AMERICAN SOCIETY OF MECHANICAL ENGINEERS

INTERNAL COMBUSTION ENGINE DIVISION (ICED)

2010 FALL TECHNICAL CONFERENCE

September 12 – 15, 2010

FINAL PROGRAM

Hilton Palacio del Rio
San Antonio, Texas

Hosted by Southwest Research Institute®

Sponsors:

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ICE Division Chair: Frank Aboujaoude
Technical Program Chair: Stuart Neill
Administration Program Chair: John Hedrick
Local Host Chair: John Hedrick

WELCOME

The Internal Combustion Engine Division (ICED) of ASME welcomes you to attend its 2010 Fall Technical Conference from September 12-15th, 2010 in San Antonio, Texas. The technical program is presented in five parallel sessions in rooms that are conveniently located to allow attendees to move among sessions.

To be competitive in today's market, engine professionals need information and the ASME Internal Combustion Engine Conference is the place to get it! We also know your time is valuable, so we pack a lot of information into a two day technical program. Social activities and work tours have been arranged to make your attendance even more enjoyable, while increasing your professional network and social capital. We wish you a memorable and professionally rewarding experience!

ACKNOWLEDGEMENT

Many individuals contributed to the organization of the Conference. The support of our colleagues at Southwest Research Institute for hosting the conference, for helping with the hotel selection and local arrangements, and organizing the technical tour of their facility is sincerely appreciated.

The support of the ICED Sponsors is sincerely appreciated. Their financial support helps cover the cost of the conference and is gratefully acknowledged. The support of the ASME-ICED Executive Committee in making the Conference arrangements was essential. The support of ASME Headquarters, in particular Vince Dilworth and Stacey Cooper with the conference web site, and Annette Robinson and Nhora Cortes-Comerer in Publishing, was outstanding.

The contributions of the anonymous reviewers are greatly appreciated. Special thanks go to all the track leaders, session organizers and co-organizers. Finally, we recognize and honor all the authors of the papers, and our Keynote speaker, Dr. Thomas W. Ryan III of Ryan Consultants, LLC, who are major contributors to the success of the Conference.

HIGHLIGHTS OF THE 2010 FALL CONFERENCE

Sunday, September 12, 2010

Welcome Reception – 18:00-19:30, Terrace (5th Floor)

Begin the Conference by joining us for complimentary hors d'oeuvres and refreshments on the Terrace on the 5th floor of the conference hotel. This is a good rendezvous point to meet with other conference attendees and professional associates and a prelude to an enjoyable evening in San Antonio.

If the weather is inclement, the Welcome Reception will be moved to the Stetson Room, overlooking the San Antonio River Walk.

Monday, September 13, 2010

Keynote Address – 08:00-09:30, Salon del Rey - South

The conference will open with a Keynote Address by Thomas W. Ryan III of Ryan Consultants, LLC. The title of Dr. Ryan's presentation is **"Sustainable Energy - Economic and Environmental Benefit of Efficiency Improvement."**

Dr. Ryan is a mechanical engineer who began his career at Southwest Research Institute in 1979 after spending two years as an assistant professor in the Mechanical Engineering Department of the Pennsylvania State University. Over the past 35 years Dr. Ryan has specialized in the areas of engine, fuels and combustion technology. He has performed both basic and applied combustion research in experiments involving very basic combustion processes and sophisticated diagnostics to actual internal combustion engine systems. Much of his work has involved the application of the appropriate diagnostic techniques in experiments involving both real and simulated combustion environments. He has for the past several years managed a large international consortium of engine manufacturers and suppliers focused on the development of advanced low emissions and high efficiency diesel engines. Dr Ryan was the 2008 President of SAE International.

Spouses Program

Transportation to the activities on the Spouses Program will be provided by the ICE Division at no charge.

Monday morning will offer a tour to some of the major attraction around San Antonio using San Antonio Trolley Tours. As part of the tour, tickets will be provided for unlimited travel on the San Antonio Trolley system for Monday and Tuesday. This will allow the Spouses to return and visit the attraction that holds the most interest.

Tuesday will start at 9:30 AM with a Rio Taxi Charter Boat trip from the back of the Hilton hotel to the San Antonio Museum of Art (SAMA). SAMA opens at 10:00AM and the entrance fee for a self-guided tour is covered by the ICED. Lunch reservations have been made at the Cafe des Artistes, located in the SAMA Hops House, overlooking San Antonio River Walk. Attendees will be responsible for their own dining expenses. At 1:30 PM there will be a Rio Taxi Charter Boat at will return the tour group from SAMA to the Hilton hotel.

Monday, September 13, 2010

07:00 - 08:00	Continental Breakfast
07:00 - 09:00	Spouses Lounge – La Duquesa (Open from 7:00 to 18:00)
09:00 - 10:15	San Antonio Trolley Tour (Pick-up at Hotel)
11:00 – 12:00	San Antonio River Walk
12:00 - 13:30	Lunch

Tuesday, September 14, 2010

07:00 - 08:00	Continental Breakfast
07:00 - 09:00	Spouses Lounge – La Duquesa (Open from 7:00 to 18:00)

09:15 – 10:30	Rio Taxi Charter Boat (Pick-up river side of hotel)
11:00 – 12:00	San Antonio Museum of Art (SAMA) – Self-guided Tour
12:00 - 13:15	Lunch Reservation at Café des Artistes at SAMA – Overlooking San Antonio River Walk
13:30 – 1400	Rio Taxi Charter Boat (Pick-up at SAMA)

Honors and Awards Banquet – 18:00-21:30, Corte Real (22 Floor)

The **Honors and Awards Banquet**, which will be held at the Hilton Palacio del Rio banquet hall Corte Real on the top floor of the hotel on Monday, September 13, 2010, is a special annual event to recognize the outstanding achievements and dedicated efforts of the ICE Division colleagues. The Honors and Awards Banquet will start with a cash bar at 6:00 p.m., followed by a delicious dinner and the awards ceremony. The evening will conclude after the awards ceremony with an outstanding performance by the Arte Flamenco Dance Company.

Academia de Arte Flamenco's students have performed at countless venues and festivals in Central and South Texas like the prestigious Texas Folklife Festival and the State Fair of Texas in Dallas, to name a few. This professional dance company performs regularly at España Bar de Tapas in San Antonio.

Tuesday, September 14, 2010

ICE Division Board of Associates Meeting
08:00-09:15, Salon del Rey – North & Central

The ICE Division will hold its Associates meetings on Tuesday morning to discuss the Division business. ICED Associates and conference attendees who want to find out more about how the Division operates are invited to attend the meeting.

ICE Division Technical Committee Meetings
09:15-10:00, Salon del Rey – North & Central

The ICE Division will hold its Technical Committee Meetings on Tuesday morning to begin planning future conferences. ICED Associates and conference attendees who are interested in actively participating in future conferences and activities of the Division are strongly encouraged to attend one of the Technical Committee meetings.

Lunchtime Presentation – 12:00-13:30, Salon del Rey - South

Tier 4 Locomotive Aftertreatment: Designing It Properly

Michael Iden
General Director – Car and Locomotive Engineering
Union Pacific Railroad

Michael Iden is the General Director of Car and Locomotive Engineering for Union Pacific Railroad, serving as the lead technical representative in locomotive emissions. Previously he was employed by the Southern Railway System, the Electro-Motive Division of General Motors and the Chicago & North Western Transportation

Company. He has a bachelor's degree in mechanical engineering from the Milwaukee School of Engineering and a Master of Management degree from Northwestern University which he attended on a General Motors Fellowship. Iden is a registered professional engineer in several states, and a federally licensed locomotive engineer. His recent work at Union Pacific includes leading the team which developed the world's first multi-engine ultra-low emitting diesel "Genset" switching locomotive. Iden has also lead UP's experimental efforts with retrofitting the first American switcher with diesel particulate filters, and retrofitting the first older line-haul locomotive with an oxidation catalyst.

Mike serves on several technical committees of the Association of American Railroads (AAR), and has been chairman of three committees: the Locomotive Committee, the Technology Scanning Committee, and the Coupling Systems and Truck Castings Committee. In 2003, Iden was nominated for the AAR's annual Environmental Excellence award for his work in reducing locomotive emissions.

