

SAE 2013 World Congress & Exhibition

Technical Session Schedule

As of 04/22/2013 07:40 pm

Tuesday, April 16

New Fuels and High-Tech Innovations: Are Engine Controls and the CAN Bus up to the Challenge?

Session Code: ANN200

Room FEV Powertrain Innovation Forum **Session Time:** 10:00 a.m.

As powertrain technology evolves, we're beginning to see a future world of complicated and highly engineered solutions to meet a variety of market needs. Fuel flexibility, downsized and highly boosted engines, EV's and Range Extenders, just to name a few all present major challenges in terms of greater functional complexity, distributed architectures, and component sharing. Engine controls are becoming increasingly complex and CAN data bus loading is becoming difficult to manage. Increasing complexity and data management generates concern about functionality and transmission/receipt of data within required time window. Engine controls and data bus experts from the automotive industry will discuss the challenges and present a forward look at emerging solutions.

Moderators - Dean Tomazic, Vice President Light-Duty Powertrain and Vehicle Engineering, FEV Inc.

Panelists - David E. Helton, Chief Engineer, Gasoline Engine Management Systems, Delphi Powertrain Systems, Delphi Corporation; Daniel Nicholson, Executive Director - Global Powertrain Driveability, Calibration & Verification, General Motors Company; Gregory Weber, Director, Powertrain Controls Engineering, Chrysler Group LLC; Philip Yuhasz, Director of Controls & Calibration, Ford Motor Company;

Tuesday, April 16

Start-Stop is Coming to North America, but will it Start or Stop Sales?

Session Code: ANN201

Room FEV Powertrain Innovation Forum **Session Time:** 1:00 p.m.

Start-stop technology may offer significant internal combustion engine efficiency improvements at a modest cost. But a variety of engineering challenges exist when integrating systems into a vehicle such as battery performance, base engine control changes, calibration complexity, reliability, safety/redundancies, NVH and driver perception. This session will look at how OEM's and suppliers are addressing these and other issues and provide an updated prognosis of the issues and solutions affecting North American start-stop systems product launches.

Moderators - Francis M. Fodale, Director, Powertrain Integration, NAFTA Powertrain Engineering, Fiat-Chrysler

Panelists - Scott Dahl, Regional President, Starters Motors & Generators Division, N.A., Robert Bosch LLC; Michel A. Forissier, Marketing, Research & Development Director, Valeo Powertrain Systems; Mazen Hammoud, Chief Engineer, Electrified Powertrain Systems, Ford Motor Company; Robert Martin, Director, Engine Electric Group, DENSO International America Inc.; Mark Rakoski, Executive Director, Sales & Engineering, Mitsubishi Electric Automotive America, Inc.;

Tuesday, April 16

Grand Opening - Mary Nichols

Session Code: ANN108

Room AVL Technology Leadership Center **Session Time:** 8:30 a.m.

Tuesday, April 16

Predicting Desire

Session Code: ANN100

Room AVL Technology Leadership Center **Session Time:** 10:00 a.m.

What will drive consumer purchase decisions of the future? Efficient cost-effective investments must be made far in advance of when consumer trends and priorities are obvious. How should auto engineers think differently about what future consumers around the world will value? This panel will discuss market segmentation, consumer priorities, drivers of customer satisfaction, business models and their impact on hot future vehicle features and functions.

Moderators - Sandy Stojkovski, President, Scenaria, Inc. An AVL Group Company

Panelists - Peter Coffee, Vice President & Head of Platform Research, CTO for Automotive Industry, salesforce.com inc.; Ralph Gilles, President & CEO - SRT Brand & Motorsports & Senior Vice President, Product Design, Chrysler Group LLC; Michael O'Brien, Vice President, Corporate Planning & Strategy, Hyundai Motor America; John Waraniak, Vice President, Vehicle Technology, Specialty Equipment Market Association (SEMA);

Tuesday, April 16

Driver Distraction Regulation and Autonomous Driving

Session Code: ANN101

Room AVL Technology Leadership Center Session Time: 1:30 p.m.

NHTSA published "Visual-Manual Driver Distraction Guidelines for In-Vehicle Electronic Devices" and it is moving through the regulatory process. The automotive industry has highlighted issues including "Per Se" lock-outs, the importance of systems integration, nomadic devices and voice activated controls, and ultimately autonomous driving. When will this technology be available, how much will it cost, and will it help or hinder the problem of a distracted driver? In addition, the fundamental issue is how can the driver and vehicle "Connect with Safety"? How can industry, government and regulatory groups work together on solutions which provide value to society? This is the challenge and focus of the panel.

Moderators - Jeffrey J. Owens, Chief Technology Officer & Senior Vice President, Delphi Automotive

Panelists - Christopher Borroni-Bird, Vice President, Strategic Development, Qualcomm Inc.; Jay Joseph, Senior Manager, Product Regulatory Office, American Honda Motor Co., Inc.; Kazuoki Matsugatani, Director, Corporate R&D Div. 3, DENSO Corporation; Christian Schumacher, Head of Advanced Driver Assistance Systems, NAFTA, Continental Automotive Systems N.A.; Peter F. Sweatman, Director, University of Michigan Transportation Research Institute; Robert K. Yakushi, Director, Product Safety, Environmental, Nissan North America, Inc.;

Tuesday, April 16

Body Engineering and Design

Session Code: B100

Room D0-02A Session Time: 9:30 a.m.

Organizers - Vesna Savic, Mallikarjuna Bennur, General Motors LLC; Raghu Echempati, Kettering Univ.; Ramakrishna Koganti, RAMK Inc.; Kevin Smith, Auto Technology Company

Time	Paper No.	Title
9:30 a.m.	2013-01-0370	New Light Truck Platform Chassis Joshua C. Johnson, Honda R&D Americas, Inc.
9:50 a.m.	2013-01-0372	Application of an FSW Continuous Welding Technology for Steel and Aluminum to an Automotive Subframe Shosuke Ohhama, Tsunehisa Hata, Honda R&D Co., Ltd. Automobile R&D; Takanori Yahaba, Honda Motor Co., Ltd. Suzuka Factory; Tsutomu Kobayashi, Tetsuya Miyahara, Mitsuru Sayama, Honda R&D Co., Ltd. Automobile R&D

10:10 a.m.	2013-01-0373	Application of a Novel Metal Folding Technology for Automotive BiW Design Paul Venhovens, CU-ICAR Clemson Univ.; Keith Bell, Industrial Origami, Inc; Prathamesh Marathe, Aniket Patkar, Frederick LaMance, Daniel Lind, Chris D'Amico, CU-ICAR Clemson Univ.
10:30 a.m.	2013-01-0335	Corrosion Simulation Tests: Analysis and Improvement of Corrosion Resistance for Automotive Components Manjula Panyam, Hariharan Venkatraman, Tata Motors Ltd
10:50 a.m.	2013-01-0369	Optimization of Body Attachment for Road Noise Performance Hyungtae Kim, Jungseok DO, Sehwun oh, Kichang Kim, Hyundai & Kia Corp.
11:10 a.m.	2013-01-0374	Efficient and Light Weight Door Panels for Automobiles Anurag gajji, Tarun Gupta, Maruti Suzuki India Limited

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00324, and also individually. To purchase visit collections.sae.org

Planned by Body Engineering Committee / Automobile Body Activity

Tuesday, April 16

Trends in Development of Accelerated Reliability and Durability Testing Technology

Session Code: IDM300

Room D0-02B

Session Time: 9:30 a.m.

This session presents the paper, practices and technology used in development of trends in reliability and durability testing (ART/ADT) technology and accurate prediction. The purpose is covering a new ideas and unique approaches to accurate simulation and integration of field inputs, safety, and human factors, improvement the ART/ADT steps-components, implementation that leads to reduce recalls, cost, and time during design, manufacture, and usage. It leads to accelerated product development.

Organizers - Lev Klyatis, Sohar Inc.; Efstratios Nikolaidis, University Of Toledo

Time	Paper No.	Title
9:30 a.m.	2013-01-0151	Development of Accelerated Reliability/Durability Testing Standardization as a Component of Trends in Development Accelerated Reliability Testing (ART/ADT) Lev Klyatis, Sohar Inc.
9:50 a.m.	2013-01-0152	Development Standardization ¿Glossary¿ and ¿Strategy¿ for Reliability Testing as a Component of Trends in Development of ART/ADT Lev Klyatis, Sohar Inc.
10:10 a.m.	2013-01-0150	Road Simulation Bench as a Tool to Reduce Time and Costs in Comparison with Proving Ground Testing - Correlation Study Marcella Turano, Fulvio Civera, Magneti Marelli S.p.A Exhaust Systems; Guilherme Figueiredo, Fiat Brasil; Marco Margaria, Magneti Marelli S.p.A Exhaust Systems; Andre Smith Pereira, Magneti Marelli Sistemas Automotivos
	2013-01-0153	Application of Dimensional Analysis to Reliability Testing (Written Only -- No Oral Presentation) Lev Gorelik

Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Tuesday, April 16

Reliability and Robust Design in Automotive Engineering: Reliability and Accelerated Testing

Session Code: IDM103

Room D0-02B

Session Time: 10:30 a.m.

This session presents methods and automotive applications on how to assess reliability and robustness in product development. Topics include among others, system reliability target allocation, interval analysis in robust design and imprecise reliability assessment. It also addresses new developments and applications in the area of accelerated testing.

Organizers - Paul Lubinski, Thermo King Corp.; Zissimos Mourelatos, Oakland University

Chairpersons - Paul Lubinski, Thermo King Corp; Zissimos Mourelatos, Oakland University

Time	Paper No.	Title
10:30 a.m.	2013-01-0328	Inverse Power Law Model for Operative Life Estimation of Carbon Steel Stub Axle Engku A. Azrulhisham, Wan Mansor Wan Mohamad, Universiti Kuala Lumpur; Hairul Fahmi Abdul Hamid, Perusahaan Otomobil Nasional Sdn Bhd
10:50 a.m.	2013-01-0329	Estimation of One-Sided Lower Tolerance Limits for a Weibull Distribution Using the Monte Carlo Pivotal Simulation Technique Sandeep Makam, Yung-Li Lee, Pradeep Attibele, Chrysler Group LLC

Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Tuesday, April 16

Reliability and Robust Design in Automotive Engineering: Reliability-Based Design Optimization and Robustness

Session Code: IDM108

Room D0-02B

Session Time: 1:00 p.m.

This session will address heoretical developments and automotive applications in RBDO and Robust Design. Topics include: computational algorithms for efficient estimation of reliability, Monte Carlo simulation, Bayesian reliability, Dempster-Shafer Evidence Theory, and Multi-Disciplinary Optimization.

Organizers - David Dronzkowski, Chrysler Group LLC; David A. Lamb, US Army TARDEC; Zissimos Mourelatos, Oakland University

Chairpersons - Zissimos Mourelatos, Oakland University

Time	Paper No.	Title
1:00 p.m.	2013-01-0377	Sampling-Based RBDO Using Score Function with Re-Weighting Scheme Shih-Po Lin, University of California, Los Angeles; Lei Shi, Shanghai Jiao Tong University; Ren-Jye Yang, Ford Motor Co.
1:20 p.m.	ORAL ONLY	A Fatigue Design Approach Based on Historical Fatigue S-N Test Data Zhigang Wei, Tenneco Automotive Co., Ltd.; Limin Luo; Fulun Yang, Tenneco Inc
	2013-01-0378	Robust Design of Load Sensing Proportional Valve by Orthogonal Experiment Analysis with Constrained Multi-objective Genetic Algorithm (Written Only -- No Oral Presentation) Zeyu Ma, Jinglai Wu, Ankang Jin, Yunqing Zhang, Huazhong University of Science and Tech.

Tuesday, April 16

Reliability and Robust Design in Automotive Engineering: Design for Six Sigma

Session Code: IDM107

Room D0-02B

Session Time: 2:00 p.m.

Design for Six Sigma (DFSS) is a powerful engineering process for designing robust, high quality products that consistently meet or exceed customers' expectations. This session will address new technical advances in DFSS and provide valuable insight into its application through the presentation of significant real-world case studies

Organizers - Richard Amori, Ford Motor Co.; Mohammad Hijawi, Chrysler Group LLC; Robert Lust; Yih-Chyun Sheu, Chery Automobile Co., Ltd.

Time	Paper No.	Title
2:00 p.m.	2013-01-0596	Integrated Virtual Approach for Optimization of Vehicle Sensitivity to Brake Torque Variation Bo Zhang, Charles Beyer, Jack Pelkey, Glenn Whitehead, Alexandre Opeiko, Chrysler Group LLC
2:20 p.m.	2013-01-0595	Systems Engineering Excellence Through Design: An Integrated Approach Based on Failure Mode Avoidance Ioan Felician Campean, Ed Henshall, University of Bradford; Brian Rutter, Ford Motor Company
2:40 p.m.	ORAL ONLY	Lessons from 15 Years of DFSS at GE and Implications for the Future Gene Wiggs, GE Aviation; Martha Gardner, GE Global Research

Tuesday, April 16

Chat with the Experts: Why Industrial Companies have Problems with Recalls, Quality, and Reliability, and Less Profit than Planned. The Way for Improvement this Situation

Session Code: IDMCHAT10

Room D0-02B

Session Time: 4:00 p.m.

This Chat is considering how, if one wants to save money in testing during design and manufacturing, the end results will be a huge loss of much more money due to faulty product, which have to be replaced, because of this mistake. The result is lower quality, reliability, safety, higher life cycle cost, than it might be. The basic reason is changing two meanings - cause and effect. It will be discuss how one can eliminate this negative situation, consider examples from well-known companies.

Organizers - Lev Klyatis, Sohar Inc.

Chairpersons - Lev Klyatis, Sohar Inc.

Panelists - Bryan Dodson, SKF; Todd Gross, Johnson Controls; Lev Klyatis, Sohar Inc;

Tuesday, April 16

Structural Plastic Composite Components - The Multi-Material Vehicle Opportunity and Technology Gaps: Evolution or Revolution? (Part 1)

Session Code: M304

Room D0-03 C&D

Session Time: 9:30 a.m.

For 30 years industry has been working to develop a multi-material vehicle where steel, aluminum , polymer composites, and Magnesium can all be utilized to optimize the vehicle structure and where materials can be used selectively where appropriate. Such a vehicle remains elusive for reasons of cost and material compatibility. This session will discuss the technology gaps and what is required to for the implementation of and successful production of a high volume multi- materials vehicle.

Organizers - Marianne S. Morgan, BASF Corp.

Time	Paper No.	Title
9:30 a.m.	ORAL ONLY	Keynote: Plastic Fantastic: A History of Automotive Composite Material Applications Lindsay Brooke, Sr Editor, Automotive Engineering Intl, SAE International
10:10 a.m.	ORAL ONLY	Materials Considerations and Technology Gaps for Polymer-based Composites Saad Abouzahr, Chrysler Corp.
10:30 a.m.	ORAL ONLY	The Challenge in Expanding Composite use in Multi Material Body Structure Michael S. Wiseman, Honda R & D Americas Inc.
10:50 a.m.	ORAL ONLY	Automotive Light Weighting Opportunities and Challenges - A Tier 1 Perspective Probir Guha, Continental Structural Plastics

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Tuesday, April 16

Structural Plastic Composite Components - The Multi-Material Vehicle Opportunity and Technology Gaps: Evolution or Revolution? (Part 2)

Session Code: M304

Room D0-03 C&D

Session Time: 1:00 p.m.

For 30 years industry has been working to develop a multi-material vehicle where steel, aluminum , polymer composites, and Magnesium can all be utilized to optimize the vehicle structure and where materials can be used selectively where appropriate. Such a vehicle remains elusive for reasons of cost and material compatibility. This session will discuss the technology gaps and what is required to for the implementation of and successful production of a high volume multi- materials vehicle.

Organizers - Marianne S. Morgan, BASF Corp.

Time	Paper No.	Title
1:00 p.m.	ORAL ONLY	Automotive Composites: Evolution or Revolution in Materials Joining George Ritter, EWI
1:20 p.m.	ORAL ONLY	Challenges and Chances for Manufacturing of Composites for High Volume Applications Tobias Potyra, Fraunhofer Project Center, Western Univ; Paul Dugsin, Magnus Associates
1:40 p.m.	ORAL ONLY	Mixed Materials: Taking on the Heavyweights Jay Baron, Car Group
2:00 p.m.	ORAL ONLY	Composite Lightweighting Solutions for Today, Tomorrow and the Day After That Marianne S. Morgan, BASF Corp.
2:20 p.m.	ORAL ONLY	Leveraging Aerospace Composites CAE methods for Composites in Automotive design & Opportunities and Gaps Giuseppe Resta, Altair Engineering

2:40 p.m.	ORAL ONLY	Structural Navigation: Optimizing Automotive Materials Selection <i>Ross Kozarsky, LUX Research</i>
3:00 p.m.	ORAL ONLY	Kick-starting Widespread Adoption of Automotive Carbon Fiber Composites <i>Robert Hutch Hutchinson, Rocky Mountain Institute</i>
3:20 p.m.	ORAL ONLY	An Opportunity for Plastics and a Seismic Industry Change <i>Oliver Kuttner, Edison2</i>
3:40 p.m.	Panel	Expert Panel Discussion: Structural Plastic Composite Components - The Multi-Material Vehicle Opportunity and Technology Gaps: Evolution or Revolution? Moderators - <i>Brett Smith, Center For Automotive Research</i>

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Tuesday, April 16

Advances In Light Weight Materials - Aluminum (Part 1 of 2)

Session Code: **M203**

Room D0-03A

Session Time: **9:30 a.m.**

This session presents the latest developments in automotive applications of aluminum castings and wrought products. The papers cover a wide range of the technical aspects including alloy development, lightweight design, process development and simulation as well as performance optimization.

Organizers - *Jidong Kang, CanmetMATERIALS; Alan Luo, General Motors Corporation; Douglas Richman, Kaiser Aluminum*

Time	Paper No.	Title
9:30 a.m.	ORAL ONLY	A Cell Geometrical Model to Numerically Study Fluid Flow in Metal Foam <i>Ahmed Suleiman, Nihad Dukhan, University Of Detroit Mercy</i>
9:50 a.m.	2013-01-0380	Development of Aluminum-Clad Material for Corrosion Resistance Cooler <i>Kazutaka Ohno, Yoshiki Tomita, Eisuke Yagi, Hirofumi Nakano, Toyota</i>
10:10 a.m.	2013-01-0379	Dry Sliding Wear Behavior of Al-B₄C Particulate Reinforced Composites Produced by Powder Metallurgy Method <i>Feray Guleryuz, Ege Universitesi; Deniz Uzunsoy, Bursa Teknik & Yildiz Teknik Universitesi; Rasim Ipek, EGE Universitesi</i>
10:30 a.m.	2013-01-0385	Selecting Paint Stripping Technologies for Aluminum Wheels, a Comprehensive Comparison of Commercially Available Methods <i>Agnes Rousseau, Christopher Ringholz, Tom Patena, John Kochilla, Atotech</i>

Planned by Non-Ferrous Committee / Materials Engineering Activity

Tuesday, April 16

Advances In Light Weight Materials - Aluminum (Part 2 of 2)

Session Code: **M203**

Room D0-03A

Session Time: **1:00 p.m.**

This session presents the latest developments in automotive applications of aluminum castings and wrought products. The papers cover a wide range of the technical aspects including alloy development, lightweight design, process development and simulation as well as performance optimization.

Organizers - Jidong Kang, CanmetMATERIALS; Alan Luo, General Motors Corporation; Douglas Richman, Kaiser Aluminum

Time	Paper No.	Title
1:00 p.m.	ORAL ONLY	Non-Isothermal Material Deformation during Heated Blank - Cold Die (HB-CD) Sheet Stamping: Preliminary Study Fadi Abu-Farha, Clemson University; Nan Zhang, Clemson University
1:20 p.m.	2013-01-0384	Evaluation of Constitutive Behavior of Aluminum Extrusions and Their GMAW Welds Jidong Kang, CanmetMATERIALS; Kevin Gong, Constellium; Guowu Shen, Jie Liang, James Chen, CanmetMATERIALS
1:40 p.m.	ORAL ONLY	Safe & Cost-Effective Path to Fuel Targets with Aluminum Randall Scheps, Alcoa Automotive
2:00 p.m.	2013-01-0381	Lightweighting Impacts on Fuel Economy, Cost, and Component Losses Aaron David Brooker, National Renewable Energy Laboratory; Jacob Ward, Department Of Energy; Lijuan Wang, National Renewable Energy Laboratory
2:20 p.m.	2013-01-0386	Structure to Assist in Prevention of Bimetallic Corrosion of Hybrid Doors Shoji Kimura, Honda R&D Co., Ltd.

Planned by Non-Ferrous Committee / Materials Engineering Activity

Tuesday, April 16

Electrical Wiring Harnesses

Session Code: AE301

Room D0-03B

Session Time: 9:30 a.m.

The Electrical Wiring Harness session deals with innovations and new developments surrounding the design, development, optimization, and manufacturing of wiring systems, connectors, terminals, wires, coverings, and other related components. The session will also hit on new topics for more robust environmental performance, alternate materials, integration with other systems, and high voltage/current considerations.

Organizers - J. Howard Evans, Bentley Motors, Ltd.; Jeremy Tibbett, Leoni Wiring Systems Inc.

Time	Paper No.	Title
9:30 a.m.	ORAL ONLY	Harness weight reduction by using small cross section wires and alternative materials Wolfgang Langhoff, Leoni Bordnetz-Systeme GmbH & Co. KG
9:50 a.m.	2013-01-0397	Aluminum Introduction in Electrical Distribution Systems Louis Chretien, LEONI Wiring Systems
10:10 a.m.	2013-01-0396	A New Approach to the Test, Assessment and Optimization of Robust Electrical Distribution Systems Ludwig Brabetz, Mohamed Ayeb, Giscard Jilwan, Patrick Graebel, Tobias Kerner, University of Kassel
10:30 a.m.	2013-01-0399	Electrical Power System Assessment Method Based on Bayesian Networks Mohamed Ayeb, Patrick Graebel, Ludwig Brabetz, Giscard Jilwan, University of Kassel

10:50 a.m.	2013-01-0398	Internal Pressure Measurement for Sealed Electrical Connectors on Automotive Wire Harnesses: A method to improve Seal Plug Design Donald Price, Ford Motor Co.
11:10 a.m.	ORAL ONLY	The Preformed Harness as a solution for high-temperature applications Matthias Groetsch, Leoni Bordnetz-Systeme GmbH & Co. KG

Planned by Electrical and Electronic Systems Committee / Automobile Electronics Activity

Tuesday, April 16

Fatigue Research and Applications

Session Code: M200

Room D0-03B

Session Time: 1:00 p.m.

This session covers recent fatigue research, analysis, analytical tools development, and novel applications of fatigue technology in the ground vehicle industry.

Organizers - John J. Bonnen, Carlos Engler-Pinto, Ford Motor Co.; Jackie D. Rehkopf, Plasan Carbon Composites

Time	Paper No.	Title
1:00 p.m.	2013-01-1779	Derivation of Effective Strain-Life Data, Crack Closure Parameters and Effective Crack Growth Data from Smooth Specimen Fatigue Tests Maria El-Zeghayar, Tim Topper, University of Waterloo; John J. Bonnen, Ford Motor Co.
2:00 p.m.	2013-01-0389	Stress Intensity Factor Based Spot Welds Fatigue Life Prediction Model Yandong Shi, Haiding Guo, Nanjing Univ. of Aeronau. & Astronau.
2:20 p.m.	2013-01-0391	Failure Mechanisms and Damage Model of Ductile Cast Iron under Low-Cycle Fatigue Conditions Xijia Wu, National Research Council Canada; Tony Quan, Clayton Sloss, Westcast Industries Inc
2:40 p.m.	ORAL ONLY	Low-Cycle and Thermo-Mechanical Fatigue and Nodular Cast Iron for High Temperature Applications Carlos Engler-Pinto, Ford Motor Co.
3:00 p.m.	2013-01-0393	Investigation of Thermal Fatigue Evaluation Method for Cast Iron Yutaka Sasaki, Noriaki Katori, Hino Motors, Ltd.
3:20 p.m.	2013-01-0392	Decarburization Effects on Fatigue Behavior of Leaf Spring Material Mustafa Karaagac, Murathan Soner, Olgun Celik; Alper Togay; Aylin Keskin, Selcuk Yildiz, OLGUNCELİK; Erdoğan Tekin, ATILIM UNIVERSITY; Ahmet Kanbolat, Olguncelik Company
	2013-01-0395	Accelerated Testing for Design Verification and Improvement of Powertrain Mounting Structure (Written Only -- No Oral Presentation) Zhengzhong Wang, Wei Ma, Yiheng Wang, Xiaolei Wang, Jianchao Cheng, Chery Automobile Co., Ltd

Planned by Ferrous Committee / Materials Engineering Activity

Tuesday, April 16

Multi-Media Systems

Session Code: AE307

Room D0-04AB

Session Time: 9:30 a.m.

This session covers topics relating to vehicular entertainment and information systems. Specific subjects include multiband antennas, satellite radio reception, measuring and evaluating audio systems, navigation, displays, infotainment busses, audio amplifiers, and loudspeakers.

Organizers - Thomas Hermann, Ford Motor Company; Robert Klacza, Chrysler Group LLC; Richard S. Stroud, Stroud Audio Inc.

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
9:30 a.m.	ORAL ONLY	A Peek Under The Hood: Technologies Driving the Connected Car Judy Chen, PhD, MHL Consortium
9:50 a.m.	ORAL ONLY	Multi-Media System Session: Supercomputing to Supercars Dave Anderson, Nvidia Corp.
10:10 a.m.	2013-01-0162	Assessment of Automatic Volume Leveling for Automotive Sound Systems Robert Cadena, Husein Dakroub, Visteon Corporation
10:30 a.m.	2013-01-0163	Ensuring Audio Signal Quality in Automotive Infotainment Systems J. William Whitehart, Visteon Corporation
10:50 a.m.	2013-01-0164	Reception Requirements for Automotive Radio Systems Raed S. Shatara, STMicroelectronics
11:10 a.m.	2013-01-0165	Dual Antenna Diversity System for FM Reception Raed S. Shatara, STMicroelectronics

Planned by Electrical and Electronic Systems Committee / Automobile Electronics Activity

Tuesday, April 16

Technologies for Embedded Software Development and Testing

Session Code: AE108

Room D0-04AB

Session Time: 1:00 p.m.

Developing automotive electronic controls and embedded software is a complex undertaking. In addition to Hardware-in-the-Loop simulation, improvements in desktop computing technology show promise for early verification of embedded software using a virtual environment for electronic control units and the test infrastructure. This session highlights advances in processes, tools, and technologies to reduce design and validation time and cost, and to improve the quality of embedded software.

Organizers - Kevin Kott, Vivek Moudgal, dSPACE Inc.; Peter Waeltermann, dSPACE GmbH

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
1:00 p.m.	ORAL ONLY	New Advances in Automotive Electronics Development Through PC-Based Simulation Klaus Lamberg, dSPACE GmbH, Paderborn, Germany
1:20 p.m.	ORAL ONLY	Test management in HIL systems Holger Krumm, dSPACE GmbH
1:40 p.m.	ORAL ONLY	New concepts and visions to support HIL workflows better Martin Ruehl, Andreas Himmler, dSPACE GmbH
2:00 p.m.	2013-01-0154	An Effective Modeling Architecture for MIL, HIL and VDIL Testing Hamid Alper Oral, Bosch Rexroth Corp.

2:20 p.m.	2013-01-0155	Rapid Prototyping Energy Management System for a Single Shaft Parallel Hybrid Electric Vehicle Using Hardware-in-the-Loop Simulation <i>Yang Li, Pushkar Agashe, Zicheng Ge, Bo Chen, Michigan Technological Univ.</i>
2:40 p.m.	2013-01-0156	Hybrid Electric Vehicle Powertrain Controller Development Using Hardware in the Loop Simulation <i>Haotian Wu, Haiyan Zhang, Vahid Motevalli, Yili Qian, Purdue Univ.; Alexander Wolfe, Caterpillar</i>
3:00 p.m.	2013-01-0157	Maneuver-Based Battery-in-the-Loop Testing - Bringing Reality to Lab <i>Oguz H. Dagci, AVL Powertrain Engineering Inc.; Nicolas Pereira, AVL France SAS; Jeff Cherry, US Environmental Protection Agency</i>
3:20 p.m.	2013-01-0158	Model-Based Development and Production Implementation of Motor Drive Controller for Hybrid Electric Vehicle <i>Kunal Patil, Mahendra Muli, Zhenhua Zhu, dSPACE Inc.</i>
3:40 p.m.	2013-01-0160	Development of a Plug-In Hybrid Electric Vehicle Control Strategy Employing Software-In-the-Loop Techniques <i>P. Christopher Manning, Eli White, Douglas Nelson, Abhijit Khare, Virginia Tech</i>
	2013-01-0161	Automatic Test-Case Generation for Hardware-in-the-Loop Testing of Automotive Body Control Modules (Written Only -- No Oral Presentation) <i>Ki-Wook Shin, Hanyang Univ.; Shim Soo Kim, Daedong Co., Ltd.; Dong-Jin Lim, Hanyang Univ.</i>

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Planned by Testing and Instrumentation Committee / Automobile Electronics Activity

Tuesday, April 16

Expert Panel Discussion: AUTOSAR Changing how we design and implement Automotive Embedded Networks and Electronic Control Modules

Session Code: AE501

Room D0-04C

Session Time: 9:30 a.m.

This panel will address the current status of AUTOSAR adoption by the vehicle OEMs, Tier 1 module developers and AUTOSAR products and service providers. Who is adopting this technology, lessons learned and what the impact maybe for you and the ways vehicles are designed and built?

Organizers - Robert miller, Vector CANtech Inc.

Moderators - Robert Miller, Vector CANtech Inc.

Panelists - Ralf Fritz, Vector CANtech Inc.; Ron Landman, John Deere Electronic Solutions; Michael Joseph Melaragni, General Motors LLC; Jochen Schoof, Elektrobit Automotive GmbH; Scott Michael Wendling, Nexteer Automotive;

Planned by Testing and Instrumentation Committee / Automobile Electronics Activity

Tuesday, April 16

Testing and Instrumentation

Session Code: AE106

Room D0-04C

Session Time: 1:00 p.m.

This session deals with Innovative Engine Test methods along with their test facility development, Vehicle Infotainment systems, Real time customer usage data and correlation/simulation with in-lab drivability methods, Reliability Testing Approach.

Organizers - Anand Vijay Kulkarni, Tata Motors, Ltd.; Ketan R. Kulkarni, Tata Consultancy Services; Chirag Sonchal, TATA MOTORS; Prasad Srinivasa, DG Technologies

Time	Paper No.	Title
1:00 p.m.	2013-01-0400	Developing Drivetrain Robustness for Small Engine Testing Marek Tatur, Dean Tomazic, FEV Inc.; Hans-Dieter Sonntag, Norbert Wiehagen, FEV GmbH; Thomas Jackson, FEV Inc.
1:20 p.m.	2013-01-0402	A New Chassis Dynamometer Laboratory for Vehicle Research Per Öberg, Peter Nyberg, Lars Nielsen, Linköping Univ.
1:40 p.m.	2013-01-0403	Intelligent ECU End of Line Testing to Support ISO26262 Functional Safety Requirements Jin Seo Park, Infineon Technologies Korea Co. Ltd.; Il hong Suh, Hanyang Univ.; Chang Yul Choe, Minho Ro, Hyundai KEFICO; Simon P. Brewerton, Infineon Technologies UK Ltd
2:00 p.m.	2013-01-0401	Design Improvements Done in Telematics System Towards Betterment of Services Offered to Fleet Customers Ramya Natarajan, Ganesan Swaminathan, Ashok Leyland Ltd.

Planned by Testing and Instrumentation Committee / Automobile Electronics Activity

Tuesday, April 16

System Level Architecture Design Tools and Methods

Session Code: AE318

Room D0-04C

Session Time: 2:40 p.m.

This session focuses on methods and design tools for the exploration, analysis, synthesis, and optimization of E/E automotive architectures.

Organizers - Amit Choudhury, ADVICS NA, Inc.; Paolo Giusto, General Motors

Time	Paper No.	Title
2:40 p.m.	2013-01-1224	Tackling the Complexity of Timing-Relevant Deployment Decisions in Multicore-Based Embedded Automotive Software Systems Wolfgang Schwitzer, Technische Universitaet Muenchen; Rolf Schneider, AUDI AG; Dominik Reinhardt, BMW AG; Georg Hofstetter, Elektronische Fahrwerksysteme GmbH
3:00 p.m.	2013-01-1225	An Integrated Approach for Modeling, Analysis and Optimization of Systems whose Design Follows the EAST-ADL2/AUTOSAR Methodology Ernest Wozniak, Sara Tucci-Piergiovanni, Chokri Mraidha, Sebastien Gerard, CEA LIST
3:20 p.m.	2013-01-1223	On Managing Performance and Timing in Early-Stage E/E Design - Reducing the Gap Between Requirements and Implementation Nico Feiertag, Christoph Ficek, Kai Richter, Symtavision GmbH
3:40 p.m.	2013-01-1222	Test Generation Technology for an AUTOSAR Simulation Platform Bill Chown, Mentor Graphics Corp

Planned by Electrical and Electronic Systems Committee / Automobile Electronics Activity

Tuesday, April 16

Load Simulation and Vehicle Performance (Part 3): Nonlinear Components/System

Session Code: M107

Room D0-05A

Session Time: 9:30 a.m.

Focusing on new theory, formulation and modeling of amplitude-, frequency- and temperature-dependent nonlinear components/systems such as rubber and hydraulic mounts or bushings, shock absorbers, and any joint friction/damping; dynamic characterization through lab and field testing; Linearization methodology; Model validation, application, and sensitivity analysis in vehicle system/subsystem simulations; Nonlinear system identification, modeling, and application in testing accuracy improvement; etc

Organizers - Ken Kang, Honda R&D Americas Inc.; Peijun Xu, Ebco Inc.; Fulun Yang, Tenneco Inc.

Time	Paper No.	Title
9:30 a.m.	ORAL ONLY	Keynote: Energy Harvesting Shock Absorbers: Power Assessment, Mechatronic Design, and Vehicle Dynamics Lei Zuo, State Univ. of New York College
10:10 a.m.	2013-01-0170	Assessment of Vehicle Performances with Energy-Harvesting Shock Absorbers Peng Li, Lei Zuo, State Univ. of New York at Stony Brook
10:30 a.m.	2013-01-0166	Shape Recovery Simulation of Flexible Airdam Mohammed Billal K, Chrysler India Automotive Pvt Ltd; Neill Quinlan, Chrysler Technology Center; Xiaoyan (Susan) Qu, Chrysler Group LLC
10:50 a.m.	2013-01-0167	Modeling and Simulation of Creep-Fatigue-Oxidation Crack Growth Zhigang Wei, Tenneco Automotive Co., Ltd.; Fulun Yang, Tenneco Inc
11:10 a.m.	2013-01-0168	Physical Modeling and Simulation Analysis of an Advanced Automotive Racing Shock Absorber using the 1D Simulation Tool AMESim Maryam Sadeghi Reineh, Linköping University, Automatic Control; Matteo Pelosi, Öhlins Racing AB
11:30 a.m.	2013-01-0169	Dynamic Simulation under Intermediate Strain Rates of Mechanical Components Made of an Elastomeric Matrix and a Metal Reinforcement Andres Ramirez, Luis Munoz, Universidad de los Andes

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Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 16

Load Simulation and Vehicle Performance (Part 5): Handling and Dynamics Control

Session Code: M107

Room D0-05A

Session Time: 1:00 p.m.

Focusing on studies of vehicle dynamics performance including handling / stability / braking / traction characteristics, active safety and operational robustness under the influence of loading, tire forces and other variants; correlation of analyses, simulations, objective measurements and subjective judgments; intelligent tire technology and applications; chassis controls and control system cooperation; impact of system hybridization and electrification on vehicle dynamics and controls.

Organizers - Ken Kang, Honda R&D Americas Inc.; Dongpu Cao, Lancaster University; Jianmin Gu, Changan Automobile Co., Ltd.

Time	Paper No.	Title
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1:00 p.m.	2013-01-0404	Impact of Driver's Steer Control on Truck-Trailer Combination when Negotiating NATO Double Lane Change Maneuver Xiaobo Yang, Oshkosh Corporation
1:20 p.m.	2013-01-0405	Fault Tolerant Control Against Actuator Failures of 4WID/4WIS Electric Vehicles Changfu Zong, Chao Liu, Hongyu Zheng, Jie Liu, Jilin University
1:40 p.m.	2013-01-0406	A Fuzzy Logic Yaw Control Study with Human in the Loop Simulation Erdem Uzunsoy, Bursa Teknik & YildizTeknik Universitesi
2:00 p.m.	2013-01-0407	Potential for Passenger Car Energy Recovery through the Use of Kinetic Energy Recovery Systems (KERS) L. Daniel Metz, Metz Engineering & Racing, LLC
2:20 p.m.	2013-01-0408	Estimating Path Clearing Effects during Potential Hydroplaning through the Use of Vehicle CAN Bus Data L. D. Metz, Metz Engineering & Racing; Duane R. Meyers, Wisconsin State Patrol
2:40 p.m.	2013-01-0409	Preview based Vehicle Steering Control using Neural Networks Saurav Talukdar, Indian Institute of Technology Bombay; Muhammad Adeel Awan, Cranfield University; Anthony Tremlett; Venkat Sastry, Defence Education; David Purdy, Cranfield University
3:00 p.m.	2013-01-0410	Vehicle Powertrain Test Bench Co-Simulation with a Moving Base Simulator Using a Pedal Robot Anders Andersson, VTI; Peter Nyberg, Linköping University; Håkan Sehammar, VTI; Per Öberg, Linköping University
3:20 p.m.	2013-01-0411	Study on Braking Force Distribution Algorithm for Hybrid Electric Bus Based on EBS Rong He, Hongyu Zheng, Changfu Zong, Jilin Univ.
	2013-01-0412	The Regenerative Braking Control Strategy of Four-Wheel-Drive Electric Vehicle Based on Power Generation Efficiency of Motors (Written Only -- No Oral Presentation) Wenkai Xu, Hongyu Zheng, Zongyu Liu, Jilin Univ
	2013-01-0413	Variable Yaw Rate Gain for Vehicle Steer-by-wire with Joystick (Written Only -- No Oral Presentation) Hongyu Zheng, Changfu Zong, Jilin Univ.
	2013-01-0414	Optimization of Braking Force Distribution for Three-Axle Truck (Written Only -- No Oral Presentation) Gang Tang, Han Zhao, Hefei University of Technology; Jinglai Wu, Yunqing Zhang, Huazhong University of Science and Tech.
	2013-01-0415	Robust Design for Vehicle Ride Comfort and Handling with Multi-Objective Evolutionary Algorithm (Written Only -- No Oral Presentation) Yong Luo, Jinglai Wu, Wenkui Fu, Yunqing Zhang, Huazhong University of Science and Tech.
	2013-01-0416	Development of an ESP Control Logic Based on Force Measurements Provided by Smart Tires (Written Only -- No Oral Presentation) Edoardo Sabbioni, Federico Cheli, Stefano Melzi, Politecnico di Milano
	2013-01-0417	Mass Estimation and Axle Load Distribution Algorithm for EBS of Large Bus (Written Only -- No Oral Presentation) Zhigen Nie, Changfu Zong, Ying Wan, Jilin Univ

2013-01-0418

**A Model-Based Mass Estimation and Optimal Braking Force
Distribution Algorithm of Tractor and Semi-Trailer Combination
(Written Only -- No Oral Presentation)**

Zongyu Liu, Hongyu Zheng, Wenkai Xu, Jilin University

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Tuesday, April 16

Materials and Residual Stress Testing Development

Session Code: M106

Room D0-05B

Session Time: 9:30 a.m.

Key words: residual stress, retained austenite, x-ray diffraction, neutron diffraction, induction hardening, carburizing, shot peening, quench and temper

Organizers - Gerald A. Shulke, Xichen Sun, Chrysler Group LLC; Xin Zhang, Ftech R&D North America

Time	Paper No.	Title
9:30 a.m.	ORAL ONLY	Microstructure and Sintering Mechanism of C/Cu Composites by Mechanical Alloying/ Spark Plasma Sintering Xu Ran, Changchun University
9:50 a.m.	2013-01-0171	Analysis of Residual Strain Profiles in Distorted Aluminum Engine Blocks by Neutron Diffraction Anthony Lombardi, Comondore (Ravi) Ravindran, Ryerson University; Dimitry Sediako, National Research Council Canada; Robert Mackay, Nemak of Canada
10:10 a.m.	2013-01-0172	Mapping Residual Stress Distributions in Advanced High Strength Steel Automotive Body Panels and Structural Components Jeffrey Nantais, Proto Manufacturing Ltd.; James Pineault, Mohammed Belassel, Michael Brauss, Proto Manufacturing Inc
10:30 a.m.	2013-01-0173	Comparison of Austempering and Quench-and-Tempering Processes for Carburized Automotive Steels Andrew D. Clark, Derek O. Northwood, Randy J. Bowers, University of Windsor; Xichen Sun, Peter Bauerle, Chrysler Group LLC

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Tuesday, April 16

NVH CAE Analysis and Application

Session Code: M108

Room D0-05B

Session Time: 1:00 p.m.

Key words: NVH, acoustics, numerical methods, test correlation, sound quality

Organizers - Kuang-Jen Liu, Chrysler Group LLC; Weiguo Zhang, Chrysler LLC; Nammalwar Purushothaman, BAE Systems; Luohui Long, Ford Motor Co.; Guangtian Gavin Song, AM General LLC

Time	Paper No.	Title
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1:00 p.m.	ORAL ONLY	Understanding the Difficulties and Challenges in Vehicle NVH Analysis and Design Wen Li, Wayne State Univ.
1:40 p.m.	2013-01-0997	Reducing Radiated Structural Noise from AIS Surfaces using Several FEM Optimization Methods John A. White Jr., Mac Lynch, Chrysler Group LLC
2:00 p.m.	2013-01-1005	Efficient and Accurate Evaluation and Improvement of Engine Radiated Noise Renhua Feng, Hunan University, Changsha, China; Daming Zhang, California State University, Fresno; Jingping Liu, Jianqin FU, BangLin DENG, Hunan University, Changsha, China
2:20 p.m.	2013-01-1012	CFD/CAE Combinations in Open Cavity Noise Predictions for Real Vehicle Sunroof Buffeting Fred G. Mendonca, CD-adapco
2:40 p.m.	2013-01-1004	A Practical Procedure to Predict AIS Inlet Noise Using CAE Simulation Tools Weiguo Zhang, Brian Butler, Mark Likich, Mac Lynch, Chrysler Group LLC
3:00 p.m.	2013-01-1000	Leaf Spring Design Considering Natural Frequency Calculations Based On NVH Murathan Soner, Gorkem Ozcelik, Ciler Senocak, Seray Goksel Tokgonul, Tolga Erdogan, Mustafa Karaagac, Ahmet Kanbolat, Olguncelik
3:20 p.m.	2013-01-1001	HVAC Blower Aeroacoustic Predictions Koji Norisada, Masaharu Sakai, Syunsuke Ishiguro, DENSO Corp.; Masami Kawaguchi, DENSO Technology Co., Ltd.; Franck Perot, Exa Corporation; Koichi Wada, EXA Japan Inc.
3:40 p.m.	2013-01-1006	Commercial Vehicle NVH Refinement through Test-CAE Development Approach Vijay Antony John Britto, Sadasivam Sivasankaran, Ekambaram Loganathan, Saisankaranarayana Kupplili Saisankaranarayana, Ashok Leyland Ltd; Kalyankumar Sidram Hatti, Ashok Leyland Technical Center
4:00 p.m.	ORAL ONLY	Joint Modeling Issues in Simplified Beam-Plate Body Analysis Soomin Choi, Seoul National Univ; Jang Gang-Won, Sejong University; Yoon Young Kim, Seoul National Univ
	2013-01-1013	Aerodynamic Noise Source Identification for a Coupe Passenger Car by Numerical Method Focusing on the Effect of the Rear Spoiler (Written Only -- No Oral Presentation) Sajjad Beigmoradi, Kambiz Jahani, Arash Keshavarz, Mohsen Bayani Khaknejad, CAE Engineer, R&D Center of SAIPA

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Tuesday, April 16

Welding and Joining and Fastening

Session Code: M102

Room D0-06A

Session Time: 1:00 p.m.

Key words: welding, joining, fastening

Organizers - Jwo Pan, Univ. of Michigan-Ann Arbor; Michael Santella; Tau Tyan, Ford Motor Co.

Time	Paper No.	Title
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1:00 p.m.	ORAL ONLY	An Online Resistance Spot Weld Quality Monitoring System Jian Chen, Wei Zhang, Zhili Feng, Oak Ridge National Laboratory
1:20 p.m.	2013-01-1023	Failure Mode and Fatigue Behavior of Friction Stir Spot Welds in Lap-Shear Specimens of Dissimilar Advanced High Strength Steels Seung Hoon Hong, Katherine Avery, Jwo Pan, Univ of Michigan-Ann Arbor; Michael Santella, Zhili Feng, Tsung-Yu Pan, Oak Ridge National Laboratory
1:40 p.m.	ORAL ONLY	Study for Flashes of Friction Stir Spot Welds Pai-Chen Lin, National Chung Cheng Univ.; Zheng-Ming Su; Tseng Wei
2:00 p.m.	2013-01-1020	Failure Mode and Fatigue Behavior of Ultrasonic Spot Welds with Adhesive in Lap-Shear Specimens of Magnesium and Steel Sheets Wei-Jen Lai, Jwo Pan, Univ of Michigan-Ann Arbor; Zhili Feng, Michael Santella, Tsung-Yu Pan, Oak Ridge National Laboratory
2:20 p.m.	2013-01-1017	Corrosion Behavior of Mixed-Metal Joint of Magnesium to Mild Steel by Ultrasonic Spot Welding with and without Adhesives Tsung-Yu Pan, Zhili Feng, Oak Ridge National Laboratory; Michael Santella, Consultant; Jian Chen, Oak Ridge National Laboratory
2:40 p.m.	2013-01-1024	Fatigue Behavior of Self-Piercing Rivets and Clinch Joints in Lap-Shear Specimens of Aluminum Sheets Pai-Chen Lin, Zheng-Ming Su, National Chung Cheng Univ.; Wei-Jen Lai, Jwo Pan, Univ of Michigan-Ann Arbor
3:00 p.m.	2013-01-1018	Key Factors to Manage Filler Metal Creation on Aluminum Heat Exchangers Laurent Pasquet, Damien Bergès, Philippe DA SILVA, Claire Demarcq, Valeo Thermal Systems

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 16

Model-Based Design and In-Vehicle Software (Part 1 of 2)

Session Code: AE316

Room D0-06B

Session Time: 9:30 a.m.

Description: Embedded software is a key enabler for technical innovations in the automotive industry. This session is designed to cover new processes, methods, and applications of new processes/methods to reduce development time and improve the quality of embedded software. A particular emphasis will be placed on methods such as executable specification, design through simulation, early verification, automatic code generation, and PC-based model in-the-loop and software in-the-loop testing.

Organizers - Vivek Jaikamal, ETAS Inc.; Wensi Jin, MathWorks Inc.; Robert Miller, Vector CANtech Inc.

Time	Paper No.	Title
9:30 a.m.	2013-01-0430	Hierarchical Accumulative Validation of Executable Control Specifications Jared Farnsworth, Koichi Ueda, Toyota Motor Engineering & Mfg NA Inc.; Hideaki Mizuno, Michio Yoshida, Toyota Motor Corporation
9:50 a.m.	ORAL ONLY	Requirement-based Test Case Generation and Coverage Analysis James Ross, John Deere
10:10 a.m.	2013-01-0436	Application of Model Checking to Automotive Control Software with Slicing Technique Masahiro Matsubara, Kohei Sakurai, Fumio Narisawa, Hitachi, Ltd.; Masushi Enshoiwa, Yoshio Yamane, Hitachi Advanced Digital, Inc.; Hisamitsu Yamanaka, Hitachi Automotive Systems, Ltd.

10:30 a.m.	2013-01-0428	Design Verification of Automotive Controller Models A. C. Rajeev, MathWorks India Pvt. Ltd.; Swarup Mohalik, Intel Technology India Pvt. Ltd.; S. Ramesh, General Motors Company
10:50 a.m.	2013-01-0427	New Methods of Debugging and Testing Improve the Software Quality of AUTOSAR ECUs Richard E. Lotoczky, Vector CANtech Inc.; Mark Schwager, Vector Informatik GmbH
11:10 a.m.	2013-01-0429	New Approaches in Virtualization of ECU Software Development Guillaume Francois, ETAS GmbH

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Planned by Electrical and Electronic Systems Committee / Automobile Electronics Activity

Tuesday, April 16

Model-Based Design and In-Vehicle Software (Part 2 of 2)

Session Code: AE316

Room D0-06B

Session Time: 1:00 p.m.

Description: Embedded software is a key enabler for technical innovations in the automotive industry. This session is designed to cover new processes, methods, and applications of new processes/methods to reduce development time and improve the quality of embedded software. A particular emphasis will be placed on methods such as executable specification, design through simulation, early verification, automatic code generation, and PC-based model in-the-loop and software in-the-loop testing.

Organizers - Vivek Jaikamal, ETAS Inc.; Wensi Jin, MathWorks Inc.; Robert Miller, Vector CANtech Inc.

Time	Paper No.	Title
1:00 p.m.	2013-01-0434	Gaining Visibility Control over Final Project Releases: A Case Study Using Audio Infotainment Systems Joao H. Silva, Visteon Corp.
1:20 p.m.	2013-01-0432	From Specification Models to Distributed Embedded Applications: A Holistic User-Guided Approach Ingo Stierand, Günter Ehmen, Werner Damm, Detlef Janssen, University of Oldenburg; Matthias Büker, Stefan Henkler, Eike Thaden, OFFIS
1:40 p.m.	2013-01-0437	Lean Model-Based Development: Practical Approach Lev Vitkin, Delphi Electronics & Safety
2:00 p.m.	ORAL ONLY	Developing a Model Based Design Environment to support Rapid Prototype Development and Production Code Generation Abdolreza Fallahi, Todd Nordby, Navistar Engine Group
2:20 p.m.	ORAL ONLY	Software-In-the-Loop Model Development for HEV Model-Based Fuel Economy Calibration Poyu Tsou, Judy Che, Lawrence Rose, Ford Motor Company
2:40 p.m.	2013-01-0425	Artist-Centric New HMI Software Development Workflow: Development of Real-Time 3D Rendering Engine for Reconfigurable Instrument Clusters Kazuyuki Nakata, Kentaro Kajita, Ryoichi Nishikawa, DENSO Corporation; Soju Matsumoto, Takumi Ishikawa, Yoma Watarai, 3D Incorporated

3:20 p.m.	2013-01-0435	Control Flow Analysis of Automotive Software Components Using Model-Based Specifications of Dynamic Behavior Thomas Pramsohler, Mahmut Kafkas, BMW Forschung & Technik GmbH; Annette Paulic, Marc Zeller, Fraunhofer ESK; Uwe Baumgarten, Technische Universität München
3:40 p.m.	2013-01-0355	Dynamic Vehicle Powertrain Model Development and Hardware-in-the-Loop Simulator for Developing and Measuring Fuel Efficient CO₂ Reducing Technologies Alan Brown, Doris Kotori, HELLA Electronics Corp.
4:00 p.m.	2013-01-0438	Development of the Clutch Controller for the Hybrid System using Automatic Code Generation Hiroyuki Inagaki, Aisin Seiki Co. Ltd
4:20 p.m.	2013-01-0426	Model Based System Design of Conceptual Drive-by-Wire ECU Functions for Electric Vehicle Conversion Ananchai Ukaew, DRIVE Center, Naresuan University
	2013-01-0431	Model-Based Design and In-Vehicle Software (Written Only -- No Oral Presentation) Volker Skwarek, Hella Fahrzeugkomponenten; Martin Hein, Hella Fahrzeugkomponenten GmbH

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Tuesday, April 16

Safety Critical Systems (Part 1 of 4)

Session Code: AE300

Room D0-07A

Session Time: 9:30 a.m.

The focus of the session is on system safety analysis and design of safety-critical systems employing electronic controls. Topics include: implementation of safety-relevant systems, fail-safe strategies, distributed fault tolerant systems and hazard analysis. Application areas include: automotive active safety and alternative energy systems as well as avionics and mission management. Finally, the session addresses application of new or revised safety standards such as ISO 26262 and DO-178C.

Organizers - Joseph G. D'Ambrosio, GM R&D Center; Brian T. Murray, United Technologies Research Center; Markus Plankensteiner, TTTech Computertechnik AG

Time	Paper No.	Title
9:30 a.m.	2013-01-0184	Model-based Application of ISO 26262: The Hazard Analysis and Risk Assessment Marion Suerken, Thomas Peikenkamp, OFFIS e.V.
9:50 a.m.	2013-01-0194	Introducing Quality Attributes for a Safety Concept Rasmus Adler, Fraunhofer IESE
10:10 a.m.	2013-01-0197	Functional Safety for Cooperative Systems Josef Nilsson, SP Technical Research Inst of Sweden; Carl Bergenhem, Qamcom; Jan Jacobson, Rolf Johansson, Jonny Vinter, SP Technical Research Inst of Sweden
10:30 a.m.	2013-01-0195	ASIL Decomposition: The Good, the Bad, and the Ugly Joseph G. D'Ambrosio, Rami Debouk, General Motors Company
10:50 a.m.	ORAL ONLY	Development of a System Safety Case Padma Sundaram, David Hartfelder, General Motors

11:10 a.m. **2013-01-0191** **Functional Safety Industry Best Practices for Introducing and Using ISO 26262**
Christof Ebert, Vector Consulting Services

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Planned by Electrical and Electronic Systems Committee / Automobile Electronics Activity

Tuesday, April 16

Safety Critical Systems (Part 2 of 4)

Session Code: **AE300**

Room D0-07A

Session Time: **1:00 p.m.**

The focus of the session is on system safety analysis and design of safety-critical systems employing electronic controls. Topics include: implementation of safety-relevant systems, fail-safe strategies, distributed fault tolerant systems and hazard analysis. Application areas include: automotive active safety and alternative energy systems as well as avionics and mission management. Finally, the session addresses application of new or revised safety standards such as ISO 26262 and DO-178C.

Organizers - Joseph G. D'Ambrosio, GM R&D Center; Brian T. Murray, United Technologies Research Center; Markus Plankensteiner, TTTech Computertechnik AG

Time	Paper No.	Title
1:00 p.m.	ORAL ONLY	A Computer-aided Formal Requirement Specification Method to support the Verification Process for Safety Related Systems Udo Brockmeyer, BTC Embedded Systems AG; Hans Holberg
1:20 p.m.	2013-01-0192	A Contract-Based Installation Methodology for Safety-Related Automotive Systems Andreas Baumgart, OFFIS e.V.
1:40 p.m.	2013-01-0183	Effort Reduction for Analysis of Safety Critical Software with Criticality Analysis Marcin Kowalewski, Zerong Yu, Willy Klier, Robert Bosch LLC
2:00 p.m.	2013-01-0182	Performing Safety Evaluation on Detailed Hardware Level according to ISO 26262 Nico Adler, Stefan Otten, FZI Research Center for Information Tech; Philippe Cuenot, Continental Automotive France; Klaus Müller-Glaser, Karlsruhe Institute of Technology
2:20 p.m.	2013-01-0190	Advantages of the Alternative Method for Random Hardware Failures Quantitative Evaluation - a Practical Survey for EPS Kamil Svancara, John Priddy, TRW Automotive; Tomislav Lovric, TRW Automotive GmbH; Joseph D. Miller, TRW Automotive US LLC; Maciej Kudanowski, William J. Forbes, TRW Automotive
2:40 p.m.	2013-01-0179	Application of Accelerated Processing Units in Safety-Critical Systems Dawid Trawczynski, Advanced Micro Devices; Janusz Zalewski, Florida Gulf Coast Univ.
3:00 p.m.	2013-01-0188	Efficiency of Safety-Related Non-Functional Software Unit Test Zerong Yu, Willy Klier, Robert Bosch LLC
3:20 p.m.	2013-01-0178	Impact of Functional Safety on EMC: ISO 26262 Robert Kado, Chrysler Group LLC; Jody J. Nelson, William Taylor, kVA

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Tuesday, April 16

Chat with the Experts: Introducing Wireless Charging Technology for Electrical Vehicles

Session Code: AECHAT100

Room D0-07A

Session Time: 4:00 p.m.

Keynote Speakers - Mark Klerer, Qualcomm Inc.

Tuesday, April 16

Expert Panel Discussion: Energy Management - Solutions for Today, Tomorrow and the Future

Session Code: AE605

Room D0-07B

Session Time: 9:30 a.m.

