



SAE 2010 Powertrains, Fuels & Lubricants Meeting

**Doubletree Hotel Mission Valley
San Diego, California, USA
October 25 - 27, 2010**

**Pre-Register by October 8, 2010
and save \$100!**

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www.sae.org/events/pfl



SAE 2010 Powertrains, Fuels & Lubricants Meeting

**Doubletree Hotel Mission Valley
San Diego, California, USA
October 25 - 27, 2010**

Stay connected with the future of powertrain technology. You are invited to join us for the SAE 2010 Powertrains, Fuels & Lubricants Meeting – share ideas; network with peers, and meet recognized technology experts. This meeting provides state-of-the-art technical information and first hand experiences relating to the interactions of engine designs, fuel blends and alternatives, combustion techniques, lubricants and emission controls.

Areas of Focus

Explore key issues and technologies impacting today's powertrains, fuels and lubricants industry including:

- **Fuels** - gasoline, diesel, bio- and alternative fuels, additives, as well as lubricants
- **Combustion optimization** - pressure boosting/turbocharging, low-temperature combustion (including HCCI), cylinder deactivation, waste heat recovery, and more
- **Emissions reduction** - catalysts, aftertreatment, deposit formation, modeling, etc.
- **Advanced Powertrains** - fuel cell vehicle applications, advanced battery technologies, hydrogen IC engines, and emerging hybrid technologies
- **Engine Downsizing** - achieving higher specific engine loads with minimum displacement
- **Advanced Fuel delivery** - high pressure and multiple injections, spray technology, etc.
- **Valvetrain optimization** - fully variable valve trains, variable compression ratio, etc.
- **Engine control** - on-board diagnostics, engine/vehicle control, calibration, etc.

Who Should Attend:

Engineers & Engineering Managers

Product Designers

Researchers & Developers

Parts & Components Suppliers

Testing & Modeling Engineers

Sales & Marketing Professionals

Academia

Government

Event Overview

Sunday Oct. 24	Monday Oct. 25	Tuesday Oct. 26	Wednesday Oct. 27
Early Registration 4:00-6:00 p.m.	Registration Open 7:00 a.m.-5:00 p.m.	Registration Open 7:00 a.m.-5:00 p.m.	Registration Open 7:00 a.m.-2:00 p.m.
	Welcome and Awards Ceremony 7:45-8:00 a.m.	Technical Sessions 8:00-11:00 a.m.	Technical Sessions 8:00-11:00 a.m.
	Technical Sessions 8:00-11:00 a.m.		
	Keynote 11:00-11:30 a.m.	Keynote 11:00-11:30 a.m.	Keynote 11:00-11:30 a.m.
	Lunch on your own 11:30 a.m.-1:30 p.m.	Lunch on your own 11:30 a.m.-1:30 p.m.	Lunch on your own 11:30 a.m.-1:30 p.m.
	Technical Sessions 1:30-5:00 p.m.	Technical Sessions 1:30-5:00 p.m.	Technical Sessions 1:30-5:00 p.m.
	Welcome Reception 5:00 pm		

Exhibits During Event



Keynote speakers

Keynote Speaker Sponsorship provided by:



Ellen Meeks, Ph.D.
 Vice President —
 Product Development,
 Reaction Design



Peter J. (Pete) Savagian
 Engineering Director
 - Hybrid Powertrain
 Systems Engineering
 and Electric Motor
 Release Centers,
 General Motors



Erik White
 Assistant Division
 Chief, California Air
 Resources Board

SAE Professional Development Seminars

*Held in conjunction with the SAE 2010 Powertrains, Fuels & Lubricants Meeting
 See page 20 for course descriptions. Separate registration & fee required.*

Event Overview

SAE 2010 Powertrains, Fuels & Lubricants Meeting Organizing Committee

Activity Chairs



Richard Steeper,
Sandia National
Laboratories



Paul Miles,
Sandia National
Laboratories

Members



Mikhail Ejakov,
Lubricants &
Powertrain Systems
Committee Chair



Paul Richards,
Exhaust
Aftertreatment
& Emissions
Committee Chair



Junmin Wang,
Control & Calibration
Committee Chair



Barbara Goodrich,
Combustion & Fuels
Committee Chair



Thomas Wallner,
Advanced Power
Sources Committee
Chair

AWARDS

Harry L. Horning Memorial Award

This award annually recognizes the author(s) of the best paper(s) relating to the better mutual adaptation of fuels and internal combustion engines presented at a meeting of SAE International or any of its sections during any calendar year. The award preserves the memory of the dedication of SAE's 1925 President, Harry L. Horning, to the pursuit of improved mutual adaptability of engines and fuels and serves as a motivation for others to follow in his footsteps.

2009 Recipients

"Key Parameters for Startability Improvement Applied to Ethanol Engines"

Christophe Colpin
Thomas Leone
M. Lhuillery
Alexandre Marchal
Renault SAS, Powertrain Division



Welcome Reception

Be sure to join us on Monday, October 25, 2010 for a chance to network with peers and meet recognized technology experts in a relaxed environment.

Special Sessions

Open Forum: Internal Deposits in High Pressure Diesel Injection Systems

– What are the causes and challenges? How do we find solutions?

1:30 – 5:00 p.m., Tuesday, October 26

Session code FFL220

Internal deposits in advanced high pressure injection systems, especially in common rail injection are a challenge for OEMs, fuel systems manufacturers, fuel producers, additive companies and research establishments. The forum will highlight the challenges, the possible causes and discuss ways to control and eliminate internal injector deposits.

This forum will consist of several short oral-only presentations by invited panelists, followed by open forum Q&A and discussion on the topic. **If you are interested in participating**, please let both of the organizers know by sending a short email with your name, affiliation and title of your presentation.

Co-organizers:

Rodica A. Baranescu, Navistar Inc.
Rodica.baranescu@navistar.com

Joan Evans, Infineum USA
joan.evans@infineum.com

Tomorrow's Vehicles by Tomorrow's Engineers

Design, Simulation, and HIL Results from Year 1 of the EcoCAR Challenge

1:30 – 5:00 p.m., Monday, October 25

Session code FFL110

Join us as selected collegiate teams present their experiences with EcoCAR: The NeXt Challenge, a three-year collegiate advanced vehicle technology engineering competition. EcoCAR challenges teams from 17 participating universities to reduce the environmental impact of a 2009 GM Saturn VUE by designing, developing and implementing a vehicle propulsion system that minimizes fuel consumption and emissions, encourages energy diversity, yet maintains vehicle utility, safety, and performance.

Organizers:

Frank J. Falcone, Argonne National Laboratory

Zoran S. Filipi, Univ. of Michigan

Michael Wahlstrom, Argonne National Laboratory

Planned by Advanced Power Sources Committee / Powertrain Fuels and Lubricants Activity

Exhibitors (As of 08/23/10)

DSi Delta Service Industries
Intertek
Transportation Research Center

SESSIONS

	Mon		Tues		Wed		Page No.
	AM	PM	AM	PM	AM	PM	
Advanced Power Sources							
Advanced Hybrid Vehicle Powertrains (FFL100)	-	-	-	✓	-	-	5
EcoCAR (FFL110)	-	✓	-	-	-	-	5
Electric Propulsion (FFL103)	-	-	-	-	✓	-	6
Hydrogen IC Engines (FFL102)	-	-	✓	-	-	-	5
Combustion & Fuels							
Alternative and Advanced Fuels (Part 1 - 3) (FFL215)	✓	✓	✓	-	-	-	7, 9
Cold Start and Transients (FFL211)	-	✓	-	-	-	-	8
Direct Injection SI Engine Technology (FFL202)	-	✓	-	-	-	-	9
Engine Flows and Combustion Diagnostics (FFL212)	-	-	-	-	✓	-	11
Fuel & Additive Effects on CI Engine Performance (Part 1 & 2) (FFL205)	-	-	-	-	✓	✓	12
Fuel & Additive Effects on SI Engine Performance (Part 1 & 2) (FFL203)	✓	✓	-	-	-	-	7, 8
Fuel Injection and Sprays (Part 1 & 2) (FFL210)	-	-	-	-	✓	✓	11, 13
Heat Transfer and Advances in Thermal & Fluid Sciences (FFL214)	✓	-	-	-	-	-	6
High Efficiency IC Engines (FFL216)	-	-	-	✓	-	-	10
Kinetically Controlled CI Combustion (Including HCCI) (FFL206)	-	-	✓	-	-	-	9
Mixing-Controlled CI (Diesel) Combustion (Part 1 & 2) (FFL204)	✓	✓	-	-	-	-	6, 8
Modeling of SI and Diesel Engines (FFL208)	-	-	✓	-	-	-	10
Multi-Dimensional Engine Modeling (FFL209)	-	-	-	✓	-	-	11
Open Forum - Internal Deposits in High Pressure Diesel Injection Systems (FFL220)	-	-	-	✓	-	-	11
SI Combustion (FFL201)	-	-	-	-	✓	-	12
Control & Calibration							
Powertrain Actuators and Sensors (FFL302)	-	-	-	✓	-	-	13
Powertrain Control and Optimization (FFL300)	-	-	-	✓	-	-	13
Emissions							
Diesel Exhaust Emission Control (FFL414)	-	-	✓	-	-	-	15
Diesel Exhaust Emission Control: Modeling (FFL407)	✓	-	-	-	-	-	14
Emissions Measurement and Testing (Part 1 & 2) (FFL408)	-	-	-	-	✓	✓	15, 16
Emissions Measurement and Testing: Particle Emissions from Combustion Sources (FFL409)	-	✓	-	-	-	-	14
General Emissions (FFL411)	-	-	-	✓	-	-	15
Lubricants & Powertrain Systems							
Advanced Lubricant Research & Development (FFL508)	-	-	✓	-	-	-	17
Driveline Lubricants (FFL509)	-	-	-	✓	-	-	17
Engine Boosting Systems (FFL501)	-	✓	-	-	-	-	16
Heavy Duty Diesel Lubricants (FFL507)	✓	-	-	-	-	-	16
New CI & SI Engines and Components (FFL500)	-	✓	-	-	-	-	17
Passenger Car Lubricants - New Specifications and Engine Oils (FFL506)	-	-	-	-	-	✓	18
Passenger Car Lubricants - Oil and Engine Aging (FFL506)	-	-	-	-	✓	-	17

Advanced Power Sources

MONDAY October 25

EcoCAR

1:30 p.m.