Wednesday, September 15, 2010

Technical Tours

BUS "A" – SwRI Tour (08:00 – 12:15)

Southwest Research Institute® (SwRI®) is one of the oldest and largest independent, nonprofit, applied research and development (R&D) organizations in the United States. SwRI consists of 12 technical divisions that offer multidisciplinary, problem-solving services in a variety of areas in engineering and the physical sciences. The tour will focus on:

- Engine, Emissions and Vehicle Research – The division specializes in design, development, and test programs on a wide range of components, engines, transmissions, and vehicles. This work is supported by research and modeling of fuel mixing, combustion, tribology, filtration, structural analysis, NVH, and fluid flow analysis. The division also develops specialized instruments, control systems, test apparatus, and data acquisition systems to aid in achieving engine and vehicle performance and emissions goals.
- Fuels and Lubricants Research Division - Internationally known for its fuels and lubricants research activities the division continues to uphold the longstanding tradition of quality and client response, started more than 60 years ago. The Institute helps clients get automotive products to the market and keep them there in response to regulation and competition. A broad range of services is available for product research, product development and product qualification of automotive components and automotive fluids for on-road, off-road, rail, and water-borne transportation systems as well as recreational vehicles and stationary power equipment.

NOTE – SwRI requires that ID badges must be worn at all times and to stay with the tour guides. SwRI also prohibits the use of any recording devices or cameras (including cell phones with cameras) during the tours.

Additional details about SwRI can be found at ***www.swri.org***.

BUS "B" – SwRI and Toyota Tour (08:00 – 15:00)

After touring SwRI (see above description), the attendees will be provided lunch at the SwRI Cafeteria. After lunch, the bus will proceed to the San Antonio Toyota Tundra Plant. The tour includes visits to the Body Weld shop, Plastics shop, and part of the Final Assembly Line. Through the tour, the Toyota guide will point out the foundations of the world renowned Toyota Production System.

NOTE – Toyota prohibits cell phones that take photos, cameras, handbags, book bags, briefcases, purses, bags and backpacks. Children traveling with families must be 6 years old to take the tour. Visitors must also present a valid photo ID.

Additional details may be found as ***http://www.toyotatexas.com/index.php/tour***.

EXHIBITS

The conference exhibits will be open in the La Corona during session breaks on Monday and Tuesday. Conference organizers would like to thank and acknowledge the exhibitors.

DieselNet.com
Intertek - Automotive Research
Cambustion
Drivven, Inc.
C-K Engineering, Inc.

PAPER RATING AND PRESENTATION AWARDS

You will receive a Technical Paper Presentation Rating Form on which you are requested to rate the presentations you attend. This is to encourage and reward the most outstanding presentations.

PUBLICATION SALES

ASME papers presented at this conference will be included in a Conference Proceedings CD. The cost of the Proceedings is included in the registration fee. After the conference, they can be ordered from www.asme.org or by telephone (800) 843-2763 or by Fax: (212) 591-7292.

FUTURE CONFERENCES

2011 FTC – Morgantown, West Virginia
The 2011 Fall Technical Conference will be held in Morgantown, West Virginia on October, 2 - 5, 2011. The conference will have the traditional format starting on Sunday night and concluding with the technical tours on Wednesday. For more information, please check www.asmeconferences.org/ICEF2011/

2012 STC – Torino, Italy
Following our new conference model, ASME ICED will hold the 2012 Spring Technical Conference in Torino, Italy.

CONFERENCE SCHEDULE

Sunday, September 12, 2010

08:30 - 16:00	Executive Committee Meeting	La Vista
16:00 - 18:00	Early Conference Registration	Mezzanine – Floor above Lobby
16:00 - 18:00	Exhibits Setup	La Corona
18:00 - 19:30	Welcome Reception	Terrace (5th floor)
19:30 - 20:00	Session Organizers Briefing	Terrace (5th floor)

Monday, September 13, 2010

07:00 - 08:00	Breakfast	Salon del Rey South
07:00 - 18:00	Spouses' Lounge	La Duquesa
07:00 - 18:00	Exhibits	La Corona
07:30 - 15:30	Conference Registration	Mezzanine – Floor above Lobby
07:30 - 08:00	Authors Briefing (Monday Sessions)	Your Session Room
08:00 - 09:30	Opening Remarks and Keynote Address	Salon del Rey North & Central
09:30 - 10:00	Break	Pre-Function
09:30 – 13:30	Spouses' Program	
10:00 - 12:00	Combustion - I	Salon del Rey North
10:00 - 12:00	Fuels - I	Salon del Rey Central
10:00 - 12:00	Numerical Simulation - I	La Vista
10:00 - 12:00	Emissions Control - I	La Princesa
10:00 - 12:00	Engine Design - I	La Reina
12:00 - 13:30	Lunch	Salon del Rey South
13:30 – 15:00	Combustion - II	Salon del Rey North
13:30 - 15:00	Emissions Control - II	Salon del Rey Central
13:30 - 15:00	Numerical Simulation - II	La Vista
13:30 - 15:00	Large Bore - I	La Princesa
13:30 - 15:00	Sensors/Controls - I	La Reina
15:00 - 15:30	Break	Pre-Function
15:30 - 17:30	Combustion - III	Salon del Rey North
15:30 - 17:00	Fuels - II	Salon del Rey Central
15:30 - 17:30	Numerical Simulation - III	La Vista
15:30 - 17:30	Large Bore - II	La Princesa
15:30 - 17:30	Sensors/Controls - II	La Reina
18:00 - 21:30	Honors and Awards Banquet	Corte Real (22nd Floor)

Tuesday, September 14, 2010

07:00 - 08:00	Breakfast	Salon del Rey South
07:00 - 18:00	Spouses' Lounge	La Duquesa
07:00 - 18:00	Exhibits	La Corona
07:30 - 15:30	Conference Registration	Mezzanine – Floor above Lobby
07:30 - 08:00	Authors Briefing (Tuesday Sessions)	Your Session Room
08:00 - 09:15	Associates Meeting (all attendees)	Salon del Rey North & Central

09:15 - 10:00	Combustion Technical Committee	Salon del Rey North
09:15 - 10:00	Fuels Technical Committee	Salon del Rey Central
09:15 - 10:00	Emissions Control Technical Committee	Salon del Rey Central
09:15 - 10:00	Numerical Simulation Technical Committee	La Vista
09:15 - 10:00	Engine Design Technical Committee	La Vista
09:15 - 10:00	Large Bore Technical Committee	La Princesa
09:15 - 10:00	Sensors/Controls Technical Committee	La Reina
10:00 - 10:30	Break	Pre-Function
10:30 - 12:00	Combustion - IV	Salon del Rey North
10:30 - 12:00	Fuels - III	Salon del Rey Central
10:30 - 12:00	Numerical Simulation - IV	La Vista
10:30 - 12:00	Emissions Control - III	La Princesa
10:30 - 12:00	Engine Design - II	La Reina
12:00 - 13:30	Lunch	Salon del Rey South
13:30 - 15:00	Combustion - V	Salon del Rey North
13:30 - 15:00	Fuels - IV	Salon del Rey Central
13:30 - 15:00	Engine Design - III	La Vista
13:30 - 15:00	Large Bore – III	La Princesa
13:30 - 15:00	Sensors/Controls - III	La Reina
15:00 - 15:30	Break	Pre-Function
15:30 - 17:00	Combustion – VI	Salon del Rey North
15:30 - 16:30	Fuels - V	Salon del Rey Central
15:30 - 17:00	Engine Design – IV	La Vista
15:30 - 17:00	Large Bore – IV	La Princesa
15:30 - 17:00	Sensors/Controls - IV	La Reina

Wednesday, September 15, 2010

07:00 - 08:00	Continental Breakfast	Salon del Rey South
08:00 - 12:15	Technical Tour of SwRI	Lobby
08:00 - 15:00	Technical Tour of SwRI and San Antonio Toyota Tundra Plant	Lobby

TECHNICAL PROGRAM

Track 1: Large Bore Engines
*Track Chair: **Dick Dunteman**, N.R. Dunteman, LLC, Shallotte, NC, United States*

Track 2: Fuels
*Track Chair: **Steve McConnell**, Argonne National Lab, Argonne, IL, United States*
*Track Co-Chair: **Scott Miers**, Michigan Technological University, Houghton, MI, United States*

Track 3: Advanced Combustion
Track Chair: ***Timothy Jacobs,** Texas A&M University, College Station, TX, United States*
Track Co-Chair: ***Bradley Zigler,** National Renewable Energy Laboratory (NREL), Golden, CO, United States*

Track 4: Emission Control Systems
Track Chair: ***Steve Fritz****, Southwest Research Institute, San Antonio, TX, United States*
Track Co-Chair: ***Alexander Sappok****, Massachusetts Institute of Technology, Cambridge, MA, United States*