As OEMs and suppliers seek new and unique ways to manufacture fuel efficient vehicles, energy management has become a crucial area of focus in meeting those goals. Concerns about the relationship of suppliers and OEMs impact the development of new fuel efficient technologies as well as how long can they sustain a profitable business while leading the path of innovation in energy management. Hear panelists on share their insights about innovation thought leadership approaching challenges.

Moderators - Marc Rosenmayr, HELLA

Panelists - Donald J. Christian, CODA Automotive Inc.; Tejas Desai, Continental; Gautam Kalghatgi, Saudi Aramco; Jeffrey Kessen, A123 Systems Inc.; Olaf Weber, Valeo; Luigi del Re, Johannes Kepler Univ.;

Planned by Electrical and Electronic Systems Committee / Automobile Electronics Activity

Tuesday, April 16

Smart Grid Technologies and Infrastructure

Session Code: AE400

Room D0-07B

Session Time: 1:00 p.m.

This session will provide real world updates on consumer behavior who are part of the DOE awarded EV Project as well as other research using models and consumer data to analyze the affect on the grid during PEV charging. Also presented will be strategies for PEV charging and synergies for integrating PEV's into the grid by way of existing infrastructure.

Organizers - Donna Bell, Ford Motor Co.; Scott Craig, Infineon Technologies; Matthew Nielsen, General Electric Co.

Time	Paper No.	Title
1:00 p.m.	2013-01-1441	Extended Range Electric Vehicle Driving and Charging Behavior Observed Early in the EV Project John Smart, Warren Powell, Idaho National Laboratory; Stephen Schey, ECotality North America
1:20 p.m.	2013-01-1445	Optimal Charging of EVs in a Real Time Pricing Electricity Market Sagar Mody, Thomas Steffen, Loughborough Univ.
1:40 p.m.	2013-01-1442	Development of Vehicle Power Connector Equipped with Outdoor Power Outlet Using Vehicle Inlet of Plug-In Hybrid Vehicle Shigeki Kinomura, Toyota Motor Corp.; Hironobu Kusafuka, Kensuke Kamichi, Tomoya Ono, Toyota Motor Corp

2:00 p.m.	ORAL ONLY	<i>The Aggregation of Electric Vehicles for DC Fast Charging in V2G/G2V Applications</i> Sean C. Mitchem, Southwest Research Institute; Joe Redfield, Redfield Consulting Services
2:20 p.m.	2013-01-1443	<i>Model-Predictive Energy Management for the Integration of Plug-In-Hybrid Electric Vehicles into Building Energy Systems</i> Bernhard Brendle, Thomas Hamacher, Markus Lienkamp, Technische Universitaet Muenchen; Christian Wilhelm, Jens Papajewski, Peter Gebhard, Alexander Riedel, Vincent Benda, Audi AG
2:40 p.m.	Panel	<i>Panel Discussion: Smart Grid Technologies and Infrastructure</i> Moderators - Scott Craig, Infineon Technologies North America Corp. Panelists - Donna Bell, Ford Motor Co; Bert Bras, Georgia Institute of Technology; Daniel Lindenmeyer, Infineon Technologies North America Corp; Scott Craig, Infineon Technologies North America Corp; Ronald Thompson, Eaton Corp;

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Tuesday, April 16

Human Factors in Driving and Automotive Telematics

Session Code: B302

Room D3-18

Session Time: 1:00 p.m.

Organizers - Daniel J. Selke, Mercedes-Benz USA LLC; James Foley, Toyota Technical Center USA Inc.; Kristin Kolodge, Chrysler

Time	Paper No.	Title
1:00 p.m.	2013-01-0444	<i>An Empirically Based Suggestion for Reformulating the Glance Duration Criteria in NHTSA's Visual-Manual Interaction Guidelines</i> Mikael Ljung Aust, Sergejs Dombrovskis, Jordanka Kovaceva, Bo Svanberg, Jan iwarsson, Volvo Cars
1:20 p.m.	2013-01-0439	<i>Driver Distraction: Are We Mistaking a Symptom for the Problem?</i> David Curry, John Meyer, Aaron Jones, ITC Experts
1:40 p.m.	ORAL ONLY	<i>Physiological Evaluation of Older Drivers' Emotional States While Driving With and Without Navigation in a Driving Simulator</i> Se Jin Park, Hyun Kyoong Lim, Murali Subramaniam, Myung Kug Moon, Korea Res. Inst. of Standards & Science
2:00 p.m.	2013-01-0441	<i>Assessment of a Safe Driving Program for Novice Operators</i> Lance Clark, Philip Pidgeon, Kim Alexander, Clemson University; Ken Rogich, Richard Petty Driving Experience; John R. Wagner, Clemson University; Matthew Jensen, Florida Institute of Technology
2:20 p.m.	2013-01-0446	<i>Pedal Misapplication: Crash Characteristics and Contributing Factors</i> Jeya Padmanaban, Matthew Fitzgerald, JP Research Inc; Joseph Marsh, Ivy Consultancy
2:40 p.m.		<i>Networking Break</i>

3:00 p.m. Panel

Panel Discussion: Human Factors Issues of Automated Driving

Panelists - Myra Blanco, Virginia Tech. Transportation Institute; Susan T. Chrysler, National Advanced Driving Simulator; Timothy Johnson, National Hwy Traffic Safet; John Davidson Lee, Univ. of Wisconsin;

Planned by Human Factors Committee / Automobile Body Activity

Tuesday, April 16

Mobility History Session (Part 1 of 2)

Session Code: **CONG100**

Room D3-20

Session Time: **9:30 a.m.**

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
9:30 a.m.	ORAL ONLY	Vehicle Automation - Then and Now <i>Robert Neff, Sales & Marketing Insight / Intrass</i>
10:30 a.m.	ORAL ONLY	Colin Chapman - Inside the Innovator <i>Karl Ludvigsen, Ludvigsen Partners</i>

Planned by Mobility History Committee / Office of the Secretary

Tuesday, April 16

Mobility History Session (Part 2 of 2)

Session Code: **CONG100**

Room D3-20

Session Time: **1:00 p.m.**

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
1:00 p.m.	ORAL ONLY	The Model T Engine <i>Jim Cowart, US Naval Academy</i>
2:00 p.m.	ORAL ONLY	History of Chrysler Engineering - The First 25 Years <i>Al Bosley, Barbara M. Fronczak, Chrysler Corporation</i>
3:00 p.m.	ORAL ONLY	Desmodromic Valvetrains <i>Jeremy Goddard, IDIADA Automotive Technology</i>

Planned by Mobility History Committee / Office of the Secretary

Tuesday, April 16

Human Factors in Seating Comfort

Session Code: **B303**

Room D3-22

Session Time: **1:00 p.m.**

Designing vehicles with good ergonomics is one of the many factors needed to achieve high customer satisfaction. A basic source for comfort (or discomfort) lies in the vehicle's seats. To design for seat comfort requires knowledge of the size of the driver, the structure of the seat, the position of the seat in the vehicle and the trip duration. Papers in this session will include topics such as seat back angle, vehicle packaging and trip duration.

Organizers - Jennifer M. Badgley, Lear Corp.; Currell L. Pattie; Marilyn Vala, Chrysler Corp.

Time	Paper No.	Title
1:00 p.m.	2013-01-0453	Driver Preference for Fore-Aft Steering Wheel Location Matthew Reed, Univ. of Michigan
1:20 p.m.	2013-01-0448	Experimental Validation of the Computer Aided Design Technique for Seat Comfort Design and Evaluation Saed T. Amer, Landon Onyebueke, Tennessee State Univ.
1:40 p.m.	2013-01-0449	Conceptualization and Implementation of a 6-Seater Interior Concept for a Hybrid Mainstream Sports Car Paul Venhovens, Johnell Brooks, Arees Uthayasuriyan, Yubin Xi, Chris D'Amico, CU-ICAR Clemson Univ.
2:00 p.m.	2013-01-0450	Application of Quality Function Deployment to the Prediction of Seat Comfort Akindeji Ojetola, Landon Onyebueke, Tennessee State University
2:20 p.m.	ORAL ONLY	Seat Comfort: Back to Basics Part 2 - Background and development of SAE J2896 Motor Vehicle Seat Comfort Performance Measures Scott Allen Ziolek, Hyundai-Kia America Technical Center Inc.
2:40 p.m.	2013-01-0452	Development of a Methodology for Simulating Seat Back Interaction Using Realistic Body Contours Jingwen Hu, Matthew Reed, Univ. of Michigan
	2013-01-0455	On the Contact Interfaces between the Driver and the Vehicle Seat (Written Only -- No Oral Presentation) Ligia Munteanu, Dan Dumitriu, Veturia Chiroiu, Institute of Solid Mechanics; Pier Paolo Delsanto, Politecnico di Torino

Planned by Human Factors Committee / Automobile Body Activity

Tuesday, April 16

Occupant Protection: Integrated Safety Systems

Session Code: B411

Room D3-23

Session Time: 9:30 a.m.

This session presents four interesting integrated active and passive safety system topics in (1) parking brake use study, (2) crash tests of cars with automatic pre-crash braking, (3) a co-simulation-based approach for validating integrated safety systems, and (4) a portable data collection package for monitoring driver research.

Organizers - Clifford C. Chou; Jerry Le, Ford Motor Co.

Chairpersons - Mario Haddad, Takata Holdings Inc.

Assistant Chairpersons - Xin Jin, Wayne State University

Time	Paper No.	Title
9:30 a.m.	2013-01-0199	Parking Brake Use Study Steven Becker, Robson Forensic Inc.
9:50 a.m.	2013-01-0200	Crash Tests with Automatic Pre-Crash Braking Cars Peter Ruecker, DEKRA Automobil GmbH

10:10 a.m.	2013-01-0201	A Co-Simulation Based Approach for the Validation of Integrated Safety Systems Markus Schratter, Michael Karner, Peter Wimmer, Daniel Watzenig, Virtual Vehicle Research and Test Center; Christian Gruber, BMW Group
10:30 a.m.	2013-01-0202	A Transportable Instrumentation Package for In-Vehicle On-Road Data Collection for Driver Research Yi L. Murphey, University of Michigan-Dearborn; Dev Kochhar, Ford Motor Co; Fang Chen, Yinghao Huang, Yong Wang, University of Michigan-Dearborn

Planned by Occupant Protection Committee / Automobile Body Activity

Tuesday, April 16

Occupant Protection: Safety Test Methodology

Session Code: B407

Room D3-23

Session Time: 1:00 p.m.

Safety Test Methodology Session presents papers in advancement of auto- safety-related analytical/testing methods, including (1) A new method for characterizing porous structure, (2) a pediatric thorax FE model, (3) testing and analysis of dynamic axial buckling behavior of steel hot-section, (4) analysis of the seat belt positioning in recent NCAP tests, and (5) simulation of a sled test method for studying vehicle soil-trip rollovers.

Organizers - Clifford C. Chou; Anindya Deb, Indian Institute Of Science; P. Miller II, MGA Research Corp.

Chairpersons - Helen A. Kaleto, MGA Research Corp.; Robert W. McCoy, Ford Motor Co.

Assistant Chairpersons - Haojie Mao, Wayne State Univ.

Time	Paper No.	Title
1:00 p.m.	2013-01-0457	A New Method for Characterization of Porous Structure without Mercury; Application to Porous Materials of Diesel Particulate Filters Kazuki Nakamura, Kazushige Ohno, Ividen Co., Ltd.; Michihisa Koyama, Kyushu Univ.; Akira Miyamoto, Nozomu Hatakeyama, Kotaro Okushi, Masayuki MIYANO, Tohoku Univ.
1:20 p.m.	2013-01-0456	Experimental Validation of Pediatric Thorax Finite Element Model under Dynamic Loading Condition and Analysis of Injury Binhui Jiang, Hunan Univ.; Haojie Mao, Wayne State Univ.; Libo Cao, Hunan Univ.; King H. Yang, Wayne State Univ.
1:40 p.m.	2013-01-0458	Numerical Prediction of Dynamic Progressive Buckling Behaviors of Single-Hat and Double-Hat Steel Components under Axial Loading Bisheshwar Haorongbam, Anindya Deb, Indian Institute Of Science; Clifford Chou
2:00 p.m.	2013-01-0460	Analysis of Seat Belt Positioning in Recent NCAP Crash Tests Sean Haight, The George Washington University; Randa Radwan Samaha, National Crash Analysis Center; David Biss, Automotive Safety Analysis Corporation
2:20 p.m.	2013-01-0459	Parameter Identification of Sled Test Method to Simulate Vehicle Soil Trip Rollover Dynamic Accurately by Numerical Simulation Considering Soil-Vehicle Interaction Tatsuya Fukushima, Masafumi Shitamichi, Toshikazu Torigaki, Hidetoshi Sokusai, Nissan Motor Company, Ltd.; Masato Nishi, Takahiko Miyachi, JSOL Corporation

Planned by Occupant Protection Committee / Automobile Body Activity

Tuesday, April 16

Vehicle Aerodynamics (Part 1 of 7): Aerodynamics Development

Session Code: B500

Room D3-24/25

Session Time: 9:30 a.m.

Organizers - Edward G. Duell, Jacobs Technology Inc.; Gregory Fadler, Navistar; Adrian P. Gaylard, Jaguar Land Rover; Mark E. Gleason, Chrysler Group LLC; Kevin Golsch, Navistar; Arturo Guzman, Chrysler Group LLC; Taeyoung Han, GM; Bahram Khalighi, General Motors; Todd Lounsberry, Chrysler Group LLC; Thomas N. Ramsay, Honda R & D Americas Inc.; David Sims-Williams, Durham University; Sandeep Sovani, ANSYS Inc.

Chairpersons - Timothy Juan, Honda R & D Americas Inc.

Time	Paper No.	Title
9:30 a.m.	2013-01-0203	Determination of Vehicle Frontal Area Using Image Processing Drew D. Brennan, Jeremy Worm, Michigan Technological University; Christopher Morgan, General Motors Company
9:50 a.m.	2013-01-0204	A Combined Digital and Experimental Process for the Aerodynamic Optimization of the New Lavidia Qian Chen, Haibo Wu, Jiangbin Zhou, Jinsong liu, Shanghai Volkswagen Automotive Co Ltd

Planned by Vehicle Aerodynamics Committee / Automobile Body Activity

Tuesday, April 16

Vehicle Aerodynamics (Part 2 of 7): Fuel Economy

Session Code: B500

Room D3-24/25

Session Time: 10:30 a.m.

Organizers - Edward G. Duell, Jacobs Technology Inc.; Gregory Fadler, Navistar; Adrian P. Gaylard, Jaguar Land Rover; Mark E. Gleason, Chrysler Group LLC; Kevin Golsch, Navistar; Arturo Guzman, Chrysler Group LLC; Taeyoung Han, GM; Bahram Khalighi, General Motors; Todd Lounsberry, Chrysler Group LLC; Thomas N. Ramsay, Honda R & D Americas Inc.; David Sims-Williams, Durham University; Sandeep Sovani, ANSYS Inc.

Time	Paper No.	Title
10:30 a.m.	2013-01-0766	Revisiting the Formulas for Tractive and Braking Energy on the EPA Driving Schedules Gino Sovran
10:50 a.m.	2013-01-0767	Making the Best Out of Aerodynamics: Platoons Arturo Davila, Enric Aramburu, Alex Freixas, Applus IDIADA

Planned by Vehicle Aerodynamics Committee / Automobile Body Activity

Tuesday, April 16

Vehicle Aerodynamics (Part 3 of 7): Unsteady Aerodynamics

Session Code: B500

Room D3-24/25

Session Time: 1:00 p.m.

Organizers - Edward G. Duell, Jacobs Technology Inc.; Gregory Fadler, Navistar; Adrian P. Gaylard, Jaguar Land

Rover; Mark E. Gleason, Chrysler Group LLC; Kevin Golsch, Navistar; Arturo Guzman, Chrysler Group LLC; Taeyoung Han, GM; Bahram Khalighi, General Motors; Todd Lounsberry, Chrysler Group LLC; Thomas N. Ramsay, Honda R & D Americas Inc.; David Sims-Williams, Durham University; Sandeep Sovani, ANSYS Inc.

Time	Paper No.	Title
1:00 p.m.	2013-01-1253	Unsteady Aerodynamics of an Oscillating Fastback Model Joshua Baden Fuller, Martin Passmore, Loughborough Univ.
1:20 p.m.	2013-01-1251	Experimental Study of Baseline Flow Characteristics for the Realistic Car Model DrivAer Christoph Strangfeld, Dirk Wieser, Hanns-Joachim Schmidt, Rene Woszidlo, Christian Nayeri, Christian Paschereit, Technische Universität Berlin
1:40 p.m.	2013-01-1255	Wind-Tunnel and On-Road Wind Noise: Comparison and Replication Mark Thompson, Simon Watkins, RMIT University; Jongman Kim, Hyundai & Kia Corp.
2:00 p.m.	2013-01-1258	Aerodynamic Pitching Stability of Sedan-Type Vehicles Influenced by Pillar-Shape Configurations See Yuan Cheng, Universiti Teknikal Malaysia Melaka; Makoto Tsubokura, Hokkaido University; Yoshihiro Okada, Mazda Motor Corporation; Takuji Nakashima, Hiroshima University; Takahide Nouzawa, Mazda Motor Corporation
2:20 p.m.	2013-01-1250	Evaluation of the Aerodynamic and Aeroacoustic Response of a Vehicle to Transient Flow Conditions Nicholas Oettle, Oliver Mankowski, David Sims-Williams, Robert Dominy, Durham University; Claire Freeman, Jaguar Land Rover
2:40 p.m.	2013-01-1257	Investigation for the Effect of the External Noise Sources onto the Interior Aerodynamic Noise Naoki Hamamoto, Yasuhiko Okutsu, Kazuo Yanagimoto, Mitsubishi Motors Corporation
3:00 p.m.	2013-01-1254	Computational Prediction of a Vehicle Aerodynamics Using Detached Eddy Simulation Natalia Castro, Omar D. Lopez, Luis Munoz, Universidad de Los Andes
3:20 p.m.	2013-01-1256	Simulation of Rear and Body Side Vehicle Soiling by Road Sprays Using Transient Particle Tracking Jonathan Jilesen, Exa Corporation; Adrian P. Gaylard, Jaguar Land Rover; Bradley Duncan, Alex Konstantinov, John Wanderer, Exa Corporation

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00329 and SUB-TP-00004, an individually. To purchase visit collections.sae.org

Planned by Vehicle Aerodynamics Committee / Automobile Body Activity

Tuesday, April 16

Fire Safety

Session Code: B200

Room D3-26

Session Time: 9:30 a.m.

The fire safety session will focus on current developments in the fields of vehicle fire science, statistics, risks, assessment and mitigation. Papers addressing vehicle design, live-fire tests and fire investigation issues applicable to traditional, electric and alternatively fueled vehicles will be presented.

Organizers - Steven Hodges, Alion Science & Technology; Jeffrey Santrock, General Motors LLC

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
9:30 a.m.	2013-01-0210	Local Fire Department Responses to Fires Involving Automobiles, Buses, and Larger Trucks: 2006-2010 Estimates Marty Ahrens, National Fire Protection Association
9:50 a.m.	2013-01-0212	Practical Case Studies of Thermal Events in Buses Aaron Jones, Nicole Schimpf, ITC Experts; Normand Dube, First Group America
10:10 a.m.	2013-01-0207	Case Studies of Parking Brake Fires in Commercial Vehicles Kerry Parrott; Douglas Stahl, Stahl Engineering & Failure Analysis, LLC
10:30 a.m.	2013-01-0209	Full-Scale Burn Test of a 1992 Compact Pick-up Truck Jeff D. Colwell, Michael E. Cundy, Exponent
10:50 a.m.	2013-01-0211	Validity of Low Ventilation for Accident Processing with Hydrogen Leakage from Hydrogen-Fuelled Vehicle Yohsuke Tamura, Takeuchi Masayuki, Japan Automobile Research Institute; Kenji Sato, Toho University
11:10 a.m.	2013-01-0208	Test Method for Fire Suppression Systems in Bus and Coach Engine Compartments Jonas Brandt, Håkan Modin, Fredrik Rosen, Michael Försth, Raúl Ochoterena, SP Technical Research Inst of Sweden
11:30 a.m.	2013-01-0213	Fire Fighting of Li-Ion Traction Batteries Markus Egelhaaf, David Kress, Dieter Wolpert, Thomas Lange, DEKRA Automobil GmbH; Rainer Justen, Daimler AG; Hartung Wilstermann, Deutsche ACCUmotive GmbH & Co. KG
	2013-01-0214	Full-Scale Burn Test of a 2001 Full-Size Pickup Truck (Written Only - No Oral Presentation) Jeff D. Colwell, Exponent Inc.

Planned by Fire Safety Committee / Automobile Body Activity

Tuesday, April 16

Occupant Protection: Pedestrian Safety

Session Code: B404

Room D3-28

Session Time: 9:30 a.m.

Organizers - Carlos Arregui Dalmases; Jason R. Kerrigan, UVA Center for Applied Biomech

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
9:30 a.m.	2013-01-0215	Flex-PLI Application to High-Bumper Vehicles - Optimization of Supplemental Weight Yoshiko Kawabe, Chinmoy Pal, Hiroyuki Okuyama, Tomosaburo Okabe, Nissan Motor Company, Ltd.
9:50 a.m.	2013-01-0216	Response Surface Generation for Kinematics and Injury Prediction in Pedestrian Impact Simulations Bingbing Nie, Yong Xia, Qing Zhou, Jun Huang, Tsinghua Univ.; Bing Deng, Mark Neal, General Motors Company

Planned by Occupant Protection Committee / Automobile Body Activity

Tuesday, April 16

Occupant Protection: Vehicle Aggressivity and Compatibility

Session Code: B410

Room D3-28

Session Time: 1:00 p.m.

Papers are invited on various aspects of vehicle-to-vehicle crashes and issues of collision compatibility and occupant safety. These may include but are not limited to topics such as analysis of accident statistics, crash test results, computer simulation procedures, vehicle design factors, etc.

Organizers - Joseph Marsh, Ivy Consultancy

Chairpersons - Joseph Marsh, Ivy Consultancy

Assistant Chairpersons - Saeed Barbat, Ford Motor Co.

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
1:00 p.m.	2013-01-0466	Effects of Vehicle Mass and Other Parameters on Driver Relative Fatality Risk in Vehicle-Vehicle Crashes Yibing Shi, Guy Nusholtz, Chrysler Group LLC
1:20 p.m.	ORAL ONLY	Effect of Vehicle Mass: Comparison with NHTSA Studies and Q & A Guy S. Nusholtz, Chrysler LLC
1:40 p.m.	ORAL ONLY	Crashworthiness of Modern Mini & Micro Cars David S. Zuby, Matthew L. Brumbelow, Insurance Institute for Highway Safety
2:00 p.m.	ORAL ONLY	Vehicle Compatibility in a Future Fleet Priya Prasad
2:20 p.m.	Panel	Panel Discussion with Q & A: Vehicle Aggressivity and Compatibility Organizers - Joseph Marsh, Ivy Consultancy Moderators - Saeed Barbat, Ford Motor Co. Panelists - Matthew L. Brumbelow, Insurance Institute for Highway Safety; Guy S. Nusholtz, Chrysler LLC; Priya Prasad;

Planned by Occupant Protection Committee / Automobile Body Activity

Tuesday, April 16

Occupant Protection: Rear Impact

Session Code: B405

Room M3-32

Session Time: 9:30 a.m.

Papers in this session are related to advancing the science of occupant safety in vehicle rear impact collisions.

Organizers - Jarrod Carter, Origin Engineering; Donald Parker, Exponent Inc.

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
9:30 a.m.	2013-01-0221	Lumbar Spine Injuries in Rear Impacts of Different Severities Nicholas Yang, Tack Lam, David Dainty, Edmund Lau, Exponent
9:50 a.m.	2013-01-0222	Characterization of Occupant Lower Extremity Behavior During Moderate-to-High Speed Rear Impacts Steven Rundell, Allison Guiang, Brian Weaver, Armstrong Forensic Engineers Inc.; Eric G. Meyer, Lawrence Technological Univ.
10:10 a.m.	2013-01-0223	A Supplemental Analysis of Selected Two-Vehicle Front-to-Rear Collisions from the NASS/CDS Jack Leifer, Trinity University

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00006 and SUB-TP-00007, and individually. To purchase visit collections.sae.org

Planned by Occupant Protection Committee / Automobile Body Activity

Tuesday, April 16

Occupant Protection: Rollover

Session Code: B406

Room M3-32

Session Time: 1:00 p.m.

Papers and presentations in this session are related to vehicular rollover. They cover various aspects of occupant safety, including vehicle design, restraint systems design, crash test analysis, CAE simulations and statistical trends analysis.

Organizers - Jarrod Carter, Origin Engineering; Donald Parker, Exponent Inc.

Time	Paper No.	Title
1:00 p.m.	2013-01-0467	The Effectiveness of the National Advanced Driving Simulator (NADS) in Evaluating the Effect of Tire Tread Belt Detachments Robert Rucoba, Robert Liebbe, Amanda Duran, Lee Carr, Carr Engineering Inc.
1:20 p.m.	2013-01-0468	Test Methodology and Initial Results from a Dynamic Rollover Test System Jason R. Kerrigan, Jeremy Seppi, Jack Lockerby, Patrick Foltz, Brian Overby, Jim Bolton, Taewung Kim, Nate J. Dennis, Jeff Crandall, UVA Center for Applied Biomechanics
1:40 p.m.	2013-01-0469	FMVSS 226 Ejection Mitigation: A Review Nancy C. Evans, Michael J. Leigh, Ford Motor Company
2:00 p.m.	2013-01-0470	Optical Measurement of High-Rate Dynamic Vehicle Roof Deformation during Rollover Jack Lockerby, Jason Kerrigan, Jeremy Seppi, Jeff Crandall, UVA Center for Applied Biomechanics
2:20 p.m.	2013-01-0472	Validation of Occupant Trajectory Model using the Ford Expedition Dolly Rollover Experimental Test Data Chad Hovey, Hovey Consulting LLC; Elizabeth Raphael, Henry Xu, Delta V Biomechanics Inc.
2:40 p.m.	Panel	Panel Discussion: Evaluating the Effect of Tire Tread Belt Detachments Moderators - Jarrod Carter, Origin Engineering; Donald Parker, Exponent Inc. Panelists - Mark William Arndt, Transportation Safety Tech. Inc.; Rob Liebbe, Carr Engineering Inc.; Robert P. Rucoba, Carr Engineering Inc.;

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Planned by Occupant Protection Committee / Automobile Body Activity

Tuesday, April 16

Occupant Protection: Side Impact

Session Code: B408

Room M3-32**Session Time: 3:20 p.m.**

Papers are invited on all aspects of automotive crashworthiness and occupant protection in side impacts, including topics such as discussions of test data, CAE methods, statistical analyses, automobile designs, restraint systems and airbags, crash test methodology and development of surrogates (test dummies). Additional topics may include side impact safety considerations for hybrid and electric propulsion vehicles.

Organizers - Jeffery W. Sankey, Transportation Research Center Inc.; Diana Kay Spurgeon, TRC Inc.; Mukul K. Verma

Time	Paper No.	Title
3:20 p.m.	2013-01-0599	Comparison of Dummy Kinematics and Injury Response between WorldSID and ES-2 in Side Impact Kazuya Iwata, Kaoru Tatsu, Hidetsugu Saeki, Tomosaburo Okabe, Nissan
3:40 p.m.	2013-01-0600	Study of Side Door Intrusion Test Results Chinmoy Mazumdar, Mukesh Mishra, Maruti Suzuki India Limited
4:00 p.m.	2013-01-0601	Child Restraint Systems: Top Tether Effectiveness in Side Impact Collisions Joseph Neal, Janet Brelin-Fornari, Kettering University

Planned by Occupant Protection Committee / Automobile Body Activity

Tuesday, April 16

Advanced Fuel Cell Vehicle Applications

Session Code: PFL101

Room O2-33**Session Time: 1:00 p.m.**

Fuel Cell Hybrid Electric Propulsion for automotive applications has the highest potential to offer both zero emissions and long range vehicle while being able to 100 percent refuel in a matter of minutes. This session covers Fuel Cell advances in Low Cost Systems; Advances in Fuel Cell Components; Electric motors for FCEVs; Simulation of PEM Fuel Cell systems and standardizing hydrogen fueling.

Organizers - Jesse Schneider, BMW AG

Time	Paper No.	Title
1:00 p.m.	2013-01-0473	MAGLEV Driveline for Wheeled Fuel Cell Powered Vehicles Henry Kamau, VBD Automotive Technologies, Ltd.
1:20 p.m.	2013-01-0475	Development of an Evaporatively Cooled Hydrogen Fuel Cell System and its Vehicle Application Alan Warburton, Dave Mossop, Ben Burslem, Pratap Rama, Paul Adcock, Jon Cole, James Edwards, Daniel Ninan, Michael Provost, Intelligent Energy
1:40 p.m.	2013-01-0477	Nanometers Layered Conductive Carbon Coating on 316L Stainless Steel as Bipolar Plates for More Economical Automotive PEMFC Jaimoo Yoo, Ki Ho Yeo, Eui Chul Shin, Young Ha Jun, J & L Tech Co. LTD
2:00 p.m.	2013-01-0476	Multi-Physics Numerical Analysis of PEMFC for Automobile Application Yuichiro Tabuchi, Toshikazu Kotaka, Nissan Motor Company, Ltd.; Chao-Yang Wang, The Pennsylvania State University
2:20 p.m.	2013-01-0478	Ultra-Long Life Oil-Free Supercharger for Fuel Cell and Hybrid Vehicle Power Trains Hans Gangwar, Ford Motor Co.; Robert Anderson, Vortech Engineering; Kyeong-Su Kim, Neuros Co., Ltd.
2:40 p.m.	2013-01-0474	Understanding of Thermal Characteristics of Fueling Hydrogen High Pressure Tanks and Governing Parameters Masanori Monde, Masataka Kosaka, Saga University

3:00 p.m.	ORAL ONLY	SAE J2601, Worldwide Hydrogen Fueling Protocol and Fuel Cell Vehicle to Station Communications and the validation thereof <i>Jesse Schneider, BMW AG</i>
	2013-01-0479	Closed Loop Control Algorithm of Fuel Cell Output Power for a City Bus (Written Only -- No Oral Presentation) <i>Liangfei Xu, Tsinghua Univ.; Minggao Ouyang, Jianqiu Li, Haiyan Huang, Fuyuan Yang, Tsinghua Univ; Quanquan Gan, Sunrise Power Co., Ltd.</i>
	2013-01-0480	Dynamic Modeling of a PEM Fuel Cell for a Low Consumption Prototype (Written Only -- No Oral Presentation) <i>Teresa Donateo, Damiano Pacella, Giovanni Indiveri, Fabio Ingrosso, Antonio Damiani, University of Salento</i>

The papers in this session are available in SAE Technical Paper Collection, COLL-GTL-00001, and also individually. purchase visit collections.sae.org

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

Tuesday, April 16

Transmission and Driveline: Launch Devices

Session Code: PFL605

Room O2-35/36

Session Time: 9:30 a.m.

Papers in this session pertain to transmission component topics, which could include Dual Dry Clutch testing, Torque Converter modeling, low friction seal research, and more.

Organizers - Michael E. Fingerman, Chrysler Group LLC

Time	Paper No.	Title
9:30 a.m.	2013-01-0232	A Dual Clutch Torque Converter for Dual Input Shaft Transmissions <i>Darrell Robinette, Ted Skrzyckie, General Motors Company</i>
9:50 a.m.	2013-01-0233	New Launch Devices for Automatic Transmissions <i>Scott William Binder, Matthias Fischer, Christoph Sasse, Joerg Trampler, ZF Friedrichshafen AG</i>
10:10 a.m.	2013-01-0231	A Design Guide for Wet Multiple Plate Clutches on Forklift Truck Transmissions Considering Strength Balance between Friction Material and Mating Plate <i>Kazunari Okabe, Mitsubishi Heavy Industries, Ltd.; Haruo Houjoh, Tokyo Institute of Technology</i>

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00365, and also individually. purchase visit collections.sae.org

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 16

Transmission and Driveline: Components/Subsystems

Session Code: PFL607

Room O2-35/36

Session Time: 10:50 a.m.

This session includes presentations on transmission and driveline components including a nitriding process to reduce distortion of annulus gears, ratcheting one way clutches for torque converters, impact loading of helical gears, a design of a single rail internal gear shift system for 5 speed MTX and an optimization of vehicle acceleration through the design of Formula SAE half shafts.

Organizers - John Collins, John A. Frait, Chrysler Group LLC

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
10:50 a.m.	2013-01-1769	A Development of the High-toughness Nitriding to Reduce Heat Treatment Distortion of AT Annulus Gear Jae Hong Park, Bong Lae Jo, Chang Won Kang, Eui Jun Kim, Hyung Oh Ban, Hyundai Motor Company
11:10 p.m.	2013-01-1770	Ratcheting OWC in Torque Converters Markus Steinberger, Luk USA LLC; Norman J. Bird, Ford Transmission & Chassis Div.
	2013-01-1771	Design of a Single Rail Internal Gear Shift System for a 5 Speed Manual Transmission (Written Only -- No Oral Presentation) Jibin Paul K, VIVEK Ramesh, Ganesh N Adiga, Mahindra & Mahindra, Ltd.
	2013-01-1772	The Design of Formula SAE Half Shafts for Optimum Vehicle Acceleration (Written Only -- No Oral Presentation) James P. Parsons, California State Polytechnic Univ-Pomona
	2013-01-1773	Study of Impact Loading on Helical Gears using Finite Element Analysis (Written Only -- No Oral Presentation) Venkata Ramana Raju Penumatsa, General Motors Tech. Center

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00365 and SUB-TP-00003, an individually. To purchase visit collections.sae.org

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 16

Transmission and Driveline: Controls

Session Code: PFL604

Room O2-35/36

Session Time: 1:00 p.m.

This session covers transmission and driveline controls. Session will cover topics related to controls hardware, controls software, and controls integration.

Organizers - Gang Chen, Hussein Dourra, Chrysler Group LLC

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
1:00 p.m.	2013-01-0481	Fuel Economy Analysis of Alternator with Kinetic Energy Storage for a Conventional Vehicle Eitaro Tanaka, Takahiro Narita, DENSO Corp.; Hitoshi Maegawa, Nippon Soken Inc
1:20 p.m.	2013-01-0482	An Optimal Powertrain Control Strategy for a Mild Hybrid Electric Vehicle Jeffery McGehee, Tennessee Technological University; Hwan-Sik Yoon, The University of Alabama
1:40 p.m.	2013-01-0483	Automatic Transmission Control Based on Estimation of Sporty Driving Intention Shin Noumura, Shogo Matsumoto, Toshio Tanahashi, Toyota Motor Corporation
2:00 p.m.	2013-01-0486	Development of a Hybrid Powertrain Active Damping Control System via Sliding Mode Control Scheme You Seok Kou, Faz Weslati, Chrysler Group LLC

2:20 p.m.	2013-01-0484	Dual Mode Control of an Automotive Clutch-By-Wire System Salem A. Haggag, Fady Ibrahim, Ain Shams University
2:40 p.m.	2013-01-0485	Research of Eliminating Method of Undesired Shifting for Vehicle with Dual Clutch Transmission Guangqiang Wu, Jianyu Si, Tongji Univ.
	2013-01-0488	Multi-Performance Optimization of the Shift Schedule for Stepped Automatic Transmissions (Written Only -- No Oral Presentation) Xiaofeng Yin, Wenping Wang, Xu Chen, Han Lu, Xihua University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00365 and SUB-TP-00003, and individually. To purchase visit collections.sae.org

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 16

Transmission and Driveline: NVH

Session Code: PFL606

Room O2-35/36

Session Time: 3:00 p.m.

This session addresses transmission noise, vibration, and harshness (NVH) issues and design solutions.

Organizers - Fabio Da Silva Ferreira, Schaeffler Group USA Inc.; Erich L. Wilfinger, Jatco USA Inc.

Time	Paper No.	Title
3:00 p.m.	2013-01-1483	Transmission Torque Converter Arc Spring Damper Dynamic Characteristics for Driveline Torsional Vibration Evaluation Zhe Li, Jaspal Sandhu, Chrysler Group LLC
	2013-01-1488	Analysis of Performance Parameters of Torsional Vibration Damper Under Various Operating Conditions (Written Only -- No Oral Presentation) Guangming Wu, Wenku Shi, Zhiyong Chen, Jilin University
	2013-01-1490	The Effect of Multi-Universal Coupling Phase on Torsional Vibration of Drive Shaft and Vibration of Vehicle (Written Only -- No Oral Presentation) Guangming Wu, Wenku Shi, Zhiyong Chen, Jilin University
	2013-01-1491	Analysis of Gear Radial and Tilt Tolerance Stack up and Correlation with Gear Micro Geometry (Written Only -- No Oral Presentation) Amit Sandooja, Volvo Eicher Commercial Vehicle Limited

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Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 16

E2T Environmental Award - Nomination Presentations

Session Code: SDP108

Room O2-37

Session Time: 9:30 a.m.

This session brings together the finalist of the Environmental Excellence in Transportation awards for the selection of an overall winner. Their presentations will highlight what has been developed as a process, technology, methodology or educational training that has given their company or community an environmental and cost advantage. The Sustainable Development Program Committee monitors this award. Please see <http://www.sae.org/news/awards/list/e2t/> for more details.

Organizers - Sujit Das, Oak Ridge National Laboratory; Nakia Simon, Chrysler Group LLC

Chairpersons - Sujit Das, Oak Ridge National Laboratory; Claudia Duranceau, CD Technical LLC; Susan Sawyer-Beaulieu, Univ. of Windsor

Time	Paper No.	Title
10:10 a.m.	ORAL ONLY	SAE Standards J2601 Jesse Schneider, BMW, Chair SAE J2601
10:30 a.m.	ORAL ONLY	High Efficiency Gasoline Engine with High Compression Ratio Masami Nishida, Mazda Motor Corp.
10:50 a.m.	ORAL ONLY	Wellman Engineering Resins - EcoLon Robert Fotsch, Wellman Plastics Recycling

Planned by Sustainable Development Program Committee / Engineering Meetings Board

Tuesday, April 16

Sustainable Materials and Components

Session Code: SDP111

Room O2-37

Session Time: 1:00 p.m.

This session delves into various areas surrounding topics that relate to a material or component's ability to be considered sustainable. These topics include but are not limited to advance material recycling technologies, remanufacturing and serviceability, materials or components reuse, as well as reduction and/or elimination of substances of concern and volatile organic compound.

Organizers - Deepak Gupta, Southeast Missouri State Univ.; Bhaskaran Gopalakrishnan, West Virginia Univ.; Susan Sawyer-Beaulieu, Univ. of Windsor

Chairpersons - Deepak Gupta, Southeast Missouri State Univ.; Bhaskaran Gopalakrishnan, Subodh Chaudhari, West Virginia Univ.

Moderators - Deepak Gupta, Southeast Missouri State Univ.; Bhaskaran Gopalakrishnan, West Virginia Univ.

Time	Paper No.	Title
1:00 p.m.	ORAL ONLY	Technical Keynote: A Business Perspective on Sustainable Manufacturing Roberto Lu, TE Connectivity
1:20 p.m.	2013-01-0492	Alternative Porous Media and Designs for Automotive Oil Filters Yiannis A. Levendis, Northeastern Univ.
1:40 p.m.	2013-01-0490	Study on the Prediction of VOC Concentration in Vehicle Cabins (1) Investigation of Relationship between Toluene Concentrations and Evaluation Conditions using Interior Parts Machiko Azuma, Hiroshi Kubo, Akio Amari, Toyota Boshoku Corporation; Koichiro Iwai, Kazumi Hayakawa, Yumi Motoyama, Hiroshi Ito, Takao Imaeda, Toyota Central R&D Labs., Inc.
2:00 p.m.	2013-01-0491	Study on the Prediction of VOC Concentration in Vehicle Cabins (2) Development of Labeled Compound Addition Method Koichiro Iwai, Kazumi Hayakawa, Yumi Motoyama, Hiroshi Ito, Takao Imaeda, Toyota Central R&D Labs., Inc.; Machiko Azuma, Hiroshi Kubo, Akio Amari, Toyota Boshoku Corporation

2:20 p.m.	2013-01-0493	Avoiding False Positive Asbestos Analysis in Polymer Matrix Composite Brake Linings <i>Ruth Hinrichs, Geosciences Institute, UFRGS, Brazil; Marcos A.Z. Vasconcellos, Physics Institute, UFRGS, Brazil</i>
2:40 p.m.	ORAL ONLY	Biobased ECO+ Solutions from DSM <i>Emile Homs, DSM</i>

Planned by Sustainable Development Program Committee / Engineering Meetings Board

Tuesday, April 16

Thermal Systems for Hybrid and Electric Vehicles

Session Code: HX105

Room O2-38

Session Time: 9:30 a.m.

The purpose of this session is to share experiences and lessons learned to advance the technology in the field of thermal management of electric and hybrid vehicle systems. This session presents papers covering both testing and simulation of hybrid and electric vehicle thermal systems.

Organizers - Ales Alajbegovic, Exa Corporation; Alaa El-Sharkawy, Chrysler Group LLC; John Rugh, National Renewable Energy Laboratory

Time	Paper No.	Title
9:30 a.m.	2013-01-0240	Heating Comfort and Range Perfectly Combined - Heating Systems for Vehicles with Alternative Drive System. Prospects and Challenges of Biofuel-Operated Water and Air Heaters <i>Robert Apfelbeck, Frank Barthel, Eberspaecher</i>
9:50 a.m.	2013-01-0235	Utilization of Ice Storage in Secondary Loop Automotive Air-Conditioning Systems <i>Magnus Eisele, Yunho Hwang, Reinhard Radermacher, University of Maryland School of Engineering</i>
10:10 a.m.	2013-01-0242	Li-ion Air-Cooled Battery System Interactions With the Vehicle HVAC System <i>Karl William Steffke, Ciro Spigno, General Motors LLC; Charles Bezzina, GM Truck Group</i>
10:30 a.m.	2013-01-0234	Reducing Temperature Gradients in High-Power, Large-Capacity Lithium-Ion Cells through Ultra-High Thermal Conductivity Heat Spreaders Embedded in Cooling Plates for Battery Systems with Indirect Liquid Cooling <i>Kim F. Yeow, Ho Teng, AVL Powertrain Engineering Inc.</i>
10:50 a.m.	2013-01-0238	ICE Project: Mobile Air-Conditioning System Based on Magnetic Refrigeration <i>Bárbara Torregrosa-Jaime, Jorge Payá, Jose Corberan, Universitat Politècnica de València; Carloandrea Malvicino, Fausto Di Sciullo, Centro Ricerche Fiat Scpa</i>
11:10 a.m.	2013-01-0239	Application of Magnetocaloric Heat Pumps in Mobile Air-Conditioning <i>Bárbara Torregrosa-Jaime, Universitat Politècnica de València; Carmen Vasile, Michel Risser, INSA Strasbourg; Christian Muller, Cooltech Applications; Jose Corberan, Jorge Payá, Universitat Politècnica de València</i>
11:30 p.m.	2013-01-0237	Numerical Analysis of Energy Efficiency of Zone Control Air-Conditioning System for Electric Vehicle using Numerical Manikin <i>Hideaki Nagano, Ikuto Miyamoto, Itsuhei Kohri, Tokyo City University</i>

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Planned by Thermal Management Activity / EMB Land and Sea Group

Tuesday, April 16

Energy Efficiency of Thermal Systems

Session Code: HX103

Room O2-38

Session Time: 1:00 p.m.

Proper thermal management can significantly contribute to overall system energy efficiency. This session highlights the latest developments in thermal management energy efficiency.

Organizers - Ronald Semel, General Motors; Gursaran D. Mathur, CalsonicKansei North America Inc.

Time	Paper No.	Title
1:00 p.m.	ORAL ONLY	Technical Keynote: Presentation Christopher P. Thomas, BorgWarner Inc.
1:40 p.m.	2013-01-0568	An Approach to Develop Energy Efficient Operation Strategies and Derivation of Requirements for Vehicle Subsystems Using the Vehicle Air Conditioning System as an Example Michael Fritz, Frank Gauterin, Michael Frey, Justus Wessling, Karlsruhe Institute of Technology (KIT); Enrico Wohlfarth, Ralf Oberfell, Daimler AG
2:00 p.m.	2013-01-0551	Effects of Air Conditioner Use on Real-World Fuel Economy Shean Huff, Brian West, John Thomas, Oak Ridge National Laboratory
2:20 p.m.	2013-01-0553	Impact of Solar Control PVB Glass on Vehicle Interior Temperatures, Air-Conditioning Capacity, Fuel Consumption, and Vehicle Range John Rugh, Larry Chaney, Laurie Ramroth, Travis Venson, National Renewable Energy Laboratory; Matthew Rose, Eastman Chemical
2:40 p.m.	2013-01-0552	Selecting an Expansion Machine for Vehicle Waste-Heat Recovery Systems Based on the Rankine Cycle Gunnar Latz, Sven Andersson, Karin Munch, Chalmers Univ. of Technology
3:00 p.m.	2013-01-0550	Addressing the Heat Exchange Question for Thermo-Electric Generators Anusha Wijewardane, Richard Stobart, Loughborough Univ.
3:20 p.m.	2013-01-0559	Influence of Heat Pipe Operating Temperature on Exhaust Heat Thermoelectric Generation F. P. Brito, L.M. Goncalves, Jorge Martins, Nuno Antunes, Diogo Sousa, Universidade do Minho
3:40 p.m.	2013-01-0546	Advanced Thermal Management of a Light Duty Diesel Vehicle John Shutty, Wolfgang Wenzel, BorgWarner Inc.; Michael Becker, Stephen Bohan, Glenn Kowalske, BorgWarner Inc
	2013-01-0569	Developing the AC17 Efficiency Test for Mobile Air Conditioners (Written Only -- No Oral Presentation) Fred Sciance, General Motors Company; Brian Nelson, EPA; Mahmoud Yassine, Chrysler Group LLC; Angelo Patti, Ford Motor Co; Leela Rao, California Air Resources Board
	2013-01-0574	Research on the Optimization of Hybrid Electric Vehicle Powertrain Heating-Up Process (Written Only -- No Oral Presentation) Tinghui Hu, Kathrien Inderwisch, Rashad Mustafa, Ferit Küçükay, IAE, TU Braunschweig

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Planned by Thermal Management Activity / EMB Land and Sea Group

Tuesday, April 16

Powertrain Actuators and Sensors

Session Code: PFL302

Room O2-43

Session Time: 9:30 a.m.

Powertrain Actuators and Sensors needs to be modified, for example, as to actuator and sensor mechanisms, devices, and systems; and the impact and control of such actuation and sensing systems on Powertrain thermodynamics, combustion, fuel economy, emissions, and performance.

Organizers - Steve Thomson, Delphi Corp.

Chairpersons - Steve Thomson, Delphi Corp

Time	Paper No.	Title
9:30 a.m.	2013-01-0304	Accurate Instantaneous Engine Speed Recording by Employing an Optical Measurement System - Application to a Typical Low Power Industrial Engine <i>D.- N. Pagonis, G. Theotokatos, G. Livanos, Dpt. of Naval Architecture TEI of Athens</i>
9:50 a.m.	2013-01-0301	Development of Magneto-Elastic Torque Sensor for Automatic Transmission Applications <i>Gregory Michael Pietron, Yuji Fujii, Joseph Kucharski, Diana Yanakiev, Nimrod Kapas, Steve Hermann, Ford Motor Company; Ramana Hogirala, Thomas L. Greene, Methode Electronics</i>
10:10 a.m.	2013-01-0302	Design of Transmission Electro-Hydraulic Control Module <i>Eiji Sugitachi, Shinji Takeuchi, Hajime Yokoyama, Masamichi Watanabe, DENSO Corp.</i>
10:30 a.m.		BREAK
10:50 a.m.	2013-01-0303	Investigation and Improvement of Interfacial Delamination in In-Situ Measuring Sensor for Automobile Application <i>Atsushi Takahashi, Honda R&D Co., Ltd.; Naoaki Yoshida, Kyushu University; Kenji Matsumoto, Honda R&D Co., Ltd.</i>
11:10 a.m.	2013-01-0305	Innovative Techniques for On-Board Exhaust Gas Dynamic Properties Measurement <i>Nicolo Cavina, Alberto Cerofolini, Enrico Corti, Fabrizio Ponti, University of Bologna; Matteo De Cesare, Federico Stola, Magneti Marelli SpA Powertrain Division</i>

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

Tuesday, April 16

Exhaust Emission Control: System Integration and Durability

Session Code: PFL401

Room O2-43**Session Time: 1:00 p.m.**

Papers in this session cover various aspects of exhaust emissions system integration and durability, including the durability of particulate filters and exhaust catalysts (oxidation, reduction, and combinations thereof). It also includes mechanisms of performance degradation and possible mitigation strategies, data from field tests, analysis of aged catalysts and filters, laboratory and accelerated on-engine aging studies, and relevant experimental tools and methodology.

Organizers - Eric Corrigan, Corning Inc.; Pradeep Prasad, Cummins Emission Solution; Aleksey Yezerets, Cummins Inc.

Time	Paper No.	Title
1:00 p.m.	2013-01-0515	Effectiveness of Diesel Oxidation Catalyst in Reducing HC and CO Emissions from Reactivity Controlled Compression Ignition Vitaly Y. Prikhodko, Scott J. Curran, James E. Parks, Robert M. Wagner, Oak Ridge National Laboratory
1:20 p.m.	2013-01-0514	Impact of Different Forms of Sulfur Poisoning on Diesel Oxidation Catalyst Performance Junhui Li, Ashok Kumar, Xu Chen, Neal Currier, Aleksey Yezerets, Cummins Inc.
1:40 p.m.	2013-01-0508	Hydrocarbon Storage on Small-Pore Cu-Zeolite SCR Catalyst Ashok Kumar, Krishna Kamasamudram, Aleksey Yezerets, Cummins Inc
2:00 p.m.	2013-01-0513	Impact of Fuel Metal Impurities on the Durability of a Light-Duty Diesel Aftertreatment System Aaron Williams, Jonathan Burton, Robert L. McCormick, National Renewable Energy Laboratory; Todd Toops, Andrew A. Wereszczak, Ethan E. Fox, Michael J. Lance, Oak Ridge National Laboratory; Giovanni Cavataio, Douglas Dobson, Jim Warner, Ford Motor Co; Rasto Brezny, Manufacturers of Emission Controls Assoc; K. Nguyen, D. William Brookshear, University of Tennessee - Knoxville
2:20 p.m.	2013-01-0511	Field Testing of High Biodiesel Blends on Engine and Aftertreatment Durability, Performance, and Maintenance in an On-Highway Application Matthew Leustek, Sylvain Charbonnel, Jared Parsons, Hind Abi-Akar, Caterpillar Inc.
2:40 p.m.	2013-01-0512	Characterization and Ranking of Materials for Exhaust Systems Under Thermal-Cycling Condition Zhigang Wei, Tenneco Automotive Co., Ltd.; Dmitri Konson, Deborah Clark, Limin Luo, Shengbin Lin, Fulun Yang, Tenneco Inc
3:00 p.m.	2013-01-0510	CAE Dynamic Durability Simulation of Exhaust System Amir Ghasemi, Eberspaecher North America Inc; Ming Dong, Eberspaecher KG; Lakshmikanth Meda, Martin Romzek, Eberspaecher North America Inc
3:20 p.m.	ORAL ONLY	Development of Corrosion Test Procedure for Automotive Exhaust System Hyunmin Ahn, Hyunmin Ahn

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

Tuesday, April 16

Advanced Vehicle Technology Competitions (Part 1 of 2)

Session Code: PFL110

Room O2-44

Session Time: 9:30 a.m.

The EcoCAR 2: Plugging in to the Future student vehicle competition, sponsored by General Motors and the U.S. Department of Energy, tasks university teams with designing, implementing and refining advanced powertrains into a conventional midsize sedan. This session presents yearly results from teams in the competition, highlighting the entire EcoCAR vehicle development process.

Organizers - Brian Benoy, Kristen G. De La Rosa, Patrick M. Walsh, Argonne National Laboratory

Chairpersons - Patrick Walsh, Argonne National Laboratory

Moderators - Patrick Walsh, Argonne National Laboratory

Time	Paper No.	Title
9:30 a.m.	2013-01-0554	Key Outcomes of Year One of EcoCAR 2: Plugging in to the Future Nicole Lambiase, Brian Benoy, Kristen De La Rosa, Argonne National Laboratory; Vahid Motevalli, Purdue University; George Molen, Mississippi State University; Douglas Nelson, Virginia Tech; Robert Alley, Patrick Walsh, Argonne National Laboratory
9:50 a.m.	2013-01-0557	Designing a High Voltage Energy Storage System for a Parallel-Through-The-Road Plug-In Hybrid Electric Vehicle Bryan Whitney Belt, Adam Fogarty, Kevin Oswald, Gregory Shaver, Peter Meckl, Vahid Motevalli, Purdue University
10:10 a.m.	ORAL ONLY	The University of Waterloo Alternative Fuels Team's Approach to EcoCAR 2 Gurhari Preet Singh, University of Waterloo
10:50 a.m.	ORAL ONLY	Vehicle System Design Process for a Series-Parallel Plug-in Hybrid Electric Vehicle P. Christopher Manning, Jonathan King, Douglas J. Nelson, R. Jesse Alley, Eli White, Virginia Tech

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

Tuesday, April 16

Advanced Vehicle Technology Competitions (Part 2)

Session Code: PFL110

Room O2-44

Session Time: 1:00 p.m.

EcoCAR 2: Plugging in to the Future is North America's premiere collegiate advanced vehicle competition series, sponsored by General Motors and the U.S. Department of Energy. EcoCAR 2 tasks university teams with designing, implementing and refining advanced powertrains into a conventional midsize sedan. This session presents yearly results from teams in the competition, highlighting the entire EcoCAR vehicle development process, as well as unique papers with research based off the competition.

Organizers - Brian Benoy, Kristen G. De La Rosa, Patrick M. Walsh, Argonne National Laboratory

Chairpersons - Patrick Walsh, Argonne National Laboratory

Moderators - Patrick Walsh, Argonne National Laboratory

Time	Paper No.	Title
1:00 p.m.	2013-01-0560	Detailed Design of a Fuel Cell Plug-in Hybrid Electric Vehicle Shawn Salisbury, Benjamin Geller, Thomas Bradley, Colorado State Univ; Matthew Fox, Tesla Motors
1:20 p.m.	2013-01-0549	Equivalent Drive Cycle Analysis, Simulation, and Testing - Wayne State University's On-Road Route for EcoCAR2 Kevin L. Snyder, Jerry Ku, Wayne State University
1:40 p.m.	2013-01-0541	Parallel-Through-The-Road Plug-In Hybrid Vehicle Modeling and Simulation by Wayne State University for EcoCAR2 Kevin L. Snyder, Love Lor, Jerry Ku, Wayne State University

2:00 p.m.	2013-01-0543	VTool: A Method for Predicting and Understanding the Energy Flow and Losses in Advanced Vehicle Powertrains <i>Robert Jesse Alley; Douglas Nelson, Eli White, P. Christopher Manning, Virginia Tech</i>
2:20 p.m.	2013-01-0564	Design of a High Voltage Lithium Ion Energy Storage System <i>Laura Nash, Jonathan Nibert, Zachariah Chambers, Marc Herniter, Rose-Hulman Institute of Technology</i>
2:40 p.m.	2013-01-0548	The Importance of Maximizing Grid Electricity Usage in the Component Selection and Design of a Midsize PHEV <i>Trevor Fayer, Trevor Crain, University of Washington EcoCAR2; Brian Fabien, Per Reinhall, University of Washington</i>
3:00 p.m.	2013-01-0547	Modeling and Development of E85 Fueled Two-Mode Hybrid Electric Vehicle <i>Kunal Patil, Stephen Bayne, Timothy T. Maxwell, Texas Tech. University</i>
	2013-01-0570	HMI Design for Increasing Vehicle Energy Efficiency by Affecting Driving Habits (Written Only -- No Oral Presentation) <i>Idan David Regev, Jerry Ku, Wayne State University</i>
	2013-01-0571	Numerical Modeling of Rear Subframe Under Different Loading Conditions (Written Only -- No Oral Presentation) <i>Usman Ali, Roydon Andrew Fraser, University of Waterloo</i>
	2013-01-0572	Intelligent Energy Distribution for Series HEVs Using Determined Optimal Driving Patterns via a Genetic Algorithm (Written Only -- No Oral Presentation) <i>Phu Ho, Eric Klang, North Carolina State University</i>

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

Tuesday, April 16

Exhaust Emission Control: Particulate Filter Systems (Part 1 of 2)

Session Code: PFL402

Room O3-45

Session Time: 10:30 a.m.