Join us as collegiate teams present their experiences with EcoCAR: The NeXt Challenge, a three-year collegiate advanced vehicle technology engineering competition. EcoCAR challenges teams from 17 participating universities to reduce the environmental impact of a 2009 GM Saturn VUE by designing, developing and implementing a vehicle propulsion system that minimizes fuel consumption and emissions, encourages energy diversity, yet maintains vehicle utility, safety, and performance.

Organizers:

Frank J. Falcone, Argonne National Laboratory; Zoran S. Filipi, Univ. of Michigan; Michael Wahlstrom, Argonne National Laboratory

Planned by Advanced Power Sources Committee / Powertrain Fuels and Lubricants Activity

TUESDAY October 26

Hydrogen IC Engines

8:00 a.m.

Hydrogen is an attractive energy carrier, and the internal combustion engine (ICE) is an attractive technology for utilizing hydrogen in e.g. transport applications. The ICE is well-known, made from cheap and abundant materials and is fuel-flexible. Furthermore, a hydrogen ICE has the potential for high efficiencies and ultra low emissions. This session reports work contributing to realizing that potential, such as direct injection optimization and fuel blending.

Organizers:

Sebastian Verhelst, Ghent University; Thomas Wallner, Argonne National Laboratory

Two-Step Low-Pressure Direct Injection System for Hydrogen Fuelled Engines

Stefano Frigo, Ettore Musu, Riccardo Rossi, Roberto Gentili, Università degli Studi di Pisa; Nicolò Doveri, Ediprogetti (Pisa); Stefania Zanforlin, Univ of Pisa

The Technical Implementation of a Retrofit Hydrogen PFI System on a Passenger Car

Pieter Huyskens, Mark Pecqueur, Karel de Grote University College

Study of NOx Emissions Reduction Strategy for a Naturally Aspirated 4-cylinder Direct Injection Hydrogen ICE

Kaname Naganuma, Yasuo Takagi, Tokyo City University; Atsuhiko Kawamura, Yoshio Sato, National Traffic Safety & Enviro Lab

Effects of Methane/Hydrogen Blends on Engine Operation: Experimental and Numerical Investigation of Different Combustion Modes

David Serrano, Olivier Laget, Dominique Soleri, Stephane Richard, IFP; Benoit Douailler, Frederic Ravet, Renault; Marc Moreau, Nathalie Dioc, PSA Peugeot Citroen

Efficiency Improved Combustion System for Hydrogen Direct Injection Operation

Hermann Obermair, Riccardo Scarcelli, Thomas Wallner, Argonne National Laboratory

High-efficiency and Low NOx Hydrogen Combustion by High Pressure Direct Injection

Shiro Tanno, Yasushi Ito, Ryo Michikawauchi, Mikio Nakamura, Toyota Motor Corporation; Hirokuni Tomita, Nippon Soken, Inc

Development Project of Multi-cylinder DISI Hydrogen ICE System for Heavy Duty Vehicles (Written Only -- No Oral Presentation)

Atsuhiko Kawamura, National Traffic Safety & Enviro Lab.; Yoshio Sato, National Traffic Safety & Enviro Lab; Kaname Naganuma, Kimitaka Yamane, Yasuo Takagi, Tokyo City University

Planned by Advanced Power Sources Committee / Powertrain Fuels and Lubricants Activity

Advanced Hybrid Vehicle Powertrains

1:30 p.m.

This wide-ranging session covers hybrid system modeling and architecture including pneumatic, thermoelectric, and flywheel systems, and plug-in hybrid electric systems.

Organizers:

Dohoy Jung, Univ. of Michigan-Dearborn; Liguang Li, Tongji Univ.; Hamid B. Servati, Servotech Engineering Inc.; David K. Trumpy, ServoTech. Engineering

Baldos II, Sweden's Most Fuel Efficient Car - Approved for Street Use (Oral Only)

Elisabet Kassfeldt, Kim Berglund, Pär Marklund, Lulea University of Technology

Advanced Control of Engine RPM for More Intuitive Driving Experience in Power Split Hybrid Electric Vehicles

Douglas R. Martin, Edward Badillo, Ford Motor Co.

Research on Power Matching and Control Strategy of Plug-in Series Hybrid Electric Car

Liguang Li, Tongji University

Electro-Thermal Modeling of A Lithium-ion Battery System

Yue Ma, AVL Powertrain Engineering Inc.; Ho Teng, AVL Powertrain Engineering Inc

The Lotus Range Extender Engine for Plug-In Series Hybrid Vehicles

James W G Turner, Lotus Engineering, Ltd.

Simplified Methodology for Modeling Cold Temperature Effects on Engine Efficiency for Hybrid and Plug-in Hybrid Vehicles

Forrest Jehlik, Argonne National Laboratory

Optimization of Control Strategy for Engine Start-stop in a Plug-in Series Hybrid Electric Vehicle

Xianjing Li, Yongzheng Sun, Zongjie Hu, Jun Deng, Liguang Li, Tongji Univ.

Coupling of A KERS Powertrain and a 4 Litre Gasoline Engine for Improved Fuel Economy in a Full Size Car (Written Only -- No Oral Presentation)

Alberto Boretti, Univ. of Ballarat

SESSIONS

Advanced Power Sources (continued)

Impact on Fuel Economy and Emissions using Advanced Hybrid Powertrains (Written Only -- No Oral Presentation)

Farooq Riaz Siddiqui

Coupling of A KERS Powertrain and A 1.2TDI Diesel Engine for Improved Fuel Economy in a Compact Car (Written Only -- No Oral Presentation)

Alberto Boretti, Univ. of Ballarat

Planned by Advanced Power Sources Committee / Powertrain Fuels and Lubricants Activity

WEDNESDAY October 27

Electric Propulsion

8:30 a.m.

Batteries pose one of the biggest challenges and opportunities on the road to electrifying the automobile. The success or failure of Hybrid, Plug-In, and Electric vehicles is highly dependent on their batteries. This session features a variety of talks by the OEMs and third party groups active in the field.

Organizers:

Sergey P. Gladyshev, Univ. of Michigan-Dearborn; James Miller, Argonne National Laboratory; Jeremy S. Neubauer, National Renewable Energy Laboratory; Serdar H. Yonak, Toyota Motor Engineering & Mfg NA Inc.

NREL's PHEV/EV Li-Ion Battery Secondary-use Project (Oral Only)

Jeremy S. Neubauer, Ahmad A. Pesaran, National Renewable Energy Laboratory

A Strategy for Overcoming Plug-in Hybrid Battery cost Hurdles in California: Integrating Post-vehicle Secondary use Value (Oral Only)

Brett D. Williams, Univ. of California-Berkeley; Timothy E. Lipman, Univ. of California-Davis

Performance, Charging, and Second-use Considerations for Batteries from Plug-in Electric Vehicles (Oral Only)

Andrew F. Burke, Univ. of California-Davis

Three Phase High Voltage Frequency Convertor for AC Engines Speed Regulation

Nikolai Shulakov, Perm State Technical University; Sergey Gladyshev, Univ of Michigan-Dearborn

Software for Synchronous Electric Turbomachines Test Benches

Dmitry Istselemov, Eduard Lyubimov, Perm State Technical Univ.; Sergey Gladyshev, Univ of Michigan-Dearborn

Planned by Advanced Power Sources Committee / Powertrain Fuels and Lubricants Activity

Combustion & Fuels

MONDAY October 25

Heat Transfer and Advances in Thermal & Fluid Sciences

8:00 a.m.

This session focuses on fundamental numerical and experimental research in the thermal-fluids sciences that impacts engine and powertrain performance and design. Topics include heat transfer, flow and mixing processes, and fundamental combustion studies.

Organizers:

Elias Yfantis

An Investigation of Metal and Ceramic Thermal Barrier Coatings in a Spark-ignition Engine

Michael Marr, James S. Wallace, Sanjeev Chandra, Larry Pershin, Silvio Memme, Javad Mostaghimi, Univ. of Toronto

Characterization of Field-Aged EGR Cooler Deposits

Michael J. Lance, Charles Sluder, Oak Ridge National Laboratory; Samuel Lewis, ORNL; John Storey, Oak Ridge National Laboratory

A Novel of EGR system to Improve Engine Performance on a Diesel Engine

Kyungwook Choi, Hanyang Univ.

Thermo-mechanical optimization of a V6 Diesel engine by means of CFD and FEM analyses

Stefano Fontanesi, Giuseppe Cicalese, Universita' di Modena e Reggio Emilia; Matteo Giacomini, Universita degli Studi di Modena

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

Mixing-Controlled CI (Diesel) Combustion (Part 1 of 2)

8:00 a.m.

Features CI combustion technologies distinguished by 1) mixing processes that influence combustion; and 2) combustion phasing closely coupled to the timing of fuel injection. Includes the impact of the fuel injection and jet-mixing processes (e.g. multiple injection strategies, group-hole/complex injector geometries); impact of swirl/spray targeting on mixing processes; combustion chamber/engine geometry optimization; sources of combustion inefficiency; and the impact of operating conditions.

Organizers:

Zhengbai Liu, Navistar Inc.; Kalyan Kumar Srinivasan, Mississippi State Univ.; Theodoros Zannis, Hellenic (Greek) Naval Academy

Comparison of Diesel Spray Combustion in Different High-temperature, High-pressure Facilities

Lyle M. Pickett, Caroline L. Genzale, Sandia National Laboratories; Gilles Bruneaux, Louis-Marie Malbec, Laurent Hermant, IFP; Caspar Christiansen, Jesper Schramm, Technical Univ. of Denmark

CFD Study of HCPC Turbocharged Engine

Ettore Musu, Riccardo Rossi, Roberto Gentili, Universita degli Studi di Pisa; Rolf Reitz, Univ of Wisconsin

A Reduced Kinetic Reaction Mechanism for the Autoignition of Dimethyl Ether

Joachim Beeckmann, RWTH Aachen University

Influence of Injection Nozzle Hole Diameter on Highly Premixed and Low Temperature Diesel Combustion and Full Load Behaviour

Steffen Kuhnert, Uwe Wagner, Ulrich Spicher, Karlsruhe Institute of Technology; Simon-Florian Haas, Klaus Gabel, Immanuel Kutschera, Audi AG

Transonic Combustion - A Novel Injection-Ignition System for Improved Gasoline Engine Efficiency

Chris De Boer, Transonic Combustion Inc.

