ASME ICEF 2024

The ICE Forward Conference

ASME Internal Combustion Engine

Program

CONFERENCE
October 20-23, 2024

The Westin Riverwalk, San Antonio
San Antonio, TX

https://event.asme.org/ICEF

The American Society of Mechanical Engineers®
ASME®

ASME
SETTING THE STANDARD

WELCOME FROM THE CONFERENCE CHAIRS

Welcome to the **2024 ASME ICE Forward Conference**, the premier annual event of the ASME Internal Combustion Engine Division. We are thrilled to have you join us at the world-renowned San Antonio Riverwalk, with the Westin Riverwalk San Antonio serving as our conference hub, and Southwest Research Institute (SwRI) as our local host organization. This year's conference is poised to deliver an exceptional experience, packed with valuable insights and opportunities for networking and professional growth.

Our conference begins on Sunday evening with a welcome reception and an engaging technical poster session, setting the tone for the days ahead for which we have curated a comprehensive agenda filled with keynotes, panel discussions, technical sessions, and networking events that promise to inspire and inform.

We are honored to have Dr. Charles Roberts of SwRI delivering the keynote address, along with the ICE Division Distinguished Lecture by Roy J. Primus, GE Research-retired. Our plenary sessions will also feature two expert panel discussions—one focused on pioneering solutions for reducing life-cycle carbon emissions in transportation and another on the future of internal combustion engines in the North American rail industry.

The technical sessions feature our most extensive technical program yet, showcasing cutting-edge research and developments that are shaping the future of internal combustion engine technology. Presentations are distributed into the following seven distinct technical tracks, each offering a deep dive into the most pressing topics and innovative solutions within our field: 1: Off-Road Engine Systems. 2: Fuels and Carbon Management. 3: Advanced Combustion, Flows, and Sprays. 4: Powertrains, Hybridization, and Engine Controls. 5: Emission Control (CLEERS at ICE Forward). 6: Modeling and Simulation. 7: Design, Lubrication, and Thermal Management

Join us Monday evening for the annual Honors and Awards Banquet. On Tuesday morning, don't miss our Career Networking and Complimentary Headshot Event. This is a fantastic opportunity to connect with industry peers, expand your professional network, and enhance your professional profile with a new headshot.

Tuesday evening is intentionally left open for you to explore the vibrant San Antonio Riverwalk. We encourage you to take advantage of this time to enjoy dinner with colleagues at one of the many excellent restaurants just steps away from the conference hotel.

The conference will conclude on Wednesday with two exciting options for those who selected them during registration: either a technical tour of SwRI or participation in the inaugural ASME ICE Division Short Course titled, "A Pragmatic Approach to Low Greenhouse Gas (GHG) IC Engines." While the tour offers a unique behind-the-scenes look at cutting-edge facilities, the short course provides an excellent opportunity to learn from some of the best instructors in our field while gaining professional development.

This conference is central to our division's mission to recognize and promote advancements in internal combustion engine technologies. It represents the collective efforts of our dedicated volunteers, reviewers, authors, speakers, sponsors, and ASME staff, all of whom we deeply appreciate.

Scott and I are honored to chair this year's conference, and we are committed to ensuring an outstanding experience for every attendee. We eagerly anticipate your participation as we continue driving the future of internal combustion engine technologies forward.

Thank you for joining us at ASME ICE Forward 2024. We hope you have a productive and enjoyable conference experience!

Warm regards,

Dustin T. Osborne

Dustin Osborne
Staff Engineer
Southwest Research Institute
Conference Chair

Scott Curran

Scott Curran, Ph.D.
Group Leader for Fuel Science & Engine Technologies Research
Oak Ridge National Laboratory
Conference Co-Chair

CONTENTS

INTERNAL COMBUSTION ENGINE DIVISION EXECUTIVE COMMITTEE

Kelly Senecal, Ph.D.
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Sr. Research Scientist
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Staff Researcher
General Motors
Industry Advisor

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Senior Engineer -
Advanced Engine Technologies
Wabtec
Secretary

ICEF 2024 CONFERENCE ORGANIZING COMMITTEE

Dustin Osborne
Staff Engineer
Southwest Research Institute
Conference Chair

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Group Leader for Fuel Science
& Engine Technologies Research
Oak Ridge National Laboratory
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Convergent Science
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Sibendu Som, Ph.D.
Director of the Center for Advanced
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Chris Stoos
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Local Chair

Riccardo Scarcelli
Group Leader, Multi-Physics Engine
Computations
Argonne National Laboratory
Honors and Awards Chair

Noah Van Dam, Ph.D.
Assistant Professor
University of
Massachusetts Lowell
Student Activities Chair

Kalyan Srinivasan, Ph.D.
Professor
University of Alabama
Technical Poster Session Chair

Ronald O. Grover, Jr. Ph.D.
Staff Researcher
General Motors
Industry Advisor

ICE FORWARD AMBASSADORS

The ASME ICE Division Executive Committee is pleased to announce the launch of the "**ICE Forward Ambassadors**" program, debuting at the 2024 ICE Forward Conference. These volunteers, based in various countries, are dedicated to promoting the division and the conference within their local research communities, universities, and industries. By fostering increased global engagement, we aim to boost international participation and attendance at the conference whenever possible.

Avinash K Agarwal, Ph.D.
Professor
Indian Institute of Technology Kanpur

Martin H. Davy, Ph.D.
Associate Professor
University of Oxford

Stefania Esposito, Ph.D.
Lecturer (Assistant Professor)
IAAPS – University of Bath

André Casal Kulzer, Ph.D.
Prof. Dr.-Ing.
University of Stuttgart, IFS/FKFS

Christine Rousselle, Ph.D.
Professor
University of Orléans, France

Felix Leach, Ph.D.
Associate Professor
University of Oxford

Marc Sens
Senior VP Research & Technology
IAV

Carlo Beatrice, Ph.D.
Research Director
CNR-STEMS

Shouvik Dev, Ph.D.
Research Officer and Program Technical Lead
National Research Council of Canada

Antonio García, Ph.D.
Full Professor
CMT Clean Mobility and Thermofluids
Universitat Politècnica de València

Olivier Laget, Ph.D.
Doctor/Ph.D.
IFP Energies nouvelles

Ratnak Sok, Ph.D.
Associate Professor
Waseda University

Ricardo Novella, Ph.D.
Full Professor
CMT Clean Mobility and Thermofluids
Universitat Politècnica de València

Federico Millo, Ph.D.
Professor
Politecnico di Torino

TECHNICAL COMMITTEES MEETING

Monday, October 21

5:30 PM–6:00 PM

Navarro Ballroom

This is an opportunity to recap with your technical committee members, share lessons learned and best practices and make plans for ICEF2025.

ASSOCIATES MEETING

Tuesday, October 22

5:20 PM–6:20 PM

Navarro Ballroom

Make plans to attend the associates meeting to learn more about the ASME and the ICE Division organizational structure and upcoming opportunities, review recent activities, and participate in shaping the division's growth and impact.