Track 5: Instrumentation, Controls and Hybrids
Track Chair: ***David Gardiner,*** *Nexum Research Corporation, Kingston, ON, Canada*
Track Co-Chair: ***Matthew Viele,*** *Drivven, Inc., Elizabeth, CO, United States*

Track 6: Numerical Simulation
Track Chair: ***Song-Charng Kong****, Iowa State University, Ames, IA, United States*

Track 7: Engine Design, Lubrication & Applications
Track Chair: ***Ronald Duda,*** *Unlimited Design International, Inc, Holyoke, MA, United States*
Track Co-Chair: ***Dan Richardson,*** *Cummins, Inc, Columbus, IN, United States*

Monday, September 13, 2010 10:00 - 12:00

3-1 FUNDAMENTAL / ADVANCED INJECTION / SPRAY DEVELOPMENT
Salon del Rey North

Session Chair: ***Gregory Bogin****, NREL, Golden, CO, United States*
Session Co-Chair: ***Hailin Li****, West Virginia University, Morgantown, WV, United States*

10:00 – 10:30

ICEF2010-35171: Mass and Momentum Flux Measurements with a High Pressure Common Rail Diesel Fuel Injector

Samuel E. Johnson, Jaclyn E. Nesbitt, Jeffrey D. Naber, *Michigan Technological University, Houghton, MI, United States*

10:30 – 11:00

ICEF2010-35032: End-of-Injection Behavior of Diesel Sprays Measured with X-Ray Radiography

Alan Kastengren, Christopher F. Powell, Zunping Liu, Seoksu Moon, Jian Gao, Xusheng Zhang, Jin Wang, *Argonne National Laboratory, Argonne, IL, United States*

11:00 – 11:30

ICEF2010-35069: Fuel-Line Stationary Waves and Variability in CI Combustion during Complex Injection Strategies

Antonis D. Michailidis, Richard K. Stobart, Gordon P. McTaggart-Cowan, *Loughborough University, Loughborough, East Midlands, United Kingdom*

11:30 – 12:00

ICEF2010-35090: Investigation of Ethanol Spray from Different DI Injectors by Using Two-Dimensional Laser Induced Exciplex Fluorescence at Potential Cold-Start Condition

Hao Chen, Min Xu, Gaoming Zhang, Ming Zhang, Yuyin Zhang, *Shanghai Jiao Tong University, Shanghai, Shanghai, China*

2-1 COMPRESSION IGNITION ALTERNATIVE FUELS (PART I)
Salon del Rey Central

Session Chair: ***Sundar Krishnan****, Mississippi State University, Mississippi State, MS, United States*
Session Co-Chair: ***Kalyan Kumar Srinivasan,*** *Mississippi State University, Mississippi State, MS, United States*

10:00 – 10:30

ICEF2010-35001: Effect of High Sulfur Military JP-8 Fuel on Heavy Duty Diesel Engine Emissions and EGR Cooler Condensate

***Michael Smith**, University of Michigan, Ann Arbor, MI, United States, **Peter Schihl**, US Army RDECOM-TARDEC, Warren, MI, United States, **Zoran Filipi**, **Dennis Assanis**, University of Michigan, Ann Arbor, MI, United States*

10:30 – 11:00

ICEF2010-35073: Effect of Swirl on Performance and Emissions of JP-8 fueled High Speed Single Cylinder Diesel Engine

***Jagdish Nargunde**, **Chandrasekharan Jayakumar**, **Anubhav Sinha**, **Naeim A. Henein**, **Walter Bryzik**, Wayne State University, Detroit, MI, United States, **Eric Sattler**, U.S. Army TARDEC, Detroit, MI, United States*

11:00 – 11:30

ICEF2010-35060: Effect of Biodiesel, JP-8 and Ultra Low Sulfur Diesel Fuel on Auto-ignition, Combustion, Performance and Emissions in a Single Cylinder Diesel Engine

***Chandrasekharan Jayakumar**, **Jagdish Nargunde**, **Anubhav Sinha**, **Walter Bryzik**, **Naeim A. Henein**, Wayne State University, Detroit, United States, **Eric Sattler**, U.S. Army TARDEC, Detroit, MI, United States*

11:30 – 12:00

ICEF2010-35130: Investigation and Demonstration of a Small Intermittent Internal Combustion Heavy-Fueled Engine

***David A. Clark**, Army Research Lab/Vehicle Technology Directorate, Cleveland, OH, United States, **Albert K. Owen**, Army Research Lab, Cleveland, OH, United States, **Albert F. Kascak**, U.S. Army, Army Research Lab, VTD, Cleveland, OH, United States, **Brian J. Porter**, Army Research Lab, Aberdeen, MD, United States*

6-1 MULTI-DIMENSIONAL MODELING (PART I)
La Vista

*Session Chair: **Randy Hessel**, University of Wisconsin-Madison, Engine Research Center, Madison, WI, United States*
*Session Co-Chair: **Russell Whitesides**, Lawrence Livermore National Laboratory, Livermore, CA, United States*
*Session Co-Chair: **Harmit Juneja**, Wisconsin Engine Research Consultants, LLC, Madison, WI, United States*

10:00 – 10:30

ICEF2010-35147: A General Rezoning Technique for KIVA3V Internal Combustion Engines CFD Simulations

***Randy Hessel**, University of Wisconsin-Madison, Engine Research Center, Madison, WI, United States, **Ettore Musu**, University of Pisa, Pisa, Italy, **Salvador M. Aceves**, **Dan Flowers**, Lawrence Livermore National Laboratory, Livermore, CA, United States*

10:30 – 11:00

ICEF2010-35135: Investigation of the Roles of Flame Propagation, Turbulent Mixing, and Volumetric Heat Release in Conventional and Low Temperature Diesel Combustion

***Sage Kokjohn**, **Rolf D. Reitz**, University of Wisconsin - Madison, Madison, WI, United States*

11:00 – 11:30

ICEF2010-35198: Numerical Study on Combustion Characteristics of Biodiesel Using a New Reduced Mechanism for Methyl Decanoate as Surrogate

***Zhaoyu Luo**, **Tianfeng Lu**, University of Connecticut, Storrs, CT, United States, **Sibendu Som**, **Douglas Longman**, Argonne National Laboratory, Argonne, IL, United States*

11:30 – 12:00

ICEF2010-35095: Simulation of Combustion and Emission Characteristics in a Dual Fueled Diesel Engine

***Biplab K. Debnath**, **Bibhuti B. Sahoo**, **Ujjwal K. Saha**, **Niranjan Sahoo**, Indian Institute of Technology Guwahati, Guwahati, India*

4-1 ENGINE EMISSIONS (PART I)
La Princesa

*Session Chair: **Alexander Sappok**, Massachusetts Institute of Technology, Cambridge, MA, United States*
*Session Co-Chair: **Steve Fritz**, SwRI, San Antonio, TX, United States*

10:00 – 10:30

ICEF2010-35055: Particulate Matter Emissions from a High-Emitting Diesel Vehicle Measured with an On-Board Electronic PM Sensor

***Jude Osara**, **Timothy Diller**, **Matthew J Hall**, **Ronald D Matthews**, The University of Texas at Austin, Austin, TX, United States, **Jakob Heinrich**, Karlsruhe Institute of Technology, Karlsruhe, Germany*

10:30 – 11:00

ICEF2010-35170: Particle Number and Mass Collection Efficiencies in a Close-Coupled DOC-DPF System: Experimental Analysis Supported by Soot Load Modeling

***Vincenzo Mulone**, University of Rome Tor Vergata/West Virginia University, Morgantown, WV,United States, **Francesco Mecocci**, **Vittorio Rocco**, University of Rome Tor Vergata, Rome, Italy, **Michelangelo Perin**, **Marco Tonetti**, CRF-Centro Ricerche FIAT, Orbassano (TO), Italy*

11:00 – 11:30

ICEF2010-35160: Soot Modeling for Advanced Control of Diesel Engine After Treatment

***Vincenzo Mulone**, University of Rome Tor Vergata/West Virginia University, Morgantown, WV, United States, **Alessandro Cozzolini**, **Prabash Abeyratne**, **Daniele Littera**, **Manoharan Thiagarajan**, **Marc C. Besch**, **Mridul Gautam**, West Virginia University, Morgantown, WV, United States*

11:30 – 12:00

ICEF2010-35075: Optical Investigation into Wall Wetting from Late-Cycle Post-Injections used for Diesel Particulate Filter Regeneration

