ASMEICE DIVISION NEWS JULY 2025



INTERNAL COMBUSTION ENGINE DIVISION

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Message from the Division Chair

Sundar Krishnan



It is my pleasure to write this message as the new Chair of the ASME Internal Combustion Engine Division. At the outset, let me express my appreciation and gratitude for everyone who is involved with the Division for your dedication and service. I believe that our Division's continuing success is firmly rooted in, above all, the passion

that everyone has for IC engines. It is my honor and privilege to lead our Division this year. Before going further, I would be remiss if I didn't thank our Past Chair, Dr. **Kelly Senecal**, for his yeoman service and exceptional leadership over the past year and a half. Suffice it to say that with such large shoes to fill, I might just have to wear sandals!

The Division is preparing for various events and activities in the upcoming year, including the 2025 ICE Forward conference, which will be held in Milwaukee, Wis-Drs. Scott Curran and Andrea consin, in October. Strzelec are serving as the Conference Chair and Co-Chair for this year's conference. They are assembling an exciting schedule, including keynotes, panels, paper and poster presentations, networking opportunities, technical tours, and for the first time, a Women in ICE (WICE) event. They will provide a more detailed description of the conference events later in this newsletter. This year's event promises excellent technical content as well as more opportunities for ICE professionals, educators, and students to make meaningful personal connections and professional collaborations. I encourage everyone to attend and participate in this year's conference.

I am pleased to share that our "The Future of the Internal Combustion Engine" webinar series continues to attract significant online attendance and active participation. I thank Dr. **Ronald Grover** and the webinar committee for their strenuous efforts in assembling an exceptional group of webinar speakers over the past year. It is evident that this webinar series serves as an excellent platform for the timely dissemination of state-of-the -art knowledge and information in pertinent ICE-related topics. With the support and active engagement of our Division members, we hope to build on recent successes in this regard.

Another exciting recent development is the new ASME-sponsored ICE Forward International Symposium to be held in Bologna, Italy in June 2026. Our newer Division members may or may not know but until a decade or so ago, the ICE Forward Conference used to be held outside North America once every few years. The last such conference was held in 2012 in Torino, Italy; those of us who attended that excellent event may have many fond memories. The new ICE Forward International Symposium is a deliberate attempt to increase our Division's international presence, coincidentally starting from Italy again! Dr. **Vittorio Ravaglioli** will serve as the 2026 Symposium Chair, and the University of Bologna will be the local host. Please mark your calendars to attend the symposium from June 3–5, 2026.

Finally, I wish to recognize the ASME-level award winners from our Division: Dr. Kelly Senecal for winning the ASME Soichiro Honda Medal, Prof. Avinash Kumar Agarwal for winning the ASME Internal Combustion Engine Award, and Dr. Bradley Zigler for winning the ASME Dedicated Service Award. Kudos and congratulations to Kelly and Brad, who are past chairs of the Division!

As you all know, the ICE Division strives to provide inclusive forums for free exchange of technical knowledge and information between a diversity of subject matter experts and active learners from academia, industry, and government laboratories. We are especially proud of our continuing commitment to fostering a welcoming environment for everyone who is interested in ICE. As we embark on an exciting year ahead, I encourage all of you to actively participate in the Division's activities in all possible ways. To continue advancing the ICE, let's keep our eyes forward!



Join us at ASME ICE Forward 2025 + Rail Transportation Symposium in Milwaukee!





Andrea Strzelec



Building on the success of the 2024 ASME ICE Forward Conference in San Antonio, we're excited to announce the 2025 conference, taking place October 19–22 in Milwaukee, Wisconsin, USA. Milwaukee is a hub for engine systems research, development, and manufacturing, and is close to several leading engine research universities making it the ideal location to showcase the latest advancements in engine systems from around the world.

New for 2025: The ASME Rail Transportation Symposium will be co-located with ICE Forward, offering expanded opportunities for collaboration and learning.

Program

The event kicks off on Sunday, October 19, with a welcome reception and technical poster session led by **Emma Zhao**. The program includes technical paper and oral -only presentations across all tracks, along with keynote addresses, panel discussions, and a distinguished lecture.