LET'S GET SOCIAL!

Post that you are planning to attend the conference, that you are authoring a technical paper, exhibiting, sponsoring, or that you are having an amazing time at ICEF!

https://www.linkedin.com/groups/12154802/

CONFERENCE INFORMATION

REGISTRATION INFORMATION

Navarro Ballroom Prefunction, Ballroom Level, 2nd Fl

Registration Hours:

Sunday, October 20	2:00 PM–6:30 PM
Monday, October 21	7:00 AM–6:30 PM
Tuesday, October 22	7:00 AM–5:00 PM
Wednesday, October 23	7:00 AM–8:00 AM

EXHIBIT INFORMATION

Navarro Ballroom Prefunction, Ballroom Level, 2nd Fl

Exhibit Hours:

Sunday, October 20	5:00 PM–6:30 PM
Monday, October 21	7:00 AM–5:00 PM
Tuesday, October 22	7:00 AM–5:00 PM

BADGE REQUIRED FOR ADMISSION

All conference attendees must wear the official ASME ICEF 2024 badge at all times in order to gain admission to technical sessions, keynotes, panels, meals, and other conference events. Without a badge, you will not be granted admission to conference activities.

SESSION ROOM EQUIPMENT

Each session room is equipped with a screen, LCD projector, and laptop. Speakers should arrive to their session room 10–15 minutes prior to the session start time. Bring a copy of your presentation on a USB/thumb-drive to be loaded onto the show computer or make arrangements in advance with your session organizer.

ASME CONFERENCES APP

ICEF 2024 will utilize a mobile event app in place of a printed program to enhance the conference experience for attendees, speakers, and sponsors. Download the ASME Conferences App and hold the entire program in the palm of your hand!

The ASME Conferences App allows you to easily look up sessions, search for papers or people, message with other attendees, and create your own schedule. You will receive an email from noreply@swapcard.com with login instructions for the ASME Conference app. Be sure to download the app for the latest infformation!

INTERNET ACCESS IN THE HOTEL

Wi-Fi is included in your guest room and in the meeting space.

Please visit the registration desk and Swapcard app for details.

CONFERENCE PROCEEDINGS

Each attendee will receive an email with a unique code to access digital copies of all the papers accepted for presentation at the conference. The official conference archival proceedings will be published after the conference and will not include accepted papers that were not presented at the conference. The official conference proceedings are registered with the Library of Congress and are submitted for abstracting and indexing. The proceedings are published on the ASME Digital Library. You will be provided with an individual link to the online papers via email. In the event you do not receive the email, send a request to conferencepubs@asme.org.

SPEAKER READY ROOM

The Business Center Boardroom (Lobby Level) will serve as the Speaker Ready Room on Monday and Tuesday from 7:00AM to 5:00PM. An LCD projector and screen will be available for authors to practice their presentations on a first-come, first-served basis.

PRESENTER ATTENDANCE POLICY

According to ASME's Presenter Attendance Policy, if a paper is not presented at the conference, the paper will not be published in the official Archival Proceedings, which are registered with the Library of Congress and are abstracted and indexed. The paper also will not be published in the ASME Digital Collection and may not be cited as a published paper.

VIDEO/AUDIO RECORDINGS

Participants are reminded that material presented at ASME conferences is under copyright of ASME. As a result, any recording of the presentations is prohibited.

LIMITATION OF LIABILITY

You agree to release and hold harmless ASME from all claims, demands, and causes of action arising out of or relating to your participation in this event.

SCHEDULE-AT-A-GLANCE*

The schedule is subject to change.
Please refer to the ASME Conferences app for detailed technical session schedule.

Sunday 10/20/2024	Monday 10/21/2024	Tuesday 10/22/2024	Wednesday 10/23/2024
Executive Committee Meeting 9:00AM–5:00PM CLOSED	Registration 7:00AM–6:30PM	Registration 7:00AM–5:00PM	Registration 7:00AM–8:00AM
Registration 2:00PM–6:30PM	Exhibits 7:00AM–5:30PM	Exhibits 7:00AM–5:30PM	SWRI Technical Tours (offsite) *Advanced sign-up required* *8:00AM–12:00PM*
Exhibits 5:00PM–6:30PM	Welcome Remarks Keynote 8:00AM–9:15AM	Career Networking and Complimentary Headshot Event 7:00AM–8:00AM	ICE Division Short Course: A Pragmatic Approach to Low Greenhouse Gas (GHG) IC Engines *Advanced sign-up required* *8:00AM–12:00PM*
Welcome Reception & Technical Poster Session 5:00PM–6:30PM	Break 9:15AM–9:30AM	Technical Sessions 8:00AM–9:20 am	*Times listed are Central Daylight Time
	Technical Sessions 9:30AM–11:30AM	Break 9:20AM–9:35AM	
	Lunch & Student Competition Presentations 11:30AM–1:00PM	Technical Sessions 9:35AM–11:35AM	
	Break 1:00PM–1:15PM	Lunch & ICE Division Distinguished Lecture 11:35AM–1:0PM	
	Technical Sessions 1:15PM–2:35PM	Break 1:05 PM–1:20PM	
	Panel: Low-Carbon Fuels for Engines 2:35PM–4:05PM	Panel: The Future of ICE in North American Rail Industry 1:20PM–2:50PM	
	Break 4:05PM–4:20 pm	Break 2:50PM–3:05PM	
	Technical Sessions 4:20PM–5:20PM	Technical Sessions 3:05PM–5:05PM	
	Technical Committee Meetings 5:30PM–6:00PM	Associates Meeting 5:20PM–6:20PM	
	ICE Forward 2024 Honors & Awards Banquet 6:30PM–9:00PM		

WELCOME REMARKS:

Thomas Costabile P.E., FASME
ASME Executive Director/CEO

Susan Ipri-Brown
ASME President 2024-2025

KEYNOTE

REALITIES OF THE EVOLUTION OF THE TRANSPORT INDUSTRY

MONDAY, OCTOBER 21, 2024
8:00 AM–9:15 AM CDT | NAVARRO BALLROOM

Charles E. Roberts, Jr., Ph.D.
Executive Director, Commercial Vehicle Systems
Southwest Research Institute

The transport industry is at a crossroads, driven by rapid technological advancements, evolving regulatory landscapes, and changing consumer expectations. This presentation explores the future direction of both human and goods transport, emphasizing the different trajectories and requirements for each sector. Electrification has moved beyond its initial hype, facing real-world challenges in scaling infrastructure, battery production, and energy supply. We will assess the current state of electrification, highlighting both progress and persistent obstacles. Despite the shift towards electric vehicles (EVs), internal combustion engines (ICEs) continue to show remarkable efficiency improvements. This session will explore the latest advancements in ICE technology and their future prospects.

Hybrid powertrains are re-emerging as a significant component of the transportation landscape, offering a balance between traditional ICE and electric propulsion. We will discuss the benefits of hybrid systems in enhancing fuel efficiency and reducing emissions.