***Goran Bozic**, University of New South Wales, UNSW Sydney, NSW, Australia, **Isaac Ekoto**, **Ben R. Petersen**, **Paul C. Miles**, Sandia National Laboratories, Livermore, CA, United States, **Sanghoon Kook**, University of New South Wales, Sydney, Australia*

7-1 ENGINE DESIGN, LUBRICATION AND APPLICATIONS (PART I)
La Reina

Session Chair: ***John Vronay**, Vronay Engineering Services, La Jolla, CA, United States*
Session Co-Chair: ***Dick Dunteman***, *N.R. Dunteman LLC, Shallotte, NC, United States*

10:00 – 10:30

ICEF2010-35023: Modeling the Effects of Plenum Volume on the Performance of a Naturally Aspirated Spark Ignition Engine

***Leonard Hamilton**, **Jim Cowart**, US Naval Academy, Annapolis, MD, United States*

10:30 – 11:00

ICEF2010-35012: Improving Efficiency, Extending the Maximum Load Limit and Characterizing the Control-related Problems Associated with Higher Loads in a 6-Cylinder Heavy-duty Natural gas Engine

***Mehrzad Kaiadi**, Lund University, Lund, Sweden, **Per Tunestal**, Lund University, Malmoe, Sweden, **Bengt Johansson**, Lund University, Lund, Sweden*

11:00 – 11:30

ICEF2010-35195: First Comparative Test Results from a Virtual Multi-Cylinder Engine Transient Test System

***Derek A. Mangun**, University of Wisconsin-Madison, Madison, WI, United States, **John J. Moskwa**, University of Wisconsin - Madison, Madison, WI, United States*

11:30 – 12:00

ICEF2010-35152: Predictive Analytics and Diagnostics Drive Effectiveness In Condition Based Monitoring

***Tim Snyder**, **Asma Ali**, SmartSignal Corporation, Lisle, IL, United States*

Monday, September 13, 2010 13:30 - 15:00

3-2 LOW TEMPERATURE COMBUSTION / HCCI / PCCI (PART I)
Salon del Rey North

*Session Chair: **Kalyan Kumar Srinivasan**, Mississippi State University, Mississippi State, MS, United States*
*Session Co-Chair: **Scott Goldsborough**, Marquette University, Milwaukee, WI, United States*
*Session Co-Chair: **Timothy J. Jacobs**, Texas A&M University, College Station, TX, United States*

13:30 – 14:00

ICEF2010-35172: Evaluation of Diesel Low Temperature Combustion Fuel-Injection Strategies at Different Engine Loads

***Usman Asad**, National University of Sciences & Technology, Rawalpindi, Punjab, Pakistan, **Ming Zheng**, University of Windsor, Windsor, ON, Canada*

14:00 – 14:30

ICEF2010-35021: Experimental Investigations of Cycle-to-Cycle and Cylinder-to-Cylinder Variations of PCCI Combustion with High Injection Pressures

***Simhachalam Juttu**, **Sukrut S Thipse**, ARAI, Pune, India, **M.K. Gajendra Babu**, Indian Institute of Technology, New Delhi, New Delhi, India, **Neelkant Marathe**, **Nitin Dhande**, **Praveen Mishra**, ARAI, Pune, Maharashtra ,India*

14:30 – 15:00

ICEF2010-35043: Effects of Injection Parameters on the Emission Characteristics of a Heavy Duty Compression Ignition Engine and Combustion Chamber Design

***Hasan Koten**, **M. Zafer Gul**, **Mustafa Yilmaz**, Marmara University, Istanbul, Turkey*

4-2 AFTERTREATMENT SYSTEMS
Salon del Rey Central

*Session Chair: **Dustin Osborne**, Southwest Research Institute, San Antonio, TX, United States*
*Session Co-Chair: **Maruthi Devarakonda**, Pacific Northwest National Laboratory, Richland, WA, United States*

13:30 – 14:00

ICEF2010-35131: Development of an Advanced Retrofit After-treatment System Targeting Toxic Air Contaminants and Particulate Matter Emissions from HD-CNG Engines

***Hemanth Kappanna**, **Marc C. Besch**, **Mridul Gautam**, **Daniel K Carder**, West Virginia University, Morgantown, WV, United States, **Adewale Oshinuga**, **Mat Miyasato**, South Coast Air Quality Management District, Diamond Bar, CA, United States*

14:00 – 14:30

ICEF2010-35054: Modeling Species Inhibition of NO Oxidation in Urea-SCR Catalysts for Diesel Engine NO_X Control

***Maruthi Devarakonda**, **Russell Tonkyn**, **Diana Tran**, **Jong Lee**, **Darrell Herling**, Pacific Northwest National Laboratory, Richland, WA, United States*

14:30 – 15:00

ICEF2010-35098: Mixture Quality Evaluation for Transient Mode Gasoline Engine Calibration

***Ernst Winklhofer**, **Heribert Fuchs**, **Alois Hirsch**, **Martin Ogris**, AVL List GmbH, Graz, Austria*

6-1 MULTI-DIMENSIONAL MODELING (PART II)
La Vista

*Session Chair: **Randy Hessel**, University of Wisconsin-Madison, Engine Research Center, Madison, WI, United States*
*Session Co-Chair: **Russell Whitesides**, Lawrence Livermore National Laboratory, Livermore, CA, United States*
*Session Co-Chair: **Harmit Juneja**, Wisconsin Engine Research Consultants, LLC, Madison, WI, United States*

13:30 – 14:00
ICEF2010-35061: Development and Application of Advanced Combustion Modeling Tools for Heavy Duty Gaseous Fueled Industrial Spark Ignition Engines
***Harmit Juneja**, Wisconsin Engine Research Consultants, LLC, Madison, WI, United States, **Leon A. LaPointe**, **Francois Ntone**, **Edward J. Lyford-Pike**, **Xiao Qin**, Cummins, Inc., Columbus, IN, United States*

14:00 – 14:30
ICEF2010-35103: Computational and Experimental Analysis of Direct CNG Injection and Mixture Formation in a SI Research Engine
***Mirko Baratta**, **Andrea E. Catania**, **Francesco Pesce**, Politecnico di Torino, Torino, Italy*

14:30 – 15:00
ICEF2010-35159: Validation of a Lagrangian Ignition Model in SI Engine Simulations
***Claudio Forte**, University of Bologna, Bologna, Italy, **Enrico Corti**, **Gian Marco Bianchi**, University of Bologna, Bologna, Italy*

1-1 DIESELS AND COMPONENTS
La Princesa

Session Chair: ***Dick Dunteman***, *N.R. Dunteman LLC, Shallotte, NC, United States*

13:30 – 14:00
ICEF2010-35024: The Effects of Biodiesel Fuel Blends on Exhaust Emissions from a General Electric Tier 2 Line-Haul Locomotive
***Dustin Osborne**, **Steve Fritz**, Southwest Research Institute, San Antonio, TX, United States, **Doug Glenn**, GE Transportation, Erie, PA, United States*

14:00 – 14:30
ICEF2010-35068: Mineral-Metal, Multi-Phase Coatings to Protect Combustion Chamber Components Against Hot-Corrosion and Thermal Loading
***Vadim Verlotski**, **Rudolf Stanglmaier**, **Günter Moormann**, **Ralph Geraets**, Märkisches Werk GmbH, Halver, Germany*

14:30 – 15:00
ICEF2010-35085: An Assessment of the Relative Benefits of Miller Cycle and Turbocompounding on a Medium Speed Diesel Engine Using Second Law Analysis
***Thomas Lavertu**, **Roy Primus**, **Omowoleola Akinyemi**, GE Global Research, Niskayuna, NY, United States*

5-1 SENSORS / CONTROLS (PART I)
La Reina

Session Chair: ***David Gardiner,** Nexum Research Corporation, Kingston. ON, Canada*
Session Co-Chair: ***Matthew Viele,** Drivven, Inc., Elizabeth, CO, United States*

13:30 – 14:00
ICEF2010-35134: Spark Advance Real-Time Optimization Based on Combustion Analysis
***Enrico Corti**, University of Bologna, Bologna, Italy, **Claudio Forte**, University of Bologna, Italy, Bologna, Italy*

14:00 – 14:30

ICEF2010-35129: Closed-Loop Control Framework for Fuel-Flexible Combustion of Biodiesel Blends

David Snyder, ***Gayatri Adi***, ***Carrie Hall***, ***Mike Bunce***, ***Gregory Shaver***, *Purdue University, West Lafayette, IN, United States*