Papers are invited for this session covering various aspects of Particulate Filter (PF) systems including the accumulation and oxidation of particulate matter within the PF, the performance of different PF technologies, and their use with different fuel specifications, engine technologies and testing protocols. Papers are also invited on novel PF construction techniques and materials and new regeneration strategies.

Organizers - Matthew Leustek, Caterpillar Inc.; Jerry Liu, CUMMINS EMISSION SOLUTIONS; Andrea Strzelec; Matthew Thornton, National Renewable Energy Laboratory; Andrew P. Walker, Johnson Matthey Inc.

Time	Paper No.	Title
10:30 a.m.	2013-01-0524	Experimental Study of Thermal Aging on Catalytic Diesel Particulate Filter Performance <i>Dimitrios Zarvalis, Dimitrios Pappas, Souzana Lorentzou, Theofilaktos Akritidis, Leonidas Chasapidis, CERTH/CPERI; Athanasios G. Konstandopoulos, CERTH/CPERI and Aristotle University</i>

10:50 a.m.	2013-01-0519	<i>In-Situ Optical Analysis of Ash Formation and Transport in Diesel Particulate Filters During Active and Passive DPF Regeneration Processes</i> <i>Alexander Sappok, Ifran Govani, Carl Kamp, Yujun Wang, Victor Wong, Massachusetts Institute of Technology</i>
11:10 a.m.	2013-01-0516	<i>Characteristics of Soot Oxidation at the Interface between Soot and Silicon-Oxy-Carbide with Embedded Single Nanosized Pt Particles</i> <i>Keisuke Nakamura, Hiroshi Oki, Ryoko Sanui, Tokyo Institute of Technology; Nobuhiro Hidaka, Masamichi Tanaka, Sumitomo Osaka Cement Co., Ltd.; Hiroaki Matsumoto, Hitachi High-Technologies Corporation; Katsunori Hanamura, Tokyo Institute of Technology</i>

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

Tuesday, April 16

Exhaust Emission Control: Particulate Filter Systems (Part 2 of 2)

Session Code: PFL402

Room O3-45

Session Time: 1:00 p.m.

Papers are invited for this session covering various aspects of Particulate Filter (PF) systems including the accumulation and oxidation of particulate matter within the PF, the performance of different PF technologies, and their use with different fuel specifications, engine technologies and testing protocols. Papers are also invited on novel PF construction techniques and materials and new regeneration strategies.

Organizers - *Matthew Leustek, Caterpillar Inc.; Jerry Liu, CUMMINS EMISSION SOLUTIONS; Andrea Strzelec; Matthew Thornton, National Renewable Energy Laboratory; Andrew P. Walker, Johnson Matthey Inc.*

Time	Paper No.	Title
1:00 p.m.	2013-01-0517	<i>Adaptive Temperature Control for Diesel Particulate Filter Regeneration</i> <i>Javier Castellano, Ford Motor Company; Anita Chaudhari, Altran; Jim Bromham, Ford Motor Company</i>
1:20 p.m.	2013-01-0523	<i>Diesel Emissions with DPF & SCR and Toxic Potentials with BioDiesel (RME) Blend Fuels</i> <i>Jan Czerwinski, Univ. of Applied Sciences Biel-Bienne; Panayotis Dimopoulos Eggenschwiler, Adm Norbert Heeb, EMPA; Covadonga Astorga-Ilorens, JRC (Joint Research Centre); Andreas Mayer, TTM; Armin Heitzer, Erdöl-Vereinigung; Giovanni D'Urbano, BAFU; Sandra Hermle, BFE; Stephan Renz, Renz Consulting; Anthi Liati, EMPA</i>
1:40 p.m.	2013-01-0518	<i>Non-Thermal Particulate Filter Regeneration Using Rapid Pulse Electric Discharges</i> <i>Alex Mason, Jon G.P. Binner, Colin P. Garner, Karola Graupner, John E. Harry, Dave W. Hoare, Andrew M. Williams, Loughborough University; Nick Fox, 3DX-Ray Ltd</i>
2:00 p.m.	2013-01-0521	<i>An Experimental Investigation into Particulate Matter Oxidation in a Catalyzed Particulate Filter with Biodiesel Blends on an Engine during Active Regeneration</i> <i>James Pidgeon, John Johnson, Jeffrey Naber, Michigan Technological University</i>

2:20 p.m.	2013-01-0526	NO₂-Formation in Diesel Particle Filter Systems Jan Czerwinski, Yan Zimmerli, Claudio Chiesura, Univ. of Applied Sciences Biel-Bienne; Andreas Mayer, TTM; Jacques Lemaire, AEEDA; Giovanni D'Urbano, BAFU
2:40 p.m.	2013-01-0520	Passive Regeneration Response Characteristics of a DPF System Adam Kotrba, Timothy P. Gardner, Ling Bai, Argun Yetkin, Tenneco Inc
3:00 p.m.	2013-01-0527	Impact of Ambient Temperature on Gaseous and Particle Emissions from a Direct Injection Gasoline Vehicle and its Implications on Particle Filtration Tak W. Chan, Eric Meloche, Environment Canada; Joseph Kubsh, Rasto Brezny, Manufacturers of Emission Controls Assoc; Deborah Rosenblatt, Greg Rideout, Environment Canada
3:20 p.m.	2013-01-0528	Detailed Investigation of Soot Deposition and Oxidation Characteristics in a Diesel Particulate Filter Using Optical Visualization Seungmok Choi, Kyeong Lee, Argonne National Laboratory
3:40 p.m.	2013-01-0525	Soot Loading Estimation Accuracy Improvement by Filtration Layer Forming on DPF and New Algorithm of Pressure Loss Measurement Kazutake Ogyu, Takashi Yamakawa, Yasuhiro Ishii, Daisuke Minoura, Yuichi Nagatsu, Takafumi Kasuga, Ibiden Co., Ltd.; Kazushige Ohno, Ibiden Co Ltd

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

Tuesday, April 16

Exhaust Emission Control: New Developments (Part 1 of 2)

Session Code: PFL404

Room O3-46

Session Time: 9:30 a.m.

Papers are invited for this session that describes technology developments and the integration of these technologies into new emission control systems. Topics include the integration of various diesel particulate matter (PM) and diesel Nitrogen Oxide (NOX) reduction technologies plus the analogous technologies for the growing population of direct injection gasoline engines. Novel developments in sensors and control systems will also be considered.

Organizers - Kenneth S. Price, Umicore Autocat USA Inc.; Ronald Silver, Caterpillar Inc.; Marek Tatur, Roger A. Van Sickle, FEV Inc.

Time	Paper No.	Title
9:30 a.m.	2013-01-0538	Vehicular Emissions in Review Timothy Johnson, Corning Incorporated
10:30 a.m.	2013-01-0534	Estimated Cost of Emission Control Technologies for Light-Duty Vehicles Part 1 - Gasoline Francisco Posada, Anup Bandivadekar, John German, International Council on Clean Transportation
10:50 a.m.	2013-01-0530	Intensification of Catalytic Aftertreatments Systems for Mobile Applications Teuvo Maunula

11:10 a.m. 2013-01-1778 *Emissions of PCDD/Fs, PCBs, and PAHs from a Modern Diesel Engine Equipped with Selective Catalytic Reduction Filters*
Christopher A. Laroo, Charles Schenk, James Sanchez, Joseph McDonald, Peter Smith, US Environmental Protection Agency

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

Tuesday, April 16

Exhaust Emission Control: New Developments (Part 2 of 2)

Session Code: **PFL404**

Room O3-46

Session Time: **1:00 p.m.**

Papers are invited for this session that describes technology developments and the integration of these technologies into new emission control systems. Topics include the integration of various diesel particulate matter (PM) and diesel Nitrogen Oxide (NOX) reduction technologies plus the analogous technologies for the growing population of direct injection gasoline engines. Novel developments in sensors and control systems will also be considered.

Organizers - Kenneth S. Price, Umicore Autocat USA Inc.; Ronald Silver, Caterpillar Inc.; Marek Tatur, Roger A. Van Sickle, FEV Inc.

Time	Paper No.	Title
1:00 p.m.	2013-01-0533	<i>An Investigation of Diesel EGR Cooler Fouling and Effectiveness Recovery</i> Anil Singh Bika, Univ. of Minnesota-Twin Cities; Alok Warey, Patrick Szymkowicz, Sandro Balestrino, David Long, General Motors Company
1:20 p.m.	2013-01-0535	<i>Cold Start Concept (CSC₂): A Novel Catalyst for Cold Start Emission Control</i> Hai-Ying Chen, Shadab Mulla, Erich Weigert, Kenneth Camm, Todd Ballinger, Julian Cox, Phil Blakeman, Johnson Matthey Inc.
1:40 p.m.	2013-01-0536	<i>Development of Highly Efficient Lean NOx Catalyst System in Low Exhaust Gas Temperature</i> Yuichi Matsuo, Shinya Ishimaru, Masato Amano, Nobuhiro Komatsu, Satoshi Aoyagi, Hiroyuki Dan, Tetsuo Endo, Yoshiaki Matsuzono, Honda R&D Co., Ltd.; Tomoaki Ito, Makoto Nagata, N.E. Chamcat Corporation
2:00 p.m.	2013-01-0531	<i>Development of a Sulfur Tolerant PGM Based Zeolite Catalyst for Methane Oxidation and Low Temperature Hydrocarbon Trapping</i> Alexander Guliaeff, Klaus Wanninger, Frank Klose, Gerd Maletz, Arno Tissler, Clariant Produkte (Deutschland) GmbH
2:20 p.m.	2013-01-0532	<i>Development of the NOx Emission Model for the Heavy Duty Diesel Engine Application Using Combustion Characteristic Parameters</i> Navtej Singh, Prasanna Nagabushan-Venkatesh, Eduardo Nigro, Adam Lack, Navistar Inc.
2:40 p.m.	2013-01-0537	<i>GDI Engine Performance and Emissions with Reformed Exhaust Gas Recirculation (REGR)</i> Daniel Fennell, Jose M. Herreros, Athanasios Tsolakis, Hongming Xu, University of Birmingham; Kirsty Cockle, Paul Millington, Johnson Matthey PLC
	2013-01-0529	<i>Gasoline - Ignition Improver - Oxygenate Blends as Fuels for Advanced Compression Ignition Combustion (Written Only -- No Oral Presentation)</i> Lei Zhou, M.D. Boot, L.P.H. de Goey, Eindhoven University Of Technology

- 2013-01-0539** **Estimated Cost of Emission Control Technologies for Light-Duty Vehicles Part 2 - Diesel (Written Only -- No Oral Presentation)**
Francisco Posada, Anup Bandivadekar, John German, International Council on Clean Transportation
- 2013-01-0540** **Visualization and Analysis of Condensation in Exhaust Gas Recirculation Coolers (Written Only -- No Oral Presentation)**
Alok Warey, David Long, Sandro Balestrino, Patrick Szymkowicz, General Motors Company; Anil Singh Bika, Univ of Minnesota-Twin Cities

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

Tuesday, April 16

Modeling of SI and Diesel Engines - Turbocharging & Fundamentals

Session Code: **PFL208**

Room W2-61

Session Time: **9:30 a.m.**

Zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of SI and CI engines with respect to: engine breathing, boosting, and acoustics; SI combustion and emissions; CI combustion and emissions; fundamentals of engine thermodynamics; numerical modeling of gas dynamics; thermal management; mechanical and lubrication systems; system level models for controls; system level models for vehicle fuel economy and emissions predictions.

Organizers - Michael L. Briggs; Federico Millo, Politecnico di Torino; Thomas Morel, Gamma Technologies Inc.; Christof Schernus, FEV GmbH

Time	Paper No.	Title
9:30 a.m.	2013-01-0575	Optimized Air Intake for a Turbocharged Engine Taking into Account Water-Cooled Charge Air Cooler Reflective Properties for Acoustic Tuning Haitham Mezher, Mann + Hummel - Ecole Centrale de Nantes; Jerome Migaud, Vincent Raimbault, Jean-Gabriel Lelong, Mann + Hummel; David Chalet, Nicolas Perrot, Ecole Centrale De Nantes; Alexandre Hunault, Mann + Hummel; Pascal Chesse, Ecole Centrale De Nantes; Bernhard Huurdeman, Mann + Hummel
9:50 a.m.	2013-01-0576	Importance of Heat Transfer Phenomena in Small Turbochargers for Passenger Car Applications Jose Serrano, Pablo Olmeda, Francisco Arnau, Miguel Reyes-Belmonte, Universitat Politècnica de València; Alain Lefebvre, RENAULT SAS
10:10 a.m.	2013-01-0577	Importance of Mechanical Losses Modeling in the Performance Prediction of Radial Turbochargers under Pulsating Flow Conditions Jose Ramón Serrano, Pablo Olmeda, Andres Tiseira, Luis Miguel García-Cuevas, Universitat Politècnica de València; Alain Lefebvre, RENAULT SAS
10:30 a.m.	2013-01-0578	Divided Exhaust Period: Effects of Changing the Relation between Intake, Blow-Down and Scavenging Valve Area Stefan Gundmalm, Andreas Cronhjort, Hans-Erik Angstrom, CCGEx, KTH Royal Institute of Technology
10:50 a.m.	2013-01-0580	Windage Tray Design Comparison Using Crankcase Breathing Simulation Owais Iqbal, Chrysler Canada Inc.; Kunal Arora, Chrysler Group LLC

- 2013-01-0581** **Advanced Turbocharger Model for 1D ICE Simulation - Part I (Written Only -- No Oral Presentation)**
Panagiotis Grigoriadis, Emanuel Binder, Lars Böttcher, Andreas Benz, Marc Sens, IAV GmbH
- 2013-01-0582** **Intra-Pipe Restriction Non-Homentropic Boundary Resolution Method (Written Only -- No Oral Presentation)**
Felipe Castillo, GIPSA Lab Renault SAS; Emmanuel Witrant, Luc Dugard, GIPSA Lab UJF Grenoble 1/CNRS; Vincent Talon, Renault SAS; David Chalet, Pascal Chesse, LUNAM Université, Ecole Centrale de Nantes

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

Tuesday, April 16

Modeling of SI and Diesel Engines - SI Combustion

Session Code: **PFL208**

Room W2-61

Session Time: **1:00 p.m.**

Zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of SI and CI engines with respect to: engine breathing, boosting, and acoustics; SI combustion and emissions; CI combustion and emissions; fundamentals of engine thermodynamics; numerical modeling of gas dynamics; thermal management; mechanical and lubrication systems; system level models for controls; system level models for vehicle fuel economy and emissions predictions.

Organizers - Federico Millo, Politecnico di Torino; Thomas Morel, Gamma Technologies Inc.; Angelo Onorati, Politecnico di Milano; Christof Schernus, FEV GmbH; Xiaofeng Yang, General Motors LLC

Time	Paper No.	Title
1:00 p.m.	2013-01-1313	Charge Motion Analysis to Guide Engine Port Development and Enhance Combustion Stability for High Cooled Exhaust Gas Recirculation Surendra Gaikwad, Nameer Salman, Saad Umer, Chrysler Group LLC
1:20 p.m.	2013-01-1314	Modeling Cycle-to-Cycle Variations in 0-D/1-D Simulation by Means of Combustion Model Parameter Perturbations based on Statistics of Cycle-Resolved Data Oldrich Vitek, Jan Macek, Czech Technical Univ.; Christoph Poetsch, Reinhard Tatschl, AVL LIST GmbH
1:40 p.m.	2013-01-1311	A Quasi-Dimensional NO_x Emission Model for Spark Ignition Direct Injection (SIDI) Gasoline Engines Jian Gong, Christopher Rutland, University of Wisconsin-Madison
2:00 p.m.	2013-01-1312	Development and Validation of a Knock Prediction Model for Methanol-Fuelled SI Engines Jeroen Vancoillie, Louis Sileghem, Sebastian Verhelst, Ghent University
2:20 p.m.	2013-01-1315	A New Approach for Modeling Cycle-to-Cycle Variations within the Framework of a Real Working-Process Simulation Markus Wenig, IVK Univ.; Michael Grill, Michael Bargende, FKFS

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

Tuesday, April 16

Modeling of SI and Diesel Engines - Diesel Combustion

Session Code: PFL208

Room W2-61

Session Time: 2:40 p.m.

Zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of SI and CI engines with respect to: engine breathing, boosting, and acoustics; SI combustion and emissions; CI combustion and emissions; fundamentals of engine thermodynamics; numerical modeling of gas dynamics; thermal management; mechanical and lubrication systems; system level models for controls; system level models for vehicle fuel economy and emissions predictions.

Organizers - Michael Bybee, Gamma Technologies Inc.; Jan Macek, Czech Technical Univ.; Federico Millo, Politecnico di Torino; Thomas Morel, Gamma Technologies Inc.; Christof Schernus, FEV GmbH

Chairpersons - Jan Macek, Czech Technical Univ

Time	Paper No.	Title
2:40 p.m.	2013-01-0881	Universal Diesel Engine Simulator (UniDES) 2nd Report: Prediction of Engine Performance in Transient Driving Cycle Using One Dimensional Engine Model Yusuke Takasu, Satoshi Kaneko, Hiroyuki Tominaga, Toyota Motor Corporation; Yoshikazu Namura, Toyota Technical Development Corporation; Kazuhisa Inagaki, Matsuei Ueda, Toyota Central R&D Labs., Inc.; Toshihiro Tani, Toyota Industries Corporation
3:00 p.m.	2013-01-0882	Multidimensional Optimization of DI Diesel Engine Process Using Multi-Zone Fuel Spray Combustion Model and Detailed Chemistry NOx Formation Model Andrey Kuleshov, Leonid Grekhov, Bauman Moscow State Technical Univ.
3:20 p.m.	2013-01-0880	The Development and Application of Homogeneity Factor on DI Diesel Engine Combustion and Emissions Raouf Mobasher; Zhijun Peng, Univ of Sussex

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

Tuesday, April 16

Direct Injection SI Engine Technology (Part 1 of 2)

Session Code: PFL202

Room W2-63

Session Time: 9:30 a.m.

Focuses on SI combustion technologies that employ direct, in-cylinder fuel injection. Topics of particular interest include in-cylinder fuel injection and spray studies, flow/spray interaction and in-cylinder mixture formation studies, and combustion chamber shape optimization. Focus includes stratified, operation or other modes enabled by DI hardware, DI-specific emissions issues such as particulates and smoke, and technologies enabled by DISI (such as downsizing).

Organizers - Matthew Brusstar, U.S. Environmental Protection Agency; Sudhakar Das, SwRI; Gerald Micklow, Florida Institute of Technology; James W G Turner, Lotus Engineering, Ltd.; Jianwen Yi, Ford Motor Co.

Time	Paper No.	Title
9:30 a.m.	2013-01-0249	Study of E10 and E85 Effect on Air Fuel Mixing and Combustion Process in Optical Multicylinder GDI Engine and in a Spray Imaging Chamber Luigi Allocca, Francesco Catapano, Alessandro Montanaro, Paolo Sementa, Bianca Maria Vaglieco, Istituto Motori CNR

9:50 a.m.	2013-01-0254	Optimised Neat Ethanol Engine with Stratified Combustion at Part-load; Particle Emissions, Efficiency and Performance Jonas Warnberg, Chalmers Univ. of Technology; Marius Boehmer, RWTH Aachen University; Ingemar Denbratt, Chalmers Univ of Technology
10:10 a.m.	2013-01-0259	In-Cylinder Particulate Matter and Spray Imaging of Ethanol/Gasoline Blends in a Direct Injection Spark Ignition Engine Mohammad Fatouraie, Margaret Wooldridge, University of Michigan; Steven Wooldridge, Ford Motor Co.
10:30 a.m.	2013-01-0257	Application of Supercritical Gasoline Injection to a Direct Injection Spark Ignition Engine for Particulate Reduction Chris De Boer, Transonic Combustion Inc.; Gary Bonar, Shizuo Sasaki, Shreeram Shetty, Transonic Combustion Inc
10:50 a.m.	2013-01-0248	Systematic Analysis and Particle Emission Reduction of Homogeneous Direct Injection SI Engines Florian Steimle, Andre Kulzer, Herwig Richter, Dietmar Schwarzenenthal, Claudia Romberg, Porsche AG
11:10 a.m.	2013-01-0260	Development of DISI Engine Utilizing a Fan-Shaped Spray Jet Eriko Matsumura, Mutsumi Kanda, Fumiaki Hattori, Hiroshi Nomura, Susumu Hashimoto, Toyota Motor Corp.; Kiyotaka Yoshimaru, Denso Corp.

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

Tuesday, April 16

Direct Injection SI Engine Technology (Part 2 of 2)

Session Code: PFL202

Room W2-63

Session Time: 1:00 p.m.

Focuses on SI combustion technologies that employ direct, in-cylinder fuel injection. Topics of particular interest include in-cylinder fuel injection and spray studies, flow/spray interaction and in-cylinder mixture formation studies, and combustion chamber shape optimization. Focus includes 'stratified' operation or other modes enabled by DI hardware, DI-specific emissions issues such as particulates and smoke, and technologies enabled by DISI (such as downsizing).

Organizers - Matthew Brusstar, U.S. Environmental Protection Agency; Sudhakar Das, SwRI; Gerald Micklow, Florida Institute of Technology; James W G Turner, Lotus Engineering, Ltd.; Jianwen Yi, Ford Motor Co.

Time	Paper No.	Title
1:00 p.m.	2013-01-0255	GDI Skew-Angled Nozzle Flow and Near-Field Spray Analysis using Optical and X-Ray Imaging and VOF-LES Computational Fluid Dynamics Bizhan Befrui, Andreas Aye, Peter Spiekermann, Daniel L. Varble, Delphi Powertrain Systems; Mark A. Shost, Ming-Chia Lai, Wayne State University; Jin Wang, Argonne National Laboratory
1:20 p.m.	2013-01-1604	Experimental Investigation of In-Cylinder Wall Wetting in GDI Engines Using a Shadowgraphy Method Bennie Luijten, Eindhoven University Of Technology; Philipp Adomeit, Andre Brunn, FEV GmbH; Bart Somers, Eindhoven University Of Technology
1:40 p.m.	2013-01-0261	Diffusion Combustion Phenomena in GDI Engines caused by Injection Process Axel Berndorfer, Stephan Breuer, Walter Piock, Paul Von Bacho, Delphi Powertrain Systems

2:00 p.m.	2013-01-0252	Premature Flame Initiation in a Turbocharged DISI Engine - Numerical and Experimental Investigations Stefan Palaveev, Max Magar, Heiko Kubach, Robert Schiessl, Ulrich Spicher, Ulrich Maas, Karlsruhe Institute of Technology
2:20 p.m.	2013-01-0250	Experimental and Numerical Study of Water Spray Injection at Engine-Relevant Conditions Meghraj Bhagat, Khanh Cung, Jaclyn Johnson, Seong-Young Lee, Jeffrey Naber, Michigan Technological Univ; Sam Barros
2:40 p.m.	2013-01-0256	LP EGR and IGR Compromise on a GDI Engine at Middle Load Guillaume Bourhis, Jonathan Chauvin, Xavier Gautrot, Loic de Francqueville, IFP Energies nouvelles
3:00 p.m.	2013-01-0258	Advanced GDI Injector Control with Extended Dynamic Range Marco Parotto, Stefano Sgatti, Fabio Sensi, Magneti Marelli SpA Powertrain Division
3:20 p.m.	2013-01-0253	Development of a Low-Noise High Pressure Fuel Pump for GDI Engine Applications Joseph G. Spakowski, Timothy D. Spegar, Delphi Automotive; Luca Mancini, Magneti Marelli

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

Tuesday, April 16

Multi-Dimensional Engine Modeling (Part 1 of 4)

Session Code: PFL209

Room W2-64

Session Time: 9:30 a.m.

The spectrum of papers solicited 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 - Hardo Barths, General Motors LLC; Sarah Diakhaby, Computational Dynamics, Ltd.; Allen David Gosman, CD-adapco; Carl Hergart, Caterpillar Inc.

Time	Paper No.	Title
9:30 a.m.	2013-01-1083	An Investigation of Grid Convergence for Spray Simulations using an LES Turbulence Model P. K. Senecal, E. Pomraning, K. J. Richards, Convergent Science Inc.; S. Som, Argonne National Laboratory
9:50 a.m.	2013-01-1087	A Comprehensive Model to Predict the Initial Stage of Combustion in SI Engines Tommaso Lucchini, Luca Cornolti, Gianluca Montenegro, Gianluca D'Errico, Marco Fiocco, Politecnico di Milano; Atsushi Teraji, Taisuke Shiraishi, Nissan
10:10 a.m.	2013-01-1090	Correlating Measured Combustion Performance with CFD Predicted In-Cylinder Flows for a Spark-Ignition Direct-Injection (SIDI) Engine with Enhanced Charge Motion Ronald O. Grover, Jr., David Cleary, General Motors Company
10:30 a.m.	2013-01-1103	Comparison of PFI and DI Operation in a Downsized Gasoline Engine Vincent Knop, Eddie Essayem, IFP Energies nouvelles

10:50 a.m. 2013-01-1109 Super-Knock Prediction Using a Refined Theory of Turbulence

Norbert Peters, Bruno Kerschgens, RWTH Aachen University, Germany;
Günther Paczko, Advanced Combustion GmbH.

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Tuesday, April 16

High Efficiency IC Engines (Part 1 of 3)

Session Code: **PFL216**

Room W2-64

Session Time: **1:00 p.m.**

This session focuses on technologies such as advanced and partially mixed combustion, cooled EGR boosting, ignition and direct injection technologies, pressure boosting, intelligent combustion, thermal efficiency including waste heat recovery, fully variable valvetrains, and other new and developing technologies.

Organizers - Sangsuk Lee, Caterpillar Tech. Center; Gerald Micklow, Florida Institute of Technology; Robert Gary Prucka, Clemson Univ.; David B. Roth, BorgWarner Inc.; James P. Szybist, Oak Ridge National Laboratory; Bengt Johansson, Lund University

Chairpersons - Bengt Johansson, Lund University

Time	Paper No.	Title
1:00 p.m.	2013-01-0277	Close to Stoichiometric Partially Premixed Combustion -The Benefit of Ethanol in Comparison to Conventional Fuels Mengqin Shen, Martin Tuner, Bengt Johansson, Lund University
1:20 p.m.	2013-01-0272	Part-Load Operation of Gasoline Direct-Injection Compression Ignition (GDCI) Engine Mark C. Sellnau, James Sinnamon, Kevin Hoyer, Junghwan Kim, Marilou Cavotta, Harry Husted, Delphi Powertrain
1:40 p.m.	2013-01-0263	Efficiency and Emissions performance of Multizone Stratified Compression Ignition Using Different Octane Fuels Stephen Ciatti, Michael Johnson, Argonne National Laboratory; Bishwadipa Das Adhikary, Rolf Reitz, University of Wisconsin Madison; Aaron Knock, Columbia University
2:00 p.m.	2013-01-0281	Experimental Investigation on different Injection Strategies for Ethanol Partially Premixed Combustion Mehrzad Kaiadi, Bengt Johansson, Marcus Lundgren, Lund University; John A. Gaynor, Scania CV AB
2:20 p.m.	2013-01-0269	Sensitivity Analysis Study on Ethanol Partially Premixed Combustion Mehrzad Kaiadi, Bengt Johansson, Marcus Lundgren, Lund University; John A. Gaynor, Scania CV AB
2:40 p.m.	2013-01-0267	Vehicle Demonstration of Naphtha Fuel Achieving Both High Efficiency and Drivability with EURO6 Engine-Out NOx Emission Junseok Chang, Gautam Kalghatgi, Amer Amer, Saudi Aramco; Philipp Adomeit, Hans Rohs, FEV GmbH; Benedikt Heuser, Institute for Combustion Engines, RWTH Aachen University
3:00 p.m.	2013-01-0268	Potential ESC Performance of a Multi-Cylinder Heavy Duty PPC Truck Engine: System Simulations based on Single Cylinder Experiments Martin Tuner, Lund University

3:20 p.m. **2013-01-0278** **Exploring the Pathway to High Efficiency IC Engines through Exergy Analysis of Heat Transfer Reduction**
Bernard Johnson, Chris Edwards, Stanford University

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Tuesday, April 16

Mixing-Controlled CI Combustion (Part 1 of 3) Emissions and Efficiency for Conventional and Low-Temperature Combustion

Session Code: **PFL204**

Room W2-65

Session Time: **9:30 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 - *Jose M Garcia, Universidad Politecnica de Valencia; Song-Chang Kong, Iowa State University; Budhadeb Mahakul, DEERE & CO; Robert McDavid, Caterpillar Inc.; Mark Musculus, Sandia National Laboratories; Raul Payri, Universidad Politecnica de Valencia; Stefan Simescu, Southwest Research Institute; Dale R. Tree, Brigham Young Univ.; Rishikesh Venugopal, Achates Power Inc.; John F. Wright, Cummins Inc.; Yong Yi, Caterpillar Inc.; Ming Zheng, Univ. of Windsor*

Chairpersons - *Rishikesh Venugopal, Achates Power Inc; Raul Payri, Universidad Politecnica de Valencia*

Time	Paper No.	Title
9:30 a.m.	2013-01-0914	Effects of Mixing and Chemical Parameters on Homogeneous Charge Induced Ignition Combustion Based on a Light-Duty Diesel Engine with Ultra-Low NOx and Soot Emissions and High Thermal Efficiency <i>Wenbin Yu, Zhiqiang Kang, Wei Guo, Jichun Liu, Weibo Zhao, Zhiyong Zhang, Haipeng Lai, Feng Bian, Wei Qu, Qingdang Wang, Dingwei Gao, Chunhui Zhang, Great Wall Motor Engine R&D Center; Jianxin Wang, Chao Yu, Tsinghua University, China</i>
9:50 a.m.	2013-01-0895	Effects of Charge Density and Oxygen Concentration on Combustion Process: Efficiency and Emissions in a High Load Operation Diesel Engine <i>Yingying Lu, Wenbin Yu, Yiqiang Pei, Wanhua Su, State Key Laboratory of Engines, Tianjin</i>
10:10 a.m.	2013-01-0894	The Potential of Fuel Metering Control for Optimising Unburned Hydrocarbon Emissions in Diesel Low Temperature Combustion <i>Oluwasajibomi M. Sogbesan, Martin H. Davy, Colin P. Garner, Loughborough University</i>
10:30 a.m.	2013-01-0897	Studies on the Impact of 300 MPa Injection Pressure on Engine Performance, Gaseous and Particulate Emissions <i>Krishna Natti, Abhimanyu Sinha, Christian Hoerter, Per Andersson, Ricardo Inc.; Jon Andersson, Ricardo UK; Craig Lohmann, Drew Schultz, Nam Hyo Cho, Richard Winsor, John Deere Power Systems</i>
10:50 a.m.	2013-01-0917	Post Injections for Soot Reduction in Diesel Engines: A Review of Current Understanding <i>Jacqueline O'Connor, Mark Musculus, Sandia National Laboratories</i>

11:10 a.m. 2013-01-0909 *Reexamination of Multiple Fuel Injections for Improving the Thermal Efficiency of a Heavy-Duty Diesel Engine*
Hideaki Osada, Noboru Uchida, Kazuaki Shimada, Yuzo Aoyagi, New Ace Inst. Co., Ltd.

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

Tuesday, April 16

Mixing-Controlled CI Combustion (Part 2 of 3) In-Cylinder Processes

Session Code: **PFL204**

Room W2-65

Session Time: **1:00 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 - *Jose M Garcia, Universidad Politecnica de Valencia; Song-Charnng Kong, Iowa State University; Budhadeb Mahakul, DEERE & CO; Robert McDavid, Caterpillar Inc.; Mark Musculus, SANDIA NATIONAL LABORATORY; Raul Payri, Universidad Politecnica de Valencia; Stefan Simescu, Southwest Research Institute; Dale R. Tree, Brigham Young Univ.; Rishikesh Venugopal, Achates Power Inc.; John F. Wright, Cummins Inc.; Yong Yi, Caterpillar Inc.; Ming Zheng, Univ. of Windsor*

Chairpersons - *Mark Musculus, Sandia National Laboratories; Qingang Xiong, Iowa State University*

Time	Paper No.	Title
1:00 p.m.	2013-01-0901	<i>Study of Soot Formation and Oxidation in the Engine Combustion Network (ECN), Spray A: Effects of Ambient Temperature and Oxygen Concentration</i> <i>Emre Cenker, IFP Energies nouvelles; Gilles Bruneaux, IFP Energies nouvelles; Lyle Pickett, Sandia National Laboratories; Christof Schulz, IVG, University of Duisburg-Essen</i>
1:20 p.m.	2013-01-0908	<i>Uncertainty in Sampling and TEM Analysis of Soot Particles in Diesel Spray Flame</i> <i>Katsufumi Kondo, Tetsuya Aizawa, Meiji Univ.; Sanghoon Kook, The University of New South Wales; Lyle Pickett, Sandia National Laboratories</i>
1:40 p.m.	2013-01-0912	<i>In-Flame Soot Sampling and Particle Analysis in a Diesel Engine</i> <i>Sanghoon Kook, Renlin Zhang, Kevin Szeto, The University of New South Wales; Lyle M. Pickett, Sandia National Laboratories; Tetsuya Aizawa, Meiji University</i>
2:00 p.m.	2013-01-0899	<i>Visualization and Heat Release Analysis of Premixed Diesel Combustion with Various Fuel Ignitabilities and Oxygen Concentrations in a Constant Volume Combustion Vessel</i> <i>Hideyuki Ogawa, Gen Shibata, Xueming Jin, Hokkaido Univ.; Toshiyuki Hirose, COSMO Oil Co., Ltd.; Naoki Kono, Japan Petroleum Energy Center</i>
2:20 p.m.	2013-01-0910	<i>Optical Investigation of the Reduction of Unburned Hydrocarbons Using Close-Coupled Post Injections at LTC Conditions in a Heavy-Duty Diesel Engine</i> <i>Jacqueline O'Connor, Mark Musculus, Sandia National Laboratories</i>

2:40 p.m.	2013-01-0906	<i>Diesel Knock Visualization and Frequency Analysis of Premixed Charge Compression Ignition Combustion with a Narrow Injection Angle</i> Stephen Sungsan Park, Yongjin Jung, Choongsik Bae, Korea Advanced Inst. of Science & Tech.
3:00 p.m.	2013-01-0907	<i>Air-Assisted Direct Injection Diesel Investigations</i> Chad Koci, Radu Florea, Sudhakar Das, Mark Walls, Stefan Simescu, Charles Roberts, Southwest Research Institute
3:20 p.m.	2013-01-0913	<i>Swirl and Injection Pressure Impact on After-Oxidation in Diesel Combustion, Examined with Simultaneous Combustion Image Velocimetry and Two Colour Optical Method</i> Henrik Dembinski, Scania CV AB; Hans-Erik Angstrom, Royal Institute of Technology

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Tuesday, April 16

Alternative and Advanced Fuels (Part 1 of 3) Other Alternative Fuels

Session Code: PFL215

Room W2-66

Session Time: 9:30 a.m.

This session focuses on the fundamental properties of fuels and methods for measuring these properties, as well as issues related to fuel storage and transportation. Examples include diesel fuel lubricity determination, fuel effects on deposits, cold weather issues, and environmental and toxicological impacts of new fuels

Organizers - William P Attard, MAHLE Powertrain LLC; Barbara Goodrich, John Deere Product Engineering Center; George Karavalakis, University of California, Riverside; James Lyons, Sierra Research Inc.; Elisa Toulson, Michigan State Univ.

Chairpersons - Elisa Toulson, Michigan State University

Time	Paper No.	Title
9:30 a.m.	2013-01-1135	<i>Alternative Diesel Fuel Combustion Acceptance Criteria for New Fuels in Legacy Diesel Engines</i> Jim Cowart, Len Hamilton, US Naval Academy; Sherry Williams, Andrew McDaniel, US Navy
9:50 a.m.	ORAL ONLY	<i>Developing Direct Injection Systems to Use Ammonia in Spark Ignition Engine</i> George Zacharakis-Jutz, Song-Chang Kong, Iowa State University
10:10 a.m.	2013-01-1133	<i>Effects of Fuel Compositions on Diesel Engine Performance Using Ammonia-DME Mixtures</i> Kyung Hyun Ryu, Kunsan National University; George Zacharakis-Jutz, Song-Chang Kong, Iowa State University
10:30 a.m.	2013-01-1137	<i>Influence of Different Natural Gas Compositions on the Regulated Emissions, Aldehydes, and Particle Emissions from a Transit Bus</i> George Karavalakis, Nicholas Gysel, Maryam Hajbabaei, Thomas Durbin, Kent Johnson, Wayne Miller, University of California, Riverside
10:50 a.m.	2013-01-1146	<i>Study on Ignition Delay Times of DME and n-Butane Blends</i> Erjiang Hu, Zuohua Huang, Xue Jiang, Jiaxiang Zhang, Xi'an Jiaotong University

- 2013-01-1151** **Using Mix of Gasoline and Liquefied Petroleum Gas for Lower Emissions and Greater Torque (Written Only -- No Oral Presentation)**
Max Beresnev, Alex Beresnev, Southern Federal University, Russia
- 2013-01-1152** **Design of DME-Diesel Fuel Supply System for Non-Gasification (Written Only -- No Oral Presentation)**
Jian Dong, Wuhan Univ. of Technology; Qingchuan Pan, Zhixiang Pan, Dong Yang, Wuhan University of Technology (WUT)

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00354, SUB-TP-00009 and SL TP-00010, and also individually. To purchase visit collections.sae.org

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Tuesday, April 16

Alternative and Advanced Fuels (Part 2 of 3) Alcohol

Session Code: **PFL215**

Room W2-66

Session Time: **1:00 p.m.**

This session focuses on the fundamental properties of fuels and methods for measuring these properties, as well as issues related to fuel storage and transportation. Examples include diesel fuel lubricity determination, fuel effects on deposits, cold weather issues, and environmental and toxicological impacts of new fuels

Organizers - William P Attard, MAHLE Powertrain LLC; Barbara Goodrich, John Deere Product Engineering Center; George Karavalakis, University of California, Riverside; James Lyons, Sierra Research Inc.; Elisa Toulson, Michigan State Univ.

Chairpersons - Barbara Goodrich, John Deere Product Engineering Center

Time	Paper No.	Title
1:00 p.m.	2013-01-1147	Criteria Emissions, Particle Number Emissions, Size Distributions, and Black Carbon Measurements from PFI Gasoline Vehicles Fuelled with Different Ethanol and Butanol Blends George Karavalakis, University of California, Riverside; Daniel Short, Maryam Hajbabaei, Diep Vu, Mark Villela, Robert Russell, Thomas Durbin, Akua Asa-Awuku, University of California, Riverside
1:20 p.m.	2013-01-1144	Blend Ratio Optimization of Fuels Containing Gasoline Blendstock, Ethanol, and Higher Alcohols (C3-C6): Part I - Methodology and Scenario Definition Kristina Lawyer, Michigan Technological University; Andrew Ickes, Thomas Wallner, Argonne National Laboratory; David Ertl, Rodney Williamson, Iowa Corn Promotion Board; Scott Miers, Jeffrey Naber, Michigan Technological University
1:40 p.m.	2013-01-1126	Blend Ratio Optimization of Fuels Containing Gasoline Blendstock, Ethanol, and Higher Alcohols (C3-C6): Part II - Blend Properties and Target Value Sensitivity Kristina Lawyer, Michigan Technological University; Andrew Ickes, Thomas Wallner, Argonne National Laboratory; David Ertl, Rodney Williamson, Iowa Corn Promotion Board; Scott Miers, Jeffrey Naber, Michigan Technological University
2:00 p.m.	2013-01-1132	Performance Evaluation and Emission Studies of a Single Cylinder Diesel Engine Fuelled with Isopropyl Alcohol and Diesel Ashish Kumar Singh, Chinmaya Mishra, Vipul Vibhanshu, M.Tech (Thermal Engineering); Naveen Kumar, Professor, DTU, Delhi

2:20 p.m.	2013-01-1129	Direct Visualization of Combustion in an E85-Fueled DISI Engine under Various Operation Conditions PO-I Lee, Nick Polcyn, Ming-Chia Lai, Wayne State University
2:40 p.m.	2013-01-1141	Investigation of Direct-Injected Ethanol and Diesel Fuel Blends on Gaseous and Particulate Emissions in a Medium-Duty Diesel Engine Tim A. Nevius, Dario Rauker, Scott T. Porter, Horiba Automotive Test Systems
3:00 p.m.	2013-01-1149	The Impact of Cellulosic Ethanol on the Performance and Emissions of a Circle Track Race Car Forrest Jehlik, Argonne National Laboratory; Daniel Bocci, Copia Advance Solutions
3:20 p.m.	ORAL ONLY	High Temperature Ignition Delay Times of Iso-Pentanol Chenglong Tang; Zuohua Huang, Xian Jiaotong Univ

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Tuesday, April 16

Chat with the Expert: Propane Autogas & The Other Gaseous Fuel

Session Code: PFLCHAT240

Room W2-66

Session Time: 4:00 p.m.

Keynote Speakers - Alan McEwan, Propane Education & Research Council

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

Tuesday, April 16

CI & SI Power Cylinder Systems

Session Code: PFL502

Room W2-67

Session Time: 9:30 a.m.

This session covers topics regarding the Power Cylinder (piston, piston rings, piston pins, connecting rods). The papers include information on how to reduce friction and improve fuel economy, how to improve durability by understanding wear, and how to improve oil consumption and blow-by.

Organizers - Yong-Ching Chen, Dwight Doig, Dan Richardson, Cummins Inc.

Time	Paper No.	Title
9:30 a.m.	2013-01-0292	Benefits of Thermal Spray Coatings in Internal Combustion Engines, with Specific View on Friction Reduction and Thermal Management Urban Morawitz, Jan Mehring, Ford Werke GmbH; Leander Schramm, KS Aluminium-Technologie GmbH
9:50 a.m.	2013-01-0293	A Non-Linear Finite Element Approach Applied to Diesel Piston Combustion Bowl Rim Strength Assessment William Morgan, Morgan Design Analysis, Ltd.; Simon Barnes, SB2 Metallurgical Services; Kwan Ho Ryu, Dong Yang Piston Co Ltd; Sanghyuk Jun, Wooseok Shim, Dong Yang Piston Co. Ltd.

10:10 a.m.	2013-01-0294	Measuring Lubricant Films at the Piston-Cylinder Contact: An Overview of Current Technologies with Focus on Ultrasound <i>Robin Mills, Emin Yusuf Avan, Rob Dwyer-Joyce, The University of Sheffield</i>
10:30 a.m.	2013-01-0295	Projection Behavior of Piston Rings in Cylinder Ports of a Two-Stroke Cycle Engine <i>Kohei Nakashima, Yoshio Murakami, Masago Yamamoto, Soichi Ishihara, Meijo Univ.</i>
	2013-01-0296	Effect of Design Features on Dynamic Characteristics of VCC Piston for I. C. Engine (Written Only -- No Oral Presentation) <i>Jian Dong, Lin Ouyang, Yue Zhou, Yuhai He, Qingchuan Pan, Wuhan Univ of Technology</i>

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Tuesday, April 16

Small Engine Technology

Session Code: PFL503

Room W2-67

Session Time: 10:50 a.m.

In this session, papers regarding research and development on small engine technology will be included. Topics will possibly consist of combustion, emission, control, NVH, etc.

Organizers - David Masser, Ford Motor Co.; Robert Kee, Queen's University Belfast

Time	Paper No.	Title
10:50 a.m.	2013-01-0583	Air Assisted Direct Cylinder Barrel Injection of Gasoline in a Two-Stroke S.I. Engine <i>Ciju Paul, Indian Space Research Organisation; Pradeep V, A Ramesh, Indian Institute of Technology Madras</i>
11:10 a.m.	2013-01-0584	Boost Port Injection of LPG in a Two - Stroke SI Engine for Reduction in HC Emissions <i>Pradeep V, Varuna Narasimhan J, Shamit Bakshi, A Ramesh, Indian Institute of Technology Madras</i>
	2013-01-0585	Control Strategy Research of Engine Smart Start/Stop System for a Micro Car (Written Only -- No Oral Presentation) <i>Hanyu Chen, Chengji Zuo, Hefei University of Technology; Yinnan Yuan, Nantong University</i>

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Tuesday, April 16

Multi-Dimensional Engine Modeling (Part 2 of 4)

Session Code: PFL209

Room W2-67

Session Time: 1:00 p.m.

The spectrum of papers solicited 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 - *Hardo Barths, General Motors LLC; Sarah Diakhaby, Computational Dynamics, Ltd.; Allen David Gosman, CD-adapco; Carl Hergart, Caterpillar Inc.*

Time	Paper No.	Title
1:00 p.m.	2013-01-1080	LES Multi-cycle Analysis of a High Performance GDI Engine <i>Stefano Fontanesi, Stefano Paltrinieri, Univ of Modena and Reggio Emilia; Alessandro Tiberi, Ferrari SpA; Alessandro D'Adamo, Univ of Modena and Reggio Emilia</i>
1:20 p.m.	2013-01-1082	Knock Tendency Prediction in a High Performance Engine Using LES and Tabulated Chemistry <i>Stefano Fontanesi, Stefano Paltrinieri, Alessandro D'Adamo, Giuseppe Cantore, Univ of Modena and Reggio Emilia; Christopher Rutland, Univ of Wisconsin Madison</i>
1:40 p.m.	2013-01-1084	LES Simulation of Flame Propagation in a Direct-Injection SI-Engine to Identify the Causes of Cycle-to-Cycle Combustion Variations <i>Reinhard Tatschl, Michael Bogensperger, Zoran Pavlovic, Peter Priesching, Henrik Schuemie, AVL List GmbH; Oldrich Vitek, Jan Macek, Czech Technical University</i>
2:00 p.m.	2013-01-1086	Large Eddy Simulation of Premixed Combustion in Spark Ignited Engines Using a Dynamic Flame Surface Density Model <i>Chathura Ranasinghe, Weeratunge Malalasekera, Andrew Clarke, Loughborough University</i>
2:20 p.m.	2013-01-1096	Towards the LES Simulation of IC Engines with Parallel Topologically Changing Meshes <i>Federico Piscaglia, Andrea Montorfano, Angelo Onorati, Politecnico di Milano</i>
2:40 p.m.	2013-01-1097	Improved Engine Wall Models for Large Eddy Simulation (LES) <i>Chalearnpol Plengsaard, Christopher Rutland, Univ of Wisconsin Madison</i>
3:00 p.m.	2013-01-1101	Large Eddy Simulation of Evaporating Spray with a Stochastic Breakup Model <i>Abolfazl Irannejad, Farhad Jaber, Michigan State University</i>
	2013-01-1111	Mixing Effects of Early Injection in Diesel Spray Using LES Model with Different Subgrid Scale Models (Written Only -- No Oral Presentation) <i>Lei Zhou, Tsinghua University; MaoZhao Xie, Dalian University of Technology; Kai Hong Luo, University of Southampton; Ming Jia, Dalian University of Technology; Qiang Zhou, FAW JIEFANG Qingdao Auto Factory; Hong Liu, Dalian University of Technology</i>

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Tuesday, April 16

Driveline and Crankcase

Session Code: *PFL506*

Room W2-68

Session Time: *9:30 a.m.*

The industry continues to work on understanding the interaction of lubricating fluids with engine hardware in order to improve vehicle efficiency, durability, and performance. The Engine Lubricants Session presents a variety of papers dealing with advances in engine oils and their relationship to improved hardware performance.

Organizers - Siddhartha Asthana, Chem-Trend Inc.; Ewa Alice Bardasz, Chris McFadden, Lubrizol Corp.; Timothy P. Newcomb, BorgWarner Inc.; Richard Vickerman, Lubrizol Corp.

Time	Paper No.	Title
9:30 a.m.	2013-01-0298	Lubricants for (Hybrid) Electric Transmissions Tom Hong-Zhi Tang, Mark Devlin, Naresh Mathur, Timothy Henly, Lee Saathoff, Afton Chemical Corp.
9:50 a.m.	2013-01-0297	Correlation of the Sequence VID Laboratory Fuel Economy Test to Real World Fuel Economy Improvements Gregory Guinther, Afton Chemical Corp.; Jeremy Styer, Afton Chemical Corporation
10:30 a.m.	2013-01-0330	Development of Long Haul Heavy Duty Vehicle Real World Fuel Economy Measurement Technique Wayne Moore, Mike Sutton, Kieron Donnelly, Lubrizol Ltd
10:50 a.m.	2013-01-0331	The Effect of Low Viscosity Oil on the Wear, Friction and Fuel Consumption of a Heavy Duty Truck Engine Phil Carden, Carl Pisani, Jon Andersson, Ricardo UK Ltd; Ian Field, Emmanuel Lainé, Infineum UK Ltd; Jai Bansal, Maryann Devine, Infineum USA LP
11:10 a.m.	2013-01-0332	Determination of Fuel Contamination in Lubricant Oil Through Gravimetric Method Kamilla de Lima Ribeiro, Fernanda Oliveira Silva, Caterina Elena De Santis, Akira Luiz Nakamura, Fiat Brasil
	2013-01-0299	Impact of Viscosity Modifiers on Gear Oil Efficiency and Durability: Part II (Written Only -- No Oral Presentation) William Barton, Lubrizol, Ltd.; Daniel Jason Knapton, Mark Baker, Lubrizol Corp.; Andrew Rose, Lubrizol, Ltd.; Elizabeth A. Schiferl, Lubrizol Corp.; Michael Huston, Lubrizol Corporation; Gareth Brown, Lubrizol, Ltd.; Gregory Hunt, The Lubrizol Corporation

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Tuesday, April 16

Panel - Fuels & Lubricants Council Open Forum -- The Next General of Passenger Car Engine Oil, ILSAC GF-6

Session Code: PFL510

Room W2-68

Session Time: 1:00 p.m.

Organizers - Ron Romano, Ford Motor Co.

Panelists - Martin O. Birze, Lubrizol of Canada, Ltd.; Galen Greene, BASF; Gregory Guinther, Afton Chemical Corp.; Peter M. Lee, Southwest Research Institute; Glenn Mazzamaro, RT Vanderbilt Co.; Charles E. Richardson, Ford Motor Co.; Angela Willis, General Motors LLC;

Tuesday, April 16

Chat with the Experts: Communicating Lubricant and Hardware requirements, limitations and mutual performance expectations; Are we getting our specifications right?

Session Code: PFLCHAT520

4:00 p.m.

Room W2-68

Session Time:

The session will focus on evaluating transmission fluid copper corrosion and seal compatibility. I am hoping that this conversation will provide some direction for better understanding of actual fluid requirements and limitations, and perhaps provide some suggestions for dealing with different performance expectations of fluids and hardware.

Organizers - Timothy P. Newcomb, BorgWarner Inc.

Panelists - Christopher S. Cleveland, Afton Chemical Corp.; William David Haynes, BorgWarner Inc.; Martin Theil, BP Europa SE; Chintan Ved, Ford Motor Co.; Richard Vickerman, Lubrizol Corp.; Francis J. Walker, Freudenberg-NOK Sealing Technologies;

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Tuesday, April 16

Engine Flows and Combustion Diagnostics (Part 1 of 2)

Session Code: PFL212

Room W2-69

Session Time: 9:30 a.m.

This session focuses on applying various sensors and diagnostics 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 - Oivind Andersson, Lund Univ.; Matthew J. Hall, Univ. of Texas-Austin; Benjamin Petersen, Sandia National Laboratories

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
9:30 a.m.	2013-01-0561	<i>An Experimental Study of Gaseous Transverse Injection and Mixing Process in a Simulated Engine Intake Port</i> <i>Hua Wang, Lucio Araneo, Aldo Coghe, Politecnico di Milano</i>
9:50 a.m.	2013-01-0562	<i>Simultaneous Measurements of In-Cylinder Temperature and Velocity Distribution in a Small-Bore Diesel Engine Using Thermographic Phosphors</i> <i>Nicholas James Neal, Jonny Jordan, David Rothamer, University of Wisconsin-Madison</i>
10:10 a.m.	2013-01-0567	<i>High Resolution In-Cylinder Scalar Field Measurements during the Compression and Expansion Strokes</i> <i>Yizhou Zhang, University of Wisconsin-Madison; David Jesch, Budapest University of Technology; Jason Oakley, Jaal Ghandhi, University of Wisconsin-Madison</i>
10:30 a.m.	2013-01-0542	<i>High-Speed Particle Image Velocimetry Study of In-Cylinder Flows with Improved Dynamic Range</i> <i>Preeti Abraham, David Reuss, Volker Sick, University of Michigan</i>
10:50 a.m.	2013-01-0563	<i>Investigations of Spray-Induced Vortex Structures during Multiple Injections of a DISI Engine in Stratified Operation Using High-Speed-PIV</i> <i>Christian Disch, Heiko Kubach, Ulrich Spicher, Karlsruhe Institute of Technology (KIT); Jürgen Pfeil, MOT GmbH; Frank Altenschmidt, Uwe Schaupp, Daimler AG</i>

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Tuesday, April 16

Engine Flows and Combustion Diagnostics (Part 2 of 2)

Session Code: PFL212

Room W2-69

Session Time: 1:00 p.m.

This session focuses on applying various sensors and diagnostics 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 - Oivind Andersson, Lund Univ.; Matthew J. Hall, Univ. of Texas-Austin; Benjamin Petersen, Ford Motor Company

Time	Paper No.	Title
1:00 p.m.	2013-01-0556	2-D Internal EGR Distribution Measurements in an Engine by Laser-Induced Fluorescence Kenji Fukui, Taketoshi Fujikawa, Mamoru Tohyama, Yoshiaki Hattori, Kazuhiro Akiham, Toyota Central R&D Labs Inc
1:20 p.m.	2013-01-0558	Investigation of the Interaction of Charge Motion and Residual Gas Concentration in an Optically Accessible SI Engine Thomas Mederer, Michael Wensing, Alfred Leipertz, LTT & SAOT Erlangen
1:40 p.m.	2013-01-0544	Experimental Study on the Characteristics of Knock under DI-HCCI Combustion Mode with Ethanol/Gasoline Mixed Fuel Yintong Liu, Xian Shi, Jun Deng, Yulin Chen, Minzhang Hu, Liguang Li, Tongji Univ
2:00 p.m.	2013-01-0545	Cycle-by-Cycle Soot Estimation in Diesel Engines Tamer Badawy, Wayne State Univ; Fadi Estefanous; Naeim Henein, Wayne State Univ
2:20 p.m.	2013-01-0555	Cycle Resolved In-Cylinder NOx and Ion Current Measurements in a Diesel Engine Fadi Adly Anis Estefanous; Tamer Badawy, Naeim Henein, Wayne State Univ
	2013-01-0565	Establishment of a Database by Conducting Intake Manifold and In-Cylinder Flow Measurements inside an Internal Combustion Engine Assembly (Written Only -- No Oral Presentation) Mayank Mittal, Harold Schock, Ravi Vedula, Ahmed Naguib, Michigan State University

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Tuesday, April 16

Combustion Control and Optimization (Part 1 of 3)

Session Code: PFL303

Room W2-70

Session Time: 9:30 a.m.

This session covers engine combustion control and optimization techniques related to achieving stringent market fuel economy, emissions, and performance. Related topics include engine combustion diagnostics, control, optimization, related combustion sensing, etc.

Organizers - Nilabh Srivastava, Univ. of North Carolina; Elisa Toulson, Michigan State Univ.; Yue-Yun Wang, General Motors; Fengjun Yan, McMaster Univ.; Xiaojian Yang, Delphi Corporation; Guoming G. Zhu, Michigan State Univ.

Time	Paper No.	Title
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9:30 a.m.	2013-01-0306	Fuel and Immission Potential of Context Aware Engine Control <i>Benjamin Pla, Universidad Politecnica de Valencia; Harald Waschl, Luigi del Re, Johannes Kepler University Linz; Carlos Guardiola, Universidad Politecnica de Valencia</i>
9:50 a.m.	2013-01-0309	Effects of Direct-Current (DC) Electric Fields on Flame Propagation and Combustion Characteristics of Lean Premixed $CH_4/O_2/N_2$ Flames <i>Xiangwen Meng, Xiaomin Wu, Jie Liu, Chan Kang, Xing Yang, Zhongquan Gao, Xi'an Jiaotong University, Xi'an, China</i>
10:10 a.m.	2013-01-0311	Effect of Air Filter Condition on Diesel Vehicle Fuel Economy <i>John Thomas, Brian West, Shean Huff, Oak Ridge National Laboratory</i>
10:30 a.m.	2013-01-0320	Control of Fuel Octane for Knock Mitigation on a Dual-Fuel Spark-Ignition Engine <i>Jacob Baranski, Eric Anderson, Keith Grinstead, John Hoke, Innovative Scientific Solutions Inc.; Paul Litke, Air Force Research Laboratory</i>
10:50 a.m.	2013-01-0323	Investigation of Robustness Control for Practical Use of Gasoline HCCI Engine <i>Kenichiro Ogata, Hitachi, Ltd.</i>
11:10 a.m.	2013-01-0325	Reduction of Cycle-by-Cycle Variations and Extension of Lean Limit of Operation in a Small Single Cylinder Gasoline Engine through Valve Timing Changes <i>Karunaharan Vythilingam, V Lakshminarasimhan, TVS Motor Co., India; A Ramesh, Indian Institute of Technology Madras</i>

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

Tuesday, April 16

Combustion Control and Optimization (Part 2 of 3)

Session Code: PFL303

Room W2-70

Session Time: 1:00 p.m.