Monday

- Keynote Dr. Cathy Choi, Knoxville Locomotive Works
- Panel Big Opportunities for Small Engines

Tuesday

- Keynote Alex Leitner-Audoui, INNIO Waukesha
- Distinguished Lecture Emeritus Prof. Rolf Reitz, University of Wisconsin–Madison
- Panel International Trends in IC Engine Systems



Special Events

- Women in ICE (WICE) Mentoring & Networking Event — Monday evening, October 20, led by Cathy Choi and the WICE Leadership Team. Information and registration is available on the event page.
- ICED Undergraduate Presentation Competition Monday lunch, coordinated by Noah Van Dam. Submissions are open through August 1.
- Honors and Awards Banquet Tuesday evening, hosted by Honors and Awards Chair Riccardo Scarcelli, celebrating outstanding contributions across ASME and the ICE Division.
- Technical Tour Wednesday morning at Briggs & Stratton, located near the conference hotel. Open to the first 100 registrants.

We encourage you to register early and book your stay at the Sheraton Milwaukee Brookfield Hotel. Early-registration discounts are available through October 18. Visit the conference website for details, registration, and hotel booking: <u>https://event.asme.org/ICEF</u>.

We are honored to chair this year's conference. ASME ICE Forward 2025 is a team effort made possible by our dedicated volunteers, authors, reviewers, speakers, sponsors, and ASME staff. Please join us in Milwaukee as we celebrate and advance the field of internal combustion engine systems.

We look forward to seeing you there, **Scott & Andrea**





ASME ICEF/RTS 2025 THE ICE FORWARD CONFERENCE WITH RAIL TRANSPORTATION SYMPOSIUM 2025

ASME ICE Forward and Rail Transportation Symposium 2025 will be held **October 19–21 in Milwaukee, Wisconsin**, a hub of internal combustion engine system development.

Register today and reserve your room at the Sheraton Milwaukee Brookfield Hotel to join us in helping guide the future of internal combustion engine systems with leading experts from industry, academia, and the national labs.

Register Today





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2025 CIMAC Congress Recap

Christopher Stoos

The 2025 CIMAC Congress was held in Zurich, Switzerland May 19th through 23rd. The Congress was well attended, with nearly 1,000 total participants and over 200 technical presentations over four event-filled days at the Kongresshaus Zurich.

Events kicked off with the opening ceremony, which included keynote addresses from Professor Lynn Loo (Global Centre for Maritime Decarbonisation) and Carsten Rolle (World Energy Council) which focused heavily on decarbonization efforts throughout industry, how that conversion is taking place, and the realities of what that means to operations across the world.



Dr. Carsten Rolle (World Energy Council) presenting his CIMAC opening keynote address

The opening ceremony also included traditional Swiss musical performances and a demonstration of Swiss Flag Throwing, which is considered one of the oldest national sports of Switzerland.

Technical sessions began after the opening ceremony was concluded, with eight sessions being held that afternoon covering properties of future fuels, combustion development, dual fuel engine operations and more. A welcome reception was held at the Kongresshaus on Monday evening.



Prof. Stefan Michel (IMD)

Tuesday started with eight technical sessions covering topics such as ammonia and methanol fuel, turbocharger technologies, and lubricants for low-carbon fuels. The technical sessions were followed by another keynote address, given by Professor **Stefan Michel**, entitled "Strategic thinking on the four levels of AI". While not engine related, the keynote provided insight into what "artificial intelligence" is, what it means, and how we should expect it to impact the engine and transportation industries. This was followed by a panel discussion on digitalization, digital twins, and how those technologies are transforming vehicle design and engine operations.

Tuesday's technical portion concluded with four additional sessions covering fuel system design, alternative fuel combustion, and ring-liner interactions.



Tuesday concluded with an evening hosted by Accelleron Industries at Circus Knie, which is the Swiss National Circus. The evening included traditional Swiss music and events, as well as an incredible private performance by the circus troop for CIMAC attendees.