The Effects of Intake Pressure on High EGR Low Temperature Diesel Engine Combustion

Asish K Sarangi, Gordon P. McTaggart-Cowan, Colin P. Garner, Loughborough Univ

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

Alternative and Advanced Fuels (Part 1 of 3)

8:30 a.m.

This is the first of three sessions considering Alternative and Advanced Fuels. It begins with presentations looking at Alternative Fuels in a general context and then focuses on the use of Alternative Fuels for SI engine application.

Organizers:

Christophe Hagen, Colorado State University; George Karavalakis, National Technical University of Athens; Amanda Lea-Langton, Univ. of Leeds; Anthony John Marchese, Colorado State Univ.; Scott A. Miers, Michigan Technological Univ.; Paul Richards, Innospec

Various Categories of Hydrocarbon Fuels Derived from Municipal Solid Waste Plastics (Oral Only)

Moinuddin Sarker, Natural State Research, Inc.

The Future of Fuel Quality and the Use of Alternative Fuels (Oral Only)

Kuntal Vora, Hart Energy Consulting

Elemental Composition Determination and Stoichiometric Air-Fuel Ratios of Gasoline Containing Ethanol

Pat Geng, GM Powertrain; Robert Furey, Furey & Associates LLC; Leslie Melkvik, General Motors Corp

Tailoring Ethanol High Temperature Ignition by Means of Chemical Additives and Water Content

Benjamin Akih-Kumgeh, Jeff Bergthorson, McGill University

The Types and Relation to Strip Corrosion of Sulfides in LPG (Written Only -- No Oral Presentation)

Xingguo Cheng, Petrochina Lanzhou Lubricating Oil R&D Institute

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

Fuel & Additive Effects on SI Engine Performance (Part 1 of 2)

8:30 a.m.

This session focuses on the impact of conventional and alternative fuels as well as fuel additives on the operation, performance, and emissions of SI engines. Papers focus on the impact bio-derived fuels (ethanol, butanol and others) on engine design and performance as well as gasoline properties and additives and their impact on engine performance and deposits.

Organizers:

Thomas Wallner, Argonne National Laboratory

Potential of E85 Direct Injection for Passenger Car Application

Peter Grabner, Helmut Eichlseder, Gregor Eckhard, Graz University of Technology

Development of a Flex Fuel Vehicle: Impact on Powertrain's Design and Calibration

Adrien Halle, IFP; Alexandre Pagot, IFP Powertrain Engineering

Flex Fuel Vehicle Performance and Corrosion Study of E85 Fuel with Chloride Addition

Shaleen Denise Clark, General Motors

The Impact of Fuel Composition on the Combustion and Emissions of a Prototype Lean-Boosted PFI Engine

John Williams, BP International Ltd; Nozomi Yokoo, Toyota; Koichi Nakata, Toyota Motor Co Ltd; Rana Ali, BP International Ltd; Walter Bunting, Kenichi Ishiwa, BP Japan KK

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

Alternative and Advanced Fuels (Part 2 of 3)

1:30 p.m.

This is the second of three sessions considering Alternative and Advanced Fuels. This session focuses on the application of oxygenated fuels for CI engine application.

Organizers:

Christophe Hagen, Colorado State University; George Karavalakis, National Technical University of Athens; Amanda Lea-Langton, Univ. of Leeds; Anthony John Marchese, Colorado State Univ.; Scott A. Miers, Michigan Technological Univ.; Paul Richards, Innospec

A Study of Mixed-FAME Effects and Trace Component Effects on the Fuel Filter Blocking Propensity FAME and FAME Blends

Luc Jolly, BP Oil International Ltd; Wenzel Strojek, BP Oil Marketing GmbH; Walter Bunting, BP Japan

The Impact of Different Biofuel Components in Diesel Blends on Engine Efficiency and Emission Performance

Andreas Janssen, Martin Muether, RWTH Aachen Univ.; Andreas Kolbeck, Matthias Lamping, FEV Motorentechnik GmbH; Stefan Pischinger, RWTH Aachen Univ.

Deterioration of B20 under Compression Ignition Engine Operation

Kapila Wadumesthrige, Nicholas Johnson, Mark Winston-Galant, Haiying Tang, Ka Yuen Ng, Steven Salley, Wayne State University

Preparation, Characterisation and Engine Test Analysis of Methyl Esters of Unrefined Palm Oil and D-Limonene Oil Mixture as CI Engine Fuel

Senthil Kumar Masimalai, MIT Madras

Effect of Fuel Oxygen on Engine Performance and Exhaust Emissions including Ultrafine Particles Fuelling with Neat Diesel Fuel, MGO, Diesel-oxygenate and MGO-oxygenate Blends

Md. Nurun Nabi, Johan Einar Hustad, Norwegian Univ of Science and Technology

SESSIONS

Combustion & Fuels (continued)

Properties of Butanol-Biodiesel-ULSD ternary Mixtures

Kapila Wadumesthrige, Ka Yuen Ng, Steven Salley, Wayne State Univ.

The Effect of HCHO Addition on Combustion in an Optically Accessible Diesel Engine Fueled with JP-8

Marcis Jansons, Dinu Taraza, Naeim A. Henein, Wayne State Univ.

Comparison and Evaluation of Performance, Combustion and Emissions of Diesel, Jatropha and Karanja Oil Methyl Ester Biodiesel in a Military 780 HP CIDI Engine. (Written Only -- No Oral Presentation)

Anand Kumar Pandey, Govt College Of Engineering

Chassis Dynamometer and Road Test Performances of Biodiesel-diesel Fuel-bioethanol Blend (Written Only -- No Oral Presentation)

Istvan Barabas, Ioan-Adrian Todorut, Technical Univ. of Cluj Napoca

Effect of Hexanol Diesel Blends on the Performance, Emission and Combustion Characteristics of a Single Cylinder Diesel Engine (Written Only -- No Oral Presentation)

Sundarraaj Chockalingam, Imayam Engineering College, India; C.G. Saravanan, Annamalai University, India

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

Cold Start and Transients

1:30 p.m.

This session focuses on both SI and mixing-controlled CI combustion and mixture preparation issues that are unique to cold start and transient engine operation. Example topics include engine performance, emissions, control strategies and calibrations for cold start and transient operation, including the impact of variable valve timing, spark, and turbocharger controls.

Organizers:

Scott A. Miers, Michigan Technological Univ.

Numerical Analysis of GDI Engine Cold-start at Low Ambient Temperatures

Simone Malaguti, Stefano Fontanesi, Univ. of Modena & Reggio Emilia; Elena Severi, Universita degli Studi di Modena

Effects of Secondary Air Injection During Cold Start of SI Engines

Dongkun Lee, John Heywood, MIT

Unburned Hydro Carbon (HC) Estimation Using a Self-Tuned Heat Release Method

Mehrzad Kaiadi, Lund Univ.

Improving Cold Start in an Ethanol-Fuelled Engine through an Electronic Gasoline Injector

Luis Carlos Sales, Matheus Guilherme Carvalho, Frederico Oliveira, FIAT Powertrain Technologies; Jose Ricardo Sodre, Pontifical Catholic University

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

Fuel & Additive Effects on SI Engine Performance (Part 2 of 2)

1:30 p.m.

This session focuses on the impact of conventional and alternative fuels as well as fuel additives on the operation, performance, and emissions of SI engines. Papers focus on the impact bio-derived fuels (ethanol, butanol and others) on engine design and performance as well as gasoline properties and additives and their impact on engine performance and deposits.

Organizers:

Thomas Wallner, Argonne National Laboratory

Research on Performance and Emission Characteristics of Engines fueled with Butanol-Gasoline Blends

Jing Yang, Yong Wang, JingPing Liu, Renhua Feng, Hunan Univ.

Thailand Fuel Performance and Emissions in Flexible Fuel Vehicles

Thummarat Thummadetsak, Chonchada Tipdech, Umaporn Wongjareonpanit, Pakasit Monnum, PTT Public Company Limited

Lean Oxygen Gum Simulation Test for Gasoline Detergency and its Correlation with M111 Engine Test

Xin Yue, Tsinghua University, CRAES; Xiaofeng Bao, Xianjiang Huang, CRAES

The Effect of Using Ethanol-blended Gasoline on the Performance and Durability of Fuel Delivery Systems in Classic Automobiles

Gregory Davis, Craig Hoff, Kettering Univ

The Effect of Gasoline Vapor Pressure on Emission from the Modern Passenger Vehicle

Xiaohong Xu, Petrochina Lubricant Company

The Effects of Gasoline on the Properties of Intake Valve and Combustion Chamber Deposits (Written Only -- No Oral Presentation)

Xiaohong Xu, Petrochina Lubricant Company; jin Cai

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

Mixing-Controlled CI (Diesel) Combustion (Part 2 of 2)

1:30 p.m.

Features CI combustion technologies distinguished by 1) mixing processes that influence combustion; and 2) combustion phasing closely coupled to the timing of fuel injection. Includes the impact of the fuel injection and jet-mixing processes (e.g. multiple injection strategies, group-hole/complex injector geometries); impact of swirl/spray targeting on mixing processes; combustion chamber/engine geometry optimization; sources of combustion inefficiency; and the impact of operating conditions.

Organizers:

Zhengbai Liu, Navistar Inc.; Kalyan Kumar Srinivasan, Mississippi State Univ.; Theodoros Zannis, Hellenic (Greek) Naval Academy

Analysis of EGR Effects on the Soot Distribution in a Heavy Duty Diesel Engine using Time-Resolved Laser Induced Incandescence

Ulf Aronsson, Johan Sjöholm, Lund Univ.; Rikard Wellander; Clement Chartier; Paul Miles, Sandia National Laboratories; Mattias Richter, Oivind Andersson, Marcus Alden, Bengt Johansson, Lund Univ.

