martin R. Bache, J. Paul Jones, Zak Quiney, Swansea University; Louise Gale, Rolls-Royce plc</i> | GT2017-63306 Numerical Investigation of a Laser-Drilled Cooling Hole <i>David Cerantola, A.M. Birk, Queens University</i> |
| 3:30 | GT2017-63145 Turbine Vane Endwall Film Cooling From Cross-Row Configuration With Simulated Upstream Leakage Flow <i>Nafiz Chowdhury, Chao-Cheng Shiau, Je-Chin Han, Texas A&M University; Luzeng Zhang, Hee-Koo Moon, Solar Turbines</i> | GT2017-65168 Study of Interlaminar Fracture Properties of Ceramic Matrix Composites at Room and Elevated Temperatures <i>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</i> | GT2017-63875 Effect of Cooling on the Aerodynamic Performance in the Intercooled Compressor Vanes <i>Longgang Liu, Xuesong Li, Xiaodong Ren, Chunwei Gu, Tsinghua University</i> |
| 4:00 | GT2017-63896 Measurement of Film Cooling Effectiveness for a First-Stage Vane and Endwall of Gas Turbine With Fan-Shaped Holes <i>Jung Shin Park, Jin Young Jeong, Jae Su Kwak, Korea Aerospace University; Kidon Lee, Doosan Heavy Industries and Construction</i> | GT2017-65247 Testing Advanced SiC Fiber Tows at Elevated Temperature in Silicic Acid-Saturated Steam <i>Scott Robertson, Kevin Sprinkle, Marina Ruggles-Wrenn, Air Force Institute of Technology</i> | GT2017-64451 Effect of Heat Transfer on Pipe Flow Stability <i>Ce Zhang, Wei Ma, Wensheng Yu, Jinfang Teng, Shanghai Jiao Tong University</i> |
| 4:30 | | GT2017-65089 Crack Growth Resistance of CMC Attachment Element and Turbine Blade in Aircraft Engines <i>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</i> | GT2017-64913 Modelling Impingement-Effusion Flow Inside Double-Walled Combustor Tile <i>Dalila Ammour, Gary J. Page, Loughborough University</i> |
| 5:00 | | GT2017-63264 Design and Testing for Ceramic Matrix Composite Turbine Vane <i>Fumiaki Watanabe, Takeshi Nakamura, Yousuke Mizokami, IHI Corporation</i> | GT2017-64982 Heat Transfer Analysis of the Surface of Nonfilm-Cooled and Film-Cooled Nozzle Guide Vanes in Transonic Annular Cascade <i>Kasem Ragab, Lamyaa El-Gabry, The American University In Cairo</i> |

| 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 <i>Dheepa Srinivasan, GE Power, GE India Technology Center</i> <i>Shawn Kelly, Oerlikon</i> | GT2017-63923 Study on the Regulation Boundary for Two-Stage Turbocharging System at Different Altitudes <i>Zhang Huiyan, Mengyu Li, Lei Shi, Kangyao Deng, Shanghai Jiao Tong University; Hualei Li, AECC Commercial Aircraft Engine CO.,LTD</i> | GT2017-63061 Measurement and Prediction of Centrifugal Compressor Axial Forces During Surge: Part 1: Surge Force Measurements <i>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</i> |
| 3:00 | GT2017-65466 Investigations into Additive Manufacturing at United Technologies <i>Sergey Mironets, UTC Aerospace Systems</i> | GT2017-64825 Conceptual Design of an Axial Inflow Turbocharger Turbine <i>Apostolos Pesiridis, Brunel University; Antonio Ferrara, Raffaele Tuccillo, Univ Of Naples; Hua Chen, National Laboratory of Engine Turbocharging Technology North China Eng Rsrch Inst</i> | GT2017-63070 Measurement and Prediction of Centrifugal Compressor Axial Forces During Surge: Part 2: Dynamic Surge Model <i>Enrico Munari, University 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.</i> |
| 3:30 | GT2017-65508 Accessible High-Caliber Metal Additive Manufacturing Systems <i>Matthew Woods, Xact Metal</i> | GT2017-64960 Implementing Full Electric Turbocharging Systems on Highly Boosted Gasoline Engines <i>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</i> | GT2017-64894 Experimental Investigation of Vibrational and Acoustic Phenomena for Detecting the Stall and Surge of a Multistage Compressor <i>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</i> |
| 4:00 | | GT2017-64927 Regenerative Hydraulic Assisted Turbocharger <i>Tao Zeng, Guoming Zhu, Michigan State University; Harold Sun, FiTech; Devesh Upadhyay, Eric Curtis, Ford Motor Company</i> | GT2017-63005 Process Control for Compression Systems <i>Rainer Kurz, Solar Turbines Inc; Klaus Brun, Southwest Research Institute</i> |
| 4:30 | | | GT2017-63212 Development of Compression System Dynamic Simulation Code for Testing and Designing of Anti-Surge Control System <i>Abbas Mohajer, Eshagh Abbasi, MAPNA Turbine Engineering and Manufacturing Company (TUGA)</i> |
| 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. | |
| <div>2:30</div> <div>3:00</div> <div>3:30</div> <div>4:00</div> <div>4:30</div> <div>5:00</div> <div>T U R O R I A L</div> | GT2017-65575 Risk Assessment at Combined Cycle Power Plants <i>George Orme, Berkshire Hathaway Specialty Insurance</i> | | GT2017-65537 Improving steam turbine operations for optimized plant output and minimal environmental impact <i>Reinhard Kloster, Siemens AG</i> | | GT2017-63446 Geometric Model Update of Blisks and its Experimental Validation for a Wide Frequency Range <i>Thomas Maywald, Arnold Kühhorn, Brandenburg University of Technology; Thomas Backhaus, Technische Universität Dresden; Sven Schrape, Rolls-Royce Deutschland</i> |
| | | | GT2017-65539 Improving steam turbine operations for optimized plant output <i>John Basirico, General Electric</i> | | GT2017-64959 Innovative Design of Attachment for Turbine Blade Rotating at High Speed <i>Daniele Botto, Farhad Alinejad, Politecnico di Torino</i> |
| | | | GT2017-65540 Improving steam turbine operations for optimized plant output <i>Yuki Enomoto, Mitsubishi Hitachi Power Systems</i> | | GT2017-64412 Determining Stress in Turbocharger Impellers due to Component Machining Process <i>Simon Barrans, Md Shams E Tabriz, University of Huddersfield; Christian Ellis, BorgWarner Ltd</i> |
| | | | GT2017-65541 Improving steam turbine operations for optimized plant output <i>Qi Sun, Dongfang Steam Turbine Co</i> | | GT2017-63560 Design of a Bimetallic Blisk Turbine for a Gas Turbine Engine and its Production Using Powder Metallurgy Methods <i>Liubov Magerramova, Ravil Nigmatullin, Boris Vasilyev, Vladimir Kinzburskiy, Central Institute of Aviation Motors</i> |
| | | | GT2017-65574 Improving steam turbine operations for optimized plant output and minimal environmental impact <i>Luciano Cozza, Ansaldo Energia SPA</i> | | GT2017-65075 An Aeromechanical Screening Tool for Turbine Blades <i>Suryarghya Chakrabarti, GE Global Research; Andrew Grafitti, Brian Potter, GE Power</i> |
| | | | | | GT2017-64377 A General Ply Design for Aero Engine Composite Fan Blade <i>Jianguangyi Xiao, Yong Chen, Qichen Zhu, Shanghai Jiaotong University; Jun Lee, Tingting Ma, Jiangsu Xinyang New Material Co., Ltd.</i> |

| 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 <i>Behzad Zamanian Yazdi, Daejong Kim, University of Texas at Arlington</i> | GT2017-63629 Non-Linear Modeling of Centrifugal Stiffening Effects for Accurate Bladed Component Reduced-Order Models <i>Elias Khalifeh, Elsa Piollet, Alain Batailly, École Polytechnique de Montréal; Antoine Millecamps, Safran Aircraft Engines</i> | 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 <i>Eric Liese, Stephen Zitney, National Energy Technology Laboratory</i> |
| 3:00 | GT2017-65233 Rotordynamics Performance of Hybrid Foil Bearing Under Forced Vibration Input <i>Daejong Kim, University of Texas at Arlington; Brian Nicholson, Air Force Research Lab Lewis Rosado, USAF AFRL/PRTM; Garry Givan, Air Force Research Lab</i> | GT2017-63752 Nonlinear Vibration of a Saturated Water Journal Bearing and Bifurcation Analysis <i>Tadayoshi Shoyama, Panasonic Corporation</i> | 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 <i>Jiangnan Zhang, Pedro Gomes, Benjamin Choo, Advanced Design Technology; Mehrdad Zangeneh, Univ College London</i> |
| 3:30 | GT2017-65105 Design Approach for Large Foil Bearings Considering Rotordynamics <i>Srikanth Honavara Prasad, Daejong Kim, University of Texas at Arlington</i> | GT2017-63999 Nodal Diameter-Dependent Modal Damping Method for Nonlinear Blade Dynamics Prediction Considering Variable Rotational Speed <i>Torsten Heinze, Joerg Wallaschek, Leibniz Universität Hannover; Lars Panning-von Scheidt, LUH Hannover; Dr. Andreas Hartung, MTU Aero Engines AG</i> | GT2017-65172 Design of a Wide-Range Centrifugal Compressor Stage for Supercritical CO2 Power Cycles <i>Robert Pelton, Sewoong Jung, Hanwha Techwin; Timothy Allison, Natalie Smith, Southwest Research Institute</i> |
| 4:00 | GT2017-63152 On the Force Coefficients of a Flooded, Open Ends Short Length Squeeze Film Damper: From Theory to Practice (and Back) <i>Luis San Andres, Texas A & M Univ; Sean Den, Formosa Plastics Corp; Sung-Hwa Jeung, Ingersoll Rand</i> | GT2017-64023 Frequency-Domain Sensitivity Analysis of Stability of Nonlinear Vibrations for High-Fidelity Models of Jointed Structures <i>Evgeny Petrov, The University of Sussex</i> | GT2017-64349 Partial Admission, Axial Impulse Type Turbine Design and Partial Admission Radial Turbine Test for S-CO2 Cycle <i>Hyunki 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</i> |
| 4:30 | GT2017-63448 Dynamic Characterization of an Integral Squeeze Film Bearing Support Damper for a Supercritical CO2 Expander <i>Bugra Ertas, GE Global Research; Adolfo Delgado, Texas A&M University; Jeffrey Moore, Southwest Research Institute</i> | GT2017-63488 Towards Full 3D Numerical Simulation of Whirl Motions Stemming From Unilateral Contact Constraints in Aircraft Engines <i>Jérémy Paltrinieri, Ecole Centrale de Nantes; Florence Nyssen, Alain Batailly, École Polytechnique de Montréal; Marie-Océane Parent, Safran Aircraft Engines</i> | GT2017-65169 A Novel Experimental Method for LCF Measurement of Nickle Base Super Alloys in High Pressure High Temperature Supercritical CO2 <i>Azam Thatte, Etienne Martin, Timothy Hanlon, GE Global Research</i> |
| 5:00 | GT2017-63276 The Dynamic Characteristic Analysis of Elastic Ring Squeeze Film Damper by Fluid-Structure Interaction Approach <i>Zhenlin Wang, Ning Xu, XiangYu Yu, Zhang-sheng Liu, Guanghui Zhang, Harbin Institute of Technology</i> | GT2017-64342 Thermomechanical Component Mode Synthesis for Blade Casing Interaction Prediction <i>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</i> | |

| 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 <i>Lawrence Shadle, U.S. Dept. of Energy, National Energy Technology Lab</i> | GT2017-63399 Numerical Studies on the Intrusive Influence of a Five-Hole Pressure Probe in a High-Speed Axial Compressor <i>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</i> | GT2017-64312 Aerodynamic Performance of an Unlocated High Pressure Turbine Rotor With Worn Tip Seal Fins <i>Lucas Pawsey, David John Rajendran, Vassilios Pachidis, Cranfield University</i> |
| 3:00 | GT2017-65452 EPRI's Perspective on the Outlook of Coal Gasification/IGCC on World's Environment <i>Jeffrey Phillips, Electric Power Research Institute</i> | GT2017-64874 A Methodology for Variable Geometry Optimization of Multistage Axial Compressors <i>Michael Lyall, AFRL/RQT; Fred J. Eisert, Air Force Research Laboratory; Douglas C. Rabe, Universal Technology Corporation; Patrick M. Fleisher, University of Notre Dame</i> | GT2017-63083 Blade Tip Leakage Loss Reduction by Means of Passive Tip Injection: Linear Cascade Wind Tunnel Results <i>Jonas Rejek, Muenster University of Applied Sciences; Stefan aus der Wiesche, Fachhochschule Münster, Fachbereich Maschinenbau; Reinhard Willinger, Technische Universität Wien</i> |
| 3:30 | GT2017-65515 Advancement of GE's Technologies for IGCC Applications <i>Paul Glaser, GE</i> | GT2017-63283 Low Reynolds Number Response of High Efficiency, Intermediate Pressure Compressor Profiles <i>Benigno J. Lazaro, Ezequiel Gonzalez, Universidad Politecnica de Madrid; David Cadrecha, Antonio Antoranz, ITP; Jorge Parra, Industria de Turbo Propulsores S.A.</i> | GT2017-64705 Effect of Active Modulation of Through-Casing Coolant Injection on Turbine Efficiency <i>Brian M.T. Tang, Marko Bacic, University of Oxford, Dept. Engineering Science; Peter Ireland, University of Oxford</i> |
| 4:00 | GT2017-65516 Siemens' Perspective on Syngas Fuels and IGCC Applications <i>Adam Foust, Siemens</i> | GT2017-63246 Experimental Investigations on the Efficiency of Active Flow Control in a Compressor Cascade With Periodic Non-Steady Outflow Conditions <i>Marcel Staats, Wolfgang Nitsche, Technische Universität Berlin</i> | GT2017-64422 On Scaling Method to Investigate High-Speed Over-Tip-Leakage Flow at Low-Speed Condition <i>Hongmei Jiang, Lipo Wang, Shanghai Jiao Tong University; Li He, Oxford University; Qiang Zhang, University of London</i> |
| 4:30 | GT2017-65549 Experience of Using Coal/Biomass Gasification to Produce Fischer-Tropsch Liquids <i>Kunlei Liu, University of Kentucky</i> | GT2017-63960 Reduction of Pressure Losses in a Linear Cascade Using Herringbone Riblets <i>Qiang Liu, Shan Zhong, Lin Li, Manchester University</i> | GT2017-64942 Experimental and Numerical Study of Honeycomb Tip on Suppressing Tip Leakage Flow in Turbine Cascade <i>Yunfeng Fu, Fu Chen, Huaping Liu, Yanping Song, Harbin Institute of Technology</i> |
| 5:00 | GT2017-65507 Overview of Current Status and Outlook of Coal Gasification and IGCC <i>Ting Wang, University Of New Orleans</i> | GT2017-64054 Influence of Leading Edge Tubercles in an Annular Compressor Cascade With Different Hub-Tip Ratios and Aspect Ratios <i>Tan Zheng, Mingmin Zhu, Xiao-qing Qiang, Jinfang Teng, Jin-zhang Feng, Shanghai Jiao Tong University</i> | GT2017-63769 Aerodynamic Performance of Tip Injections for a Winglet-Shrouded Linear Turbine Cascade <i>Min Zhang, Yan Liu, Meng Chao Zhang, Bao Xi Mo, Jin Guang Yang, Dalian University of Technology</i> |

| 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 <i>Syed Anjum Haider Rizvi, Joseph Mathew, Indian Institute of Science</i> | GT2017-63479 The Effect of Transient Fuel Staging on Self-Excited Instabilities in a Multi-Nozzle Model Gas Turbine Combustor <i>Wyatt Culler, Janith Samarasinghe, Bryan Quay, Domenic Santavicca, Jacqueline O'Connor, Pennsylvania State University</i> | GT2017-65491 Memorial Statement on Harold W. Hipsky, Jr. <i>Louis Bruno, United Technologies Aerospace Systems</i> |
| 3:00 | GT2017-64622 Comparison of Heterogeneous and Homogeneous Coolant Injection Models for Large Eddy Simulation of Multi-perforated Liners Present in a Combustion Simulator <i>Martin Thomas, Laurent Gicquel, Florent Duchaine, Antoine Dauplain, CERFACS; Charlie Koupper, Safran Helicopter Engines; Franck Nicoud, University of Montpellier</i> | GT2017-64717 An Onion Peeling Reconstruction of the Spatial Characteristics of Entropy Waves in a Model Gas Turbine Combustor <i>Dominik Wassmer, Felix Pause, TU Berlin, ISTA; Bruno Schuermans, GE (Switzerland) GmbH; C. Oliver Paschereit, H.F.I TU Berlin; Jonas Moeck, TU Berlin</i> | GT2017-65487 Design Challenges In Auxiliary Power Unit Compressors - The Art Of Compromise <i>Tony Jones, Pratt and Whitney AeroPower</i> |
| 3:30 | GT2017-64635 The Effect of Non-Equilibrium Boundary Layers on Compressor Performance <i>Andrew P S Wheeler, Robert Miller, University of Cambridge; Anthony Dickens, University of Cambridge Department of Engineering</i> | GT2017-65003 Experimental Study of Transient Mechanisms of Bi-Stable Flame Shape Transitions in a Swirl Combustor <i>Michael Stöhr, Zhiyao Yin, Wolfgang Meier, German Aerospace Center (DLR); Kilian Oberleithner, Moritz Sieber, Chair of Fluid Dynamics, TU Berlin</i> | GT2017-65488 Design and Experimental Assessment of a Compact, High Work Factor Centrifugal Compressor <i>Om Sharma, United Technologies Research Center</i> |
| 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 <i>Martin Thomas, Laurent Gicquel, Florent Duchaine, Mael Harnieh, CERFACS; Charlie Koupper, Safran Helicopter Engines</i> | GT2017-64527 The Response to Incident Acoustic Waves of the Flow Field Produced by a Multi-Passage Lean-Burn Aero-Engine Fuel Injector <i>Nicholas Treleaven, Jialin Su, Andrew Garmory, Gary J. Page, Loughborough University Technology Centre</i> | GT2017-65489 Centrifugal Compressors in HVAC industry - Challenges and Opportunities <i>Vishnu Sishtla, United Technologies Climate, Controls and Security</i> |
| 4:30 | | GT2017-64614 Experimental Investigation of Self-Excited Combustion Instabilities in a Lean, Premixed, Gas Turbine Combustor at High Pressure <i>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.</i> | GT2017-65490 Combustor Development of an Auxiliary Power Unit - A System Approach <i>Charlene Hu, UTAS Aerostructures</i> |
| 5:00 | | | |