Knie Circus performers doing things that humans probably shouldn't do

Wednesday consisted of another twelve technical sessions, covering a broad array of topics including biofuels, future fuels, combustion, controls, and exhaust aftertreatment systems.

In addition to the many technical presentations, there was also a very good panel discussion on Wednesday afternoon on "Decarbonizing Marine Across the Value Chain". Panelists included Eman Abdalla (Cargill), Alexandra Ebbinghaus (Shell), Giuseppe Gargiulop (MSC), Shingo Mizutani (NYK Ship Management), and Christoph Rofka (Accelleron) and was moderated by Kathrin Lau (Ship & Offshore). The panel discussed how the various companies (shippers, suppliers, OEMs, end users) see their role in decarbonization, and what they are doing to make changes in their industry.



July 2025

Marine Decarbonization Panel Discussion

Thursday concluded the technical portion of the Congress, with a packed schedule of technical presentations covering sixteen different sessions over the course of the day. The sessions covered a plethora of topics, including alternative fuels such as ammonia, hydrogen, and methanol, conventional fuels, new engine concepts, controls, and more. All published papers from the conference are available to ICED members. For more details on how to access the papers from this and previous CIMAC Congresses, see the information from **Adam Klingbeil** (ICED CIMAC Representative) on the following page.

The congress concluded on Friday with three technical tour options, including the following:

- DUAP
- WinGD + Kistler + Hug + Burckhardt Compression
- Accelleron and LiBs

The next CIMAC Congress is scheduled for late Spring 2028. As of now, the location has not been officially announced, but if you like mussels and French fries, you likely won't be disappointed.



ASME ICE Division Members: Rediscover Your CIMAC Membership Benefits

ICED's Long-Standing Partnership with CIMAC National Member Association

We would like to remind all ASME Internal Combustion Engine Division (ICED) members of a valuable but often overlooked benefit: your existing membership in the CIMAC United States National Member Association (NMA). This long-standing partnership has been providing ICED associates with additional resources and opportunities in the large engine technology sector, though many associates may not be aware of these advantages.

What is CIMAC?

CIMAC (International Council on Combustion Engines) is a prestigious global organization that provides a forum for technical interchange among all parties interested in piston engines, gas turbine systems, non-shaftline propulsion systems, automation and controls, system integration, and digitalization solutions. The organization brings together industry leaders, researchers, and practitioners to address technological trends and developments across the large engine industry.

CIMAC's mission includes developing globally harmonized standards and regulations, striving for zero environmental impact of large engine technology, facilitating safe and efficient operations through digitalization, and promoting innovative solutions in the industry.

Your Existing CIMAC Membership Benefits

Industry-Shaping Working Groups—As an ICED member, you can volunteer to participate in CIMAC working groups where industry experts collaborate on critical topics affecting the large engine industry. These groups develop recommendations and position papers that often form the foundation for industry-wide standards and techniques.

Discounted World Congress Registration—The prestigious CIMAC World Congress, held every three years, offers significant registration discounts to members. At the recent May 2025 Congress, members saved 400 Euro on registration fees (2250 Euro vs. 2650 Euro standard rate).

IMO Consultative Status—In July 2024, CIMAC achieved an important milestone by receiving official consultative status with the International Maritime Organization (IMO). As the United Nations specialized agency responsible for maritime safety and pollution prevention, IMO's work directly supports UN sustainable development goals. This connection provides CIMAC members with greater visibility into international maritime regulations and standards development.

National Member Association Participation—As part of this membership benefit, ICED members can also participate in the CIMAC National Member Association (NMA). While the NMA is currently in a rebuilding phase, there are emerging opportunities to help strengthen the collaborative relationship between CIMAC and ASME. Associates interested in contributing to these efforts and shaping the future direction of the NMA are encouraged to reach out for more information.

How to Access Your CIMAC Membership Benefits

To activate your member access, navigate to the CIMAC registration website (<u>https://www.cimac.com/registration-for-login.html</u>) and fill out the necessary information to register.