Control Oriented Crank Angle Based Analysis of Soot Dynamics During Diesel Combustion

Klaus Siegfried Oppenauer, Daniel Alberer, Luigi del Re, Johannes Kepler University Linz

Effect of Injection Duration on the Emission Characteristics in a Dual Fuel HCDC Engine - An Experimental Study

M. Himabindu, N. V. Mahalakshmi, Anna Univ.

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

Direct Injection SI Engine Technology

3:30 p.m.

Direct injection spark ignition (DISI) engines will play a major role in improving the fuel efficiency of today's vehicles. The papers in this session will explore the latest advancements in DISI engine technology, including spray formation and mixing, injection technology and modeling strategies, and its synergies with other advanced engine technologies.

Organizers:

Claudia Iyer, Ford Motor Company; Ming-Chia D. Lai, Wayne State Univ.; Jeffrey D. Naber, Michigan Technological Univ.; Xu Zheng, Ford Motor Co.

Direct Injection Multi-hole Spray and Mixing Characterization of Ethanol Gasoline Blends in a Engine

Ming-Chia Lai, Wayne State Univ.; Wayne Moore, Delphi Energy & Engine Mgmt. Systems; Atsushi Matsumoto, Yi Zheng, Xing-Bin Xie, Wayne State Univ.; Keith A. Confer, Delphi Corp.

Spray and Combustion Characteristics of Ethanol Blended Gasoline in a Spray Guided DISI Engine under Lean Stratified Operation

Heechang Oh, Choongsik Bae, Korea Advanced Inst of Science & Tech

A Study of Fuel Spray Visualization in a Direct-injection Spark-ignition Engine with Gasoline and Ethanol-gasoline Blended Fuels

Mayank Mittal, MSU College of Engineering; David L.S. Hung, Guoming Zhu, Harold Schock, Michigan State Univ

Performances of a Turbocharged E100 Engine with Direct Injection and Variable Valve Actuation (Written Only -- No Oral Presentation)

Alberto Boretti

Characterisation of Combustion Chamber Deposits Formed in Direct Injection Spark Ignition (DISI) Engines during an On-road Vehicle Trial (Written Only -- No Oral Presentation)

Stefan de Goede, Sasol Technology, Fuels Technology

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

TUESDAY October 26

Kinetically Controlled CI Combustion (Including HCCI)

8:00 a.m.

This session focuses on kinetically controlled combustion. Experimental and simulation studies pertaining to various means of controlling combustion are welcome. Examples are research studies dealing with temperature and composition distribution inside the cylinder and their impact on heat release process. Studies clarifying the role of fuel physical and chemical properties in autoignition are also welcome.

Organizers:

Amer A. Amer, Oliver Mathieu, Saudi Aramco

A New Functional Global Auto-ignition Model for Hydrocarbon Fuels - Part 1 of 2: An Investigation of Hydrocarbon Fuel Auto-ignition Behaviour and Existing Global Auto-ignition Models

Gareth Floweday, Sasol Advanced Fuels Laboratory, UCT

Improving Emissions, Noise and Fuel Economy Trade-Off By Using Multiple Injection Strategies In Diesel Low Temperature Combustion (LTC) Mode

Patricia Anselmi, Julian Kashdan, Guillaume Bression, Edouard Ferrero-Lesur, Benoist Thirouard, Bruno Walter, IFP

Characteristics of Isopentanol as a Fuel for HCCI Engines

Yi Yang, John Dec, Nicolas Dronniou, Sandia National Laboratories; Blake Simmons, Sandia NL and Joint BioEnergy Institute

High Efficiency, Low Emissions RCCI Combustion by Use of a Fuel Additive

Derek Splitter, Reed Hanson, Rolf Reitz, Univ of Wisconsin Madison

Effects of Cetane Number, Aromatic Content and 90% Distillation Temperature on HCCI Combustion of Diesel Fuels

Vahid Hosseini, W Neill, Hongsheng Guo, Cosmin Emil Dumitrescu, Wallace Chippior, National Research Council Canada; Craig Fairbridge, National Centre for Upgrading Technology; Ken Mitchell, Shell Canada Ltd

A New Functional Global Auto-ignition Model for Hydrocarbon Fuels - Part 2 of 2: Model Formulation, Development and Performance Assessment

Gareth Floweday, Sasol Advanced Fuels Laboratory, UCT

Load Expansion of Stoichiometric HCCI Using Spark Assist and Hydraulic Valve Actuation

James P. Szybist, Eric Nafziger, Oak Ridge National Laboratory

Characterizing Auto-ignition Initiation and Combustion Development of Direct Fuel Injection in an HCCI NVO Operated Engine: Optical Study (Written Only -- No Oral Presentation)

Pawel Miroslaw Luszcz, The University of Birmingham, UK

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

Alternative and Advanced Fuels (Part 3 of 3)

8:30 a.m.

This is the third of three Alternative and Advanced Fuels sessions. This session includes papers on the development and understanding of surrogate and reference fuels plus other Alternative and Advanced Fuels concepts for current and future engine technologies.

Organizers:

Christophe Hagen, Colorado State University; George Karavalakis, National Technical University of Athens; Amanda Lea-Langton, Univ. of Leeds; Anthony John Marchese, Colorado State Univ.; Scott A. Miers, Michigan Technological Univ.; Paul Richards, Innospec

Binary Mixtures of Branched and Aromatic Pure Component Fuels as Surrogates for Future Diesel Fuels

Andrew Mathes, Jacob Ries, Patrick Caton, Jim Cowart, Dianne Luning Prak, Leonard Hamilton, US Naval Academy

SESSIONS

Combustion & Fuels (continued)

Using Engine Experiments to Isolate Fuel Equivalence Ratio Effects on Heat Release in HCCI Combustion

Hassan Babiker, Oliver Mathieu, Yoann Viollet, Ahmar Ghauri, Amer Amer, Saudi Aramco

Hydrogen Enriched Diesel Combustion

Stephen Samuel, Oxford Brookes Univ.; Gregory McCormick, McCormick Designs

Evaluation of Fischer-Tropsch Fuel Performance In Advanced Diesel Common Rail FIE

Paul Lacey, Delphi Diesel Systems; Richard H. Clark, Shell Global Solutions UK; Ratchatapong Boonwatsakul, Shell Global Solutions Malaysia; Nebojsa Milovanovic, Delphi Diesel Systems; Paul Stevenson, Richard Stradling, Shell Global Solutions UK; Jean Marc kientz, Sandro Gail, Delphi Diesel Systems

Waste Lubricating Oil as a Source of Hydrogen Fuel using Chemical Looping Steam Reforming

Amanda Lea Langton, Univ. of Leeds

Optical and Thermodynamic Investigations of Reference Fuels for Future Combustion Systems

Peter Hottenbach, Gerd Grünefeld, Andreas Janssen, Stefan Pischinger, Thorsten Brands, Martin Muether, RWTH Aachen Univ

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

Modeling of SI and Diesel Engines

9:00 a.m.

This session deals with the development of 0-, 1- and quasi-dimensional models for the thermo- and fluid-dynamic processes in both SI and CI engines. Models for engine breathing, turbocharging, SI and CI combustion, and after-treatment systems are all considered, as are models for control and integrated simulation methods.

Organizers:

Efthimios Pariotis, Hellenic Naval Academy; Rainer J. Rothbauer, Southwest Research Institute

Development of Variable Temperature Brake Specific Fuel Consumption Engine Maps

Forrest Jehlik, Argonne National Laboratory

Fundamentals of Pressure Trace Analysis for Gasoline Engines with Controlled-Auto-Ignition

Markus Wenig, IVK/FKFS Univ.; Michael Grill, Michael Bargende, FKFS

A Compositional Representative Fuel Model for Biofuels - Application to Diesel Engine Modelling

Rafael Lugo, Jean-Charles de Hemptinne, Catherine Lefebvre, Vahid Ebrahimian, Chawki Habchi, IFP Energies nouvelles

Modelling of Engine and Vehicle for a Compact Car with a Flywheel Based Kinetic Energy Recovery Systems and a High Efficiency Small Diesel Engine (Written Only -- No Oral Presentation)

Alberto Boretti, Univ. of Ballarat

Modeling Pressure Oscillations under Knocking Conditions: A Partial Differential Wave Equation Approach (Written Only -- No Oral Presentation)

Alessandro di Gaeta, Veniero Giglio, Giuseppe Police, Fabrizio Reale, Natale Rispoli, Istituto Motori CNR

Prediction of Hydrodynamic Bearing Behaviour for Pre-layout of Cranktrain Dimensions (Written Only -- No Oral Presentation)

M. Cagri Cevik, VKA

Operation of a Truck Diesel Engine Converted to Direct Injection Jet Ignition of LPG (Written Only -- No Oral Presentation)

Alberto Boretti

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

High Efficiency IC Engines

1:30 p.m.

This session will highlight technologies impacting IC engine efficiency, including engine downsizing, pressure boosting and turbocharging; intelligent combustion such as high dilution, low temperature and stratified charge; variable compression ratios and fully variable valvetrains; advanced fuel injection technologies, and much more.

Organizers:

Terrence Alger, Southwest Research Institute; Bengt Johansson, Lund University; Robert M. Wagner, Oak Ridge National Laboratory

A Normally Aspirated Spark Initiated Combustion System Capable of High Load, High Efficiency and Near Zero NOx Emissions in a Modern Vehicle Powertrain

William Attard, MAHLE Powertrain LLC

An Advanced Internal Combustion Engine Concept for Low Emissions and High Efficiency from Idle to Max Load Using Gasoline Partially Premixed Combustion

Vittorio Manente, Claes-Goeran Zander, Lund Univ; Bengt Johansson, Per Tunestal, Lund University; William Cannella, Chevron USA Inc

Use of Alcohol Fuels In Clean, Spark Ignition Engines with Diesel-Like High Efficiency

Leslie Bromberg, Daniel Cohn, Massachusetts Institute of Technology

Optimization of Timing Drive System Design Parameters for Reduced Engine Friction

Umut Uysal, Ford Otosan A.S.; Ozgen Akalin, Istanbul Technical University

A Waste Heat Recovery System for Light Duty Diesel Engines

Thomas Edward Briggs, Robert Wagner, K. Dean Edwards, Scott Curran, Eric Nafziger, Oak Ridge National Laboratory

In-Cylinder Fuel Blending of Gasoline/Diesel for Improved Efficiency and Lowest Possible Emissions on a Multi-Cylinder Engine

Scott Curran, Vitaly Prikhodko, Robert Wagner, Kukwon Cho, Charles Sluder, Oak Ridge National Laboratory; Sage Kokjohn, Rolf Reitz, Univ of Wisconsin

Investigating Potential Light-duty Efficiency Improvements through Simulation of Turbo-compounding and Waste-heat Recovery Systems

K. Dean Edwards, Robert Wagner, Thomas Briggs, Oak Ridge National Laboratory

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

Multi-Dimensional Engine Modeling

1:30 p.m.