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

| 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 <i>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</i> | GT2017-65524 Active Clearance Measurement, State of the Technology <i>Kam Chana, Oxford University; Peter L Loftus, Rolls-Royce plc</i> |
| 3:00 | GT2017-64105 A Hybrid Free Wake Simulation Comparison of Turbine Wake Steering With Innovative Turbine Designs <i>Keye Su, Donald Bliss, Duke University</i> | GT2017-65528 Active Clearance Measurement, a Key to Engine Health <i>Neil P. Martin, dstl Portsmouth West</i> |
| 3:30 | GT2017-64723 Comparative Analysis of Different Numerical Techniques to Analyze the Wake of a Wind Turbine <i>Alessandro Bianchini, Francesco Balduzzi, Domenico Gentiluomo, Giovanni Ferrara, Alessandro Bianchini, University of Florence; Lorenzo Ferrari, University of Pisa</i> | GT2017-65377 Active Clearance Measurement, the New Fogale Capacitance Measurement Approaches <i>Nicolas Billiard, FOGALE Nanotech</i> |
| 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 <i>Francesco Balduzzi, Giovanni Ferrara, University of Florence; Giacomo Persico, Vincenzo Dossena, Politecnico Di Milano; Lorenzo Battisti, University of Trento; Lorenzo Ferrari, University of Pisa</i> | GT2017-65527 Active Clearance Measurement, Pentair Thermal Management's Capacisense Product <i>Paul Seccombe, Pentair Technical Solutions UK Ltd</i> |
| 4:30 | GT2017-63129 High Humidity Aerodynamic Effects Study on Offshore Wind Turbine Airfoil/Blade Performance Through CFD Analysis <i>Yu Xue, CDT Science and Technology Research Institute; Yan Liu, North China Electric Power University</i> | |
| 5:00 | GT2017-63573 CFD Simulation of Blade Flows With High Amplitude Pitching <i>Ramesh Kumar, John W. Chew, Dario Amirante, Nick Hills, University of Surrey; Joseba Murua, Pilatus Aircraft Ltd</i> | |

| WEDNESDAY, JUNE 28 | | 2:30 - 5:00 PM |
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| <div>2:30</div> <div>3:00</div> <div>3:30</div> <div>4:00</div> <div>4:30</div> <div>5:00</div> | 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 |
| | T U T O R I A L | |
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| THURSDAY, JUNE 29 | | | 8:00 - 10:00 AM |
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| | 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 <i>Ran Yao, Wenshuo Yang, Wei Wang</i> , University of Science and Technology of China; <i>Jianhua Wang</i> , University of Science & Technology; <i>Zhineng Du, Ming Wang</i> , 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 <i>Ruquan You, Haiwang Li, Zhi Tao, Kuan Wei</i> , Beihang University | GT2017-63060 Theoretical Model of Buoyancy-Induced Heat Transfer in Closed Compressor Rotors <i>Hui Tang</i> , University of Bath, <i>J Michael Owen</i> , University of Bath |
| | GT2017-64293 Rotating Effect on Transonic Squealer Tip Cooling Performance <i>Diwei Zhu, Haiteng Ma, Jinfang Teng</i> , Shanghai Jiao Tong University; <i>Shaopeng Lu</i> , School of Aeronautics and Astronautics, Shanghai Jiao Tong University; <i>Qiang Zhang</i> , University of London | GT2017-64728 State-of-The-Art Cooling Technology for a Turbine Rotor Blade <i>Jason Town, Karen Thole</i> , Pennsylvania State University; <i>Douglas Straub</i> , U.S. Dept of Energy; <i>Jim Black</i> , National Energy Technology Laboratory; <i>Tom Shih</i> , Purdue University | GT2017-64884 Experimental and Computational Investigation of Rayleigh-Benard Flow in the Rotating Cavities of a Core Compressor <i>Mark R. Puttock-Brown</i> , Thermo-Fluid Mechanics Research Centre; <i>Martin G. Rose</i> , Thermo-Fluid Mechanics Research Centre (TFMRC), University of Sussex; <i>Chris A. Long</i> , University of Sussex |
| 9:00 | GT2017-65207 On the Reliability of RANS Turbulence Models for Endwall Cooling Prediction <i>XUEYING LI</i> , Tsinghua University, Department of Thermal Engineering; <i>Jing Ren, Hongde Jiang</i> , Tsinghua University | GT2017-64921 Internal and External Cooling of a Full Coverage Effusion Cooling Plate: Effects of Double Wall Cooling Configuration and Conditions <i>Zhong Ren, Sneha Reddy Vanga, Nathan Rogers, Phil Ligrani, Keith Hollingsworth</i> , University of Alabama In Huntsville; <i>Frederico Liberatore, Rajeshriben Patel, Ram Srinivasan, Yin-hsiang Ho</i> , Solar Turbines Inc | GT2017-64503 Numerical Characterization of Flow and Heat Transfer in Pre-Swirl Systems <i>Riccardo Da Soghe, Cosimo Bianchini, Jacopo D'Errico</i> , Ergon Research |
| | GT2017-63168 Numerical Study on Effects of Density Ratio on Film Cooling Flow Structure and Film Cooling Effectiveness <i>Eiji Sakai</i> , CRIEPI; <i>Toshihiko Takahashi</i> , 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 <i>DaWei Chen, Hui ren Zhu, Yang Xu, XiaoMeng Jia, Cong Liu</i> , Northwestern Polytechnical University; <i>Haiping Lu</i> , Shenyang Aircraft Engine Design Institute |

| | 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 <i>James Page</i> , University of Cambridge, Whittle Laboratory; <i>Paul Hield</i> , Rolls-Royce plc; <i>Paul G. Tucker</i> , University of Cambridge | GT2017-63585 Introducing a New Test Rig for Film Cooling Measurements With Realistic Hole Inflow Conditions <i>Marc Fraas</i> , <i>Tobias Glasenapp</i> , Karlsruhe Institute of Technology (KIT); <i>Achmed Schulz</i> , KIT; <i>Hans-Jörg Bauer</i> , Institut of Thermal Turbomachinery (ITS) - Karlsruhe Institut of Technology (KIT) | GT2017-65392 Taking Turbine Blade and Vane Cooling Holes to New Depths and Widths <i>Eric Overholt</i> , Metem - A GE Power business |
| 8:30 | GT2017-63868 Fan Similarity Model for the Fan-Intake Interaction Problem <i>Mauro Carnevale</i> , <i>Feng Wang</i> , <i>Luca Di Mare</i> , Imperial College; <i>Jeffrey S. Green</i> , <i>Anthony Parry</i> , Rolls Royce plc. | GT2017-64391 Flow Statistics and Visualisation of Multi-Row Film Cooling Boundary Layers <i>Craig Fernandes</i> , <i>Michael T. Voet</i> , <i>Erik Fernandez</i> , <i>Jayanta Kapat</i> , University of Central Florida; <i>Zachary Little</i> , University of Central Florida - CATER | GT2017-65393 Advanced Manufacturing 4.0 <i>Bill Cox</i> , Renishaw Inc. |
| 9:00 | GT2017-63072 Dynamic Inlet Simulation Demonstration for Airframe-Propulsion Integration Using HPCMP CREATE™-AV Kestrel <i>Jason Klepper</i> , <i>Jim Sirbaugh</i> , QuantiTech, Inc; <i>Milton Davis</i> , Arnold Air Force Base | GT2017-64853 Freestream Flow Effects on Film Effectiveness and Heat Transfer Coefficient Augmentation for Compound Angle Shaped Holes <i>Josh Anderson</i> , <i>John McClintic</i> , <i>David Bogard</i> , The University of Texas At Austin; <i>Tom Dyson</i> , GE Global Research; <i>Zachary Webster</i> , GE Aviation | GT2017-65453 Additive Friction Stir – A New Additive Manufacturing and Repair Technology for Metallic Structural Materials Including Ti64 <i>Nanci Hardwick</i> , 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 <i>Connor Wiese</i> , Air Force Research Laboratory; <i>James L. Rutledge</i> , Air Force Institute of Technology; <i>Marc Polanka</i> , AFIT/ENY | GT2017-65482 DMLM Technology Applied to Combustion Components for Gas Turbine Applications <i>Edoardo Gonfotti</i> , GE OIL & GAS |

| THURSDAY, JUNE 29 | | | 8:00 - 10:00 AM | | |
|--|--|---|--------------------------------------|---|---|
| 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 <i>Beat Aeschlimann, Michael Hubatka, Robert Stettler, Reza Housseini, MECOS AG</i> | | T U T O R I A L | | 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 <i>Luis San Andres, Bonjin Koo, Texas A&M Univ; Makoto Hemmi, Hitachi Research Laboratory</i> |
| | GT2017-64327 The Improvement of Air/Oil Separator Performance in the Aero-Engine Lubrication System <i>Yaguo Lyu, Jieyang Shen, Zhenxia Liu, Jianping Hu, Northwestern Polytechnical University</i> | | | | GT2017-64263 Influence of Bearing Load on the Performance of Tilting-Pad Journal Bearing Under High Surface Velocity <i>Binbin Liu, Wang Weimin, Jinji Gao, Beijing University of Chemical Technology; Jian Zhang, Jinzhou NEWJCM Machinery Manufacture Co.,Ltd.</i> |
| | GT2017-63332 Development of Reliable NARX Models of Gas Turbine Cold, Warm and Hot Start-Up <i>Hilal Bahlawan, Pier Ruggero Spina, Mauro Venturini, Università Degli Studi Di Ferrara; Mirko Morini, University of Parma; Michele Pinelli, Univ Of Ferrara Endif</i> | | | | GT2017-65240 Including Pivot Friction in Pad Motion for a Tilting Pad Journal Bearing With Ball-Socket Pivots <i>Feng He, Dresser-Rand Co.</i> |
| 9:30 | GT2017-64698 Modelling of Hot Surface Ignition Within Gas Turbines Subject to Flammable Gas in the Intake <i>Lea D. Pedersen, Grundfos Holding A/S; Kenny K. Nielsen, Lloyds Register; Chungun Yin, Henrik Sørensen, Aalborg University; Ingar Fossan, ComputIT</i> | | | | GT2017-64949 Response Surface Mapping and Multi-Objective Optimization of Tilting Pad Bearing Designs <i>Michael Branagan, Neal R. Morgan, Brian Weaver, Houston G. Wood, University of Virginia</i> |

| 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 <i>Yasutomo Kaneko</i> , Ryukoku University | | GT2017-65529 Basics of Liquid Fuel Atomization <i>Ajay Agrawal</i> , University of Alabama GT2017-65530 Practical Aspects of Liquid Fuel Atomization and Combustion <i>Adel Ben Mansour</i> , Parker Hannifin Corp | | GT2017-65426 Supercritical CO2 Power Cycle Heat Exchanger Tutorial <i>Grant Musgrove</i> , Southwest Research Institute |
| | GT2017-63193 Modal Analyses of an Axial Turbine Blisk With Intentional Mistuning <i>Bernd Beirow</i> , <i>Felix Figaschewsky</i> , <i>Arnold Kühhorn</i> , Brandenburg University of Technology Cottbus-Senftenberg; <i>Alfons Bornhorn</i> , MAN Diesel SE | | T U T O R I A L | | T U T O R I A L |
| | GT2017-63022 Piezoelectric Passive Shunt Damping of Mistuned Bladed Disks <i>Bilal Mokrani</i> , <i>André Preumont</i> , Universit Libre de Bruxelles | | | | |
| | GT2017-63835 Multistage Blisk and Large Mistuning Modeling Using Fourier Constraint Modes and PRIME <i>Eric Kurstak</i> , <i>Kiran D'Souza</i> , The Ohio State University | | | | |
| 9:30 | | | | | |

| THURSDAY, JUNE 29 | | | 8:00 - 10:00 AM | | |
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| 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 <i>Akshay Khadse, Lauren Blanchette, Jayanta Kapat, Subith Vasu, Kareem Ahmed, University of Central Florida</i> | | GT2017-63020 Impact of Wake Dispersion on Axial Compressor Performance <i>Chunill Hah, NASA Glenn Research Center</i> | | GT2017-63618 Flow Topology Optimization of a Cooling Passage for a High Pressure Turbine Blade Jens Iseler, Dassault Systèmes <i>Thomas J. Martin, United Technologies Research Center</i> |
| | GT2017-63707 Cycle Modeling and Optimization of an Integrally Geared sCO2 Compressor <i>Jeffrey Bennett, Jason Wilkes, Timothy Allison, Southwest Research Institute; Robert Pelton, Karl Wygant, Hanwha Techwin</i> | | GT2017-63590 High Aspect Ratio Blading in an Axial Compressor Stage <i>Tobias Schmidt, Markus Peters, Peter Franz Jeschke, RWTH Aachen University; Roland Matzgeller, Sven-Juergen Hiller, MTU AeroEngines GmbH</i> | | GT2017-63324 Fast Optimisation of a Three-Dimensional Bypass System Using a New Aerodynamic Design Method <i>Fernando Barbarossa, Mauro Carnevale, Max Rife, Luca Di Mare, Imperial College; Anthony Parry, Jeffrey Green, Rolls Royce</i> |
| 9:00 | GT2017-64418 Analysis of the Thermodynamic Potential of Supercritical Carbon Dioxide Cycles: A Systematic Approach <i>Francesco Crespi, David Sanchez, Giacomo Gavagnin, University of Seville; Gonzalo S. Martinez, AICIA</i> | | GT2017-64292 LES Loss Prediction in an Axial Compressor Cascade at Off-Design Incidences With Free Stream Disturbances <i>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</i> | | GT2017-64365 Aerodynamic Optimization Process for Turbocharger Compressor Impellers <i>Rob Lotz, BorgWarner Turbo Systems</i> |
| | GT2017-64625 Optimization of Operating Parameters of a Recompression sCO2 Cycle for Maximum Efficiency <i>Sharath Sathish, Adi Narayana Namburi, Pramod Chandra Gopi, Triveni Turbine Limited; Pramod Kumar, Indian Institute of Science; Matt Carlson, Clifford Ho, Sandia National Laboratories</i> | | 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 <i>Sameer Kulkarni, Joseph Veres, NASA Glenn Research Center; Timothy A. Beach, Vantage Partners, LLC; Philip C. E. Jorgenson, NASA</i> | | GT2017-63403 A Comparative Study of Contrasting Machine Learning Frameworks Applied to RANS Modeling of Jets in Crossflow <i>Jack Weatheritt, Richard Sandberg, The University of Melbourne; Julia Ling, Sandia National Labs; Gonzalo Saez-Mischlich, Julien Bodart, DAEP, ISAE-Supaero</i> |

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

| 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 Universität Hannover | | Session Chair: Klaus Brun , Southwest Research Institute | |
| <div>8:00</div> <div>8:30</div> <div>9:00</div> <div>9:30</div> | <div>T</div> <div>U</div> <div>T</div> <div>O</div> <div>R</div> <div>I</div> <div>A</div> <div>L</div> | GT2017-65501 Combustion Dynamics Tutorial <i>Tim Lieuwen, Georgia Institute of Technology</i> | | GT2017-64988 Investigation of Aerodynamics and Heat Transfer of a Highly Loaded Turbine Blade Using the Universal Intermittency Function <i>Ali Nikparto, Meinhard T. Schobeiri, Texas A & M University</i> | |
| | | GT2017-64152 DDES Analysis of Wake Vortex Related Unsteadiness and Losses in the Environment of High-Pressure Turbine Stage <i>Dun Lin, Tsinghua University; Xinrong Su, Department of Thermal Engineering, Tsinghua University; Xin Yuan, Tsinghua University, Dept. of Thermal Eng.</i> | | GT2017-63443 Experimental Investigation Into Crater Morphology for Droplets Impinging on a Moving Film <i>Antony Mitchell, Kathy Simmons, David Hann, University of Nottingham</i> | |
| | | GT2017-64121 An Experimentally Derived Model to Predict the Water Film in a Compressor Cascade With Droplet Laden Flow <i>Niklas Neupert, HSU Hamburg; Janneck Harbeck, Helmut-Schmidt University; Franz Joos, Helmut-Schmidt-University Hamburg</i> | | GT2017-64155 Investigation on the Effect of Surface Wettability on a Two-Phase Flow in a Compressor Cascade <i>Niklas Neupert, HSU Hamburg; Janneck Harbeck, Helmut-Schmidt University; Franz Joos, Helmut-Schmidt-University Hamburg</i> | |
| | | GT2017-63273 Numerical Investigation of Stator Clocking Effects on the Downstream Stator in a 1.5-Stage Axial Turbine <i>Yalu Zhu, Jiaqi Luo, Peking University; Feng Liu, University Of California Irvine</i> | | GT2017-64155 Investigation on the Effect of Surface Wettability on a Two-Phase Flow in a Compressor Cascade <i>Niklas Neupert, HSU Hamburg; Janneck Harbeck, Helmut-Schmidt University; Franz Joos, Helmut-Schmidt-University Hamburg</i> | |
| | | GT2017-63619 The Unsteady Flow Field of a Purged High Pressure Turbine Based on Mode Detection <i>Stefan Zerobin, Sabine Bauinger, Andreas Marn, Franz Heitmeir, Emil Göttlich, Graz University of Technology; Andreas Peters, GE Aviation</i> | | GT2017-64332 Two-Phase CFD-Calculations for the Design of Water-Based Turbine Cleaning Systems for Turbochargers <i>Magnus Fischer, Ansgar Weickgenannt, ABB Turbo Systems Ltd -- ABB Turbocharging</i> | |

| THURSDAY, JUNE 29 | | 8:00 - 10:00 AM | |
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| WIND ENERGY | | CYCLE INNOVATIONS | |
| Vertical Axis and Small Wind Turbines | | Cyber-Physical Systems for Gas Turbines | |
| Technical • Westin Hotel, Harris • ThA-49-2 | | Panel • Westin Hotel, Providence II • ThA-6-13 | |
| Session Chair: Alessandro Bianchini , Univ of Florence Session Co-Chair: Abolfazl Pourrajabian , K N Toosi Univ of Technology | | Session Chair: Paolo Pezzini , Ames Laboratory | |
| GT2017-64137 Arriving at the Optimum Overlap Ratio for an Elliptical-Bladed Savonius Rotor <i>Nur Alom</i> , National Institute of Technology Meghalaya; <i>Ujjwal K. Saha</i> , Indian Institute of Technology Guwahati | | GT2017-63685 Hardware-in-the-Loop Operations With an Emulator Rig for SOFC Hybrid Systems <i>Mario Luigi Ferrari</i> , <i>Alessandro Sorce</i> , University of Genoa; <i>Aristide Fausto Massardo</i> , University of Genoa | |
| GT2017-64701 Three Dimensional Aerodynamic Analysis of a Darrieus Wind Turbine Blade Using Computational Fluid Dynamics and Lifting Line Theory <i>Francesco Balduzzi</i> , <i>Alessandro Bianchini</i> , <i>Giovanni Ferrara</i> , Univ Of Florence; <i>David Marten</i> , TU Berlin – ISTA; <i>George Pechlivanoglou</i> , TU Berlin; <i>Christian Navid Nayeri</i> , <i>C. Oliver Paschereit</i> , H.F.I TU Berlin; <i>Jernej Drofelnik</i> , University of Glasgow; <i>Michele Campobasso</i> , University of Lancaster; <i>Lorenzo Ferrari</i> , University of Pisa | | GT2017-64881 Cyber-Physical Observer for Fluidized Bed-Chemical Looping Control Applications <i>Larry Shadle</i> , <i>Justin M. Weber</i> , <i>Samuel Bayham</i> , US DOE; <i>Paolo Pezzini</i> , Ames National Laboratory; <i>Esmail R. Monazam</i> , REM Engineering Services; <i>Ronald Breault</i> , US Dept Energy, National Energy Technology Laboratory; <i>Rupendranath Panday</i> , REM Engineering Services PLLC – NETL; <i>David Tucker</i> , National Energy Technology Laboratory; <i>Kenneth Mark Bryden</i> , Ames Laboratory at Iowa State University | |
| GT2017-64364 Reproducible Inflow Modifications for a Wind Tunnel Mounted Research Hawt <i>Sirko Bartholomay</i> , <i>Wolf-Leonard Fruck</i> , <i>George Pechlivanoglou</i> , TU Berlin; <i>C. Oliver Paschereit</i> , <i>Christian Navid Nayeri</i> , H.F.I. TU Berlin | | GT2017-65242 Real-Time Fuel Cell Model Development Challenges for Cyber-Physical Systems in Hybrid Power Applications <i>David Tucker</i> , National Energy Technology Laboratory; <i>Valentina Zaccaria</i> , Oak Ridge Institute for Science and Education; <i>Nor Farida Harun</i> , Oak Ridge Institute for Science and Education; <i>Kenneth Mark Bryden</i> , Ames Laboratory at Iowa State University; <i>Comas Haynes</i> , Georgia Tech Research Institute | |
| GT2017-64385 A Study of Power Production and Noise Generation of a Small Wind Turbine for an Urban Environment <i>Andrew Hays</i> , <i>Kenneth Van Treuren</i> , Baylor University | | GT2017-65486 An Advanced Cyber-physical framework to accelerate the design process of new technologies development <i>Kenneth Mark Bryden</i> , Ames Laboratory at Iowa State University GT2017-65492 The National Energy Technology Laboratory (NETL) perspective on cyber-physical systems <i>Sydni Credle</i> , US Dept of Energy/Netl | |