14:30 – 15:00

ICEF2010-35119: Next-Cycle and Same-Cycle Cylinder Pressure Based Control of Internal Combustion Engines

Matthew Viele, *Drivven, Inc., Elizabeth, CO, United States,* ***Kristopher Quillen***, *Drivven, Inc., San Antonio, TX, United States,* ***Stephen Ciatti***, *Argonne National Laboratory, Argonne, IL, United States*

Monday, September 13, 2010 15:30 - 17:30

3-2 LOW TEMPERATURE COMBUSTION / HCCI / PCCI (PART II)
Salon del Rey North

Session Chair: ***Kalyan Kumar Srinivasan****, Mississippi State University, Mississippi State, MS, United States*
Session Co-Chair: ***Scott Goldsborough****, Marquette University, Milwaukee, WI, United States*
Session Co-Chair: ***Timothy J. Jacobs****, Texas A&M University, College Station, TX, United States*

15:30 – 16:00

ICEF2010-35143: Fast Methods to Analyze High-Speed Images of HCCI and Spark-Assisted HCCI Ignition Events

Peter Keros, ***Dimitris Assanis***, ***Jill Schlechtweg***, ***Margaret S. Wooldridge***, *University of Michigan, Ann Arbor, MI, United States*

16:00 – 16:30

ICEF2010-35100: In-Cycle Closed Loop Control of the Fuel Injection on a 1-Cylinder Heavy Duty CI-Engine

Claes-Göran Zander, *Scania CV AB / Lund University, Lund, Sweden,* ***Per Tunestal***, *Lund University, Malmoe, Sweden,* ***Ola Stenlåås***, *Scania CV AB, Södertälje, Sweden,* ***Bengt Johansson***, *Lund University, Lund, Sweden*

16:30 – 17:00

ICEF2010-35087: Comparison of Crank Angle Based Ignition Timing Methods on an HCCI Engine

Ahmad Ghazimirsaied, *University of Alberta, Edmonton, AB, Canada,* ***Mahdi Shahbakhti***, *KNT University of Technology, Tehran, Iran,* ***Bob Koch***, *University of Alberta, Edmonton, AB, Canada*

17:00 – 17:30

ICEF2010-35122: Model-based Estimation of Turbocharger Requirements for Boosting an HCCI Engine

Sotirios Mamalis, ***Aris Babajimopoulos***, *University of Michigan, Ann Arbor, MI, United States*

2-1 COMPRESSION IGNITION ALTERNATIVE FUELS (PART II)
Salon del Rey Central

Session Chair: ***Sundar Krishnan***, *Mississippi State University, Mississippi State, MS, United States*
Session Co-Chair: ***Kalyan Kumar Srinivasan,*** *Mississippi State University, Mississippi State, MS, United States*

15:30 – 16:00

ICEF2010-35079: Combustion and Emissions Characteristics of a Polypropylene Blended Diesel Fuel in a Direct Injection Compression Engine

***Valentin Soloiu**, Georgia Southern University, Statesboro, GA, United States, **Yoshinobu Yoshihara**, **Kazuie Nishiwaki**, **Yasufumi Nakanishi**, Ritsumeikan University, Kusatsu, Shiga, Japan*

16:00 – 16:30

ICEF2010-35034: Optimization of the Performance and Emissions of Soy Biodiesel Blends in a Modern Diesel Engine

***Mike Bunce**, **David Snyder**, **Gayatri Adi**, **Carrie Hall**, **Gregory Shaver**, Purdue University, West Lafayette, IN, United States*

16:30 – 17:00

ICEF2010-35191: Combustion and Exhaust Emission Characteristics of a Passenger Car Diesel Engine Fueled with BD30 Derived from Soybean

***Myung Yoon Kim**, **Wooheum Cho**, **Eun-Hyun Lee**, **Jerok Chun**, Hyundai & Kia Corporate Research & Development Division, Hwaseong, South Korea*

6-2 ENGINE SIMULATION
La Vista

*Session Chair: **Claudio Forte**, University of Bologna, Italy, Bologna, Italy*

15:30 – 16:00

ICEF2010-35120: Investigating Potential Efficiency Improvement for Light-Duty Transportation Applications through Simulation of an Organic Rankine Cycle for Waste-Heat Recovery

***K. Dean Edwards**, **Robert M. Wagner**, Oak Ridge National Laboratory, Knoxville, TN, United States*

16:00 – 16:30

ICEF2010-35127: Quasi-Two-Zone Modeling of Diesel Ignition Delay in Pilot-Ignited Partially Premixed Low Temperature Natural Gas Combustion

***Saroj K. Jha**, **Sundar Krishnan**, **Kalyan Kumar Srinivasan**, Mississippi State University, Mississippi State, MS, United States*

16:30 – 17:00

ICEF2010-35050: A New Valve Lift Control Technique in Electro-hydraulic Variable Valve Actuation Systems

***Mohammad Pournazeri**, **Amir Fazeli**, **Amir Khajepour**, University of Waterloo, Waterloo, ON, Canada*

17:00 – 17:30

ICEF2010-35036: The Destruction of Exergy during the Combustion Process for a Spark-Ignition Engine

***Jerald A. Caton**, Texas A&M University, College Station, TX, United States*

1-2 GAS ENGINE PERFORMANCE
La Princesa

*Session Chair: **Daniel Olsen**, Colorado State University, Fort Collins, CO, United States*

15:30 – 16:00

ICEF2010-35082: Development of an Exhaust Manifold Design Optimization for Cylinder Scavenging and Turbocharger Performance

***Diana K. Grauer**, **Kirby S. Chapman**, Kansas State University, Manhattan, KS, United States*

16:00 – 16:30

ICEF2010-35105: In-Cylinder Optical Diagnostics in a Laser Ignited Natural Gas Fired Reciprocating Engine

***Bipin Bihari**, **Sreenath Gupta**, **Munidhar Biruduganti**, **Raj R. Sekar**, Argonne National Laboratory, Argonne, IL, United States*

16:30 – 17:00

ICEF2010-35058: On Comparative Performance Testing of Prechamber and Open Chamber Laser Ignition

Sachin Joshi, ***Frank Loccisano***, ***Azer P. Yalin***, *Engines and Energy Conversion Laboratory, Fort Collins, CO, United States,* ***David T. Montgomery***, *Caterpillar Inc., Mossville, IL, United States*

17:00 – 17:30

ICEF2010-35109: Development and Use of a Segregated-Solver for Detailed Modeling of End-Gas Detonation in a Lean-Burn Spark-Ignited Engine

Scott B. Fiveland, Shriram Vijayaraghavan, *Caterpillar Inc., Mossville, IL, United States,* ***Shaoping Shi***, *Fluent Inc., Morgantown, WV,* ***Michael McMillian***, ***Steven Richardson***, *NETL, Morgantown, WV,* ***Joel. D. Hiltner***, *Hiltner Combustion Systems, Ferndale, WA, United States*

5-2 SENSORS / CONTROL (PART II)
La Reina

Session Chair: ***Matthew Viele,*** *Drivven, Inc., Elizabeth, CO, United States*
Session Co-Chair: ***David Gardiner,*** *Nexum Research Corporation, Kingston. ON, Canada*

15:30 – 16:00

ICEF2010-35123: Ion Current, Combustion and Emission Characteristics in an Automotive Common Rail Diesel Engine

Naeim A. Henein, ***Walter Bryzik***, ***Tamer Badawy***, ***Nilesh Rai***, *Wayne State University, Detroit, MI, United States*

16:00 – 16:30

ICEF2010-35153: Misfire Detection for Spark Ignition Engines Based Upon Cycle-by-Cycle Exhaust Temperature Sensing

David Gardiner, *Nexum Research Corp., Mallorytown, ON, Canada*

16:30 – 17:00

ICEF2010-35124: Gas Quality Sensor to Improve Biogas-fueled CHP

Serguei Zelepouga, ***John Pratapas***, *Gas Technology Institute, Des Plaines, IL, United States,* ***Alexei Saveliev***, ***Vilas Jangale***, *North Carolina State University, Raleigh, NC, United States,* ***Vitaly Gnatenko***, *Gas Technology Institute, Des Plaines, IL, United States*

Tuesday, September 14, 2010 10:30 - 12:00

3-2 LOW TEMPERATURE COMBUSTION / HCCI / PCCI (Part III)
Salon del Rey North

Session Chair: ***Xin He****, National Renewable Energy Laboratory, Golden, CO, United States*
Session Co-Chair: ***Bradley T. Zigler****, National Renewable Energy Laboratory, Golden, CO, United States*