This session covers engine combustion control and optimization techniques related to achieving stringent market fuel economy, emissions, and performance. Related topics include engine combustion diagnostics, control, optimization, related combustion sensing, etc.

Organizers - Nilabh Srivastava, Univ. of North Carolina; Elisa Toulson, Michigan State Univ.; Yue-Yun Wang, General Motors; Fengjun Yan, McMaster Univ.; Xiaojian Yang, Delphi Automotive; Guoming G. Zhu, Michigan State Univ.

Time	Paper No.	Title
1:00 p.m.	2013-01-0310	Development of a New 2.0-Liter Fuel-Efficient Diesel Engine <i>Junji chisaki, Kazuya Yoshijima, Takashi Kikuchi, Shoichiro Morinaka, Kenichi Yamada, Toyota Motor Corporation; Masaaki Okamoto, Tsutomu Oda, Keisuke Manabe, Toyota Industries Corporation</i>
1:20 p.m.	2013-01-0316	Optimization of Dual Loop EGR of a V6 3.0 Liter Diesel Engine for CO₂ Reduction <i>Haewook Lee, Chunghoon Jo, Seungsuk Yoon, Seyoung YI, Yangrae Kim, Jongik Jeon, Hyundai Motor Company</i>
1:40 p.m.	2013-01-0318	Disturbance Sources in the Diesel Engine Combustion Process <i>Zhijia Yang, Thomas Steffen, Richard Stobart, Loughborough Univ</i>

2:00 p.m.	2013-01-0321	Effect of Ultra-Cooled EGR and Retarded Injection Timing on Low Temperature Combustion in CI Engines <i>P. Brijesh, A. Chowdhury, S. Sreedhara, IIT Bombay, Mumbai-400 076, India</i>
2:20 p.m.	2013-01-0322	Study on Reduction of Diesel Engine Out Emission through Closed Loop Control based on the In-Cylinder Pressure with EGR Model <i>Seunghyun Lee, Jeongwoo Lee, Seungha Lee, Dongsu Kim, Yoonwoo Lee, Seoul National Univ; Seongeun Yu, Hyundai motor group; Hoimyoung Choi, Advanced Institutes of Convergence Tech</i>
2:40 p.m.	2013-01-0319	Numerical Study on Emission Characteristics of High-Pressure Dimethyl Ether (DME) under Different Engine Ambient Conditions <i>Khanh Cung; Meghraj Bhagat; Anqi Zhang; Seong-Young Lee, Michigan Technological Univ</i>
3:00 p.m.	2013-01-0315	Online Adjustment of Start of Injection and Fuel Rail Pressure Based on Combustion Process Parameters of Diesel Engine <i>Zhijia Yang, Richard Stobart, Edward Winward, Loughborough Univ</i>
3:20 p.m.	2013-01-0308	Virtual Performance and Emissions Mapping for Diesel Engine Design Optimization <i>Andrew Smallbone, Amit Bhave, Michael Hillman, cmcl innovations; Allan Saville, Caterpillar UK Engines Co Ltd.; Robert Mcdavid, Caterpillar Inc</i>
	2013-01-0327	Analysis of Multivariable Controller Designs for Closed-Loop Diesel Engine Air System Control (Written Only -- No Oral Presentation) <i>Daniel Humke, John Deere Power Systems</i>

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Wednesday, April 17

Take a Load Off: The Increasing Importance of Energy Load Management in Tomorrow's Powertrain Solutions

Session Code: ANN202

Room FEV Powertrain Innovation Forum **Session Time:** 9:45 a.m.

Demands on vehicle electrical architectures have skyrocketed as fuel efficiency targets have moved to the forefront in the automotive sector. Newer, mainstream automotive technologies such as steering-by-wire, brake-by-wire, variable valve trains, active suspensions, and heated catalysts, among others, are also placing dramatically greater demands on electrical systems. Powertrain developers are also being tasked with placing much more emphasis on the recovery and use of wasted mechanical and thermal energy as they consider technologies such as kinetic energy recover systems, better management of AC/heating energy use and the potential use of heat pumps to recover exhaust heat. These trends are not unique to just niche market vehicles, but are becoming mainstream considerations for larger volume products. Automotive engineers are being challenged like never before to increase energy efficiency and to efficiently recover waste energy. This session will provide a balanced OEM/supplier assessment of the emerging technologies we can expect to see that address this need.

Moderators - Joachim Wolschendorf, Vice President, FEV, Inc.

Panelists - Larry Laws, Lead CO2 Strategist, General Motors Company; Richard D. Smith, Vice President, Thermal Engineering, DENSO International America, Inc.; Nizar Trigui, Global Chief Engineering, Vehicle Energy Management, Ford Motor Company; Timothy White, Director Powertrain Application Engineering, Chrysler Group LLC;

Wednesday, April 17

Systems Engineering: Breaking Down the Walls to Develop a Better Solution

Session Code: ANN203

Room FEV Powertrain Innovation Forum Session Time: 1:00 p.m.

A majority of the engineering community's mindset is to approach solutions from a distinct single-track methodology. The goal of systems engineering is to approach solutions from multiple disciplines and perspectives to generate a solution as a whole. By breaking down the boundaries within specific organizations and working collaboratively to develop a solution that reduces time to market, reduces cost and improves efficiency and reliability. The greatest challenge is buy-in from all of the engineering departments to accept changes (and cost) for the greater good of the technology change.

Moderators - Gregory Fadler, Director Fuel Economy Center of Excellence, Navistar

Panelists - James Hentschel, Executive Director & Global Functional Leader, Global Advanced Development & Computer Aided Engineering, Global Engineering, General Motors Corporation; Thomas McCarthy, Chief Engineer, Research & Advanced Powertrain Engineering, Ford Motor Company; Guenther Raab, Director, Systems Engineering Group, Continental Automotive Systems US Inc.; Heribert Scherer, Director Testing, Powertrain Technology, ZF Friedrichshafen AG;

Wednesday, April 17

Keynote Address - George Whitesides

Session Code: ANN109

Room AVL Technology Leadership Center Session Time: 9:00 a.m.

Wednesday, April 17

CO2 Challenges - What are the Most Cost Effective Fuel Economy Solutions?

Session Code: ANN102

Room AVL Technology Leadership Center Session Time: 10:30 a.m.

Around the world, rapidly decreasing CO2 standards are just beginning to take effect. These standards and competition over fuel economy bragging rights will drive new technologies into the market representing big opportunities for innovators who can keep pace and roll out a string of hits. What are the future technology knobs that can be turned to improve CO2 of vehicles? How far should they be turned to achieve CO2 reductions most cost effectively? This panel will discuss their perspective on where, when, and why different solutions will emerge.

Moderators - Jeffrey C. Klei, President, NAFTA Region Continental North America

Panelists - Joseph Bakaj, Vice President, Powertrain Engineering, Ford Motor Company; Juergen J. Greiner, Executive Vice President, Product Development Powertrain Technology, ZF Friedrichshafen AG; Bob Lee, Vice President & Head of Engine Powertrain & Electrified Propulsion Systems Engineering, Chrysler Group LLC; Yasuyuki Sando, General Manager, Smart Mobility Development Division, Honda R&D Co., Ltd.; Makoto Yasuda, Vice President, Powertrain, Nissan Motor Company, Ltd.;

Wednesday, April 17

Advanced Propulsion - What are the New and Innovative Technologies that will be the "Game Changers"?

Session Code: ANN103

Room AVL Technology Leadership Center Session Time: 1:30 p.m.

With so many challenges in the area of propulsion for the future vehicles one must wonder what are the "Game Changers" that the industry will face? Certainly new technologies must be invented and introduced. This panel will examine what some of the key industry leaders believe some of these may be.

Moderators - Dimitri Kazarinoff, President, AVL Powertrain Engineering Inc.

Panelists - Guenter K. Fraidl, Senior Vice President Powertrain System Passenger Cars, AVL LIST GmbH; Michael Harpster, Director, Propulsion Systems Research Lab, GM Global Research & Development; David Johnson, CEO, Achates Power Inc.; Andreas Schamel, Director Global Powertrain Research & Advanced Engineering; Managing Director, European Ford Research Centre, Ford Motor Company; Christopher P.

Thomas, Vice President & Chief Technology Officer, BorgWarner Inc.; Hakan Yilmaz, Chief Engineer, Gasoline Systems, Robert Bosch LLC;

Wednesday, April 17

Design Tools/Digital Modeling/Rapid Prototyping

Session Code: B104

Room D0-02A

Session Time: 8:00 a.m.

The session focuses on the design of tools involved in manufacturing processes. Researchers and engineers involved in development in simulation and digital modeling of manufacturing process, innovative materials used and technology expediting the process in rapid prototyping are encouraged to participate. Studies in wear patterns, failure modes, extending life in modern tools, optimal layout of tools are also welcome.

Organizers - William J. Altenhof; Randy Gu, Oakland Univ.; Yun Lu, Chrysler Group LLC; Pilaka V. Murty, Gayatri Vidya Parishad College of Engine; Yu J. Teng, Chrysler Group LLC

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Technical Keynote: Driving Innovation - The Automobile Design Revolution Comes Down From The Cloud Gregg Nichols, Autodesk Inc.
8:40 a.m.	2013-01-0602	Controlling the Forming of Thermoplastics through Forming Power Patrick Girard, Zohir Benrabah, National Research Council Canada; Hicham Mir, Inergy Automotive Systems Research SA
9:00 a.m.	2013-01-0603	A Method for Precise Placement of Hose Models Mitchel Keil, Western Michigan Univ.; Jai Thomas, Caterpillar Inc.
9:20 a.m.	2013-01-0604	The Automatic Aerodynamic CFD Framework Employing Vehicle Specifications at the Concept Stage of Development Takashi Takiguchi, Kenta Ogawa, Hiroyuki Tateyama, Tatsuya Oda, Honda R&D Co.,Ltd.
	2013-01-0939	Modeling of Lithium-Ion Battery Management System and Regeneration Control Strategy for Hybrid Electric Vehicles (Written Only -- No Oral Presentation) Zhengshu Zhu, Michigan Technological Univ.

Planned by Body Engineering Committee / Automobile Body Activity

Wednesday, April 17

Wiper Systems

Session Code: B109

Room D0-02A

Session Time: 9:40 a.m.

Organizers - Randy Gu, Oakland Univ.; Yu J. Teng, Chrysler Group LLC; William J. Altenhof; Yun Lu, Chrysler Group LLC; Pilaka V. Murty, Gayatri Vidya Parishad College of Engine

Time	Paper No.	Title
9:40 a.m.	2013-01-0958	Development of Backlash-Less Reduction Structure Capable of Suppressing Wiper Reversing Sound Masayuki Shimoyama, Shoda Hirokazu, Kanda Satoshi, Ohashi Yasuo, Mitsuha Corp.

Planned by Body Engineering Committee / Automobile Body Activity

Wednesday, April 17

CAD/CAM/CAE Technology (Part 1 of 2)

Session Code: B101

Room D0-02A

Session Time: 10:20 a.m.

Organizers - Randy Gu, Oakland Univ.; Yun Lu, Yu J. Teng, Chrysler Group LLC; William J. Altenhof; Pilaka V. Murty, Gayatri Vidya Parishad College of Engine

Time	Paper No.	Title
10:20 a.m.	2013-01-1358	Full-Vehicle Model Development for Prediction of Fuel Consumption Paul Goossens, Maplesoft; Avesta Goodarzi, University of Waterloo
10:40 a.m.	2013-01-1371	Kinematic Modeling and Analysis of a Cam Based CVT Gregory Fitzpatrick Hickman, Randy Gu, Yin-Ping Chang, Oakland University
11:00 a.m.	2013-01-1376	Innovative Process-Integrated Measurements of Products and Parts - Patented Grid Application of Stereo Photography and Photogrammetry Christian-Andreas Schumann, West Saxon University of Zwickau; Egon MUELLER, Chemnitz University of Technology; Dieter Gerlach, Dimensional Technology International Inc; Claudia Tittmann, West Saxon University of Zwickau; Martin-Andreas Schumann, Chemnitz University of Technology
11:20 a.m.	2013-01-1363	Drag Coefficient Measurement, CFD Simulation and Validation of an Automotive Body Chris Friedl, Autodesk Australia Pty. Ltd.; Matthew Watts, RMIT University, Australia
	2013-01-1378	Estimation of Piston Assembly Friction by Finite Element Approach (Written Only -- No Oral Presentation) Ravindra R. Malagi, Gogte Institute of Tecnology ,Belgaum; Shivakant N. Kurbet, Basaveshwara Engg College; N. Gowrishenkar, India Piston Rings, Ltd.
	2013-01-1380	Development on Rapid Assembly System of Crash Safety CAE Modeling (Written Only -- No Oral Presentation) Hui TANG, Geely Engineering Inst.
	2013-01-1382	A Method for Locator Errors Compensation in the Fixture - Workpiece System (Written Only -- No Oral Presentation) S. Khodaygan, K. N. Toosi University of Technology

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Planned by Body Engineering Committee / Automobile Body Activity

Wednesday, April 17

CAD/CAM/CAE Technology (Part 2 of 2)

Session Code: B101

Room D0-02A

Session Time: 1:00 p.m.

Organizers - Randy Gu, Oakland Univ.; Yun Lu, Yu J. Teng, Chrysler Group LLC; William J. Altenhof; Pilaka V. Murty, Gayatri Vidya Parishad College of Engine

Time	Paper No.	Title
1:00 p.m.	2013-01-1375	Effects of Mesh Density on Finite Element Analysis Yucheng Liu, Gary Glass, Univ. of Louisiana
1:20 p.m.	2013-01-1369	An Experimental Study on Flow Pattern of Door Trim Speaker Grille Shape Heeseung Yang, HanilE-Wha; Hyunkwon Jo, Ikkeun Jang, Hyunmin Park, Sungyun Yoon, Heejoong KIM, Han Il E Hwa
1:40 p.m.	2013-01-1373	Development of Virtual Testing of EGR Coolant Rail Samaneh Arabi, Oluremi Ayotunde Olatunbosun, Mohammad Behrooz, Univ. of Birmingham
2:00 p.m.	2013-01-1374	Determination of Weld Nugget Size Using an Inverse Engineering Technique Randy Gu, Lianxiang Yang, Oakland University; Leonid Lev, General Motors Company; George Harmon, Chrysler Group LLC; Nan Xu, Xin Xie, Oakland University
2:20 p.m.	2013-01-1370	Buckling of Structures Subject to Multiple Forces Wenjing Wang, Beijing Jiaotong University; Randy Gu, Oakland Univ.; Cen Li, Beijing Jiaotong University; Lianxiang Yang, Oakland University
2:40 p.m.	2013-01-1367	A Study on Durability of Bonded Piston Seals Considering Forming Process Yuki Takao, Kazuki Takeno, NOK Corporation
3:20 p.m.	2013-01-1361	Theoretical Evaluation and Finite Element Analysis of Commercial Truck Chassis Assembly Sathish Kumar P, Balakrishnan M, Ashok Leyland Technical Centre, Chennai
3:40 p.m.	2013-01-1372	Methodology for Design Simulation and Experimental Validation of High Temperature Enhanced Flow Materials in Automotive Lighting Bezel Applications Venkatesha N, GE India Technology Centre
	2013-01-1377	Analysis and Optimization for Cracking of a Steering Tie Rod based on Arc Length Algorithm (Written Only -- No Oral Presentation) Yongsheng Li, Geely Automobile Research Institute

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Planned by Body Engineering Committee / Automobile Body Activity

Wednesday, April 17

Reliability and Robust Design in Automotive Engineering: Assessment of Reliability and Robustness and Reliability Applications

Session Code: IDM102

Room D0-02B

Session Time: 8:00 a.m.

Theoretical developments and automotive applications in RBDO and Robust Design are presented in this session. Topics include computational algorithms for efficient estimation of reliability, Monte Carlo simulation, Bayesian reliability, Dempster-Shafer Evidence Theory, and Multi-Disciplinary Optimization.

Organizers - Zissimos Mourelatos, Oakland University; Efstratios Nikolaidis, University Of Toledo

Chairpersons - Vijitashwa Pandey, Zissimos Mourelatos, Oakland University

Time	Paper No.	Title
8:00 a.m.	2013-01-0605	HMMWV Axle Testing Methodology to Determine Efficiency Improvements with Superfinished Hypoids Brian David Dykas, US Army Research Laboratory; Denise M. Rizzo, US Army TARDEC; Doug Fussner, Randy McDonnell, Southwest Research Institute; Mark Riggs, The Ohio State University
8:20 a.m.	2013-01-0606	New Metrics to Assess Reliability and Functionality of Repairable Systems Vijitashwa Pandey, Zissimos Mourelatos, Oakland University
8:40 a.m.	2013-01-0607	Probability of Failure of Dynamic Systems by Importance Sampling Mahdi Norouzi, Efstratios Nikolaidis, Univ of Toledo
9:00 a.m.	ORAL ONLY	Application of Subset Simulation with Markov Chain Monte Carlo and Splitting to Time-Dependent Reliability Estimation Zhonglai Wang, Zissimos Mourelatos, Oakland University; Jing Li, Oakland Univ; Amandeep Singh, Igor Baseski, US Army TARDEC

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Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Wednesday, April 17

Reliability and Robust Design in Automotive Engineering: Decision Under Uncertainty/Uncertainty Modeling

Session Code: IDM104

Room D0-02B

Session Time: 9:40 a.m.

Methods for modeling uncertainty and decision making under uncertainty are presented in this session. Both theoretical developments and practical applications from the automotive industry are covered.

Organizers - Zissimos Mourelatos, Oakland University; Efstratios Nikolaidis, University Of Toledo; Vijitashwa Pandey, Oakland University; Paul Lubinski, Thermo King Corp

Chairpersons - Zissimos Mourelatos, Oakland University; Efstratios Nikolaidis, University Of Toledo

Time	Paper No.	Title
9:40 a.m.	2013-01-0943	Managing the Computational Cost of Monte Carlo Simulation with Importance Sampling by Considering the Value of Information Efstratios Nikolaidis, Mahdi Norouzi, University of Toledo; Zissimos Mourelatos, Vijitashwa Pandey, Oakland University
10:00 a.m.	2013-01-0945	The Uncertainty of Estimated Lognormal and Weibull Parameters for Test Data with Small Sample Size Zhigang Wei, Tenneco Automotive Co., Ltd.; Fulun Yang, Limin Luo, Shengbin Lin, Tenneco Inc
10:20 a.m.	2013-01-0946	A Comparison of Methods for Representing and Aggregating Uncertainties Involving Sparsely Sampled Random Variables - More Results Vicente Romero, Sandia National Laboratories; Joshua Mullins, Vanderbilt University; Laura Swiler, Angel Urbina, Sandia National Laboratories

10:40 a.m.	2013-01-0947	A Methodology for Design Decisions using Block Diagrams Vijitashwa Pandey, Zissimos Mourelatos, Oakland University
11:00 a.m.	2013-01-0944	Combined Variation Modeling of Structural and Tuning Components for Vehicle Performance Assessment Bo Zhang, James Robertson, Glenn Whitehead, Chrysler Group LLC; Ravindranadh Pillutla, Satyam-Venture Engineering Service Ltd.
	2013-01-0948	A Polynomial Chaos- Based Likelihood Approach for Parameter Estimation of Load Sensing Proportional Valve (Written Only -- No Oral Presentation) Zeyu Ma, Jinglai Wu, Yunqing Zhang, Huazhong University of Science and Tech.

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Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Wednesday, April 17

Reliability and Robust Design in Automotive Engineering: Reliability and Robust Design in Automotive Aero-Thermal and Fluid Systems

Session Code: IDM105

Room D0-02B

Session Time: 1:00 p.m.

The purpose of this session is to bring awareness among the automotive aerodynamics, thermal and hydraulic systems development community to address the need of reliability analysis and robust design to improve the overall product quality. This session also introduces CAE based optimization of aero-thermal and fluid systems to improve automotive fuel economy. This session presents papers covering both testing and simulation.

Organizers - Alaa El-Sharkawy, Sadek S. Rahman, Richard Sun, Chrysler Group LLC

Time	Paper No.	Title
1:00 p.m.	ORAL ONLY	Analysis Led Design and Industry Trends in 1D Powertrain Simulation Sudhi Uppuluri, Computational Sciences Experts Group
1:20 p.m.	2013-01-0959 ORAL ONLY	Application of Time Constant Analysis for Design and Development of Thermal Systems Alaa El-Sharkawy, Chrysler Group LLC
1:40 p.m.	2013-01-0960	Characterizing Thermal Interactions Between Engine Coolant, Oil and Ambient for an Internal Combustion Engine Sudhi Uppuluri, Computational Sciences Experts Group; Joe Proulx, Mentor Graphics; Boris Marovic, Mentor Graphics (Deutschland) GmbH; Ajay Naiknaware, CSEG, LLC
2:00 p.m.	2013-01-0961 ORAL ONLY	Application of DFSS for Design of Heat Exchangers Alaa El-Sharkawy, Chrysler Group LLC; Brian Komarisky, Chrysler Corp; Asif Salahuddin, Chrysler Group LLC
2:20 p.m.	2013-01-1777	Scalable Complexity Simulation in the Electric Vehicle Thermal Management Development Process Christian Rathberger, Engineering Center Steyr GmbH & CoKG; Christoph M. Stroh, Magna Powertrain; Alexander Lichtenberger, Engineering Center Steyr GmbH & CoKG

Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Wednesday, April 17

Chat with the Expert: Making Design Decisions Involving Multiple Performance Attributes

Session Code: IDMCHAT20

Room D0-02B

Session Time: 4:00 p.m.

The development of a new consumer product starts with the definition of performance targets. Then the product is designed so that it meets these targets and costs as little as possible. Performance targets are determined based on customer clinics and analysis of existing successful models. This chat will review methods for eliciting customer preferences for performance and cost, developing mathematical models and making informed design decisions.

Keynote Speakers - Mohamed El-Sayed, Kettering University; Zissimos Mourelatos, Oakland University; Efstratios Nikolaidis, University Of Toledo; Vijitashwa Pandey, Oakland University

Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Wednesday, April 17

Design Optimization - Methods and Applications (Part 1 of 2)

Session Code: B103

Room D0-03 C&D

Session Time: 8:00 a.m.

Organizers - Mallikarjuna Bennur, General Motors LLC; Hasetetsion G. Mariam; Vesna Savic, General Motors LLC

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
8:00 a.m.	ORAL ONLY	Technical Keynote: Optimization in Complex Constraint Situations for the Early Vehicle Design Phase Hans Zimmer, SFE GmbH
9:00 a.m.	2013-01-0969	Development of CFD Shape Optimization Technology using the Adjoint Method and its Application to Engine Intake Port Design Shigefumi Tokuda, Masato Kubota, Yasushi Noguchi, Toyota Motor Corp
9:20 a.m.	2013-01-0962	A Non-parametric Free-form Optimization Method for Controlling the Stiffness of Automotive Sheet Metal Structures Masatoshi Shimoda, Yang Liu, Toyota Technological Institute
9:40 a.m.	2013-01-0972	Sequential DoE Framework for Steady State Model Based Calibration Mohammed Reza Kianifar, Loan Felician Campean, University of Bradford; Dave Richardson, Jaguar Cars Ltd.
10:00 a.m.	2013-01-0973	Methodology for the Design of a Double-Wishbone Suspension System by Means of Target Cascading: Problem Statement Juan Blanco, Luis Munoz, Universidad de los Andes
10:20 a.m.	2013-01-0971	Methodology for the Design of a Double-Wishbone Suspension System by Means of Target Cascading: Model-Geometry Interactions and Case Study Juan Blanco, Luis Munoz, Universidad de los Andes
10:40 a.m.	2013-01-0967	Target Cascading Optimization of the Kinematics of a Steering System Coupled to a Double Wishbone Suspension System of a Hybrid Off-Road Vehicle Juan Blanco, Luis Munoz, Universidad de los Andes
	2013-01-0975	Stiffness Evaluation Method for BIW with Sensitivity Coefficients (Written Only -- No Oral Presentation) Yuan Qu, Linbo Zhang, Shen Wu, Wang hongbin, Chery Automobile Co., Ltd.

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Planned by Body Engineering Committee / Automobile Body Activity

Wednesday, April 17

Design Optimization - Methods and Applications (Part 2 of 2)

Session Code: B103

Room D0-03 C&D

Session Time: 1:00 p.m.

Organizers - Mallikarjuna Bennur, General Motors LLC; Hasetetsion G. Mariam; Vesna Savic, General Motors LLC

Time	Paper No.	Title
1:00 p.m.	2013-01-0970	Design Optimization of Hybrid Body-in-White Paulo Reynaldo Calvo, Bertrandt AG
1:20 p.m.	2013-01-0964	Optimization of IDRA<italic>pegasus</italic>: Fuel Cell Hydrogen Vehicle Nicoletta Filippo, Massimiliana Carello, Politecnico di Torino; Massimo D'Auria, NOESIS Solutions; Alex Marcello, Politecnico di Torino
1:40 p.m.	2013-01-0966	Multi-Objectives Optimization of Fastener Location in a Bolted Joint Bo Zhang, Danny Brown, John St. Pierre, Xian Tao, Ian Williams, Glenn Whitehead, Christopher Wolfe, Chrysler Group LLC; Ravindranadh Pillutla, Stayam-Venture Engineering Services Ltd.
2:00 p.m.	2013-01-0965	Optimising Piston Ring Contact Face Chamfer for High Performance Engines Matthew W. Dickinson, UCLan
2:20 p.m.	2013-01-0968	Drivetrain System Design Based On an Architecture Analysis Method Yukio Ogawa, Hiroyasu Miyoshi, Kazufumi Iwashita, Nissan Motor Co., Ltd.; Youngwon Park, Takeshi Abe, The University of Tokyo
2:40 p.m.	2013-01-0974— ORAL ONLY	An Optimized Approach to Developing An Automotive Climate Control System Guillaume Belloncle, Dassault Systemes

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Planned by Body Engineering Committee / Automobile Body Activity

Wednesday, April 17

Applications of Advanced High-Strength Steels and Press Hardening for Automotive Structures

Session Code: M202

Room D0-03A

Session Time: 8:00 a.m.

This symposium provides a forum for researchers and application engineers to disseminate the knowledge and information gained in the area of advanced high-strength and press-hardening steel development and applications in automotive structures, enabling light-weight and durable vehicles with improved safety.

Organizers - Constantin Chiriac, United States Steel Corp.; Jason Coryell, General Motors; Emmanuel De Moor, Colorado School of Mines; Jatinder P. Singh, General Motors; Michael Santella; Michael J. Worswick, Univ. of Waterloo

Chairpersons - *Jatinder Singh, General Motors Co; Constantin Chiriac, United States Steel Corp; Jason Coryell, General Motors Co*

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Keynote: Automotive Application of AHSS: Clearing the Hurdles to Meet Automotive Fuel Efficiency and Safety Regulation <i>David W. Anderson, American Iron and Steel Institute</i>
8:20 a.m.	ORAL ONLY	Overview of a New Category of Cold Formable NanoStructured 3rd Generation AHSS <i>Daniel James Branagan, The NanoSteel Company</i>
8:40 a.m.	2013-01-0609	Improvement of Stretch Flangeability of High-Tensile-Strength Steel Sheets by Piercing under Tension Using Humped Bottom Punch <i>Yuzo Takahashi, Osamu Kawano, Satoshi Horioka, Kohsaku Ushioda, Nippon Steel & Sumitomo Metal Corporation</i>
9:00 a.m.	2013-01-1774	Studies on Edge Strain Hardening Produced by Trimming Operations <i>Constantin Chiriac, Ming F. Shi, United States Steel Corp.</i>
9:20 a.m.	2013-01-0610	Temperature Effects on the Deformation and Fracture of a Quenched-and-Partitioned Steel <i>Jason Coryell, Vesna Savic, Louis Hector, Sushil Mishra, General Motors Company</i>
9:40 a.m.	2013-01-0608	Impact Testing of a Hot-Formed B-Pillar with Tailored Properties - Experiments and Simulation <i>Ryan George, Michael J. Worswick, University of Waterloo; Duane Detwiler, Honda R&D Americas Inc; Jidong Kang, CanmetMATERIALS</i>
10:00 a.m.	ORAL ONLY	Development of Tailored Hot Stamping Parts for Improving Crashworthiness <i>Ho young Kong, Hot stamping</i>
10:20 a.m.	ORAL ONLY	1700MPa Martensitic Steel in Automotive Bumper Applications <i>Brian Malkowski, Shape Corp.</i>

Planned by Ferrous Committee / Materials Engineering Activity

Wednesday, April 17

Advances in Bar Steel and Heat Treatment Technology

Session Code: **M209**

Room D0-03A

Session Time: **11:00 a.m.**

The development, manufacturing, and heat treatment of bar steel product continues to evolve to meet the demands of the transportation industry. Design challenges surrounding fuel economy, cost, quality, durability and environmental impact are driving new approaches to steel for critical vehicle components. New steel grades, heat treatment technologies, mill processes and forming methods are active topics of research to meet these opportunities.

Organizers - *David W. Anderson, American Iron and Steel Institute; Michael L. Shaw, Chrysler LLC*

Time	Paper No.	Title
11:00 a.m.	2013-01-0949	Austempering Process for Carburized Low Alloy Steels <i>Rebeca Lumbreras, Oakland University; Xichen Sun, Chrysler Group LLC; Gary Barber, Qian Zou, Oakland University</i>
11:20 a.m.	2013-01-0950	Advanced Heat Treatments for Ferrous Alloys <i>Alan Druschitz, Virginia Tech.; Melvin Ostrander, Rex Heat Treat; Ricardo Aristizabal, Universidad de Antioquia</i>

Wednesday, April 17

Magnesium Technologies

Session Code: M205

Room D0-03A

Session Time: 1:00 p.m.

With the higher federal fuel economy standards announced recently, Mg is becoming increasingly more attractive as structural material for automobiles. In recent years, the interest in magnesium research for automotive applications has expanded beyond cast alloys to include wrought alloys. The focus is not only on improving alloy properties, but also on reducing process costs. The technical papers to be presented at the 2013 Magnesium Technologies sessions reflect this broadening perspective.

Organizers - Fadi Abu-Farha, Clemson University; Alan Luo, General Motors Corporation

Time	Paper No.	Title
1:00 p.m.	2013-01-0979	Casting Process and Mechanical Properties of Large-Scale Extruded Mg-Zn-Y Alloys Yuichi Ienaga, Kenshi Inoue, Honda R&D Co Ltd; Tokuteru Uesugi, Kenji Higashi, Osaka Prefecture University
1:40 p.m.	2013-01-0980	Microstructure-Sensitive Fatigue Modeling of an Extruded AM30 Magnesium Alloy Marcos Lugo, Mississippi State University; J. B. Jordon, University of Alabama; J.D. Bernard, M.F. Horstemeyer, Mississippi State University
2:00 p.m.	2013-01-0977— ORAL ONLY	Fatigue Life Prediction of Magnesium Alloys Subjected to Variable Amplitude Loading Hong Tae Kang, Univ. of Michigan-Dearborn
2:20 p.m.	ORAL ONLY	Effect of Adhesive Addition on Fatigue Performance of Magnesium Alloys Self-Piercing Riveted Joints Chonghua Jiang, AET Integration Inc.
2:40 p.m.	ORAL ONLY	Mechanical Behavior of Magnesium Single Crystal under High-Strain-Rate Dynamic Loading Qizhen (Katherine) Li, Univ. of Nevada Reno
3:00 p.m.	2013-01-0978	Development of Corrosion Testing Protocols for Magnesium Alloys and Magnesium-Intensive Subassemblies Robert C. McCune, Robert C. McCune & Associates, LLC; Joy Forsmark, Brian Schneider, Ford Motor Co; Alan Luo, Helen Gu, William Schumacher, Xi Chen, General Motors Co; Florina Vartolas, Chrysler Group LLC
	2013-01-0976	An Experimental and Numerical Study of the Microstructural and Mechanical Properties of an Extruded Magnesium Alloy at 450 °C and Varied Strain Rates Q. Ma, B. Li, A.L. Oppedal, P.T. Wang, Center for Advanced Vehicular Systems; Alan Luo, General Motors Company; Mark Horstemeyer, Center for Advanced Vehicular Systems

Wednesday, April 17

Specialty Alloys

Session Code: M208

Room D0-03A

Session Time: 3:00 p.m.

As demands increase for greater safety, energy efficiency and corrosion resistance, so do considerations of alternative higher performance metallic alloys in automotive applications. We invite papers discussing innovative applications and developments in titanium alloys, specialty stainless alloys and powder metal products, among others, beyond high strength steel and aluminum alloys. Topics of particular interest include metallurgy, joining, performance testing, design and corrosion behavior.

Organizers - Thomas Glennan, Technical Writing Solutions LLC; Brandon M. Hance, AK Steel Corp.

Time	Paper No.	Title
3:00 p.m.	2013-01-1154	Fe-Si Sintered Alloy for use in Exhaust Applications Thomas Cornelio, Michael R. Schloder, Michael O'Neill, Alpha Sintered Metals Inc.; Stephen Bowyer, Gary Vrsek, FEV Inc
3:20 p.m.	2013-01-1153	Development of New Intermediate Nickel Alloys for Application in Automotive Valves of High Performance Engines Alexandre Bellegard Farina, Rodrigo César N. Liberto, Celso Antonio Barbosa, Villares Metals S/A
3:40 p.m.	ORAL ONLY	Development of the Manufacturing Method for Low-Gloss Stainless Steel Sheet and Its Corrosion Characteristics Dong-Jae Choi, Materials Engineering

Planned by Ferrous Committee / Materials Engineering Activity

Wednesday, April 17

Advances in Instrument Panels, Seats and Interiors

Session Code: M300

Room D0-03B

Session Time: 8:00 a.m.

This session will feature technical presentations that will discuss new technology and industry insights in automotive interiors. Focus areas include materials, perceived quality, environmental concerns, manufacturing, safety, and durability.

Organizers - Robert Egbers, Comusa LLC; Lisa Fallon, General Motors LLC; Stephen M. Pitrof, Inteva LLC; Ravi Thyagarajan, US Army TARDEC

Time	Paper No.	Title
8:00 a.m.	2013-01-0654	Effect of Fabric Type and Construction on Automotive Seating Comfort Pritpal Singh, Sandeep Raina, Kapil Kumar Pandey, Sweta Bansal, Maruti Suzuki India, Ltd.
8:20 a.m.	2013-01-0612	Analysis and Optimization of Effect of Ageing on Automotive Seat Fabric Performance Sarita Kumari, Dinesh N Dave, Pankaj Maheshwari, Maruti Suzuki India Limited
8:40 a.m.	2013-01-0615	Root Cause Analysis of Discoloration of Polypropylene in Automobile Interiors Vandana Chauhan, Amulya Kali Ray, Maruti Suzuki India Limited
9:00 a.m.	Panel	Lightweighting in Automotive Interiors Panelists from Automotive OEMs will speak on their views regarding regulatory needs to reduce overall vehicle weight, the emphasis being placed for interiors components share in the overall vehicle weight reduction goals, and current technical trends and challenges to meet the interior lightweighting goals. Panelists - Timothy Boundy, General Motors; Mark Sheldon, Chrysler Group LLC; Jeffrey Webb, Ford Motor Co., Ltd.;

Wednesday, April 17

Advances in Coating

Session Code: M302

Room D0-03B

Session Time: 1:00 p.m.

This session will provide a look at research on coatings for exterior body and plastics (including polycarbonate) as well as vehicle interiors and underbody/underhood. Focus will be on mid-term and future research.

Organizers - Todd Fitz, Honda R&D Americas Inc.; Arun Kumar Sikder, GE; Daniel G. Wright, BASF Corp.; James Keller, United Paint & Chemical Corporation

Time	Paper No.	Title
1:00 p.m.	ORAL ONLY	Rheology of Waterborne Coatings: The Latest on Theory and Engineering Practice Timothy S. December, BASF Corp.
1:20 p.m.	ORAL ONLY	The Flexible Pretreatment Process for Multimetal Bodies: Zinc Phosphate plus Zirconium Oxide Bruce H. Goodreau, Michael Sienkowski, Joseph Caiozzo, Henkel Corporation
1:40 p.m.	ORAL ONLY	Matte Clearcoat Use in the Automotive Industry Michael R. Mulligan, Michael Millar, PPG
2:00 p.m.	2013-01-0981	Multilayer Coatings for Polycarbonate Glazing: Influence of Mechanical Properties on the Abrasion Performance of the Coating System Arun Kumar Sikder; Dinesh K, Radha Kamalakaran, GE India Technology Center Pvt Ltd; Nicole Paull, Judith Marnell, Steven Gasworth, Stephen Shuler, SABIC
2:20 p.m.	ORAL ONLY	New Denim Stain Resistant Coating Technology for Automotive Seating Surfaces Paola Morales, United Paint & Chemical Corporation
2:40 p.m.	ORAL ONLY	Quantifying Surface Activation in Treatment of Automotive Plastics Giles Dillingham, Brighton Technologies Group
3:00 p.m.	ORAL ONLY	Forecast Salt Spray Test Results of Automotive Corrosive Parts by Electrochemical Corrosion Evaluation Santosh Kumar Sarang, Aisin Technical Center of America

Wednesday, April 17

Intelligent Transportation Systems - Safer, Smarter, Faster

Session Code: AE313

Room D0-04AB

Session Time: 8:00 a.m.

Intelligent Transportation Systems (ITS) includes smart vehicles, smart roads and infrastructure, and wired and wireless communications to link them together. This session will provide insights and progress reports on the latest ITS research, development, and deployment around the world. Time to collision estimations, embedded processor control, adaptive cruise control and image recognition along with discussion on the management of safety and safety systems.

Organizers - David Acton, The-Transformation-Network Inc.; Stephan Tarnutzer, DGE Inc.

Time	Paper No.	Title
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8:00 a.m.	ORAL ONLY	Automotive Emergency Call and NG(Next Generation)-911 <i>Hirofumi Onishi, Alpine Electronics of America Inc.</i>
8:20 a.m.	2013-01-0617	Exploring the Impact of Speed Synchronization through Connected Vehicle Technology on Fleet-Level Fuel Economy <i>Jan-Mou Li, Zhiming Gao, Oak Ridge National Laboratory</i>
8:40 a.m.	2013-01-0618	A Unified Framework of Adaptive Cruise Control for Speed Limit Follower and Curve Speed Control Function <i>Jin-Woo Lee, General Motors Company; Shilpa Prabhuswamy, Danlaw Inc.</i>
9:00 a.m.	2013-01-0620	A Smart Jersey Highway Barrier with Portal for Small Animal Passage and Driver Alert <i>Lance Clark, John R. Wagner, Kim Alexander, Philip Pidgeon, Clemson University</i>
9:20 a.m.	2013-01-0621	Estimation of CO₂ Reduction Potential in Japan by Traffic-Flow Smoothing and Eco-Driving Promotion <i>Hidetoshi Imaizumi, Honda R&D Co., Ltd.; Koji Sengoku, Honda Motor Co., Ltd.</i>
9:40 a.m.	2013-01-0622	All Round Blind Spot Detection by Lens Condition Adaptation based on Rearview Camera Images <i>Yasuhisa Hayakawa, Osamu Fukata, Nissan Motor Co., Ltd.</i>
	2013-01-0623	Collision Prevention While Driving in Real Traffic Flow Using Emotional Learning Fuzzy Inference Systems (Written Only -- No Oral Presentation) <i>Reza Zarringhalam, University Of Waterloo; Ali Ghaffari, K N Toosi Univ of Technology</i>

Planned by Electrical and Electronic Systems Committee / Automobile Electronics Activity

Wednesday, April 17

Intelligent Vehicle Initiative (IVI) Technology, Advanced Controls, and Navigation Systems

Session Code: AE309

Room D0-04AB

Session Time: 1:00 p.m.

This session presents papers by leading experts in the field of Intelligent Vehicle Technologies, such as: vehicle communications and networks, driver drowsiness and driving pattern detection, sensors and GPS, vehicle and chassis control and autonomous vehicles, route prediction, head-up displays and power transmission for electric vehicles.

Organizers - Kenneth W. Webster, Transportation Research Center Inc.

Time	Paper No.	Title
1:00 p.m.	ORAL ONLY	An Estimation of the Fuel Consumption Reduction from Real-Time Traffic Information <i>Richard Zerod, Visteon Corp.</i>
1:20 p.m.	2013-01-0982	V2V Next Steps: A Proposal for Simplification of V2V Safety Systems <i>Mike Ridge, Robert Dekelbaum, Battelle Memorial Institute</i>
1:40 p.m.	2013-01-0983	Automatic Driving Maneuver Recognition and Analysis using Cost Effective Portable Devices <i>Amardeep Sathyanarayana, Seyed Omid Sadjadi, John Hansen, The University of Texas at Dallas</i>

2:00 p.m.	2013-01-0984	Consumption Optimization in Battery Electric Vehicles by Autonomous Cruise Control using Predictive Route Data and a Radar System <i>Andreas Freuer, Hans-Christian Reuss, FKFS</i>
2:20 p.m.	2013-01-0985	Opportunities on Fuel Economy Utilizing V2V Based Drive Systems <i>Dominik Lang, Thomas Stanger, Luigi del Re, Johannes Kepler University Linz</i>
	2013-01-0987	An Algorithm of Vehicle Automatic Tracking Based on Differential Game (Written Only -- No Oral Presentation) <i>Tang Xinpeng, Huazhong University of Sci. & Tech.</i>
	2013-01-0988	The Algorithmic Research of Multi-operating Mode Energy Management System (Written Only -- No Oral Presentation) <i>Wang Jun, Wang Qingnian, Jilin University; Xiaohua Zeng, nan zhou, Jilin Univ; Li li, Shanghai Volkswagen Automotive Co.Ltd</i>
	2013-01-0989	Dynamic Eco-Routing Methodology Using Petri Net (Written Only -- No Oral Presentation) <i>Mohamad Abdul-Hak, Mercedes Benz Research and Development; Youssef Bazzi, Lebanese University; Oliver Cordes, Mercedes Benz Research and Development; Nizar Alholou, Malok al Amir, Univ of Detroit Mercy</i>

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Wednesday, April 17

Prognostics

Session Code: AE601

Room D0-04C

Session Time: 8:00 a.m.

Known as Integrated Health Vehicle Maintenance in Europe and Condition Based Maintenance in the U.S.A., Prognostics is sometimes referred to as Predictive Maintenance. The value proposition story of prognostics will be reviewed with actual case studies of how prognostics reduces costs. How to build an algorithm that captures the important values related to a system in order to produce the wanted result or "catch the anomaly". Case studies will be discussed.

Organizers - Tim A. Cavanaugh, Cavanaugh Consulting

Time	Paper No.	Title
8:00 a.m.	2013-01-0624	Predictive Health Monitoring of Gear Surface Fatigue Failure Using Model-Based Parametric Method Algorithms; An Experimental Validation <i>Ahmed Onsy; Robert Bicker, Brian A. Shaw, Newcastle University</i>
8:20 a.m.	Panel	Prognostics Moderators - Tim A. Cavanaugh, Cavanaugh Consulting Panelists - David V. Freeman, DOT/NHTSA; Deborah M. Freund, Federal Motor Carrier Safety Administration; Steven W. Holland, General Motors Global R & D; David Bernard Porter, MAHLE Powertrain LLC;

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Wednesday, April 17

Vehicle Diagnostics - Part 1

Session Code: AE311

Room D0-04C

Session Time: 10:00 a.m.

Vehicle diagnostics deals with the development, delivery and execution of diagnostic procedures for vehicle systems. This session will explore new technologies, processes and trends in the area of vehicle diagnostics.

Organizers - Kathleen E. Kedzior, MAHLE Test Systems

Time	Paper No.	Title
10:00 a.m.	ORAL ONLY	ISO 13209 OTX - A Door to the New Diagnostic Standards Andreas Hege, RA Consulting GMBH; Joerg Supke, emotive GmbH
10:20 a.m.	ORAL ONLY	Difficulties in Service Diagnostic Tool Development Louis Scott Bolt, Mahle
10:40 a.m.	ORAL ONLY	Graphics Based Service Information - Recommended Practice Development Update Arnold Taube, John Deere World Headquarters
11:00 a.m.	ORAL ONLY	Complete on-board and off-board diagnostics development, tools and processes from an automotive systems and aftersales tools provider Cayetano Garcia Orijuela, Robert Bosch LLC; Walter Lehle, Lehle; Ian Legate, Teradyne Diagnostic Solutions
	2013-01-0957	Vehicle Level Approach for Optimization of On-Board Diagnostic Strategies for Fault Management (Written Only -- No Oral Presentation) Dibyendu Palai, Tata Motors Ltd.

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Wednesday, April 17

Vehicle Diagnostics Part 2 - Expert Panel Discussion: Service Information Technician Needs

Session Code: AE311

Room D0-04C

Session Time: 1:00 p.m.

Increased vehicle complexity and new technologies could be creating a knowledge gap in vehicle service which could impact service performance, warranty costs and brand image. OEMs and technicians may not be aligned on needs and available technologies to meet the changing environment of service technicians. This panel will focus on Service Information Efficacy. The panel is comprised on industry experts in OE, OES and aftermarket service training, education and vehicle diagnostic technicians.

Organizers - Kathleen E. Kedzior, MAHLE Test Systems

Moderators - Mark N. Pope, General Motors LLC

Panelists - Joseph J. Barkai, IDC Manufacturing Insights; John Cardillo, Ford Motor Co.; Kevin E. Fondaw, General Motors LLC; Jeffrey Minter, Madison Area Technical College; Tony Molla, National Inst. for Auto Serv Excel;

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Wednesday, April 17

Expert Panel Discussion: Compare and Contrast Prognostics and Diagnostics

Session Code: AE604

Room D0-04C

Session Time: 3:00 p.m.

What does Diagnostics give you that Prognostics cannot and Vice Versa?

Organizers - Kathleen Kedzior, MAHLE Test Systems; Tim Cavanaugh, Cavanaugh Consulting

Moderators - Tim A. Cavanaugh, BAE Systems

Panelists - David V. Freeman, DOT/NHTSA; Deborah M. Freund, Federal Motor Carrier Safety Administration; Steven W. Holland, General Motors Global R & D; David Bernard Porter, MAHLE Powertrain LLC;

Wednesday, April 17

Load Simulation and Vehicle Performance (Part 2): Multi-Body Dynamics

Session Code: M107

Room D0-05A

Session Time: 8:00 a.m.

Session focus will be on the comparison of modeling techniques between vehicle dynamics simulation and durability loads simulation as well as optimal development process considering vehicle dynamics and durability loads. Further discussion on data processing and analysis techniques, loads sensitivity, DOE and optimal design techniques for loads minimization, prediction of manufacturing tolerance effects on loads, robust design methods, driver modeling, and FE-based system modeling will occur.

Organizers - Paramsothy Jayakumar, TARDEC; Dan Negrut, Univ. of Wisconsin

Time	Paper No.	Title
8:00 a.m.	2013-01-1189	Virtual Road Load Data Acquisition using Full Vehicle Simulations Nantu Roy, Mark Villaire, Chrysler Group LLC
8:20 a.m.	2013-01-1190	Predicting the Response of a Seat-Occupant Model by Using Incremental Harmonic Balance Yousof Azizi, Anil Bajaj, Patricia Davies, Ray W. Herrick Laboratories, Purdue Univ.
8:40 a.m.	2013-01-1191	Investigating Through Simulation the Mobility of Light Tracked Vehicles Operating on Discrete Granular Terrain Dan Negrut, Daniel Melanz, Hammad Mazhar, University of Wisconsin - Madison; David Lamb, Paramsothy Jayakumar, Michael Letherwood, US Army TARDEC
9:00 a.m.	2013-01-1192	Development of New Generation of Multibody System Computer Software Ahmed A. Shabana, Univ. of Illinois at Chicago; Paramsothy Jayakumar, TARDEC; Michael Letherwood, US Army TARDEC
9:20 a.m.	2013-01-1193	Improvement of Virtual Vehicle Analysis Efficiency with Optimal Modes Selection in Flexible Multi-Body Dynamics Geunsoo Ryu, Jaewook Jeon, Hyundai Motor Company
9:40 a.m.	2013-01-1194	Development of Wheel Loader Dynamic Simulation Model Kwang Seok Oh, Seungjae Yun, Hakgu Kim, Kyongsu Yi, Seoul National Univ; Kyungeun Ko, Panyoung Kim, Hyundai Heavy Industries
10:00 a.m.	2013-01-1196	An Abstract Multi-Rate Method for Vehicle Dynamics Simulation James Critchley, Multibody.org; Paramsothy Jayakumar, U.S. Army TARDEC
10:20 a.m.	2013-01-1197	Compaction-Based Deformable Terrain Model as an Interface for Real-Time Vehicle Dynamics Simulations Justin Madsen, University of Wisconsin - Madison; Andrew Seidl, Dan Negrut, Univ of Wisconsin

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00338, and also individually. T

Wednesday, April 17

Load Simulation and Vehicle Performance (Part 1): Tire and Terrain

Session Code: M107

Room D0-05A

Session Time: 1:00 p.m.

Tire and terrain mechanics modeling for load simulations, tire model development, parameters identification, and sensitivity analyses, tire test development, road profile characterization, effective road profile development, and interactions between tire, suspension/steering/brake systems, and different terrains, spindle loads/travel variation characteristics from proving ground test on deterministic and rough roads, terramechanics, tire noise, rolling resistance, and correlation studies.

Organizers - Emmanuel O. Bolarinwa, TFHRC, Federal Highway Administration; Jianfeng Ma, St. Louis Univ.; Xiaobo Yang, Oshkosh Corporation

Chairpersons - Jianfeng Ma, St. Louis Univ.; Emmanuel O. Bolarinwa, Federal Highway Administration; Xiaobo Yang, Oshkosh Corporation

Time	Paper No.	Title
1:00 p.m.	2013-01-0630	Structural MBD Tire Models: Closing the Gap to Structural Analysis - History and Future of Parameter Identification Axel Gallrein, Manfred Baecker, Andrey Gizatullin, Fraunhofer ITWM
1:40 p.m.	ORAL ONLY	Experimental Investigation of Vehicle Behavior on a Slopped Terrain Surface Emmanuel O. Bolarinwa, Federal Highway Administration
2:00 p.m.	2013-01-0625	Development of Truck Tire-Soil Interaction Model using FEA and SPH Ranvir S. Dhillon, Rustam Ali, Moustafa El-Gindy, University of Ontario Institute of Tech.; David Philipps, Fredrik Oijer, Inge Johansson, Volvo Group Trucks Technology
2:20 p.m.	2013-01-0626	Dynamic Load Estimation for Heavy Trucks on Bridge Structures Timothy Gordon, Mainak Mitra, Univ. of Michigan
2:40 p.m.	2013-01-0628	Torque Distribution Algorithm of Six-Wheeled Skid-Steered Vehicles for On-Road and Off-Road Maneuverability Jaewon Nah, Kyongsu Yi, Seoul National Univ; Wongun Kim, Yeogiel Yoon, Samsung Techwin
3:00 p.m.	2013-01-0629	Developing a Compact Continuous-State Markov Chain for Terrain Road Profiles Jacob N. Lambeth, John Ferris, Virginia Tech; Alexander Reid, David Gorsich, US Army RDECOM
3:20 p.m.	2013-01-0631	Numerical Investigation of Dynamic Impact between Cellular Shear Band Based Non-Pneumatic Tire and Sand with Obstacle Jianfeng Ma, St. Louis Univ.
3:40 p.m.	2013-01-0632	Development of a Combat Vehicle FEA Tire Model for Off-Road Applications Hossam Ragheb, Moustafa El-Gindy, Hossam Kishawy, University of Ontario Institute of Tech.
4:00 p.m.	2013-01-0633	Experimental Investigation of Tire Dynamic Strain Characteristics for Developing Strain-Based Intelligent Tire System Xiaoguang Yang, Oluremi Olatunbosun, Univ of Birmingham; Daniel Garcia-Pozuelo Ramos, Universidad Carlos III de Madrid, Spain; Emmanuel Bolarinwa, Federal Highway Administration

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Wednesday, April 17

CAE Analysis and Application: Multi-Discipline Interaction

Session Code: M110

Room D0-05B

Session Time: 8:00 a.m.

Key words: CAE, coupling, multi-discipline interaction

Papers should discuss the simulation methods for the coupled effects of various physical phenomena, including (not limited to) the following methods:

- ¿ Sequential coupling/de-coupling of multi-discipline CAE methods
- ¿ Direct/Parallel coupling/de-coupling of multi-discipline CAE methods
- ¿ Implicit and explicit simulation or co-simulation methods for multi-discipline coupling

Organizers - Fan Li, GM; Mike Guo, Chrysler LLC; Peiran Ding, ANSYS Inc.

Time	Paper No.	Title
8:00 a.m.	2013-01-0639 ORAL ONLY	Simulation of Fluid-Structure Interaction using a Combined Sc/Tetra and Abaqus Tool Shuo Mao, Graduate student, Wright State University; George Huang, Professor and Chair, ME Dept. WSU; Veera Venkata Sunil Vytla, Cradle North America Inc.; Yuya Ando, Software Cradle Co Ltd.
8:20 a.m.	2013-01-0636	Analysis of Open Plenum Structure for Reduction of Booming Noise Gajanan Tonge, Surendra Agrawal, Chrysler India Technical Centre
8:40 a.m.	2013-01-0637	Smart Meshing Template Process with CAD/CAE Link Honglu Wang, Vijay Patil, William Resh, Phil Insalaco, Dan Flesher, Scott Lanski, Chrysler Group LLC
9:00 a.m.	ORAL ONLY	Fluid Structure Interaction of Micro Air Vehicles Using a combined Sc/Tetra and Abaqus Simulations Alex Byrd
9:20 a.m.	2013-01-0635	Multi-Disciplinary Analyses for Brake Fluid Temperature Evaluation Tinghui Shi, Robert Nisonger, General Motors Company
9:40 a.m.	2013-01-0642	Implementing Simulation Driven Product Development for Thermoforming of an Instrument Panel Hossam Metwally, Peiran Ding, ANSYS Inc.
10:00 a.m.	2013-01-0641	Fluid Structure Interaction Simulation of Fuel Tank Sloshing Veera Venkata Sunil Vytla, Cradle North America, Inc.; Yuya Ando, Software Cradle Co Ltd
10:20 a.m.	2013-01-0640	CFD-Based Wave-Number Analysis of Side-View Mirror Aeroacoustics towards Aero-Vibroacoustic Interior Noise Transmission Fred G. Mendonca, Teo Shaw, Alan Mueller, CD-adapco; Paul Bremner, Scott Clifton, AeroHydroPlus
	2013-01-0643	Model Coupling with a Function-Based Modular Framework for Entire-System Simulation (Written Only -- No Oral Presentation) Florian Netter, Audi Electronics Venture GmbH; Frank Gauterin, Karlsruhe Institute of Technology; Johannes Schreyer, Munich University of Applied Sciences

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Wednesday, April 17

CAE Durability Analysis and Applications (Part 1): Fatigue Theory and Methodology Development

Session Code: M109

Room D0-05B

Session Time: 1:00 p.m.

This technical session focuses on state-of-the-art fatigue theory and advanced development in fatigue analysis methodology and research. Studies and discussions on innovative and improved fatigue theory/methods in material constitutive modeling, damage rules/fatigue damage calculation, and fatigue life predictions will be addressed.