| THURSDAY, JUNE 29 | | 8:00 - 10:00 AM | |
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| 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 <i>Eric Liese</i> , National Energy Technology Laboratories <i>Stephen Zitney</i> , US Dept Of Energy Netl | T U T O R I A L | |
| | GT2017-65027 Performance Analysis of a Combined Cycle Power Plant Through Exergetic and Environmental Indices <i>Edgar Vicente Torres González</i> , Universidad Autónoma Metropolitana - Iztapalapa <i>Raúl Lugo Leyte</i> , Universidad Autónoma Metropolitana - Iztapalapa <i>Helen Denise Lugo Méndez</i> , Universidad Autónoma Metropolitana - Iztapalapa <i>Martín Salazar Pereyra</i> , Tecnológico de Estudios Superiores de Ecatepec <i>Miguel Toledo Velazquez</i> , ESIME-Zacatenco, IPN <i>Juan José Ambriz García</i> , UAMI | | |
| | GT2017-65261 Gas Turbine Combined Cycle Optimized for Post-Combustion Carbon Capture <i>S. Can Gülen</i> , Bechtel Infrastructure & Power Inc. <i>Chris Hall</i> , Bechtel Oil, Gas & Chemicals GT2017-63650 Managing Gas Turbine Combustion System Fuel Manifold Distress Through Ultrasonic Inspections and Calibrated Fracture Analyses <i>Scott Keller</i> , Afzal Pasha Mohammed, Power Systems Mfg., LLC; <i>Khalid Oumejjoud</i> , PSM <i>Ansaldo Energia Group</i> | | |
| | GT2017-63674 Managing Compressor Rotor Rim Fatigue Damage <i>John Scheibel</i> , Jay Richardson, Electric Power Research Institute; <i>Robert Dewey</i> , Turbine Technology Intl; <i>Swami Swaminathan</i> , huawei shi, Turbine Technology International | | |
| 9:30 | | | |

| 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 <i>Feng Zhang, Xinjun Wang, Jun Li, Daren Zheng, Junfei Zhou, Xi'an Jiaotong University</i> | GT2017-63299 A Machine Learning Approach for Determining the Turbulent Diffusivity in Film Cooling Flows <i>Pedro M. Milani, John K. Eaton, Stanford University; Julia Ling, Sandia National Labs; Gonzalo Saez- Mischlich, Julien Bodart, DAEP, ISAE-Supaero</i> | GT2017-64052 Investigations of Single Jet Impinging on Plates With Circular Dimples <i>Zhiqiang Guo, Mei Zheng, Yinze Liu, Wei Dong, Shanghai Jiao Tong University</i> |
| 10:45 | GT2017-63515 Large Eddy Simulation of Flow and Heat Transfer Mechanism in Matrix Cooling Channel <i>Yigang Luan, Lianfeng Yang, Bo Wan, Tao Sun, Harbin Engineering University</i> | GT2017-63398 Effects of Oscillations in the Mainstream on Film Cooling at Various Blowing Ratios <i>Seung Il Baek, Savash Yavuzkurt, Penn State University</i> | GT2017-64991 Heat Transfer Analysis of Jet Impingement Cooling on a Simulated Ceramic Matrix Composite Surface <i>Karthik Krishna, Mark Ricklick, Embry Riddle Aeronautical University</i> |
| 11:15 | GT2017-64574 Effect of Uneven Wall Heating Conditions Under Different Buoyancy Numbers for a One Side Rib- Roughened Rotating Channel <i>Zhi Wang, E.T.S.I. Aeronautia y del Espacio, UPM; Roque Corral, ITP</i> | GT2017-64234 Influence of Mainstream Cross Flow on Film Cooling Performance and Jet Flow Field <i>Yifei Li, Yang Zhang, Xinrong Su, Xin Yuan, Tsinghua University, Dept. of Thermal Eng.</i> | GT2017-64915 Experimental Investigation of Two Competitive High Pressure Turbine Blade Cooling Systems <i>Sergiy Riznyk, Andriy Artushenko, Igor Kravchenko, Sergii Borys, SE Ivchenko-Progress</i> |
| 11:45 | | GT2017-63308 Large Eddy Simulation of Axial and Compound Angle Holes With Varying Hole Length-to-Diameter Ratio <i>Weihong Li, Wei Shi, Jing Ren, Hongde Jiang, Tsinghua University; Xueying Li, Tsinghua University, Department of Thermal Engineering</i> | |

| 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 Lundblad , 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 <i>Svilen Savov</i> , University of Cambridge, Whittle Laboratory; <i>Nicholas Atkins</i> , Cambridge University | GT2017-63776 Analytical Model for the Performance Estimation of Pre-Cooled Pulse Detonation Turbofan Engines <i>Carlos Xisto</i> , <i>Fakhre Ali</i> , <i>Olivier Petit</i> , Chalmers University of Technology; <i>Tomas Grönstedt</i> , Chalmers University; <i>Andrew Rolt</i> , Cranfield University; <i>Anders Lundblad</i> , GKN Aerospace | GT2017-65432 Introduction to Ceramic Matrix Composites <i>Gregory Morscher</i> , The University of Akron |
| 10:45 | GT2017-63512 Analysis of the Influence of Geometric Structure on the Rotationally Induced Ingress <i>Zhenxia Liu</i> , <i>Ma Jun</i> , <i>Jianping Hu</i> , Northwestern Polytechnical University; <i>Zhang Lifan</i> , 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 <i>Ye-Bonne Koyama Maldonado</i> , Safran Aircraft Engines / ONERA The French Aerospace Lab; <i>Gregory Delattre</i> , <i>Laurent Jacquin</i> , <i>Cédric Illoul</i> , ONERA The French Aerospace Lab; <i>Clément Dejeu</i> , Safran Aircraft Engines | GT2017-65433 Processing-Property Relationships in CMCs <i>Gregory Morscher</i> , 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 <i>Zhigang Li</i> , <i>Liming Song</i> , <i>Tieyu Gao</i> , <i>Xin Yan</i> , Xian Jiaotong University; <i>Jun Li</i> , Institute of Turbomachinery, Xi'an Jiaotong Univ; <i>Qing Gao</i> , 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 <i>Teresa Siebel</i> , <i>Jan Zanger</i> , German Aerospace Center; <i>Karsten Knobloch</i> , <i>Manfred Aigner</i> , DLR; <i>Friedrich Bake</i> , <i>Andreas Huber</i> , German Aerospace Center (DLR) | GT2017-65434 Updating CMH-17 Vol 5 - Ceramic Matrix Composites <i>Rachael Andrulonis</i> , Wichita State University - NIAR |
| 11:45 | | GT2017-64214 Plausibility Study of Hecto Pressure Ratio Concepts in Large Civil Aero Engines <i>Felix Klein</i> , <i>Stephan Staudacher</i> , 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 Mieznar, 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 <i>Ha-Rok Bae</i> , Wright State University | | GT2017-63451 Towards Investigation of External Oil Flow From a Journal Bearing in an Epicyclic Gearbox <i>Martin Berthold</i> , <i>Hervé Morvan</i> , <i>Richard Jefferson-Loveday</i> , The University of Nottingham; <i>Colin Young</i> , Rolls-Royce plc | | GT2017-63138 A Discussion on the Advancement of Blade Tip Timing Data Processing <i>Vsevolod Kharyton</i> , Siemens; <i>Grigorios Dimitriadis</i> , <i>Colin Defise</i> , Liege University | |
| | GT2017-65463 Building Large Scale Emulators using a DOE Enhanced Divide and Combine Method <i>Mark Andrews</i> , SmartUQ | | GT2017-63662 Dynamic and Thermal Analysis of Rotor Drop on Sleeve Type Catcher Bearings in Magnetic Bearing Systems <i>Xiao Kang</i> , <i>Alan Palazzolo</i> , Texas A&m University | | GT2017-63287 Mistuning and Damping Experiments at Design Speed Combined With Computational Tools <i>Kiran D'Souza</i> , <i>Michael Dunn</i> , Ohio State University; <i>Bogdan Epureanu</i> , University of Michigan | |
| 11:15 | GT2017-65484 Probabilistic Methods for Epistemic and Aleatory Uncertainty Quantification <i>John McFarland</i> , Southwest Research Institute | | GT2017-64050 Performance and Cost Reduction of Permanent Magnet Biased Magnetic Bearings <i>Bradley Nichols</i> , <i>Paul Allaire</i> , <i>Timothy Dimond</i> , <i>Jianming Cao</i> , <i>Saeid Dousti</i> , Rotor Bearing Solutions International, LLC | | GT2017-63922 Experimental Study on Controlling the Vibration of Rotor System With Elastic Damping Support <i>Dongdong Yu</i> , <i>Lidong He</i> , Beijing University of Chemical Technology; <i>Lihui He</i> , Harbin Normal University | |
| | GT2017-65485 Rapid Generation of Parameterized Multi-Fidelity Turbine Engine Geometry for Probabilistic Simulations <i>Christopher Meckstroth</i> , 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 <i>Benstone Schwartz</i> , <i>Roger Fittro</i> , <i>Carl Knospe</i> , University of Virginia | | GT2017-63897 Blade Incipient Crack Determination for Centrifugal Compressor Based on CWT-Stochastic Resonance Method <i>Hongkun Li</i> , Dalian University; <i>Changbo He</i> , <i>Qiang Zhou</i> , Dalian University of Technology; <i>Fuan Lu</i> , Shenyang Blower Works Group Co.Ltd | |
| 11:45 | | | | | | |

| 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 <i>Vamshi Avadhanula, Timothy Held, Echogen Power Systems (DE), Inc</i> | GT2017-63454 Hybrid RANS/LES Simulation of Corner Stall in a Linear Compressor Cascade <i>Guoping Xia, Gorazd Medic, United Technologies Research Center</i> | GT2017-65250 Large-Eddy and Unsteady Reynolds-Averaged Navier-Stokes Simulations of an Axial Flow Pump for Cardiac Support <i>Benjamin Torner, Sebastian Hallier, Matthias Witte, Frank-Hendrik Wurm, University Rostock</i> |
| | GT2017-63549 Transient Simulation of Critical Flow With Thermal-Hydraulic System Analysis Code for Supercritical CO2 Applications <i>Min Seok Kim, Bong Seong Oh, Jinsu Kwon, Hwa-Young Jung, Jeong Ik Lee, Korea Advanced Institute of Science and Technology (KAIST)</i> | GT2017-64400 A High-Loaded Axial Compressor Bifurcate Stator Blade Aerodynamic Design and Vorticity Dynamics Diagnosis for Flow Structure <i>Huanlong Chen, Menghan Yu, Linxi Li, Huaping Liu, Harbin Institute of Technology</i> | GT2017-64889 Large Eddy Simulation of Roughened NACA65 Compressor Cascade <i>Jongwook Joo, Gorazd Medic, Om Sharma, United Technologies Research Center</i> |
| 10:45 | | GT2017-65158 Control of the Corner Separation in a Linear Cascade by Trailing Gaps <i>Wenfeng Zhao, Bin Jiang, Qun Zheng, Harbin Engineering University</i> | GT2017-64979 Very Large Eddy Simulation (VLES) of a Squealer Tipped Axial Turbine Stage <i>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</i> |
| | | GT2017-65192 A Study of Loss Mechanism in a Linear Compressor Cascade at the Corner Stall Condition <i>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</i> | GT2017-64694 Effect of Combustion on Turbulence in a Gas Turbine Combustion Chamber <i>Richard Adoua, Gary J. Page, Loughborough University</i> |
| 11:15 | | | |
| 11:45 | | | |

| THURSDAY, JUNE 29 | | 10:15 AM - 12:15 PM | |
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| | 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 <i>Xiaotong Mi, Chi Zhang, Bo Wang, Yuzhen Lin, Beihang University</i> | GT2017-63338 Thermoacoustic Damping Rate Determination From Combustion Noise Using Bayesian Statistics <i>Nicolai V. Stadlmair, Technische Universität München; Tobias Hummel, Technical University of Munich, Chair of Thermodynamics; Thomas Sattelmayer, Technical Univ Munich</i> | GT2017-63885 Effects of Equivalence Ratio on the Off-Design Combustion Performance of Adjustable Fuel Feeding Combustor for a Micro-Gas Turbine <i>Chang Xing, Penghua Qiu, Li Liu, Wenkai Shen, Yajin Lyu, Zhuo Zhang, Jingyi Sun, Shaohua Wu, Yukun Qin, Harbin Institute of Technology</i> |
| 10:45 | GT2017-64154 Mixture Quality of a Vortex Generator Premixer and Alternative Premixer Designs in the Auto-Ignition Regime of Hydrogen Air Flames <i>Stefan Bauer, Simon Bässler, Balbina Hampel, Lehrstuhl für Thermodynamik; Christoph Hirsch, Thomas Sattelmayer, Technical University of Munich</i> | GT2017-63477 Plasma-Assisted Combustor Dynamics Control at Ambient and Realistic Gas Turbine Conditions <i>Wookyung Kim, Jeffrey Cohen, United Technologies Research Center</i> | GT2017-64396 Investigation of a FLOX®-Based Combustor for a Micro Gas Turbine With Exhaust Gas Recirculation <i>Stefan Hasemann, Andreas Huber, Clemens Naumann, German Aerospace Center (DLR); Manfred Aigner, Dlr</i> |
| 11:15 | GT2017-65001 Experimental and Modeling Study of C1 to C3 Hydrocarbon Ignition in the Presence of Nitric Oxide <i>Ponnuthurai Gokulakrishnan, Casey Fuller, Michael Klassen, Combustion Science & Engineering, Inc.</i> | GT2017-64239 Impact of Damper Parameters on the Stability Margin of an Annular Combustor Test Rig <i>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</i> | GT2017-64477 Detailed Examination of a Modified Two-Stage Micro Gas Turbine Combustor <i>Andreas Schwärzle, Thomas Monz, Andreas Huber, German Aerospace Center (DLR); Manfred Aigner, Dlr</i> |
| 11:45 | GT2017-64476 Experimental Study of Aeronautical Ignition in a Swirled Confined Jet-Spray Burner <i>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</i> | GT2017-64238 Predicting the Influence of Damping Devices on the Stability Margin of an Annular Combustor <i>Max Zahn, Michael Betz, Moritz Schulze, Christoph Hirsch, Technical University of Munich; Thomas Sattelmayer, Technical Univ Munich</i> | |

| THURSDAY, JUNE 29 | | 10:15 AM - 12:15 PM | |
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| | 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 <i>Max Hewkin-Smith, Graham Pullan, University Of Cambridge; S.D. Grimshaw, Whittle Laboratory, University of Cambridge; Edward Greitzer, Zoltan Spakovszky, Massachusetts Institute Of Technology</i> | GT2017-63153 Accurate Method to Reproduce Throughflow Results With a Meanline Solver <i>Jose M. Chaquet, Alfredo Fernandez, Industria de Turbopropulsores SA; Roque Corral, ITP</i> | GT2017-63792 Size and Temperature Dependent Deposition Model of Micro-Sized Sand Particles <i>Kuahai Yu, Henan University of Science and Technology; Danesh Tafi, Virginia Tech</i> |
| 10:45 | GT2017-63245 Validation of a Numerical Model for Predicting Stalled Flows in a Low-Speed Fan <i>Kuen-Bae Lee, Mehdi Vahdati, Imperial College London; Mark Wilson, Rolls-Royce</i> | GT2017-63589 Selecting Rational Parameters for Ultra-Low Power Two-Stage Axial Turbine With Pressure Stages <i>Dmitry S. Kalabukhov, Vladimir A. Grigoriev, Vladislav M. Rad'ko, Samara National Research University</i> | GT2017-64421 An Experiment-Based Sticking Model for Heated Sand <i>Brett Barker, Kwen Hsu, Bruce Varney, Rolls Royce; Andrew Boulanger, Wing Ng, John Hutchinson, Virginia Tech</i> |
| 11:15 | GT2017-63432 Experimental Investigation of Stall Inception and its Propagation in a Contra Rotating Axial Fan Under Radial Inflow Distortion <i>Tegegn Dejene Toge, Pradeep A M, Indian Institute of Technology Bombay</i> | GT2017-65222 Comparing Human Driven and Automatic Blade Row Aerodynamic Designs <i>Ricardo Puente, Universidad Politecnica De Madrid; Roque Corral, ITP; Jorge Parra, Industria de Turbo Propulsores S.A.</i> | 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 <i>Andrew Boulanger, John Hutchinson, Weibin Xu, Matthew Keefe, Wing Ng, Srinath Ekkad, Virginia Tech; Brett Barker, Kwen Hsu, Rolls-Royce Corporation</i> |
| 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 <i>Zhiyang Chen, Yanhui Wu, Guowei Yang, Guangyao An, Bo Wang, Northwestern Polytechnical University</i> | GT2017-64975 Validation of a Gas Turbine Thermodynamic Model Without Accurate Component Maps <i>Anthony Jarrett, Ying Chen, Life Prediction Technologies Inc.</i> | GT2017-64961 Dynamic Similarity in Turbine Deposition Testing and the Role of Pressure <i>Craig Sacco, Chris Bowen, Ryan Lundgreen, Jeffrey Bons, Ohio State University; Eric Ruggiero, Jason Allen, Jeremy C Bailey, GE Aviation</i> |

| THURSDAY, JUNE 29 | | 10:15 AM - 12:15 PM | |
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| 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 |
| <div>10:15</div> <div>10:45</div> <div>11:15</div> <div>11:45</div> <div>TUTORIAL</div> | GT2017-65521 Real-Time Aeroelastic Modeling of Open-Rotors with Slender Blades <i>Ioannis Goulos, Cranfield University</i> | GT2017-64464 The Degradation Simulation of Compressor Salt Fog Fouling for Marine Gas Turbine <i>Yunpeng Cao, Lie Chen, Qingcai Yang, Minghao Wu, Harbin Engineering University; Jianwei Du, Fang Yu, China Ship Research and Development Academy</i> | GT2017-63579 Experimental Analysis on a T100 Microturbine Connected With Different Volume Sizes <i>Mario Luigi Ferrari, Paolo Silvestri, Matteo Pascenti, Federico Reggio, Aristide Fausto Massardo, University of Genoa</i> |
| | | GT2017-64071 Health Estimation of Gas Turbine: A Symbolic Linearization Model Approach <i>Qingcai Yang, Yunpeng Cao, Shuying Li, Harbin Engineering University; Fang Yu, Jianwei Du, China Ship Research and Development Academy</i> | GT2017-64029 Simulation of CHP System Based on Micro Gas Turbine With Inverted Brayton Cycle <i>Kirill Abrosimov, Alexander Ustinov, Skoltech; Dmitrii Galkin, Ramil Tumashev, BMSTU</i> |
| | | GT2017-64376 A Thermodynamic Transient Model for Performance Analysis of a Twin Shaft Industrial Gas Turbine <i>Samuel Cruz-Manzo, Yu Zhang, University of Lincoln; Vili Panov, Anthony Latimer, Festus Agbonzikilo, Siemens Industrial Turbomachinery</i> | GT2017-64619 Fault Detection Through Model Based Diagnostics of AE-T100 Micro Gas Turbine <i>Mariam Mahmood, unige Alessio Martini, Alberto Traverso, University of Genova</i> |
| | | | GT2017-64028 Preliminary Design Optimization of an Organic Rankine Cycle Radial Turbine Rotor <i>Edna R. Da Silva, Konstantinos G. Kyprianidis, Mälardalen University; Michael Sätterskog, Saab AB; Ramiro Gustavo Ramirez Camacho, UNIFEI - Universidade Federal de Itajubá; Angie Lizeth Espinosa Sarmiento, CEFET/RJ CAMPUS ANGRA DOS REIS</i> |