If you haven't received a response after 1-2 weeks, try using the password reset function, which should trigger the activation of your membership access

Please note that CIMAC may not have the names of all ICED members in their system, and it is ASME's responsibility to verify membership. If you encounter any difficulties accessing your benefits after following these steps, or if you have questions about participation in the NMA, please contact: Adam Klingbeil (<u>Adam.Klingbeil@Wabtec.com</u>) or Chris Stoos (<u>christopher.stoos@swri.org</u>)

We encourage all members to take full advantage of these valuable benefits.



Women in Internal Combustion Engines (WICE) is an organization that aims to increase the recognition and representation of engineers within the internal combustion engine field by championing the inclusion of women and all technical individuals from a wide range of backgrounds, experiences, and perspectives.



WOMEN IN **NTERNAL** COMBUSTION INGINES

July 2025

We invite you to join us in this important initiative!

Meet the current WICE leadership team:



Cathy Choi, Chair **Knoxville Locomotive Works**



Emily Bierman, Secretary John Deere



Stefania Esposito, Outreach University of Bath



Laura Herrera, Sr. TEC Operations Manager ASME

Upcoming ICED Webinar

Recent Progress in Understanding H2 Abnormal Combustion in IC Engines – Technology Development and Modeling Perspectives

July 23, 2025, 12:00 – 1:00 PM EST

As hydrogen re-emerges as a promising carbon-free fuel for internal combustion engines, the fuel presents some challenges in controlling combustion due to its unique physical and chemical properties. One of the most critical issues is abnormal combustion, including knock, preignition, and backfiring, which can significantly limit performance, efficiency, and engine durability. This ASME webinar will provide an overview of the latest developments in hydrogen spark -ignition engine research, with a focus on the mechanisms and characteristics of abnormal combustion in H₂-fueled systems. The session will cover the following topics: (1) fundamental combustion behavior of hydrogen in SI engines; (2) current experimental findings and observed abnormal combustion modes; (3) advancements in engine design and control strategies for mitigation; (4) progress in computational modelling and simulation tools for prediction and prevention. By combining insights from experimental research and state-of-the-art simulation approaches, the webinar aims to equip engineers, researchers, and technologists with the knowledge to understand and approach abnormal combustion mitigation in hydrogen engines.

Speakers



Paul Leggott, Cummin Inc.



Andrea Piano, Politecnico di Torino

Moderated by:

Yu Zhang (Cummins Inc.) Muhsin Ameen (Argonne National Laboratory)





International ICE Forward Symposium

STUDIORUM | DEPARTMENT

June 3-5, 2026 | Bologna, Italy

The International ICE Forward Symposium will be held in Bologna, in the center of Italy's Motor Valley.

Don't miss this opportunity to present your research at an event featuring company visits, presentations by leading experts from around the world, and a social dinner at the famous Ferrari Museum in Maranello!



2025 ASME Society Awards

ASME's Internal Combustion Engine (ICE) Division recognizes outstanding achievements in the internal combustion engine field through its honors and awards program. Each year, ICEF hosts the Awards and Honors Banquet where we recognize these remarkable individuals. This year's awards banquet will be held on Tuesday, October 21 from 6:30 – 9:00 PM.

View more information on the ICE awards <u>here</u>. Special thanks go to the numerous volunteers that serve on ICE Division's award committees. Without their expertise, time, and dedication, this would not be possible. Congratulations to all award recipients!

ASME SOICHIRO HONDA MEDAL

The Soichiro Honda Medal Award recognizes an individual for an outstanding achievement or a series of significant engineering contributions in developing improvements in the field of personal transportation.



Kelly Senecal Convergent Science, Inc.

ASME INTERNAL COMBUSTION ENGINE AWARD

The Internal Combustion Engine Award (ICE) recognizes eminent achievement or distinguished contribution over a substantial period of time, which may result from research, innovation, or education in advancing the art of engineering in the field of internal combustion engines; or in directing the efforts and accomplishments of those engaged in engineering practice in the design, development, application, and operation of internal combustion engines. In 1966, by bequest, the Diesel and Gas Engine Power Division established this award.