The presentation will also delve into alternative fuels, including biofuels, e-fuels, and renewable fuels, examining their development and potential to complement or replace conventional fuels. Hydrogen internal combustion engines present unique engineering challenges and opportunities, and we will provide insights from recent hydrogen ICE demonstrator projects, highlighting achievements and lessons learned. Finally, we will explore the concept of sub-zero emissions vehicles (SZEVs) enabled by advanced ICE chemical processing, examining the technological innovations required to achieve this ambitious goal and its potential impact on the transport industry's environmental footprint.

Join us as we navigate the complexities and realities of the evolving transport industry, providing a balanced perspective on the future of mobility and sustainability. This presentation aims to offer a comprehensive overview of the challenges and opportunities ahead, fostering a deeper understanding of the multifaceted nature of transportation evolution.

Charles E. Roberts, Jr., Ph.D., manages the SwRI Commercial Vehicle emissions laboratories, which provide engine and emissions development and certification activities to heavy-duty and non-road vehicle companies worldwide. Dr. Roberts also oversees all heavy-duty and non-road powertrain systems advanced R&D activities, including internal research programs and advanced R&D for external clients. Dr. Roberts previously held the title of Institute Engineer at SwRI, where he managed SwRI's Powertrain Consulting Service, providing consulting to transportation industry clients worldwide. In his current role, Dr. Roberts continues to act as a SwRI liaison to regulatory agencies such as the U.S. EPA, DOE, CARB, and others.

Dr. Roberts currently oversees and previously managed the SwRI Clean Diesel program, one of the world's longest-running and largest diesel engine cooperative research consortia, consisting of more than 25 client-companies from around the world. Dr. Roberts is an original patent-holder and previous program manager for the SwRI HEDGE® technology and cooperative research program, where cooled exhaust gas recirculation and turbocharging technologies are being developed toward production for the light-duty gasoline industry.

UNDERGRADUATE STUDENT RESEARCH COMPETITION PRESENTATIONS AND LUNCH

MONDAY, OCTOBER 21, 2024 **11:30 AM–1:00 PM CDT**

Navarro Ballroom

The ASME ICED undergraduate student research competition is an annual event inviting undergraduate researchers that have studied in the field of internal combustion engines, emissions systems, fuels and sprays, or carbon management. Up to two winning submissions are selected to deliver their presentations to a group of leading experts in the internal combustion engine field at the ASME ICE Forward Conference.

The two selected students will receive complimentary conference registration and up to $1,500 in travel reimbursement. Past recipients have frequently forged valuable connections at the conference, which have led to career opportunities and graduate school recruitment.

Alfie Drew
University of Oxford
Life-cycle Analysis for Passenger Car CO2 Comparisons in the EU

Joseph Jacobs
Texas A&M University
Novel Method for Measuring Laminar Flame Speed of Engine Lubrication Oul Mist in Air

Student Activities Chair

Noah Van Dam, Ph.D.
Assistant Professor
University of Massachusetts Lowell

PANEL: LOW-CARBON FUELS FOR ENGINES

MONDAY, OCTOBER 21, 2024
2:35 PM–4:05 PM CDT | NAVARRO BALLROOM

The panel discussion on "Low-Carbon Fuel for Engines" will bring together leading experts from industry, academia, and national labs to explore innovative solutions for reducing life-cycle carbon emissions in transportation. This panel will explore the latest advancements in low-carbon fuel technologies, such as biofuels, hydrogen, synthetic fuels, SAF, etc. Panelists will discuss the challenges and opportunities associated with scaling up these technologies and addressing infrastructure, economic, and regulatory hurdles. The panel aims to foster a collaborative dialogue on how to fairly evaluate different fuels from life-cycle perspective, how to accelerate the transition to sustainable fuel alternatives, ensuring a cleaner and more resilient future for transportation. Attendees will gain insights into cutting-edge research, practical implementations, and policy frameworks that support the adoption of low-carbon fuels. This discussion promises to be a vital exchange of ideas and strategies for driving forward the decarbonization of engines and achieving global climate goals.

MODERATOR
André Boehman, Ph.D.
Professor, Mechanical Engineering
Vennema Professor of Engineering
Director, W.E.Lay Automotive Laboratory
University of Michigan – Ann Arbor

PANELIST
Kesavan Ramakrishnan, Ph.D.
Senior System Architect
Cummins Inc

PANELIST
Scott Curran, Ph.D.
Group Leader for Fuel Science & Engine Technologies Research
Oak Ridge National Laboratory

PANELIST
Diep Vu, Ph.D.
Senior Environmental Engineer
Marathon Petroleum Company

PANELIST
Christopher P. Kolodziej, Ph.D.
Principal Energy Systems Analyst
Argonne National Laboratory

CAREER NETWORKING AND COMPLEMENTARY HEADSHOT EVENT

TUESDAY, OCTOBER 22 **7:00 AM–8:00 AM**

Navarro Ballroom, Ballroom Level (2nd FL)

This one-hour in-person event is free to conference registrants and is a fantastic opportunity to interact with leaders within the ASME ICE Division Executive Committee and to get an optional complementary headshot for use in professional activities. A volunteer photographer will be onsite to provide updated headshots for anyone who signs up for the event.

All are welcome! Grab a morning beverage, network, and have informal conversations.

What to expect:

- Complementary headshots from a volunteer photographer onsite. Pictures will be shared after the event at no cost.
- Attendees are invited to meet with senior ICE colleagues and enjoy conversation in a small group setting.
- Conversations are intended to be informal with open-ended discussions.

This is your opportunity to:

- Connect and engage with well-established professionals and ICE research leaders who serve on the ASME Internal Combustion Engine Division's Executive Committee.
- Learn from leaders in the industry and gain valuable connections and insights that will help you advance your career.
- Connect with other early-career colleagues, students, and peers attending the event.
- Get an updated headshot while you are at the conference and dressed in business professional attire.
- Help boost your professional network!

Scott Curran, Ph.D.
Group Leader for Fuel Science
& Engine Technologies Research,
Oak Ridge National Laboratory

Ronald O. Grover, Jr., Ph.D.
Staff Researcher
General Motors

ICE DIVISION DISTINGUISHED LECTURE

FOUR DECADES OF ICE R&D: REFLECTIONS, OBSERVATIONS, AND LESSONS LEARNED

TUESDAY, OCTOBER 22, 2024
11:35 AM–1:05 PM CDT | NAVARRO BALLROOM

Roy J. Primus
Senior Principal Engineer,
Retired, GE Research

Roy J. Primus is a retired Senior Principal Engineer from GE Research. He retired in 2020 after 43 years of R&D work with reciprocating engines. His areas of emphasis included combustion systems, air handling systems, and thermodynamic system performance and emission control. Primus was a member of GE Research for 18 years. Prior to joining GE he worked at the Cummins Technical Center for 25 years. Over his career he managed and conducted a wide spectrum of analytical and experimental work with diesel and natural gas engines spanning a broad range of engine sizes, applications, and architectures.