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 Brighenti**, 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 <i>Bengt Sundén, Jian Liu, Safer Hussain, Lei Wang</i> , Lund University; <i>Gong-nan Xie</i> , University of Minnesota at Twin Cities; <i>Hans Abrahamsson, Carlos Arroyo</i> , GKN Aerospace Engine Systems | T U T O R I A L | | GT2017-63799 Basic Tutorial: Transient Engine Simulation - Its Role In Design and Development <i>Syed Khalid</i> , Gas Turbine Systems Solutions, LLC; <i>Wilfried Visser</i> , Delft U of Tech | |
| | GT2017-63734 Experimental and Analytical Assessment of Cavity Modes in a Gas Turbine Wheelspace <i>Rachel Berg</i> , GE Aviation; <i>Choon Sooi Tan</i> , MIT <i>Zhongman Ding</i> , General Electric Company; <i>Gregory Laskowski</i> , GE Aviation; <i>Rinaldo Miorini</i> , GE Global Research Center; <i>Pepe Palafox</i> , GE Aviation | | | | |
| GT2017-63739 Numerical Investigation on the Cooling Effectiveness Among Air and Steam and Mist/Steam for a Gas Turbine Vane <i>Junfei Zhou, Xinjun Wang, Jun Li, Feng Zhang, Daren Zheng</i> , Xi'an Jiaotong University | | | | | |
| GT2017-63910 Effects of Purge Flow Configuration on Sealing Effectiveness in a Rotor-Stator Cavity <i>Kenneth Clark, Michael Barringer, David Johnson, Karen Thole</i> , Pennsylvania State University; <i>Christopher Robak, Eric Grover</i> , Pratt & Whitney | | | | | |
| GT2017-64297 Unsteady Measurement of Core Penetration Flow in a Turbine Rotor-Stator Disc Cavity <i>Youil Kim</i> , Agency for Defense Development; <i>Seung Jin Song</i> , Seoul National University | | | | | |
| 3:30 | GT2017-63840 Numerical Investigation on Mist/Air Cooling in Rectangular Ribbed Channels with Various Aspect Ratios <i>Junxiong Zeng, Tieyu Gao, Jianying Gong</i> , Xian Jiaotong University; <i>Jun Li</i> , Institute of Turbomachinery, Xi'an Jiaotong Univ. | | | GT2017-64620 Re-Ingestion of Upstream Egress in a 1.5-Stage Gas Turbine Rig <i>James Scobie, Fabian Hualca, Mario Patinios, Carl Sangan, J Michael Owen, G.D. Lock</i> , University of Bath | |
| 4:00 | GT2017-63970 Numerical Study of Pyrolysis Effects on Supercritical-Pressure Flow and Conjugate Heat Transfer of N-Decane in the Square Channel <i>Xizhuo Hu, Zhi Tao, Jianqin Zhu, Haiwang Li</i> , Beihang University | | | GT2017-64632 Egress Interaction Through Turbine Rim Seals <i>James Scobie, Fabian Hualca, Carl Sangan, G.D. Lock</i> , University of Bath | |
| 4:30 | | | | | |
| 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 <i>Jiaxu Yao, Jin Xu, Ke Zhang, Jiang Lei, Xi'an Jiaotong University; Lesley Wright, Baylor University</i> | GT2017-63480 A Thermodynamic Model to Quantify the Impact of Cooling Improvements on Gas Turbine Efficiency <i>Selcuk Can Uysal, Eric Liese, Jim Black, National Energy Technology Laboratory; Andrew Nix, West Virginia University</i> | GT2017-64007 Superalloy Cooling System for the Composite Rim of an Inside-Out Ceramic Turbine <i>Nicolas Courtois, Frédéric Ebacher, Patrick K. Dubois, Nidal Kochrad, Cédéric Landry, Miguel Charette, Alexandre Landry-Blais, Luc Fréchette, Jean-Sébastien Plante, Mathieu Picard, Université de Sherbrooke; Benoit Picard, Ceragy Engines, inc.</i> |
| 3:00 | GT2017-63968 Investigations on the Influence of Rib Orientation Angle on Film Cooling Performance of Cylindrical Holes <i>Lin Ye, Cunliang Liu, Huiren Zhu, Jianxia Luo, Northwestern Polytechnical University; Ying-ni Zhai, Xi'an University of Architecture & Technology</i> | GT2017-63504 Numerical Investigation on the Effect of Slot Leakage on a NGV With 2D Contoured Endwall: Adiabatic Effectiveness and Aerodynamic Loss <i>Pingting Chen, Jing Ren, Hongde Jiang, Tsinghua University; Xueying Li, Tsinghua University, Department of Thermal Engineering</i> | GT2017-64490 Experimental Investigation of an Inverted Brayton Cycle Micro Gas Turbine for CHP Application <i>Eleni Agelidou, Thomas Monz, Andreas Huber, German Aerospace Center (DLR); Manfred Aigner, Dlr</i> |
| 3:30 | GT2017-64275 Heat Transfer Coefficients of Forward and Backward Cylindrical Hole Film Cooling Using Transient IR Technique <i>Bo Shi, Jing Ren, Hongde Jiang, Tsinghua University; Xueying Li, Tsinghua University, Department of Thermal Engineering</i> | GT2017-63581 Prediction of Heat Transfer for a Highly Loaded Transonic Turbine Guide Vane With the Usage of a GPU Based 3D RANS Solver <i>Marwick Sembritzky, Derek Micallef, David Engelmann, Ruhr-Universität Bochum</i> | GT2017-64695 Inverted Brayton Cycle With Exhaust Gas Condensation <i>Ian Kennedy, Zhihang Chen, Colin Copeland, University of Bath; Bob Ceen, Axes Design Ltd; Simon Jones, HiETA Technologies Ltd</i> |
| 4:00 | GT2017-64731 Experimental Characterization of Reverse-Oriented Film Cooling <i>Robin Prenter, Mohammad Arif Hossain, Lucas Agricola, Ali Ameri, Jeffrey Bons, Ohio State Univ</i> | GT2017-63949 Research on Cooling Uniformity Based on Image Analysis Method <i>Hong Wu, Deng Wen Yang, Beijing University of Aeronautics and Astronautics</i> | |
| 4:30 | GT2017-64645 Nozzle Guide Vane Film Cooling Effectiveness for Radial Showerheads With Restricted Cooling Hole Surface Angles <i>Nicholas Holgate, Oxford University; Peter Ireland, University of Oxford; Kevin Self, Rolls-Royce plc.</i> | GT2017-64205 Evaluation of Numerical Methods to Predict Temperature Distributions of an Experimentally Investigated Convection-Cooled Gas-Turbine Blade <i>Erik Findeisen, Beate Woerz, Mark Wieler, Peter Franz Jeschke, RWTH Aachen University Michael Rabs, MAN Diesel and Turbo SE</i> | |
| 5:00 | | GT2017-64520 Preliminary CFD Simulations of Lubrication and Heat Transfer in a Gearbox <i>Evgenia Korsukova, Gas Turbine and Transmissions Research Centre; Hervé Morvan, University of Nottingham</i> | |

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

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

| THURSDAY, JUNE 29 | | 2:30 - 5:30 PM | |
|-------------------|---|--|--|
| | 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 <i>Shaun Sullivan, Brayton Energy LLC</i> | GT2017-65114 Measurements and Characterization of Turbulence in the Tip Region of an Axial Compressor Rotor <i>Yuanchao Li, Huang Chen, Joseph Katz, Johns Hopkins University</i> | GT2017-63407 Highly Resolved LES Study of Gap Size Effect on Low-Pressure Turbine Stage <i>Richard Pichler, Richard Sandberg, The University of Melbourne; Vittorio Michelassi, General Electric Oil & Gas; Jonathan Ong, GE</i> |
| | GT2017-65402 Comprex Perspective on Recuperator Path Forward <i>Zhijun Jia, Comprex, LLC</i> | GT2017-64533 On Improving the Surge Margin of a Tip-Critical Axial Compressor Rotor <i>Marcus Lejon, Niklas Andersson, Tomas Grönstedt, Chalmers University; Hans Mårtensson, GKN Aerospace; Lars Ellbrant, GKN Aerospace</i> | GT2017-64580 The Effect of Turning Angle on the Loss Generation of LP Turbines <i>Diego Torre, Industria De Turbopropulsores; Guillermo Garcia Valdecasas, David Cadrecha, ITP</i> |
| 3:00 | GT2017-65403 Altex Technologies Perspective on Recuperator Path Forward <i>John Kelly, Altex Technologies Corporation</i> | GT2017-63468 Numerical Research on Effects of Shroud Contraction on Tip Leakage Flow and Overall Performance of Axial Compressors <i>Yufan Zhang, Lucheng Ji, Jiabin Li, Beijing Institute of Technology</i> | GT2017-64778 Part Load Behavior of the LP Part of an Industrial Gas Turbine <i>Milan V. Petrovic, Univ of Belgrade; Alexander Wiedermann, Man Diesel & Turbo SE; Srecko Nedeljkovic, Milan Banjac, University of Belgrade Faculty of Mech Eng</i> |
| 3:30 | GT2017-65404 Mezzo Technologies Perspective on Recuperator Path Forward <i>Kevin Kelly, Mezzo Technologies</i> | GT2017-64115 Comparison of Stall Characteristics of Multi-Stage and Single-Stage Transonic Axial Compressors <i>Young Seok Kang, Tae Choon Park, Byeung Jun Lim, Korea Aerospace Research Institute; Hyung Soo Lim, Korea Institute of Machinery and Materials</i> | GT2017-64867 Analysis of the Performance of Plasma Actuators Under Low-Pressure Turbine Conditions Based on Experiments and URANS Simulations <i>D. S. Martinez, Elisa Pescini, Fedele Marra, Maria Grazia De Giorgi, Antonio Ficarella, University of Salento</i> |
| 4:00 | GT2017-65405 Thar Energy Perspective on Recuperator Path Forward <i>Marc Portnoff, Thar Energy, LLC</i> | GT2017-63777 Numerical Investigation of Stall Mechanism of an Axial Compressor at Three Different Rotating Speeds <i>Haoguang Zhang, Feng Tan, Kang An, Yanhui Wu, Wuli Chu, Northwestern Polytechnical University</i> | GT2017-63772 Investigation of 3D Blade Design on Flow Field and Performance of a Low Pressure Turbine Stage <i>Zhiyuan Zhao, Xin Du, Fengbo Wen, Zhongqi Wang, Harbin Institute of Technology</i> |
| 4:30 | GT2017-65406 VPE Perspective on Recuperator Path Forward <i>Aaron Wildberger, Vacuum Process Engineering</i> | GT2017-63783 Numerical Investigation of Self-Driven Fan Performance With Tip-Jet <i>Lei Li, Guoping Huang, Jie Chen, Jin-Chun Wang, Nanjing University of Aeronautics & Astronautics</i> | |
| 5:00 | | | |

| 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 <i>Jens Trümner, Christian Mundt, Universität der Bundeswehr München</i> | GT2017-63147 Low-Order Modelling of Combustion Noise in an Aero-Engine: The Effect of Entropy Dispersion <i>Yasser Mahmoudi, Andrea Giusti, Epaminondas Mastorakos, Ann Dowling, University of Cambridge</i> | GT2017-63821 A CFD Simulation of Coal Syngas Oxy-Combustion in a High-Pressure Supercritical CO₂ Environment <i>Hassan Abdul Sater, James Lenertz, Chris Bonilha, Creative Power Solutions; Xijia Lu, Jeremy Fetvedt, 8 Rivers Capital</i> |
| | GT2017-63237 Implementation of a Surface Roughness-Based Transition Onset Correction in the γ-Rföt T Transition Model <i>Alexandre Minot, Safran Tech; Julien Marty, Jean Perraud, Grégoire Casalis, ONERA</i> | GT2017-63247 Predicting Thermoacoustic Instability in an Industrial Gas Turbine Combustor: Combining a Low Order Network Model With Flame LES <i>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</i> | GT2017-64013 Low Load Operation Range Extension by Autothermal On-Board Syngas Generation <i>Max H. Baumgärtner, Technische Universität München - Lehrstuhl für Thermodynamik; Thomas Sattelmayer, Technical Univ Munich</i> |
| 3:00 | | | |
| 3:30 | GT2017-63294 Experimental and Numerical Investigation of Transition Effects on a Low Reynolds Number Airfoil <i>Michael Collison, Peter Harley, Domenico Di Cugno, Dyson</i> | GT2017-63805 Multi Scale Computational Simulation of Combustion Instability and Transition in a Model Afterburner <i>Sriram Kalathoor, National Center for Combustion Research & Development, and Indian Institute of Technology Madras; Satya Chakravarthy, IIT Madras</i> | GT2017-64227 Exhaust Gas Recirculation at Elevated Pressure Using a FLOX® Combustor <i>Peter Kutne, Judith Richter, James D. Gounder, Clemens Naumann, Wolfgang Meier, German Aerospace Center (DLR)</i> |
| | GT2017-63296 On Boundary Layer Relaminarization in an Highly Accelerated High Pressure Turbine Stator Flow <i>Pascal Bader, Wolfgang Sanz, Graz University of Technology</i> | GT2017-63271 Two Way Hybrid LES/CAA Approach Including Acoustic Feedback Loop for the Prediction of Thermoacoustic Instabilities in Technical Combustors <i>Timo Klenke, Kilian Lackhove, Amsini Sadiki, Johannes Janicka, Federico Lo Presti, Technical University Darmstadt; Francesca di Mare, DLR</i> | GT2017-64447 Development of a Jet-Stabilized Combustion System for the Use of Low-Caloric SOFC Off-Gas <i>Sandro Bücheler, Andreas Huber, German Aerospace Center (DLR); Manfred Aigner, DLR</i> |
| 4:00 | | | |
| 4:30 | GT2017-63499 The Impact of the Multiple Reference Frame Interface on Modelling the Interaction Between IGVs and the Impeller in Turbocharger Compressors <i>Xiangjun Li, Northwestern Polytechnical University; Stephen Spence, Queen's University Belfast</i> | GT2017-65123 LES-Based Scattering Matrix Method for Low-Order Acoustic Network Models <i>Changjin Yoon, Owen Graham, Fei Han, GE Global Research Center; Kwanwoo Kim, GE Aviation; Jong Guen Lee, Katsuo Maxted, Thomas Caley, University of Cincinnati</i> | GT2017-64556 High Momentum Jet Flames at Elevated Pressure, B: Detailed Investigation of Flame Stabilization With Simultaneous PIV and OH-LIF <i>Michael Severin, Oliver Lammel, Holger Ax, Rainer Lueckerath, Wolfgang Meier, Johannes Heinze, German Aerospace Center (DLR); Manfred Aigner, DLR</i> |
| | | GT2017-65200 Large Eddy Simulation of Combustion Instability of Low-Swirl Flames in a Multi-Nozzle Combustor <i>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</i> | GT2017-64615 High Momentum Jet Flames at Elevated Pressure, A: Experimental and Numerical Investigation for Different Fuels <i>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</i> |
| 5:00 | | | |

| 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 <i>Geoffroy Chaussonnet, Simon Holz, Rainer Koch, Hans-Jörg Bauer, Institut of Thermal Turbomachinery (ITS) - Karlsruhe Institut of Technology (KIT); Armin Mueller, JENOPTIK Robot GmbH</i> | GT2017-64610 Tackling Highly Constrained Design Problems: Efficient Optimisation of a Highly Loaded Transonic Compressor <i>Lieven Baert, Paul Beaucaire, Michael Leborgne, Caroline Sainvitu, Ingrid Lepot, Ingrid Lepot, Cenaero; Tariq Benamara, Piotr Bretkopf, Université de Technologie de Compiègne</i> | GT2017-65471 Wind Turbine Industry Panel <i>George Pechlivanoglou, TU Berlin</i> |
| 3:00 | GT2017-63135 Effects of Fluid Properties on Spray Characteristics of a Flow-Blurring Atomizer <i>Brian T. Fisher, Steven G. Tuttle, Katherine M. Hinnant, Naval Research Laboratory; Michael R. Weismiller, National Research Council</i> | GT2017-65106 LPC Blade and Non Axisymmetric Hub Profiling Optimization Using Multi-Fidelity Non-Intrusive Pod Surrogates <i>Caroline Sainvitu, Cenaero</i> | GT2017-65522 Industry Panel Session <i>George Pechlivanoglou, TU Berlin</i> |
| 3:30 | GT2017-64149 A Numerical Study of the Internal Flow in a Pressure Swirl Atomizer <i>Weijia Qian, Xin Hui, Chi Zhang, Yuzhen Lin, Quanhong Xu, Beihang University; Chih Jen Sung, University of Connecticut</i> | GT2017-63738 Design Optimization of a 3D Parameterized Vane Cascade With Non-Axisymmetric Endwall Based on a Modified Ego Algorithm and Data Mining Techniques <i>Chenxi Li, Zhendong Guo, Liming Song, Zhenping Feng, Xian Jiaotong University; Jun Li, Institute of Turbomachinery, Xi'an Jiaotong Univ</i> | PANEL |
| 4:00 | GT2017-64846 Experimental Study of Superheated Kerosene Jet Fuel Sprays From a Pressure-Swirl Nozzle <i>Shaji Manipurath, National Research Council of Canada</i> | GT2017-64135 Optimization of Coupled System Components Using Approximations of Interface Quantities <i>Michael Lockan, Brandenburg University of Technology; Dieter Bestle, Brandenburg University of Technology Cottbus-Senftenberg; Christian Janke, Marcus Meyer, Rolls-Royce Deutschland Ltd & Co KG</i> | |
| 4:30 | GT2017-64939 Characterization of Spray Formed by Diesel-Water Mixture Jet Injected Into an Air Crossflow <i>Jinkwan Song, Jong Guen Lee, University of Cincinnati</i> | GT2017-64177 A Newly Improved Collaborative Optimization Strategy: Application to Conceptual Multidisciplinary Design Optimization of a Civil Aero-Engine <i>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.</i> | |
| 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 <i>Kevin Kirtley, GE Power & Water</i> | GT2017-63413 Quantitative CO PLIF Measurements in Aeroengine Gas Turbine Combustion Chambers Under Realistic Conditions <i>Lena Voigt, Johannes Heinze, Thomas Aumeier, German Aerospace Center (DLR); Thomas Behrendt, Francesca di Mare, DLR</i> | GT2017-65498 Inter-turbine Reheat Combustion <i>Khawar Syed, Alstom (Switzerland) Ltd.</i> |
| 3:00 | GT2017-65372 Siemens Energy, Inc. Perspective <i>Jose Rodriguez, Siemens Energy, Inc.</i> | GT2017-63671 Measuring Water Film Thickness in a Wet Gas Compressor Diffuser: Design, Calibration, and Testing of Electromagnetic Probes <i>Craig Nolen, Melissa Poerner, Southwest Research Institute</i> | GT2017-65572 Numerical Simulation of the Multistage Ultra-High Efficiency Gas Turbine Engine, UHEGT <i>Seyed Ghoreysbi, Texas A & M Univ</i> |
| 3:30 | GT2017-65373 Additive Manufacturing for the New Generation of Ansaldo Energia Gas Turbines <i>Uwe Ruedel, Ansaldo Energia Switzerland Ltd.</i> | GT2017-63773 A Hybrid Approach for 3D Full-Field Measurement on a Closed Slinger Combustor by Hydraulic Simulations <i>Lichao Jia, LiLi Yang, Huijing Yuan, Peking University; Yongxia Jia, Tsinghua University; Yiyang Wang, Yang Feng, AECC HuNan Aviation Powerplant Research Institute</i> | GT2017-65494 Performance Optimisation of an Inter-turbine Reheat Engine <i>Alvise Pellegrini, Cranfield University</i> |
| 4:00 | GT2017-65374 Pratt & Whitney Perspective <i>Dominic Mongillo, Pratt & Whitney</i> | GT2017-63788 Computational and Experimental Study of a Platinum Thin-Film Based Oil Condition and Contamination Sensor <i>Vikram Sridhar, Kam Chana, Oxford University; Deepanshu Singh, Indian Institute of Technology</i> | PANEL |
| 4:30 | PANEL | GT2017-64597 Planar Velocity Measurements at 100 kHz in Gas Turbine Combustors With a Continuous Laser Source <i>Marek Mazur, Philippe Scoufflaire, Franck Richecoeur, Leo Cunha Caldeira Mesquita, Laboratoire EM2C, CNRS, CentraleSupélec, Université Paris-Saclay</i> | |
| 5:00 | | GT2017-64597 Planar Velocity Measurements at 100 kHz in Gas Turbine Combustors With a Continuous Laser Source <i>Aymeric Vié, Sebastien Ducruix, Laboratoire EM2C, CNRS, CentraleSupélec, Université Paris-Saclay</i> | |