The spectrum of papers for this session reflect the truly multidisciplinary nature of the field, covering advances in areas such as chemical kinetics, combustion and spray modeling, turbulence, mesh generation, and approaches targeting improved computational efficiency. Papers employing multi-dimensional modeling to gain a deeper understanding of processes related to turbulent transport, transient phenomena, and chemically reacting, two-phase flows are also encouraged.

Organizers:

Thomas Edward Briggs, Oak Ridge National Laboratory; Rainer J. Rothbauer, Southwest Research Institute

Chairpersons:

Thomas Briggs, Oak Ridge National Laboratory

The Full Cycle HD Diesel Engine Simulations Using KIVA-4 Code

Abdurrahman Imren, Istanbul Technical University; Valeri Golovitchev, Chalmers Univ of Technology; Cem Sorousbay, Istanbul Technical University; Gerardo Valentino, Istituto Motori CNR

Effects of Negative Valve Overlap on the Auto-ignition Process of Lean Ethanol/Air Mixture in HCCI Engines

Tobias Joelsson, Rixin Yu, Johan Sjöholm, Per Tunestal, Xue-Song Bai, Lund University

Full Cycle CFD Simulations to Study Thermal and Chemical Effects of Fuel Injection During Negative Valve Overlap in an Automotive Research Engine

Randy P. Hessel, Univ. of Wisconsin Madison; Richard Steeper, Russell Fitzgerald, Sandia National Laboratories; Salvador Aceves, Daniel Flowers, Lawrence Livermore National Laboratory

LES of Flow and Temperature Distribution in an Experimental Engine

Tobias Joelsson, Rixin Yu, Xue-Song Bai, Lund University; Noriyuki Takada, Toyota Motor Corporation; Ichiro Sakata, Hiromichi Yanagihara, Toyota Motor Europe; Johannes Lindén, Mattias Richter, Marcus Alden, Bengt Johansson, Lund University

A Feasible CFD Methodology for Gasoline Intake Flow Optimization in a HEV Application - Part 2: Prediction and Optimization (Written Only -- No Oral Presentation)

Yongli Qi, Caterpillar Inc.; Hao Liu, Zhejiang Yinlun Machinery Co., Ltd.; Kenneth Midkiff, Paulius Puzinauskas, Univ of Alabama

A Feasible CFD Methodology for Gasoline Intake Flow Optimization in a HEV Application - Part 1: Development and Validation (Written Only -- No Oral Presentation)

Yongli Qi, Caterpillar Inc.; Hao Liu, Zhejiang Yinlun Machinery Co., Ltd.; Kenneth Midkiff, Paulius Puzinauskas, Univ of Alabama

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

Open Forum - Internal Deposits in High Pressure Diesel Injection Systems

1:30 p.m.

Internal deposits in advanced high pressure injection systems, especially in common rail injection, are a challenge for OEMs, fuel systems manufacturers, fuel producers, additive companies and research establishments. The forum will highlight the challenges, the possible causes and discuss ways to control and eliminate internal injector deposits. If you are interested in participating, please email the organizers with your name, affiliation and title of your proposed presentation.

Organizers:

Rodica Baranescu, Navistar Inc.; Joan M. Evans, Infineum USA LP

WEDNESDAY October 27

Engine Flows and Combustion Diagnostics

8:00 a.m.

The Engine Flows and Combustion Diagnostics session features papers which focus on extending and improving various sensors and diagnostic methods that can be employed to examine the flow and combustion processes in both production engines and research environments. Examples of diagnostics of interest include, but are not limited to: pressure sensors, ion probes, exhaust gas composition analyzers, and various optical techniques.

Organizers:

Simona S. Merola, Cinzia Tornatore, Istituto Motori CNR

Chairpersons:

Simona Merola, Cinzia Tornatore, Istituto Motori CNR

Crank-angle-resolved Measurements of Air-fuel Ratio, Temperature, and Liquid Fuel Droplet Scattering in a Direct-injection Gasoline Engine

Kevin R. Sholes, Nissan Motor Co., Ltd.; Ronald K. Hanson, Jason M. Porter, Sung Hyun Pyun, Jay B. Jeffries, Stanford University; Kiyotaka Shouji, Tomohiro Chaya, Nissan Motor Co., Ltd.

An In-cylinder Laser Absorption Sensor for Crank-angle-resolved Measurements of Gasoline Concentration and Temperature

Jay Jeffries, Jason Porter, Sung Pyun, Ronald Hanson, Stanford Univ.; Kevin Sholes, Kiyotaka Shouji, Tomochiro Chaya, Nissan Motor Co Ltd

Direct Injection of High Pressure Gas: Scaling Properties of Pulsed Turbulent Jets

Rik Baert, Arno Klaassen, Eindhoven University of Technology; Erik Doosje, TNO

Application of a Tunable-Diode-Laser Absorption Diagnostic for CO Measurements in an Automotive HCCI Engine

Russell P. Fitzgerald, Richard Steeper, Sandia National Laboratories

Detection of Combustion Quality in a Production SI Engine Using Ion Sensor (Written Only -- No Oral Presentation)

Sadami Yoshiyama, The University of Kitakyushu

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

Fuel Injection and Sprays (Part 1 of 2)

8:00 a.m.

The Fuel Injection and Sprays session is devoted to experimental and numerical investigations in the area of fuel injection systems and sprays in both spark ignition and compression ignition engines. Topics include spray geometry characterization, fuel atomization, optical diagnostic techniques, fuel effects, and any other related topics.

Organizers:

David L.S. Hung, Michigan State Univ.; Tiegang Fang, North Carolina State Univ.; Farzan Parsinejad, Chevron Oronite; William Attard, MAHLE Powertrain LLC

Experimental Investigation of Droplet Size and Velocity in Clustered Diesel Sprays under High-Pressure and High-Temperature Conditions

Maria Cárdenas, Diana Martin, Reinhold Kneer, RWTH Aachen University

SESSIONS

Evaluation of Diesel Spray Momentum Flux in Transient Flow Conditions

Lucio Postriotti, Michele Battistoni, Universita degli Studi di Perugia

Analysis of Transient Cavitating Flows in Diesel Injectors with Diesel and Biodiesel Fuels

Michele Battistoni, Carlo Grimaldi, Universita degli Studi di Perugia

High-Speed Microscopic Imaging of the Initial Stage of Diesel Spray Formation and Primary Breakup

Cyril Crua, Tenzin Shoba, Morgan Heikal, University of Brighton; Martin Gold, Cassandra Higham, BP Global Fuels Technology

New Approach for Characterization of Fuel Property Influence on Spray Formation in Diesel Engines

Matthias Zink, Thorsten Raatz, Thomas Wintrich, Robert Bosch GmbH; Peter Eilts, Technical Univ of Braunschweig

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

Fuel & Additive Effects on CI Engine Performance (Part 1 of 2)

8:30 a.m.

Focus is on the effects of alternative fuels in compression ignition engines operating in a largely mixing-controlled combustion regime. A wide range of alternative fuels exist and may include hydrogen, ethanol, methane, gasoline, naphtha, biodiesel, vegetable oils, and synthetic diesel fuel. Papers pertaining to emissions reduction, performance, combustion analysis, efficiency, spray characteristics and durability for both experimental as well as numerical investigations are encouraged.

Organizers:

Rinaldo Caprotti, Infineum UK, Ltd.; Barbara Goodrich, John Deere Product Engineering Center; Charles Mueller, Sandia National Laboratories; Paul Richards, Innospec

Test Method Development for the Real World Evaluation of Fuel Additives for Heavy Duty Diesel Engine Applications

Mark Hawthorne, Afton Chemical, Ltd.

Internal Injector Deposits in High-Pressure Common Rail Diesel Engines

Scott D. Schwab, Afton Chemical Corp.; Julie Galante-Fox, Delphi Powertrain; Alexander Kulinowski, Keith Miller, Afton Chemical Corp.

Insights into Deposit Formation in High Pressure Diesel Fuel Injection Equipment

Jim Barker, Paul Richards, Innospec; G John Langley, University of Southampton

Deposit Control in Modern Diesel Fuel Injection Systems

Rinaldo Caprotti, Infineum UK, Ltd.; Nadia Bhatti, Infineum; Graham Balfour, Infineum UK Ltd

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

SI Combustion

9:00 a.m.

This session focuses on combustion technologies in both 4-stroke and 2-stroke engines characterized by 1) ignition by an external energy source that serves to control combustion phasing, and 2) a combustion rate that is limited by flame propagation. Gasoline as well as alternative fuels such as ethanol, CNG, and blends are considered. The scope of topics includes studies of mixture formation, ignition, knock, engine efficiency, flame propagation, and emissions formation.

Organizers:

Alasdair Cairns, Brunel University; Simona Merola, Istituto Motori CNR; Lurun Zhong, FEV Inc.

Chairpersons:

Simona Merola, Istituto Motori CNR

Flame Kernel Development inside a Pre-Chamber of a Turbulent Jet Ignition Combustion System in a Modern Vehicle Powertrain

William Attard, MAHLE Powertrain LLC

Development of Multi Zone Model for Spark Ignition Engine with Reference to Engine Knock - Part I: Model Validation

Abdelhadi Ahmed, Syed Ahmed, Tidjani Niass, Saudi Aramco

Combustion Process Investigation in a Small SI Engine

Cinzia Tornatore, Simona Merola, Paolo Sementa, Istituto Motori CNR

A Review of Prechamber Initiated Jet Ignition Combustion Systems

Elisa Toulson, Michigan State Univ.