10:30 – 11:00

ICEF2010-35194: Fuel Property Effects on PCCI Combustion in a Heavy-Duty Diesel Engine

Cosmin Dumitrescu, ***W. Stuart Neill***, ***Hongsheng Guo***, ***Vahid Hosseini***, ***Wallace L. Chippior***, *National Research Council Canada, Ottawa, ON, Canada*

11:00 – 11:30

ICEF2010-35056: An Experimental Investigation of Low Octane Gasoline in Diesel Engines

Stephen Ciatti, ***Swaminathan Subramanian***, *Argonne National Laboratory, Argonne, IL, United States*

11:30 – 12:00

ICEF2010-35062: Investigation of Running HCCI with Dual-Fuel in a Small Scale Engine

Yuh-Yih Wu, ***Hsien-Chi Tsai***, *National Taipei University of Technology, Taipei, Taiwan,* ***Ta-Chuan Liu***, *Mechanical and Systems Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan*

2-3 ALTERNATIVE GASEOUS FUEL ENGINES
Salon del Rey Central

*Session Chair: **Steve McConnell**, Argonne National Lab, Argonne, IL, United States*

10:30 – 11:00

ICEF2010-35128: Comparison of Propane and Methane Performance and Emissions in a Turbocharged Direct Injection Dual Fuel Engine
***C. Michael Gibson**, **Andrew Polk**, **Nicholas Shoemaker**, **Kalyan Kumar Srinivasan**, **Sundar Krishnan**, Mississippi State University, Mississippi State, MS, United States*

11:00 – 11:30

ICEF2010-35182: Flame Propagation in Natural Gas Fueled Direct Injection Engines
***Mark Fabbroni**, Giffin Koerth Inc., Toronto, ON, Canada, **Jim Wallace**, University of Toronto, Toronto, ON, Canada*

11:30 – 12:00

ICEF2010-35053: Comparison of Regulated and Unregulated Exhaust Emissions from a Fleet of Multi-Fuel Solid Resource Collection Vehicles
***Arvind Thiruvengadam**, **Daniel K Carder**, West Virginia University, Morgantown, WV, United States, **Mohan Krishnamurthy**, California Air Resources Board, Sacramento, CA, United States, **Mridul Gautam**, West Virginia University, Morgantown, WV, United States*

6-1 MULTI-DIMENSIONAL MODELING (PART III)
La Vista

*Session Chair: **Randy Hessel**, University of Wisconsin-Madison, Engine Research Center, Madison, WI, United States*
*Session Co-Chair: **Russell Whitesides**, Lawrence Livermore National Laboratory, Livermore, CA, United States*
*Session Co-Chair: **Harmit Juneja**, Wisconsin Engine Research Consultants, LLC, Madison, WI, United States*

10:30 – 11:00

ICEF2010-35104: CNG Injector Nozzle Design and Flow Prediction
***Mirko Baratta**, **Andrea E. Catania**, **Francesco Pesce**, Politecnico di Torino, Torino, Italy*

11:00 – 11:30

ICEF2010-35108: The Effect of Stroke-to-Bore Ratio on Combustion Performance of a Lean Burn Heavy-Duty Gaseous SI Engine
***Xiao Qin**, **Francois Ntone**, **Leon A. LaPointe**, **Edward J. Lyford-Pike**, Cummins, Inc., Columbus, IN, United States*

11:30 – 12:00

ICEF2010-35067: Modeling the Effect of Nozzle Hole Geometry on Diesel Injection and Combustion
***Fulvio Palmieri**, "Roma Tre" University, Roma, Italy, **Giancarlo Chiatti**, **Ornella Chiavola**, University 'ROMA TRE', Rome, Italy*

4-1 ENGINE EMISSIONS (PART II)
La Princesa

*Session Chair: **Alexander Sappok**, Massachusetts Institute of Technology, Cambridge, MA, United States*
*Session Co-Chair: **Steve Fritz**, SwRI, San Antonio, TX, United States*

10:30 – 11:00

ICEF2010-35164: Interpreting the Lambda Sensor Output Signal to Control Emissions from Natural Gas Fueled Engines
***Mohamed Toema**, **Kirby S. Chapman**, Kansas State University, Manhattan, KS, United States*

11:00 – 11:30

ICEF2010-35199: An Accelerated Testing Approach for Lubricant Oil Consumption Reduction on an EMD 710 Diesel Engine

***Kent Froelund**, Da Vinci Emissions Services, Ltd., San Antonio, TX, United States, **Neil Blythe**, GE Transportation, Erie, PA, United States, **Jaime Garcia**, GE Transportation, San Luis Potosi, Mexico, **Steve Fritz**, **John Hedrick**, SwRI, San Antonio, TX, United States*

11:30 – 12:00

ICEF2010-35086: Large Engine Aftertreatment in a Pre-Turbo Position: A Path to Compact and Cost-Effective Emissions Reduction

***Markus Downey**, **Claus Bruestle**, Emitec Inc., Rochester Hills, MI, United States, **Mark Subramaniam**, **Christopher Hayes**, FEV Inc., Auburn Hills, MI, United States, **Dean Tomazic**, FEV Inc., Auburn Hills, MI, United States*

7-2 ENGINE DESIGN, LUBRICATION AND APPLICATIONS (PART II)
La Reina

*Session Chair: **Dan Richardson**, Cummins Inc., Columbus, IN, United States*
*Session Co-Chair: **Ronald Bruch**, Cummins Inc., Columbus, IN, United States*
*Session Co-Chair: **John Vronay**, Vronay Engineering Services, La Jolla, CA, United States*

10:30 – 11:00

ICEF2010-35071: Experimental Study of Turbochargers Performances at Low Speeds

***Michael Deligant**, **Pierre Podevin**, **Georges Descombes**, Conservatoire national des arts et métiers, Paris, France, **Thierry Lamquin**, Honeywell Turbo Technologies, Thaon-les-Vosges, France, **Fabrice Vidal**, PSA Peugeot Citroën, Vélizy Villacoublay, France, **Alexandre Marchal**, Renault SAS, Lardy, France*

11:00 – 11:30

ICEF2010-35142: Waste Heat Recovery Mechanisms for Internal Combustion Engines

***John Armstead**, **Scott Miers**, Michigan Technological University, Houghton, MI, United States*

11:30 – 12:00

ICEF2010-35189: Engine Oils for Landfill Service: Requirements and Proof of Performance

***Frederick W. Girshick**, Infineum USA, L.P., Linden, NJ, United States*

Tuesday, September 14, 2010 13:30 - 15:00

3-3 FUNDAMENTAL / ADVANCED COMBUSTION DEVELOPMENT
Salon del Rey North

*Session Chair: **Xin He**, National Renewable Energy Laboratory, Golden, CO, United States*
*Session Co-Chair: **Bradley T. Zigler**, National Renewable Energy Laboratory, Golden, CO, United States*

13:30 – 14:00

ICEF2010-35155: In-cylinder Velocity Measurements and Analysis in a Briggs and Stratton Engine

***Semih Olcmen**, **Marcus Ashford**, University of Alabama, Tuscaloosa, AL, United States*

14:00 – 14:30

ICEF2010-35136: An Optical Study of Spark Ignition and Flame Kernel Development near the Lean Limit at Elevated Pressure

***Jaclyn E. Nesbitt**, **Seong-Young Lee**, **Jeffrey D. Naber**, **Rajat Arora**, Michigan Technological University, Houghton, MI, United States*

14:30 – 15:00

ICEF2010-35035: A Comparative Study of Combustion Models for Spark Ignition Engines Based on Experimentation and CFD Simulation

***Raouf Mobasheri**, **M. Sadegh Shahrokhi-Dehkordi**, University of Sussex, Brighton, East Sussex, United Kingdom*

2-1 COMPRESSION IGNITION ALTERNATIVE FUELS (PART III)
Salon del Rey Central

*Session Chair: **Sundar Krishnan**, Mississippi State University, Mississippi State, MS, United States*
*Session Co-Chair: **Kalyan Kumar Srinivasan,** Mississippi State University, Mississippi State, MS, United States*

13:30 – 14:00

ICEF2010-35084: CFD and Optical Investigations of Fluid Dynamics and Mixture Formation in a DI-H2 ICE