| 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 <i>Eisaku Ito, MHI Takasago R&D Center</i> | GT2017-63680 URANS Simulations and Experimental Investigations on Unsteady Aerodynamic Effects in the Blade Tip Region of a Shrouded Fan Configuration <i>Gi-Don Na, Frank Kameier, HS Düsseldorf (ISAVE); Michael Mauß, Nils Springer, Brose Fahrzeugteile GmbH; C. Oliver Paschereit, H.F.I TU Berlin</i> | T U T O R I A L |
| 3:00 | GT2017-65449 Ansaldo Energia Path Forward: Gas Turbine Technology <i>Stefan Florjancic, Ansaldo Energia Switzerland</i> | GT2017-63952 Development and Validation of a Novel Synthetic Blade Model for Axial Flow Fans in Unsteady CFD <i>Tommaso Bonanni, Alessandro Corsini, Giovanni Delibra, David Volponi, Sapienza University of Rome</i> | |
| 3:30 | GT2017-65451 Siemens Energy Path Forward: Gas Turbine Technology <i>Bonnie Marini, Siemens</i> | GT2017-64679 Numerical Testing of a Trailing Edge Passive Morphing Control for Large Axial Fan Blades <i>Alessio Castorrini, Alessandro Corsini, Franco Rispoli, Sapienza University of Rome; Anthony Sheard, AGS Consulting LLC</i> | |
| 4:00 | GT2017-65450 GE Path Forward: Gas Turbine Technology <i>Joseph Citenò, GE</i> | GT2017-63795 Preliminary Investigation on the Effect of the Modification of the Sweep Angle at the Blade Tip of Forward Swept Axial Fans <i>Massimo Masi, University of Padova – DTG; Andrea Lazzaretto, University of Padova</i> | |
| 4:30 | PANEL | GT2017-63965 Partially Vaned Diffuser With Variable Cross-Section for Centrifugal Fans <i>Tore Fischer, Joerg Seume, Gottfried Wilhelm Leibniz Universität; Sebastian Burgmann, Bergische Universität Wuppertal; Manuel Rudersdorf, The Fuel Cell Research Centre ZBT GmbH</i> | |
| 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 <i>Maverick Zawislak, David Cerantola, A.M. Birk, Queens University</i> | GT2017-63552 Numerical Study on the Influence of Trench Width on Film Cooling Characteristics of Double-Wave Trench <i>Bolun Zhang, Li Zhang, Huiren Zhu, Jiansheng Wei, Zhong-yi Fu, Northwestern Polytechnical University</i> | GT2017-63841 Unsteady 360 Computational Fluid Dynamics Validation of a Turbine Stage Mainstream/Disc Cavity Interaction Using Lattice-Boltzmann Method <i>Alexander Mirzamoghadam, Khosro MollaHosseini, Alexander Mirzamoghadam, Honeywell Aerospace; Ignacio Gonzalez-Martino, Francesco Polidoro, Exa Corporation</i> |
| | GT2017-63978 Reducing Nacelle Pressure Drag <i>David Cerantola, Maverick Zawislak, A.M. Birk, Queens University</i> | GT2017-63741 The Effect of Upstream Ramps With Different Shapes on Film Cooling Efficiency <i>Daren Zheng, Xinjun Wang, Feng Zhang, Junfei Zhou, Xian Jiaotong University; Qi Yuan, Xi'an Jiaotong University School of Energy & Power</i> | GT2017-63844 Unsteady Pressure Characteristics in the Mainstream/Disc Cavity of a Turbine-Stage <i>Jagdish Harihara Balasubramanian, Rolls Royce; Ramendra P Roy, Mukilan Michael, Arizona State University</i> |
| 8:30 | GT2017-63978 Reducing Nacelle Pressure Drag <i>David Cerantola, Maverick Zawislak, A.M. Birk, Queens University</i> | GT2017-63741 The Effect of Upstream Ramps With Different Shapes on Film Cooling Efficiency <i>Daren Zheng, Xinjun Wang, Feng Zhang, Junfei Zhou, Xian Jiaotong University; Qi Yuan, Xi'an Jiaotong University School of Energy & Power</i> | GT2017-63844 Unsteady Pressure Characteristics in the Mainstream/Disc Cavity of a Turbine-Stage <i>Jagdish Harihara Balasubramanian, Rolls Royce; Ramendra P Roy, Mukilan Michael, Arizona State University</i> |
| | GT2017-64379 A 3D Shape Design and Optimization Method for Natural Laminar Flow Nacelle <i>Yongjian Zhong, Songyang Li, AECC Commercial Aircraft Engine Co., Ltd</i> | GT2017-63886 Research on Film Cooling Mechanism of Vortex Reconstruction Induced by Swirling Coolant Flow <i>Guoqiang Yue, Ping Dong, Yuting Jiang, Jie Gao, Qun Zheng, Harbin Engineering University</i> | GT2017-64169 Effects of Rotor Disc Growth on Flow and Heat Transfer Characteristics of Rim Seal <i>Xingyun Jia, Qun Zheng, Hai Zhang, Yuting Jiang, Harbin Engineering University</i> |
| 9:00 | GT2017-64379 A 3D Shape Design and Optimization Method for Natural Laminar Flow Nacelle <i>Yongjian Zhong, Songyang Li, AECC Commercial Aircraft Engine Co., Ltd</i> | GT2017-63886 Research on Film Cooling Mechanism of Vortex Reconstruction Induced by Swirling Coolant Flow <i>Guoqiang Yue, Ping Dong, Yuting Jiang, Jie Gao, Qun Zheng, Harbin Engineering University</i> | GT2017-64169 Effects of Rotor Disc Growth on Flow and Heat Transfer Characteristics of Rim Seal <i>Xingyun Jia, Qun Zheng, Hai Zhang, Yuting Jiang, Harbin Engineering University</i> |
| | GT2017-63427 Inlet Compatibility and Fan Aeromechanics of HBP Turbofan Engine <i>Zhonglin Wang, Jingjing Chen, Yong Chen, Shanghai Jiao Tong University</i> | GT2017-65063 Numerical Optimization of Geometry Parameters for Shaped Film Cooling Holes <i>Mohammad Alshehaby, Kasem Ragab, Lamyaa El-Gabry, The American University in Cairo</i> | GT2017-64388 Simplified Ingestion Model Assessment for 1D Gas Turbine Engine Secondary Flow Network <i>Ashish Negi, Sushilkumar Thamke, Balakrishnan Thangavel, Honeywell; Alexander Mirzamoghadam, Honeywell Aerospace</i> |
| 9:30 | GT2017-63427 Inlet Compatibility and Fan Aeromechanics of HBP Turbofan Engine <i>Zhonglin Wang, Jingjing Chen, Yong Chen, Shanghai Jiao Tong University</i> | GT2017-65063 Numerical Optimization of Geometry Parameters for Shaped Film Cooling Holes <i>Mohammad Alshehaby, Kasem Ragab, Lamyaa El-Gabry, The American University in Cairo</i> | GT2017-64388 Simplified Ingestion Model Assessment for 1D Gas Turbine Engine Secondary Flow Network <i>Ashish Negi, Sushilkumar Thamke, Balakrishnan Thangavel, Honeywell; Alexander Mirzamoghadam, Honeywell Aerospace</i> |
| | | | |

| 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 <i>Antonio Andreini</i> , Department of Industrial Engineering (DIEF)-University of Florence; <i>Riccardo Becchi</i> , University of Florence; <i>Bruno Facchini</i> , <i>Lorenzo Mazzei</i> , <i>Alessio Picchi</i> , University of Florence; <i>Ignazio Vitale</i> , AvioAero -- GE AVIO srl; <i>Anil Tolpadi</i> , GE Aviation | GT2017-63694 Influence of Turbine Blade Leading Edge Profile on Film Cooling With Shaped Holes <i>Mingjie Zhang</i> , <i>Nian Wang</i> , <i>Andrew F Chen</i> , <i>Je-Chin Han</i> , Texas A&M University | GT2017-65479 Creation and use of Generic Repair Process to Level the Playing Field for all Vendors <i>John Scheibel</i> , EPRI |
| | GT2017-64911 Numerical and Experimental Investigations for Flow Fields Under Non-Reacting and Reacting Conditions Through a Lean Premixed Fuel Nozzle <i>Sandeep Kedukodi</i> , <i>Suhyeon Park</i> , <i>Siddhartha Gadiraju</i> , <i>Srinath Ekkad</i> , Virginia Tech; <i>Yong Kim</i> , <i>Ram Srinivasan</i> , Solar Turbines | GT2017-63818 Effect of Flow Acceleration on Mainstream-to-Coolant Flow Interaction for Round and Shaped Film Cooling Holes <i>Kyle Vinton</i> , Baylor University; <i>Lesley Wright</i> , Baylor University | GT2017-65480 Generation and Use of Generic Repair Vendor Qualification Process <i>Paul Keener</i> , Duke Energy |
| 9:00 | GT2017-63319 Computational Analysis of a Novel Cooling Scheme for Ultra Compact Combustor Turbine Vanes <i>Brian Bohan</i> , <i>James L. Rutledge</i> , Air Force Institute of Technology; <i>Marc Polanka</i> , AFIT/ENY | GT2017-64616 Effect of Internal Crossflow Velocity on Film Cooling Effectiveness: Part I: Axial Shaped Holes <i>John McClintic</i> , <i>Josh Anderson</i> , <i>David Bogard</i> , The University of Texas At Austin; <i>Tom Dyson</i> , GE Global Research; <i>Zachary Webster</i> , GE Aviation | GT2017-65481 Developing Repair Solutions for Major Structural Components from Large Gas Turbines <i>Matija Kolonic</i> , INPIRIO |
| | GT2017-63204 Investigation of Lean Combustion Stability, Pressure Drop, and Material Durability in Porous Media Burners <i>Sadaf Sobhani</i> , Stanford University; <i>Bret Haley</i> , <i>David Bartz</i> , <i>John Sullivan</i> , ALZETA Corporation; <i>Jared Dunnmon</i> , <i>Matthias Ihme</i> , Stanford University | GT2017-64624 Effect of Internal Crossflow Velocity on Film Cooling Effectiveness: Part II: Compound Angle Shaped Holes <i>John McClintic</i> , <i>Josh Anderson</i> , <i>David Bogard</i> , The University of Texas At Austin; <i>Tom Dyson</i> , GE Global Research; <i>Zachary Webster</i> , GE Aviation | GT2017-65483 Effects of Heat Treatments on Microstructure-Mechanical Properties in GTD-111 Alloy in Heavy Frame Gas Turbines <i>Rajeev Aluru</i> , 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 <i>Sebastian Schuster, Dieter Brillert, University of Duisburg-Essen; Christian Kreischer, TU Dortmund University</i> | GT2017-63667 The Use of Air-Measured Profile Data for Application in a High Pressure Steam Turbine <i>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</i> | GT2017-63444 Effect of Vortex Shedding on the Performance of Scoop Based Lubrication Devices <i>Arun Prabhakar, Yousif A Abakr, The University of Nottingham, Malaysia; Kathy Simmons, The University of Nottingham</i> |
| 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 <i>Massimiliano Renzi, Carlo Caligiuri, Mosè Rossi, Free University of Bozen/Bolzano</i> | GT2017-63466 Optimization Designs of Front Stage Nozzles in a LP Steam Turbine <i>Xianhong Wu, PCA Engineers Ltd; Deng Guoliang, Xiaolin Du, Pengfei Zhang, Dongfang Turbine Co. Ltd</i> | GT2017-63687 Dynamic Properties of Multi-Lobe Water Lubricated Bearings With Temporal and Convective Inertia Considerations <i>Saeid Dousti, Paul Allaire, Jianming Cao, Timothy Dimond, Bradley Nichols, Rotor Bearing Solutions International</i> |
| 9:00 | GT2017-64250 Operation and Flame Observation of Micro Gas Turbine Firing Ammonia Norihiko Iki, AIST <i>Osamu Kurata, Takayuki Matsunuma, Takahiro Inoue, Taku Tsujimura, Hirohide FURUTANI, National Institute of Advanced Industrial (AIST); Hideaki Kobayashi, Akihiro Hayakawa, Tohoku University</i> | GT2017-64561 Experimental and Numerical Investigation of the Performance Impact of a Heavily Off-Design Inlet Swirl Angle in a Steam Turbine Stage <i>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</i> | GT2017-63847 Investigation of Air-Oil-Thermal Distribution in Floating Bush Bearing <i>Yan Wang, Xiaodong Ren, Tsinghua University</i> |
| 9:30 | | GT2017-63946 Analysis on Solid Particle Erosion in the Governing Stage of a High-Parameter Steam Turbine <i>Lihua Cao, Tao Zhang, Northeast Electric Power University</i> | GT2017-64251 Comparison of Experimentally and Numerically Determined Dynamic Coefficients of the Hydrodynamic Slide Bearings Operating in the Nonlinear Rotating System <i>Lukasz Brenkacz, Grzegorz Zywicka, The Szwedowski Institute of Fluid-Flow Machinery Polish Academy of Sciences</i> |

| FRIDAY, JUNE 30 | | | 8:00 - 10:00 AM |
|-----------------|---|--|--|
| | 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 <i>Tianyuan Liu, Ding Guo, Di Zhang, Xian Jiaotong University; Yonghui Xie, Inst of Turbomachinery</i> | GT2017-63187 Heat Exchanger Options for Dry Air Cooling for the sCO2 Brayton Cycle <i>Anton Moisseytsev, Qiuping Lv, James Sienicki, Argonne National Laboratory</i> | <div>T U T O R I A L</div> |
| | GT2017-63972 Double Nodal Diameter Spectrum Method and its Application in Quantification of Vibration Localization of Impellers With Splitter Blades <i>Kaicheng Liu, Jianjun Wang, Beihang University</i> | GT2017-63322 A Study of s-CO2 Power Cycle for CSP Applications Using an Isothermal Compressor <i>Jin Young Heo, Yoonhan Ahn, Jeong Ik Lee, Korea Advanced Institute of Science and Technology (KAIST)</i> | |
| 8:30 | | | |
| 9:00 | GT2017-64973 Resonance Frequency Detuning With Application Towards Blade Mistuning <i>Garrett Lopp, Jeffrey Kauffman, University of Central Florida</i> | GT2017-64042 Dry Air Cooling and the sCO2 Brayton Cycle <i>James Sienicki, Anton Moisseytsev, Qiuping Lv, Argonne National Laboratory</i> | |
| | GT2017-63437 The Influence of Mistuning and Coriolis Effects on the Modal Parameters of Bladed Discs: An Experimental Study <i>Valentina Ruffini, Christoph W. Schwingshackl, Imperial College London; Jeffrey S. Green, Rolls Royce plc.</i> | GT2017-64958 Lowering the Levelized Cost of Electricity of a Concentrating Solar Power Tower With a Supercritical Carbon Dioxide Power Cycle <i>Joshua Schmitt, Jason Wilkes, Timothy Allison, Jeffrey Bennett, Southwest Research Institute; Karl Wygant, Robert Pelton, Hanwha Techwin</i> | |
| 9:30 | | | |

| 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 <i>Graham Goldin, CD-adapco; Hai Wang, Rui Xu, Stanford University; Tianfeng Lu, Yang Gao, University of Connecticut; Zhuyin Ren, Tsinghua Univ.</i> | GT2017-63131 Characterization of Fuel Composition and Altitude Impact on Gaseous and Particle Emissions From a Turbojet Engine <i>Tak Chan, Environment and Climate Change Canada; Pervez Canteenwalla, NRC Canada; Wajid Chishty, NRC Aerospace</i> | GT2017-63577 A Review of Inlet-Fan Coupling Methodologies <i>Benjamin Godard, Edouard De Jaeghere, Safran Aircraft Engines; Nabil Ben Nasr, Julien Marty, Raphael Barrier, ONERA; Nicolas Gourdain, ISAE - Universite de Toulouse</i> |
| | GT2017-64978 CO and H₂O Time-Histories in Shock-Heated Blends of Methane and Ethane for Assessment of a Chemical Kinetics Model <i>Olivier Mathieu, Clayton Mulvihill, Eric Petersen, Texas A&M University; Yingjia Zhang, Xi'an Jiaotong University; Henry Curran, NUI Galway</i> | GT2017-63293 Large-Eddy Simulation and Detailed Modeling of Soot Evolution in a Model Aero Engine Combustor <i>Achim Wick, Frederic Priesack, Heinz Pitsch, Institute for Combustion Technology, RWTH Aachen University</i> | GT2017-65223 Improved Hierarchical Modelling for Aerodynamically Coupled Systems <i>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.</i> |
| | GT2017-64995 Thermochemical Mechanism Optimization for Accurate Predictions of CH Concentrations in Premixed Flames of C₁-C₃ Alkane Fuels <i>Philippe Versailles, Antoine Durocher, Jeffrey Berghthorson, McGill University; Graeme M.G. Watson, Siemens Canada, Power Generation, Distributed Generation; Gilles Bourque, Siemens Canada Ltd</i> | 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 <i>Andrea Giusti, Epaminondas Mastorakos, University of Cambridge; Christoph Hassa, Johannes Heinze, Eggert Magens, German Aerospace Center (DLR); Marco Zedda, Rolls-Royce plc</i> | GT2017-64630 Aeromechanical Design and Test of a Modern Highly Loaded Fan <i>Jens Nipkau, Bronwyn Power, Matthew Jordan, Rolls-Royce Corporation</i> |
| 9:30 | | GT2017-64770 Formation of Soot in Ethylene-Air Partially Premixed Flames Over a Wide Range of Premixedness <i>Aritra Chakraborty, Dept. of Aerospace Engineering and The National Centre for Combustion Research and Development; Satya Chakravarthy, IIT Madras</i> | GT2017-65174 Transonic Fan Performance Evaluated With Different Solution Limiters <i>Forrest L. Carpenter, Paul Cizmas, Texas A & M University</i> |

| 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 <i>Michal Siorek</i> , Solar Turbines Incorporated; <i>Stephen Guillot</i> , Techsburg Inc; <i>Song Xue</i> , Concepts NREC; <i>Wing Ng</i> , Virginia Tech | GT2017-64817 Limit Cycles of Spinning Thermoacoustic Modes in Annular Combustors: A Bloch-Wave and Adjoint-Perturbation Approach <i>Georg Atta Mensah</i> , Technische Universität Berlin; <i>Jonas P. Moeck</i> , TU Berlin | GT2017-63047 Characterising the Influence of Impeller Exit Recirculation on Centrifugal Compressor Work Input <i>Charles Stuart</i> , <i>Stephen Spence</i> , <i>Sung in Kim</i> , Queen's University Belfast; <i>Dietmar Filsinger</i> , IHI Charging Systems; <i>Andre Starke</i> , IHI Charging Systems International GmbH |
| 8:30 | GT2017-63250 Wall Pressure and Temperature Distribution in Bent Oblong Exhaust Ejectors <i>Asim Maqsood</i> , A.M. Birk, Queens University | GT2017-63649 Stability and Sensitivity Analysis of Hydrodynamic Instabilities in Industrial Swirled Injection Systems <i>Thomas Ludwig Kaiser</i> , <i>Thierry Poinso</i> , IMFT; <i>Kilian Oberleithner</i> , Chair of Fluid Dynamics, TU Berlin | GT2017-63268 Effect of Free-Stream Velocity Definition on Boundary Layer Thickness and Losses in Centrifugal Compressors <i>Jonna Tiainen</i> , <i>Ahti Jaatinen-Värri</i> , <i>Aki Grönman</i> , <i>Teemu Turunen-Saaresti</i> , <i>Jari Backman</i> , Lappeenranta University of Technology |
| 9:00 | GT2017-64714 Installation Effects on Highly Loaded Turboprop S-Duct Intake Proximity <i>Caglar Atalayer</i> , <i>Detlev Wulff</i> , TU Braunschweig; <i>Jens Friedrichs</i> , TU Braunschweig Inst of Aircraft Propulsion & Turbomachinery | GT2017-64130 Analytical Study of Low-Frequency Helmholtz Mode Oscillation in a Model Combustor <i>Man ZHANG</i> , <i>Wenjie TAO</i> , AECC Commerical Aircraft Engine CO., LTD; <i>Yuzhen Lin</i> , Beihang University | GT2017-64724 Impeller Manufacturing: Design for Machining <i>Michael Cave</i> , <i>Min Ji</i> , 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 <i>Jakob P. Haug</i> , <i>Rudolf P.M. Rademakers</i> , Universität der Bundeswehr München; <i>Marcel Stößel</i> , Wehrtechnische Dienststelle für Luftfahrzeuge und Luftfahrtgerät der Bundeswehr; <i>Reinhard Niehuis</i> , 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) <i>Tushar Jadhav</i> , <i>Saurabh Patwardhan</i> , <i>Stefano Orsino</i> , <i>Pravin Nakod</i> , ANSYS Inc | GT2017-64923 Cast Impeller Quality and its Effects on Performance <i>Edward Fowler</i> , Solar Turbines Incorporated |