About the Thermal Effect of Pre-knock Reactions in a Spark Ignition Engine Fueled with LPG (Written Only -- No Oral Presentation)

Bogdan Radu, Dinu Fuioreescu, Politehnica University of Bucharest

Experimental Analysis of the Combustion Process of Commercial and Reference Fuels on the CFR Laboratory Engine (Written Only -- No Oral Presentation)

Mario Marzano, Patrizio Nuccio, Politecnico di Torino

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

Fuel & Additive Effects on CI Engine Performance (Part 2 of 2)

1:30 p.m.

Focus is on the effects of alternative fuels and additives in compression ignition engines operating in a largely mixing-controlled combustion regime. A wide range of alternative fuels exist and may include hydrogen, ethanol, methane, gasoline, naphtha, biodiesel, vegetable oils, and synthetic diesel fuel. Papers pertain to emissions reduction, performance, combustion analysis, efficiency, spray characteristics and durability for both experimental as well as numerical investigations.

Organizers:

Rinaldo Caprotti, Infineum UK, Ltd.; Barbara Goodrich, John Deere Product Engineering Center; Charles Mueller, Sandia National Laboratories; Paul Richards, Innospec

An Experimental Study on the Impact of Biodiesel Origin and type on the Exhaust Emissions from a Euro 4 Pick-up Truck

George Karavalakis, Evaggelos Bakeas, Stamos Stournas, National Technical University of Athens

Exhaust Emission Characteristics of Commercial Vehicles Fuelled with Biodiesel

Daisuke Kawano, National Traffic Safety & Enviro Lab.; Norifumi Mizushima, Hajime Ishii, Yuichi Goto, National Traffic Safety & Enviro Lab; Koichiro Iwasa, Tokyo Univ. of Agri. & Tech.

Reduction of NOx Emissions from Diesel Engines Operated on both Diesel and Biodiesel Fuels using SNCR

Juergen Krahl, Coburg Univ. of Applied Sciences

Performance & Emissions of Diesel and Alternative Diesel Fuels in a Heavy-duty Industry-Standard Older Engine

Manuch Nikanjam, Chevron Products Co.

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

Fuel Injection and Sprays (Part 2 of 2)

1:30 p.m.

The Fuel Injection and Sprays session is devoted to experimental and numerical investigations in the area of fuel injection systems and sprays in both spark ignition and compression ignition engines. Topics include spray geometry characterization, fuel atomization, optical diagnostic techniques, fuel effects, and any other related topics.

Organizers:

David L.S. Hung, Michigan State Univ.; Tiegang Fang, North Carolina State Univ.; Farzan Parsinejad, Chevron Oronite; William Attard, MAHLE Powertrain LLC

Experimental Study on Difference of Spray Characteristics between Biodiesel and Diesel Fuels with High Pressure Common Rail System

Liguang Li, Tongji Univ.

Optical Investigations of the Vaporization Behaviors of Isooctane and an Optical, Non-fluorescing Multicomponent Fuel in a Spark Ignition Direct Injection Engine

Stephen Busch, Heiko Kubach, Karlsruhe Institute of Technology; Christian Disch, MOT GmbH; Ulrich Spicher, Karlsruhe Institute of Technology

Distribution of Vapor Concentration of Fuel Mixed with High Volatility Component and Low Volatility Component

Hajime Fujimoto, Doshisha Univ.

Experimental Investigation of Fuel Influence on Atomization and Spray Propagation using an Outwardly Opening GDI-Injector

Florian Mathieu, Manuel Reddemann, Diana Martin, Reinhold Kneer, RWTH Aachen University

Analysis of Bio-Diesel Spray Atomization in Common-Rail Piezoinjector System (Written Only -- No Oral Presentation)

Krzysztof Wislocki, Ireneusz Pielecha, Dmytro Maslennikov, Jakub Czajka, Poznan University of Technology

Comparative Experimental Study on Microscopic Spray Atomization Characteristics of RME, GTL and Diesel (Written Only -- No Oral Presentation)

Yanfei Li, Guohong Tian, Hongming Xu, Jun Zhang, University of Birmingham

Optical Research of Spray Development of E85 Fuel in High Pressure Gasoline Direct Injection System (Written Only -- No Oral Presentation)

Ireneusz Pielecha, Dmytro Maslennikov, Poznan University of Technology; Krzysztof Wislocki, Technical Univ of Poznan Poland

Planned by Combustion and Fuels Committee / Powertrain Fuels and Lubricants Activity

Control & Calibration

TUESDAY October 26

Powertrain Actuators and Sensors

1:30 p.m.

Variable Valve Actuation mechanisms, devices, and systems; and the impact and control of such systems on thermodynamics, combustion, fuel economy, emissions, and performance.

Organizers:

Timothy Kunz, Delphi Corp.; Per Tunestal, Lund University

Experimental Investigation of a Double Magnet EMVA at Key-On Engine: a Mechanical Resonance Based Control Strategy (Written Only -- No Oral Presentation)

Alessandro di Gaeta, Umberto Montanaro, Silvio Massimino, Istituto Motori CNR; Carlos Idefonso Hoyos Velasco, University of Naples Federico II

Use of Variable Valve Actuation to Control the Load in a Direct Injection, Turbocharged, Spark-ignition Engine (Written Only -- No Oral Presentation)

Alberto Boretti

Planned by Control and Calibration Committee / Powertrain Fuels and Lubricants Activity

Powertrain Control and Optimization

1:30 p.m.

This session covers engine control system and optimization technique developments related to achieving stringent market fuel economy, emissions, performance, reliability and quality demands. Related topics include engine and its subsystem control, signal processing, on-board diagnostic strategy development, sensor, actuator, electronic control unit designs, etc.

Organizers:

Elisa Toulson, Michigan State Univ.; Matti Vint, Ricardo Inc.; Xiaojian Yang; Guoming Zhu, Michigan State Univ.

Air/Fuel Ratio Control in Diesel-Dual-Fuel Engine by Varying Throttle, EGR Valve, and Total Fuel

Withit Chatlatanagulchai, Kasetsart University; Krisada Wannatong, PTT; Shinapat Rhiemprayoon; Kittipong Yaovaja, Thai-German Petroleum & Chemical

On-line Abatement of Transient NOx and PM Diesel Engine Emissions by Oxygen based Optimal Control

Daniel Alberer, Luigi del Re, Johannes Kepler University Linz

SESSIONS

Control & Calibration (continued)

Nonlinear Input Transformation for EGR and VGT Control in Diesel Engines

Johan Wahlström, Lars Eriksson, Linköping University

Quantitative Feedback Control of Air Path in Diesel-Dual-Fuel Engine

Withit Chatlatanagulchai, Kasetsart University; Krisada Wannatong, PTT; Shinapat Rhiensayoon; Nitirong Pongpanich, Kasetsart University

Common Rail Multi-jet Diesel Engine Combustion Development Investigation for MFB50 Evaluation

Fabrizio Ponti, Vittorio Ravaglioli, Univ. degli Studi di Bologna; Gabriele Serra, Magneti Marelli

Nonlinear Model Predictive Control of Advanced Engines Using Discretized Nonlinear Control Oriented Models

Tae-Kyung Lee, Zoran Filipi, Univ. of Michigan

Idle Speed Control of GDI-SI Engines via ECU-1D Engine Co-Simulation (Written Only -- No Oral Presentation)

Alessandro di Gaeta, Umberto Montanaro, Veniero Giglio, Istituto Motori CNR

Planned by Control and Calibration Committee / Powertrain Fuels and Lubricants Activity

Modelling of the Soot Accumulation in DPF Under Typical Vehicle Operating Conditions

Magín Lapuerta, Fermín Oliva, Universidad Castilla-La Mancha; Simón Martínez-Martínez, Universidad Autónoma de Nuevo León

Towards a Model for Engine Oil Hydrocarbon Particulate Matter

Petter Tornehed, Scania CV AB; Ulf Olofsson, KTH

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Emissions Measurement and Testing: Particle Emissions from Combustion Sources

1:30 p.m.

This session focuses on topics related to particle emissions from engines and fuel effects.

Organizers:

Imad A. Khalek, Southwest Research Institute; John M. Storey, Oak Ridge National Laboratory

Development of a Predictive Model for Gasoline Vehicle Particulate Matter Emissions

Koichiro Aikawa, Takayuki Sakurai, Honda R&D Co Ltd; Jeff J. Jetter, Honda R&D Americas Inc.

Particle Emissions from a 2009 Gasoline Direct Injection Engine Using Different Commercially Available Gasoline Fuels

Imad A. Khalek, Thomas Bougher, Southwest Research Institute; Jeff J. Jetter, Honda R&D Americas Inc.

Particulate Matter Emissions and the Role of Catalytic Converter during Cold Start of GDI Engine

Ahmed Hassaneen, Stephen Samuel, Denise Morrey, Oxford Brookes Univ.

The Impacts of Mid-level Biofuel Content in Gasoline on SIDI Engine-out and Tailpipe Particulate Matter Emissions

Xin He, John Ireland, Bradley T. Zigler, Matthew Ratcliff, Keith Knoll, Teresa L. Alleman, National Renewable Energy Laboratory; John T. Tester, Northern Arizona Univ.

Loading and Regeneration Analysis of a Diesel Particulate Filter with a RF-based Sensor

James E. Parks, Vitaly Prikhodko, Oak Ridge National Laboratory; Alexander Sappok, Massachusetts Institute of Technology

Diesel Particulate Oxidation Model: Combined Effects of Volatiles and Fixed Carbon Combustion

Andrea Strzelec, Todd Toops, Charles Daw, Oak Ridge National Laboratory; David Foster, Univ of Wisconsin; Christopher Rutland, Univ of Wisconsin Madison

Ethanol Blend Effects On Direct-Injection Gasoline Vehicle PM Emissions

John M. Storey, Teresa Barone, Kevin Norman, Samuel Lewis, Oak Ridge National Laboratory

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Emissions

MONDAY October 25

Diesel Exhaust Emission Control: Modeling

8:00 a.m.