Avinash Kumar Agarwal Indian Institute of Technology

ASME DEDICATED SERVICE AWARD

The ASME Dedicated Service Award honors unusual dedicated voluntary service to the Society marked by outstanding performance, demonstrated effective leadership, prolonged and committed service, devotion, enthusiasm and faithfulness.



Bradley Zigler





• ICED Webinar Series The Future of the Internal Combustion Engine

The ASME Internal Combustion Engine (ICE) Division Executive Committee has been holding a complimentary webinar series titled "The Future of the Internal Combustion Engine". The goal of this series is to communicate the role of the ICE in our decarbonized society.

Topics include

- Light Duty
- Heavy Duty
- Combustion
- Hybridization

- Alternative Fuels
- Computer Simulations
- AI, and much more!





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Upcoming ASME Events

<u>PVP 2025</u>

Pressure Vessels and Piping Conference July 20–25 Montréal, QC Canada

<u>QNDE 2025</u>

Progress in Quantitative Nondestructive Evaluation July 23–25 Montréal, QC Canada

FEDSM 2025

Fluid Engineering Division Summer Meeting July 27–30 Philadelphia, PA USA

IDETC-CIE 2025

International Design Engineering Technical Conference August 17–20 Anaheim, CA USA

SMASIS 2025

Smart Materials, Adaptive Structures, and Intelligent Systems September 8–10 St. Louis, MO USA

IMECE India 2025

International Mechanical Engineering Congress & Expo India September 10–13 Hyderabad, India

CARD 2025

Conference for Advanced Reactor Deployment September 29–October 1 Charlotte, NC USA

ICEF 2025

The ICE Forward Conference with Rail Transportation Symposium October 19–21 Milwaukee, WI USA

DTOG 2025

Energizing Transformation in Oil and Gas October 27–29 Houston, TX USA

IMECE 2025

International Mechanical Engineering Congress & Expo November 16–20 Memphis, TN USA

OMAE 2026

Conference on Ocean, Offshore, and Arctic Engineering May 31–June 4, 2026 Tokyo, Japan

Turbo Expo 2026

Turbomachinery Technical Conference and Expo June 16–18, 2026 Milan, Italy



From the Archives

Charles Finney

Ralph Hensen Miller

ICEF tour

The tour on Wednesday morning, October 22, to wrap up this year's ICEF Forward Conference in Milwaukee, will stop at the Briggs & Stratton museum. Briggs & Stratton was founded in 1908 and headquartered in Milwaukee. Milwaukee and Wisconsin have a storied history with the internal combustion engine, and we'll explore this history during ICEF in October!

In most of our undergraduate studies, we learn of various compression-engine cycles: in-depth analysis of Otto and Diesel, with some passing mention of Atkinson and Miller. The are for application unless noted as awarded (awd.), and awards Miller cycle was developed by Ralph Hensen Miller, whose connection to the ICED was his service as chairman of the Oil and Gas Power Division 1934–35. His career focused on various power-machinery improvements, including the supercharged expanded cycle which bears his name. He joined ASME as an associate member in 1919 and was elected a full member in 1935 and fellow in 1962.

Ralph Miller (né Möller) was born May 27, 1890, in Horslunde, Denmark, and after his schooling, he emigrated from Denmark to the United States in 1913, naturalizing in 1922. In his early years in the US, he traveled around, working in Houston, Seattle (for Gulowsen Grei⁰), and New York, marrying in Los Angeles in 1917. From 1920 through the late 1930s, he worked for Ingersoll-Rand of Phillipsburg, New Jersey. He attended the first OGPD national conference in 1928¹, being listed as assis-



tant chief engineer for oil engines at Ingersoll-Rand. His ASME obituary² noted, "He is particularly known for his work on the Ingersoll–Rand open-combustion chamber."