***Riccardo Scarcelli**, Argonne National Laboratory, Argonne, IL, United States, **Thomas Wallner**, Argonne National Laboratory, Lemont, IL, United States, **Hermann Obermair**, Argonne National Laboratory, Argonne, IL, United States, **Sebastian A. Kaiser**, **Victor M. Salazar**, Sandia National Laboratories, Livermore, CA, United States*

14:00 – 14:30

ICEF2010-35179: Exhaust Emissions of a H2-Enhanced Heavy-Duty Diesel Engine Equipped with Cooled EGR and Variable Geometry Turbocharger

***Hailin Li**, **Chet-Mun Liew**, **Shiyu Liu**, **Marc Besch**, **Bradley Ralston**, **Nigel Clark**, West Virginia University, Morgantown, WV, United States, **Yiqun Huang**, Houston Advanced Research Center, Woodlands, TX, United States*

14:30 – 15:00

ICEF2010-35026: Diesel Engine Operation Using Ammonia as a Carbon-Free Fuel

***Aaron Reiter**, **Song-Charng Kong**, Iowa State University, Ames, IA, United States*

7-2 ENGINE DESIGN, LUBRICATION AND APPLICATIONS (PART III)
La Vista

*Session Chair: **Dan Richardson**, Cummins Inc., Columbus, IN, United States*
*Session Co-Chair: **Ronald Bruch**, Cummins Inc., Columbus, IN, United States*
*Session Co-Chair: **John Vronay**, Vronay Engineering Services, La Jolla, CA, United States*

13:30 – 14:00

ICEF2010-35118: Nucleate Boiling Identification and Utilization for Improved Internal Combustion Engine Efficiency

***Brian Eggart**, **Nikhil Ajotikar**, **Scott Miers**, Michigan Technological University, Houghton, MI, United States*

14:00 – 14:30

ICEF2010-35074: Elastomer Performance in Hot Engine Coolants during Extreme Service

***Daniel Hertz, Jr.**, Seals Eastern Inc., Red Bank, NJ, United States*

14:30 – 15:00

ICEF2010-35114: Development of Engine Bearing Solutions for New High Output Automotive Engines

***David Saxton**, **Troy Kantola**, Federal-Mogul Corp., Plymouth, MI, United States, **Achim Adam**, **Karl-Heinz Lindner**, **Maik Wilhelm**, Federal-Mogul, Wiesbaden, Germany*

1-3 GAS ENGINE EMISSIONS (PART I)
La Princesa

Session Chair: **Diana Grauer**, Kansas State University, Manhattan, KS, United States

13:30 – 14:00

ICEF2010-35072: In-cylinder Equivalence Ratio Measurements in a EGR Equipped Engine

***Sreenath Gupta**, **Bipin Bihari**, **Munidhar Biruduganti**, **Raj R. Sekar**, Argonne National*

14:00 – 14:30

ICEF2010-35030: Development of Low NOx Capability on the Waukesha 275GL Series Engines

***Greg Sorge**, **James K. von der Ehe**, Dresser Waukesha, Waukesha, WI, United States*

14:30 – 15:00

ICEF2010-35038: Waukesha 275GL Series NOx Control System Development and Performance

***Jared Wentz**, Dresser Waukesha, Waukesha, WI, United States*

5-1 SENSORS / CONTROLS (PART III)
La Reina

Session Chair: ***David Gardiner,** Nexum Research Corporation, Kingston. ON, Canada*
Session Co-Chair: ***Matthew Viele,** Drivven, Inc., Elizabeth, CO, United States*

13:30 – 14:00

ICEF2010-35076: Cylinder Head Gasket with Integrated Miniature Combustion Pressure Sensors

***Marek Wlodarczyk**, Optrand, Inc., Plymouth, MI, United States, **David Toth**, Federal-Mogul Corporation, Ann Arbor, MI, United States*

14:00 – 14:30

ICEF2010-35113: Cylinder Individual Efficiency Estimation for Online Fuel Consumption Optimization

***Magnus Lewander**, Lund University, Lund, Sweden, **Per Tunestal**, Lund University, Malmoe, Sweden, **Bengt Johansson**, Lund University, Lund, Sweden*

14:30 – 15:00

ICEF2010-35166: Optimal Combustion Positioning Methodology Based on MFB50 On-Board Estimation

***Fabrizio Ponti**, DIEM - University of Bologna, Bologna, Italy, **Vittorio Ravaglioli**, University of Bologna, Forlì, Italy, **Gabriele Serra**, Magneti Marelli, Bologna, Italy*

Tuesday, September 14, 2010 15:30 - 17:00

3-2 LOW TEMPERATURE COMBUSTION / HCCI / PCCI (PART IV)
Salon del Rey North

*Session Chair: **Kalyan Kumar Srinivasan**, Mississippi State University, Mississippi State, MS, United States*
*Session Co-Chair: **Scott Goldsborough**, Marquette University, Milwaukee, WI, United States*
*Session Co-Chair: **Timothy J. Jacobs**, Texas A&M University, College Station, TX, United States*

15:30 – 16:00

ICEF2010-35037: An Assessment of the Thermodynamics Associated with High-Efficiency Engines

***Jerald A. Caton**, Texas A&M University, College Station, TX, United States*

16:00 – 16:30

ICEF2010-35070: Efficiency Considerations of Later-Phased Low Temperature Diesel Combustion

***Bryan Knight**, **Joshua A. Bittle**, **Timothy J. Jacobs**, Texas A&M University, College Station, TX, United States*

16:30 – 17:00

ICEF2010-35117: Comparison of Filter Smoke Number and Elemental Carbon Mass From Partially Premixed Low Temperature Combustion in a Direct Injection Diesel Engine

***William Northrop**, **Jo-Yu Chin**, **Stanislav Bohac**, **Dennis Assanis**, University of Michigan, Ann Arbor, MI, United States*

2-2 SPARK IGNITION ALTERNATIVE FUELS
Salon del Rey Central

*Session Chair: **Steve McConnell,** Argonne National Lab, Argonne, IL, United States*

15:30 – 16:00

ICEF2010-35106: The Impacts of Mid-level Alcohol Content in Gasoline on SIDI Engine-out and Tailpipe Emissions

***Xin He**, **John Ireland**, **Matthew A. Ratcliff**, **Keith E. Knoll**, **Teresa L. Alleman**, **Bradley T. Zigler**, National Renewable Energy Laboratory, Golden, CO, United States, **John T. Tester**, Northern Arizona University, Flagstaff, AZ, United States, **Jon H. Luecke**, National Renewable Energy Laboratory, Golden, CO, United States*

16:00 – 16:30

ICEF2010-35031: Correlation between Speciated Hydrocarbon Emissions and Flame Ionization Detector Response for Gasoline/Alcohol Blends

***Thomas Wallner**, Argonne National Laboratory, Lemont, IL, United States*

7-2 ENGINE DESIGN, LUBRICATION AND APPLICATIONS (PART IV)
La Vista

*Session Chair: **Dan Richardson**, Cummins Inc., Columbus, IN, United States*
*Session Co-Chair: **Ronald Bruch**, Cummins Inc., Columbus, IN, United States*
*Session Co-Chair: **John Vronay**, Vronay Engineering Services, La Jolla, CA, United States*

15:30 – 16:00

ICEF2010-35047: Analysis of Properties of Adulterated Fuel and its Effect on Internal Combustion Engines and the Environment - A Case Study Tema Metropolitan Assembly, Tema, Ghana

***Anthony Simons**, **Eric K Gbadam**, University of Mines and Technology, Tarkwa, Ghana*

16:00 – 16:30

ICEF2010-35139: New Approaches on Material Design for High-Performance 2-Stroke Engine Bearings

***Robert Mergen**, **Falko Langbein**, **Leopold Harreither**, Miba Bearing Group, Laakirchen, Austria*

16:30 – 17:00

ICEF2010-35097: Numerical Study of Piston Skirt-Liner Elastohydrodynamic Lubrication and Contact by the Multigrid Method

***Xianghui Meng**, **You-Bai Xie**, Shanghai Jiaotong University, Shanghai, China*

1-4 GAS ENGINE EMISSIONS (PART II)
La Princesa

*Session Chair: **Munidhar Biruduganti**, Argonne National laboratory, Argonne, IL, United States*

15:30 – 16:00

ICEF2010-35173: Development of a Cycle-Resolved Kinetic Mechanism for Carbon Monoxide Formation

***Jacob J. McFarland**, **Diana K. Grauer**, **Kirby S. Chapman**, Kansas State University, Manhattan, KS, United States*