Primus holds an M.S. in Mechanical Engineering and a B.S. in Mathematics from Rose-Hulman Institute of Technology. He has published 35 technical papers and holds 56 U.S. patents. Primus is a Fellow of the Society of Automotive Engineers and was honored in 2022 with the ASME Internal Combustion Engine Award.

PANEL: THE FUTURE OF ICE IN THE NORTH AMERICAN RAIL INDUSTRY

TUESDAY, OCTOBER 22, 2024
1:20 PM–2:50 PM CDT | NAVARRO BALLROOM

The North American rail industry is at a pivotal moment, with over 20,000 locomotives in use and minimal new production in the last five years due to the high cost and complexity of meeting EPA emission standards. The industry relies heavily on modernizing older fleets, which emit significantly more pollutants than newer Tier 4 locomotives. Regulatory bodies like the California Air Resources Board and the US EPA are pushing for reduced emissions, while railroad shareholders and customers demand lower greenhouse gas (GHG) emissions.

Technological challenges are significant, with limited resources for developing and implementing low-carbon or carbon-free fuels, such as hydrogen, ammonia, and methanol, or battery-electric locomotives. Electrification and battery development, as envisioned by the U.S. Department of Energy, are costly and time-consuming. Furthermore, the need for interoperable infrastructure across the rail network is critical to support future technologies.

This panel will feature insights from locomotive OEM experts on managing these challenges, exploring decarbonization strategies, and discussing the limited government funding and realistic timelines for research, development, and field validation of new technologies. The session aims to offer actionable insights for advancing the industry toward a more sustainable future while balancing current operational needs.

MODERATOR
Steven G. Fritz, P.E.
Sr. Manager, Locomotive Technology Center
Southwest Research Institute

PANELIST
Cathy Choi, Ph.D.
Executive Advisor
Knoxville Locomotive Works

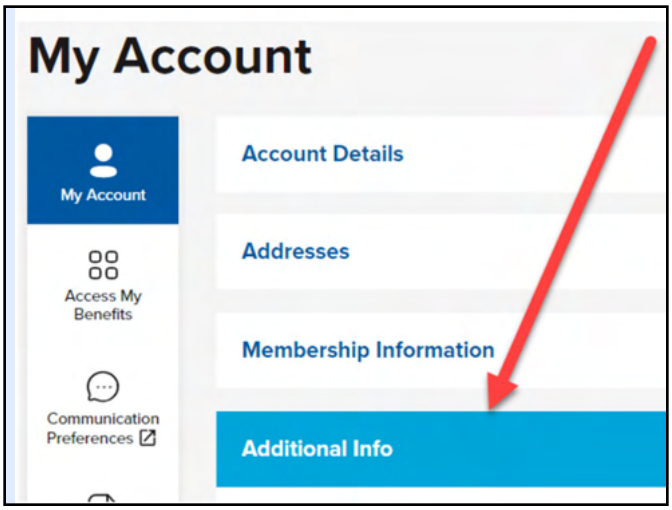
PANELIST
Eric Dillen
Sr. Engineering Manager,
Advanced Engine Technology Team
Wabtec Corporation

PANELIST
Jinal Shah
Director, Engines and Engine Systems
Progress Rail,
A Caterpillar Company

PANELIST
Justin Blomenberg
Executive Director – Power Systems Industrial Product Engineering
Cummins Inc

HOW TO BECOME A MEMBER OF THE ICE DIVISION

1. www.asme.org
2. Click on **"My Account".**
3. Click on **"Additional Info".**
4. Click on **"Edit"** on "Technical Division Interests".
5. Select your division interests.
6. **SAVE** your selections.



Please ensure that you have granted permission to receive communications from the ICED.

1. Login to asme.org and click on Communication Preferences.
2. Click "Login to Preference Center".
3. Under ASME Sections and Technical Division Communications, Opt-In to division communications by checking the box next to Technical Divisions.
4. Check all your Preferences to be sure you receive the information from ASME that you are interested in.
5. Click "Save Preferences".

AWARDS

MONDAY, OCTOBER 21, 2024 **6:30–9:00 PM CDT**

Navarro Ballroom, Ballroom Level (2nd FL)

ASME's Internal Combustion Engine (ICE) Division recognizes the outstanding achievements in the internal combustion engine field through its honors and awards program. Every year, ICEF hosts the Awards Dinner where we recognize these remarkable individuals.

Click here for more information on the ICE awards or to complete a nomination packet. Special thanks to the numerous volunteers that serve on ICE's award committees. Without their expertise, time, and dedication, this would not be possible. Congratulations to all award recipients!

ASME SOCIETY AWARDS

ASME INTERNAL COMBUSTION ENGINE

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.

Zoran Filipi, Ph.D.
Professor
Clemson University

ASME GEORGE WESTINGHOUSE GOLD MEDAL

The George Westinghouse Medals were established to recognize eminent achievement or distinguished service in the power field of mechanical engineering.

Robert M. Wagner, Ph.D.
Associate Laboratory
Director, Energy Science and Technology
Oak Ridge National Laboratory

ASME SOICHIRO HONDA MEDAL

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

Hongtei Eric Tseng, Ph.D.
Professor
University of Texas

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.

Kelly Senecal, Ph.D.
Owner & Vice President
Convergent Science

Ronald O. Grover, Jr., Ph.D.
Staff Researcher
General Motors

ASME FELLOWS

The ASME Committee of Past Presidents confers the Fellow grade of membership on worthy candidates to recognize their outstanding engineering achievements.

Scott Curran, Ph.D.
Group Leader for Fuel Science & Engine Technologies Research
Oak Ridge National Laboratory

Tiegang Fang, Ph.D.
Professor
North Carolina State University

Sreenath B. Gupta, Ph.D.
Principal Mechanical Engineer
Argonne National Laboratory

Yuanjiang Pei, Ph.D.
Team Leader
Aramco Americas

William Northrop, Ph.D.
Professor
University of Minnesota

ASME ICED AWARDS

ENGINE IMPACT AWARD

The ASME Internal Combustion Engine Division created this award to honor internal combustion engine related research and development that has been put into practice towards a commercial product developed by industry. This award is specifically created to recognize researchers in industry who have made tremendous contributions to the ICE community.

Keith J. Richards
Vice President
Convergent Science

Kevin P. Duffy
Division Manager
Caterpillar Inc.

INTERNAL COMBUSTION ENGINE DIVISION EARLY CAREER AWARD

This award is specifically created to recognize early career researchers in academia, national labs, and industry who have made tremendous contributions to the ICE community.

Muhsin Ameen, Ph.D.
Principal Research Scientist,
Transportation & Power Systems Division
Argonne National Laboratory

MERITORIOUS SERVICE AWARD

The ASME Internal Combustion Engine Division created this award to honor loyal service, guidance, leadership, and worthy contributions to the progress of the ICE Division.