Organizers - Guofei Chen, United States Steel Corp.; Mike Guo, Chrysler LLC; Ali Fatemi, Univ. of Toledo; Mark A. Pompetzki, HBM-nCode; Yung-Li Lee, Chrysler Group LLC

Time	Paper No.	Title
1:00 p.m.	ORAL ONLY	Life Prediction for Welds between Two Sheets of Similar and Dissimilar Materials Based on Fracture Mechanics Solutions Jwo Pan, Univ. of Michigan-Ann Arbor
1:40 p.m.	2013-01-1011	Fatigue Evaluation of Notched Plate Specimens by the Battelle Structural Stress Method Jeong Kyun Hong, Thomas Forte, Battelle
2:00 p.m.	2013-01-1009	Fatigue Life Prediction of an Automobile Cradle Mount Touhid Zarrin-Ghalami, Ali Fatemi, Univ. of Toledo; Yung-Li Lee, Chrysler Group LLC
2:20 p.m.	2013-01-1201	Techniques for Contact Considerations in Fatigue Life Estimations of Automotive Structures Mingchao Guo, Kaizhi Quan, Suresh Bhosale, Congyue Wang, Sridhar Srikantan, Chrysler Group LLC
2:40 p.m.	2013-01-1206	Rainflow Counting Based Block Cycle Development for Fatigue Analysis using Nonlinear Stress Approach Weidong Zhang, Mingchao Guo, Sridhar Srikantan, Chrysler Group LLC
3:00 p.m.	2013-01-0999	Fatigue Life Calculation with Loads Varying in Magnitude and Direction John Altobelli, NAVAIR Lakehurst; Tirupathi R. Chandrupatla, Rowan University
3:20 p.m.	2013-01-0998	A Thermal-Fatigue Life Assessment Procedure for Components under Combined Temperature and Load Cycling Zhigang Wei, Tenneco Automotive Co., Ltd.; Shengbin Lin, Limin Luo, Fulun Yang, Dmitri Konson, Tenneco Inc

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Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Wednesday, April 17

Advanced Analysis, Design, and Optimization of Materials, Restraints, and Structures for Enhanced Automotive Safety and Weight Reduction (Part 1)

Session Code: M103

Room D0-06A

Session Time: 8:00 a.m.

Papers with an emphasis on, but not limited to, innovative ideas to enhance automotive safety with improved material constitutive modeling, analysis method developments, simulation and pre/post processing tools, optimization techniques, crash code developments, finite element model updating, model validation and verification techniques, dummies and occupants, restraint systems, passive safety as well as lightweight material applications and designs are highly encouraged.

Organizers - Jwo Pan, Univ. of Michigan-Ann Arbor; Tau Tyan, Ford Motor Co.; Guofei Chen, United States

Steel Corp.; Wei Li, General Motors LLC; William J. Altenhof, Univ. of Windsor; Sheng-Dong Liu, Generalty LLC

Time	Paper No.	Title
8:00 a.m.	2013-01-0663	System Level Design Simulation to Predict Passive Safety Performance for CFRP Automotive Structures Juergen Lescheticky, BMW Group; Graham Barnes, Engenuity Limited; Marc Schrank, Dassault Systemes Simulia Corp.
8:20 a.m.	2013-01-0650	Investigation of Crashworthiness of Structural Composite Components in Frontal and Side NCAP Tests Chung-Kyu Park, Cing-Dao (Steve) Kan, The George Washington University; William Thomas Hollowell, WTH Consulting LLC
8:40 a.m.	2013-01-0657	Side Crash Pressure Sensor Prediction for Unitized Vehicles: An ALE Approach Tau Tyan, Kirk Arthurs, Jeffrey Rupp, Melissa Parks, Kumar Mahadevan, Saeed Barbat, Nand Kochhar, John Fazio, David Bauch, Ford Motor Co.
9:00 a.m.	2013-01-0666	Side Crash Pressure Sensor Prediction for Body-on-Frame Vehicles: An ALE Approach Tau Tyan, Kirk Arthurs, Jeffrey Rupp, Charles Ko, Bill Sherwood, Leonard Shaner, Saeed Barbat, Nand Kochhar, John Fazio, David Bauch, Ford Motor Co.
9:20 a.m.	ORAL ONLY	Material Models for Simulation of a Lithium-Ion Battery Module Specimen under Punch Indentation Mohammed Yusuf Ali, Univ. of Michigan-Ann Arbor; Wei-Jen Lai, Jwo Pan, Univ of Michigan-Ann Arbor
9:40 a.m.	ORAL ONLY	Mechanical Behavior of Lithium-Ion Battery Cell and Module Specimens under Constrained Compression Wei-Jen Lai, Mohammed Yusuf Ali, Jwo Pan, Univ of Michigan-Ann Arbor
10:00 a.m.	2013-01-0651	Front Rail Crashworthiness Design for Front Oblique Impact Using a Magic Cube Approach Sibo Hu, Beijing Automotive Technology Center/Dalian Univ. of Tech.; Zheng-Dong Ma, University of Michigan; Chang Qi, Dalian University of Technology; Yi Ding, Beijing Automotive Technology Center
10:20 a.m.	2013-01-0658	Structural Optimization of Thin-Walled Tubular Structures for Progressive Buckling Using Compliant Mechanism Approach Satyajeet Shinde, Indiana University Purdue University Ind; Punit Bandi, Autoliv North America Inc; Duane Detwiler, Honda R&D Americas Inc; Andres Tovar, Indiana University Purdue University Ind.
10:40 a.m.	2013-01-0665	A Development of 780MPa Hot Rolled High Strength Steel for Application to Automotive One-Piece Front Lower Control Arm Kyoungju Sohn, JinHwa Jeon, Hyundai Steel
11:00 a.m.	2013-01-0656	Cost-Effectiveness of a Lightweight Design for 2017-2020: An Assessment of a Midsize Crossover Utility Vehicle Cheryl Caffrey, Kevin Bolon, Hugh Harris, US Environmental Protection Agency; Greg Kolwich, FEV Inc; Robert Johnston, EDAG Inc; Tim Shaw, Munro & Associates
11:20 a.m.	2013-01-0667	Cost-Effectiveness of a Lightweight BIW Design for 2020-2025: An Assessment of a Midsize Crossover Utility Vehicle Body Structure Gregory Peterson, Andrew Peterson, Lotus Engineering Inc

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Wednesday, April 17

Advanced Analysis, Design, and Optimization of Materials, Restraints, and Structures for Enhanced Automotive Safety and Weight Reduction (Part 2)

Session Code: M103

Room D0-06A

Session Time: 1:00 p.m.

Papers with an emphasis on, but not limited to, innovative ideas to enhance automotive safety with improved material constitutive modeling, analysis method developments, simulation and pre/post processing tools, optimization techniques, crash code developments, finite element model updating, model validation and verification techniques, dummies and occupants, restraint systems, passive safety as well as lightweight material applications and designs are highly encouraged.

Organizers - Jwo Pan, Univ. of Michigan-Ann Arbor; Tau Tyan, Ford Motor Co.; Guofei Chen, United States Steel Corp.; Wei Li, General Motors LLC; William J. Altenhof, Univ. of Windsor; Sheng-Dong Liu, Generalty LLC

Time	Paper No.	Title
1:00 p.m.	2013-01-0655	Estimation of Secondary Mass Changes in Vehicle Design Donald E. Malen, Univ. of Michigan-Ann Arbor; René Göbbels, RWTH Aachen Univ.; Roland Wohlecker, Fka - Forschungsgesellschaft Kraftfahrwe
1:20 p.m.	2013-01-0664	Hybrid III 50th Dummy Ankle Performance Study and Proposed Design Modification Lihua Li, Chery Automobile Co Ltd; Youmei Zhao; Guangyong Shen
1:40 p.m.	2013-01-0660	The Effects of the BioRID Dummy Head Position on the Whiplash Test Evaluation Pengxiang Wang, Chery Automobile Co., Ltd.
2:00 p.m.	2013-01-0644	Effects of Pore Distributions on Ductility of Thin-Walled High Pressure Die-Cast Magnesium Kyoo Sil Choi, Dongsheng Li, Xin Sun, Pacific Northwest National Laboratory; Mei Li, Ford Motor Co; John Allison, University of Michigan
2:20 p.m.	2013-01-0649	Advanced Reinforced Materials for Engine and Vehicle Efficiency Gian-Luigi Molteni, DuPont Automotive
2:40 p.m.	2013-01-0652	Effect of Temperature and Aeration on Fluid-Elastomer Compatibility Nancy Zeng, Cheryl L. O'Brien, Carole M. Wolfe, Craig O'Brien, General Motors Company
3:00 p.m.	2013-01-0653	Numerical Simulation of Shock Absorbing Polyester Elastomers Takaya Kobayashi, Yasuko Mihara, Mechanical Design & Analysis Corporation; Katsuhisa Yamashita, Chisato Nonomura, Katsuhiro Kodama, Yumiko Isogai, Tomoko Kanaya, TOYOB0 Co. Ltd.
	2013-01-0645	Use of Finite Element Simulation for Modeling Vertically Aligned Carbon Nanotube Arrays Based on Structural Mechanics Principles (Written Only -- No Oral Presentation) Johnson Joseph, Y Charles Lu, University of Kentucky
	2013-01-0669	Body Lightweight Design and Scalability with Structural Foam Solutions (Written Only -- No Oral Presentation) Horst Lanzerath, Ford Research & Advanced Engineering; Carsten Tragsdorf, CTES Engineering

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Wednesday, April 17

Casting Materials

Session Code: M204

Room D0-06B

Session Time: 8:00 a.m.

Organizers - Thomas Prucha, American Foundry Society Inc.; Lin Zhang, Chrysler Group LLC

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Structured Problem Solving of Hot Cracking of Stainless Steel Castings Delin Li, CanmetMATERIALS
8:20 a.m.	ORAL ONLY	Austempering Temperature on Tensile Properties and Hardenability of Intercritically Austempered Ductile Iron Robin D. Foley, UAB
8:40 a.m.	ORAL ONLY	Bridging Nanoscience and Lightweighting Metal Casting Xiaochun Li, Univ. of Wisconsin
9:00 a.m.	ORAL ONLY	Weight Reduction of Passenger Cars by Application of High Performing Aluminum Alloys Ralf Klos, Rheinfelden ALLOYS GmbH & Co. Kg
9:20 a.m.	ORAL ONLY	UAB - Cast 7000 Series Aluminum Robin D. Foley, UAB
9:40 a.m.	ORAL ONLY	The Potential of the Die Casting Technique for the Production of Highly Stressed Components in the Automotive Industry Klaus Greven, KSM Castings GmbH
10:00 a.m.	ORAL ONLY	Latest Advancements and Technologies in Aluminum Castings Qigui Wang, General Motors
10:20 a.m.	ORAL ONLY	Reduced Silicon Alloys for Enhanced Casting Performance David Weiss, ECK Industries Inc.
10:40 a.m.	2013-01-1026	Fusion Welding of Vacuum High Pressure Die Cast Aluminum Alloy A356 and Wrought Alloy 6061 Meng Wang, Henry Hu, Univ. of Windsor
11:00 a.m.	ORAL ONLY	Magnesium Casting Technology - Past, Present and Future Alan Luo, General Motors Corporation
11:20 a.m.	ORAL ONLY	Cast Magnesium Alloys for High-Temperature Applications Frank Czerwinski, CanmetMaterials

Wednesday, April 17

Simulation and Modeling Mechatronics

Session Code: AE201

Room D0-06B

Session Time: 1:00 p.m.

Historically, simulation and modeling efforts have typically been domain specific, independently modeling the behavior of electronic, electrical, or mechanical subsystems. As the complexity of these subsystems and their inter-domain interactions increase, it is imperative that the inter-domain behaviors and effects are taken into account when modeling and simulating the resulting Mechatronic system.

Organizers - Thomas Egel, MathWorks Inc.; Christopher Semanson; Mark Steffka, GM Powertrain; Chris Semanson, Ford Motor Company

Time	Paper No.	Title
1:00 p.m.	2013-01-0423	A Coupled System Simulator for Electric Power Steering System Long Xie, Masaru Yamasaki, Toshiyuki Ajima, Hitachi, Ltd; Junnosuke Nakatsugawa, Hitachi Automotive Systems, Ltd; Yoshitaka Sugiyama, Hitachi Automotive Systems Steering, Ltd
1:20 p.m.	2013-01-0422	A Study for Improving the Sound Quality of Vehicle Horns through Acoustic Characteristics Analysis and CAE Method Development Jong-Suh Park, Ki-Sang Chae, Hyundai Motor Co.
1:40 p.m.	2013-01-0420	Implementing System Simulation to Drive a more Efficient Controls Development Process Vincent THOMAS, LMS Imagine SA; Vincent Talon, Renault SA; Landry SAUSSOL, LMS Imagine SA
2:00 p.m.	2013-01-0421	Extending Co-Simulation to the Real-Time Domain Georg Stettinger, Alpen Adria Univ.; Josef Zehetner, Martin Benedikt, Norbert Thek, Virtual Vehicle Competence Center
2:20 p.m.	Panel	Panel Discussion: Applying the Model-Based Design process to achieve real-time simulation of mechatronic systems A panel of industry experts will discuss the role of real-time and HIL simulation for mechatronic systems along with the challenges in creating multi-domain physical models that are capable of real-time performance. Topics of discussion will include the role of real-time simulation in the Model-Based Design process, techniques for migrating from desktop to real-time simulation and experiences combining real-time models with physical hardware for HIL simulation. Moderators - Thomas Egel, MathWorks Inc.; Chris Semanson, ford Panelists - motor company Nathan Crosty, Magna Electronics; Hussein Dourra, Chrysler Group LLC; Marc Herniter, Rose Hulman Institute of Technology; William P. Milam, Ford Motor Co.; Harsha K. Nanjundaswamy, FEV Inc.; Dan Robinson, John Deere Intelligent Vehicle Systems;
	2013-01-0424	Study of Integrated Chassis Control System Based on Virtual Prototype Simulation (Written Only -- No Oral Presentation) Tang Xinpeng, Huazhong Univ. of Sci and Tech.

Planned by Computer Applications Committee / Automobile Electronics Activity

Wednesday, April 17

Safety Critical Systems (Part 3 of 4)

Session Code: AE300

Room D0-07A

Session Time: 8:00 a.m.

The focus of the session is on system safety analysis and design of safety-critical systems employing electronic controls. Topics include: implementation of safety-relevant systems, fail-safe strategies, distributed fault tolerant systems and hazard analysis. Application areas include: automotive active safety and alternative energy systems as well as avionics and mission management. Finally, the session addresses application of new or revised safety standards such as ISO 26262 and DO-178C.

Organizers - Joseph G. D'Ambrosio, GM R&D Center; Brian T. Murray, United Technologies Research Center; Markus Plankensteiner, TTTech Computertechnik AG

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
8:00 a.m.	2013-01-0193	Safety Analysis and Design for ISO 26262 - Model Based and Tool Supported Marc Born, Olaf Kath, Eckhardt Holz, IKV++ Technologies AG; Bruce Douglass, IBM
8:20 a.m.	2013-01-0189	System Modeling for Integration and Test of Safety-Critical Automotive Embedded Systems Martin Krammer, Helmut Martin, Michael Karner, Daniel Watzenig, Anton Fuchs, Virtual Vehicle Research and Test Center
8:40 a.m.	ORAL ONLY	A Reference Workflow to fulfill important ISO 26262 Criteria for the Development of Safety Critical Software Hans J. Holberg, BTC Embedded Systems AG; Dirk Fleischer, dSPACE GmbH; Ingo Stuermer, Model Engineering Solutions
9:00 a.m.	2013-01-0196	Virtualization Technology and Using Virtual CPU in the Context of ISO26262: The E-Gas Case Study Yukihide Niimi, Takayuki Ono, Soichiro Arai, DENSO Corporation; Hideki sugimoto, Renesas Electronics Corporation; Riccardo Mariani, Yogitech Spa
9:20 a.m.	2013-01-0180	Using Vehicle Simulation to Investigate Controllability Michael Ellims, Helen Elizabeth Monkhouse, Protean Electric Ltd.; Damian Harty, Teena Gade, Coventry Univ.
9:40 a.m.	ORAL ONLY	Automated and Economical Qualification of HIL Systems for Safety-Related Projects Andreas Himmler, dSPACE GmbH
10:00 a.m.	2013-01-0181	High-Voltage Battery System Concepts for ISO 26262 Compliance William Taylor, Jody J. Nelson, kVA
10:20 a.m.	ORAL ONLY	Analysis of Potential Driver Startle in the Safety Assessment of Advanced Propulsion Systems Mark A. Vernacchia, Richard Marsh, General Motors
10:40 a.m.	2013-01-0175	Optimal Sensor Configuration and Fault-Tolerant Estimation of Vehicle States Reza Zarringhalam, Ayyoub Rezaeian, Univ. of Waterloo; Saber Fallah, Univ. of Surrey; Amir Khajepour, William Melek, Univ. of Waterloo; Shih-Ken Chen, Baktiarr Litkouhi, General Motors Company
11:00 a.m.	2013-01-0187	A Control Allocation Algorithm for Improving the Fail-Safe Performance of an Electric Vehicle Brake System Chong Feng, Nenggen Ding, Yongling He, Guoyan Xu, Feng Gao, Beihang Univ.

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00321, and also individually. To purchase visit collections.sae.org

Planned by Electrical and Electronic Systems Committee / Automobile Electronics Activity

Wednesday, April 17

Safety Critical Systems (Part 4 of 4)

Session Code: AE300

Room D0-07A**Session Time: 1:00 p.m.**

The focus of the session is on system safety analysis and design of safety-critical systems employing electronic controls. Topics include: implementation of safety-relevant systems, fail-safe strategies, distributed fault tolerant systems and hazard analysis. Application areas include: automotive active safety and alternative energy systems as well as avionics and mission management. Finally, the session addresses application of new or revised safety standards such as ISO 26262 and DO-178C.

Organizers - Joseph G. D'Ambrosio, GM R&D Center; Brian T. Murray, United Technologies Research Center; Markus Plankensteiner, TTTech Computertechnik AG

Time	Paper No.	Title
1:00 p.m.	2013-01-0176	Development and Comparison of Monitoring Functions for Electric Vehicles Christophe Moure, Klaus Kersting, Applus Idiada Group
1:20 p.m.	2013-01-0185	A New Approach to Input and Output Monitoring for Microcontrollers Supporting Functional Safety Simon P. Brewerton, Infineon Technologies UK Ltd
1:40 p.m.	2013-01-0174	Software Architecture Methods and Mechanisms for Timing Error and Failure Detection According to ISO 26262: Deadline vs. Execution Time Monitoring Christoph Ficek, Maurice Sebastian, Nico Feiertag, Kai Richter, Marek Jersak, Symtvision GmbH; Karsten Schmidt, Audi AG
2:20 p.m.	ORAL ONLY	ISO 26262 - Challenges and Experiences Working with Tier 1s Hakan Sivencrona, QAMCOM Research & Technology
2:40 p.m.	2013-01-0198	Techniques and Measures for Improving Domain Controller Availability while Maintaining Functional Safety in Mixed Criticality Automotive Safety Systems Swapnil Gandhi, Delphi Deutschland GmbH; Simon P. Brewerton, Infineon Technologies UK Ltd
3:00 p.m.	2013-01-0186	Hardware Based Paravirtualization: Simplifying the Co-Hosting of Legacy Code for Mixed Criticality Applications Simon Brewerton, Infineon Technologies UK; Rolf Schneider, AUDI AG

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Planned by Electrical and Electronic Systems Committee / Automobile Electronics Activity

Wednesday, April 17**SAE / MIT Innovation Competition****Session Code: IDM800****Room D0-07B****Session Time: 8:20 a.m.**

The goal of the competition is to provide ideas for the vehicle industry when it faces tremendous challenges by innovative start ups. Sponsored General Motors and by EmiSense. the following a series of presentations from past start up competitors, each company will present their technology and a compelling reason for development. Judging will follow and cash and in kind prizes to be awarded. This will be preceded by several success stories from previous competitors.

Organizers - David Stout, David B Stout Associates LLC; Dennis Nash, MIT Enterprise Forum Great Lakes Region

Time	Paper No.	Title
8:20 a.m.	ORAL ONLY	Opening Remarks David Stout, David B Stout Associates LLC; Dennis Nash, MIT Enterprise Forum Great Lakes Region

8:40 a.m.	ORAL ONLY	Keynote Speaker: The Long and Winding Road of New Technology Adoption in the Automotive Industry <i>Patrick Thompson, EmiSense</i>
9:00 a.m.	ORAL ONLY	Component Dimensional Stability During Extreme Climatic Testing <i>Phillip Lewis, Dynamic Intelligent Solutions</i>
9:20 a.m.	ORAL ONLY	Judges Introduction and Explanation of Competition Rules <i>David Stout, David B Stout Associates LLC</i>
9:40 a.m.	ORAL ONLY	Innovation IT Network <i>Vivek V. Havele, CAE Technology Inc.</i>
10:00 a.m.	ORAL ONLY	Adaptive Tunable Antenna Architecture for Mobile Applications <i>Randy Dence, Monarch Antenna</i>
10:20 a.m.	ORAL ONLY	Omnidirectional, RF Navigates, Autonomous Guided Vehicles for Manufacturing and Warehousing <i>Paul Fleck, OmnicO AGV Inc.</i>
10:40 a.m.	ORAL ONLY	Thermal Sensing Process Control <i>Barry Sutherland, North Coast Industrial Imaging</i>
11:00 a.m.	ORAL ONLY	Bio-Based Automotive Plastics Using Lignin Based Polyurethane <i>Ken R. Kurple, BluWater Bio Productions</i>
11:20 a.m.	ORAL ONLY	Judges Comments and Award Presentation <i>David Stout, David B Stout Associates LLC; Dennis Nash, MIT Enterprise Forum Great Lakes Region</i>

Wednesday, April 17

Vehicle Dynamics, Stability and Control (Part 1 of 4)

Session Code: AC500

Room D3-17

Session Time: 8:00 a.m.

This session is focused on vehicle dynamics and controls using modeling and simulation, and experimental analysis of passenger cars, heavy trucks, and wheeled military vehicles. This session addresses active and passive safety systems to mitigate rollover, yaw instability and braking issues; driving simulators and hardware-in-the-loop systems; suspension kinematics and compliance, steering dynamics, advanced active suspension technologies; and tire force and moment mechanics.

Organizers - *W. Riley Garrott, National Hwy Traffic Safety Admin; Mohamed Kamel Salaani, Transportation Research Center Inc.; Gary J. Heydinger, SEA, Ltd.; David R. Mikesell, Ohio Northern University; Amandeep Singh, US Army TARDEC; Mark Heitz, Transportation Research Center Inc.; Paul Grygier, Retired (Previously NHTSA)*

Chairpersons - *David R. Mikesell, Ohio Northern University; M. Kamel Salaani, Transportation Research Center Inc.*

Time	Paper No.	Title
8:00 a.m.	2013-01-0673	Optimal Wheel Torque Distribution for a Four-Wheel-Drive Fully Electric Vehicle <i>Leonardo De Novellis, Aldo Sorniotti, Patrick Gruber, Univ. of Surrey</i>
8:20 a.m.	2013-01-0674	Optimal Torque Control for an Electric-Drive Vehicle with In-Wheel Motors: Implementation and Experiments <i>Abtin Athari, Univ. of Waterloo; Saber Fallah, Univ. of Surrey; Bin Li, Amir Khajepour, Univ. of Waterloo; Shih-Ken Chen, Baktiar Litkouhi, General Motors Company</i>
8:40 a.m.	2013-01-0690	Online Estimation of Vehicle Stability Factor for Electronic Stability Control <i>Chihiro Nitta, Hideaki Koto, Kenichiro Takahashi, ADVICS Co., Ltd.</i>

9:00 a.m.	2013-01-0686	An Approach to Vehicle Brake-By-Wire Optimal Control Tracking Strategy Salem A. Haggag, Diaa Abidou, Ain Shams University
9:20 a.m.	2013-01-0693	Modeling of a 6×4 Tractor and Trailers for Use in Real Time Hardware in the Loop Simulation for ESC Testing Sughosh J. Rao, The Ohio State University; Mohamed Kamel Salaani, Transportation Research Center Inc.; Gary J. Heydinger, SEA, Ltd.; Dennis A. Guenther, The Ohio State University; W. Riley Garrott, National Hwy Traffic Safety Admin.
10:00 a.m.	2013-01-0692	Validation of Real Time Hardware in the Loop Simulation for ESC Testing with a 6×4 Tractor and Trailer Models Sughosh J. Rao, The Ohio State University; Mohamed Kamel Salaani, Transportation Research Center Inc.; Gary J. Heydinger, SEA, Ltd.; Dennis A. Guenther, The Ohio State University; Frank Barickman, National Hwy Traffic Safety Admin.
	2013-01-0701	An Objective Analysis of the Effect of Tire Tread Depth on Crash Causation and Wet Road Vehicle Dynamics (Written Only -- No Oral Presentation) Donald F. Tandy, Clay Coleman, Tandy Engineering & Associates Inc.; Rose Ray, Exponent Inc.
	2013-01-0714	Study on Objective Evaluation Index System of On-Center Handling for Passenger Car (Written Only -- No Oral Presentation) Changfu Zong, Zexing Zhang, Li Mai, Changqing Wang, Jilin University; Zhengxin Wu
	2013-01-0715	Study of Stability Control for Electric Vehicles with Active Control Differential (Written Only -- No Oral Presentation) Zhuoping Yu, Yongqiang Deng, Lu Xiong, Tongji University

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Planned by Vehicle Dynamics Committee / Automobile Chassis Activity

Wednesday, April 17

Vehicle Dynamics, Stability and Control (Part 2 of 4)

Session Code: AC500

Room D3-17

Session Time: 1:00 p.m.

This session is focused on vehicle dynamics and controls using modeling and simulation, and experimental analysis of passenger cars, heavy trucks, and wheeled military vehicles. This session addresses active and passive safety systems to mitigate rollover, yaw instability and braking issues; driving simulators and hardware-in-the-loop systems; suspension kinematics and compliance, steering dynamics, advanced active suspension technologies; and tire force and moment mechanics.

Organizers - W. Riley Garrott, National Hwy Traffic Safety Admin; Mohamed Kamel Salaani, Transportation Research Center Inc.; Gary J. Heydinger, SEA, Ltd.; David R. Mikesell, Ohio Northern University; Amandeep Singh, US Army TARDEC; Mark Heitz, Transportation Research Center Inc.; Paul Grygier, Retired (Previously NHTSA)

Chairpersons - W. Riley Garrott, National Hwy Traffic Safety Admin; M. Kamel Salaani, Transportation Research Center Inc.

Time	Paper No.	Title
1:00 p.m.	2013-01-0695	A Comparative Study of Car-Trailer Dynamics Models Yuping He, Jing Ren, Univ of Ontario Institute of Technology

1:20 p.m.	2013-01-0682	A Methodology to Assess Road Tankers Rollover Trend During Turning <i>Jose Antonio Romero, Eduardo Betanzo-Quezada, Queretaro Autonomous University; Alejandro Lozano-Guzman, CICATA, National Polytechnic Institute</i>
1:40 p.m.	2013-01-0675	Design for Vehicle Rollover Warning System <i>Chun Hsiung Chen, Chi-Chun Yao, Yu-Sheng Liao, Automotive Research & Testing Center</i>
2:00 p.m.	2013-01-0679	Decoupled 3D Moment Control for Vehicle Motion Using In-Wheel Motors <i>Etsuo Katsuyama, Toyota Motor Corp.</i>
	2013-01-0702	Handling Stability Optimization of Mining Dump Truck Based on Parameter Identification (Written Only -- No Oral Presentation) <i>Wenguang Wu, Zhengqi Gu, Hunan University</i>
	2013-01-0711	Directional Control of Articulated Heavy Vehicles (Written Only -- No Oral Presentation) <i>S. Hamed Tabatabaei Oreh, Reza Kazemi, Shahram Azadi, K N Toosi Univ. of Technology</i>
	2013-01-0717	An Anti-Lock Braking Control Strategy for 4WD Electric Vehicle Based on Variable Structure Control (Written Only -- No Oral Presentation) <i>Hao Zhu, Zhuoping Yu, Lu Xiong, Hui Zheng, Tongji University</i>

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Planned by Vehicle Dynamics Committee / Automobile Chassis Activity

Wednesday, April 17

Active Safety and Advanced Driver Assistance Systems (Part 1 of 2)

Session Code: AC600

Room D3-18

Session Time: 8:00 a.m.

Active Safety & Advanced Driver Assistance Systems help prevent accidents or mitigate accident severity. Some these safety systems provide alerts to the driver in critical situations, while others respond to threats by automatically braking and steering the vehicle to avoid crashes. Today's ADAS systems are enabled by on-board vehicle and environmental sensors such as radars and cameras. In the future, V2X communication will be added to enhance safety functionality and performance.

Organizers - Joseph Kianthra, Active Safety Engineering LLC; Walter Kosiak, Delphi Corp.

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Technical Keynote: The Status of NHTSA Research on Advanced Forward Collision Avoidance and Mitigation Systems <i>W. Riley Garrott, National Hwy Traffic Safety Admin</i>
8:40 a.m.	2013-01-0730	Characterization of Lane Departure Crashes Using Event Data Recorders Extracted from Real-World Collisions <i>Kristofer D. Kusano, Hampton C. Gabler, Virginia Tech</i>
9:00 a.m.	2013-01-0725	Status of Test Methods for Autonomous Emergency Braking Systems - Results from the Active Test Project <i>Andrés Aparicio, Applus Idiada; Micha Lesemann, Institut für Kraftfahrzeuge; Henrik Eriksson, SP Technical Research Inst of Sweden</i>

9:20 a.m.	2013-01-0724	Subjective Evaluation of Advanced Driver Assistance by Evaluation of Standardized Driving Maneuvers Stefan Bernsteiner, Graz University of Technology; Daniel Lindvai-Soos, Magna Steyr Fahrzeugtechnik AG & Co KG; Reinhard Holl, Arno Eichberger, Graz University of Technology
9:40 a.m.	2013-01-0723	Validation of a Driver Recovery Model Using Real-World Road Departure Cases Allison Daniello, Kristofer Kusano, H. Gabler, Virginia Tech
10:00 a.m.	2013-01-0726	Design and Evaluation of Emergency Driving Support Using Motor Driven Power Steering and Differential Braking on a Virtual Test Track Jaewoong Choi, Kyongsu Yi, Seoul National Univ.
10:20 a.m.	2013-01-0722	V2V-Intersection Management at Roundabouts Reza Azimi, Gaurav Bhatia, Raj Rajkumar, Carnegie Mellon Univ.; Priyantha Mudalige, GM Technical Center
10:40 a.m.	2013-01-0728	Limitations of an Integral Safety Concept in Longitudinal Traffic to Meet Vision Zero Hadj Hamma Tadjine, Benedikt Schonlau, Robert Schwaiger, Klaus Krumbiegel, IAV GmbH
	2013-01-0739	Experimental Study on Vehicle to Road Tracking Algorithm by Using Kalman Filter Associated with Vehicle Lateral Dynamics (Written Only -- No Oral Presentation) Dongho Shin, Korea Univ. of Technology and Education

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Planned by Automobile Chassis Activity / EMB Land and Sea Group

Wednesday, April 17

Active Safety and Advanced Driver Assistance Systems (Part 2 of 2)

Session Code: AC600

Room D3-18

Session Time: 1:00 p.m.

Automotive Active Safety Systems help prevent accidents or mitigate accident severity. Some active safety systems provide warnings to the driver in critical situations, while other systems respond to threats by automatically braking and steering the vehicle. Active Safety systems are enabled by on-board sensors, together with environmental sensors such as radars and cameras. In the future, car-to-car and car-to-infrastructure communication will enhance system functionality and performance.

Organizers - Joseph Kianianthra, Active Safety Engineering LLC; Walter Kosiak, Delphi Corp.

Time	Paper No.	Title
1:00 p.m.	2013-01-0732	Alert Method for Rear Cross Traffic Alert System in North America Yoshihiko Takahashi, Tetsuya Komoguchi, Masato Seki, Toyota Motor Corp.; Nimesh Patel, David Auner, Bruce Campbell, Toyota Motor Engineering & Mfg NA Inc.
1:20 p.m.	2013-01-0733	Hybrid Approach for a Future Environmental Representation for Advanced Driver Assistance Systems Andree Hohm, Ralph Grewe, Stefan Lueke, Continental AG
1:40 p.m.	2013-01-0718	Development of Active Lane Keeping Assist System JaeHee Kim, Sang Min Lee, Sung Kwang Shin, Sang Ho Jeong, Hyundai & Kia Corp.

2:00 p.m.	2013-01-0727	Forward Collision Warning Timing in Near Term Applications Guy S. Nusholtz, Timothy P. Hsu, Manuel A. Gracián, Jesús A. Prado, Rebeca Cedeño, Nadia M. Santillán, David Herrera, Chrysler Group LLC
2:20 p.m.	2013-01-0734	A Sensor Fusion Digital-Map System for Driver Assistance Kyungho Yoo, Hwayoung Kim, Hayong Woo, Seongsu Im, Hui Sung Lee, Hyundai Motor Co.
2:40 p.m.	2013-01-0720	Considerations in HMI Design of a Reverse Braking Assist (RBA) System Dev Kochhar, Walter Talamonti, Louis Tijerina, Ford Motor Co.

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Planned by Automobile Chassis Activity / EMB Land and Sea Group

Wednesday, April 17

Chat with the Experts: Motorsports

Session Code: MSECCHAT100

Room D3-19

Session Time: 4:00 p.m.

Keynote Speakers - Naethan Eagles, TotalSim, Ltd.; David A. Finch, Raetech Corp.; Raymond Leto, TotalSim LLC; Wiley R. McCoy, McLaren Performance Technologies; John Melvin, Tandelta; J. Kirk Russell, Retired; H. Robert (Bob) Welge, Robert's Engineering Development

Planned by Motorsports Engineering Committee / Motorsports Engineering Activity

Wednesday, April 17

Tire and Wheel Technology

Session Code: AC400

Room D3-20

Session Time: 9:00 a.m.

Advanced concepts and modeling of tires will be presented by industry and university researchers.

Organizers - John D. Andrus; Jaehyung Ju, Univ. of North Texas; Neel K. Mani, Timothy A. Marantis, Bridgestone Americas Inc.; Rick S. Wallace, David L. Howland, General Motors LLC

Time	Paper No.	Title
9:00 a.m.	2013-01-0741	Experimental and Numerical Analysis of the Conceptual Next Generation Ecology Tire (First Report) Isao Kuwayama, Hiroyuki Matsumoto, Hisashi Heguri, Bridgestone Corp.
9:20 a.m.	2013-01-0742	Integrity Sensing with Smart Polymers and Rubber Components on Vehicles (i.e. Tires, Hoses, Seals) Brittany Ann Newell, Gary Krutz, Keith Harmeyer, Michael Holland, Purdue Univ.
9:40 a.m.	2013-01-0743	Using Objective Vehicle-Handling Metrics for Tire Performance Evaluation and Selection Srikanth Sivaramakrishnan, Saied Taheri, Virginia Tech

10:00 a.m.	2013-01-0744	<i>Development of Intelligent Tire System</i> <i>Hee Young Jo, Myungki Yeom, Jeongjin Lee, Hyundai Motor Co.; Kyushik Park, Mando Corp.; Jaegeun Oh, Corechips</i>
	2013-01-0746	<i>Tire Carcass Camber and its Application for Overturning Moment Modeling (Written Only -- No Oral Presentation)</i> <i>Dang Lu, Dawei Wang, Chunxue Wang, Konghui Guo, Jilin Univ.</i>
	2013-01-0748	<i>Objective Measurement of Vehicle Steering and Handling Performance When a Tire Loses Its Air (Written Only -- No Oral Presentation)</i> <i>Donald F. Tandy, B. Nicholas Ault, Jason Colborn, Robert Pascarella, Tandy Engineering & Associates Inc.</i>

Planned by Tire and Wheel Committee / Automobile Chassis Activity

Wednesday, April 17

Automotive Engineering as a Degree

Session Code: ABET100

Room D3-20

Session Time: 1:00 p.m.

This is a panel discussion on the development of Automotive Engineering as a separate curriculum within university engineering programs. The speakers will consider the need for such programs from the perspective of universities and the mobility industry.

Organizers - Thomas E. Kenney; Kenneth E. Rennels, Purdue University; Nadir Yilmaz, New Mexico Inst. of Min & Tech.

Panelists - Imtiaz Haque, CU-ICAR; Matthew C. Reynolds, Chrysler Group LLC; Kim Topping, Chrysler Group LLC; Peter Hylton, Indiana Univ. Purdue Univ. Indianapolis; Giorgio Rizzoni, The Ohio State Univ.; Robert L. Woods, Univ. of Texas at Arlington; Sam Hamade, Ford Motor Co.;

Wednesday, April 17

Panel Discussion: Landfill Free Attainment Best Practices

Session Code: SDP120

Room D3-22

Session Time: 8:00 a.m.

Landfills have led to some of the most heated, acrimonious battles over pollution concerns in the public commons that have ever been seen. The panel will speak about the understanding of what is possible in the auto industry where a fully-integrated supply chain approach to "landfill free" attainment can be part of a long term strategic plan. Issues the panel will be prepared to discuss include education as to what is possible through direct and indirect attention (best practices); barriers (real and imagined); recycling and issues surrounding leadership in environmental stewardship. Specific examples will be given.

Organizers - John J. Bradburn, General Motors LLC; Carol Henry, George Washington Univ.; Michael D. Powers, Wellman Engineering Resins

Chairpersons - Michael D. Powers, Wellman Engineering Resins

Moderators - Ernie Smith, Cummins Inc.

Panelists - Lawrence Berkowski, Wellman Engineering Resins; John J. Bradburn, General Motors LLC; Jeffery C. Czich, Ford Motor Co.; Eve Steigerwalt, Dana Holding Corporation;

Planned by Sustainable Development Program Committee / Engineering Meetings Board

Wednesday, April 17

Driver Vision and Lighting Technology

Session Code: B300

Room D3-22

Session Time: 1:00 p.m.

Organizers - Jianzhong Jiao, Osram Opto Semiconductors Inc.; Michael Flannagan, Univ. of Michigan

Time	Paper No.	Title
1:00 p.m.	ORAL ONLY	Single Reflector Full LED Headlamp with Combined High and Low Beam Stefan G. Groetsch, Osram Opto Semiconductors GmbH
1:20 p.m.	2013-01-0753	LED Headlamp for DOE Super Truck Al Bolander, Timothy Brooks, Peter Thompson, Grote Industries LLC
1:40 p.m.	2013-01-0754	How to Make LED Concepts More Affordable for Automotive Signal Lighting Miroslav Kropac, Varroc Lighting Systems
2:00 p.m.	2013-01-0752	Light Bulb Filament Distortion Thresholds by Voltage and Delta-V Jay Przybyla, Thomas Rush, Daniel Melcher, Sam Robinson, Armstrong Forensic Engineers Inc
2:20 p.m.	2013-01-0749	Headlamp Levelness and Glare: Preliminary Analyses Based on Field Data John D. Bullough, Rensselaer Polytechnic Institute
2:40 p.m.	2013-01-0751	Effectivity of Automatic Glare Free High Beam Lighting Devices in Night Time Driving Rainer Neumann, Varroc Lighting Systems GmbH
3:00 p.m.	2013-01-1027	The Effectiveness of the Use of the Side View Camera in Reducing Accidents when Changing Lanes Kei Oshida, Haruhiko Nishiguchi, Honda R&D Co Ltd
3:20 p.m.	2013-01-1029	Driver Visibility: Customer Insights and Metric Development Rajiv Mehta, John Martuscelli, General Motors Company

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Planned by Human Factors Committee / Automobile Body Activity

Wednesday, April 17

Occupant Protection: Structural Crashworthiness and Occupant Safety (Part 1 of 2)

Session Code: B409

Room D3-23

Session Time: 9:00 a.m.

Organizers - Saeed Barbat, Jamel E. Belwafa, Ford Motor Co.

Chairpersons - Saeed Barbat, Jamel E. Belwafa, Ford Motor Co

Time	Paper No.	Title
9:00 a.m.	2013-01-0764	Idealized Vehicle Crash Test Pulses for Advanced Batteries Saeed Barbat, Mark Mehall, Ford Motor Co.; Raviraj Nayak, General Motors Company; Guy S. Nusholtz, Chrysler Group LLC; Natalie M. Olds, USCAR; Yibing Shi, Chrysler Group LLC; William Stanko, Ford Motor Co.; Jenne-Tai Wang, General Motors Company; Para Weerappuli, Ford Motor Co.; Lan Xu, Chrysler Group LLC; Krishnarao Venkata Yalamanchili, General Motors Company

9:20 a.m.	2013-01-0756	Selection of Optimal Design Parameters to Achieve Improved Occupant Performance in Frontal Impacts Sairama Narayana Peddi, Mahindra & Mahindra, Ltd.
9:40 a.m.	2013-01-0760	Optimized Ride-Down Rate Control in Frontal Impact and its Application in the Energy Management of Occupant Restraint System Shaobo Qiu, FAW Automotive Technology Research Center; Hongjian Li, Faw Automotive Technology Research Center; Junyuan Zhang, Yue Ma, Jilin University Automotive Engrg College; Yumin Hao, Faw Automotive Technology Research Center
10:00 a.m.	2013-01-0755	Influence of Welded Joints on the Crashworthiness Response of Hybrid Structural Elements Miguel Costas, Jacobo Diaz, Luis Esteban Romera, Santiago Hernandez, University of La Coruna; Raquel Ledo, CTAG

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00328 and SUB-TP-00007, an individually. To purchase visit collections.sae.org

Planned by Occupant Protection Committee / Automobile Body Activity

Wednesday, April 17

Occupant Protection: Structural Crashworthiness and Occupant Safety (Part 2 of 2)

Session Code: B409

Room D3-23

Session Time: 2:00 p.m.

Organizers - Saeed Barbat, Jamel E. Belwafa, Ford Motor Co.

Chairpersons - Saeed Barbat, Jamel E. Belwafa, Ford Motor Co

Time	Paper No.	Title
2:00 p.m.	2013-01-0757	An Assessment of the Effects of Passenger Vehicle Weight and Size on Accident and Fatality Risk Based on Data for 1991 through 2007 Model Year Vehicles R. Michael Van Auken, John W. Zellner, Dynamic Research, Inc.
2:20 p.m.	2013-01-0758	Method Development of Multi-Dimensional Accident Analysis Using Self Organizing Map Hitoshi Uno, Yusuke Kageyama, Akira Yamaguchi, Tomosaburo Okabe, Nissan
2:40 p.m.	2013-01-0759	Severe Frontal Collisions with Partial Overlap - Two Decades of Car Safety Development Lotta Jakobsson, Graeme McInally, Anders Axelson, Magdalena Lindman, Anders Kling, Thomas Broberg, Mikael Fermér, Linus Wågström, Volvo Car Corporation
3:00 p.m.	2013-01-0762	Repeatability of a Small Overlap and an Oblique Moving Deformable Barrier Test Procedure James Saunders, Daniel Parent, NHTSA

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00328, SUB-TP-00006 and SL TP-00007, and also individually. To purchase visit collections.sae.org

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Wednesday, April 17

Vehicle Aerodynamics (Part 4 of 7): Cooling Airflow

Session Code: B500

Room D3-24/25

Session Time: 8:00 a.m.

This session deals with Cooling Airflow aspects of aerodynamics testing and measurement. Papers on climatic wind tunnel facilities as well as techniques for measuring cooling airflow on scale models, full scale vehicles, and CFD are discussed.

Organizers - Edward G. Duell, Jacobs Technology Inc.; Gregory Fadler, Navistar; Adrian P. Gaylard, Jaguar Land Rover; Mark E. Gleason, Chrysler Group LLC; Kevin Golsch, Navistar; Arturo Guzman, Chrysler Group LLC; Taeyoung Han, GM; Bahram Khalighi, General Motors; Todd Lounsberry, Chrysler Group LLC; Thomas N. Ramsay, Honda R & D Americas Inc.; David Sims-Williams, Durham University; Sandeep Sovani, ANSYS Inc.

Time	Paper No.	Title
8:00 a.m.	2013-01-0598	A Review of Some Cooling Air Flow Measurement Techniques for Model Scale, Full Scale and CFD Timo Kuthada, FKFS
8:20 a.m.	2013-01-0597	The UOIT Automotive Centre of Excellence - Climatic Test Facility Scott Best, Aiolos Engineering Corp.; John Komar, Gary Elfstrom, Univ of Ontario Institute of Technology

Planned by Vehicle Aerodynamics Committee / Automobile Body Activity

Wednesday, April 17

Vehicle Aerodynamics (Part 5 of 7): Aerodynamics Development II

Session Code: B500

Room D3-24/25

Session Time: 9:20 a.m.

This session explores a range of important contemporary concerns for the road vehicle aerodynamicist: what is the aerodynamic potential of underbody diffusers? Could active flow control concepts reduce drag? What are the aerodynamic losses associated with rotating wheels? What is the impact on aerodynamic drag of tyre design?

Organizers - Edward G. Duell, Jacobs Technology Inc.; Gregory Fadler, Navistar; Adrian P. Gaylard, Jaguar Land Rover; Mark E. Gleason, Chrysler Group LLC; Kevin Golsch, Navistar; Arturo Guzman, Chrysler Group LLC; Taeyoung Han, GM; Bahram Khalighi; Todd Lounsberry, Chrysler Group LLC; Thomas N. Ramsay, Honda R & D Americas Inc.; David Sims-Williams, Durham University; Sandeep Sovani, ANSYS Inc.

Time	Paper No.	Title
9:20 a.m.	2013-01-0952	Performance of an Automotive Under-Body Diffuser Applied to a Sedan and a Wagon Vehicle Jesper Marklund, Combitech AB; Lennart Lofdahl, Chalmers Univ. of Technology; Hakan Danielsson, Chalmers Univ of Technology; Gunnar Olsson, LeanNova Engineering AB
9:40 a.m.	2013-01-0953	Investigation of Wheel Ventilation-Drag using a Modular Wheel Design Concept Alexey Vdovin, Chalmers Univ. of Technology; Sabine Bonitz, Technische Universität Berlin; Christoffer Landstrom, Volvo Car Corporation; Lennart Lofdahl, Chalmers Univ. of Technology
10:00 a.m.	2013-01-0955	Investigation of the Influence of Tyre Geometry on the Aerodynamics of Passenger Cars Teddy Hobeika, Chalmers University of Technology; Simone Sebben, Christoffer Landstrom, Volvo Car Corporation

10:20 a.m. **2013-01-0954** **Computational Study of Drag Reduction of Models of Truck-Shaped Bodies in Ground Effect by Active Flow Control**
Ramesh K. Agarwal, Washington Univ. St. Louis

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00329 and SUB-TP-00004, an individually. To purchase visit collections.sae.org

Planned by Vehicle Aerodynamics Committee / Automobile Body Activity

Wednesday, April 17

Career Wise for Engineering Professionals: Transforming Your Talents into the New World of Work

Session Code: **CONG101**

Room D3-26

Session Time: **1:00 p.m.**

Career development is no longer something you focus on in your twenties and are set for life, it is ongoing and constant. New technologies, globalization and the world-wide competition for jobs demand that we continue to grow our skills and knowledge throughout our life. This session will provide you with tools to help you meet this demand as an engineering professional. Participants will create a personal mission statement and set career goals, identify the best way to research new opportunities and build their network while also crafting a personal brand with consistent messaging.

Organizers - *Martha Schanno, SAE International*

Panelists - *Caryn Mateer, Transformational Leaders Intl.; Kathleen Riley, Transformational Leaders Intl.;*

Wednesday, April 17

Occupant Protection: Accident Reconstruction (Part 1 of 2)

Session Code: **B400**

Room D3-28

Session Time: **8:00 a.m.**

Organizers - *Christopher D. Armstrong, KEVA Engineering; Geoff Germane, Germane Engineering; Stein E. Husher, KEVA Engineering; Richard Frank Lambourn, Transport Research Laboratory, Ltd.; L. Daniel Metz*

Time	Paper No.	Title
8:00 a.m.	2013-01-0776	A Comparison of 25 High Speed Tire Disablements Involving Full and Partial Tread Separations <i>Gray Beauchamp, Daniel Koch, Dana E. Thornton, Kineticorp LLC</i>
8:20 a.m.	2013-01-0789	Friction, Tread Depth and Water; Laboratory Investigations of Passenger Car Tire Cornering Performance under Minimally-Wet Conditions <i>William Blythe, Debra E. Seguin, William Blythe Inc.</i>
8:40 a.m.	2013-01-0781	Approach to Determine Slip Values Based on the Intensity of Tire Marks with Respect to Tire and Road Properties <i>Gunther Seipel, Hermann Winner, Technische Universitat Darmstadt; Frank Baumann, Ralf Hermanutz, Daimler AG</i>

9:00 a.m.	2013-01-0787	Determining When an Object Enters the Headlight Beam Pattern of a Vehicle Jeffrey Muttart, CrashSafetyResearch.com; Wade D. Bartlett, Mechanical Forensics Engineering Services LLC; Chris D. Kauderer, Kauderer & Associates; Grant L. Johnston, Grant Johnston Consulting Engineers; Matthew R. E. Romoser, University of Massachusetts; Jan Unarski, Institute of Forensic Research; Daniel Barshinger, Quest Engineering & Failure Analysis Inc.
9:20 a.m.	2013-01-0783	Tire Friction Comparison of Three Tire Types Peter J. Leiss, Steven Becker, Gary Derian, Robson Forensic Inc.
9:40 a.m.	2013-01-0779	Uncertainty in Calculations Using Lambourn's Critical Speed Procedure Wojciech Wach, Institute of Forensic Research, Kraków
10:00 a.m.		Networking Break
10:20 a.m.	2013-01-0769	Evaluation of Vehicle Kinematics Using GPS and Other Technologies Adam Michener, John Scott, Ric Robinette, Richard Fay, Fay Engineering Corp.
10:40 a.m.	2013-01-0770	Energy Dissipation in High Speed Frontal Collisions Cleve Bare, Daniel Peterson, Micky Marine, Kevin Welsh, Exponent, Inc.
11:00 a.m.	2013-01-0771	Commercial Vehicle Skid Distance Testing and Analysis Kevin Bedsworth, Robert Butler, Gary Rogers, Kevin Breen, William Fischer, Engineering Systems, Inc.
	2013-01-0792	Brake Characteristics for a Bobtail Vehicle (Written Only -- No Oral Presentation) Fawzi P. Bayan, Anthony Cornetto, Ashley Dunn, Ronny Wahba, Jeffrey Suway, SEA, Ltd.; Yuri Prokrym; Andrew Price
	2013-01-0795	Tractor-Semitrailer Stability Following a Steer Axle Tire Blowout at Speed and Comparison to Computer Simulation Models (Written Only -- No Oral Presentation) Anthony Cornetto, Fawzi Bayan, Ashley Dunn, Charles Tanner, Ronny Wahba, Jeffrey Suway, Gary Heydinger, SEA, Ltd.; Krishnan Chakravarthy, Dennis Guenther, Ohio State Univ.

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Planned by Occupant Protection Committee / Automobile Body Activity

Wednesday, April 17

Occupant Protection: Accident Reconstruction (Part 2 of 2)

Session Code: B400

Room D3-28

Session Time: 1:00 p.m.

Organizers - Christopher D. Armstrong, KEVA Engineering; Geoff Germane, Germane Engineering; Stein E. Husher, KEVA Engineering; Richard Frank Lambourn, Transport Research Laboratory, Ltd.; L. Daniel Metz

Time	Paper No.	Title
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1:00 p.m.	2013-01-0780	Four-Point Planar Homography Algorithm for Rectification Photogrammetry: Development and Applications Chad Hovey, Hovey Consulting LLC; Angelo Togli, Collision Research & Analysis Inc
1:40 p.m.	2013-01-0788	Video Projection Mapping Photogrammetry through Video Tracking William T. Neale, James Marr, David Hessel, Kineticorp LLC
2:00 p.m.		Networking Break
2:20 p.m.	2013-01-0785	The Accuracy of Pedestrians in Estimating the Speed of a Moving Vehicle Mark Strauss, James Carnahan, Ruhl Forensic, Inc. / Univ. of Illinois Urbana; Roland Ruhl, Ruhl Forensic, Inc.
2:40 p.m.	2013-01-0772	Modeling of Pedestrian Midblock Crossing Speed with Respect to Vehicle Gap Acceptance Joseph Jakym, Shady Attalla, Sam Kodsi, Kodsi Engineering
3:00 p.m.	2013-01-0778	Using Data from a DriveCam Event Recorder to Reconstruct a Vehicle-to-Vehicle Impact Nathan A. Rose, Neal R. Carter, David Pentecost, William Bortles, Tilo Voitel, Kineticorp LLC
3:20 p.m.	2013-01-0774	Measuring and Modeling Suspensions of Passenger Vehicles Bradley E. Heinrichs, Jean-Francois Goulet, Ryan Fix, Mathieu King, MEA Forensic Engineers & Scientists
3:40 p.m.	2013-01-0777	Features of Fatal Pedestrian Injuries in Vehicle-to-Pedestrian Accidents in Japan Yasuhiro Matsui, National Traffic Safety & Enviro Lab.; Tsutomu Doi, Ibaraki Christian University; Shoko Oikawa, Kenichi Ando, National Traffic Safety & Enviro Lab.
	2013-01-0784	The Accuracy of Photo-Based Three-Dimensional Scanning for Collision Reconstruction Using 123D Catch (Written Only -- No Oral Presentation) Mark S. Erickson, Jeremy J. Bauer, Wilson C. Hayes, Hayes + Associates
	2013-01-0793	Two-Dimensional Collision Simulations of Low-Speed Crash Tests (Written Only -- No Oral Presentation) Eric Deyerl, Dial Engineering; Louis Cheng, Applied BioMechanics; Jordan Gatti, Dial Engineering
	2013-01-0794	Work-Energy Relationships for the Collinear Single Degree of Freedom Impact Model under the Case of Net Unbalanced Externally Applied Forces (Written Only -- No Oral Presentation) Jai P. Singh, BEAR, Inc.; Nicholas J. Carpenter, Collision Dynamics Analysis
	2013-01-0796	Stiffness Coefficients of Heavy Commercial Vehicles (Written Only -- No Oral Presentation) Nicolas Poirette, University of Maryland; Fawzi P. Bayan, Jeffrey Suway, Anthony Cornetto, Alfred Cipriani, Ronny Wahba, SEA, Ltd.

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Planned by Occupant Protection Committee / Automobile Body Activity

Wednesday, April 17

Motorsports Engineering (Part 1 of 2)

Session Code: MSEC100

8:00 a.m.

Room M3-32

Session Time:

A broad spectrum of Motorsports topics covering safety, aerodynamics, hybrids, modeling/simulation and engines will be presented.

Organizers - David A. Finch, Raetech Corp.; Raymond Leto, TotalSim LLC; Wiley R. McCoy, McLaren Performance Technologies; Thomas N. Ramsay, Honda R&D Americas Inc.; Michael Royce; J. Kirk Russell, Performance Events Promotion LLC; H. Robert (Bob) Welge, Robert's Engineering Development

Chairpersons - Raymond Leto, TotalSim LLC; Wiley R. McCoy, McLaren Performance Technologies; Thomas N. Ramsay, Honda R & D Americas Inc.; J. Kirk Russell, Performance Events Promotion LLC; H. Robert (Bob) Welge, Robert's Engineering Development

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Technical Keynote: Efficiency Achieved <i>In 2012 the Experimental/New Technology Entry at the famous Le Mans 24hr was a racing car that challenged conventional wisdom in order to achieve radical efficiency gains. The Nissan "DeltaWing" project was born out of regulatory torpor; while contemporary racing cars were dominated by regulations that specifically limited efficiency, this project discarded the rulebook to demonstrate racing's ability to showcase extreme efficiency with extraordinary performance.</i> Ben Bowlby, Ben Bowlby Racing, LLC
8:40 a.m.		Networking Break
9:20 a.m.	ORAL ONLY	From Detroit to Austin - A Look at 30 Years of Formula 1 in the USA Michael Royce
9:40 a.m.	2013-01-0802	Design of an Actively Controlled Aerodynamic Wing to Increase High-Speed Vehicle Safety Yuping He, Univ. of Ontario Institute of Technology
10:00 a.m.		Networking Break
10:20 a.m.	2013-01-0801	Ballistic Testing of Motorsport Windshields John Patalak, Thomas Gideon, NASCAR
10:40 a.m.	2013-01-0800	Occupant Rollover Protection in Motorsports John Patalak, Thomas Gideon, NASCAR
11:00 a.m.	2013-01-0804	Examination of a Properly Restrained Motorsport Occupant John Patalak, Thomas Gideon, NASCAR; John Melvin, Tandelta
11:20 a.m.	ORAL ONLY	SAE Motorsports Safety Compendium John Melvin, Tandelta
	2013-01-0797	Race Car Aerodynamics - The Design Process of an Aerodynamic Package for the 2012 Chalmers Formula SAE Car (Written Only -- No Oral Presentation) Sven Rehnberg, Lucas Börjesson, Robert Svensson, Jonathan Rice, Chalmers Univ. of Technology
	2013-01-0799	CFD and Experimental Optimization of Formula SAE Race Car Cooling Air Duct (Written Only -- No Oral Presentation) Sachin R Kamath, Prajwal Kumar M P, Shashank S N, Vinay Damodaran, NITK, Surathkal; Anand S R, Prakash Kulkarni, IISc, Bangalore

- 2013-01-0805 *Assessment of Ear- and Tooth-Mounted Accelerometers as Representative of Human Head Response (Written Only -- No Oral Presentation)***
John J. Christopher, Mark R. Sochor, U.Va. Center for Applied Biomechanics; Joseph Pelletiere, Federal Aviation Administration; Robert Scott Salzar, U.Va. Center for Applied Biomechanics
- 2013-01-0806 *Extended Steady State Lap Time Simulation for Analyzing Transient Vehicle Behavior (Written Only -- No Oral Presentation)***
Timo Völkl, Martin Muehlmeier, Audi AG; Hermann Winner, Technische Universität Darmstadt

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Wednesday, April 17

Motorsports Engineering (Part 2 of 2) - Panel Discussion: Does Motor Sports have any Relevance to the Automobile Industry Today? If so, what is it?