The emission system is a complicated system that needs better understanding. The main focus of this session is the state of the art modeling of exhaust emission and controls system, including SCR based emission control, EGR, DPF, among others.

Organizers:

Weihua Cai, Caterpillar

Spatial Conversion Profiles within an SCR in a Test Exhaust System with Injection of Ammonia Gas Modelled in CFD using the Porous Medium Approach

M. P. Sturgess, S. F. Benjamin, C. A. Roberts, Coventry University

Modeling of Non-Road Diesel Exhaust Aftertreatment Systems: Diesel Oxidation and Selective Catalytic Reduction Catalysts.

Maya Ranjan Desai, Monica Tutuianu, Mehrdad Ahmadinejad, Timothy Watling, Andrew York, Johnson Matthey Technology Centre; Joseph Stevenson, Johnson Matthey PLC

Effects of Gas Transport Properties on the Processes of NO_x Reduction and NH₃ Oxidation in a Urea-SCR System Using Numerical Analyses

Myung-Whan Bae, Gyeongsang National Univ.

TUESDAY October 26**Diesel Exhaust Emission Control**

8:30 a.m.

This session considers issues related to diesel exhaust emissions control through the use of aftertreatment technology. Topics regarding the performance, durability and fuel effects of diesel particulate filter (DPF) and selective catalytic reduction (SCR) are covered.

Organizers:

Paul Richards, Innospec; Aaron Williams, National Renewable Energy Laboratory

Emissions and Performance Implications of Biodiesel Use in an SCR-equipped Cat Diesel Engine

Lyn McWilliam; Anton Zimmermann, Caterpillar Inc

Effect of Exhaust Flow Conditions and External Cooling on the Performance of the Particle Oxidation Catalyst (POC)

Panu Karjalainen, Juha Heikkila, Topi Ronkko, Jorma Keskinen, Tampere Univ of Technology; Kati Lehtoranta, Pekka Matilainen, Toni Kinnunen, Ecocat Oy

Aspects of HC-SCR Catalyst Durability for Lean-Burn Engine Exhaust Aftertreatment

Steven J. Schmiege, General Motors R&D Center

Characterization of Oxidation Behaviors and Chemical-Kinetics Parameters of Diesel Particulates Relevant to DPF Regeneration

Seung Yang, Kyeong Lee, Argonne National Laboratory; Hwansoo Chong, University of Illinois at Chicago

Development of Artificial Ash Accumulation Test Method

Shuji Fujii, NGK Automotive Ceramics USA Inc.

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

General Emissions

1:30 p.m.

General topics in emissions related to Fuel type, After Treatment design and architecture, combustion strategy etc., using techniques like Mathematical models, CFD, and Experiments

Organizers:

Ronald M. Heck; Krishna Kamasamudram, Cummins Inc.; Qilong LU, Southwest Research Institute; Shouxian Ren, General Motors LLC

Characteristics of Nano-scale Particulates from Turbo-Intercooled Gasoline Direct-Injection Engine

Ian Whelan, University College Dublin, Ireland; Stephen Samuel, Oxford Brookes Univ; David Timoney, University College Dublin, Ireland; Ahmed Hassaneen, Oxford Brookes Univ

Study on Reliable Automotive Exhaust Acrolein Collection Method.

Kenichi Akiyama, JARI Japanese Automotive Research Inst.

Partial Oxidation of Hydrocarbon Species During the High Efficiency Clean Combustion of FACE Fuels

Samuel A. Lewis, John Storey, Charles Sluder, Kukwon Cho, Raynella Connatser, Teresa Barone, Oak Ridge National Laboratory

Exhaust Emissions Measured Under Real Traffic Conditions from Vehicles Fitted with Different Powertrains (Written Only -- No Oral Presentation)

Piotr Lijewski, Poznan University of Technology

Effects of Fuel Hydrocarbon Composition on Passenger Emission Durability (Written Only -- No Oral Presentation)

Hongxia Dong, Lube Oil Co., Petrochina Company LTD; Xiaohong Xu, Lube Oil Co., Petrochina Company LTD; Quanshan Liu, Lube Oil Co., Petrochina Company LTD

Exhaust methane emissions from European passenger cars (Written Only -- No Oral Presentation)

Efthimios Zervas

Non-regulated exhaust pollutants emitted from European passenger cars (Written Only -- No Oral Presentation)

Efthimios Zervas

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

WEDNESDAY October 27**Emissions Measurement and Testing (Part 1 of 2)**

8:00 a.m.

Session focus is on particle emissions from combustion sources; in-use engine emissions measurements and modeling; particulate measurement techniques; detailed characterization techniques; NOx measurement; and testing facility developments. The session organizers would like to thank the authors for their continuing work in expanding the knowledge base of emissions measurement and testing. Special thanks goes to the paper reviewers without whom this session would not be possible.

Organizers:

Allen B. Duncan, US Environmental Protection Agency; Krishna Kamasamudram, Cummins Inc.; Tamas Szailer, Cummins Emission Solutions

Emission Characteristics of a Diesel Engine Operating with In-Cylinder Gasoline and Diesel Fuel Blending

Vitaly Y. Prikhodko, Scott Curran, Teresa Barone, Samuel Lewis, John Storey, Robert Wagner, James Parks, Kukwon Cho, Oak Ridge National Laboratory

Lean Gasoline Engine Reductant Chemistry During Lean NOx Trap Regeneration

James E. Parks, Vitaly Prikhodko, William Partridge, Jae-Soon Choi, Kevin Norman, Shean Huff, Oak Ridge National Laboratory

Proof-of-Principle Investigation into the Use of Custom Rapid Aging Procedures to Evaluate and Demonstrate Catalyst Durability

Huifang F. Shao, Afton Chemical Corp.; Anna Plaatje

SESSIONS

Emissions (continued)

Mechanism of Road Side NO_x Pollution Exhausted by On-Road Driving Diesel Vehicle -Comparison between Vehicle Adopted for New Long Term Regulation and Vehicle Adopted for Long Term Regulation Using On-board Measurement System

Masayoshi Miya, Keio Univ; Susumu Sato, National Traffic Safety & Enviro Lab; Norimasa Iida, Keio Univ

Analysis of Effect of Eco-driving with Early Shift-up on Real-world Emission

Susumu Sato, Hisakazu Suzuki, National Traffic Safety & Enviro Lab.; Masayoshi Miya, Norimasa Iida, Keio Univ.

Exhaust Emission from Combat Vehicle Engines during Start and Warm-Up (Written Only -- No Oral Presentation)

Ireneusz Pielecha, Jacek Pielecha, Jerzy Merkisz, Poznan Univ of Technology

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Emissions Measurement and Testing (Part 2 of 2)

1:30 p.m.

Session focus is on particle emissions from combustion sources; in-use engine emissions measurements and modeling; particulate measurement techniques; detailed characterization techniques; NO_x measurement; and testing facility developments. The session organizers would like to thank the authors for their continuing work in expanding the knowledge base of emissions measurement and testing. Special thanks goes to the paper reviewers without whom this session would not be possible.

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Allen B. Duncan, US Environmental Protection Agency; Krishna Kamasamudram, Cummins Inc.; Tamas Szailer, Cummins Emission Solutions

500 hours Endurance Test on Biodiesel Running an Euro IV Engine

Juergen Krahl, Coburg Univ. of Applied Sciences

An Experimental Study of the EMS Control Parameter Optimization for the use of Biodiesel Blend Fuel

Ki-Hyun Baek, HMC

Effect of Biodiesel on NO_x Reduction Performance of Urea-SCR System

Norifumi Mizushima, National Traffic Safety & Enviro Lab.; Daisuke Kawano, National Traffic Safety & Enviro Lab; Yutaka Murata, Waseda Univ; Hisakazu Suzuki, Hajime Ishii, Yuichi Goto, National Traffic Safety & Enviro Lab

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants Activity

Lubricants & Powertrain Systems

MONDAY October 25

Heavy Duty Diesel Lubricants

9:00 a.m.

This Session highlights advances in heavy duty diesel lubricant technology that will lead to improved efficiency, performance, component durability, or the overall environmental impact of engine-lubricant systems.

Organizers:

Ewa Bardasz, Lubrizol Corp.; Kenneth Chao, Deere & Company

Comparative Study of Engine Oil Performance on CNG/Diesel Engines on an Urban Transport Fleet

Vicente Macian, Bernardo Tormos, Jose Miguel Salavert, Yesid Gomez, Universidad Politécnic de Valencia

Soot Removal from Lubricating Systems

Nageswara R. Cheekala, Ronald Rohrbach, Peter Unger, Honeywell Int'l Inc.

Effect of Different B20 Fuels on Engine Oil Properties

Dairene Uy, James Anderson, Arup Gangopadhyay, Ford Research & Advanced Engineering

Effect of Biodiesel (B20) on Vehicle-Aged Engine Oil Properties

Rob Zdrodowski, Arup Gangopadhyay, James E. Anderson, William C. Ruona, Dairene Uy, Steven J. Simko, Ford Motor Company

Planned by Lubricants and Powertrain Systems Committee / Powertrain Fuels and Lubricants Activity

Engine Boosting Systems

1:30 p.m.

Trends of ever increasing power density, better fuel economy and now reduced emissions are increasing focus on turbocharging/supercharging and turbochargers/superchargers, as part of overall engine system optimization. Increased amounts of EGR and use of aftertreatment devices present new challenges. This session will cover conceptual, modeling and experimental studies relating to advanced turbochargers/superchargers and advanced boosting systems to respond to above challenges.

Organizers:

Philip S. Keller, BorgWarner Inc.; Ahmet Selamet, Ohio State Univ.; Kevin V. Tallio, Ford Motor Co.

Simulation of Mild Surge in a Turbocharger Compression System

Rick Dehner, Ahmet Selamet, Ohio State Univ; Philip Keller, Michael Becker, BorgWarner Inc

Turbocharger Matching for a 4-Cylinder Gasoline HCCI Engine using a 1D Engine Simulation

Prasad Shingne, Dennis Assanis, Aristotelis Babajimopoulos, University of Michigan; Philip Keller, David Roth, Michael Becker, BorgWarner Inc

Ultra High Efficiency Two Stage Turbocharging System

Davorin D. Kapich, Kapich Engineering

Planned by Lubricants and Powertrain Systems Committee / Powertrain Fuels and Lubricants Activity

New CI & SI Engines and Components

3:30 p.m.