Vitaly Y. Prikhodko, Ph.D.
Research & Development Staff
Oak Ridge National Laboratory

Josh A. Pihl
Buildings and Transportation Science Division Director
Oak Ridge National Laboratory

Gokul Vishwanathan, Ph.D.
Demonstrations Program Manager - Carbon Capture Pilots
Department of Energy,
Office of Clean Energy Demonstrations

CONFERENCE AWARDS

BEST 2023 ICEF CONFERENCE PAPER

ICEF2023-10963: A Hybrid Heavy Duty Diesel Power System for off-road Applications – Concept Validation

Chad Koci
Engineering Technical Team Leader
Caterpillar Inc.

Radoslav Ivanov
Engineering Consultant
R-Flow Ltd.

Jay Steffen
Engineering Specialist
Caterpillar Inc.

Jeremy Adams
Manager Visualization
Caterpillar Inc.

Jason Keim
Senior Engineer
SuperTurbo Technologies Inc.

Tom Waldron
Executive Vice President
SuperTurbo Technologies Inc.

Rich Kruiswyk
Engineering Fellow
Caterpillar Inc.

Tim Bazyn
Engineering Fellow
Caterpillar Inc.

Lauren Duvall
Engineering Team Leader
Caterpillar Inc.

Robert McDavid, Ph.D.
Manager Engineering
Caterpillar Inc.

Marc Montgomery
Senior Mechanical Engineer
SuperTurbo Technologies Inc.

BEST 2023 ICEF CONFERENCE PRESENTATION

ICEF2023-110018: High-Performance Alloys for Conventional ICE and Hydrogen ICE Applications

Andreas Frehn, Ph.D.
Director Technology & Innovation EMEA
Materion Brush GMBH

BEST 2023 ICEF CONFERENCE STUDENT PRESENTATION

ICEF2023-110006, Characterization of Flex-Fuel Prechamber Enabled Mixing-Controlled Combustion (PC-MCC) With Gasoline/Ethanol Blends at High Load

Jared Zeman
Graduate Research Assistant
Marquette University

Call for Award Nominations

ASME SOCIETY AWARDS

ASME Fellow

Nomination Deadlines:

March 1

June 1

September 1

December 1

ICE DIVISION AWARDS

Early Career Award

Nomination Deadline May 1

Engine Impact Award

Nomination Deadline May 1

Meritorious Service Award

Nomination Deadline May 1

ASME
SETTING THE STANDARD
INTERNAL COMBUSTION ENGINE DIVISION

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
- Electrification
- Alternative Fuels
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CONFERENCE MEALS AND NETWORKING EVENTS

WELCOME RECEPTION & TECHNICAL POSTER SESSION

Navarro Ballroom Prefunction, Ballroom Level (2nd FL)

SUNDAY, OCTOBER 8 — **5:00 PM–6:30 PM**

Navarro Ballroom Prefunction, Ballroom Level (2nd FL)

All conference registrants are invited to join their colleagues for complimentary light refreshments during this Sunday evening event. Greet friends and meet thinkers from around the world who are shaping the future of ICE, all in a casual atmosphere. Be sure to visit the technical posters during this time!

MORNING BEVERAGES

Navarro Ballroom, Ballroom Level (2nd FL)

MONDAY, OCTOBER 21	**7:00 AM–8:00 AM**
TUESDAY, OCTOBER 22	**7:00 AM–8:00 AM**

LUNCH WITH UNDERGRADUATE COMPETITION WINNERS

Navarro Ballroom

MONDAY, OCTOBER 21 — **11:30 AM–1:00 PM**

ICE FORWARD 2024 HONORS & AWARDS BANQUET

Navarro Ballroom

MONDAY, OCTOBER 21 — **6:30 PM–9:00 PM**

Come celebrate a select group for their outstanding achievements in the internal combustion engine field.

Admission to the banquet is Included with each Full Conference Registration. Additional drink options will be available for purchase.

CAREER NETWORKING AND COMPLEMENTARY HEADSHOT EVENT

Navarro Ballroom Prefunction, Ballroom Level (2nd FL)

TUESDAY, OCTOBER 22 — **7:00 AM–8:00 AM**

ICE DIVISION DISTINGUISHED LECTURE LUNCH

Navarro Ballroom

TUESDAY, OCTOBER 22 — **11:35 AM–1:05 PM**

NETWORKING BREAKS

Navarro Ballroom Prefunction, Ballroom Level (2nd FL)

MONDAY, OCTOBER 21	TUESDAY, OCTOBER 22
9:15 AM–9:30 AM	9:20 AM–9:35 AM
1:00 PM–1:15 PM	1:05 PM–1:20 PM
4:05 PM–4:20 PM	2:50 PM–3:05 PM

Come meet our sponsors and join your fellow attendees for networking and discussion.

ICE DIVISION SHORT COURSE
A PRAGMATIC APPROACH TO LOW GREENHOUSE GAS (GHG) IC ENGINES

WEDNESDAY, OCTOBER 23, 2024 **8:00AM – 12:00PM CDT**

Register by 5:00 PM on Tuesday, October 22nd. Visit the on-site registration desk to register.

Registration for the short course is separate from the ICEF conference registration.
You don't want to miss this inaugural learning series offered at ICEF! The media is littered with a myriad of opinions on how global markets should achieve improved energy efficiency in the transportation sector. Don't miss the chance to learn from distinguished lecturers who will analyze the energy challenge based on fundamental science.

This short course will consist of three modules:

1. **Thermodynamic upper bounds of IC engines based on first principles.** First and second law concepts will be used to reinforce approaches underway to improve efficiency and performance. Topics will include:
   - Heat Engines versus Internal Combustion Engines
   - Second Law of Thermodynamics Concepts and system entropy
   - Energy is in the fuel! Fuel properties, types of combustion
   - Combustion chemistry, auto-ignition, and engine knock

2. **Market, and societal based constraints.** A rational approach to achieving sustainable mobility systems must consider the likely timelines for new resource extraction and processing, implementing new infrastructure, and the transition of the manufacturing base which currently supplies the global demand for mobility propulsion systems. Topics will include:
   - Maximum efficiency derivation
   - Heat release within the constraints of maximum pressure and auto-ignition
   - Expansion process – lean mixtures and gamma
   - Ending the expansion process
   - Energy remaining in the exhaust – pumping work and system configurations
   - Friction and parasitic losses
   - Regulatory compliance and implications on industrial production

3. **Promising enabling technologies.** Technologies consistent with constraints of fundamental physics and market and societal issues, and how they mesh with changes in a propulsion system's energy carrier. Topics will include:
   - What will move the market? Incremental technology advancements or disruptive innovation?
   - What will be the mix of ICE, Hybrids, and BEVs moving forward?
   - What happens if battery cost and charging becomes on par with ICE?

Who Should Attend
The content in this intermediate course appeals to:

- Engineers,
- Upper-level engineering students,
- ICE enthusiasts
- Managers with powertrain development/analysis responsibility

Instructors

David E. Foster, Ph.D.
Phil and Jean Myers Professor Emeritus
Engine Research Center
University of Wisconsin – Madison (retired)

Kevin Hoag
Technical Fellow
Southwest Research Institute (SwRI)

TECHNICAL TOUR

TECHNICAL TOUR OF SOUTHWEST RESEARCH INSTITUTE (SWRI)
WEDNESDAY, OCTOBER 23, 2024 | 8:00 AM–12:00 PM CDT

TOUR OPEN TO ALL REGISTRANTS. PRE-REGISTRATION REQUIRED.