| | 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 <i>Cong Jiqing, Jing Jianping, Shanghai Jiao Tong University</i> | GT2017-64761 Improving Disturbance Compensation in Gas Turbines by Incorporating Event-Triggered Logic Signals From Switchgear <i>Robert Moroto, Robert Bitmead, University of California-San Diego; Chad Holcomb, Solar Turbines Inc.</i> | GT2017-63307 Dry Air Injection for Gas Turbines: Implementation and Operating Experience <i>Sergio Arias Quintero, Bob Kraft, Scott Auerbach, Powerphase LLC</i> |
| 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 <i>Lu Weiyu, Guoping Huang, Xin Fu, Jin-Chun Wang, Shuli Hong, Nanjing University of Aeronautics & Astronautics</i> | GT2017-63222 A Practical Approach From the MEE Toward Hybrid Propulsion <i>Noriko Morioka, IHI Corporation, Engine Technology Dept; Hitoshi Oyori, Tomoaki Asako, Katsuyuki Takahashi, Takumi Ando, IHI Corporation</i> | GT2017-63375 Semi-Closed Recuperated Cycle With Wet Compression <i>Hans Wettstein, HEW Consulting</i> |
| 9:00 | GT2017-65265 Absolute and Convective Instabilities of a Separated Boundary Layer Near the Leading Edge of an Aerofoil <i>Subrata Sarkar, K. S. Jadhav, Indian Institute of Technology Kanpur</i> | GT2017-63472 A Parametric Study of Actuator Requirements for Active Turbine Tip Clearance Control of a Modern High Bypass Turbofan Engine <i>Jonathan Kratz, NASA Glenn Research Center; Jeffryes Chapman, Vantage Partners, LLC; Ten-Huei Guo, NASA</i> | GT2017-64387 Process Analysis of Selective Exhaust Gas Recirculation for CO₂ Capture in Natural Gas Combined Cycle Power Plants Using Amines <i>Maria Elena Diego, Jean-Michel Bellas, Mohamed Pourkashanian, University of Sheffield</i> |
| 9:30 | GT2017-63831 A Comprehensive Investigation of Blade Row Interaction Effects on Stator Loss Utilizing Vane Clocking <i>Natalie Smith, Southwest Research Institute; Nicole Key, Purdue Univ</i> | GT2017-63529 An Integral Type μ Synthesis Method for Temperature and Pressure Control of Flight Environment Simulation Volume <i>Zhu Meiyin, Wang Xi, Beihang University</i> | GT2017-65227 Optimisation of a Low-Tit Combined Cycle Gas Turbine With Application to New Generation Solar Thermal Power Plants <i>Frédéric Siros, Electricité de France; Gonzalo Fernandez Campos, Centrale Supélec</i> |

| 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 <i>Hasham Chougule</i> , Honeywell Technology Solutions; <i>Alexander Mirzamoghadam</i> , Honeywell Aerospace | GT2017-63491 Transport of Microparticles in a Turbulated Serpentine Passage <i>Daniel D. Borup</i> , <i>Christopher J. Elkins</i> , <i>John K. Eaton</i> , Stanford University | GT2017-63226 An Experimental Investigation on the Overall Cooling Performances of Two Turbine End-Wall Structures <i>Wei Wang</i> , <i>Jian Pu</i> , <i>Rui-ming Yuan</i> , University of Science and Technology of China; <i>Jianhua Wang</i> , University of Science & Technology; <i>Yong-xian Luan</i> , <i>Bin-peng Kang</i> , 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 <i>Zhigang LI</i> , <i>Zhenping Feng</i> , Xi'an Jiaotong University; <i>Jun Li</i> , 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 <i>Maximilian Elfner</i> , <i>Achmed Schulz</i> , Karlsruhe Institute for Technology KIT; <i>Hans-Jörg Bauer</i> , Institut of Thermal Turbomachinery (ITS) - Karlsruhe Institut of Technology (KIT); <i>Knut Lehmann</i> , Rolls-Royce Deutschland Ltd & Co KG | GT2017-64397 Effects of Inlet Swirl on Endwall Film Cooling in Neighboring Vane Passages <i>Yang Zhang</i> , <i>Xin Yuan</i> , Department of Thermal Engineering, Tsinghua University; <i>Yifei Li</i> , <i>Xiutao Bian</i> , Tsinghua University; <i>Francesco Ornano</i> , University of Oxford |
| 11:15 | GT2017-63565 Dry Gas Face Seal Design With Arbitrary Gap Shape <i>Alexander Vinogradov</i> , <i>Sergey Falaleev</i> , <i>Renat Badykov</i> , Samara National Research University | GT2017-64039 Scaling Heat-Transfer Coefficients Measured Under Laboratory Conditions to Engine Conditions <i>Tom Shih</i> , <i>Chien-Shing Lee</i> , Purdue University; <i>Kenneth Mark Bryden</i> , 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 <i>Thomas Povey</i> , 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 <i>Thomas Huber</i> , <i>Cyrille J. Bricaud</i> , <i>Thomas Zierer</i> , Ansaldo Energia Switzerland AG | GT2017-63973 Investigation of Heat Transfer and Flow Characteristics in Fractal Tree-Like Microchannel With Steam Cooling <i>Linqi Shui</i> , <i>Bo Huang</i> , <i>Kunkun Dong</i> , Xi'an University of Technology; <i>Chunyan Zhang</i> , Xi'an Aerospace Composite Materials Research Institute | GT2017-64994 Film Cooling Effectiveness Comparison on Full-scale Turbine Vane Endwalls Using PSP Technique <i>Chao-Cheng Shiau</i> , <i>Andrew F Chen</i> , <i>Je-Chin Han</i> , Texas A&M University; <i>Salam Azad</i> , <i>Siemens</i> ; <i>Ching-Pang Lee</i> , Siemens Energy Inc. |
| 12:15 | | | |

| | 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 <i>Florent Duchaine, CERFACS</i> | GT2017-63621 Introduction of L12-Ordered Precipitation to Alumina-Forming Austenitic Heat-Resistant Steels With Low Ni Content <i>Bingbing Zhao, Xianping Dong, Feng Sun, Lanting Zhang, Shanghai Jiao Tong University</i> | GT2017-63254 Leakage, Drag Power and Rotordynamic Force Coefficients of an Air in Oil (Wet) Annular Seal <i>Luis San Andres, Xueliang Lu, Texas A&M University</i> |
| 10:45 | GT2017-63842 Heat Transfer Deterioration Onset of Hydrocarbon Fuel at Supercritical Pressure <i>Zeyuan Cheng, Zhi Tao, Jianqin Zhu, Haiwang Li, Longyun Wang, Beihang University</i> | GT2017-64104 Morphological Changes in γ' Phase by Creep, Aging and Aging After Creep for Polycrystalline Nickel-Based Superalloy <i>Haruhisa Shigeyama, Mitsutoshi Okada, Toshihiko Takahashi, Susumu Yamada, Takayuki Sakai, Terutaka Fujioka, Central Research Institute of Electric Power Industry</i> | GT2017-63988 Experimental Study of the Static and Dynamic Characteristics of a Long Smooth Seal With Two-Phase, Mainly-Air Mixtures <i>Min Zhang, James E. McLean, Dara Childs, Texas A&M University</i> |
| 11:15 | GT2017-63908 A New Heat Transfer Correlation for Supercritical RP-3 Flowing in Vertical Tubes <i>Longyun Wang, Zhi Tao, Jianqin Zhu, Haiwang Li, Zeyuan Cheng, Beihang University</i> | GT2017-64043 A Physically Based Model for High Temperature Deformation of Inconel 718PLUS™ <i>Utkudeniz Ozturk, Jose Maria Cabrera, Jessica Calvo, Polytechnic University of Catalonia</i> | GT2017-64875 Effect of Surface Patterning on the Dynamic Response of Annular Hole-Pattern Seals <i>Hanxiang Jin, Gen Fu, Alexandrina Untaroiu, Virginia Tech</i> |
| 11:45 | GT2017-64080 Prediction of the Turbine Tip Convective Heat Flux Using Discrete Green Functions <i>Valeria Andreoli, David Gonzalez Cuadrado, Guillermo Paniagua, Purdue University</i> | GT2017-64605 Long-Term Oxidation Resistance of Several Precipitation Strengthened Ni-Based Superalloys <i>Joseph Meyer, Vinay Deodeshmukh, Haynes International</i> | GT2017-63894 Using the Honeycomb Seal Technology to Overcome the Axial Overload of a Centrifugal Supercharger <i>Lihao Zhang, Lidong He, Hangling Hu, Kuan Li, Jinji Gao, Beijing University of Chemical Technology</i> |
| 12:15 | GT2017-64711 An Integrated Conjugate Computational Approach for Evaluating the Aerothermal and Thermomechanical Performance of Double-Wall Effusion Cooled Systems <i>Alexander V. Murray, Peter Ireland, University of Oxford; Anton J. Rawlinson, Rolls-Royce PLC</i> | | GT2017-65055 Investigation on Intelligent Rotor Vibration Control Based on Electromagnetic Damping Seal <i>Xing Shao, Wang Weimin, Fengli Jie, Xing'an Jiang, Beijing University of Chemical Technology</i> |

| FRIDAY, JUNE 30 | | | 10:15 - 12:45 PM | | |
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| 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 <i>Christoph Krause, Marco Stelldinger, Benjamin Hanschke, Arnold Kühhorn, Brandenburg University of Technology Cottbus-Senftenberg; Thomas Giersch, Rolls-Royce Deutschland Ltd & Co KG</i> | | T U T O R I A L | GT2017-65427 Supercritical CO2 Power Cycle Materials Tutorial <i>Ganesan Subbaraman, Gas Technology Institute</i> | |
| | GT2017-63986 New Step to Improve the Accuracy of Blade Synchronous Vibration Parameters Identification Based on Combination of GARIV and LM Algorithm <i>Wang Weimin, Sanqun Ren, Shan Huang, Qihang Li, Kang Chen, Beijing University of Chemical Technology</i> | | | GT2017-63058 Response of a Compact Recuperator to Thermal Transients in a Supercritical Carbon Dioxide Brayton Cycle <i>Eric Clementoni, Tim Cox, Martha King, Naval Nuclear Laboratory</i> | |
| | GT2017-63980 Investigation on the Turbine Blade Tip Clearance Measurement and Active Clearance Control Based on Eddy Current Pulse-Trigger Method <i>Wang Weimin, Huajin Shao, Xing Shao, Kailiang Song, Beijing University of Chemical Technology</i> | | | GT2017-63639 Mechanical Design and Validation Testing for a High-Performance Supercritical Carbon Dioxide Heat Exchanger <i>Shaun Sullivan, Jason Farias, James S. Nash, James Kesseli, Brayton Energy</i> | |
| | GT2017-63628 One Exciter per Sector Test Bench for Bladed Wheels Harmonic Response Analysis <i>Paolo Neri, Ciro Santus, University of Pisa; Leonardo Bertini, Univ of Pisa – DIC; Alberto Guglielmo, GE Oil&Gas</i> | | | GT2017-64560 Printed Circuit Heat Exchanger Flow Distribution Measurements <i>Blake Lance, Matt Carlson, Sandia National Laboratories</i> | |
| | GT2017-63901 Experimental Study on Magnetorheological Fluid Dampers in a Pipe System <i>Yunmeng Zhou, Lidong He, Beijing University of Chemical Technology</i> | | | GT2017-64908 The Conductance Ratio Method for Off-Design Heat Exchanger Modeling and its Impact on an sCO2 Recompression Cycle <i>Francesco Crespi, David Sanchez, University of Seville; Kevin Hoopes, Southwest Research Institute; Nicole Kuek, Brian Choi, Alfa Laval CorHex Ltd</i> | |
| 12:15 | | | | | |

| 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 <i>Xijia Lu, Scott Martin, Mike McGroddy, 8 Rivers Capital; Mike Swanson, Josh Stanislawski, Jason D. Laumb, Energy & Environmental Research Center</i> | GT2017-63235 Experimental Investigations of the Aerodynamics of Highly Loaded Tandem Vanes in a High-Speed Stator Cascade <i>Alexander Heinrich, Christine Tiedemann, Dieter Peitsch, Technische Universität Berlin</i> | GT2017-64684 Experimental Investigation of Total Pressure Loss Development in a Highly Loaded Low Pressure Turbine Cascade <i>Philip Bear, Mitch Wolff, Wright State University; Andreas Gross, New Mexico State University; Christopher Marks, Rolf Sondergaard, U.S. Air Force Research Laboratory</i> |
| 10:45 | GT2017-64952 Direct Fired Oxy-Fuel Combustor for sCO2 Power Cycles: 1MW Scale Design and Preliminary Bench Top Testing <i>Jacob Delimont, Aaron McClung, Southwest Research Institute; Marc Portnoff, Thar Energy, LLC</i> | GT2017-64286 Large Eddy Simulation of Tandem Blade Stator Cascades <i>Pratik Mitra, Jahnvi Kantharaju, Rohan Rayan, Joseph Mathew, Indian Institute of Science</i> | GT2017-63081 Prediction of Profile Losses by Means of Large-Eddy Simulation Including Turbulence Modeling Assessment <i>Karsten Hasselmann, Muenster University of Applied Sciences; Stefan aus der Wiesche, Fachhochschule Münster, Fachbereich Maschinenbau</i> |
| 11:15 | GT2017-63311 Thermal Properties for the Simulation of Direct-Fired sCO2 Combustor <i>K. R. V. Manikantachari, Subith Vasu, Jose O. Bobren-Diaz, University of Central Florida; Scott Martin, Embry-Riddle Aeronautical University</i> | GT2017-64956 Technology Demonstration of a Splittered Transonic Rotor With a Downstream Variable Geometry Tandem Stator <i>Sabine Bauinger, Graz University of Technology; Anthony Gannon, Garth V. Hobson, Aaron D. Terrell, Naval Postgraduate School</i> | GT2017-63359 A Numerical Investigation of the Impact of Part-Span Connectors on the Flow Field in a Linear Cascade <i>Christoph Brüggemann, Markus Schatz, ITSM, University of Stuttgart; Damian Vogt, University of Stuttgart; Frederik Popig, Siemens AG</i> |
| 11:45 | | GT2017-63771 Secondary Flow in Variable Stator Vanes With Penny-Cavities <i>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</i> | GT2017-63521 Effect of Spanwise Variation of Chord on the Performance of a Turbine Cascade <i>Srikanth Deshpande, Lund University; Pradeep A M, Indian Institute of Technology Bombay; Marcus Thern, Lund University, Faculty of Engineering; Magnus Genrup, Lund University</i> |
| 12:15 | | GT2017-63261 Different Effects of Cantilevered and Shrouded Stators on Axial Compressor Performance <i>Xia-yi Si, Jinfang Teng, Xiao-qing Qiang, Jin-zhang Feng, Shanghai Jiao Tong University</i> | GT2017-63865 An Experimental Investigation of the Effects of Grooved Tip Geometry on the Flow Field in a Turbine Cascade Passage Using Stereoscopic PIV <i>Yangtao Tian, Lixiang Wang, Beihang University; Hongwei Ma, Beijing Univ Of Aeronautics</i> |

| 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 , Nedunchezian Swaminathan , University of Cambridge; Kilian Lackhove , Amsini Sadiki , Technische Universität Darmstadt; André Fischer , Max Stauffer , 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 (GzTRC); 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: Jacqueline 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 <i>Lee Galloway, Stephen Spence, Sung in Kim, Queen's University Belfast; Daniel Rusch, Klemens Vogel, René Hunziker, ABB Turbo Systems Ltd</i> | GT2017-63300 High Speed Imaging of Forced Ignition Kernels in Non-Uniform Jet Fuel/Air Mixtures <i>Sheng Wei, Brandon Sforzo, Jerry Seitzman, Georgia Institute of Technology</i> | GT2017-63295 Development and Applications of a Coupled Particle Deposition Dynamic Mesh Morphing Approach for the Numerical Simulation of Gas Turbine Flows <i>Peter Forsyth, David Gillespie, Matthew McGilvray, University of Oxford</i> |
| 10:45 | GT2017-63372 Numerical Investigation of an Asymmetric Double Suction Centrifugal Compressor With Different Backswept Angle Matching for a Wide Operating Range <i>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</i> | GT2017-63722 Simultaneous Spectral Imaging of C₂/CH• at Low-to-High Pressure Combustion <i>Jonathan E. Reyes, Kareem Ahmed, University of Central Florida</i> | GT2017-64629 Numerical Simulation of a Particle-Laden Impinging Jet: Effect of Wall Curvature on Particle Deposition <i>Paolo Venturini, Domenico Borello, Giuliano Agati, Alessandro Salvagni, Franco Rispoli, Sapienza University of Rome</i> |
| 11:15 | GT2017-63535 Aerodynamic Performances of a Centrifugal Compressor With Discrete Cavities <i>Sang-Bum Ma, Kwang-yong Kim, Inha University</i> | GT2017-65067 Assessment of UV Sensors for Flameout Detection <i>Edouard Bahous, Ram Srinivasan, Priyank Saxena, John Bowen, Solar Turbines</i> | GT2017-64649 Pressure and Temperature Effects on Particle Deposition in an Impinging Flow <i>Ryan Lundgreen, Ohio State University</i> |
| 11:45 | GT2017-63918 Influence of Adjustable Inlet Guide Vanes on the Performance Characteristics of a Shrouded Centrifugal Compressor <i>Yubao Tian, Yonghong Tang, Zhiheng Wang, Guang Xi, Xi'an Jiaotong University</i> | GT2017-65271 Development of a Recuperated Flameless Combustor for an Inverted Brayton Cycle Microturbine Used in Residential Micro-CHP <i>Michel Delanaye, Rabia Nacereddine, Mehdi Rouabah, MITIS; Andres Giraldo, MITIS/University of Liege; Valentina Fortunato, Alessandro Parente, University of Brussels</i> | GT2017-64675 Numerical Simulation With Adaptive Boundary Method for Predicting Time Evolution of Erosion Processes <i>Alessio Castorriani, Alessandro Corsini, Franco Rispoli, Paolo Venturini, Francescogiuseppe Morabito, Sapienza University of Rome</i> |
| 12:15 | | GT2017-64769 Time-Resolved Three-Component PIV Investigation of Flashback in Stratified Flames <i>Rakesh Ranjan, Noel Clemens, The University Of Texas At Austin</i> | |

| FRIDAY, JUNE 30 | | | 10:15 - 12:45 PM |
|-----------------|---|--|---|
| | 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 <i>Konstantinos Gryllias, Simona Moschini, KU Leuven; Jerome Antoni, INSA de Lyon</i> | GT2017-63705 Exergy Analysis and Performance Assessment for Different Recuperative Thermodynamic Cycles for Gas Turbine Applications <i>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</i> | <div>TUTORIAL</div> |
| 10:45 | GT2017-63181 Long-Term NOx Emission Behavior of Heavy Duty Gas Turbines: An Approach for Model-Based Monitoring and Diagnostics <i>Moritz Lipperheide, Frank Weidner, Manfred Wirsum, RWTH-Aachen University; Martin Gassner, GE Power; Stefano Bernero, GE Power</i> | GT2017-63881 Hydraulic Fuel System Simulation Using Newton-Raphson Method and its Integration With a Gas Turbine Performance Model <i>Yi-Guang Li, Chen Wang, Cranfield University</i> | |
| 11:15 | GT2017-64288 Condition Monitoring of Combustion System on Industrial Gas Turbines Based on Trend and Noise Analysis <i>Yu Zhang, Miguel Martinez-Garcia, Samuel Cruz-Manzo, University of Lincoln; Mike Garlick, Anthony Latimer, Siemens Industrial Turbomachinery Ltd</i> | GT2017-63990 Thermodynamic Modeling and Comparative Analysis of Supercritical Carbon Dioxide Brayton Cycle <i>Apostolos A. Gkountas, Anastassios M. Stamatelos, University of Thessaly; Anestis Kalfas, Aristotle Univ Of Thessaloniki</i> | |
| 11:45 | GT2017-63253 A Fault Diagnosis Approach for Rolling Element Bearing Based on S-Transform and Artificial Neural Network <i>Ningbo Zhao, Hongtao Zheng, Zhitao Wang, Harbin Engineering University; Lei Yang, No. 96317 Unit of PLA</i> | GT2017-64699 Dynamic Simulation of Startup Characteristics for the Advanced Humid Air Turbine System <i>Yutaka Watanabe, Toru Takahashi, Masashi Nakamoto, Central Research Institute of Electric Power Industry</i> | |
| 12:15 | GT2017-64899 Improving Turbomachinery Health Monitoring Using Advanced Shaft Telemetry System <i>Stephen Hesler, Electric Power Research Institute; Christopher Suprock, Suprock Technologies LLC</i> | | |