Session Code: **MSEC100**

Room M3-32

Session Time: **2:00 p.m.**

This is an ongoing question, particularly in the era of tight budgets and intense competition within the industry. Other factors are now in play, such as the challenging future fuel economy requirements and the ongoing interest in hybrids and electric vehicles. This is compounded by the desire for cost containment trend within motor sports and the entry of hybrid race cars from both Audi and Toyota in the 2012 Le Mans Endurance race.

Organizers - *Patrick H. Baer, Chrysler Group LLC; Lee Carducci, Power-Tec Engineering; David T. Currier, Toyota Racing Development USA; Patrick DiMarco, Ford Motor Co.; Hubert Gramling, FIA Institute; Paul Haney, InfoTire; Tim Holland, Lotus Engineering, Ltd.; Ryan Hoover, IMMI (Indiana Mills & Mfg Inc); Peter Hylton, Indiana Univ. Purdue Univ. Indianapolis; William Kimberley, Racecar Graphic, Ltd.; John Melvin, Tandelta; Matthew J. Meyer, GM Racing; John Patalak, NASCAR; Dan Rivard; Michael Royce, Albion Associates, LLC; Pete Spence, Toyota Racing Development USA; Don Taylor, NHRA; Peter Thomas Tkacik, UNC Charlotte Motorsports Engineering; Timothy White, National Hot Rod Association; J. Kirk Russell, Performance Events Promotion LLC; Raymond Leto, TotalSim LLC; Wiley R. McCoy, McLaren Performance Technologies; H. Robert (Bob) Welge, Robert's Engineering Development; Thomas N. Ramsay, Honda R&D Americas Inc.; David A. Finch, Raetech Corp.*

Chairpersons - *Michael Royce*

Moderators - *John McElroy, Blue Sky Productions*

Panelists - *David R. Bailey, Chrysler Group LLC; Ben Bowlby, Ben Bowlby Racing, LLC; Scot Elkins, IMSA; Robert Larsen, OboTech. LLC; John Maddox, Roush Yates Engines; Pete Spence, Toyota Racing Development USA;*

Planned by Motorsports Engineering Committee / Motorsports Engineering Activity

Wednesday, April 17

Advanced Hybrid and Electric Vehicle Powertrains (Part 1 of 4)

Session Code: **PFL100**

Room O2-33

Session Time: **8:00 a.m.**

This session covers new production and near-production hybrid powertrains, hybrid architecture, and testing.

Organizers - *Michael Duoba, Argonne National Laboratory; Ryan McGee, Ford Motor Co.; Constantine N. Raptis, Mark A. Theobald, GM Powertrain*

Time	Paper No.	Title
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8:00 a.m.	2013-01-1458	Validating Volt PHEV Model with Dynamometer Test Data Using Autonomie Namdoo Kim, Michael Duoba, Namwook Kim, Aymeric Rousseau, Argonne National Laboratory
8:20 a.m.	2013-01-1470	Modeling and Validation of Power-Split and P2 Parallel Hybrid Electric Vehicles SoDuk Lee, Byungho Lee, Joseph McDonald, L. James Sanchez, Edward Nam, US Environmental Protection Agency
8:40 a.m.	2013-01-1473	Analysis of Input Power, Energy Availability, and Efficiency during Deceleration for X-EV Vehicles Eric Rask, Danilo Santini, Henning Lohse-Busch, Argonne National Laboratory
9:00 a.m.	2013-01-1456	System Simulation and Analysis of EPA 5-Cycle Fuel Economy for Powersplit Hybrid Electric Vehicles Yan Meng, Mark Jennings, William Schwartz, Poyu Tsou, Ford Motor Co.
9:20 a.m.	2013-01-1462	Ambient Temperature (20°F, 72°F and 95°F) Impact on Fuel and Energy Consumption for Several Conventional Vehicles, Hybrid and Plug-In Hybrid Electric Vehicles and Battery Electric Vehicle Henning Lohse-Busch, Michael Duoba, Eric Rask, Kevin Stutenberg, Argonne National Laboratory; Vivek Gowri, Univ of Washington; Lee Slezak, David Anderson, US Dept of Energy
9:40 a.m.	2013-01-1457	The Measured Impact of Vehicle Mass on Road Load Forces and Energy Consumption for a BEV, HEV, and ICE Vehicle Richard 'Barney' Carlson, Idaho National Laboratory; Henning Lohse-Busch, Argonne National Laboratory; Jeremy Diez, ECOTality North America; Jerry Gibbs, U.S. Department of Energy
10:00 a.m.	2013-01-1474	Developing a Utility Factor for Battery Electric Vehicles Michael Duoba, Argonne National Laboratory
10:20 a.m.	2013-01-1449	Vehicle Modeling and Evaluation of the Engine Options in Conventional and Mild-Hybrid Powertrain Andrej Ivanco, Zoran Filipi, Clemson University ICAR
10:40 a.m.	2013-01-1453	Accounting for the Variation of Driver Aggression in the Simulation of Conventional and Advanced Vehicles Jeremy S. Neubauer, Eric Wood, National Renewable Energy Laboratory

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

Wednesday, April 17

Advanced Hybrid and Electric Vehicle Powertrains (Part 2 of 4)

Session Code: PFL100

Room O2-33

Session Time: 1:00 p.m.

This session covers new production and near-production hybrid powertrains, hybrid architecture, and testing.

Organizers - Michael Duoba, Argonne National Laboratory; Ryan McGee, Ford Motor Co.; Constantine N. Raptis, Mark A. Theobald, GM Powertrain

Time	Paper No.	Title
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1:00 p.m.	2013-01-1451	Engine Control Unit Modeling with Engine Feature C Code for HEV Applications Alexander Zaremba, Philip Lechowicz, Mark Jennings, Ford Motor Co.
1:20 p.m.	2013-01-1471	Optimal Online Energy Management for Diesel HEV: Robustness to Real Driving Conditions Laurent Thibault, Thomas Leroy, IFP Energies Nouvelles
1:40 p.m.	2013-01-1465	Application of an Optimal Control Problem to a Trip-Based Energy Management for Electric Vehicles Thomas Juergen Boehme, Florian Held, Christoph Rollinger, Heiko Rabba, Matthias Schultalbers, IAV Automotive Engineering; Bernhard Lampe, University of Rostock
2:00 p.m.	ORAL ONLY	Enabling Integrated Powertrain Experiments in Networked Distributed Laboratories Tulga Ersal, Youngki Kim, Jason Siegel, Ashwin Salvi, Univ of Michigan; Mark Brudnak, US Army TARDEC; Anna Stefanopoulou, University of Michigan; Jeffrey Stein, Univ of Michigan-Ann Arbor; Zoran Filipi, Clemson University
2:20 p.m.	2013-01-1466	Regenerative Braking Control Enhancement for the Power Split Hybrid Architecture with the Utilization of Hardware-in-the-loop Simulations Kerem Bayar, Ryan McGee, Hai Yu, Dale Crombez, Ford Motor Co
2:40 p.m.	2013-01-1477	Performance Improvement of a Two Speed EV through Combined Gear Ratio and Shift Schedule Optimization Xingxing Zhou, Paul Walker, Nong Zhang, FEIT, University of Technology; Bo Zhu, BAIC Motor Electric Vehicle Co Ltd
3:00 p.m.	2013-01-1461	Optimization of Gear Shifting and Torque Split for Improved Fuel Efficiency and Drivability of HEVs Mohammad Khodabakhshian, Lei Feng, Jan Wikander, KTH Royal Institute of Technology
3:20 p.m.	2013-01-1460	Instantaneous Optimization-based Energy Management Control Strategy for Extended Range Electric Vehicle Branimir Skugor, Josko Deur, Univ of Zagreb
	2013-01-1481	Dynamic Programming-based Optimization of Control Variables of an Extended Range Electric Vehicle (Written Only -- No Oral Presentation) Mihael Cipek, Mirko Ćorić, Branimir Ćkugor, Josip Kasać, Joško Deur, Univ of Zagreb

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Wednesday, April 17

Transmission and Driveline: Modeling

Session Code: PFL608

Room O2-35/36

Session Time: 8:00 a.m.

This session covers transmission and driveline modeling, including topics related to transmission hardware, software, and system integration

Organizers - James Hendrickson, General Motors LLC; Berthold Martin, Chrysler Group LLC; Chin-Yuan Perng, Ford Motor Co.

Time	Paper No.	Title
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8:00 a.m.	2013-01-0808	Development of Advanced Light-Duty Powertrain and Hybrid Analysis Tool Byungho Lee, SoDuk Lee, Jeff Cherry, Anthony Neam, James Sanchez, Ed Nam, US Environmental Protection Agency
8:20 a.m.	2013-01-0814	Analysis of Thermal Load for Dry Clutch under the Frequent Launching Condition Shaohua Sun, Yulong Lei, Yao Fu, Cheng Yang, ShunBo Li, State Key Lab. of ASC, Jilin University
8:40 a.m.	2013-01-0815	Forward-Looking Simulation of the GM Front-Wheel Drive Two-Mode Power-Split HEV Using a Dynamic Programming-Informed Equivalent Cost Minimization Strategy Dekun Pei; Michael Leamy, Georgia Institute of Technology
9:00 a.m.	2013-01-0816	Development and Implementation of Hardware in the Loop Simulation for Dual Clutch Transmission Control Units Nicolo Cavina, Davide Olivi, Enrico Corti, Giorgio Mancini, University of Bologna; Luca Poggio, Francesco Marcigliano, Ferrari Auto SpA
9:20 a.m.	2013-01-0817	Development and Validation of a Forklift Truck Powertrain Simulation Martin Murtagh, Robert Kee, Geoffrey McCullough, Charles Stuart, Conor Bradley, Queen's University of Belfast; Stephen Trimble, Matthew Allen, Chenyao Chen, Alan Kolkemo, NACCO Material Handling Group; Drew Reichenbach, AVL Powertrain Engineering, Inc.
9:40 a.m.	2013-01-0818	Experimental Characterization and Modeling of Dry Dual Clutch Thermal Expansion Effects Matija Hoic, Zvonko Herold, Nenad Kranjcevic, Josko Deur, Univ of Zagreb; Vladimir Ivanovic, Ford Motor Co.
10:00 a.m.	2013-01-0819	Development of an Analytical Modeling Method and Testing Procedures to Aid in the Design of Cardan Joints for Front Steerable Beam Axles Gerald Thom, Chrysler Group LLC; Alan Sheets, Altair Product Design; Frederick F. Brendel, Kah Wah Long, Chrysler Group LLC
10:20 a.m.	2013-01-0820	Mathematical Analysis of Influence of Oil Temperature on Efficiencies in Hydraulic Pumps for Automatic Transmissions Yoshiharu Inaguma, Naohito Yoshida, JTEKT Corp
10:40 a.m.	2013-01-0822	The Simscape Language and Powertrain Applications Jyh-Shin Chen, General Motors Company
	2013-01-0825	Analysis of a Shift Quality Metric for a Dual Clutch Transmission (Written Only -- No Oral Presentation) Huabing Zeng, Yulong Lei, Yao Fu, Yongfa Li, State Key Lab. of ASC, Jilin University; Wanhua Ye, Chongqing Tsingshan Industry Co. Ltd.
	2013-01-0826	Powershift Differential Transmission with Three Flows of Power for Construction Machines (Written Only -- No Oral Presentation) Jaroslav Pitonak, University of Zilina

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Wednesday, April 17

Transmission and Driveline: All Wheel Drive

Session Code: PFL602

Room O2-35/36

Session Time: 1:00 p.m.

This session contains topics relevant to all wheel drive systems.

Organizers - Joel Gunderson, Farzad Samie, General Motors LLC; Robert A. Smithson, FallBrook Technologies Inc.

Time	Paper No.	Title
1:00 p.m.	2013-01-0362	AWD Disconnect Solutions ¿ZF EConnect¿ Robert Peter, Claus Granzow, Matthias Arzner, Volker Vogel, ZF Friedrichshafen AG
1:20 p.m.	2013-01-0361	Development of a Standard Spin Loss Test Procedure for FWD-Based Power Transfer Units Michael P. Kirk, Chrysler Group LLC; Thomas D'Anna, William Seldon, FEV Inc; Andreas Perakes, Ford Motor Co; Craig Ross, General Motors Company

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 17

Transmission and Driveline: IVT / CVT

Session Code: PFL603

Room O2-35/36

Session Time: 2:00 p.m.

This session contains topics relevant to belt and traction drive continuously variable transmissions (CVT).

Organizers - Joel Gunderson, Farzad Samie, General Motors LLC; Robert A. Smithson, FallBrook Technologies Inc.

Time	Paper No.	Title
2:00 p.m.	2013-01-0365	Development of High-Efficiency New CVT for Midsize Vehicle Koichiro Inukai, Akihiro Shibahara, Takeshi Uchino, Nishiyama Keiichi, Yasunori Murakami, Moichio Kojima, Honda R&D Co., Ltd.
2:20 p.m.	2013-01-0368	Thermal Analysis of Traction Contact Area Using a Thin-film Temperature Sensor Masashi Inoue, Yasuhiro Takeuchi, Muneo Yarinaga, Nippon Soken Inc.; Toshinari Sano, Mitsuaki Tomita, Toyota Motor Corporation
2:40 p.m.	2013-01-0366	Study of the Prediction Method for Maximum Traction Coefficient Toshinari Sano, Mitsuaki Tomita, Toyota Motor Corporation; Masashi Inoue, Yasuhiro Takeuchi, Muneo Yarinaga, Nippon Soken Inc
3:00 p.m.	2013-01-0364	Technology Development to Improve Jatco CVT8 Efficiency Yohei Shimokawa, JATCO, Ltd.
3:20 p.m.	2013-01-0367	Development of Ratio Control System for Toyota's New Continuously Variable Transmission Kunio Hattori, Shinya Toyoda, Daisuke Inoue, Yuya Shimoizato, Toyota Motor Corporation

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Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 17

Vehicle Electrification Strategies for Sustainability

Session Code: SDP117

Room O2-37

Session Time: 8:00 a.m.

In this session speakers will explore the issues and design strategies of bringing sustainable EV, PHEV and vehicle electrification technologies to market. Identifying the customer value of these sustainable technologies is key to their success and growth. The design models and systems presented in this session highlight ways to optimize customer value to make these technologies successful.

Organizers - Rajit Johri, Ford Motor Co.; Nakia Simon, Mengyang Zhang, Chrysler Group LLC; Richard T. Paul, Environmental Consultant

Time	Paper No.	Title
8:00 a.m.	2013-01-0494	Cost Effective Annual Use and Charging Frequency for Four Different Plug-in Powertrains <i>Danilo Santini, Yan ZHOU, Thomas Stephens, Anant Vyas, Namdoo Kim, Kevin Gallagher, Argonne National Laboratory</i>
8:20 a.m.	2013-01-0495	The Integrated Electric Lifestyle: The Economic and Environmental Benefits of an Efficient Home-Vehicle System <i>Benjamin Lee, Daniel Boston, Qinpeng Wang, Godfried Augenbroe, Bert Bras, Tina Guldberg, Christiaan Paredis, Georgia Institute of Technology; Michael Tinskey, Donna Bell, Ford Motor Co</i>
8:40 a.m.	2013-01-0496	A Technical and Financial Analysis of Potentially Near-Zero Greenhouse Gas Emission Passenger Vehicles <i>Michael Brear, Peter Dennis, Chris Manzie, University of Melbourne; Rahul Sharma, University of Queensland</i>
9:00 a.m.	2013-01-0497	Hydrogen Sensors for Automotive Fuel Cell Applications <i>Massimo Venturi, Daimler AG; Ralph Fischer, MBtech Group GmbH & Co. KGaA; Florian Henkel, NuCellSys GmbH</i>
9:20 a.m.	2013-01-0499	A Load Balancing Strategy for Increasing Battery Lifetime in Electric Vehicles <i>Christopher Masjosthusmann, Ulrich Bueker, Ulrich Köhler, Nikolaus Decius, HELLA KGaA Hueck & Co.</i>
9:40 a.m.	2013-01-0500	A Techno-Economic Analysis of BEV Service Providers Offering Battery Swapping Services <i>Jeremy S. Neubauer, Ahmad Pesaran, National Renewable Energy Laboratory</i>
10:00 a.m.	2013-01-0501	Formulation of Model for Estimation of Battery Capacity Degradation Based on Usage History <i>Taisuke Tsurutani, Koichiro Takemasa, Tsubasa Uchida, Yuki Tominaga, Honda R&D Co., Ltd.</i>
10:20 a.m.	2013-01-0502	The Future Adoption and Benefit of Electric Vehicles: A Parametric Assessment <i>Garrett E. Barter, David Reichmuth, Todd H. West, Dawn K. Manley, Sandia National Laboratories</i>
10:40 a.m.	2013-01-0503	Supervisory Control Strategy for Mild Hybrid System - A Model Based Approach <i>Subhabrata Gupta, Rahul Sharma, Yuaraj K B, Anil Yadav, Manik Narula, Tapan Sahoo, Maruti Suzuki India Ltd.</i>
11:00 a.m.	2013-01-0504	Feasibility of Electrifying Urban Goods Distribution Trucks <i>Sofia Löfstrand, Jonas Hellgren, Niklas Thulin, Volvo GTT ATR; Henrik Engdahl, Stefan Pettersson, Viktoria Institute; Jon Williamsson, Anders Sandoff, University of Gothenburg</i>

11:20 a.m.	2013-01-0505	Modified Bass Model with External Factors for Electric Vehicle Adoption Yimin Liu, Erica Klampfl, Michael A. Tamor, Ford Motor Co.
11:40 a.m.	2013-01-0506	How to Make Your Fleet More Sustainable and Save Money: The Ford Fleet Purchase Planner Sandra Winkler, Daniel Reich, Erica Klampfl, Timothy Wallington, Ford Motor Co.

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Planned by Sustainable Development Program Committee / Engineering Meetings Board

Wednesday, April 17

Sustainable and Energy Efficient Manufacturing

Session Code: SDP109

Room O2-37

Session Time: 1:00 p.m.

The goal of this session is to address developments in energy efficient manufacturing relevant to the automotive industry. Specifically, it will focus on examining emerging energy efficient manufacturing technologies, as well as, best practices for established manufacturing methods. Additionally, the session examines innovative design and modeling techniques relevant to energy systems employed in automotive manufacturing.

Organizers - Deepak Gupta, Southeast Missouri State Univ.; Bhaskaran Gopalakrishnan, West Virginia Univ.; Michael Santella, University of Tennessee; Antoinette W. Stein, EPP-LCA.org

Chairpersons - Deepak Gupta, Southeast Missouri State Univ; Bhaskaran Gopalakrishnan, West Virginia Univ

Moderators - Deepak Gupta, Southeast Missouri State Univ; Bhaskaran Gopalakrishnan, West Virginia Univ

Time	Paper No.	Title
1:00 p.m.	ORAL ONLY	Technical Keynote: An Overview of Sustainable Practices at US Automotive Manufacturing Industry Nasr Alkadi, Oak Ridge National Laboratory
1:40 p.m.	2013-01-0831	A Study on Innovation of Material Recycles: World's First Implementation to Use ELV Bumper Materials for New Car Bumpers Shigeki Nitta, Kanako Ito, Mazda Motor Corporation
2:00 p.m.	2013-01-0829	The Impact of Die Start-Up Procedure for High Pressure Die Casting Alastair Long, David Thornhill, Cecil Armstrong, Queen's University of Belfast; David Watson, Ryobi Aluminium Castings (UK) Ltd
2:40 p.m.	2013-01-0830 ORAL ONLY	High-Throughput Manufacturing for Chrome Thin Film Coatings on Aluminum Wheels David Mount, ULVAC Japan, Ltd.
3:00 p.m.	2013-01-0832	Chilled Water System Analysis Tool (CWSAT) and Application to Manufacturing Plants Alex R. Quintal; Ghanshym Gaudani, Dragoljub Kosanovic, UMASS Amherst IAC
3:20 p.m.	2013-01-0834	Compressed Air Efficiency: A Case Study Combining Variable Speed Control with Electronic Inlet Valve Modulation Jason Cambridge, Shane Frazier, David W. Goodman, Malek Nofal, Ali Razban, IUPUI

3:40 p.m.	2013-01-0833	Using IAC Database for Longitudinal Study of Small to Medium Sized Automotive Industry Suppliers' Energy Intensity Changes S. Chaudhari; Deepak Gupta, Southeast Missouri State Univ.; Bhaskaran Gopalakrishnan, West Virginia Univ.
	2013-01-0835	Increasing Competitiveness and Sustainability in Structural Assembly by Using Friction Spot Welding (Written Only -- No Oral Presentation) Henry Hameister, Helmut Schmidt University

Planned by Sustainable Development Program Committee / Engineering Meetings Board

Wednesday, April 17

Thermal Systems Modeling and Simulation (Part 1 of 2)

Session Code: HX102

Room O2-38

Session Time: 8:00 a.m.

The Thermal Systems Modeling and Simulation session focusses on state of the art simulation technologies for modeling thermal systems and their application in the development and optimization of vehicle thermal management and fuel economy. The papers in the session will range from empirical, 1D modeling methods to three dimensional CFD models as well as coupled methods.

Organizers - Ales Alajbegovic, Exa Corporation; Gursaran D. Mathur, CalsonicKansei North America Inc.; Kumar Srinivasan, Chrysler Group LLC

Time	Paper No.	Title
8:00 a.m.	2013-01-0875	Factors Affecting Heat Transfer in a Diesel Engine: Low Heat Rejection Engine Revisited Sudhakar Das, Charles E. Roberts, Southwest Research Institute
8:20 a.m.	2013-01-0851	Simulations of a Bottoming Organic Rankine Cycle (ORC) Driven by Waste Heat in a Diesel Engine (DE) Ge-Qun Shu, Guopeng Yu, Hua tian, Haiqiao Wei, State Key Lab of Engines; Xingyu Liang, Tianjin Univ
8:40 a.m.	2013-01-0858	Thermodynamic Analysis of a Novel Combined Power and Cooling Cycle Driven by the Exhaust Heat Form a Diesel Engine Hua Tian, Tianjin University; Ge-Qun Shu, HaiQiao Wei, Xingyu Liang, Guopeng Yu, State Key Lab of Engines
9:00 a.m.	2013-01-0842	Numerical Investigation of Buoyancy-Driven Flow in a Simplified Underhood with Open Enclosure Kuo-Huey Chen, General Motors Company; James Johnson, General Motors Company (retired); Parviz Merati, Charles Davis, Western Michigan Univ.
9:20 a.m.	2013-01-0843	A Numerical Methodology to Compute Temperatures of a Rotating Cardan Shaft Heinrich Reister, Ernst Peter Weidmann, Daimler AG; Thomas Walker, Sachin Badarayani, CD-adapco
9:40 a.m.	2013-01-0873	Numerical Simulation of the Transient Heat-Up of a Passenger Vehicle during a Trailer Towing Uphill Drive Mario Disch, Nils Widdecke, Jochen Wiedemann, IVK / FKFS Univ. of Stuttgart; Heinrich Reister, Ernst Peter Weidmann, Daimler AG
10:00 a.m.	2013-01-0857	Fuel Economy Impact of Grille Opening and Engine Cooling Fan Power on a Mid-Size Sedan Bing Xu, Michael Leffert, Brian Belanger, General Motors Company

10:20 a.m.	2013-01-0859	The Impact of Vehicle Front End Design on AC Performance Ken T. Lan, Chrysler Group LLC; Ling Xiao, MEDA Limited; Kumar Srinivasan, Sadek S. Rahman, Chrysler Group LLC
10:40 a.m.	2013-01-0855	A Simple Model for Calculating Vehicle Thermal Loads Kaushal Kumar Jha, Viren Bhanot, Venkata Ryali, Mahindra & Mahindra
11:00 a.m.	2013-01-0861	Engine Air Intake Thermal Modelling in Full Vehicle Underhood Environment Wilko Jansen, Jaguar & Land Rover
11:20 a.m.	2013-01-0869	Impact of the Underhood Opening Area on the Drag Coefficient and the Thermal Performance of a Vehicle Samer Saab, Valeo Thermal Systems; Jean-François Hetet, Alain Maiboom, Ecole Centrale De Nantes; François Charbonnelle, Valeo Thermal Systems
	2013-01-0877	Thermomechanical Stress Analysis of Vehicles Gray Cast Brake (Written Only -- No Oral Presentation) Ali Belhocine, Mechanical Engineering; Bouchetara Mostefa, Usto Univ.
	2013-01-0879	The Development of Exhaust Surface Temperature Models for 3D CFD Vehicle Thermal Management Simulations Part 1 - General Exhaust Configurations (Written Only -- No Oral Presentation) Kristian Haehndel, BMW Group - RMIT University; Torsten Frank, Frieder Martin Christel, Carsten Spengler, Gerrit Suck, BMW Group; Sylvester Abanteriba, RMIT University

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Planned by Thermal Management Activity / EMB Land and Sea Group

Wednesday, April 17

Thermal Systems Modeling and Simulation (Part 2 of 2)

Session Code: HX102

Room O2-38

Session Time: 1:00 p.m.

The Thermal Systems Modeling and Simulation session focusses on state of the art simulation technologies for modeling thermal systems and their application in the development and optimization of vehicle thermal management and fuel economy. The papers in the session will range from empirical, 1D modeling methods to three dimensional CFD models as well as coupled methods.

Organizers - Ales Alajbegovic, Exa Corporation; Gursaran D. Mathur, CalsonicKansei North America Inc.; Kumar Srinivasan, Chrysler Group LLC

Time	Paper No.	Title
1:00 p.m.	2013-01-0864	Design of Efficient Air-Conditioning Systems for Electric Vehicles Bárbara Torregrosa-Jaime, Jorge Payá, Jose Corberan, Universitat Politècnica de València
1:20 p.m.	2013-01-0844	A Comparison of Physiology-Based Metrics to Environment-Based Metrics for Evaluating Thermal Comfort Mark Hepokoski, Allen Curran, Tony Schwenn, ThermoAnalytics Inc
1:40 p.m.	2013-01-0868	A New Computational Tool for Automotive Cabin Air Temperature Simulation Jiazhen Ling, Vikrant Aute, Yunho Hwang, Reinhard Radermacher, University of Maryland

2:00 p.m.	2013-01-0850	A New Automotive Air Conditioning System Simulation Tool Developed in MATLAB/Simulink Tibor Kiss, Lawrence Chaney, National Renewable Energy Laboratory; John Meyer, Visteon Corporation
2:40 p.m.	2013-01-0870	Numerical Simulation of Warm-Up Characteristics and Thermal Management of a GDI Engine Jesús Lahuerta, Stephen Samuel, Oxford Brookes University
3:00 p.m.	2013-01-0854	A Statistical Approach for Correlation/Validation of Hot-Soak Terminal Temperature of a Vehicle Cabin CFD Model Tao Ye, General Motors Company
3:20 p.m.	2013-01-0849	Active Thermal Management with a Dual Mode Coolant Pump Varun Negandhi, BorgWarner Inc.; Dohoy Jung, University of Michigan-Dearborn; John Shutty, BorgWarner Inc.
3:40 p.m.	2013-01-0865	A Multi-Dimensional CFD-Chemical Kinetics Approach in Detection and Reduction of Knocking Combustion in Diesel-Natural Gas Dual-Fuel Engines Using Local Heat Release Analysis Amin Maghbouli, National University of Singapore; Sina Shafee, Middle East Technical University; Rahim Khoshbakhti Saray, Sahand University of Technology; Wenming Yang, National University of Singapore; Vahid Hosseini, Sharif Univ of Technology; Hui An, National University of Singapore
4:00 p.m.	2013-01-0867	Improving Air-Fuel Mixing in Diesel Engine Fuelled by Higher Viscous Fuel Using Guide Vane Swirl and Tumble Device (GVSTD) Idris Saad, Universiti Teknologi MARA; Saiful Bari, University of South Australia
	2013-01-0856	Prediction of HVAC System Aero/Acoustic Noise Generation and Propagation using CFD (Written Only -- No Oral Presentation) Mayur Sah, Kumar Srinivasan, Chrysler Group LLC; Fred Mendonca, Nachiket Pai, CD Adapco
	2013-01-0874	PSO Tuned Vehicle Climate System Model for HIL Based ECU Testing (Written Only -- No Oral Presentation) Sufian Ashraf Mazhari, Saju Nampoothiri, Tata Elxsi, Ltd.
	2013-01-0878	Organic Rankine Cycles with Dry Fluids for Small Engine Exhaust Waste Heat Recovery (Written Only -- No Oral Presentation) Charles Sprouse III, Christopher Depcik, University of Kansas

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Planned by Thermal Management Activity / EMB Land and Sea Group

Wednesday, April 17

Multi-Dimensional Engine Modeling (Part 3 of 4)

Session Code: PFL209

Room O2-43

Session Time: 8:00 a.m.

The spectrum of papers solicited 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 - Hardo Barths, General Motors LLC; Sarah Diakhaby, Computational Dynamics, Ltd.; Allen David Gosman, CD-adapco; Carl Hergart, Caterpillar Inc.

Time	Paper No.	Title
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8:00 a.m.	2013-01-1093	<i>Evaluation of Different Tabulation Techniques Dedicated to the Prediction of the Combustion and Pollutants Emissions on a Diesel Engine with 3D CFD</i> <i>Lionel Martinez, Jean-Baptiste Michel, Stephane Jay, Olivier Colin, IFP Energies nouvelles</i>
8:20 a.m.	2013-01-1092	<i>Surrogate Diesel Fuel Models for Low Temperature Combustion</i> <i>Anand Krishnasamy, Rolf D. Reitz, University of Wisconsin; Werner Willems, Ford Forschungszentrum Aachen GmbH; Eric Kurtz, Ford Motor Co</i>
8:40 a.m.	2013-01-1102	<i>Influence of Liquid Penetration Metrics on Diesel Spray Model Validation</i> <i>Gina M. Magnotti, Caroline L. Genzale, Georgia Institute of Technology</i>
9:00 a.m.	2013-01-1104	<i>Kinetic Modeling of Soot Formation with Highlight in Effects of Surface Activity on Soot Growth for Diesel Engine Partially Premixed Combustion</i> <i>Feiyang Zhao, Wenbin Yu, Yiqiang Pei, Wanhua Su, Tianjin University</i>
9:20 a.m.	2013-01-1105	<i>A Computational Investigation of the Effects of Swirl Ratio and Injection Pressure on Mixture Preparation and Wall Heat Transfer in a Light-Duty Diesel Engine</i> <i>Federico Perini, Adam Dempsey, Rolf Reitz, University of Wisconsin-Madison; Dipankar Sahoo, Sandia National Laboratories; Benjamin Petersen, Ford Motor Company; Paul Miles, Sandia National Laboratories</i>
9:40 a.m.	2013-01-1107	<i>Analysis of Turbulence Model Effect on the Characterization of the In-Cylinder Flow Field in a HSDI Diesel Engine</i> <i>Stefano Fontanesi, Giuseppe Cicalese, Elena Severi, Univ of Modena and Reggio Emilia</i>
10:00 a.m.	2013-01-1108	<i>Modeling of Conventional and Early Diesel Injection Combustion Characteristics using FGM Approach</i> <i>Sridhar Ayyapureddi, Ulaç Egüz, Cemil Bekdemir, Bart Somers, Philip de Goey, Eindhoven University of Technology; Bogdan Albrecht, DAF Trucks NV</i>
10:20 a.m.	2013-01-1091	<i>Multi-Dimensional Modeling and Validation of Combustion in a High-Efficiency Dual-Fuel Light-Duty Engine</i> <i>Zihan Wang, Riccardo Scarcelli, Sibendu Som, Steven McConnell, Argonne National Laboratory; Nameer Salman, York Zhu, Ken Hardman, Kevin Freeman, Ronald Reese, Chrysler Group LLC; P. K. Senecal, Mandhapati Raju, Shawn Givler, Convergent Science Inc</i>
10:40 a.m.	2013-01-1099	<i>A Comprehensive Combustion Model for Biodiesel-Fueled Engine Simulations</i> <i>Jessica Brakora; Rolf Reitz, Univ of Wisconsin</i>
11:00 a.m.	2013-01-1100	<i>Simulation of a Heavy Duty Diesel Engine Fueled with Soybean Biodiesel Blends in Low Temperature Combustion</i> <i>Youngjae Lee, Kwonwoo Jang, Karam Han, Kang Y. Huh, Pohang Univ. of Science and Technology; Seungmook Oh, KIMM</i>
11:20 a.m.	2013-01-1110	<i>Dynamic Chemical Mechanism Reduction for Internal Combustion Engine Simulations</i> <i>Mandhapati P. Raju, Mingjie Wang, P. K. Senecal, Convergent Science Inc.</i>

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

Wednesday, April 17

Multi-Dimensional Engine Modeling (Part 4 of 4)

Session Code: PFL209

Room O2-43

Session Time: 1:00 p.m.

The spectrum of papers solicited 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 - Hardo Barths, General Motors LLC; Sarah Diakhaby, Computational Dynamics, Ltd.; Allen David Gosman, CD-adapco; Carl Hergart, Caterpillar Inc.

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
1:00 p.m.	2013-01-1098	Gasoline Combustion Modeling of Direct and Port-Fuel Injected Engines using a Reduced Chemical Mechanism Shawn D. Givler, Mandhapati Raju, Eric Pomraning, P. K. Senecal, Convergent Science Inc.; Nameer Salman, Ronald Reese, Chrysler Group LLC
1:20 p.m.	2013-01-1095	A Numerical Investigation on Scalability and Grid Convergence of Internal Combustion Engine Simulations Sibendu Som, Douglas Longman, Shashi Aithal, Raymond Bair, Marta García, Argonne National Laboratory; Shaoping Quan, K. J. Richards, P. K. Senecal, Convergent Science Inc.; Tushar Shethaji, Marcus Weber, Caterpillar Inc.
1:40 p.m.	2013-01-1089	Investigation of the Parameters Influencing the Spray-Wall Interaction in a GDI Engine - Prerequisite for the Prediction of Particulate Emissions by Numerical Simulation Fabian Köpple, Paul Jochmann, Andreas Kufferath, Robert Bosch GmbH; Michael Bargende, IVK, University of Stuttgart
2:00 p.m.	2013-01-1088	Combined In-cylinder / CHT Analyses for the Accurate Estimation of the Thermal Flow Field of a High Performance Engine for Sport Car Applications Stefano Fontanesi, Giuseppe Cicalese, Univ of Modena and Reggio Emilia; Alessandro Tiberi, Ferrari SpA
2:20 p.m.	2013-01-1085	In-Cylinder Flow Analysis in a Two-Stroke Engine - A Comparison of Different Turbulence Models Using CFD Addepalli S Krishna, Jawali Maharudrappa Mallikarjuna, Indian Institute of Technology Madras; Kumar Davinder, Y Ramachandra Babu, TVS Motor Company Ltd.
2:40 p.m.	ORAL ONLY	A Multi-Distribution Functions Droplet Evaporation Model using Continuous Thermaldynamics Way Lee Cheng, Cai Shen, Univ of Illinois at Urbana-Champaign; Chia-Fon Lee, Univ of Illinois and Tsinghua Univ
3:00 p.m.	ORAL ONLY	Numerical Investigation about Effects of Ambient Temperature on Soot Formation and Oxidation Mechanisms Xiaojie Bi, Univ of Illinois at Urbana-Champaign; Chia-Fon Lee, Univ of Illinois and Tsinghua Univ; Xinqi Qiao PhD, Shanghai Jiao Tong Univ

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

Wednesday, April 17

Advanced Battery Technologies (Part 1 of 4)

Session Code: PFL103

Room O2-44

Session Time: 8:20 a.m.

The success of HEV_s, PHEV_s & EV_s is highly dependent on their batteries. This session focuses on advanced battery technologies, including, but not limited to: advanced materials and cell chemistries, battery management systems and controls, modeling, testing, diagnosis and health monitoring, safety, reliability, durability, battery charging, battery economics/cost reduction, and system integration/optimization. These topics can be addressed at the cell, module, pack or vehicle levels.

Organizers - Neil M. Johnson, Ricardo Inc.; James Miller, Argonne National Laboratory; Yi Ding, US Army; Xiaosong Huang, General Motors; Thomas Wang, GM Technical Center; Xinran Xiao, Michigan State University; Alvaro Masias, Ford Motor Co.; Wayne Cai, General Motors

Chairpersons - Neil Johnson, Ricardo Inc

Time	Paper No.	Title
8:20 a.m.	2013-01-1544	Simplified Extended Kalman Filter Observer for SOC Estimation of Commercial Power-Oriented LFP Lithium Battery Cells Tarun Huria, Massimo Ceraolo, Università di Pisa; Javier Gazzarri, Robyn Jackey, MathWorks
8:40 a.m.	2013-01-1537	Improved SOC Estimation for Lithium-Ion Cells Valid for Different Temperatures and States-of-Health Patrick Wesskamp, Manuel Fischnaller, Nils Lohmann, Joachim Melbert, Thomas Musch, Ruhr-University Bochum
9:00 a.m.	2013-01-1540	Extraction of Battery Parameters for Optimal Performance Using the Circuit Model with a Multi-Objective Genetic Algorithm Jonathan Brand, Zheming Zhang, Ramesh K. Agarwal, Washington Univ. St. Louis
9:20 a.m.	2013-01-1547	Battery Model Parameter Estimation Using a Layered Technique: An Example Using a Lithium Iron Phosphate Cell Robyn Jackey, Michael Saginaw, Pravesh Sanghvi, Javier Gazzarri, MathWorks; Tarun Huria, Massimo Ceraolo, Università di Pisa
9:40 a.m.	2013-01-1522	AutoLion₂: A Thermally Coupled Simulation Tool for Automotive Li-Ion Batteries Jim Kalupson, Gang Luo, Christian E. Shaffer, EC Power
10:00 a.m.	ORAL ONLY	Computer-Aided Engineering and Experimental Diagnostics of Vehicle Batteries Chao-Yang Wang, Penn State Univ-University Park; Yan Ji; Wei Zhao; Lei Cao
10:20 a.m.	2013-01-1519	A `Microscopic₂ Structural Mechanics FE Model of a Lithium-Ion Pouch Cell for Quasi-Static Load Cases Christoph Breiffuss, Wolfgang Sinz, Florian Feist, Gregor Gstrein, Bernhard Lichtenegger, Christoph Knauder, Christian Ellersdorfer, Joerg Moser, Hermann Steffan, Graz University of Technology; Michael Stadler, AUDI AG; Peter Gollob, Volker Hennige, AVL LIST GmbH
10:40 a.m.	ORAL ONLY	Fast Ion Conducting Electrolyte Based on Li₇La₃Zr₂O₁₂ Garnet: Enabling a New Class of Electrochemical Energy Storage jeff sakamoto, msu
11:00 a.m.	ORAL ONLY	Application Enabling LTO Based Batteries: Technical and Cost Benefits for Motive Applications Evan House, EIG; Timothy E. Coogan, EIG America Inc.

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Wednesday, April 17

Advanced Battery Technologies (Part 2 of 4)

Session Code: PFL103

Room O2-44

Session Time: 1:00 p.m.

The success of HEV's, PHEV's & EV's is highly dependent on their batteries. This session focuses on advanced battery technologies, including, but not limited to: advanced materials and cell chemistries, battery management systems and controls, modeling, testing, diagnosis and health monitoring, safety, reliability, durability, battery charging, battery economics/cost reduction, and system integration/optimization. These topics can be addressed at the cell, module, pack or vehicle levels.

Organizers - Wayne Cai, General Motors; Yi Ding, US Army; Xiaosong Huang, General Motors; Neil M. Johnson, Ricardo Inc.; Alvaro Masias, Ford Motor Co.; James Miller, Argonne National Laboratory; Thomas Wang, GM Technical Center; Xinran Xiao, Michigan State University

Time	Paper No.	Title
1:00 p.m.	2013-01-1520	Characterizing Thermal Behavior of an Air-Cooled Lithium-Ion Battery System for Hybrid Electrical Vehicle Applications Using Finite Element Analysis Approach Kim F. Yeow, Ho Teng, AVL Powertrain Engineering Inc.
1:20 p.m.	2013-01-1529	A Model Parameter Identification Method for Battery Applications Xiao Hu, Lewis Collins, Scott Stanton, ANSYS Inc.; Shugang Jiang, A&D Technology Inc
1:40 p.m.	2013-01-1539	Modeling and Validation of Lithium-Ion Automotive Battery Packs SoDuk Lee, Byungho Lee, Joseph McDonald, Edward Nam, US Environmental Protection Agency
2:00 p.m.	2013-01-1521	Impact of Temperature on the A123 Li-Ion Battery Performance and Hybrid Electric Vehicle Range Ehsan Samadani, Josh Lo, Michael Fowler, Roydon Andrew Fraser, Leonardo Gimenez, University of Waterloo
2:20 p.m.	2013-01-1546	Charge Capacity Versus Charge Time in CC-CV and Pulse Charging of Li-Ion Batteries Rami Abousleiman, Chrysler Group LLC; Abdullah Al-Refai, Osamah Rawashdeh, Oakland University
2:40 p.m.	2013-01-1542	Hardware-in-the-Loop Test of Battery Management Systems Hagen Haupt, Joerg Bracker, Markus Ploeger, dSPACE GmbH
3:00 p.m.	2013-01-1524	Long-Term Validation of Rapid Impedance Spectrum Measurements as a Battery State-of-Health Assessment Technique Jon P. Christophersen, Idaho National Laboratory; John L. Morrison, Montana Tech. of Univ. of Montana; Chester G. Motloch, Motloch Consulting, Inc.; William H. Morrison, Montana Tech. of Univ. of Montana
3:20 p.m.	2013-01-1532	Lead-Acid State of Charge Estimation for Start-Stop Applications Daniel Le, Brian Sisk, Johnson Controls Power Solutions
3:40 p.m.	2013-01-1530	Li-Ion Battery SoC Estimation Using a Bayesian Tracker Ienkaran Arasaratnam, Ryan Ahmed, McMaster University; Mohammed El-Sayed, McMaster Univ; Jimi Tjong, Ford Motor Co; Saeid Habibi, McMaster Univ

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Wednesday, April 17

Exhaust Emission Control: Particle Filter Substrates

Session Code: PFL406

Room O3-45

Session Time: 8:00 a.m.

Papers are presented in this session covering both diesel and gasoline particulate filters in terms of developing substrates with lower pressure drop, improved thermal stress resistance, new substrate materials and new test methods to evaluate the mechanical properties of the ceramic materials.

Organizers - Kirby Baumgard, John Deere Power Systems; Thorsten Boger, Corning Inc.; Julian Tan, Watlow

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Size-Dependent Fundamental Filtration Studies with Novel Porous Media Xiayun Huang, Texas A&M University; Andrea Strzelec, Texas A&M Univ.; Nicole Zacharia, Texas A&M University
8:20 a.m.	2013-01-0838	DPF Soot Estimation Challenges and Mitigation Strategies and Assessment of Available DPF Technologies Nishant Singh, Silpa Mandarapu, Navistar Inc.
8:40 a.m.	2013-01-0837	Durability of Filtration Layers Integrated into Diesel Particulate Filters Hidemasa Iwata, Ibiden Co Ltd; Athanasios Konstandopoulos, CERTH/CPERI; Kazuki Nakamura, Takafumi Kasuga, Kazutake Ogyu, Kazushige Ohno, Ibiden Co Ltd
9:00 a.m.	2013-01-0841	Durability Investigation on Aluminum Titanate-Diesel Particulate Filter Having Asymmetric Hexagonal Cell Design Kentaro Iwasaki, Sumika Ceramics Poland Sp.z o.o.; Takumi Shibuta, Sumitomo Chemical Co.Ltd.
9:20 a.m.	2013-01-0840	Development of High Porosity SiC-DPF Which is Compatible with High Robustness and Catalyst Coating Capability for SCR Coated DPF Application Kazutake Ogyu, Toyoki Ogasawara, Hiroki Sato, Keiji Yamada, Kazushige Ohno, Ibiden Co., Ltd.
9:40 a.m.	2013-01-0839	The Effect of a Particle Oxidation Catalyst (POC[®]) on Particle Emissions of a GDI Car during Transient Engine Operation Matti Happonen, Pekka Matilainen, Kauko Kanninen, Toni Kinnunen, Ecocat Oy; Panu Karjalainen, Juha Heikkilä, Topi Ronkko, Jorma Keskinen, Tampere Univ of Technology; Tero Lähde, Antti Malinen, Liisa Pirjola, Metropolia Univ of Applied Sciences; Theodoros Tzamkiozis, Aristotle University of Thessaloniki
10:00 a.m.	2013-01-0836	Advanced Ceramic Wall Flow Filter for Reduction of Particulate Number Emission of Direct Injection Gasoline Engines Yoshitaka Ito, Takehide Shimoda, Takashi Aoki, Yukinari Shibagaki, Kazuya Yuuki, Hirofumi Sakamoto, Claus Vogt, NGK Insulators, Ltd; Tasuku Matsumoto, Wolfgang Heuss, Philipp Kattouah, Mikio Makino, Kyohei Kato, NGK Europe GmbH

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

Wednesday, April 17

Particle Emissions from Combustion Sources (Part 1 of 2)

Session Code: PFL409

Room O3-45

Session Time: 1:00 p.m.

Papers are invited for this session on particle emissions from combustion engines, including measurement and testing methods, and the effects of changes in fuel composition. Papers are also invited on the topics of the environmental and health effects of elemental carbon and organic carbon that constitutes solid cored particles plus the environmental and health effects of secondary organic aerosol emissions. This includes particulate emissions from both gasoline and diesel engines.

Organizers - Imad A. Khalek, Southwest Research Institute; Matti Maricq, Ford Motor Co.

Chairpersons - Matti Maricq, Ford Motor Co; Imad Khalek, Southwest Research Institute

Time	Paper No.	Title
1:00 p.m.	2013-01-1549	Analysis of Gaseous and PM Emissions of 4-Stroke CAI/HCCI and SI Combustion in a DI Gasoline Engine Mohammed Moore Ojapah, Yan Zhang, Hua Zhao, Brunel University
1:20 p.m.	2013-01-1565	Simulation and Analysis of In-Cylinder Soot Formation in a Low Temperature Combustion Diesel Engine Using a Detailed Reaction Mechanism Chitralkumar V. Naik, Karthik Puduppakkam, Ellen Meeks, Reaction Design Inc.
1:40 p.m.	2013-01-1558	The Influence of Fuel Properties on Particulate Number Emissions from a Direct Injection Spark Ignition Engine Felix Leach, Richard Stone, Univ. of Oxford; Dave Richardson, Jaguar Cars Ltd
2:00 p.m.	2013-01-1557	A New Approach for Very Low Particulate Mass Emissions Measurement Jonathan Bushkuhl, Kettering University; William Silvis, AVL North America Inc; Joseph Szente, Matti Maricq, Ford Motor Co
2:20 p.m.	2013-01-1561	Application of the Pegasor Particle Sensor for the Measurement of Mass and Particle Number Emissions Leonidas Ntziachristos, Stavros Amanatidis, Zissis Samaras, Aristotle University of Thessaloniki; Kauko Janka, Juha Tikkanen, Pegasor Oy
2:40 p.m.	2013-01-1562	Determining Soot Distribution in the Vehicle Exhaust Downstream of a Faulty Diesel Particulate Filter Paul Tennison, Joseph Szente, Michael Loos, Thomas Korniski, Xiaogang Zhang, Ford Motor Co.
3:00 p.m.	2013-01-1560	Effect of Equivalence Ratio on the Particulate Emissions from a Spark-Ignited, Direct-Injected Gasoline Engine Stephen Sakai, Mitchell Hageman, David Rothamer, University of Wisconsin-Madison
3:20 p.m.	2013-01-1564	PN Emissions from Heavy-Duty Diesel Engine with Periodic Regenerating DPF Hiroyuki Yamada, NTSEL

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

Wednesday, April 17

Exhaust Emission Control: SCR (Part 1 of 2)

Session Code: PFL405

Room O3-46

Session Time: 8:00 a.m.

Papers cover the Selective Catalytic Reduction (SCR) process, in which a non-hydrocarbon reductant known as Diesel Exhaust Fluid (DEF) is injected to create ammonia which reacts with NOX and converts it into harmless Nitrogen. The topic includes various aspects of SCR technology such as different washcoats, two-way (SCR washcoat on DPF substrate), aging and poisoning impact on catalyst performance, importance of DEF injection and mixing and SCR modeling.

Organizers - Brad Adelman, Navistar Inc.; Danan Dou, John Deere Product Engineering Center; Magdi Khair; Rahul Mital, General Motors LLC

Time	Paper No.	Title
8:00 a.m.	2013-01-1063	Thermally Durable Vanadium-SCR Catalysts for Diesel Applications Teuvo Maunula, Toni Kinnunen, Kauko Kanninen, Arto Viitanen, Auli Savimaki, Ecocat
8:20 a.m.	2013-01-1071	Removal of Hydrocarbons and Particulate Matter Using a Vanadia Selective Catalytic Reduction Catalyst: An Experimental and Modeling Study Timothy C. Watling, Johnson Matthey Technology Centre; Yaritza Lopez, Jason D. Pless, Balaji Sukumar, Wassim Klink, Penelope Markatou, Johnson Matthey ECT
8:40 a.m.	2013-01-1079	Effect of Hydrothermal Aging on the Catalytic Performance and Morphology of a Vanadia SCR Catalyst Yuanzhou Xi, Nathan A. Ottinger, Z. Gerald Liu, Cummins Emission Solutions
9:00 a.m.	2013-01-1067	Effect of Injection Parameters on Spray Characteristics of Urea-SCR System Xian Shi, Jun Deng, Zhijun Wu, Liguang Li, Tongji University
9:20 a.m.	2013-01-1069	A Development of Urea Solution Injection Quantity Decision Logic for SCR System Jiho Cho, Jinha Lee, Seokjae Kim, Sunghoon Bang, Jong Ik Chun, Jung Whun Kang, Seungbeom Yoo, Hyundai Motor Co.
9:40 a.m.	2013-01-1073	High Speed Video Measurements with Water of a Planar Laser Illuminated Heated Tip Urea Injector Spray Nic van Vuuren, Jianrong Qin, Continental Automotive Systems USA
10:00 a.m.	2013-01-1074	Design Improvements of Urea SCR Mixing for Medium-Duty Trucks Guanyu Zheng, Tenneco Inc.; Manoj Kumar Sampath, William Alcini, Gabriel Salanta, Adam Kotrba, Tenneco Inc; Bryan Axe, Chrysler Group LLC
10:20 a.m.	2013-01-1078	Investigation of the Urea Evaporation and Mixing with Various Temperatures and Injector and Injection Angles in the Catalytic Muffler Tae Hyun An, Man Young Kim, Chonbuk National University; Hak Sup Jung, Kukje Machinery; Hongsuk Kim, Gyubaek Cho, Korea Institute of Machinery & Materials
10:40 a.m.	2013-01-1075	SCR System Optimization and Control Supported by Simulation Tools Grigorios C. Koltsakis, Pavlos Fragkiadoulakis, Zissis Samaras, Aristotle University of Thessaloniki; Evangelos Georgiadis, Charles Bizet, Pierre-Olivier Calendini, Olivier Hayat, Vincent Dubois, PSA Peugeot Citroen; Christos Manetas, Exothermia SA

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

Wednesday, April 17

Exhaust Emission Control: SCR (Part 2 of 2)

Session Code: PFL405

1:00 p.m.

Room O3-46

Session Time:

Papers cover the Selective Catalytic Reduction (SCR) process, in which a non-hydrocarbon reductant known as Diesel Exhaust Fluid (DEF) is injected to create ammonia which reacts with NOX and converts it into harmless Nitrogen. The topic includes various aspects of SCR technology such as different washcoats, two-way (SCR washcoat on DPF substrate), aging and poisoning impact on catalyst performance, importance of DEF injection and mixing and SCR modeling.

Organizers - Brad Adelman, Navistar Inc.; Danan Dou, John Deere Product Engineering Center; Magdi Khair; Rahul Mital, General Motors LLC

Time	Paper No.	Title
1:00 p.m.	2013-01-1072	Upcoming Emission Regulations for Passenger Cars : Impact on SCR System Requirements and Developments Joël Op de Beeck, Inergy Automotive Systems SA; James Thompson, Neall Booth, Inergy Automotive Systems LLC
1:20 p.m.	2013-01-1064	Cold Start Effect Phenomena over Zeolite SCR Catalysts for Exhaust Gas Aftertreatment Volker Schmeisser, Michel Weibel, Laura Sebastian Hernando, Daimler AG; Isabella Nova, Enrico Tronconi, Maria Pia Ruggeri, Politecnico di Milano
1:40 p.m.	2013-01-1065	Mitigation of Platinum Poisoning of Cu-Zeolite SCR Catalysts Xu Chen, Neal Currier, Aleksey Yezerets, Krishna Kamasamudram, Cummins Inc.
2:00 p.m.	2013-01-1066	On-Engine Investigation of SCR on Filters (SCRoF) for HDD Passive Applications Weiyong Tang, Dave Youngren, Michael SantaMaria, Sanath Kumar, BASF Corporation
2:20 p.m.	2013-01-1062	The Effects of CO, H₂, and C₃H₆ on the SCR Reactions of an Fe Zeolite SCR Catalyst Michael Andrew Smith, University of Michigan; Christopher Depcik, University of Kansas; John Hoard, Stani Bohac, Dennis Assanis, University of Michigan
2:40 p.m.	2013-01-1070	Comparison of SCR Catalyst Performance on RMC SET Emission Cycle between an Engine and a High Flow Burner Rig Pranay Nagar, Tamas Szailer, Cummins Inc.; Cynthia Webb, Southwest Research Institute
3:00 p.m.	2013-01-1076	Improvement of Low-Temperature Performance of The NOx Reduction Efficiency on the Urea-SCR Catalysts Satoshi Sato, Shinya Sato, Mitsuru Hosoya, Hino Motors, Ltd.
3:20 p.m.	2013-01-1061	Experimental Demonstration of a Model-Based Control Design and Calibration Method for Cost Optimal Euro-VI Engine-Aftertreatment Operation Paul Mentink, Frank Willems, Frank Kupper, Edwin Van den Eijnden, TNO Automotive

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

Wednesday, April 17

Modeling of SI and Diesel Engines - Models for Controls

Session Code: PFL208

Room W2-61**Session Time: 8:00 a.m.**

Zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of SI and CI engines with respect to: engine breathing, boosting, and acoustics; SI combustion and emissions; CI combustion and emissions; fundamentals of engine thermodynamics; numerical modeling of gas dynamics; thermal management; mechanical and lubrication systems; system level models for controls; system level models for vehicle fuel economy and emissions predictions.

Organizers - Norbert Meyer, dSPACE GmbH; Federico Millo, Politecnico di Torino; Thomas Morel, Gamma Technologies Inc.; Christof Schernus, FEV GmbH; Per Tunestal, Lund University

Chairpersons - Norbert Meyer, dSPACE GmbH; Per Tunestal, Lund University

Time	Paper No.	Title
8:00 a.m.	2013-01-0247	Mean Value Engine Model Including Spark Timing for Powertrain Control Application Hadi Adibi Asl, Mohammadreza Saeedi, Roydon Fraser, Univ of Waterloo; Paul Goossens, Maplesoft; John McPhee, Univ of Waterloo
8:20 a.m.	2013-01-0243	The Development of Real-time NOx Estimation Model and its Application Junyoung Lee, Seungha Lee, Wonah Park, Kyoungdoug Min, Han Ho Song, Seoul National Univ.; Hoimyoung Choi, Advanced Institutes of Convergence Tech.; Jun Yu, Hyundai Motor Group; Sung Hwan Cho, Hyundai-Kia America Technical Center Inc
8:40 a.m.	2013-01-0246	EGR Rate Estimation for Cylinder Air Charge in a Turbocharged Diesel Engine using an Adaptive Observer Hyunjun Lee, Yeongseop Park, Seungwoo Hong, Minkwang Lee, Myoungcho Sunwoo, Hanyang Univ.
9:00 a.m.	2013-01-0244	Development of High Level Modeling Method for Rapid Modeling Process Hisahiro Ito, Hironori Yohata, Junichi Kako, Yukio Kuroda, Toyota Motor Corporation

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

Wednesday, April 17

Modeling of SI and Diesel Engines - Thermodynamics and General Engine Modeling

Session Code: PFL208

Room W2-61**Session Time: 9:20 a.m.**

Zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of SI and CI engines with respect to: engine breathing, boosting, and acoustics; SI combustion and emissions; CI combustion and emissions; fundamentals of engine thermodynamics; numerical modeling of gas dynamics; thermal management; mechanical and lubrication systems; system level models for controls; system level models for vehicle fuel economy and emissions predictions.