Southwest Research Institute (SwRI) is a premier independent, nonprofit research and development organization using multidisciplinary services to provide solutions to some of the world's most challenging scientific and engineering problems. Headquartered in San Antonio, Texas, our client-focused, client-funded organization occupies more than 1,500 acres, providing more than 2.4 million square feet of laboratories, test facilities, workshops, and offices for more than 3,100 employees who perform contract work for government and industry clients.

The technical tour will feature SwRI's state-of-the-art engine, aftertreatment, and vehicle testing laboratories. Additional tour stops may include SwRI's fuel and lubricant laboratories, liquid hydrogen storage facility, and The Energy Storage Technology Center® (ESTC).

Advanced sign-up, in addition to ICEF-2024 conference registration, is required to attend the SwRI tour.

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**Please note, ASME will share your name and contact information with the facility for security clearance.
Due to regulatory restrictions, this tour will be unavailable to citizens of Iran, Syria, Cuba, and North Korea.

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Thank you to our Track Chairs! Without their dedication and time commitment, ICEF could not be a successful conference.

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Chair: Matthew Hart, *Wabtec Corp.*
Co-Chair: Munidhar Biruduganti, *Argonne National Laboratory*
Co-Chair: Christopher Stoos, *Southwest Research Institute*

TRACK 2: FUELS AND CARBON MANAGEMENT

Chair: Hunter Mack, *University of Massachusetts Lowell*
Co-Chair: Dimitris Assanis, *Stony Brook University*

TRACK 3: ADVANCED COMBUSTION, FLOWS, AND SPRAYS

Chair: Cosmin Dumitrescu, *West Virginia University*
Co-Chair: Gokul Vishwanathan, *Propane Education & Research Council*

TRACK 4: POWERTRAINS, HYBRIDIZATION, AND ENGINE CONTROLS

Chair: Vittorio Ravaglioli, *University of Bologna*
Co-Chair: Michael Bunce, *MAHLE Powertrain LLC*

TRACK 5: EMISSIONS CONTROL (CLEERS* AT ICE FORWARD)

Chair: Vitaly Prikhodko, *Oak Ridge National Laboratory*
Co-Chair: Josh Pihl, *Oak Ridge National Laboratory*

TRACK 6: MODELING AND SIMULATION

Chair: Muhsin Ameen, *Argonne National Laboratory*
Co-Chair: Yu Zhang, *Cummins Inc*

TRACK 7: DESIGN, LUBRICATION, AND THERMAL MANAGEMENT

Chair: David Rutledge, *Cummins Inc*
Co-Chair: Ambikapathy Naganathan, *Cummins Inc*

Please refer to the ASME Conferences app or ICEF website for Technical Sessions and Authors.

AUTHOR INDEX

AUTHOR LAST NAME	AUTHOR FIRST NAME	PAPER NUMBER	SESSION
Accardo	Antonella	140649	02-02: Ammonia/Hydrogen II
Ankobea-Ansah	King	141703	04-01: Powertrain Diagnostics and Control Strategies
Assanis	Dimitris	141645	02-02: Ammonia/Hydrogen II
Assanis	Dimitris	141648	02-06: Compression Ignition II
Assanis	Dimitris	141649	06-06: Alternative Fuels
Assanis	Dimitris	141651	05-03: Emissions Control III
Assanis	Dimitris	141653	02-04: Spark Ignition
Beurlot	Kyle	141760	03-01: Advanced SI/CI Concepts I
Babu	Aravindh	147792	06-05: Performance Systems Modeling
Bansal	Vinay	141176	02-06: Compression Ignition II
Barain	Ahmed	140686	05-02: Emissions Control II
Baskara Babu	Yamini	149661	08-01: Poster Session
Bittle	Joshua	140906	03-04: Fundamental Sprays/Ignition/Combustion I
Bittle	Joshua	140950	03-04:Fundamental Sprays/Ignition/Combustion I
Bjørgen	Karl Oskar	140903	03-04: Fundamental Sprays/Ignition/Combustion I
Björnsson	Ola	140748	04-01: Powertrain Diagnostics and Control Strategies
Böhmeke	Christian	141676	05-02: Emissions Control II
Buffaloe	Gina	140462	03-06: Advanced SI/CI Concepts III
Buntin	Denis	149684	08-01: Poster Session
Caselli	Andrea	139358	04-01: Powertrain Diagnostics and Control Strategies
Chandrashekhar Dhotre	Akash	151571	08-01: Poster Session
Chaudhari	Vasudev	140958	01-02: Off-Road Spark & Assisted Ignition
Chen	Haiying	151192	05-01: Emissions Control I
Cho	Seokwon	139613	02-07: Alcohol Fuels
Cho	Yongsuk	141698	06-01: Spray Modeling
Chowdhury	Musharrat	140920	06-06: Alternative Fuels
Chuahy	Flavio	142853	06-04: Large-Bore Engine Modeling
Cong	Binghao	140976	02-06: Compression Ignition II
Cowart	Jim	140061	02-06: Compression Ignition II
Curran	Scott	138271	01-01: Off-Road Compression Ignition
Curran	Scott	147827	08-01: Poster Session
Curran	Scott	149686	08-01: Poster Session
Deka	Dhruba Jyoti	148621	08-01: Poster Session
Dempsey	Adam	141614	03-01: Advanced SI/CI Concepts I
Dev	Shouvik	140175	05-03: Emissions Control III
Di Maio	Dario	140518	06-04: Large-Bore Engine Modeling
Dumitrescu	Cosmin	140567	02-01: Ammonia/Hydrogen I
Ebrahimi	Khashayar	140669	06-05: Performance Systems Modeling
Eldridge	Thomas	140646	05-01: Emissions Control I
Ewphun	Pop-Paul	140390	01-01: Off-Road Compression Ignition
Fakeye	Adebayo	148290	03-05: Fundamental Sprays/Ignition/Combustion II
Fakih	Hussein	149369	08-01: Poster Session
Fotsch	Dick	148100	08-01: Poster Session
Fotsch	Dick	148179	04-02: Powertrain Modelling and Optimization