16:00 – 16:30

ICEF2010-35162: Performance of a Large Bore Natural Gas Engine with Reformed Natural Gas Prechamber Fueling

***Matthew D. Ruter**, **Daniel Olsen**, Colorado State University, Fort Collins, CO, United States, **Mark V. Scotto**, **Mark A. Perna**, Rolls-Royce Fuel Cell Systems (US) Inc, North Canton, OH, United States*

16:30 – 17:00

ICEF2010-35052: Study on NOx Emission of Medium Speed Micro Pilot Gas Engine with Pre-combustion Chamber

***Satoru Goto**, Niigata Power Systems Co., Ltd., Ohta-City, Gunma Prefecture, Japan*

5-4 SENSORS / HYBRIDS
La Reina

Session Chair: ***Matthew Viele,** Drivven, Inc., Elizabeth, CO, United States*
Session Co-Chair: ***David Gardiner,** Nexum Research Corporation, Kingston. ON, Canada*

15:30 – 16:00

ICEF2010-35093: A Simulation Study Quantifying the Effects of Drive Cycle Characteristics on the Performance of a Pneumatic Hybrid Bus

***Sasa Trajkovic**, **Bengt Johansson**, Lund University, Lund, Skåne, Sweden, **Per Tunestal**, Lund University, Malmoe, Sweden*

16:00 – 16:30

ICEF2010-35101: Extracting Cylinder Individual Combustion Data from a High Precision Torque Sensor

***Hans Aulin**, SAAB Powertrain/Lund University, Malmö, Skane, Sweden, **Per Tunestal**, Lund University, Malmoe, Sweden, **Thomas Johansson**, **Bengt Johansson**, Lund University, Lund, Sweden*

16:30 – 17:00

ICEF2010-35141: Development of a Spark Discharge PM Sensor for Measurement of Engine-Out Soot Emissions

***David Gardiner**, **Greg Pucher**, **William D. Allan**, **Marc LaViolette**, Royal Military College of Canada, Kingston, ON, Canada*

Conference Notes

1. Attend ICED Associates' Meeting on Tuesday morning at 8:00 a.m.
2. Attend your Technical Committee meeting on Tuesday morning at 9:15 a.m.
3. Plan to attend the 2011 FTC in Morgantown, WV, October 2-5, 2011.
4. Plan to attend the 2012 STC in Torino, Italy.
5. Record the Hospitality Suite Room number here:

ASME Internal Combustion Engine Division

ASME Staff	Vince Dilworth

Executive Committee

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Assistant Vice-Chair, Technical Programs	Dr. Timothy Jacobs Texas A&M University
New Member	Mr. Steven McConnell Argonne National Lab
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Large Bore Engines	Mr. Dick Dunteman N.R. Dunteman
Advanced Combustion	Dr. Timothy Jacobs Texas A&M University
Fuels Technology	Mr. Steven McConnell Argonne National Laboratory
Emissions Control	Mr. Steve Fritz Southwest Research Institute
Instrumentation, Controls & Hybrids	Mr. David Gardiner Nexum Research Corp.
Numerical Simulation	Dr. Song-Charng Kong Iowa State University

Design, Lubrication, and Applications	Mr. Ronald Duda Unlimited Design International Inc.
Technical Awards	Dr. Jerald Caton Texas A&M University

Journal of Engineering for Gas Turbines & Power

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CALL FOR PAPERS

Internal Combustion Engine Division
ASME International

Invites Papers for the

2011 Fall Technical Conference

October 2 – 5, 2011
Morgantown, West Virginia, USA

Hosted by : West Virginia University

Papers of high technical quality related to the development, advancement, and improved understanding of the **internal combustion engine** are sought for the ASME Internal Combustion Engine Division's 2011 Fall Technical Conference to be held October 2 – 5, 2011 in Morgantown, West Virginia and hosted by West Virginia University. In addition to two-days of technical presentation of accepted papers, the conference highlights networking activities among members of industry, government, and academia, keynote speakers, student presentations, industrial tours, a banquet, and an overall collegial atmosphere to advance the state of the art of the internal combustion engine.

All offers relating to the internal combustion engine, or interfaces with internal combustion engines, are accepted for rigorous review by experts in the field. Specifically, accepted papers are grouped into the following technical tracks (with track chairs listed for contact):

Track 1: Large Bore Engines (Mr. Dick Dunteman, nrdun@aol.com)
Track 2: Fuels (Professor Scott Miers, samiers@mtu.edu)
Track 3: Advanced Combustion (Dr. Brad Zigler, brad.zigler@nrel.gov)
Track 4: Emissions Control Systems (Mr. Steve Fritz, sfritz@swri.org)
Track 5: Instrumentation, Controls, and Hybrids (Mr. David Gardiner, dgardiner@nexumresearch.com)
Track 6: Numerical Simulation (Professor Song-Charng Kong, kong@iastate.edu)
Track 7: Engine Design, Lubrication, and Applications (Mr. Ronald Duta, rduda@unlimitedesigneng.com)

Accepted papers that are presented at the conference will be archived on the conference proceedings CD and by Scopus. Presentation of papers at the conference requires payment of the registration fee (papers not presented at the conference are excluded from both the conference proceedings CD and Scopus). Accepted papers must transfer copyright to ASME, with certain exceptions noted. The ASME ICE Division's Presentation Policy and the ASME Copyright Policy are available at https://www.asmeconferences.org/ICEF2011/PubPolicy.cfm and https://www.asmeconferences.org/ICEF2011/PubForms.cfm, respectively.

Accepted papers of highest quality and with potential for long-lasting technical contribution will be approved for fast-track publication in ASME's *Journal of Engineering for Gas Turbines and Power*. All accepted papers, regardless of fast-track selection, are eligible for consideration by ASME's *Journal of Engineering for Gas Turbines and Power*.

Please submit your 400-word or less paper offer / abstract by **Friday, January 28, 2011** at the conference website: **www.asmeconferences.org/ICEF2011**, which will be activated soon.

For additional information or questions, please contact the technical program chair:

Timothy J. Jacobs **Texas A&M University** **tjjacobs@tamu.edu**

IMPORTANT DATES:	**January 28, 2011**	400-word paper offer / abstract due
	April 1, 2011	Draft manuscript due for review
	June 24, 2011	Final manuscript, copyright, and author registration due

UNDERGRADUATE MECHANICAL ENGINEERING STUDENTS

CALL FOR PRESENTATIONS

Internal Combustion Engine Division
ASME International

Invites Presentations for the

2011 Fall Technical Conference

October 2 – 5, 2011
Morgantown, West Virginia, USA

Hosted by: West Virginia University

Are you an undergraduate Mechanical Engineering student who is passionate about **internal combustion engines**? Would you like to participate in one of the world's leading internal combustion engine organizations **for free**? If so, then the Student Presentation Chair of the ASME Internal Combustion Engine Division invites you to submit a **1000-word extended abstract and 10-minute draft presentation** about your undergraduate work in internal combustion engines.

Maybe you:

- work in a laboratory at school that does internal combustion engine research.
- work on the engine of a collegiate race team or your own car.
- have innovative ideas for next generation advanced engines or alternative fuels.
- are an internal combustion engine enthusiast and would like to deliver a presentation on the subject.

We would like to hear from you if you have an interest in internal combustion engines!

To be considered, submit a 1000-word abstract and 10-minute draft presentation (e.g., in Powerpoint) to the Student Presentation Chair by **April 8, 2011**. The Student Presentation Chair and a selection committee will **chose the top two presentations**. Then, those two students will be **invited to Morgantown, West Virginia** to deliver their presentations to a group of leading experts in the internal combustion engine field at the ASME Internal Combustion Engine Division's Fall Technical Conference. As a participant of the conference, you'll get to attend other researcher's presentations and network with people working in this exciting and important field.

If your presentation is selected, your travel and lodging expenses are covered up to $1000. You must be an ASME student member and be an undergraduate student on the date of submission to be selected.

Send your 1000-word abstract and 10-minute draft presentation by April 8, 2011 to:

Will Northrop
Student Presentation Chair
University of Michigan
wnorthro@umich.edu

WE WOULD LIKE TO HEAR FROM YOU BY APRIL 8, 2011!

http://www.asme.org/divisions/ice

Southwest Research Institute (SwRI), headquartered in San Antonio, Texas, is a multidisciplinary, independent, nonprofit, applied engineering and physical sciences research and development organization with 12 technical divisions.

Southwest Research Institute
ASME-ICED 2010 Fall Technical Conference
September 12-15, 2010

San Antonio, Texas