By the early 1940s, he had moved to the Worthington Pump and Machinery Company, living in Buffalo, New York. His work during that time focused on developing engine systems and their components such as governors, oil scrapers, bearings, valve mechanisms, and particularly fuel injection. By 1947, he had moved to Nordberg Manufacturing Company in Milwaukee, Wisconsin, where he worked the remainder of his career. At Nordberg, he focused on a variety of ICE systems, including variable valve timing and especially supercharging, which led to ary² highlighted the impactful "firsts" in his career and reprehis "Miller supercharging system"^{2,4}.

⁰ASME Year Book, 1920. ¹Proceedings of the First National Meeting of the Oil and Gas Power Division, A.S.M.E., and Second Annual Oil Power Conference. Pennsylvania State College, June 14–16, 1928. Pennsylvania State College School of Engineering Technical

A record of his professional work is seen in his patent history. The partial list below shows the breadth of his work; dates with no assignee are listed as individual (ind.):

Ingersoll Rand (Phillipsburg, New Jersey)

Apparatus for feeding fuel in injection engines, 1925 (awd.). | Internal combustion engine, 1928 (awd.). | Starting and stopping apparatus for internal-combustion engines, 1929 (awd.). | Oil scraper, 1930 (awd.). | Internal combustion engine, 1931 (awd.). | Cylinder, 1933 (awd.). | Governing device for internal combustion engines, 1934 (awd.). | Bearing, 1933 (awd.). | Valve mechanism, 1933 (awd.). | Piston ring, 1936 (awd.).

American Locomotive Company (Schenectady, New York)

Internal combustion engine, 1942. | Liquid fuel injection apparatus, 1942 (ind.). | Hydraulic coupling, 1943 (awd.). | Internal combustion engine, 1944 (awd.). | Liquid fuel injection apparatus, 1944 (ind.).

Worthington Pump and Machinery Corporation (Buffalo, New York) Internal-combustion engine, 1945. | Liquid fuel injection apparatus, 1947 (awd.).

Nordberg Manufacturing Company (Milwaukee, Wisconsin)

Apparatus for using one cylinder of an internal-combustion engine interchangeably as a pump and a power cylinder, 1947. | Control means for internal-combustion engines, 1948. | Combustion chamber for four cycle diesel engines, 1948. | High-pressure supercharging system, 1949 (ind.). | Method for operating an internal combustion engine and internal combustion engine for carrying out the method, 1951 (ind.). | Internal combustion engine, 1951 (ind.). | Method for operating a piston internal combustion engine and piston internal combustion engine for carrying out the method, 1951 (ind.). | Method and apparatus for varying the final compression temperature in a four cycle internal combustion engine, 1951 (ind.). | High expansion, spark ignited, gas burning, internal combustion engines, 1952 (ind.). | Spark ignition engine, 1953 (ind.). | Spark ignition engine, 1953 (ind.). | Hydraulic mechanism for actuating an engine valve with variable timing, 1953. | Supercharged intercooled two stroke cycle engine with compression control valve, 1953 (ind.). | Dual fuel variable speed engine control, 1954. | Supercharged engine, 1956 (ind.). | Load accelerator for supercharged engine, 1956. (ind.) | Direct reversing engine and method of operating it, 1959 (ind. awd.). | Non-throttling gas engine, 1959 (ind. awd.) Matched turbocharger and engine, 1960 (ind.).

Fortunately, US passport applications from the 1920s have been digitized, with his from 1923 providing the first attested portrait³, as shown here. Ralph Miller died on August 18, 1967 in Milwaukee, and his Mechanical Engineering magazine obitusented one of the few notices of his passing.

Bulletin No. 5. ²Ralph H. Miller obituary, *Mechanical Engineering* (November 1967) 89: 120–1. ³U.S. National Archives and Records Administration, Passport Applications, Roll #2337, certificate #326095. ⁴Supercharged engine, US Patent 2817322A.



2025 Executive Committee





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Conference Chair



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oos & Charles Finney



ICE Forward Ambassadors

The <u>ICE Forward Ambassadors</u> are a global group of prominent researchers who help promote the ICE Division and the ICE Forward Conference.



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Carlo Beatrice Research Director CNR-STEMS



Martin H. Davy Associate Professor University of Oxford



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