AUTHOR LAST NAME	AUTHOR FIRST NAME	PAPER NUMBER	SESSION
Franken	Tim	140922	06-07: Ammonia Combustion
Gainey	Brian	138747	06-05: Performance Systems Modeling
Gandolfo	John	140910	02-07: Alcohol Fuels
Guo	Hongsheng	140145	02-01: Ammonia/Hydrogen I
Hassan	Hafiz Ahmad	140970	02-06: Compression Ignition II
Hendy	Muhannad	149642	08-01: Poster Session
Hodonj	Daniel	147633	05-03: Emissions Control III
Hurren	Troy	148250	05-01: Emissions Control I
Ianniello	Roberto	140893	03-03: Advanced SI/CI Concepts II
Jin	Long	140791	03-03: Advanced SI/CI Concepts II
Johnston	Tyler	141702	02-07: Alcohol Fuels
Joshi	Satyum	141549	04-02: Powertrain Modeling and Optimization
Joshi	Satyum	141551	03-05: Fundamental Sprays/Ignition/Combustion II
kandappadi	sudheesh	140624	02-03: Natural Gas
Karimi	Kamyab	141709	06-01: Spray Modeling
Kaul	Brian	148393	08-01: Poster Session
Khedkar	Nikhil	140863	05-03: Emissions Control III
Kiesling	Constantin	140722	03-02: Dual Fuel Combustion
Kim	Doohyun	148402	06-06: Alternative Fuels
Kiouranakis	Konstantinos	139218	01-02: Off-Road Spark & Assisted Ignition
Klingbeil	Adam	140674	03-01: Advanced SI/CI Concepts I
Kumar Singh	Rahul	139250	02-07: Alcohol Fuels
Kurien	Caneon	140740	02-01: Ammonia/Hydrogen I
Kutkut	Motaz	140537	03-06: Advanced SI/CI Concepts III
Leach	Felix	138846	03-01: Advanced SI/CI Concepts I
Lee	Peter	147693	07-01: Design, Lubrication, and Thermal Management
Leenders	Tom	140005	06-03: Hydrogen Injection and Mixing
Liu	Jinlong	140324	06-07: Ammonia Combustion
Liu	Jinlong	140869	02-01: Ammoni /Hydrogen I
Lott	Patrick	148419	05-01: Emissions Control I
Manin	Julien	147555	03-05: Fundamental Sprays/Ignition/Combustion II
Marello	Omar	140754	02-05: Compression Ignition I
Markov	Krasimir	140801	02-05: Compression Ignition I
Marzemin	Francesco	140714	06-04: Large-Bore Engine Modeling
Mason	Michael	140571	06-01: Spray Modeling
McAllister	Matthew	140006	03-05: Fundamental Sprays/Ignition/Combustion II
Menaca	Rafael	140872	06-02: Hydrogen Combustion
Miganakallu	Niranjan	140682	03-06: Advanced SI/CI Concepts III
Miura	Ken	140870	07-01: Design, Lubrication, and Thermal Management
Mueller	Charles	140691	03-03: Advanced SI/CI Concepts II
Nasim	Md Nayer	140772	05-01: Emissions Control I
Nawaz	Behlol	140933	02-02: Ammonia/Hydrogen II
Newberry	Alejandro	149561	08-01: Poster Session
Nonavinakere Vinod	Kaushik	148368	08-01: Poster Session
O'Donnell	Patrick	140796	01-01: Off-Road Compression Ignition
Ovaska	Teemu	140557	01-01: Off-Road Compression Ignition
Pal	Pinaki	141660	02-04: Spark Ignition

AUTHOR LAST NAME	AUTHOR FIRST NAME	PAPER NUMBER	SESSION
Panithasan	Mebin Samuel	140561	02-04: Spark Ignition
Parsons	Dom	140758	02-02: Ammonia/Hydrogen II
Pathak	Utkarsh	140560	06-07: Ammonia Combustion
Patil	Tejashri	139956	05-01: Emissions Control I
Patwary	Mohammad Fahim Faisal	140123	06-01: Spray Modeling
Phlips	Patrick	141596	06-05: Performance Systems Modeling
Piano	Andrea	140885	06-02: Hydrogen Combustion
Pommier	Forrest	138935	01-02: Off-Road Spark & Assisted Ignition
Puzinauskas	Paul	141696	02-07: Alcohol Fuels
Rana	Shailendra	141569	06-07: Ammonia Combustion
Ravaglioli	Vittorio	141833	04-02: Powertrain Modeling and Optimization
Reggeti	Shawn	140905	02-01: Ammonia/Hydrogen I
Roshid	S M Al Mamun Or	151067	08-01: Poster Session
Rousselle	Christine	140052	02-01: Ammonia/Hydrogen I
Sapkota	Pradeep	140645	06-02: Hydrogen Combustion
Sari	Rafael	141706	06-05: Performance Systems Modeling
Sellnau	Mark	142042	05-03: Emissions Control III
Semler	Joseph	149595	08-01: Poster Session
Serrano	Jose R.	140272	02-04: Spark Ignition
Shakeel	Mohammad Raghib	140847	06-06: Alternative Fuels
Shen	Li	148396	03-05: Fundamental Sprays/Ignition/Combustion II
Silvagni	Giacomo	148334	04-01: Powertrain Diagnostics and Control Strategies
Silvagni	Giacomo	148392	02-03: Natural Gas
Singh	Saurabh	138297	03-01: Advanced SI/CI concepts I
Singh	Harsimran	141693	06-07: Ammonia Combustion
Sinha Majumdar	Sreshtha	149501	08-01: Poster Session
Soloiu	Valentin	140956	02-05: Compression Ignition I
Soloiu	Valentin	140960	02-05: Compression Ignition I
Srna	Ales	140019	03-05: Fundamental Sprays/Ignition/Combustion II
Stafford	Jacob	148227	08-01: Poster Session
Strzelec	Andrea	140927	05-02: Emissions Control II
Thothadri	Hariraja	149654	08-01: Poster Session
Torelli	Roberto	148611	06-01: Spray Modeling
Tretola	Giovanni	140954	06-03: Hydrogen Injection and Mixing
Tyrewala	Daanish	138672	03-02: Dual fuel Combustion
Varanasi	Avaneesh Athreya	140982	03-06: Advanced SI/CI Concepts III
Varma	Arun Ravi	140788	06-06: Alternative Fuels
Wang	Yiqing	140413	06-03: Hydrogen Injection and Mixing
White	Samuel	140524	03-06: Advanced SI/CI Concepts III
White	Tyler	140936	02-03: Natural Gas
Wieser	Marinus	148209	04-02: Powertrain Modeling and Optimization
Xu	Chao	140952	06-04: Large-Bore Engine Modeling
Zafeiridis	Menelaos	148196	06-05: Performance Systems Modeling
Zeman	Jared	141611	03-01: Advanced SI/CI Concepts I
Zhang	Yicheng	140540	08-01: Poster Session
Zhou	Ziming	140636	03-04: Fundamental Sprays/Ignition/Combustion I
Zoumpourlos	Konstantinos	142036	03-02: Dual Fuel Combustion