This session covers topics regarding new CI and SI engines and components. This includes analytical, experimental, and computational studies covering hardware development as well as design and analysis techniques.

Organizers:

Gareth Dowd, BP; Jeffrey D. Naber, Michigan Technological Univ.; Andreas Petrou Panayi, Michigan State Univ.; Mulyanto Poort, Mid-Michigan Research; Dan Earl Richardson, Cummins Inc.

Energy Consumption in ICE Lubricating Gear Pumps

Massimo Rundo, Politecnico di Torino

2-Stroke Diesel Engine for Light Aircrafts: IDI vs. DI Combustion Systems

Enrico Mattarelli, Carlo Alberto Rinaldini, Fabrizio Paltrinieri, Federico Perini, Univ. of Modena & Reggio Emilia; Mark Wilksch, Wilksch Aero

C+CR Rotary Valves, an Experimental Study and a new Point of View.

Mark Pecqueur, Kris Martens, Pieter Huyskens, Karel de Grote University College

Experimental Study on Hydraulic Free Piston Diesel Engine (Written Only -- No Oral Presentation)

Zhao Zhenfeng, Beijing Institute of Technology

The Influence of the Cylinder Surface Laser Treatment on the Toxic Compound Emissions in NEDC Cycle (Written Only -- No Oral Presentation)

Jerzy Merksiz, Maciej Bajerlein, Poznan Univ of Technology

Planned by Lubricants and Powertrain Systems Committee / Powertrain Fuels and Lubricants Activity

TUESDAY October 26**Advanced Lubricant Research & Development**

8:30 a.m.

Discussions in this session cover topics on fuel efficiency in vehicles and hydraulic systems, measurement of film thickness in piston assemblies and the effect of aging on low temperature rheological properties of fluids.

Organizers:

Mark T. Devlin, Tze-Chi Jao, Afton Chemical Corp.

Feasibility of Using Full Synthetic Low Viscosity Engine Oil at High Ambient Temperatures in Military Vehicles

Adam Brandt, Greg Hansen, Robert Warden, Edwin Frame, Douglas Yost, Southwest Research Institute; Allen Comfort, Luis Villahermosa, US Army RDECOM-TARDEC

Assessment of Ageing Mechanisms in Lubricants and Their Effects on Retained Low Temperature Pumpability of Top Tier Oils

Isabella Goldmints, Infineum USA LP

Evaluation of Hydraulic Efficiency Using High-Shear Viscosity Fluids

Brian Koehler, Southwest Research Institute; Barton J. Schober, Lubrizol Corp.; John Matthew Jackson, Southwest Research Institute

A Non-invasive Method for Measuring the Thickness of Oil Film formed between the Piston Ring and Liner of an Engine

Emin Yusuf Avan, Robin Mills, Rob Dwyer-Joyce, The University of Sheffield

Fuel Efficiency Effects of Lubricants in Military Vehicles

Robert Warden, Adam Brandt, Southwest Research Institute; Luis Villahermosa, Allen Comfort, US Army RDECOM-TARDEC

Planned by Lubricants and Powertrain Systems Committee / Powertrain Fuels and Lubricants Activity

Driveline Lubricants

1:30 p.m.

The industry continues to work on understanding the interaction of lubricating fluids with driveline hardware in order to improve vehicle efficiency, durability, and performance. The Driveline Lubricants Session presents a variety of papers dealing with advances in transmission fluids and axle lubricants as well as their relationship to improved hardware performance.

Organizers:

Gareth Dowd, BP; Michael Huston, Lubrizol; Timothy P. Newcomb, BorgWarner Inc.; Richard Vickerman, Lubrizol Corp.

Permeability Measurements of Different Friction Materials for Wet Clutches and Brakes

Pär Marklund, Lulea University of Technology

Next Generation Torque Control Fluid Technology, Part IV; Using a New Split-Mu Simulation Test for Optimizing Friction Material-Lubricant Hardware Systems

David Whitticar, Michael Huston, Lubrizol Corp.

Next Generation Torque Control Fluid Technology, Part III: Using an Improved Break-away Friction Screen Test to Investigate Fundamental Friction Material-lubricant Interactions

David Whitticar, Lubrizol Corp.

Wet Clutch Degradation Monitored by Lubricant Analysis

Kim Berglund, Pär Marklund, Roland Larsson, Luleå University of Technology; Mayte Pach, Statoil Lubricants; Richard Olsson, Haldex Traction AB

Effect of ATF Physical Properties on Fuel Efficiency

Mark T. Devlin, Afton Chemical Corp.

Planned by Lubricants and Powertrain Systems Committee / Powertrain Fuels and Lubricants Activity

WEDNESDAY October 27**Passenger Car Lubricants - Oil and Engine Aging**

8:30 a.m.

This session covers all aspects relating to engine oils for passenger car vehicles, including effects of additive/base oil on engine-out particulate and gaseous emissions, lubrication and oil consumption, friction, wear, as well as performance in the laboratory and under field service.

Organizers:

Edward S. Akucewich, Lubrizol Corp.; Alain Bouffet, Total Refining & Marketing; Alain Gauthier, Total Refining and Marketing

SESSIONS

Lubricants & Powertrain Systems (continued)

The Importance of Oxidation and Volatilization in Obtaining Comparable Rheological Results in the SEQ IIIG and ROBO Tests (Oral Only)

Alan Flamborg, Raymond Romaszewski, Evonik Rohmax Usa Inc.; Bernard Kinker

Oil Consumption Sources in a Modern Gasoline Engine including Contribution of Blow-by separator and Turbocharger - An experimental Study based on the Use of Radiotracers

Thierry Delvigne, DSI

Controlling Lubricant Derived Phosphorous Deactivation of the Three Way Catalysts Part 2: Technical Assessments of Positive Environmental Impact via Utilization of Novel ZDP Technology

Ewa Bardasz, Elizabeth A. Schiferl, Jonathan S. Vilaro, Thomas T. Curtis, Lubrizol Corp.; Frances E. Lockwood, Ashland Inc.; Thomas R. Smith, Timothy Lee Caudill, Valvoline Company

Effect of Viscosity Index Improvers in Ethanol/Gasoline/Water Emulsions Formed with E25 and E85 in Passenger Car Motor Oils

Pritesh A. Patel, Kirk A. Nass, David S. George, Catherine S. Puckett, Chevron Oronite Co. LLC

Role of Fuel Decomposition Products on Formation of Sequence IIIG Piston Deposits

Mark T. Devlin, Afton Chemical Corp.

Planned by Lubricants and Powertrain Systems Committee / Powertrain Fuels and Lubricants Activity

Passenger Car Lubricants - New Specifications and Engine Oils

1:30 p.m.

This session covers all aspects relating to engine oils for passenger car vehicles, including effects of additive/base oil on engine-out particulate and gaseous emissions, lubrication and oil consumption, friction, wear, as well as performance in the laboratory and under field service.

Organizers:

Edward S. Akucewich, Lubrizol Corp.; Alain Bouffet, TOTAL RAFFINAGE & MARKETING; Alain Gauthier, Total Refining and Marketing

Extending SAE J300 to Viscosity Grades below SAE 20

Michael J. Covitch, Lubrizol Corp.

High Shear Rate Rheology of Lower Viscosity Engine Oils Over a Temperature Range of 80° to 150°C Using the Tapered Bearing Simulator (TBS) Viscometer

Theodore W. Selby, Savant Inc.

Planned by Lubricants and Powertrain Systems Committee / Powertrain Fuels and Lubricants Activity

Registration & Hotel

Registration Fees	By October 8	After October 8
SAE Classic Member*	\$595	\$695
SAE Premium Member *	\$570	\$670
SAE Elite Member *	\$545	\$645
Non-Member*	\$995	\$1095
Participant* (Includes: organizer, presenter, moderator or panelist)	\$395	\$495
Tabletop Exhibit Personnel (one full registration per exhibit; proceedings are not included)	FREE	FREE

*Registration includes admission to Keynote and Technical Sessions, and Receptions plus one copy of the Proceedings

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Hotel Information

Event Location and Hotel

DoubleTree Hotel San Diego Mission Valley

7450 Hazard Center Drive
San Diego, CA 92108

Hotel Reservations:

- All attendees are responsible for their own lodging and travel arrangements.
- A block of sleeping rooms has been reserved at the DoubleTree Hotel San Diego Mission Valley
- SAE's group rate is \$119 per room per night, all inclusive, single or double occupancy, plus local, state and federal applicable taxes. Rates include complimentary internet access in sleeping rooms.
- Reservations must be made through The Housing Connection by Friday, October 11, 2010 by calling 1-800-847-5810 or 801-505-4138 outside the US or through our on-line connection – at www.sae.org/events/pfl/

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Professional Development Seminars

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ID# C1010

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Instructor: Gerald Micklow

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Selective Catalytic Reduction for Diesel Engines

ID#C0913

Dates: October 25 – 26, 2010

This seminar discusses NOx formation in diesel engines and in-cylinder methods for reducing these emissions. The aftertreatment systems for NOx reduction will be explained and the advantages and disadvantages of these emission reduction technologies will be discussed. The primary focus is on urea SCR and its technology and the important chemical reactions and methods for improving SCR performance.

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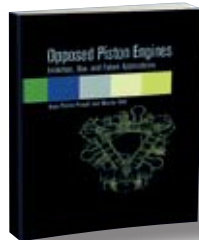
Fees: \$1,175; SAE Members – Classic: \$1,058; Premium: \$999; Elite: \$940
1.3 CEUs

Instructor: Magdi Khair

For complete seminar content, instructor bio, and to register visit www.sae.org/pdevent/C0913 or call customer service at 1-877-606-7323.

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Related Resources



Opposed Piston Engine

By Martin L.S. Flint, Jean-Pierre Pirault

This book is an extensive survey of opposed piston (OP) engines from 1887 to 2006.

The authors explore design and performance details of all major

types of opposed piston engines in stationary, ground, marine, and aviation applications. Some performance and emission comparisons to 4-stroke engines are made, as is a case for reconsidering opposed piston engines for certain applications.

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