| | 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 <i>Jee Loong Hee, Santhosh Rudrasetty, Graham Johnson, Gas Turbine Transmissions Research Centre; Kathy Simmons, David Hann, University of Nottingham; Michael Walsh, Rolls Royce plc</i> | GT2017-64653 Numerical and Experimental Comparison of Forced Response of Free-Standing and Single-Connected Last Stage Blades <i>Francesco Piraccini, GE; Tim Rice, Alexey Evtushenko, Michael Mossom, GE Power; Jury Auciello, GE Oil & Gas</i> | GT2017-63217 Influence of Tailored Boundary Layer Suction on Aerodynamic Performance in Bowed Compressor Cascades <i>Ding Jun, Xin Du, Shaowen Chen, Zhou Xun, Songtao Wang, Harbin Institute of Technology; Shen Jiaqi, Zhejiang Yuexiu University of Foreign Languages</i> |
| 3:00 | GT2017-63815 Experimental Investigation of Oil Shedding From an Aero-Engine Ball Bearing at Moderate Speeds <i>Santhosh Rudrasetty, Jee Loong Hee, Graham Johnson, Gas Turbine Transmissions Research Centre; Kathy Simmons, David Hann, University of Nottingham; Michael Walsh, Rolls Royce plc</i> | GT2017-64583 Interface Reduction in Craig-Bampton Component Mode Synthesis by Orthogonal Polynomial Series <i>Luigi Carassale, Mirko Maurici, University of Genova</i> | GT2017-63781 Vortex Structures for Highly-Loaded Subsonic Compressor Cascades With Slot Injection <i>Huanlong Chen, Huaping Liu, Dongfei Zhang, Linxi Li, Harbin Institute of Technology</i> |
| 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 <i>Bok Seong Choe, Sogang University-KIST; Jeon-Kook Lee, Yong-Bok Lee, Korea Institute of Science and Technology; Doyoung Jeon, Sogang Univ</i> | GT2017-64636 An Explicit-Implicit Time Integration Approach for Finite Element Evaluation of Engine Load Following an FBO Event <i>Yiliu Weng, Lipeng Zheng, AECC Commercial Aircraft Engine Co., Ltd</i> | GT2017-63935 Numerical Investigation on Effect of Compressor Performance in Single Rotor With Micro-Vortex Generator <i>Shan Ma, Wuli Chu, Haoguang Zhang, Jinhua Lang, Haiyang Kuang, Northwestern Polytechnical University</i> |
| 4:00 | GT2017-63909 Validation of Turbulence Models for the Superlaminar Flows in Journal Bearings <i>Aoshuang Ding, Xiaodong Ren, Tsinghua University</i> | GT2017-64108 Frequency Analysis Performed on Compressor Blades of Two Types of Gas Turbines Using Campbell and SAFE Diagrams <i>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</i> | GT2017-63948 Impact of Vortex Produced by a Novel Curve-Micro Vortex Generator on Secondary Flow in Compressor Cascade <i>Shan Ma, Wuli Chu, Haoguang Zhang, Lanpan Li, Jinhua Lang, Northwestern Polytechnical University</i> |
| 4:30 | | GT2017-63702 Identification of Vibrational Resonances of Centrifugal Compressor and Radial Turbine Impellers Interacting With General Pressure Pulsations <i>Zhusan Luo, Mike Stanko, Carl Schwarz, Zhihong Annie Wang, Praxair, Inc.</i> | GT2017-63953 Effect of Blade Aspiration Slot Configuration on the Aerodynamic Performance of a Highly Loaded Aspirated Compressor Cascade <i>Zhang Longxin, le Cai, Bao Liu, Ding Jun, Songtao Wang, Harbin Institute of Technology</i> |

| 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 <i>Penghao Duan</i> , University of Oxford; <i>Choon Sooi Tan</i> , MIT; <i>Andrew Scribner</i> , Siemens Energy, Inc; <i>Anthony Malandra</i> , Siemens Power Generation | GT2017-63203 Prediction of CO and NOx Pollutants in a Stratified Bluff Body Burner <i>Pascal Gruhlke</i> , <i>Fabian Proch</i> , <i>Andreas Kempf</i> , University of Duisburg-Essen; <i>Enric Illana Mahiques</i> , <i>Stefan Dederichs</i> , <i>Christian Beck</i> , 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 <i>Hayder M.B. Obaida</i> , <i>Hakim Kadhim</i> , <i>Aldo Rona</i> , <i>Katrin Leschke</i> , <i>Jonathan P. Gostelow</i> , University of Leicester |
| 3:00 | GT2017-63220 Numerical Investigation on Loss Mechanism and Performance Improvement for a Zero Inlet Swirl Turbine Rotor <i>Wei Zhao</i> , Inst.Of Eng. Therm., Chinese Academy of Sciences; <i>Qingjun Zhao</i> , <i>Jianzhong Xu</i> , Key Laboratory of Light-Duty-Gas-Turbine; <i>Xiuming Sui</i> , <i>Weiwei Luo</i> , IET | GT2017-64446 A Generalized FGM Progress Variable Weight Optimization Using HEEDS <i>Graham Goldin</i> , <i>Yongzhe Zhang</i> , CD-adapco | GT2017-63055 Numerical Study of the Flow Past an Axial Turbine Stator Casing and Perspectives for its Management <i>Hakim Kadhim</i> , <i>Aldo Rona</i> , <i>Hayder M.B. Obaida</i> , <i>Jonathan P. Gostelow</i> , University of Leicester |
| 3:30 | GT2017-64244 Accurate Estimation of Profile Losses and Analysis of Loss Generation Mechanisms in a Turbine Cascade <i>Davide Lengani</i> , <i>Marina Ubaldi</i> , <i>Pietro Zunino</i> , Università di Genova; <i>Daniele Simoni</i> , DIME University of Genova; <i>Francesco Bertini</i> , GE AvioAero; <i>Vittorio Michelassi</i> , 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 <i>Leo Cunha Caldeira Mesquita</i> , Laboratoire EM2C, CNRS, CentraleSupélec, Université Paris-Saclay <i>Aymeric Vié</i> , Laboratoire EM2C, CNRS, CentraleSupélec, Université Paris-Saclay <i>Sébastien Ducruix</i> , CNRS | GT2017-64075 The Effect of Manufacturing Variations on Unsteady Interaction in a Transonic Turbine <i>John Clark</i> , US Air Force Research Laboratory AFRL; <i>Joseph Beck</i> , AFRL/RXMS; <i>Alex Kaszynski</i> , <i>Angela Still</i> , Universal Technology Corporation; <i>Ron-Ho Ni</i> , AeroDynamic Solutions |
| 4:00 | GT2017-64478 Multi-Fidelity Modeling of a Fully-Featured HP Turbine Stage <i>Giorgio Occhioni</i> , <i>Shahrokh Shahpar</i> , <i>Haidong Li</i> , Rolls Royce Plc | GT2017-65030 A Hybrid Flamelet Generated Manifold Model for Modeling Partially Premixed Turbulent Combustion Flames <i>Rakesh Yadav</i> , <i>Sandeep Jain</i> , ANSYS; <i>Ashoke De</i> , Indian Institute of Technology | GT2017-64727 Influence of Tip Geometry on Over Tip Leakage in Shrouded Rotor Blades With Cooling <i>Jeff Tessier</i> , <i>Gregory Vogel</i> , PSM |
| 4:30 | GT2017-63079 High-Fidelity Simulations of a Linear HPT Vane Cascade Subject to Varying Inlet Turbulence <i>Richard Pichler</i> , <i>Richard Sandberg</i> , The University of Melbourne; <i>Gregory Laskowski</i> , GE Aviation; <i>Vittorio Michelassi</i> , 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 <i>Pierre Gauthier</i> , Siemens Energy Canada | GT2017-64697 Scale-Resolving Simulations of Bypass Transition in a High-Pressure Turbine Cascade Using a Spectral-Element Discontinuous-Galerkin Method <i>Anirban Garai</i> , <i>Laslo Diosady</i> , Science and Technology Corporation; <i>Scott Murman</i> , <i>Nateri Madavan</i> , 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 Perturbations | 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 <i>Travis Smith, Benjamin Emerson, Tim Lieuwen, Georgia Institute of Technology; William Proscia, Pratt & Whitney</i> | GT2017-63080 Boundary Layer Flashback in Premixed Hydrogen-Air Flames With Acoustic Excitation <i>Vera Hoferichter, TU München – Thermodynamik; Thomas Sattelmayer, Technical Univ Munich</i> | GT2017-65005 CAD-Based Adjoint Optimization of the Stresses in a Radial Turbine <i>Tom Verstraete, Jens-Dominik Mueller, Queen Mary University of London; Lasse Mueller, Von Karman Institute</i> |
| 3:00 | GT2017-63843 Measurements and Modeling of the Dynamic Response of a Pilot Stabilized Premixed Flame Under Dual-Input Perturbation <i>Chunyan LI, Suhui LI, Xu Cheng, Min Zhu, Tsinghua University, Department of Thermal Engineering</i> | GT2017-63249 Influence of Carrier Air Preheating on Autoignition of Inline-Injected Hydrogen-Nitrogen Mixtures in Vitiated Air of High Temperature <i>Christoph Schmalhofer, Peter Griebel, German Aerospace Center (DLR); Manfred Aigner, Dlr</i> | GT2017-64123 A Centrifugal Compressor Impeller: a Multidisciplinary Optimization to Improve its Mass, Strength, and Gas-Dynamic Characteristics <i>Anton Salnikov, Maxim Danilov, Central Institute of Aviation Motors (CIAM) called P.I. Baranov</i> |
| 3:30 | GT2017-63936 Velocity Field Response of a Forced Swirl Stabilized Premixed Flame <i>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</i> | GT2017-63414 Experimental Investigation of a Bluff Body Burner for Distributed Hydrogen Injection <i>James D. Gounder, Peter Kutne, German Aerospace Center (DLR); Andrea Gruber, SINTEF Energy Research</i> | GT2017-63262 Optimization of the Operation Characteristic of a Highly Stressed Centrifugal Compressor Impeller Using Automated Optimization and Metamodeling Methods <i>Marius Geller, Christoph Schemmann, Norbert Kluck, Dortmund University of Applied Sciences and Arts</i> |
| 4:00 | GT2017-63441 Experimental Sensitivity Analysis and the Equivalence of Pulsed Forcing and Feedback Control in Thermoacoustic Systems <i>Nicholas P. Jamieson, Matthew P. Juniper, University of Cambridge</i> | GT2017-63924 Investigation of Hydrogen Enriched Methane Flame in a Dry Low Emission Industrial Prototype Burner at Atmospheric Pressure Conditions <i>Arman Ahamed Subash, Atanu Kundu, Robert Collin, Jens Klingmann, Marcus Aldén, Lund University</i> | GT2017-64535 Effect of Foil Geometry on the Static Performance of Thrust Foil Bearings <i>Gen Fu, Alexandrina Untaroiu, Virginia Tech; Erik Swanson, Xdot Engineering and Analysis</i> |
| 4:30 | | GT2017-64885 Hydrogen Enriched Methane Combustion Diluted With Exhaust Gas and Steam: Fundamental Investigation on Laminar Flames and NOx Emissions <i>Charles Lhuillier, Romain Paul Alexis Oddos, Lisa Zander, Neda Djordjevic, Technische Universität Berlin; Finn Lückhoff, Chair of Fluid Dynamics, TU Berlin; Katharina Göckeler, FDX Fluid Dynamix GmbH; C. Oliver Paschereit, H.F.I TU Berlin</i> | GT2017-64872 Design for Additive Manufacturing: Valves Without Moving Parts <i>Audrey Gaymann, Francesco Montomoli, Marco Pietropaoli, Imperial College of London</i> |

**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 Melbourne
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 Melbourne
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

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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 |
|---------------------|--|---|--|
| 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 , IL D 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 | <p>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</p> <p>Development of a Durable Vapor Phase Deposited Superhydrophobic 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</p> <p>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</p> |

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

**ASME 2017 POWER
CONFERENCE/INTERNATIONAL
CONFERENCE ON POWER
ENGINEERING (ICOPE-17)**
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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

**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

**Dry Air Turbo-Compressor Cooling Test
Results**

Technical Presentation:

PowerEnergy2017-3642

Kevin Eisemann, Barber-Nichols Inc., Arvada, CO,
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

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 CO₂
without using Carbon Capture or Reduction
processes due to its extremely high efficiency
(while using state-of-the-art NO_x, SO_x, 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

**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

**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

**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 CO2 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

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

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

| 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 1-8: 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 | 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 Czyszcwski , Beniamino Rovagnati , Sargent & Lundy, Chicago, IL, United States | 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

**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

**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*

| 11:00 AM - 12:30 PM | 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 |
| | <p>Session Organizer: Ashwani Gupta, University of Maryland, College Park, MD, United States</p> <p>Session Co-Organizer: Chun Zou, Huzhong University of Science and Technology, Wuhan, Hubei, China</p> | <p>Session Organizer: Paul Weitzel, Retired, Canal Fulton, OH, United States</p> | <p>Session Organizer: Frank Michell, American Electric Power, Columbus, OH, United States</p> |
| | <p>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</p> <p>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</p> <p>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</p> <p>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</p> | <p>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</p> <p>Development of CFB Technology in Zhejiang University Technical Presentation: PowerEnergy2017-3787 Leming Cheng, Zhejiang University, Hangzhou, China</p> | <p>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</p> <p>Risk Analysis of Power-Gen Gas Turbines with GADS Outage Data Technical Paper Publication: PowerEnergy2017-3086 Bin Zhou, FM Global, Norwood, MA, United States</p> <p>ASME B31 Hydrostatic Valve Testing Technologies Technical Presentation: PowerEnergy2017-3864 Kurt Stridinger, Calder, Parker, CO, United States</p> |

| 11:00 AM - 12:30 PM | 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 1-8: 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 |
| | <p>Session Organizer: Andrew Rister, Duke Energy, Owensville, IN, United States Session Co-Organizer: Zachary Godish, Conco Services Corporation, Verona, PA, United States</p> | <p>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</p> | <p>Session Organizer: Biplab Kumar Debnath, National Institute of Technology Meghalaya, Shillong, Meghalaya, India Session Co-Organizer: Zhenkun Sang, Shanghai Jiaotong University, Shanghai, Shanghai, China</p> |
| | <p>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</p> <p>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</p> <p>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</p> <p>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</p> | <p>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</p> <p>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</p> <p>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</p> <p>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</p> | <p>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</p> <p>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</p> <p>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</p> <p>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</p> |

ASME 2017 11TH
INTERNATIONAL CONFERENCE
ON ENERGY SUSTAINABILITYASME 2017 11TH INTERNATIONAL
CONFERENCE ON ENERGY
SUSTAINABILITYASME 2017 11TH
INTERNATIONAL CONFERENCE
ON ENERGY SUSTAINABILITYTRACK 2-1: BIOFUELS,
HYDROGEN, SYNGAS, AND
ALTERNATE FUELSTRACK 2-2: CONCENTRATING
SOLAR POWERTRACK 2-5: WIND ENERGY
SYSTEMS AND TECHNOLOGIESSession 2-1-1: Fuel Processing and
Biofuel Production TechnologiesSession 2-2-1: Concentrators and
OpticsSession 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, ChinaSession Organizer: **Sheldon Jeter**, Georgia
Institute of Technology, Atlanta, GA, United
StatesSession Organizer: **Weifei Hu**, Cornell
University, Ithaca, NY, United States
Session Co-Organizer: **Ali Mehmani**,
Columbia University, New York, NY, United
States**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 Vazquez 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 Lambrecht**, 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 kW
Metal Halide High Flux Solar Simulator**

Technical Presentation: PowerEnergy2017-3920

Jeff Roba, Nathan Siegel, Bucknell University,
Lewisburg, PA, United States

**ASME 2017 11TH
INTERNATIONAL CONFERENCE
ON ENERGY SUSTAINABILITY**
**TRACK 2-8 THERMODYNAMIC
ANALYSIS OF ENERGY SYSTEMS**
Session 2-8-1 Organic Cycles
Charlotte Convention Center West, 202A

Session Organizer: **Alireza Javanshir**,
University of North Carolina at Charlotte,
Charlotte, NC, United States

**ASME 2017 11TH
INTERNATIONAL CONFERENCE
ON ENERGY SUSTAINABILITY**
**TRACK 2-9: ENVIRONMENTAL,
ECONOMIC, AND POLICY
CONSIDERATIONS OF ADVANCED
ENERGY SYSTEMS**
**Session 2-9-2: Environmental
Engineering Panel**
Charlotte Convention Center West, 210A
**ASME 2017 15TH FUEL CELL
SCIENCE, ENGINEERING, AND
TECHNOLOGY CONFERENCE**
**TRACK 3-2: POLYMER
ELECTROLYTE MEMBRANE,
DIRECT METHANOL, &
ALKALINE FUEL CELLS**
**Session 3-2-1: Polymer Electrolyte
Membrane, Direct Methanol, &
Alkaline Fuel Cells**
Charlotte Convention Center East, 215

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

**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 Shafaei, Saeed
Mohseni**, University of Tehran, Tehran, Iran

**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

**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

**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 Shafaei, Saeed Mohseni,
University of Tehran, Tehran, Iran

Environmental Engineering

Panel Presentation:

PowerEnergy2017-3960

Frank Princiotto, Retired - USEPA, Chapel Hill, NC,
United States

Environmental Engineering

Panel Presentation:

PowerEnergy2017-3961

George Koperna, Advanced Resources International,
Inc., Arlington, VA, United States

Environmental Engineering

Panel Presentation:

PowerEnergy2017-3962

Margaret Thompson, Clemson University, Clemson,
SC, United States

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

**Hybrid Direct Methanol Fuel Cells
for Wearable- and Portable-Power
Applications**

Technical Presentation:

PowerEnergy2017-3399

Kyle Crew, 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

**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

**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

**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

| 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 |
| | <p>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</p> <p>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</p> <p>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</p> <p>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</p> <p>Preliminary Performance Evaluation of a Hybrid Compressed-Air/Pumped-Hydro Energy Storage Prototype System Technical Presentation: PowerEnergy2017-3956 Adewale Odukumaiya, 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</p> | PANEL 10:30am - 11:30am | PANEL 11:30am - 12:30pm |

**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

**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, Huazhong 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

**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

**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

**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

**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

**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, Harbin Boiler Company, Haerbin, China, **Song
Baojun**, Haerbin Boiler Company, Haerbin, China, **Xia Liangwei**,
Huang Ying, Haerbin Boiler Company, Haerbin, China

**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

**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 Helvacı, Bournemouth University,
Bournemouth, United Kingdom, **Zulfiqar Ahmad Khan**,
Bournemouth University, Poole, United Kingdom

**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

**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

**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.<D, 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

**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 (NH₄)₂SO₄ on V₂O₅/TiO₂ 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

**ASME 2017 11TH
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ON ENERGY SUSTAINABILITY**
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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

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

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

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, Uttarakhand, India

Light Weight Solar Panel
Technical Presentation:
PowerEnergy2017-3069
Amanda Michelle Simran, Karunya University, Chennai Tamil Nadu, Tamil Nadu, India

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

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

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

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

**ASME 2017 11TH
INTERNATIONAL CONFERENCE
ON ENERGY SUSTAINABILITY**
**TRACK 2-8: THERMODYNAMIC
ANALYSIS OF ENERGY SYSTEMS**
Session 2-8-2: Power Cycles
Charlotte Convention Center West, 202A

Session Organizer: **Ali Al-Alili**, The Petroleum Institute, Abu Dhabi, United Arab Emirates