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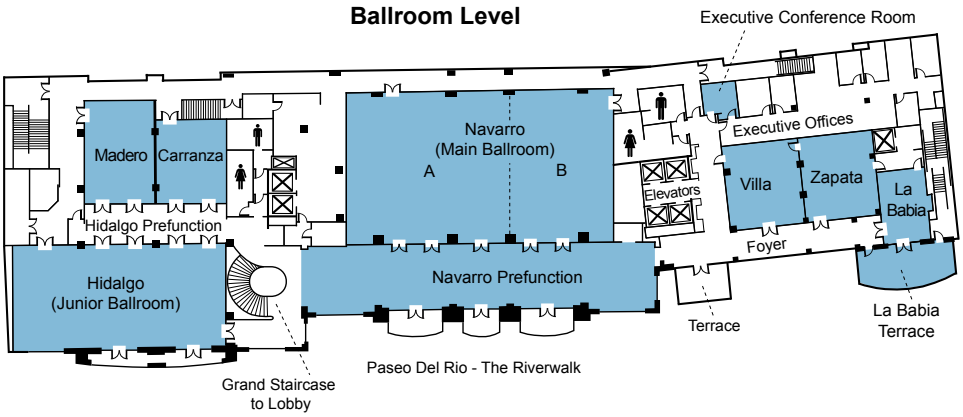

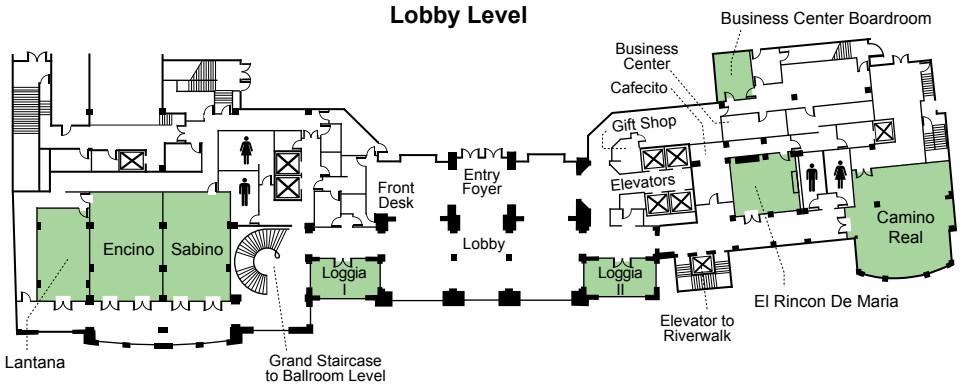

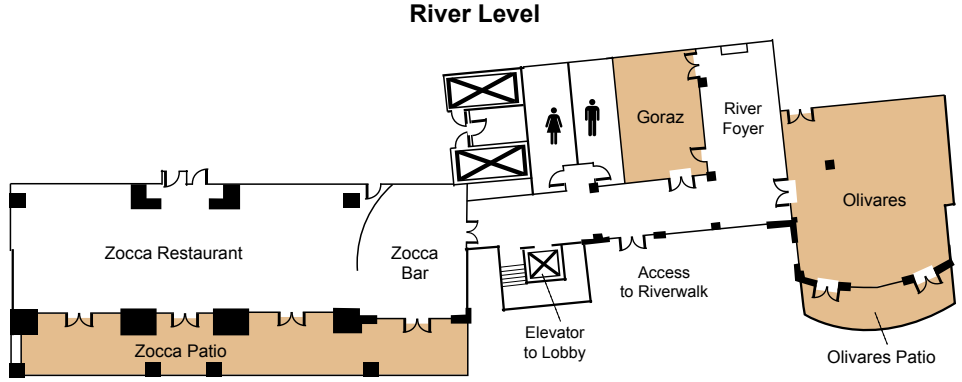

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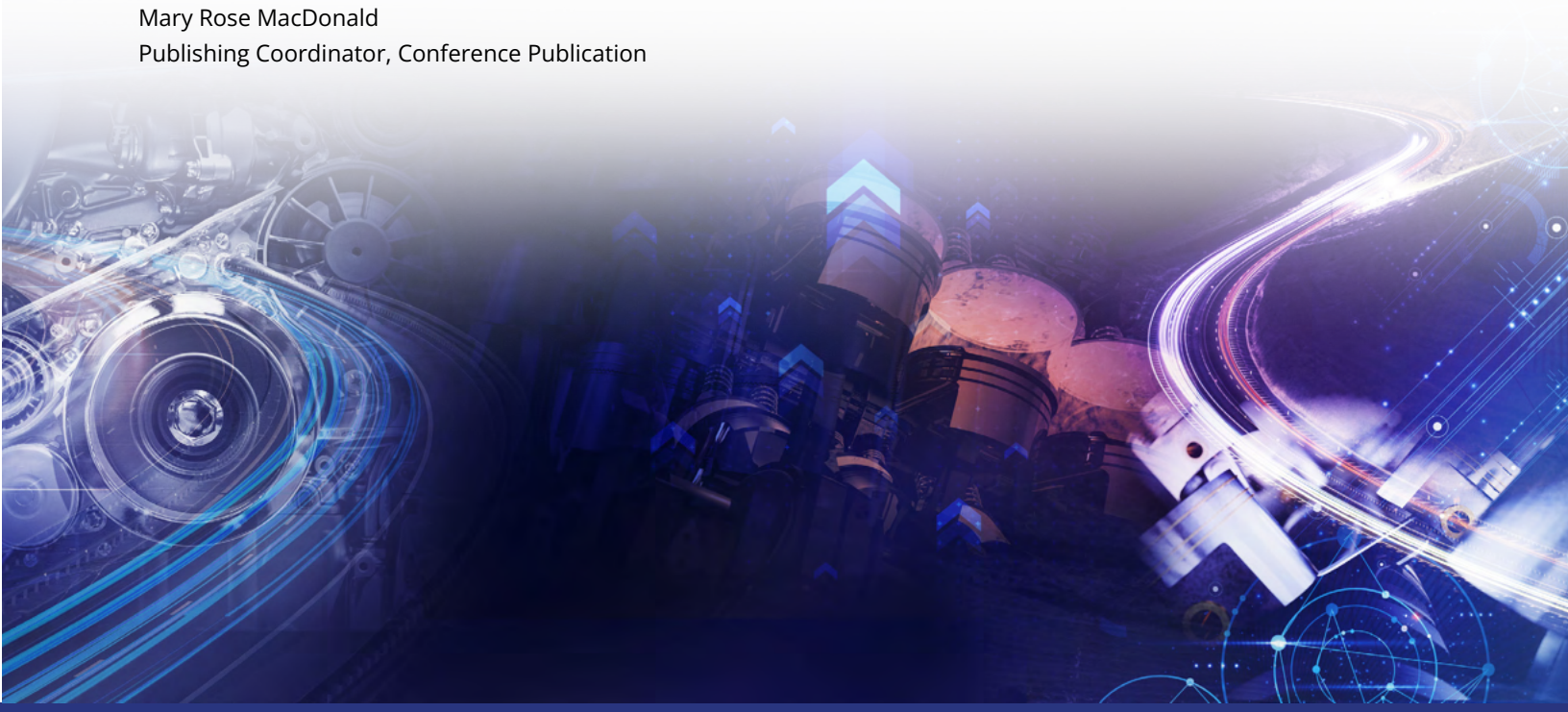

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