Organizers - Kevin L. Hoag, University Of Wisconsin Madison; Federico Millo, Politecnico di Torino; Thomas Morel, Gamma Technologies Inc.; Christof Schernus, FEV GmbH; Brad R. Tillock, EngSim Corporation

Time	Paper No.	Title
9:20 a.m.	2013-01-1625	Fuel Consumption Optimization and Noise Reduction in a Spark-Ignition Turbocharged VVA Engine Vincenzo De Bellis, Universita' di Napoli; Fabio Bozza, Universita' di Napoli - Ist Motori CNR; Daniela Siano, Istituto Motori CNR; Alfredo Gimelli, Universita' di Napoli

9:40 a.m.	2013-01-1621	Application of Modeling Technology in a Turbocharged SI Engine <i>Lurun Zhong, Marc Musial, William Resh, Kanwerdip Singh, Chrysler Group LLC</i>
10:00 a.m.	2013-01-1623	How to Improve Light Duty Diesel Based on Heavy Duty Diesel Thermodynamic Analysis? <i>Matthieu Lecompte, Louis-Marie Malbec, Gregory Font, Bruno Walter, IFP Energies Nouvelles</i>
10:20 a.m.	2013-01-1622	Investigation of Extreme Mean Effective and Maximum Cylinder Pressures in a Passenger Car Diesel Engine <i>Peter Eilts, Claude-Pascal Stoeber-Schmidt, René Wolf, Technical University of Braunschweig</i>
10:40 a.m.	2013-01-1620	Dynamic Analysis of the Libralato Thermodynamic Cycle Based Rotary Engine <i>Guangyu Dong, Xiaoran Han, Richard Stobart, Shuo Lu, Loughborough Univ</i>
	2013-01-1626	Optimization of a High Speed Gasoline Engine Using Genetic Algorithm (Written Only -- No Oral Presentation) <i>Jing Yang, Zhixiong Zhang, Lifeng chen, Yi Wang, Hunan Univ</i>

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

Wednesday, April 17

Modeling of SI and Diesel Engines - System Modeling, Hydraulic and Mechanical Systems

Session Code: PFL208

Room W2-61

Session Time: 1:00 p.m.

Zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of SI and CI engines with respect to: engine breathing, boosting, and acoustics; SI combustion and emissions; CI combustion and emissions; fundamentals of engine thermodynamics; numerical modeling of gas dynamics; thermal management; mechanical and lubrication systems; system level models for controls; system level models for vehicle fuel economy and emissions predictions.

Organizers - Diana-Lucinia Dascalescu, Gamma Technologies Inc.; Federico Millo, Politecnico di Torino; Thomas Morel, Gamma Technologies Inc.; Christof Schernus, FEV GmbH

Time	Paper No.	Title
1:00 p.m.	2013-01-1113	Predicting Light-Duty Vehicle Fuel Economy as a Function of Highway Speed <i>John Thomas, Ho-Ling Hwang, Brian West, Shean Huff, Oak Ridge National Laboratory</i>
1:20 p.m.	2013-01-1115	Analysis of the Performance of a Turbocharged S.I. Engine under Transient Operating Conditions by Means of Fast Running Models <i>Federico Millo, Giacomo Di Lorenzo, Politecnico di Torino; Emanuele Servetto, Andrea Capra, Powertech Engineering; Massimo Pettiti, Fiat Group Automobiles</i>
1:40 p.m.	2013-01-1116	A Comprehensive Study on Different System Level Engine Simulation Models <i>Johann C. Wurzenberger, AVL LIST GmbH; Roman Heinzle, RICAM, MathConsult GmbH Linz; Maxime-Vianney Deregnaucourt, Vienna University of Technology; Tomaz Katrasnik, University of Ljubljana</i>

2:00 p.m.	2013-01-1120	Traversing the V-Cycle with a Single Simulation - Application to the Renault 1.5 dCi Passenger Car Diesel Engine <i>Imran Cosadia, John J. Silvestri, Iakovos Papadimitriou, Gamma Technologies, Inc.; Damien Maroteaux, Philippe Obernesser, RENAULT SAS</i>
2:20 p.m.	2013-01-1117	Investigations on the Tail-Pipe Emissions of Commercial Engines with Advanced One-Dimensional Simulation Methods <i>Friedrich Forsthuber, Thorsten Krennek, Franz Marinitsch, Thomas Lauer, Vienna University of Technology; Joachim Weiss, Markus Raup, Thorolf Schatzberger, MAN Truck & Bus AG</i>
2:40 p.m.	2013-01-1118	An Efficient, One-Dimensional, Finite Element Helical Spring Model for Use in Planar Multi-Body Dynamics Simulation <i>Marcin Marek Okarmus, Gamma Technologies Inc.; Rifat Keribar, Diana-Lucinia Dascalescu, Gamma Technologies Inc; Rob Zdrodowski, Ford Motor Co</i>
3:00 p.m.	2013-01-1119	Using Non-Smooth Mechanics and Parallelization Techniques for the Efficient Simulation of Different Types of Valve Springs <i>Jan Clauberg, Robert Huber, Technische Universitaet Muenchen</i>

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

Wednesday, April 17

Fuel & Additive Effects on SI Engine Performance

Session Code: PFL203

Room W2-63

Session Time: 8:00 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 of bio-derived fuels (ethanol, butanol and others) on engine design and performance as well as gasoline properties and additives, and their impact.

Organizers - Gerald Micklow, Florida Institute of Technology; Shailesh Martin Lopes, General Motors

Chairpersons - Elana Chapman, John O. Waldman, General Motors Co.

Time	Paper No.	Title
8:00 a.m.	2013-01-0885	Cellulosic Ethanol Fuel Quality Evaluation and its Effects on PFI Intake Valve Deposits and GDI Fuel Injector Plugging Performance <i>Michael Russell, Jill Cummings, Timothy Cushing, William Studzinski, General Motors Company</i>
8:20 a.m.	2013-01-0893	Effects of Gasoline and Ethanol Fuel Corrosion Inhibitors on Powertrain Intake Valve Deposits <i>Elana Chapman, Jill Cummings, Douglas Conran, General Motors Company</i>
8:40 a.m.	2013-01-0887	Development of Gasoline Combustion Reaction Model <i>Kohtaro Hashimoto, Honda R&D Co., Ltd.; Mitsuo Koshi, Akira Miyoshi, The University of Tokyo; Yoshinori Murakami, Hachinohe National College of Technology; Tatsuo Oguchi, Toyohashi University of Technology; Yasuyuki Sakai, Hiromitsu Ando, University of Fukui; Kentaro Tsuchiya, AIST</i>
9:00 a.m.	2013-01-0892	The Effect of Direct Injection Timing and Pressure on Engine Performance in an Ethanol Direct Injection Plus Gasoline Port Injection (EDI+GPI) SI Engine <i>Yuan Zhuang, Guang Hong, University of Technology, Sydney</i>

9:20 a.m.	2013-01-0886	The Effect of Charge Cooling on the RON of Ethanol/Gasoline Blends Tien Mun Foong, Kai J. Morganti, Michael J. Brear, Gabriel da Silva, Yi Yang, The University of Melbourne; Frederick L. Dryer, Princeton University
9:40 a.m.	2013-01-0888	The Impact of Low Octane Hydrocarbon Blending Streams on the Knock Limit of γE85γ James P. Szybist, Brian H. West, Oak Ridge National Laboratory
10:00 a.m.	2013-01-0883	Octane Response of Premium-Recommended Vehicles Arjun Prakash, Aaron Jones, Edward Nelson, James Macias, Shell Global Solutions (US) Inc; Eugene Jimenez, Matthew Hinojosa, Southwest Research Institute
10:20 a.m.	2013-01-0884	Lubricating Oil Consumption on the Standard Road Cycle Brian West, C. Scott Sluder, Oak Ridge National Laboratory
10:40 a.m.	2013-01-0891	A Representative Testing Methodology for System Influence on Automotive Fuel Filtration Sumit Khadilkar, Ahmed Soliman, UNC Charlotte Motorsports Engineering; Peter Schuetzbach, Marko Kustic, Robert Bosch GmbH

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

Wednesday, April 17

SI Combustion (Part 1 of 3) Basic Combustion, Efficiency & Knock

Session Code: PFL201

Room W2-63

Session Time: 1:00 p.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. The scope of topics includes studies of mixture formation, ignition, knock, engine efficiency, flame propagation, alternative fuels and emissions formation. Part 1 of 3: Basic Combustion, Efficiency, and Knock

Organizers - Terrence Alger, Southwest Research Institute; Richard S. Davis, General Motors LLC; Mark C. Sellnau, Delphi Corp.

Chairpersons - Terrence Alger, Southwest Research Institute

Time	Paper No.	Title
1:00 p.m.	2013-01-1121	Experiments and Modeling of Flame/Wall Interaction in Spark-Ignition (SI) Engine Conditions Olivier Laget, IFP Energies nouvelles; Laëtitia Muller, Turbomeca; Karine Truffin, Julian Kashdan, Rajesh Kumar, IFP Energies nouvelles; Julien Sotton, Bastien Boust, Marc Bellenoue, ENSMA
1:20 p.m.	2013-01-1122	Investigations on the Potential of a Variable Miller Cycle for SI Knock Control Wolfram Gottschalk, Ulf Lezius, Lucas Mathusall, IAV GmbH
1:40 p.m.	2013-01-1123	Increasing EGR Tolerance using High Tumble in a Modern GTDI Engine for Improved Low-Speed Performance Jennifer Wheeler, Dusan Polovina, Subramanian Ramanathan, Kevin Roth, Dennis Manning, Joshua Stein, AVL Powertrain Engineering Inc
2:00 p.m.	2013-01-1125	Influences on Combustion Characteristics and Performances of EGR vs. Lean Burn in a Gasoline Engine Qijun Tang, Jingping Liu, Hunan University; Zhangsong Zhan, Tiegang Hu, ChangAn Automotive Group

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

Wednesday, April 17

High Efficiency IC Engines (Part 2 of 3)

Session Code: PFL216

Room W2-64

Session Time: 8:00 a.m.

This session focuses on technologies such as advanced and partially mixed combustion, cooled EGR boosting, ignition and direct injection technologies, pressure boosting, intelligent combustion, thermal efficiency including waste heat recovery, fully variable valvetrains, and other new and developing technologies.

Organizers - Sangsuk Lee, Caterpillar Tech. Center; Gerald Micklow, Florida Institute of Technology; Robert Gary Prucka, Clemson Univ.; David B. Roth, BorgWarner Inc.; James P. Szybist, Oak Ridge National Laboratory; Bengt Johansson, Lund University

Chairpersons - David Roth, BorgWarner Inc

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
8:00 a.m.	2013-01-0279	RCCI Engine Operation Towards 60% Thermal Efficiency Derek Splitter, Martin Wissink, Dan DeVescovo, Rolf Reitz, Univ of Wisconsin
8:20 a.m.	2013-01-0264	Effect of Piston Bowl Geometry on Dual Fuel Reactivity Controlled Compression Ignition (RCCI) in a Light-Duty Engine Operated with Gasoline/Diesel and Methanol/Diesel Adam B. Dempsey, N. Ryan Walker, Rolf Reitz, Univ. of Wisconsin
8:40 a.m.	2013-01-0289	Efficiency and Emissions Mapping of RCCI in a Light-Duty Diesel Engine Scott Curran, Reed Hanson, Robert Wagner, Oak Ridge National Laboratory; Rolf Reitz, University of Wisconsin
9:00 a.m.	2013-01-0265 ORAL ONLY	Reactivity Controlled Compression Ignition Drive Cycle Emissions and Fuel Economy Estimations Using Vehicle Systems Simulations Scott Curran, Zhiming Gao, Robert Wagner, Oak Ridge National Laboratory
9:20 a.m.	2013-01-0273	Influencing Parameters of Brake Fuel Conversion Efficiency with Diesel / Gasoline Operation in a Medium-Duty Diesel Engine Jiafeng Sun, Joshua A. Bittle, Timothy J. Jacobs, Texas A&M University
9:40 a.m.	2013-01-0266	A Comparison of Lean Operation and Exhaust Gas Recirculation: Thermodynamic Reasons for the Increases of Efficiency Jerald A. Caton, Texas A&M Univ.
10:00 a.m.	2013-01-0283	Low Temperature Combustion Strategies for Compression Ignition Engines: Operability limits and Challenges Usman Asad, Prasad Divekar, Ming Zheng, University of Windsor; Jimi Tjong, Ford Motor Company
10:20 a.m.	2013-01-0287	Design of a 4-Cylinder GTDI Engine with Part-Load HCCI Capability Jennifer Wheeler, Dusan Polovina, Vasile Frasinell, AVL Powertrain Engineering Inc; Oliver Miersch-Wiemers, Alan Mond, Jeff Sterniak, Hakan Yilmaz, Robert Bosch LLC
10:40 a.m.	2013-01-0270	Analysis of Cyclic Variability of Heat Release for High-EGR GDI Engine Operation with Observations on Implications for Effective Control Brian Kaul, Robert Wagner, Johnney Green, Oak Ridge National Laboratory

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

Wednesday, April 17

High Efficiency IC Engines (Part 4)

Session Code: PFL216

Room W2-64

Session Time: 1:00 p.m.

This session focuses on technologies such as advanced and partially mixed combustion, cooled EGR boosting, ignition and direct injection technologies, pressure boosting, intelligent combustion, thermal efficiency including waste heat recovery, fully variable valvetrains, and other new and developing technologies.

Organizers - Sangsuk Lee, Caterpillar Tech. Center; Gerald Micklow, Florida Institute of Technology; Robert Gary Prucka, Clemson Univ.; David B. Roth, BorgWarner Inc.; James P. Szybist, Robert M. Wagner, Oak Ridge National Laboratory; Bengt Johansson, Lund University

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

Wednesday, April 17

High Efficiency IC Engines (Part 3 of 3)

Session Code: PFL216

Room W2-64

Session Time: 1:00 p.m.

This session focuses on technologies such as advanced and partially mixed combustion, cooled EGR boosting, ignition and direct injection technologies, pressure boosting, intelligent combustion, thermal efficiency including waste heat recovery, fully variable valvetrains, and other new and developing technologies.

Organizers - Sangsuk Lee, Caterpillar Tech. Center; Gerald Micklow, Florida Institute of Technology; Robert Gary Prucka, Clemson Univ.; David B. Roth, BorgWarner Inc.; James P. Szybist, Oak Ridge National Laboratory; Bengt Johansson, Lund University

Chairpersons - James Szybist, Oak Ridge National Laboratory

Time	Paper No.	Title
1:00 p.m.	2013-01-0274	Concept of ζ Temperature Swing Heat Insulationζ in Combustion Chamber Walls, and Appropriate Thermo-Physical Properties for Heat Insulation Coat Hidemasa Kosaka, Yoshifumi Wakisaka, Yoshihiro Nomura, Yoshihiro Hotta, Makoto Koike, Kiyomi Nakakita, Toyota Central R&D Labs Inc.; Akio Kawaguchi, Toyota Motor Corp
1:20 p.m.	2013-01-0280	Development and Vehicle Demonstration of a Systems-Level Approach to Fuel Economy Improvement Technologies Keith A. Confer, John Kirwan, Delphi Powertrain; Nayan Engineer, Hyundai-Kia America Technical Center Inc
1:40 p.m.	2013-01-0288	Increasing Efficiency in Gasoline Powertrains with a Two-Stage Variable Compression Ratio (VCR) System Henning Kleeberg, Dean Tomazic, FEV Inc.; Jürgen Dohmen, Karsten Wittek, FEV GmbH; Andreas Balazs, RWTH Aachen University
2:00 p.m.	2013-01-0271	Future Gasoline Engine Technology and the Effect on Thermal Management and Real World Fuel Consumption James Miller, James Taylor, Paul Freeland, Marco Warth, Mahle Powertrain, Ltd.; Rene Dingelstadt, Rolf Mueller, Mahle International GmbH

2:20 p.m.	2013-01-0282	Thermodynamic Systems for Tier 2 Bin 2 Diesel Engines Arvind Suresh, David Langenderfer, Clay Arnett, Michael Ruth, Cummins Inc.
2:40 p.m.	2013-01-0276	Effects of Late Intake Valve Closing Timing on Thermal Efficiency and Emissions Based on a Two-stage Turbocharger Diesel Engine Binyang Wu, Hao Yu, Pak Pak, Yiqiang Pei, Wanhua Su, Tianjin University
3:00 p.m.	2013-01-0286	Development and Economic Analysis of a Two Stroke Compounded Engine Concept - the BETE-Max John R. Bucknell
3:20 p.m.	2013-01-0284	Design and Operational Characteristics of a Novel Floating-Stroke, Free Piston Internal Combustion Reciprocating Engine S. Scott Goldsborough, Marquette University; John Fitzgerald, Energy Transition Technology Inc

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

Wednesday, April 17

Mixing-Controlled CI Combustion (Part 3 of 3) Fuel Effects

Session Code: PFL204

Room W2-65

Session Time: 9:00 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 - Jose M Garcia, Universidad Politecnica de Valencia; Song-Charnng Kong, Iowa State University; Budhadeb Mahakul, DEERE & CO; Robert McDavid, Caterpillar Inc.; Mark Musculus, Sandia National Laboratories; Raul Payri, Universidad Politecnica de Valencia; Stefan Simescu, Southwest Research Institute; Dale R. Tree, Brigham Young Univ.; Rishikesh Venugopal, Achates Power Inc.; John F. Wright, Cummins Inc.; Yong Yi, Caterpillar Inc.; Ming Zheng, Univ. of Windsor

Chairpersons - Song-Charnng Kong, Iowa State University; Ming Zheng, Univ. of Windsor

Time	Paper No.	Title
9:00 a.m.	2013-01-0911	Exploring a Gasoline Compression Ignition (GCI) Engine Concept K.D. Rose, J. Ariztegui, R.F. Cracknell, T. Dubois, H.D.C. Hamje, L. Pellegrini, D.J. Rikeard, CONCAWE; B. Heuser, Institute for Combustion Engines, RWTH Aachen University; T. Schnorbus, A.F. Kolbeck, FEV GmbH
9:20 a.m.	2013-01-0900	Study of In-Cylinder Combustion and Multi-Cylinder Light Duty Compression Ignition Engine Performance Using Different RON Fuels at Light Load Conditions Bishwadipa Das Adhikary, Univ. of Wisconsin-Madison; Rolf Reitz, Univ of Wisconsin-Madison; Stephen Ciatti, Argonne National Laboratory
9:40 a.m.	2013-01-0902	Comparison of Negative Valve Overlap (NVO) and Rebreathing Valve Strategies on a Gasoline PPC Engine at Low Load and Idle Operating Conditions Patrick Borgqvist, Per Tunestal, Bengt Johansson, Lund University

10:00 a.m.	2013-01-0915	Experimental Investigation on the Combustion and Emissions of a Light Duty Diesel Engine Fuelled with Butanol-Diesel Blend Gerardo Valentino, Stefano Iannuzzi, Felice Esposito Corcione, Istituto Motori CNR
10:20 a.m.	2013-01-0916	Premixed Charge of n-Butanol Coupled with Direct Injection of Biodiesel for an Advantageous Soot-NOx Trade-Off Valentin Soloiu, Marvin Duggan, Henry Ochieng, Spencer Harp, Jabeous Weaver, Craig Jenkins, Brian Vlcek, Georgia Southern University
10:40 a.m.	2013-01-0903	Analysis of Surrogate Fuels Effect on Ignition Delay and Low Temperature Reaction during Partially Premixed Combustion Hadeel Solaka, Martin Tuner, Bengt Johansson, Lund University
11:00 a.m.	2013-01-0898	Investigation of Low-Temperature Combustion in an Optical Engine Fueled with Low Cetane Sasol JP-8 Fuel Using OH-PLIF and HCHO Chemiluminescence Imaging Kan Zha, Xin Yu, Ming-Chia Lai, Marcis Jansons, Wayne State University
11:20 a.m.	2013-01-0904	Renewable Ethanol Use for Enabling High Load Clean Combustion in a Diesel Engine Xiaoye Han, Univ of Windsor; Jimi Tjong, Ford Motor Co; Meiping Wang, Graham Reader, Ming Zheng, Univ of Windsor

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

Wednesday, April 17

Fuel Injection and Sprays (Part 1 of 3)

Session Code: PFL210

Room W2-65

Session Time: 1:00 p.m.

This session is devoted to experimental and computational work in the area of fuel injection systems and sprays. Topics include: spray characterization, cavitation, multi-phase jet modeling, CFD models for spray processes, wall films and impingement, hydraulic circuit analysis, and dissolved gas effects. Studies of both gasoline and diesel fuel sprays and fuel injection equipment are encouraged.

Organizers - Tarek M. Abdel-Salam, East Carolina University; Essam El-Hannouny, Argonne National Laboratory; Jacqueline O'Connor, Sandia National Laboratories

Time	Paper No.	Title
1:00 p.m.	2013-01-1602	Effects of Cavitation in Common-Rail Diesel Nozzles on the Soot Formation Process Francisco Payri, J. Javier Lopez, Antonio Garcia, Oscar A. de la Garza de Leon, CMT Motores Termicos UPV; Sebastien Houille, Peugeot Citroen Automobiles SA
1:20 p.m.	2013-01-1590	4th Generation Diesel Common Rail System: Realizing Ideal Structure Function for Diesel Engine Shuichi Matsumoto, DENSO Corp; Charles Klose, Deere & Company; Jason Schneider, John Deere & Co; Noriaki Nakane, DENSO Corp; Daiji Ueda, DENSO International America, Inc.; Shigeyuki Kondo, DENSO Corp
1:40 p.m.	2013-01-1615	Effect of Jet-Jet Interactions on the Liquid Fuel Penetration in an Optical Heavy-Duty DI Diesel Engine Guillaume Lequien, Edouard Berrocal, Yann Gallo, Augusto Themudo e Mello, Oivind Andersson, Bengt Johansson, Lund University

2:00 p.m.	2013-01-1591	Optical Investigation of Injection and Combustion Phases of a Fouled Piezoelectric Injector in a Transparent CR Diesel Engine <i>Agnese Magno, Univ. Federico II - Istituto Motori CNR; Ezio Mancaruso, Bianca Maria Vaglieco, Istituto Motori CNR</i>
2:20 p.m.	2013-01-1599	Relation between Tip Penetration and Droplet Size of Diesel Spray <i>Keisuke Komada, Daisaku Sakaguchi, Nagasaki University; Hiroshi Tajima, Kyushu Univ; Hironobu Ueki, Masahiro Ishida, Nagasaki University</i>
2:40 p.m.	2013-01-1605	Use of Low-Pressure Direct-Injection for Reactivity Controlled Compression Ignition (RCCI) Light-Duty Engine Operation <i>N. Ryan Walker, Adam B. Dempsey, Michael J. Andrie, Rolf D. Reitz, University of Wisconsin-Madison</i>
3:00 p.m.	2013-01-1588	Spray Visualization and Characterization of a Micro-Variable Circular-Orifice (MVCO) Injector Coupled with a Swirl Adapter for Diesel Reformer Applications <i>Karthik Nithyanandan, Ming Huo, Univ of Illinois at Urbana-Champaign; Chia-Fon Lee, Univ of Illinois and Tsinghua Univ; Deyang Hou, QuantLogic Corporation</i>
3:20 p.m.	2013-01-1610	Evaluation of Some Important Boundary Conditions for Spray Measurements in a Constant Volume Combustion Chamber <i>Jonas Galle, Christophe Van De Maele, Sander Defruyt, Sebastian Verhelst, Roel Verschaeren, Ghent University</i>
3:40 p.m.	2013-01-1592	Numerical Study of DMF and Gasoline Spray and Mixture Preparation in a GDI Engine <i>Haiying Li, Birmingham Univ.; Cao li, Jaguar Land Rover; Xiao Ma, PoWen TU, Birmingham Univ.; Hongming Xu, Birmingham Univ, Tsinghua University; Shi-Jin Shuai, Tsinghua University; Akbar Ghafourian, Birmingham Univ.</i>
4:00 p.m.	2013-01-1596	Spray Atomization Study on Multi-Hole Nozzle for Direct Injection Gasoline Engines <i>Motoyuki Abe, Hitachi, Ltd.; Ehara Hideharu, Soma Masahiro, Tohru Ishikawa, Hitachi Automotive Systems, Ltd.</i>

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

Wednesday, April 17

Alternative and Advanced Fuels (Part 3 of 3) Biodiesel

Session Code: PFL215

Room W2-66

Session Time: 8:00 a.m.

This session focuses on the fundamental properties of fuels and methods for measuring these properties, as well as issues related to fuel storage and transportation. Examples include diesel fuel lubricity determination, fuel effects on deposits, cold weather issues, and environmental and toxicological impacts of new fuels

Organizers - William P Attard, MAHLE Powertrain LLC; Barbara Goodrich, John Deere Product Engineering Center; George Karavalakis, University of California, Riverside; James Lyons, Sierra Research Inc.; Elisa Toulson, Michigan State Univ.

Chairpersons - George Karavalakis, Univ. of California-Riverside

Time	Paper No.	Title
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8:00 a.m.	2013-01-1139	Calculation of Heating Value for Diesel Fuels Containing Biodiesel Shailesh Martin Lopes, General Motors Company; Robert Furey, Furey Fuels Consulting, LLC; Pat Geng, General Motors Company
8:20 a.m.	2013-01-1138	Evaluation of the Impacts of Biofuels on Emissions for a California Certified Diesel Fuel from Heavy-Duty Engines Maryam Hajbabaei, Kent C. Johnson, University of California, Riverside; Robert Okamoto, California Air Resources Board; Thomas D. Durbin, University of California, Riverside
8:40 a.m.	ORAL ONLY	Comprehensive Study of Criteria Emissions from Low Blend Level Biodiesels and their Certification in California Maryam Hajbabaei, university of california riverside; George Karavalakis, Kent Johnson, Univ of California-Riverside; Alexander Mitchell, Jim Guthrie, California Air Resources Board; Thomas Durbin, Univ of California-Riverside
9:00 a.m.	2013-01-1130	Experimental and Modeling Study of Biodiesel Surrogates Combustion in a CI Engine Xin Wang, Mingfa Yao, Shanju Li, Jingbo Gu, Tianjin Univ
9:20 a.m.	2013-01-1136	The Properties and Injector Nozzle Fouling Performance of GTL and EN590 Diesel with RME and SME Biodiesel Stefan de Goede, Sasol Technology Fuels Technology; Piet Roets, Adrian Velaers, Sasol Fuels Technology; Jerrie Vermeulen, Sasol Technology; Celeste Wilken, Sasol Fuels Technology
9:40 a.m.	2013-01-1142	Experimental Study of Combustion and Emissions Characteristics of Methyl Oleate, as a Surrogate for Biodiesel, in a Direct Injection Diesel Engine Valentin Soloiu, Jabeous Weaver, Henry Ochieng, Marvin Duggan, Sherwin Davoud, Brian Vlcek, Craig Jenkins, Georgia Southern University; Christopher Butts, USDA, ARS National Peanut Research Lab
10:20 a.m.	2013-01-1127	Optical Investigation of Post-injection Strategy Impact on the Fuel Vapor within the Exhaust Line of a Light Duty Diesel Engine Supplied with Biodiesel Blends Simona Silvia Merola, Istituto Motori CNR; Andrea De Filippo, General Motors Powertrain Europe; Gerardo Valentino, Cinzia Tornatore, Luca Marchitto, Stefano Iannuzzi, Istituto Motori CNR
10:40 a.m.	2013-01-1128	Effectiveness of Various Phenolic Compounds (Commercial and Non-Commercial) on Biodiesel Oxidation Stability Alexandros Deligiannis, Antonios Anastasakos, George Anastopoulos, George S. Dodos, Fanourios Zannikos, National Technical Univ of Athens
11:00 a.m.	2013-01-1148	Microbiological Growth Study of Biodiesel Fuel George S. Dodos, Fanourios Zannikos, National Technical Univ of Athens
	2013-01-1145	Diesel Cold Start into Congested Real World Traffic: Comparison of Diesel and B100 for Ozone Forming Potential (Written Only -- No Oral Presentation) Seyed Hadavi, Gordon E. Andrews, Hu Li, Univ of Leeds; Grzegorz Przybyla, Silesian University of Technology; Mohammadmohsen Vazirian, Univ of Leeds
	2013-01-1150	Performance and Emission Studies of a Diesel Engine Using Biodiesel Tyre Pyrolysis Oil Blends (Written Only -- No Oral Presentation) Abhishek Sharma, Bijay Dhakal, NIT Rourkela, India

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Wednesday, April 17

Emissions Measurement and Testing

Session Code: PFL408

Room W2-66

Session Time: 1:00 p.m.

Papers are invited for this session covering emissions measuring techniques and testing regimes. This includes new analysis techniques and the novel application of existing techniques, the comparison of existing and proposed testing regimes with real world experience, including modeling.

Organizers - Allen B. Duncan, Environmental Protection; Leslie Hill, Horiba, Ltd.; Phil Price, Ford Motor Co.

Time	Paper No.	Title
1:00 p.m.	2013-01-1044	Vehicle Exhaust Emissions Characterization by Chromatographic Techniques Applied to Different Gasoline-Ethanol Blends. Susanna Paz-Estivill, Rosa Delgado-Ortiz, Applus IDIADA; Elisenda Cirera-Domènech, Francesc Broto-Puig, IQS (Ramon Llull University)
1:20 p.m.	2013-01-1045	Alternative to Hydrogen/Helium as Flame Ionization Detector Fuel Mahmoud K. Yassine, Morgan La Pan, Kamal Nayfeh, Chrysler Group LLC
1:40 p.m.	2013-01-1046	Experimental and Modeling Study of a Diesel Oxidation Catalyst (DOC) under Transient and CPF Active Regeneration Conditions Xiaobo Song, Harsha Surenahalli, Jeffrey Naber, Gordon Parker, John Johnson, Michigan Technological University
2:00 p.m.	2013-01-1047	Emissions Measurement System for Hybrid and Plug-in Hybrid Electric Vehicles Using Intermittent Sampling Strategy Yoshinori Otsuki, Tatsuki Kumagai, Hiroshi Nakamura, Katsushi Taguchi, Horiba Ltd; Nobuhisa Mori, Toyota Motor Corporation
2:20 p.m.	2013-01-1048	Influence of Driving Cycles on Powered Two-Wheelers Emissions, Fuel Consumption and Cold Start Behavior Giorgio Zamboni, Univ of Genoa; Maria Vittoria Prati, Istituto Motori CNR; Chiara Carraro, Stefano Malfettani, Univ of Genoa; Maria Antonietta Costagliola, Giovanni Meccariello, Istituto Motori CNR; Silvia Marelli, Massimo Capobianco, Univ of Genoa
2:40 p.m.	2013-01-1051	Fast O₂ Measurement using Modified UEGO Sensors in the Intake and Exhaust of a Diesel Engine Kieran Hegarty, Paul Dickinson, Dariusz Cieslar, Nick Collings, Univ of Cambridge
3:00 p.m.	2013-01-1054	An Experimental and Modeling Study of Reaction Kinetics for a Cu-Zeolite SCR Catalyst Based on Engine Experiments Xiaobo Song, Jeffrey Naber, John Johnson, Gordon Parker, Michigan Technological University
3:20 p.m.	2013-01-1057	Effects of 7, 9, and 10 psi Vapor Pressure Fuels on Multi-Day Diurnal Evaporative Emissions of Tier 2 and LEV II Vehicles Johanna Dolch, Ford Motor Co; Aaron Reek, Gerard Glinsky, SGS Environmental Testing Corp; Dominic Diccio, Ford Motor Co; Valerie Ughetta, Alliance of Automobile Manufacturers Inc
3:40 p.m.	2013-01-1058	In-Situ Real-Time Fuel Consumption Measurement Using Raw Exhaust Flow Meter and Zirconia AFR Sensor Masanobu Akita, Hiroshi Nakamura, Masayuki Adachi, Horiba, Ltd.

2013-01-1059

Ford Otosan New Powertrain Test Facility - Part 1: Design & Construction of Engine Emission Development Cells (Written Only -- No Oral Presentation)

Serdar Akca, Cem Ozen, Fatih Yilmaz, Yasin Yayla, Ford Otosan Product Development

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

Wednesday, April 17

Engine Boosting Systems (Part 1 of 2)

Session Code: PFL501

Room W2-67

Session Time: 8:00 a.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 - Arjun D. Tuteja; William Smith, Honeywell Int'l (Turbo Technologies); David Japikse, Eric Krivitzky, Concepts NREC; Marcello Canova

Chairpersons - Eric Krivitzky, Concepts NREC

Time	Paper No.	Title
8:00 a.m.	2013-01-0928	Boost System Development for Gasoline Direct-Injection Compression-Ignition (GDCI) Kevin S. Hoyer, Mark Sellnau, James Sinnamon, Harry Husted, Delphi Powertrain
8:20 a.m.	2013-01-0929	Assessing the Loss Mechanisms Associated with Engine Downsizing, Boosting and Compression Ratio Change Patrick Smith, Wai K. Cheng, MIT
8:40 a.m.	2013-01-0930	Comparative Evaluation of Turbochargers for High Horsepower Diesel-Electric Locomotives Anirudh Gautam, Avinash Kumar Agarwal, I I T Kanpur
9:00 a.m.	2013-01-0931	Development of High Speed Motor and Inverter for Electric Supercharger Kazuhiro Nishiwaki, Masahiro Iezawa, Hideyuki Tanaka, Takashi Goto, Mitsubishi Electric Corp.; Byeongil An, Mitsubishi Heavy Industries, LTD.
9:20 a.m.	2013-01-0932	Downspeeding a Light Duty Diesel Passenger Car with a Combined Supercharger and Turbocharger Boosting System to Improve Vehicle Drive Cycle Fuel Economy Philip Wetzel, Eaton Corp.
9:40 a.m.	2013-01-0920	Experimental Evaluation of Advanced Turbocharger Performance on a Light Duty Diesel Engine Harold Sun, David Hanna, Paul Niessen, Brien Fulton, Ford Motor Company; Liangjun Hu, ESI Group; Eric Curtis, Jianwen Yi, Ford Motor Company
10:00 a.m.	2013-01-0921	Behavior of an IC Engine Turbocharger in Critical Conditions of Lubrication J. Galindo, J.R. Serrano, V. Dolz, M. A. López, Universitat Politècnica de València; F. Bouffaud, Renault SA

10:20 a.m.	2013-01-0935	Simulation Study of the Series Sequential Turbocharging for Engine Downsizing and Fuel Efficiency Qingning Zhang, Chris Brace, Sam Akehurst, Richard Burke, Univ of Bath; Geoff Capon, Ford Motor Company Ltd; Les Smith, Jaguar Land Rover Ltd; Steve Garrett, Kai Zhang, Cummins Turbo Technologies
10:40 a.m.	2013-01-0936	EGR Systems Evaluation in Turbocharged Engines Lurun Zhong, Marc Musial, Ronald Reese, Greg Black, Chrysler Group LLC
11:00 a.m.	2013-01-1310	A Novel System for Reducing Turbo-Lag by Injection of Compressed Gas into the Exhaust Manifold Dariusz Cieslar, Nick Collings, Paul Dickinson, Keith Glover, Univ of Cambridge; Alexander Darlington, AVL

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

Wednesday, April 17

Engine Boosting Systems (Part 2 of 2)

Session Code: PFL501

Room W2-67

Session Time: 1:00 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 - Arjun D. Tuteja; William Smith, Honeywell Int'l (Turbo Technologies); David Japikse, Concepts NREC; Marcello Canova; Eric Krivitzky, Concepts NREC

Chairpersons - Marcello Canova

Time	Paper No.	Title
1:00 p.m.	2013-01-0918	Investigation of Nozzle Clearance Effects on a Radial Turbine: Aerodynamic Performance and Forced Response Liangjun Hu, ESI Mindware Inc; Harold Sun, Jianwen Yi, Eric Curtis, Anthony Morelli, Ford Motor Co; Jizhong Zhang, National Key Lab of Turbocharger; Ben Zhao, Ce Yang, Xin Shi, Shangtao Liu, Beijing Institute of Technology
1:20 p.m.	2013-01-0919	TVS® V-Series Supercharger Development for Single and Compound Boosted Engines Michael Froehlich, Nathan Stewart, Eaton Corp - Vehicle Group
1:40 p.m.	2013-01-0923	Eliminating Engine Performance Degradation Over Time Through Compressor Redesign Eric Krivitzky, Concepts NREC; Masashi Yamamoto, Mitsubishi FUSO Truck and Bus Corp.
2:00 p.m.	2013-01-0924	Meanline Modeling of Radial Turbine Performance for Turbocharger Simulation and Diagnostic Applications Nikolaos Sakellaris, Dimitrios Hountalas, NTUA, School of Mechanical Engineering
2:20 p.m.	2013-01-0925	Uncertainty and Measurement Sensitivity of Turbocharger Compressor Gas Stands Erwann Guillou, Honeywell Turbo Technologies

2:40 p.m.	2013-01-0927	1-D Model of Roots Type Supercharger <i>Pavel Brynych, Jan Macek, Oldrich Vitek, Libor Cervenka, Czech Technical Univ.</i>
3:00 p.m.	2013-01-0933	Geometry-Based Compressor Data-Maps Prediction <i>Jamil El Hadeif, Peter Janas, Renault SAS; Guillaume Colin, University Of Orleans; Vincent Talon, Renault SAS; Yann Chamaillard, University of Orleans</i>
3:20 p.m.	2013-01-0934	Potentials of Variable Compressor Pre Swirl Devices in Consideration of Different Sealing Concepts <i>Stephan-Johannes Schnorpfeil, Stefan Pischinger, VKA , RWTH Aachen; Philipp Adomeit, FEV GmbH; Stephen Bowyer, FEV Inc.</i>
	2013-01-0937	The Fluid Induced Vibration Analysis on an Integrated Exhaust Manifold (Written Only -- No Oral Presentation) <i>BangLin Deng, Jingping Liu, Renhua Feng, Hunan University; Daming Zhang, California State University</i>
	2013-01-0938	Experimental and Numerical Study of the Effect of Pulsating Flow on the Turbocharger Turbine Performance Parameters (Written Only -- No Oral Presentation) <i>Hamidreza Tabatabaei, Islamic Azad University-Kashan Branch; Masoud Boroomand, Amirkabir University of Technology; Mohammad Taeibi-Rahni, Sharif University of Technology</i>

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

Wednesday, April 17

New CI & SI Engines and Components (Part 1 of 3)

Session Code: PFL500

Room W2-68

Session Time: 8:20 a.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 - Jeffrey Naber, Michigan Tech. University; James E. Smith, West Virginia Univ.; John Szpytman, Continental Automotive Systems; Bryon Wasacz, Chrysler Group LLC

Time	Paper No.	Title
8:20 a.m.	2013-01-1723	A Study on the Dynamic Characteristics of a Single-body Hydraulic Lash Adjuster under Aeration <i>Kenta Yoshii, Masaru Kawano, Nagao Yanagisawa, Honda R&D Co.,Ltd.</i>
8:40 a.m.	2013-01-1731	Dynamic Characteristic Calibration of a Hydraulic Lash Adjuster Model Using Unit Excitation Test <i>Yuki Sano, Nagao Yanagisawa, Motoyasu Sakaguchi, Kenta Yoshii, Honda R&D Co Ltd</i>
9:00 a.m.	2013-01-1737	Assessing the Propensity for Valve Train Tick Noise <i>Bruce K. Geist, William Resh, Scott Fisher, Ian McLean, Mark Hannon, Chrysler Group LLC</i>
9:20 a.m.	2013-01-1729	Calibrating an Adaptive Pivoting Vane Pump to Deliver a Stepped Pressure Profile <i>Bruce Geist, William Resh, Kiranmaye Aluru, Chrysler Group LLC</i>

9:40 a.m.	2013-01-1730	Challenge Determining a Combustion System Concept for Downsized SI-engines - Comparison and Evaluation of Several Options for a Boosted 2-cylinder SI-engine <i>Alexander Eichhorn, David Lejsek, Alexander Hettinger, Andreas Kufferath, Robert Bosch GmbH</i>
10:00 a.m.	2013-01-1720	The New Powertrain Virtual Analysis Process in Engine Design and Development <i>Yi-Hsin Chen, William Resh, Hong Geng, Simon Shi, Jaspal Sandhu, Darryl Muir, Chrysler Group LLC</i>
10:20 a.m.	2013-01-1732	Development of the Combustion System for the General Motors Fifth Generation ϵ Small Blockϵ Engine Family <i>Scott Halsall, Kevin Luchansky, Yangbing Zeng, Richard Davis, Ronald Herrin, General Motors Company</i>
10:40 a.m.	2013-01-1728	Development of New V6 3.5L Gasoline Engine for ACURA RLX <i>Nobuo Suzuki, Honda R&D Co., Ltd.; Yasutaka Hayashi, Marc Odell, Tatsuhito Esaki, Honda R&D Americas, Inc.; Atsushi Sato, Kazuya Ishiki, Satoshi Watanabe, Honda R&D Co., Ltd.</i>
11:00 a.m.	2013-01-1734	Development of New L4 2.4L Gasoline Engine for 2013 Model Year ACCORD <i>Yasuhiro Motohashi; Kenji Kubota; Nobuyuki Akaishi; Kazuya Ishiki; Takashi Iwamoto; Masakazu Kinoshita</i>
11:20 a.m.	2013-01-1738	Development of New Gasoline Engine for ACCORD Plug-in Hybrid <i>Akiyuki Yonekawa, Masaki Ueno, Osamu Watanabe, Naohiro Ishikawa, Honda R&D Co. Ltd.</i>

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

Wednesday, April 17

New CI & SI Engines and Components (Part 2 of 3)

Session Code: PFL500

Room W2-68

Session Time: 1:00 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 - Jeffrey Naber, Michigan Tech. University; James E. Smith, West Virginia Univ.; John Szpytman, Continental Automotive Systems; Bryon Wasacz, Chrysler Group LLC

Time	Paper No.	Title
1:00 p.m.	2013-01-1716	Advanced Glow Plug for Heavy Fuels Applications <i>Benjamin Baird, Shahrokh Etemad, Precision Combustion, Inc.</i>
1:20 p.m.	2013-01-1724	New Polymeric Coating on Sputtered Bearings for Heavy Duty Diesel Engines <i>Mario S. Praca, Samantha Uehara, Matheus Ferreira, MAHLE Metal Leve S.A.; Omar Mian, MAHLE Engine Systems UK</i>
1:40 p.m.	2013-01-1725	High Durability and Low Fuel Consumption Ring Pack for HDD Engines <i>Eduardo Nocera, Rafael Antonio Bruno, Davi Silva, MAHLE Metal Leve S.A.; Jason Bieneman, MAHLE Industries, Incorporated</i>

2:00 p.m.	2013-01-1717	Characterization of EGR Cooler Response for a Range of Engine Conditions Yolanda Bravo, VALEO; Jose Lujan, Andres Tiseira, Universidad Politecnica de Valencia
2:20 p.m.	2013-01-1736	Analytical Comparison of a Turbocharged Conventional Diesel and a Naturally Aspirated Compact Compression Ignition Engine both Sized for a Highway Truck John Clarke, Edward O'Malley, Motiv Engines LLC
2:40 p.m.	2013-01-1719	Preliminary Design of a Two-Stroke Uniflow Diesel Engine for Passenger Car Olivier Laget, Cyprien Ternel, Julien Thiriot, Sébastien Charmasson, IFP Energies nouvelles; Pascal Tribotté, Renault; Fabrice Vidal, PSA Peugeot Citroën
3:00 p.m.	2013-01-1739	Development of Diesel Engine using New Fuel Injection System - Direct Monitoring of Fuel Injection Pressure using Injector with Built-in Sensor, and its Applications Takeshi Miyaura, Atsushi Morikawa, Yoshiyasu Ito, Toyota Motor Corp; Koji Ishizuka, Toyomori Tsuiki, DENSO Corporation

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

Wednesday, April 17

Combustion Control and Optimization (Part 3 of 3)

Session Code: PFL303

Room W2-69

Session Time: 8:00 a.m.

This session covers engine combustion control and optimization techniques related to achieving stringent market fuel economy, emissions, and performance. Related topics include engine combustion diagnostics, control, optimization, related combustion sensing, etc.

Organizers - Nilabh Srivastava, Univ. of North Carolina; Elisa Toulson, Michigan State Univ.; Yue-Yun Wang, General Motors; Fengjun Yan, McMaster Univ.; Xiaojian Yang; Guoming G. Zhu, Michigan State Univ.

Time	Paper No.	Title
8:00 a.m.	2013-01-0326	Estimation of Main Combustion Parameters from the Measured Instantaneous Crankshaft Speed Florin Mocanu, Dinu Taraza, Wayne State University
8:20 a.m.	2013-01-0312	Development of an Improved Residuals Estimation Model for Dual Independent Cam Phasing Spark-Ignition Engines Vaibhav Kale, Yeliana Yeliana, Jeremy Worm, Jeffrey Naber, Michigan Technological Univ
8:40 a.m.	2013-01-0317	Estimation of the Engine-Out NO₂/NO_x Ratio in a EURO VI Diesel Engine Roberto Finesso, Daniela Misul, Ezio Spessa, Politecnico di Torino
9:00 a.m.	2013-01-0313	Identification of Factors Influencing Premixed Diesel Engine Noise and Mechanism of Noise Reduction by EGR and Supercharging Gen Shibata, Yushi Shibaiki, Hirooki Ushijima, Hideyuki Ogawa, Hokkaido University

9:20 a.m.	2013-01-0314	Development of a Novel Approach for Non-Intrusive Closed-Loop Heat Release Estimation in Diesel Engines <i>Fabrizio Ponti, Vittorio Ravaglioli, Enrico Corti, Davide Moro, University of Bologna; Matteo De Cesare, Magneti Marelli SpA Powertrain Division</i>
9:40 a.m.	2013-01-0307	Virtual Combustion Phasing Target Correction in the Knock Region for Model-Based Control of Multi-Fuel SI Engines <i>Baitao Xiao, Shu Wang, Robert G. Prucka, Clemson Univ</i>
10:00 a.m.	2013-01-0324	A Semi-Physical Artificial Neural Network for Feed Forward Ignition Timing Control of Multi-Fuel SI Engines <i>Baitao Xiao, Shu Wang, Robert G. Prucka, Clemson Univ</i>
10:20 a.m.	Panel	Panel Discussion: Engine and Combustion Modeling for Model-Based Control <i>This panel discussion will bring together a group of technical experts on control-oriented model and model-based control development. The panel discussion will review the current status, challenges, and the future direction on this subject for various sub-systems of the automotive powertrain and engine systems.</i> Moderators - Zongxuan Sun, Univ. of Minnesota-Twin Cities Panelists - Zoran S. Filipi, Clemson University; Hossein Javaherian, General Motors LLC; Patrick C. Niven, Ricardo Inc.; Zongxuan Sun, Univ. of Minnesota-Twin Cities; Guoming G. Zhu, Michigan State University;

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00357, SUB-TP-00008 and SL TP-00009, and also individually. To purchase visit collections.sae.org

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

Wednesday, April 17

Powertrain Control & Calibration (Part 1 of 3) Engine Control & Calibration

Session Code: PFL300

Room W2-69

Session Time: 1:00 p.m.

This session covers powertrain control system and optimization processes related to achieving stringent market fuel economy, emissions, performance, reliability, and quality demands. Topics include the control, calibration, and diagnostics of the engine, powertrain, and supporting electromechanical subsystems related to energy management in conventional and hybrid operation.

Organizers - Feilong Liu, Delphi Corp.; Peter J. Maloney, MathWorks Inc.; Denise M. Rizzo, US Army TARDEC; Matti Vint, Ricardo Inc.

Chairpersons - Feilong Liu, Delphi

Time	Paper No.	Title
1:00 p.m.	2013-01-1745	Development of a New In-vehicle Sensing Method to Instantaneously Measure the Mixture Fraction of Bio-diesel Present in a Crude Oil based Classic Diesel Fuel <i>Michael Pontoppidan, Numidis Sarl; Gino Montanari, Magneti Marelli Brazil</i>
1:20 p.m.	2013-01-0343	Real-Time Estimation of Intake O₂ Concentration in Turbocharged Common-Rail Diesel Engines <i>Ivan Arsie, Andrea Cricchio, Cesare Pianese, University of Salerno; Matteo De Cesare, Magneti Marelli SpA Powertrain Division</i>
1:40 p.m.	2013-01-0345	Simplified Multiple Sliding Mode Transient Control with VGT and EGR Diesel Engine <i>Hyomin Jin, Seibum Choi, Hojin Jung, KAIST</i>

2:00 p.m.	ORAL ONLY	<i>Reduction of Experimental Data Points in the Base Calibration by Estimation of Engine Maps Using Regularized Basis Function Neural Networks</i> (paper approved by SAE Brazil- 2012-36-0231) <i>Eduardo Xavier, Rodrigo Westphal, Wanderson Rodrigues, Fiat Chrysler América Latina</i>
2:20 p.m.	2013-01-0342	<i>Flexible ECU Function Development Calibration and Engine Performance Assessment Based on Co-Simulation</i> <i>Charles-Francois Tumelaire, David Gurney, Tony Cains, Nebojsa Milovanovic, Marco Warth, Mahle Powertrain, Ltd.</i>
2:40 p.m.	2013-01-0351	<i>Engine Test Data Quality Requirements for Model Based Calibration: A Testing and Development Efficiency Opportunity</i> <i>Tim Beattie, Jaguar Land Rover; Richard P. Osborne, AVL UK, Ltd.; Wilhelm Graupner, AVL List GMBH</i>
3:00 p.m.	2013-01-1749	<i>Data Driven Estimation of Exhaust Manifold Pressure by Use of In-cylinder Pressure Information</i> <i>Stefano Bottelli; Harald Waschl; Sergio Savaresi, Politecnico di Milano; Luigi del Re; Simone Formentin, Politecnico di Milano</i>
3:20 p.m.	2013-01-0354	<i>Ion-Sense-Based Real-Time Combustion Sensing for Closed Loop Engine Control</i> <i>Gerard Malaczynski, Gregory Roth, Donald Johnson, Delphi Automotive Systems, LLC</i>
3:40 p.m.	2013-01-0359	<i>Design and Benefits of Dynamic Skip Fire Strategies for Cylinder Deactivated Engines</i> <i>Mark Wilcutts, Joshua Switkes, Mark Shost, Adya Tripathi, Tula Technology, Inc.</i>
	2013-01-0338	<i>Reducing Development Time by Using Virtual Platform to Help Designing Fault Detection Strategy for a Turbocharged SI Engine (Written Only -- No Oral Presentation)</i> <i>Rasoul Salehi, Sharif University of Technology; Amir Hossein Parivar; Gholam Reza Vossoughi, Aria Alasty, Sharif University of Technology</i>
	2013-01-1752	<i>Exhaust Manifold Pressure Estimation Diesel Equipped with a VGT Turbocharger (Written Only -- No Oral Presentation)</i> <i>Felipe Castillo, GIPSA Lab - Renault SAS; Emmanuel Witrant, Luc Dugard, UJF Grenoble 1/CNRS, GIPSA Lab; Vincent Talon, Renault SAS</i>
	2013-01-1754	<i>Model-Based Methodology for Air Charge Estimation and Control in Turbocharged Engines (Written Only -- No Oral Presentation)</i> <i>Kunihiko Suzuki, Hitachi, Ltd.; Seiji Asano, Hitachi Automotive Systems, Ltd.</i>

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

Wednesday, April 17

Chat with the Expert - LD/HD Control, Calibration, and OBD

Session Code: PFLCHAT310

Room W2-69

Session Time: 4:00 p.m.

Moderators - Stephen Majkowski, American Power Group, Inc. APG

Panelists - William J. Fedor, Delphi Powertrain; Zoran S. Filipi, Clemson University; Kody G. Klindt, IAV Automotive

Engineering Inc.; Guoming G. Zhu, Michigan State University;

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

Wednesday, April 17

Natural Gas Engines and Vehicles

Session Code: PFL106

Room W2-70

Session Time: 8:00 a.m.

This session covers fuel injection, combustion, controls, performance and emissions of SI engines fueled with methane based fuels such as natural gas, producer gas, coke oven gas or hydrogen-natural gas blends. Diesel-natural gas dual-fuel engines will also be presented.

Organizers - Riccardo Scarcelli, Argonne National Laboratory; Patric Ouellette, Westport Innovations Inc.; Thomas Wallner, Argonne National Laboratory; Chris Hagen, Oregon State Univ.

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Keynote Presentation: Natural Gas Engines , Where are We and Where are We Going John M. Lapetz, Westport
8:40 a.m.	2013-01-0862	Reducing the Cycle-Cycle Variability of a Natural Gas Engine Using Controlled Ignition Current Jessica Dahlstrom, Per Tunestal, Bengt Johansson, Lund University
9:00 a.m.	2013-01-0863	Cold Performance Challenges with CNG PFI Injectors Raul Bircann, Youssef Kazour, Kenneth Dauer, Mahoro Fujita, Allan Wells, Daniel Francis Kabasin, Harry Husted, Delphi Corp.
9:20 a.m.	2013-01-0866	Performance and Emissions of a Turbocharged Spark Ignition Engine Fuelled with CNG and CNG/Hydrogen Blends Mirko Baratta, Stefano D'Ambrosio, Daniela Anna Misul, Politecnico di Torino
9:40 a.m.	2013-01-0845	Knock and Emission Characteristics of Heavy-Duty HCNG Engine with Modified Compression Ratios Gihun Lim, University of Science and Technology; Sungwon Lee, Cheolwoong Park, Young Choi, Changgi Kim, Korea Institute of Machinery & Materials
10:00 a.m.	2013-01-0852	Characterization of CH₄ and CH₄/H₂ Mixtures Combustion in a Small Displacement Optical Engine Francesco Catapano, Silvana Di Iorio, Paolo Sementa, Bianca Maria Vaglieco, Istituto Motori CNR
10:20 a.m.	2013-01-0847	Impact of Supplemental Natural Gas on Engine Efficiency, Performance, and Emissions Claire Maxey, Vickey Kalaskar, The Pennsylvania State University; Dongil Kang, Andre Boehman, University of Michigan
10:40 a.m.	2013-01-0848	The Influence of Crevices on Hydrocarbon Emissions from a Diesel-Methane Dual Fuel Engine Fredrik Königsson, Johannes Kuyper, Per Stalhammar, AVL Sweden; Hans-Erik Angstrom, Royal Institute of Technology
11:00 a.m.	2013-01-0853	Experimental Investigation of Cycle-by-Cycle Variations in a Natural Gas/Diesel Dual Fuel Engine with EGR Lu Sun, Yifu liu, Lei Zhou, Ke Zeng, Xi'an Jiaotong University

11:20 a.m. 2013-01-0871 *Analysis of Transient Compressible Gas Jets Using High Speed Schlieren Imaging*
Lars Christian Riis Johansen, Eugenio de Benito Sienes, Petter Dahlander, Chalmers University of Technology

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

Wednesday, April 17

Hydrogen IC Engines

Session Code: **PFL102**

Room W2-70

Session Time: **1:00 p.m.**

This session focuses on hydrogen internal combustion engines and highlights recent engine research as well as vehicle related activities. Combustion concepts including hydrogen port fuel injection as well as direct injection are investigated, advanced diagnostics for hydrogen engines are presented and recent results in hydrogen engine simulation are shown.