**ASME 2017 11TH
INTERNATIONAL CONFERENCE
ON ENERGY SUSTAINABILITY**
**TRACK 2-10: SUSTAINABLE
BUILDING ENERGY SYSTEMS**
**Session 2-10-4: Advances in Energy
Sustainability in the Building Sector-II**
Charlotte Convention Center West, 210A

Session Organizer: **Jorge Gonzalez**, City College of New York, New York, NY, United States
Session Co-Organizer: **Antonio Bula**, Universidad del Norte, Barranquilla, Colombia

**ASME 2017 15TH FUEL CELL
SCIENCE, ENGINEERING, AND
TECHNOLOGY CONFERENCE**
**TRACK 3-2: POLYMER
ELECTROLYTE MEMBRANE,
DIRECT METHANOL, &
ALKALINE FUEL CELLS**
**Session 3-2-2: Polymer Electrolyte
Membrane, Direct Methanol, &
Alkaline Fuel Cells -II**
Charlotte Convention Center East, 215

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

**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

**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.

**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.

**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

**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

**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

**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

**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

**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

**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

ASME 2017 ENERGY
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TRACK 4-4: THERMAL ENERGY
STORAGE SYSTEMSTRACK 5-8: THERMAL
HYDRAULICS AND
COMPUTATIONAL FLUID
DYNAMICSSession 4-4-1: Thermal Energy
Storage I: Materials and
ComponentsSession 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

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
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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 Shipping**, 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

**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

**MILD Combustion Regimes of Hot Diluted
Methane in Opposed Flow with a WSGM
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

**Success of Ammonia-fired, Regenerator-
heated, Diffusion Combustion Gas Turbine
Power Generation and Prospect of Low
NO_x 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

**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

**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

**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

**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

**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

**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
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**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
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Session Organizer: **Xiang Xiaofeng**, Xi'an Thermal Power Research Institute Co. Ltd, Xi'an, China
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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

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

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

Study on a New Humidifier Model of PEMFC
Technical Presentation:
PowerEnergy2017-3648
Chunliang Zhou, Harbin Engineering University, Heilongjiang Province, Heilongjiang, 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

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

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

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

Rxperimental Investigation of Performance Effect of Working Parameters on Bi-evaporator Compression/ejection Refrigeration System
Technical Paper Publication:
PowerEnergy2017-3198
Huadong Liu, X.I Wei, Zhenzhen Wang, Lihong Geng, Chunhe Li, Zhengzhou University, Zhengzhou, 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

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

Pilot Experimental Study of New Urea Hydrolysis for DeNO_x in Coal Plant
Technical Paper Publication:
PowerEnergy2017-3021
Xiang Xiaofeng, Xi'an Thermal Power Research Institute Co. Ltd, Xi'an, China

**ASME 2017 POWER
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**ASME 2017 11TH
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ON ENERGY SUSTAINABILITY**
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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

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

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

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

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

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 Nwugo, Johnson Igboke**, 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

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

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

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

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

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

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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

**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

**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

**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

**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

**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 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

**Modelling and Simulation of a Hybrid
Cogeneration System for Institutional
Tropical Buildings, Part II: Solar Energy**

Technical Presentation:

PowerEnergy2017-3706

Jose D Tejada, **Jorge Echeverry**, **Ricardo Mejia**,
Andy Castillo, **Santiago Sierra**, **Lesme Corredor**,
Universidad del Norte, Barranquilla, Colombia

**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

**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), 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 Ce_{1-x}Sm_xO₂ (x = 0.1 - 0.4),
Ce_{0.8}Sm_{0.2}O₂/Na₂CO₃, Ce_{0.8}Sm_{0.2}O₂/LiCO₃
and Ce_{0.8}Sm_{0.2}O₂/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, **Weiqliang Zhang**, Xi'an Jiaotong University, Xi'an, China

ASME 2017 POWER CONFERENCE/
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INTERNATIONAL CONFERENCE ON
POWER ENGINEERING (ICOPE-17)TRACK 1-1: FUELS, COMBUSTION
& MATERIAL HANDLINGTRACK 1-2: COMBUSTION
TURBINESTRACK 1-3: BOILERS & HEAT
RECOVERY STEAM GENERATORSSession 1-1-4: Advanced Biomass
Combustion Issues - ISession 1-2-1: Combined and Simple
Cycle Plant PerformanceSession 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
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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

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

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

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

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

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

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

The Optimization of Exhaust Gas Temperature
Operation Strategy for CCGP

Technical Presentation: PowerEnergy2017-3780

Shuhong Peng, Kelian 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

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 Cold-forming Properties
of Sanicro 25 - A Potential Candidate
for Superheater and Reheaters in High
Efficiency AISC 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, Sandviken, Sweden, **Glenn Darley**, Sandvik, Shanghai, China

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

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INTERNATIONAL CONFERENCE ON
POWER ENGINEERING (ICOPE-17)TRACK 1-7: RENEWABLE
ENERGY SYSTEMS: SOLAR,
WIND, HYDRO AND
GEOTHERMALTRACK 1-7: RENEWABLE ENERGY
SYSTEMS: SOLAR, WIND, HYDRO
AND GEOTHERMALTRACK 1-8: HEAT EXCHANGERS,
CONDENSERS, COOLING
SYSTEMS, AND BALANCE-OF-
PLANTSession 1-7-1: Advanced
Technologies for Wind EnergySession 1-7-2: Hydro Power,
Distributed Power, and Small Scale
GenerationSession 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
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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 Englebreton**, 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. Barthelme, 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

**ASME 2017 POWER CONFERENCE/
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POWER ENGINEERING (ICOPE-17)**
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**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
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**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

**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

**New Structure and Manufacturing Process of
Integral 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

**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

**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

**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

**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

**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

**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

**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

**Design and Construction of a Solar Mobile
Anaerobic Digester 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

**ASME 2017 11TH
INTERNATIONAL CONFERENCE
ON ENERGY SUSTAINABILITY**
**ASME 2017 15TH FUEL CELL
SCIENCE, ENGINEERING, AND
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**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,
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Session Organizer: **David Tucker**, National
Energy Technology Laboratory, Morgantown,
WV, United States

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**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 Razzaghpahanah, 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

**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

**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

**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 Rodríguez-Aseguinolaza**, CIC
Energigune, Minano, Alava, Spain, **Bruno D'Aguanno**,
CIC Energigune, Miñano, Alava, Spain

**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

**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
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Switzerland

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| 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 | | |
| <p>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</p> <p>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</p> <p>Critical Nuclear Structure Roofing: Condition Assessment and Rehabilitation Approach Technical Presentation: PowerEnergy2017-3959 Anna Pridmore, Erik Wagner, Structural Technologies, Columbia, MD, United States</p> <p>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</p> | <p>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</p> <p>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</p> <p>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</p> | |

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INTERNATIONAL CONFERENCE ON
POWER ENGINEERING (ICOPE-17)TRACK 1-1: FUELS, COMBUSTION
& MATERIAL HANDLINGTRACK 1-1: FUELS, COMBUSTION &
MATERIAL HANDLINGTRACK 1-1: FUELS, COMBUSTION
& MATERIAL HANDLINGSession 1-1-5: Advanced
Gasification and Pyrolysis SystemsSession 1-1-8: Advanced and
Alternative Fuels - ISession 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

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

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

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

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

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

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

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

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

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

Improve SO₂ 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

Simultaneous Removal of NO_x and SO₂ 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

Experimental Investigation of Activation Solution for On-line Activating SCR-DeNO_x Catalyst

Technical Paper Publication:

PowerEnergy2017-3476

Dong Lin Chen, Tuo Ye, Xi Zeng, Changsha University of Science and Technology, Changsha, Hunan, 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 1-2: COMBUSTION
TURBINESTRACK 1-3: BOILERS & HEAT
RECOVERY STEAM GENERATORSTRACK 1-8: HEAT EXCHANGERS,
CONDENSERS, COOLING
SYSTEMS, AND BALANCE-OF-
PLANTSession 1-2-2: Gas Turbine
UpgradesSession 1-3-5: Steam Generator
OperationSession 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

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, 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 Presentation: 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 Shiyong 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, Southeast 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

**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

**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

**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

**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

**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

**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

**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

**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

**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

**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

**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

**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

**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

**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

**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

**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, Shinjuku, Tokyo,
Japan

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
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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 HANDLINGTRACK 1-1: FUELS, COMBUSTION &
MATERIAL HANDLINGTRACK 1-1: FUELS, COMBUSTION
& MATERIAL HANDLINGSession 1-1-6: Advanced Chemical
Looping SystemsSession 1-1-9: Advanced and
Alternative Fuels - IISession 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, Kinergetics 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

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

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

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

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, **Mordechai Reshef**, Israel Electric Corporation, Haifa, Israel

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

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

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

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

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)

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

**ASME 2017 POWER
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ENGINEERING (ICOPE-17)**
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ENGINEERING (ICOPE-17)**
**ASME 2017 POWER
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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

An Investigation on Turbulence Generation in Split-Diesel Engine
Technical Presentation:
PowerEnergy2017-3834
Youssef Attai, Helwan University, Cairo, Egypt

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

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

Mist Injection in Turbine Blade Cooling System
Technical Presentation:
PowerEnergy2017-3830
Hamad Alhajeri, College of Technical Studies, PAAET, Adyia, Kuwait, **Joao Amaral Teixeira**, Cranfield University, Cranfield, 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

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

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

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

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

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

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

**ASME 2017 POWER
CONFERENCE/INTERNATIONAL
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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, Hangzhou, 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 Determining 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
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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

**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 Treatment**

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

**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 | 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 1-1: 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, 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 CO₂ 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 , NewCO ₂ 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 SO₂ 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 Na₂CO₃ 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 | |

| 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 |
| <p>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</p> <p>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</p> <p>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</p> | <p>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</p> <p>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</p> <p>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</p> | <p>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</p> <p>Using On-Line Acoustic Monitoring to Locate Tube Leaks Technical Presentation: PowerEnergy2017-3865 Ian du Bois, Mistras Group, Princeton Junction, NJ, United States</p> |

| 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, 210A | 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 |
| 11:00 AM - 12:30 PM | 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 , Shiwan 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 | | |

ASME 2017 11TH
INTERNATIONAL CONFERENCE
ON ENERGY SUSTAINABILITYASME 2017 11TH INTERNATIONAL
CONFERENCE ON ENERGY
SUSTAINABILITYASME 2017 11TH
INTERNATIONAL CONFERENCE
ON ENERGY SUSTAINABILITYTRACK 2-2: CONCENTRATING
SOLAR POWERTRACK 2-6: GEOTHERMAL
POWER, HYDRO/OCEAN POWER,
AND EMERGING ENERGY
TECHNOLOGIESTRACK 2-7: CHP AND HYBRID
POWER & ENERGY SYSTEMSSession 2-2-6: Advanced
Power CyclesSession 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

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 Técnica Federico Santa María, Valparaíso, 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, 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 Altarragemy, Fatemeh Hadi, **Muhammad Akbar**, Tennessee State University, Nashville, TN, United States, **Matthew Traun**, 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

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**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

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**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,
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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

**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

**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

**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

**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

**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

**The Regeneration Effect of H₂SO₄ on V-W-
TiO₂ 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

**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

**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

**Prediction Study of Split-Diesel Engine
Performance**

Technical Presentation:

PowerEnergy2017-3835

Youssef Attai, Helwan University, Cairo, Egypt

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**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**
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Charlotte Convention Center, West, 210B

Session Organizer: **Ashwani Gupta**,
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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,
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**Analysis of the Aerodynamic Losses in a
Supersonic Turbine**
Technical Paper Publication:
PowerEnergy2017-3624
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West Lafayette, IN, United States, **Elena Collado-
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**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,
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Singapore, Singapore, **Yongli Zhou, Wei Chen**, Chongqing
University, Chongqing, China, **Jianyong Ouyang**, National
University of Singapore, Singapore, Singapore, **Kuan Sun**,
Chongqing University, Chongqing, China

**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

**ASME 2017 POWER
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**TRACK 1-9: STEAM TURBINE-
GENERATORS, ELECTRIC
GENERATORS, TRANSFORMERS,
SWITCHGEAR, AND ELECTRIC
BOP & AUXILIARIES**
**Session 1-9-5 :Mechanical Aspects
of Turbines, Generators and
Auxiliaries**
Charlotte Convention Center West, 210A

Session Organizer: **Lyle Branagan**, Pioneer Motor Bearing Co., Kings Mountain, NC, United States
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**ASME 2017 POWER
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ENGINEERING (ICOPE-17)**
**TRACK 1-11: 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**
Charlotte Convention Center West, 201A

Session Organizer: **Tarannom Parhizkar**, Sharif University of Technology, Los Angeles, CA, United States
Session Co-Organizer: **Bo Zemin**, Shanghai Jiao Tong University, Shanghai, China

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**TRACK 1-13: ENERGY WATER
SUSTAINABILITY**
**Session 1-13-5: Water Consumption
& Withdrawal at Thermal Power
Plants**
Charlotte Convention Center West, 202B

Session Organizer: **Erik Shuster**, US DOE/ National Energy Technology Laboratory, Pittsburgh, PA, United States

**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

**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

**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

**Determination of Maximum Flow Rates and
Diversity Factors of Populations: Colombian
Caribbean Region**
Technical Paper Publication:
PowerEnergy2017-3033
Maicol M. Marengo Marriaga, Gases del Caribe S.A E.S.P,
Barranquilla, Atlantico, Colombia, **Guillermo Cujar**, Gases del
Caribe S.A., Barranquilla, Atlantico, Colombia

**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

**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

**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**,
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Laboratory, Albuquerque, NY, United States,
Diana Bauer, US DOE, Washington, DC, United
States, **Calvin Ray Shaneyfelt**, **Geoff Klise**, Sandia
National Laboratory, Albuquerque, NM, United
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**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

**Thermoelectric Power Technology Choices
Based on Water Availability**
Technical Presentation:
PowerEnergy2017-3897
Erik Shuster, US DOE/National Energy
Technology Laboratory, Pittsburgh, PA, United
States

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**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

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 Tecnológica 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

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**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
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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
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**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 Kozhikkootungal 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, Uttarakhand, 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

**ASME 2017 POWER
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**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
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**Session 1-6-1: Procurement and
Supply Chain Management**
**Session 1-7-7: Small Power
Systems and Presentations**
Charlotte Convention Center West, 206B
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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

**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

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**TRACK 1-9: STEAM TURBINE-
GENERATORS, ELECTRIC
GENERATORS, TRANSFORMERS,
SWITCHGEAR, AND ELECTRIC
BOP & AUXILIARIES**
**Session 1-9-6: Topics in Steam
Turbine and Generator
Auxiliaries**
Charlotte Convention Center West, 210A

Session Organizer: **Thomas Bauer**, Svobatech, Inc., Wuerenlingen, Switzerland
Session Co-Organizer: **James Wieters**, EPRI, Charlotte, NC, United States

**ASME 2017 POWER
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**TRACK 1-11: PLANT OPERATIONS,
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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**
Charlotte Convention Center West, 201A

Session Organizer: **Noman Sadi**, Arkansas State University, Jonesboro, AR, United States
Session Co-Organizer: **Christopher Marcella** C.E.M., Wheelabrator, Methuen, MA, United States

**ASME 2017 POWER
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**TRACK 1-11: 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**
Charlotte Convention Center West, 204

Session Organizer: **Brian Wodka**, RMF Engineering, York, PA, United States

**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

**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

**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

**Dempster-Shafer-based Sensor Fusion
Approach for Machinery Fault Diagnosis**

Technical Paper Publication:

PowerEnergy2017-3715

Kar Hoo Hui, Institute of Noise and Vibration, Kuala Lumpur, Wilayah Persekutuan, Malaysia, **Meng Hee Lim, Salman Leong**, Universiti Teknologi Malaysia, Kuala Lumpur, Kuala Lumpur, Malaysia

**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

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 States

**Generator Stiffness Change Diagnostic and
Solutions**

Technical Presentation:

PowerEnergy2017-3856

Ahmed Alabdan, Saudi Electricity Company, ABHA, Saudi Arabia

**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

**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

**ASME 2017 POWER
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ON ENERGY SUSTAINABILITY**
**ASME 2017 11TH
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ON ENERGY SUSTAINABILITY**
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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 Fédérale 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
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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

**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

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George D. Dumbaugh, PE

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Andrew Rister

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Noman Sadi

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Lele Yu

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Bo Zemin

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Yesaswi N. Chilamkurti

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Christopher Chi-Ming Chu

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Xiang Xiaofeng

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Clifford Ho

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Ali Mehmani

Wind Energy Systems and Technologies

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Jie Zhang

Wind Energy Systems and Technologies

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Ali Mehmani

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Weifei Hu

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Craig Turchi

Geothermal Power, Hydro/Ocean Power, and Emerging Energy Technologies

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Ben Xu

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M. Keith Sharp

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Sustainable Building Energy Systems

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Jorge Gonzalez

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Antonio Bula

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Polymer Electrolyte Membrane, Direct Methanol, & Alkaline Fuel Cells

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Prodip K. Das

Polymer Electrolyte Membrane, Direct Methanol, & Alkaline Fuel Cells

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Polymer Electrolyte Membrane, Direct Methanol, & Alkaline Fuel Cells

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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

Thermal 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-I

George Mesina

Thermal Hydraulics and Computational Fluid Dynamics

Session 5-8-1 Thermal Hydraulics and CFD Challenges-I

Jovica Riznic

Thermal Hydraulics and Computational Fluid Dynamics

Session 5-8-1 Thermal Hydraulics and CFD Challenges-I

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. Bel

Student Competition

Session 1-14-2 Student Competition

Joseph Ciras

Student Competition

Session 1-14-3 Student Competition

André 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

Notes

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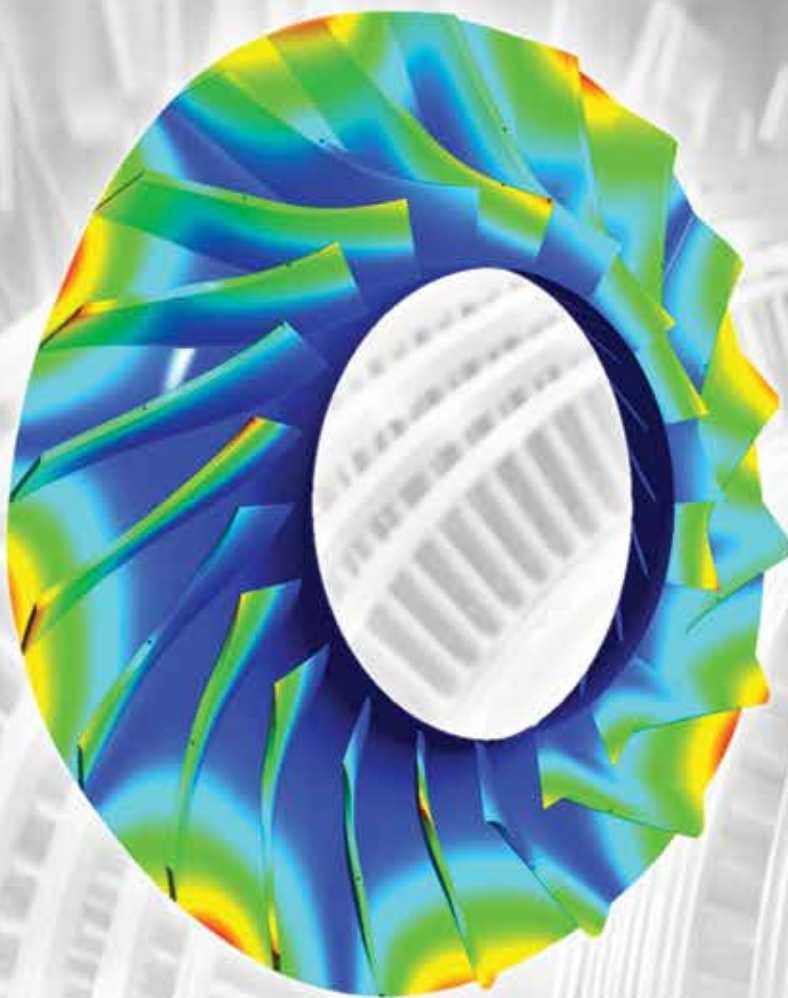


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