Organizers - *Brad A. Boyer, Ford Motor Co.; Thomas Wallner, Argonne National Laboratory*

Time	Paper No.	Title
1:00 p.m.	2013-01-0225	<i>Evaluation of a Flow-Field-Based Heat Transfer Model for Premixed Spark-Ignition Engines on Hydrogen</i> <i>Joachim Demuyne, Ghent University; Kam Chana, Oxford University; Michel De Paepe, Sebastian Verhelst, Ghent University</i>
1:20 p.m.	2013-01-0227	<i>Direct In-cylinder Injection of Water into a PI Hydrogen Engine</i> <i>Matthew Younkins, University of Michigan/Ford Motor Co.; Margaret Wooldridge, University of Michigan; Brad Boyer, Ford Motor Co.</i>
1:40 p.m.	2013-01-0226	<i>Experimental Investigation of a Port Fuel Injected Spark Ignition Engine Fuelled with Variable Mixtures of Hydrogen and Methane</i> <i>Michele Battistoni, Claudio Poggiani, Carlo N. Grimaldi, Universita degli Studi di Perugia</i>
2:00 p.m.	2013-01-0229	<i>A Comparative Study of a Spark Ignition Engine Running on Hydrogen, Synthesis Gas and Natural Gas</i> <i>Pedro Orbaiz, Michael J. Brear, Payman Abbasi, Peter A. Dennis, University of Melbourne</i>
2:20 p.m.	2013-01-0224	<i>DelHy 3W - Hydrogen Fuelled Hy-Alfa Three Wheeler</i> <i>Saravanan Natarajan, Mathew Abraham, M Rajesh, GP Subash, Rana Kunal, Mahindra & Mahindra Ltd; Lalit Das, Indian Institute of Technology - Delhi</i>
	2013-01-0230	<i>Hydrogen DI Dual Zone Combustion System (Written Only -- No Oral Presentation)</i> <i>Matthew Younkins, University of Michigan/Ford Motor Co.; Brad Boyer, Ford Motor Co.; Margaret Wooldridge, University of Michigan</i>

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

Thursday, April 18

Rising Above the Conventional: What Technologies have the Largest Potential to Get to the Best Possible Vehicle Fuel Efficiency (and why)?

Session Code: ANN204

Room FEV Powertrain Innovation Forum **Session Time:** 9:45 a.m.

There is more focus on fuel efficiency than there has been at any time in recent memory. Myriad technologies are being proposed from many fundamental directions: combustion, materials and mechanical component design, thermodynamics, tribology, chemistry, vehicle dynamics, power transmission, and body in white, just to name a few. Each of the innovations in these fields come with a set of benefits, some potential drawbacks, and a cost. Powertrain developers are faced with having to select the right combination of features to target the highest efficiency gain. This session will compare the emerging technologies from a cost/benefit/timing perspective and provide insight on the technologies that will likely rise to the top of the powertrain developers' short list.

Moderators - Floyd E. Allen, Powertrain Systems Executive, FEV, Inc.

Panelists - Chris Cowland, Director, Advanced & SRT Powertrain, Chrysler Group LLC; Bob Fascetti, Director, Global Engine Engineering, Powertrain Product Development, Ford Motor Company; Douglas A. Hughes, Engineering Manager - Advanced Powertrain, Eaton Corp.; Prabjot Nanua, Director Advanced Engineering, General Motors Company;

Thursday, April 18

Keynote Address - Bob Lutz

Session Code: ANN110

Room AVL Technology Leadership Center **Session Time:** 9:00 a.m.

Thursday, April 18

Product Development Efficiency - Reducing Time to Market with the Right Products

Session Code: ANN104

Room AVL Technology Leadership Center **Session Time:** 10:30 a.m.

Product is king. This panel will focus on challenges and solutions to empowering global engineering organizations to bring innovative new products to market that consumers want in less time, with higher quality, and at lower overall cost. All this while needing to maintain agility in the face of change, achieve economies of scale amongst disparate market needs, adhere to rapidly advancing regulations, and achieve buy-in amongst different silos, cultures, generations, and regions. Executives will discuss their thinking on achieving efficiency through people, processes, and structure.

Moderators - Martin Fischer, President, HELLA

Panelists - Carla Bailo, Senior Vice President, Research & Development, Nissan Americas; Priya Playle, Principal, P3 North America Inc.; Randall W. Stephens, Chief Engineer, Product Development Office, Toyota Technical Center USA Inc.; Eric M. Tech, President Global Truck & Engine, Navistar Inc.; Benjamin Winter, Vice President -- Vehicle Engineering, Chrysler Group LLC;

Thursday, April 18

Virtual Design and Engineering

Session Code: IDM301

Room D0-02B **Session Time:** 8:00 a.m.

This technical session will showcase the creation and application of various tools that will allow for the design and manufacture of parts, equipment, facilities and tests that eliminate the need for physical part prototyping early in a program. The ability to model various aspects of design, test and manufacturing allows for more accurate, cost effective and faster development and product delivery to market.

Organizers - George Smith, Magna Powertrain; Paul Zalucha, Ford Motor Co.

Time	Paper No.	Title
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8:00 a.m.	2013-01-1163	Heat Exchanger Optimization Using Approximation and Parallel Parameterized CFD (PPCFD) Khaled Saleh, Vikrant Aute, University of Maryland College Park; Kurt Reinhard Radermacher, Univ. of Maryland
8:20 a.m.	2013-01-1164	Overcoming Barriers to a Successful Vehicle Modularity Strategy Michael LaLande, Dassault Systemes
8:40 a.m.	2013-01-1165	Virtual Road Approach for Vehicle Durability Simulations Abhijit Londhe, Suhas Kangde, Mahindra & Mahindra Ltd

Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Thursday, April 18

Key Success Factors of Lean Manufacturing Implementation

Session Code: IDM400

Room D0-02B

Session Time: 9:00 a.m.

This technical session deals with research and development efforts addressing the advancement and applications of Lean methodologies and Quality improvement in the mobility Industry. Papers presented in this session will portray the latest developments in the principles, practices, tools, processes, and applications of Lean and Quality improvement methodologies.

Organizers - Beena Anand, Norma Group; Mohamed El-Sayed, Kettering Univ.

Time	Paper No.	Title
9:00 a.m.	ORAL ONLY	Battery-Free AGVs: Scalable, Flexible, Asynchronous Production Rod Emery, Superior Controls
9:20 a.m.	2013-01-1324	Cloud Computing OEE (Overall Equipment Effectiveness) for Reducing Production Downtime Ravi Anand, SYBEQ
9:40 a.m.	2013-01-1326	How to Spread the Lean Mindset in an Effective Way Using Change Agents in Sales and Engineering and Finance at Tenneco Patrick Garcia, Enrique Orta, Tenneco Europe
10:00 a.m.	2013-01-1327	Methodology Improvement for Lean Transactional Patrick Garcia, Tenneco Europe
10:20 a.m.	2013-01-1329	Lean Implementation in Integrated Design and Manufacturing Mohamed El-Sayed, Kettering University
10:40 a.m.	2013-01-1330	Critical Success Factors of Quality Culture Development in Automotive Industry Shady Baher El Safty, General Motors International Operations
11:00 a.m.	2013-01-1332	Implementation of Lean in Human Resources Patrick Garcia, Tenneco Europe; Wolfgang Fries, Tenneco International

Planned by Lean - Six Sigma Committee / Integrated Design and Manufacturing Activity

Thursday, April 18

Reliability and Robust Design in Automotive Engineering: Model Validation and Verification

Session Code: IDM106

Room D0-02B

Session Time: 1:00 p.m.

Model Validation and Verification invite papers that deal with the theoretical and/or applied aspects of one or more of the following representative topics: model development, model correlation/calibration, model verification, model validation, uncertainty quantification, uncertainty propagation, validation metrics, predictive capability assessment, etc.

Organizers - Yan Fu, Ford Motor Co.; Ramesh Rebba, General Motors LLC; Ren-Jye Yang, Ford Motor Co.

Chairpersons - Ching-Hung Chuang, Yan Fu, Ford Motor Co

Time	Paper No.	Title
1:00 p.m.	2013-01-1385	A Cost-Driven Method for Design Optimization Using Validated Local Domains Dorin Drignei; Zissimos Mourelatos, Vijitashwa Pandey, Oakland University; Igor Baseski, US Army TARDEC; Michael Kokkolaras, McGill University; Amandeep Singh, David Lamb, US Army TARDEC
1:20 p.m.	2013-01-1384	Reliability-Based Design Optimization with Model Bias and Data Uncertainty Zhen Jiang, Wei Chen, Northwestern University; Yan Fu, Ren-Jye Yang, Ford Motor Company
1:40 p.m.	2013-01-1387	An Ensemble Approach for Model Bias Prediction Zhimin Xi, Univ. of Michigan; Yan Fu, Ren-Jye Yang, Ford Motor Co
2:00 p.m.	2013-01-1386	On Stochastic Model Interpolation and Extrapolation Methods for Vehicle Design Zhenfei Zhan, Yan Fu, Ren-Jye Yang, Ford Motor Co
2:20 p.m.	2013-01-1388	Robust Analytical Methodology for Hood Overslam Travel using a DFSS Approach Sankar Rao Nallapati, Jason Miller, Balakrishna Chinta, John Morley, General Motors Company
2:40 p.m.	2013-01-1383	Leaf Spring Safety and Ride Comfort Circumstances Against Fatigue Behaviour Murathan Soner, Ciler Senocak, Olgun Celik; Tolga Erdogan, Olguncelik Company; Mustafa Karaagac, Olgun Celik; Ahmet Kanbolat, Olguncelik Company; Gorkem Ozcelik, Olgun Celik; Vural Ceyhun

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Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Thursday, April 18

Sheet / Hydro / Gas Forming Technology and Modeling (Part 1 of 2)

Session Code: M201

Room D0-03 C&D

Session Time: 8:00 a.m.

The Sheet/ Hydro/ Gas Forming Technology and Modeling session is designed to provide industrial and academic participants a forum to address current technical issues in sheet metal forming using analytical, numerical and experimental tools. This session will help to advance the state of the art in sheet metal forming and lead to rapid dissemination of new technologies for industrial applications.

Organizers - Xiaoming Chen, US Steel; Ghassan Kridli, Texas A&M Univ. at Qatar; S. George Luckey, Ford Motor Co.; Krishna Murali, General Motors LLC; Thomas Oetjens, Magna International; Michael J. Worswick, Univ. of Waterloo

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Formability Assessment of Al-6XXX-T4 Tubes for Hydroforming Applications Yannis Korkolis, Univ. of New Hampshire

8:20 a.m.	2013-01-1168	Deformation Mechanism of ERW Tubes in Newly Developed Bending Method ζPRBζ Osamu Sonobe, Yuji Hashimoto, Jiro Hiramoto, Toru Inazumi, JFE Steel Corp.
8:40 a.m.	ORAL ONLY	Sheet Metal Forming Limits with Normal Pressure Jieshi Chen, Shanghai Jiao Tong University
9:00 a.m.	2013-01-1166	Predicting Failure during Sheared Edge Stretching Using a Damage-Based Model for the Shear-Affected Zone Cliff Butcher, David Anderson, Michael Worswick, University of Waterloo
9:20 a.m.	ORAL ONLY	Numerical Failure Prediction of the Hole Expansion Test using the GISSMO Damage Model David Anderson, Cliff Butcher, University Of Waterloo; Michael Worswick, University of Waterloo
9:40 a.m.	2013-01-1167	The Influence of Edge Preparation Method on the Hole Expansion Performance of Automotive Sheet Steels Brandon M. Hance, Robert J. Comstock, Daniel K. Scherrer, AK Steel Corporation
10:00 a.m.	2013-01-1169	Correlation Study on Parameters Affecting Springback Phenomenon in Stamping Simulation Sarin Babu Thokala, Sathya Narayanan, Naveed Ahamed, Deepak Ranjan Bhuyan, Praveen Balaj Balakrishnan, Chrysler India Automotive Pvt Ltd; Sathya Dev, Chrysler Group LLC
10:20 a.m.	2013-01-1171	Die Wear Estimation in Automotive Sheet Metal Stamping Praveen Balaj Balakrishnan, Chrysler India Automotive Pvt. Ltd.; Sathya Dev, Chrysler Group LLC; Deepak Bhuyan, Parvez Syed, Sarin Babu Thokala, Chrysler India Automotive Pvt. Ltd.
10:40 a.m.	2013-01-1170	Optimization of High-Volume Warm Forming for Lightweight Sheet Nia R. Harrison, Andrey Ilinich, Peter A. Friedman, Ford Motor Company; Jugraj Singh, Chrysler Group LLC; Ravi Verma, General Motors Company
11:00 a.m.	2013-01-1172	Deep Drawing by Indirect Hot Stamping ZiQiang Sheng, Yuwei Wang, Tony Chang, Severstal North America Inc.; Robert Miller, Evangelos Liasi, Ford Product Development

Planned by Ferrous Committee / Materials Engineering Activity

Thursday, April 18

Panel Discussion: Measurement and Analysis of Forming Limit Diagrams Using DIC Techniques (Part 2 of 2)

Session Code: M201

Room D0-03 C&D

Session Time: 1:00 p.m.

The Sheet/ Hydro/ Gas Forming Technology and Modeling session is designed to provide industrial and academic participants a forum to address current technical issues in sheet metal forming using analytical, numerical and experimental tools. This session will help to advance the state of the art in sheet metal forming and lead to rapid dissemination of new technologies for industrial applications.

Organizers - Xiaoming Chen, US Steel; Ghassan Kridli, Texas A&M Univ. at Qatar; S. George Luckey, Ford Motor Co.; Krishna Murali, General Motors LLC; Thomas Oetjens, Magna International; Michael J. Worswick, Univ. of Waterloo

Time	Paper No.	Title
1:00 p.m.	ORAL ONLY	Sheet Metal Stamping: Stretching Our Resources the Right Way Lorenzo Smith, Oakland Univ.

1:40 p.m.

Panel

Panel Discussion: Measurement and Analysis of Forming Limit Diagrams Using DIC Techniques

Digital image correlation (DIC) techniques are increasingly being applied by engineers and researchers at automotive OEMs, Tier 1s, sheet suppliers, research laboratories and universities to characterize sheet metal formability. DIC enables improvements in strain measurement efficiency and accuracy directly supporting the development of more robust formability metrics such as forming limit diagrams (FLDs). While DIC results are commonly used by stamping researchers and engineers to support product and manufacturing feasibility, there are no generally accepted industry test specifications and methods. This panel discussion will review DIC technology and applications as well as consider next steps toward industry standardization.

Panelists - Changqing Du, Chrysler Group LLC; Jidong Kang, CanmetMATERIALS; Ming F. Shi, United States Steel Corp.; Dan Zeng, Ford Motor Company; Gang Huang, Arcelor Mittal USA; Thomas Stoughton, General Motors LLC; John Tyson, Trillion Quality Systems; Cedric Xia, Ford Motor Co; Mark Iadicola, National Institute Standards & Tech; Lianxiang Yang, Oakland University;

Planned by Ferrous Committee / Materials Engineering Activity

Thursday, April 18

LCA and Sustainability

Session Code: SDP113

Room D0-03A

Session Time: 8:00 a.m.

This session reviews life cycle assessments on materials, technologies, and processes. Other topics included in this session are updates on the development of life cycle analysis databases for use by the national and international community.

Organizers - Claudia Duranceau, CD Technical LLC; Susan Sawyer-Beaulieu, Univ. of Windsor

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Cathode Material Identity's Influence on the Environmental Impact of Automotive Lithium-Ion Batteries Jennifer B. Dunn, Argonne National Laboratory; Christine James, University of Michigan; Kevin Gallagher, Linda Gaines, John Sullivan, Andrew Burnham, Michael Wang, Argonne National Laboratory
9:00 a.m.	2013-01-1279	Uncertainties in the Life Cycle Assessment of Passenger Vehicles Adriana Carvallo, Jean-Pierre L. Birat, Antoine Gauriat, Jean-Sébastien Thomas, ArcelorMittal Global R&D
9:20 a.m.	2013-01-1280	Geographical Differences of Electricity Supply in Environmental Impact Assessment of Electric Vehicles Fan Yang, Bingbing Li, Chris Yuan, University of Wisconsin Milwaukee
9:40 a.m.	2013-01-1281	Life Cycle Assessment of Energy Use and GHG Emissions of Plug-In Hybrid Electric Vehicles in China Xiaomin Xie, Tingting Zhang, Zhen Huang, Shanghai Jiao Tong Univ.
10:00 a.m.	2013-01-1282	Reducing Light Duty Vehicle Fuel Consumption and Greenhouse Gas Emissions: The Combined Potential of Hybrid Technology and Behavioral Adaptation Danilo Santini, Andrew Burnham, Argonne National Laboratory

10:20 a.m.	2013-01-1283	Life-Cycle Greenhouse Gas and Criteria Air Pollutant Emissions of Electric Vehicles in the United States Hao Cai, Michael Wang, Amgad Elgowainy, Jeongwoo Han, Argonne National Laboratory
10:40 a.m.	2013-01-1285	Application of Life Cycle Analysis to End of Life Vehicles Recycling Process Suna Erses Yay, Sakarya Universitesi; Kubilay Yay, Istanbul Technical Univ.
	2013-01-1278	Contemporary Tools and Approach for Project Management Sustainability in Indian Automotive Industry (Written Only -- No Oral Presentation) Yaamini Devi Loganathan, Foton Motors Mktg & Sales India Pvt Ltd
	2013-01-1284	Indian Automobile Greenfield Projects and its Impact on Economic Sustainability (Written Only -- No Oral Presentation) Yaamini Devi Loganathan, Foton Motors Mktg & Sales India Pvt Ltd
	2013-01-1286	Macroscopic Study of Projected Catalytic Converter Requirements (Written Only -- No Oral Presentation) Bryan Strecker, Christopher Depcik, Univ. of Kansas

The papers in this session are available in SAE Technical Paper Collection, COLL-GTL-00001 and COLL-TP-00367, also individually. To purchase visit collections.sae.org

Planned by Sustainable Development Program Committee / Engineering Meetings Board

Thursday, April 18

Advances in Alternative Energy Sources for Sustainable Development in the Transportation Sector

Session Code: SDP110

Room D0-03A

Session Time: 1:00 p.m.

This session explores advances in the creation of sustainable energy sources and their usage in the transportation sector. Topics can include research and in-production technology used to produce renewable energy sources and materials. A discussion on lifecycle analysis of the energy sources is also highly recommended. The SDPC encourages usage of papers, presentations, and panels in this session to display leading edge technologies and practical tools for engineers.

Organizers - Sujit Das, Oak Ridge National Laboratory; Rahul Jhavar, Ph.D., Caterpillar Inc.

Time	Paper No.	Title
1:00 p.m.	2013-01-1039	Review of Technologies for Sustainable Ground Transportation Ramesh K. Agarwal, Washington Univ. St. Louis
1:20 p.m.	2013-01-1035	Emission Performance of Neat and Blended Polyoxymethylene Dimethyl Ethers in an Old Light-Duty Diesel Car Leonardo Pellegrini, Mario Marchionna, Renata Patrini, Salvatore Florio, ENI SpA
1:40 p.m.	2013-01-1040	Performance and Emission Characteristics of Fish Oil Biodiesel and Diesel Blend in a Medium Capacity C.I. Engine Employing EGR Manish V, Sahil Gupta, Naveen Kumar, Varun Vohra, Delhi Technological University
2:00 p.m.	2013-01-1033	Simulated Fuel Economy and Emissions Performance during City and Interstate Driving for a Heavy-Duty Hybrid Truck C. Stuart Daw, Zhiming Gao, David E. Smith, Tim J. Laclair, Josh A. Pihl, K. Dean Edwards, Oak Ridge National Laboratory

2:20 p.m.	2013-01-1041	An Experimental Investigation on Performance and Emission Studies of a Single Cylinder Diesel Engine Fuelled with Blends of Diesel and Mahua Oil Methyl Ester Vipul Vibhanshu, M.Tech (Thermal Engineering); Naveen Kumar, Delhi Technological University; Ashish Singh, Chinmaya Mishra, M.Tech (Thermal Engineering)
2:40 p.m.	2013-01-1038	Cost Comparison of Wind Energy Delivered as Electricity or Hydrogen for Vehicles Marc W. Melaina, Genevieve Saur, National Renewable Energy Laboratory
3:00 p.m.	2013-01-1037	Opportunities and Control Measures for Sustainable Transport Growth in Emerging Economy Regions-India Prashant Kumar Banerjee, Manohar Chaudhari, Uday Salunkhe, S Ravishankar, Tata Motors, Ltd.
	2013-01-1042	On the Design of High Power Low Frequency Harvesters for Car Engine (Written Only -- No Oral Presentation) Hany Sherif, College of Eng., Qassim University; Mohamed Eltaib, Eng College Qassim Univ & Assiut Univ.; Abdullah Alsuwaiyan, Unayzah Eng College., Qassim University
	2013-01-1043	Comparative Analysis of Twin Cylinder C.I. Engine Fueled with Diesel and Preheated Karanj Oil (Written Only -- No Oral Presentation) Vivek W Khond, G H Raison College Of Engineering

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00366, SUB-TP-00010 and SL TP-00012, and also individually. To purchase visit collections.sae.org

Planned by Sustainable Development Program Committee / Engineering Meetings Board

Thursday, April 18

Automotive Composites

Session Code: M303

Room D0-03B

Session Time: 8:00 a.m.

This session contains papers which describe the use of modern automotive composites in structural applications. Design, process, and analytical presentations are included, as well as papers presenting results of bonding strategies and techniques. Engineers involved in the design and use of advanced composites will find this session of particular value.

Organizers - Somasekhar Bobba, GE India Technology Center; Bruce N. Greve, General Motors Vehicle Engineering Cntr.; Y Charles Lu, University of Kentucky; Srikanth Pilla, Univ. of Wisconsin-Madison; Richard Dale Tonda, SEA, Ltd.

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	HiAnt® Simulation: Simulating Structural Composite Hybrid Parts made from Continuous Fiber Reinforced Plastics Vasant Pednekar, Lanxess Corp.
8:20 a.m.	ORAL ONLY	Leveraging Non-Automotive Design Criteria to Enhance Overall Value and Quality of Direct Molded Long Fiber Thermoplastic Automotive Parts Darin J. Grinsteinner, CPI Binani Inc.
8:40 a.m.	ORAL ONLY	Composite Material for On-Line Painting Guillaume CLEDAT, CCP Composites France

9:40 a.m.	2013-01-1174	Effect of B₄C Particles on Dry Sliding Wear Behavior of LM-13 Metal Matrix Composite Tejas Chaukulkar, Manisha Chemicals; Prajeen Dumbare; Rahul Waikar, Vishwakarma Institute of Technology Pune
10:00 a.m.	2013-01-1175	Development of Intercooler Plastic Tank Material Instead of Aluminum Die-Cast Masakazu Atsumi, Masaru Urushihara, DENSO Corp.; Yuji Munesawa, Kuraray Co., Ltd.
10:20 a.m.	2013-01-1176	Advanced Thermosetting Resin Matrix Technology for Next Generation High Volume Manufacture of Automotive Composite Structures Roman Hillermeier, Tareq Hasson, Lars Friedrich, Cedric Ball, Momentive Specialty Chemicals Inc.
10:40 a.m.	2013-01-1177	Development of Polymer Composite Battery Pack Case for an Electric Vehicle Chi-Hoon Choi, Jeong-Min Cho, Hyundai Motor Company; Yongkil Kil, Yonghoon Yoon, LG Hausys
11:00 a.m.	2013-01-1178	A Comparative Study on the Axial Impact Performance of Jute and Glass Fiber-Based Composite Tubes Ashok Mache, Anindya Deb, Indian Institute Of Science
11:20 a.m.	2013-01-1775	2013 SRT Viper Carbon Fiber X-Brace James Truskin, Leland Decker, Uday Ramchander, Chrysler Group LLC; Jackie Rehkopf, Plasman Carbon Composites
	2013-01-1173	Production of a Composite Monocoque Frame for a Formula SAE Racecar (Written Only -- No Oral Presentation) Leonard Hamilton, Peter Joyce, Chris Forero, Martin McDonald, US Naval Academy
	2013-01-1179	Flexural Strength Properties of Teak Wood Filled Rectangular Hollow Sectioned Thin Steel Tube and its Application in Automobile (Written Only -- No Oral Presentation) Bharatesh Danawade, Ravindra Malagi, Gogte Institute of Technology, Belgaum; Suprit Malagi, S.G. Balekundri Insti. of Tech. Belgaum

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Thursday, April 18

Advances in Plastic Components, Processes and Technologies

Session Code: M301

Room D0-03B

Session Time: 1:00 p.m.

This session will cover a very broad range of applications, processes and technologies as the title suggests.

Organizers - Emile Homsí, DSM; Y Charles Lu, University of Kentucky; Robert Maynard, Ticona; Venkatesha N, GE India Technology Centre

Time	Paper No.	Title
1:00 p.m.	ORAL ONLY	Light Weight, Friction Down, Improved Performance via new High Performance Plastics from DSM in various automotive applications

Bert Havenith, DSM

1:20 p.m.	2013-01-1776	Advances in Polyamide 4T for Lead Free Solder Surface Mount Technology (SMT) Applications Gregory Costantino, DSM Engineering Plastics
1:40 p.m.	2013-01-1392	Recent Case Studies of Engineering Thermosets for Under the Hood Applications Frank Bayerl, Sigrid ter Heide, Cedric A. Ball, Momentive Specialty Chemicals Inc.
2:20 p.m.	2013-01-1395	Controlling Adhesion with Digital UV Decorating Techniques Rory Wolf, Enercon Industries
2:40 p.m.	2013-01-1396	Development of TPO Based Rear Bumper Back Beam Chang Hee Sohn, Ok Kim, Yong Chun, Hyundai MOBIS; Jong Wook Lee, Honam Petrochemical Corp.
3:00 p.m.	2013-01-1394	A Study of Resin Overlay Bearing Material for Recent Automotive Engines Hiroki Kobayakawa, Daido Metal Co., Ltd.; Hideo Tsuji, Naohisa Kawakami, Colin McAleese, Hiromitsu Katsuki, Kenta Kato, Daido Metal Co Ltd
3:20 p.m.	2013-01-1393	Numerical Modeling of Preferential and In-Line Heating of Semi-Transparent Thin Polymers in Stretch Blow Molding and Thermoforming Processes Alain Malo, Zohir Benrabah, Francis Thibault, Anna Bardetti, NRC-Automotive
3:40 p.m.	2013-01-1397	Thermo-Viscoelastic Model for Shrinkage and Warpage Prediction During Cooling and Solidification of Automotive Blow Molded Parts Zohir Benrabah, NRC Automotive; Hicham Mir, Inergy Automotive Systems Research; Yi Zhang, Ford Motor Company
4:00 p.m.	2013-01-1390	Measurement Method of Small Leakage Rate for Fitted Metal Parts Norimasa Hosonuma, Hidenori Arai, Yuuichi Shutou, Nozomu Suzuki, Hirotaka Mizuta, NOK Corporation
	2013-01-1391	Evaluation of Anti Scratch Additives on Polypropylene Compound (Written Only -- No Oral Presentation) Mrunal R. Hatwalne, Tata Motors, Ltd.; Prachi Joshi
	2013-01-1398	Finite Element Analysis of Door Closing Effort (Written Only -- No Oral Presentation) Peter Qiu, Yuan Qu, Shen Wu, Min Sun, Chery Automobile Co., Ltd.

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Thursday, April 18

Systems Engineering

Session Code: AE312

Room D0-04AB

Session Time: 8:00 a.m.

This session addresses automotive requirements, high level system design, cost analysis, simulation, modeling, testing, and validation. System includes components, sub assemblies, computer based controllers, hardware and software. The session focuses on intelligent and efficient approaches to analysis, design (not detailed design), modeling, measurement, document management and optimizing performance. Topics on effect of cost, and human machine interface are covered.

Organizers - Subramaniam Ganesan, Oakland Univ.; Kanaparty Rao, IBES Inc.

Time	Paper No.	Title
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8:00 a.m.	2013-01-1411	A Mechanism to Interpret Diesel Fuel Atomization as it is Injected into an Engine Combustion Chamber Badih Ali Jawad, Selin Arslan, Lawrence Technological Univ.
8:20 a.m.	2013-01-1409	Cylinder Head Intake Flow Analysis Badih Jawad, Lawrence Technological Univ.; Selin Arslan, Lawrence Technological Univ.
8:40 a.m.	2013-01-1400	Fatigue Life Improvement through the ζNOVAζ Process Mehieddine Rababeh, Badih A. Jawad, Daw Alwerfalli, Hassan Choucair, Lawrence Technological University
9:00 a.m.	2013-01-1402	The Study of Wall Y+ of Incompressible Turbulent Flow Over High Lift Devices Using CutCell Meshing Ramadan Ghmati, Tripoli Univ.; Badih Jawad, Liping Liu, Selin Arslan, Lawrence Technological Univ.
9:20 a.m.	2013-01-1410	Numerical Study of the Aerodynamic Characteristics of a Multi-Element Airfoil NACA 23012 Asya Gabbasa, Badih Jawad, Liping Liu, Selin Arslan, Lawrence Technological Univ.
9:40 a.m.	2013-01-1404	Improving Engine Performance Through Intake Design Badih Jawad, Kingman Yee, Selin Arslan, Liping Liu, Lawrence Technological Univ.
10:00 a.m.	2013-01-1401	Better Vehicle Performance Through Improved Throttle Response Badih Jawad, Kingman Yee, Liping Liu, Selin Arslan, Lawrence Technological Univ.
10:20 a.m.	2013-01-1412	Synchronous Mode Operation in Electrical Machine with DC Stator Excitation Sergey P. Gladyshev, Michigan-Dearborn University; Inina Okrainskaya, South Ural State University
10:40 a.m.	2013-01-1407	A Virtual Driving Education Simulation System - Hardware and Software with Pilot Study Qimin (Jimmy) Yao, John R. Wagner, Kim Alexander, Philip Pidgeon, Clemson University
11:00 a.m.	2013-01-1399	Achieving a Scalable E/E-Architecture Using AUTOSAR and Virtualization Dominik Reinhardt, Dirk Kaule, BMW AG; Markus Kucera, University of Applied Science Regensburg
11:20 a.m.	2013-01-1408	Modeling and Measurement to Customer-Specific Fuel Cost Estimation Brian Fan, Matthew Stevens, Chris Mendes, Alex Koch, CrossChasm Technologies
11:40 a.m.	2013-01-1403	Title: Development of Reusable Body and Comfort Software Functions Prakash Kulkarni, KPIT Cummins Infosystems Ltd.; Raghavendra Anantharam, Nishant Tholiya, KPIT Cummins Infosystems Ltd; Claas Bracklo, Pia Mondal, BMW AG
	2013-01-1405	Efficient Knowledge Management with an SBA: How Innovative Technology can Revive Older Ones (Written Only -- No Oral Presentation) Alexandre Figuiere, Dassault Systemes
	2013-01-1413	SMS-Based Operation of Electrical Appliances (Written Only -- No Oral Presentation) Qandeel Rehman, National Univ. of Science and Technology

2013-01-1414

An Efficient Technique for Reducing the Cost of Motorcycle ECU-Immobilizer Subsystem Integration (Written Only -- No Oral Presentation)

Sunil Kumar Chippa, Samraj Dhinagar, M/S TVS Motor Company Limited

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Planned by Electrical and Electronic Systems Committee / Automobile Electronics Activity

Thursday, April 18

Panel discussion: Reliability Assessment, Model Validation, and the new SAE J2940 Standard

Session Code: IDM900

Room D0-04AB

Session Time: 1:00 p.m.

SAE Ground Vehicle Reliability committee recently completed the SAE Standard J2940. It is a short standard that requires elements of quantitative Model V&V. In particular, it requires that Reliability and Confidence be reported as pairs of numbers, for studies claiming that reliability is being assessed with validated models. The panel includes key members of the committee that produced the standard, including the primary author, Dr. Roger Logan and will address critical issues to J2940.

Organizers - David A. Lamb, US Army TARDEC

Panelists - Kyung K. Choi, Univ. of Iowa; Roger W. Logan, Independent Consultant; Zissimos Mourelatos, Oakland University;

Planned by Quality, Reliability and Robust Design Committee / Integrated Design and Manufacturing Activity

Thursday, April 18

In-Vehicle Networks

Session Code: AE305

Room D0-04C

Session Time: 8:00 a.m.

Technical papers and/or presentations offered in this session will portray the latest developments and proposals for In-Vehicle Networks. Typical subjects covered are: new protocols, gateways, vehicle control, message handling, X-by-wire, diagnostics, off-board connectivity and vehicle-to-vehicle or vehicle-to-infrastructure communications.

Organizers - Christopher Lupini, Delphi Corp.; Richard D. Means, Mark Zachos, DG Technologies

Time	Paper No.	Title
8:00 a.m.	2013-01-1184	LIN Slave Node Position Detection via LIN Switch Method <i>Rainer Evers, NXP Semiconductors</i>
8:20 a.m.	2013-01-1182	Performance Evaluation of the Scalable-CAN Integrated In-Vehicle Network <i>Ryo Kurachi, Yang Chen, Hiroaki Takada, Nagoya University; Masanobu Nishimura, Satoshi Horiata, Tatsuya Nakajima, AutoNetworks Technologies, Ltd.</i>
8:40 a.m.	2013-01-1188	Development and Implementation of SAE DC Charging Digital Communication for Plug-in Electric Vehicle DC Charging <i>Jason D. Harper, Argonne National Laboratory</i>
9:00 a.m.	2013-01-1183	An i-Electric System Architecture for EVs <i>Pedro Neves, Bernardo Ribeiro, Andre Dias, CEIIA</i>
9:20 a.m.	2013-01-1185	Fault Tolerance Characteristics of FlexRay Central Devices <i>Amit Gupta, Markus Jochim, Kenneth Orlando, General Motors Company</i>

9:40 a.m.	2013-01-1186	Ethernet in the Control Path: Time-Critical Services Using Modern Networking Technology <i>Michael David Johas Teener, Broadcom Corp.</i>
10:00 a.m.	ORAL ONLY	Better Vehicular Security and Safety with an In-Vehicle Firewall and an Intrusion Detection and Prevention System <i>Virendra Kumar, Escrypt Inc.</i>
10:40 a.m.	2013-01-1187	Optimized Methodology for Evaluation of Complex Network Architectures <i>Dibyendu Palai, Tata Motors Ltd.</i>
11:00 a.m.	ORAL ONLY	Untethering the Car <i>Vishal Khemani, Marvell Semiconductors</i>
	2013-01-1181	A Deterministic Algorithm for Distributed Processing in a Vehicle Network (Written Only -- No Oral Presentation) <i>Sudharsan Sundaram, Santosh Malagi, Sabir Ahmed, Mahindra Two Wheelers Ltd</i>

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Planned by Electrical and Electronic Systems Committee / Automobile Electronics Activity

Thursday, April 18

Expert Panel Discussion: Connected Vehicle Technology Transforming Transportation

Session Code: AE331

Room D0-04C

Session Time: 1:00 p.m.

Connected Vehicle Technology, called V2X wireless, enables a range of exciting vehicle- to-vehicle (V2V) and Infrastructure-to-vehicle (I2V) applications that will transform safety and improve mobility. Research and large-scale pilots are underway around the world to prove-out these cooperative systems. This panel gives an overview on the progress of V2X development across the globe. Now that V2X technology is on roads there is much to learn from the early pilots of this important technology.

Moderators - Gregory D. Krueger, SAIC

Panelists - Farid Ahmed-Zaid, Ford Motor Co.; Roger Berg, DENSO International America Inc.; Walton L. Fehr, US Dept. of Transportation; Paul Gray, Cohda Wireless; Michael R. Lukuc, US Dept. of Transportation; Richard Wallace, Center for Automotive Research;

Thursday, April 18

Load Simulation and Vehicle Performance (Part 4): Ride Comfort

Session Code: M107

Room D0-05A

Session Time: 8:00 a.m.

Focusing on studies of driver behavior modeling, driving simulator techniques, vehicle ride comfort evaluation and enhancement, test/simulation correlation analysis, vehicle elastomeric component modeling (i.e. bushings, rubber mounts, springs, dampers, seat cushions), passive, semi-active and active suspension systems, suspension seat analysis and modeling techniques, the effect and control of beaming, shaking, impact harshness, brake judder and any other phenomena affecting ride comfort of driver, passengers, goods, etc.

Organizers - Jennifer Johrendt, Univ. of Windsor; Peijun Xu, Ebco Inc.; Jingzhou James Yang, Texas Tech. University

Time	Paper No.	Title
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8:00 a.m.	ORAL ONLY	Keynote: Digital Human Modeling for Seated Occupants James Yang, Texas Tech. Univ.
8:40 a.m.	2013-01-0994	Evaluation of Human Body Response for Different Vehicle Seats Using a Multibody Biodynamic Model Prasad Kumbhar, Texas Tech University; Peijun Xu, Ebco Inc; James Yang, Texas Tech University
9:00 a.m.	2013-01-0990	Improvement of Bus Ride Comfort via Active Suspension and Connected Dampers Mina M.S. Kaldas, IAE, TU Braunschweig; Aref M.A. Soliman, South Valley University
9:20 a.m.	2013-01-0991	Rule Optimized Fuzzy Logic Controller for Full Vehicle Semi-Active Suspension Mina M.S. Kaldas, Kemal Çalçukan, Roman Henze, Ferit Küçükay, IAE, TU Braunschweig
9:40 a.m.	2013-01-0992	Ride Comfort Evaluation of Horizontal Vibration in Tractor-Trailer Considering Human Body Motion of Driver Yuichiro Hirose, Mitsuru Enomoto, Takashi Sasaki, Hino Motors, Ltd.; Eiichi Yasuda, Masatoshi Hada, Toyota Central R&D Labs Inc
10:00 a.m.	2013-01-0993	Influence of Road Roughness on the Ride and Rolling Resistance for Passenger Car Aref M. A. Soliman, South Valley University; Mina M.S. Kaldas, IAE, TU Braunschweig; Sayed A. Abdallah, Benha University
	2013-01-0995	Robust Design Optimization of an Shock Absorber for Enhancing Ride Performance (Written Only -- No Oral Presentation) Gang Tang, Han Zhao, Hefei University of Technology; Manlong Peng, Jinglai Wu, Yunqing Zhang, Huazhong University of Science and Tech.
	2013-01-0996	Testing, Modelling and Analysis of a Linear Magnetorheological Fluid Damper under Sinusoidal Conditions (Written Only -- No Oral Presentation) H. Metered, S. Mostafa, S. El-Demerdash, N. Hammad, M. El-Nashar, Helwan Univ

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00338, and also individually. To purchase visit collections.sae.org

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Thursday, April 18

Optical Measurement and Nondestructive Testing Techniques in Automotive Engineering

Session Code: M105

Room D0-05A

Session Time: 1:00 p.m.

Key words: optical techniques; digital correlation; holography; shearography; nondestructive testing

Organizers - Sheng Liu, General Motors LLC; Kah Wah Long, Chrysler Group LLC; Lianxiang Yang, Oakland University

Time	Paper No.	Title
1:00 p.m.	2013-01-1420	The Selection of Window in Spatial Phase Shift ESPI Nan Xu; Xin Xie; Xu Chen; Randy Gu, Oakland Univ; Lianxiang Yang, Oakland University

1:20 p.m.	2013-01-1426	High-Speed Inline Production Testing of Cast Pistons Using 3D-CT and a Digital X-Ray Detector Oliver Scholz, Steven Oeckl, Matthias Kube, Fraunhofer IIS
1:40 p.m.	2013-01-1422	Tensile Material Properties of Fabrics for Vehicle Interiors from Digital Image Correlation Vesna Savic, Louis Hector, General Motors LLC
2:00 p.m.	ORAL ONLY	Optical Measurement Techniques from Materials to Manufacturing John Tyson, Trillion Quality Systems
2:20 p.m.	2013-01-1423	Forming Limit Measurement Using a Multi-Sensor Digital Image Correlation System Xu Chen, Nan Xu, Xin Xie, Lorenzo Smith, Lianxiang Yang, Oakland University
2:40 p.m.	ORAL ONLY	Advancements in Digital Image Correlation Opening a New Range of Measurement Capabilities Matt J. Crompton, Dantec Dynamics
3:00 p.m.	2013-01-1421	A New Method for Determination of Forming Limit Diagram Based on Digital Image Correlation Ling Zhang, Jianping Lin, Tongji Univ.; Li Sun, General Motors China Science Lab; Chen Wang, Li Wang, Baosteel Group Corp
3:20 p.m.	2013-01-1428	Improving Material Property Measurement by Using Multi-Camera Digital Image Correlation Caleb P. Chovan, Grove City College; Betelhem Mengiste, University of Maryland Eastern Shore; Xu Chen, Lianxiang Yang, Laila Guessous, Oakland University
3:40 p.m.	2013-01-1427	Constitutive Model of Ti40 Alloy Sheet Based on DIC Measurement (Written Only -- No Oral Presentation) Jianhua Jiang, Tongji Univ.; Houmin Wang, Junhai Gu, shanghai aero plane manufacturing co
4:00 p.m.	2013-01-1425	Fatigue Life Prediction of Rubber Bushing in Engine Cradle (Written Only -- No Oral Presentation) Mingxia Fang, Tongji University; Jianghong Chen, United Automotive Electronic Sys Co. Ltd

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Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Thursday, April 18

CAE Durability Analysis and Applications (Part 2 A): Applications to Automotive Engineering

Session Code: M109

Room D0-05B

Session Time: 8:00 a.m.

This technical session focuses on applications of innovative and improved stress and fatigue analysis methods to automotive engineering. Studies and discussions on practical problem-solving/CAE modeling techniques on whole vehicle, body, chassis, components, joints, power-train systems and assemblies, etc. will be addressed.

Organizers - Mike Guo, Chrysler LLC; Guofei Chen, United States Steel Corp.; Abolhassan Khosrovaneh, GM; Zhigang Wei, Tenneco Automotive Co., Ltd.; Guangtian Gavin Song, AM General LLC; Yung-Li Lee, Chrysler Group LLC

Time	Paper No.	Title
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8:00 a.m.	2013-01-1003	A New Method of d'Alembert's Principle Finite Element Based Fatigue Calculation with Input of Loads and Accelerations Barry (Baizhong) Lin, Chrysler Group LLC
8:20 a.m.	2013-01-1008	New Methodologies for Efficient and Accurate Fatigue Prediction of Seam Welds Michael Hack, Frank Zingsheim, LMS, A Siemens Business
8:40 a.m.	2013-01-1007	Random Vibration Testing Development for Engine Mounted Products Considering Customer Usage Liang Wang, Oakland University; Robert Burger, Yung-Li Lee, Chrysler Group LLC; Keyu Li, Oakland Univ
9:00 a.m.	2013-01-1205	Finite Element Method Based Fatigue Analysis of a Gray Cast Iron Component Yue Ma, Cummins Inc.
9:20 a.m.	2013-01-1212	The Large Scale Finite Element Analysis of a Charge Air Cooler Using a Homogenization Method Keisuke Iwahori, DENSO Corp.; Nobutada Ohno, Dai Okumura, Tomoya Muraki, Nagoya University; Susumu Miyakawa, DENSO Corp.
9:40 a.m.	2013-01-1208	A Fatigue Prediction Method for Spot Welded Joints Hong Tae Kang, Univ. of Michigan-Dearborn; Abolhassan Khosrovaneh, General Motors Company; Hu Hu, Univ. of Michigan-Dearborn; Urban De Souza, General Motors Company
10:00 a.m.	2013-01-1204	Integrating Manufacturing Pre-Stress in FEA Based Road Load Fatigue Analysis Wenxin Qin, Chrysler Group LLC
10:20 a.m.	2013-01-1203	Effect of Leaf Springs on Suspension and Steering System Murathan Soner, Olguncelik Company; Metin Guven, Daimler; Gorkem Ozcelik; Seray Goksel Tokgonul, Tolga Erdogan, Mustafa Karaagac, Ahmet Kanbolat, Olguncelik Company
10:40 a.m.	2013-01-1199	CAE Simulation of Door Sag/Set Using Subsystem Level Approach Roshan N. Mahadule, Tata Technologies Ltd.; Sudhakar Doppalapudi, Chrysler Group LLC
11:00 a.m.	2013-01-1211	Strength Analysis and Fatigue Life Prediction of an Extra Large Dump Truck Deck and Subframe Jihoon Moon, Seunghun Ryu, Wookjin Na, Hyundai Motor Company
	2013-01-1214	Investigating Hinge Crack Problem of a Vehicle Hood by Integration of CAE and RLD Analysis (Written Only -- No Oral Presentation) Zhangyin Li, Zhengzhong Wang, Lei Wang, Chunwei Rong, Kuaichu Fan, Chery Automobile Co., Ltd.

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Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Thursday, April 18

CAE Durability Analysis and Applications (Part 2 B): Applications to Automotive Engineering

Session Code: M109

Room D0-05B

Session Time: 1:00 p.m.

This technical session focuses on applications of innovative and improved stress and fatigue analysis methods to automotive engineering. Studies and discussions on practical problem-solving/CAE modeling techniques on whole vehicle, body, chassis, components, joints, power-train systems and assemblies, etc. will be addressed.

Organizers - Abolhassan Khosrovaneh, GM; Mike Guo, Chrysler LLC; Guofei Chen, United States Steel Corp.; Guangtian Gavin Song, AM General LLC; Zhigang Wei, Tenneco Automotive Co., Ltd.; Yung-Li Lee, Chrysler Group LLC

Time	Paper No.	Title
1:00 p.m.	2013-01-1213	Correlations Among Monotonic Tensile Properties and Simple Approximations that Predict Strain-Controlled Fatigue Properties of Steels Rafaa Esmaael; Vernon Fernandez, Lawrence Technological University
1:20 p.m.	2013-01-1210	Failure Analysis and Problem Solving of Component Fatigue Tested Parts Tapash Dey, Tenneco Inc.; Bradley Walworth, Tenneco Automotive Co Ltd
1:40 p.m.	2013-01-1198	Simulation and Test Correlation of Wheel Radial Fatigue Test Mohammed Billal K, Chrysler India Automotive Pvt Ltd; Thomas Oery, Chrysler Technology Center; Raghuraman Taruvai Sankaran, Anilkumar S Nesarikar, Chrysler India Automotive Pvt Ltd
2:00 p.m.	2013-01-1207	Strain Correlation Improvement in Fuel Tank Abhijit Londhe, Suhas Kangde, Mahindra & Mahindra Ltd
2:20 p.m.	2013-01-1200	Structural Evaluation of Light Weight Aluminum Bedplate Design with Cast Iron Inserts through CAE for High Density Diesel Engine Vivek H Yadav, Krishnan Karthikeyan, Rahul Murlidhar Kad, V. Vikraman, Mahindra & Mahindra
2:40 p.m.	Panel	Panel Discussion: Durability Assessment and Validation in Automotive Engineering The purpose of the panel is to provide an opportunity to discuss, clarify, evaluate and exchange of viewpoints among the automotive fatigue/durability experts. The commonly used durability analysis, and test validation processes/methodologies will be discussed. Panelists - Yung-Li Lee, Chrysler Group LLC; Abolhassan Khosrovaneh, GM; Xuming Su, Ford Motor Co.;

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Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Thursday, April 18

Automotive Tribology - Modeling and Testing (Part 1 of 2)

Session Code: M111

Room D0-06A

Session Time: 8:00 a.m.

This technical session focuses on fundamental and applied research that lowers frictional energy losses and enhances reliability and durability of automotive components. The topics include, but not limited to engine and drivetrain tribology, seals, bearing and gear lubrication, materials tribology, surface engineering, lubricants and additives, computer-aided tribology, tribotesting, as well as friction, wear and lubrication fundamentals.

Organizers - Sung Cha, Hyundai Motor Company; Qian Zou, Oakland University; Ozgen Akalin, Istanbul Technical Univ.; Qingmin Yang, Federal-Mogul Corp.; Yucong Wang, General Motors LLC

Chairpersons - Sung Chul Cha, Hyundai Motor Group - R&D; Qian Zou, Oakland University

Time	Paper No.	Title
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8:00 a.m.	ORAL ONLY	Frontiers of Multi-functional Smart Tribological Coatings for Automotive Applications <i>Ali Erdemir, Argonne National Laboratory</i>
8:40 a.m.	ORAL ONLY	Recent Developments of Amorphous Hydrogenated Carbon Based DLC Coatings for Automotive Applications <i>Martin Keunecke, Fraunhofer IST</i>
9:20 a.m.	ORAL ONLY	DLC Coating for Automotive Precision Components to Minimize Wear and Friction <i>André Hieke, A. Hieke</i>
9:40 a.m.	ORAL ONLY	Advanced Tribological Coatings for Automotive Parts and their Production <i>Marcus Morstein, PLATIT AG</i>
10:00 a.m.		BREAK
10:20 a.m.	2013-01-1215	Study of the Motion of Floating Piston Pin against Pin Bore <i>Ghassan Abed, Qian Zou, Gary Barber, Oakland University; Ben Zhou, Yucong Wang, Yuchuan Liu, Fanghui Shi, General Motors Company</i>
10:40 a.m.	2013-01-1217	Analysis of Oil Film Generation on the Main Journal Bearing Using a Thin-Film Sensor and Elasto-Hydrodynamic Lubrication (EHL) Model <i>Masatsugu Inui, Makoto Kobayashi, Kensaku Oowaki, Takayoshi Furukawa, Nissan Motor Co., Ltd.; Yuji Mihara, Michiyasu Owashi, Tokyo City University</i>
11:00 a.m.	2013-01-1219	Tribological Performance of ZnO-Oil Nanofluids at Elevated Temperatures <i>Ionut C. Harta, Kayla Owens, Oakland University; Steven De Jesús Santiago, Universidad Del Turabo; David Schall, Steven Thrush, Gary Barber, Qian Zou, Oakland University</i>

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Thursday, April 18

Automotive Tribology - Modeling and Testing (Part 2 of 2)

Session Code: M111

Room D0-06A

Session Time: 1:00 p.m.

This technical session focuses on fundamental and applied research that lowers frictional energy losses and enhances reliability and durability of automotive components. The topics include, but not limited to engine and drivetrain tribology, seals, bearing and gear lubrication, materials tribology, surface engineering, lubricants and additives, computer-aided tribology, tribotesting, as well as friction, wear and lubrication fundamentals.

Organizers - Sung Cha, Hyundai Motor Company; Qian Zou, Oakland University; Ozgen Akalin, Istanbul Technical Univ.; Qingmin Yang, Federal-Mogul Corp.; Yucong Wang, General Motors LLC

Chairpersons - Yucong Wang, General Motors LLC; Qingmin Yang, Federal-Mogul Corp.

Time	Paper No.	Title
1:00 p.m.	2013-01-1218	Material Wear Evaluation using Temperature Controlled Wear Testing <i>Saikrishna Sundararaman, Freudenberg-NOK Sealing Technologies</i>
1:20 p.m.	2013-01-1216	Accuracy Comparison of ARX and ANFIS Model of PM Brake Lining Wear Behavior <i>Ovun Isin, Ilyas Istif, Erdem Uzunsoy, Deniz Uzunsoy, Yildiz Technical University</i>

1:40 p.m.	2013-01-1221	Identification of Dry Sliding Wear Behavior of B₄C_P Particulate Reinforced Mg Matrix Composites for Automobile Disk Brakes <i>Ilyas Istif, Ovun Isin, Erdem Uzunsoy, Deniz Uzunsoy, Yildiz Teknik Universitesi</i>
2:00 p.m.	2013-01-1220	SEM Imaging at Multiple Voltages of Friction Films <i>M.A.Z. Vasconcellos, Physics Institute, UFRGS; R. Hinrichs, Geosciences Institute, UFRGS</i>

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Thursday, April 18

Processes, Methods, and Tools for Cyber-Security-Aware Automotive Embedded Systems

Session Code: AE321

Room D0-07A

Session Time: 8:00 a.m.

This session focuses on processes, methods, and tools for the design, analysis, and synthesis of cyber secure automotive embedded systems. The analysis aspect shall cover static code analysis methods and tools for analyzing the vulnerabilities of embedded software (application and platform) prior to their deployment on the target HW. In addition, the analysis shall cover vulnerabilities in currently and future automotive communication protocols for inter and intra-vehicle communications.

Organizers - Amit Choudhury, ADVICS NA, Inc.; Barbara J Czerny, Chrysler Group LLC

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Opening Keynote: The Emerging Importance of Cyber-Physical Security <i>Brian T. Murray, United Technologies Research Center</i>
8:40 a.m.	ORAL ONLY	The ARTEMIS SESAMO project <i>Joseph G. D'Ambrosio, Rami Debouk, GM R&D Center</i>
9:00 a.m.	2013-01-1419	System Security and System Safety Engineering: Differences and Similarities and a System Security Engineering Process Based on the ISO 26262 Process Framework <i>Barbara J. Czerny, Chrysler Group LLC</i>
9:20 a.m.	ORAL ONLY	Vehicle Cyber-Security Approach with Functional-Safety Concept <i>Hirofumi Onishi, Alpine Electronics of America Inc.</i>
9:40 a.m.	2013-01-1415	Threat Analysis and Risk Assessment in Automotive Cyber Security <i>David Ward, Ileri Ibarra, Alastair Ruddle, MIRA Ltd</i>
10:00 a.m.	2013-01-1418	Secure Key Management - A Key Feature for Modern Vehicle Electronics <i>Christian Schleiffer, Marko Wolf, ESCRYPT GmbH; André Weimerskirch, Lars Wolleschensky, ESCRYPT Inc.</i>

Planned by Testing and Instrumentation Committee / Automobile Electronics Activity

Thursday, April 18

Vehicle Sensors and Actuators

Session Code: AE319

Room D0-07A

Session Time: 10:00 a.m.

Modern automotive customers need safer vehicles with little or no impact to the environment. The purpose of this session is to present the latest research and development on novel sensors, actuators, and circuits that are critical to deliver the function of today's complex automotive systems.

Organizers - Chenfang Chang, GM R&D Center; Sanjeev M. Naik, GM

Chairpersons - Sai S V Rajagopalan, General Motors

Time	Paper No.	Title
10:00 a.m.	2013-01-1334	Smart Soot Sensor for Particulate Filter OBD Olivier Brunel; Frederic Duault, Electricfil Automotive; Jacques Lavy, IFP Energies nouvelles; Yann Creff, Bilal Youssef, IFPEN
10:20 a.m.	2013-01-1337	Capacitive Humidity Sensors Using Highly Durable Polyimide Membrane Naohisa Niimi, Takahiko Yoshida, DENSO Corporation; Toshiki Isogai, NIPPON SOKEN, INC.
11:00 a.m.	2013-01-1339	Design of Seat Mounted ECG Sensor System for Vehicle Application Kazuhiro Sakai, Kenichi Yanai, Shuntaro Okada, Katsuyoshi Nishii, DENSO Corporation
	2013-01-1338	Sensor less Wash Fluid Detection in Automotive Application (Written Only -- No Oral Presentation) Sidharth Gupta, Tata Motors, Ltd.
	2013-01-1340	Real Time Vehicular Camera Vision Acquisition System Using Field Programmable Gate Array (FPGA) (Written Only -- No Oral Presentation) Shikher Saluja, Delphi Electronics & Safety; Komal Agrawal, VIT; K KSivasankaran, VLSI - VIT University; Lakshmi Bandlamudi, Chandrakantha Ursu, Active Safety Engineering LLC

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00001, and also individually. To purchase visit collections.sae.org

Planned by Electrical and Electronic Systems Committee / Automobile Electronics Activity

Thursday, April 18

Automotive Engineering Testing and Test Methods

Session Code: M104

Room D0-07A

Session Time: 1:00 p.m.

The focus of this session are the tests and test methods employed in the evaluation of the performance and durability of powertrain (engines, transmissions), driveline (4WD systems, driveshafts, axles), chassis (frame, suspensions, brakes, etc.) and body components, subsystems, and full vehicle systems.

Organizers - Darryl S. Taylor, Boeing; Mike Temkin, Chrysler Corp.

Time	Paper No.	Title
1:00 p.m.	2013-01-1429	Statistical Method Tools to Analyze Ageing Effects on Li-Ion Battery Performances Anthony Barré, Frédéric Suard, CEA, LIST; Mathias Gerard, Maxime Montaru, CEA, LITEN; Delphine Riu, G2Elab, Grenoble INP
1:20 p.m.	2013-01-1433	Progress in Application of Portable Accelerometer Based Measurement Systems in Powertrain Performance Testing Performed on Road Sebastian Brol, Opole University of Technology

1:40 p.m.	2013-01-1437	<i>The Effect of Suspension Types and Tuning on Vehicle Durability</i> <i>Dae-Un Sung, Eun-Joo Kim, June-Yeop Kim, Chun Woo Shin, Won Wook Jung, Hyundai-Kia Motors</i>
2:00 p.m.	2013-01-1432	<i>Pass by Noise Reduction on a Commercial Vehicle</i> <i>Venkatesh Narayanan, Arunkumar S, Muralidharan Chennakrishnan, Kalyankumar Hatti, Ashok Leyland Technical Centre</i>
2:20 p.m.	2013-01-1434	<i>Self-Tuning Speed Tracking Controller for a Portable Brake and Throttle Robot</i> <i>David R. Mikesell, Ohio Northern University; Anmol Sidhu, SEA Ltd</i>
2:40 p.m.	2013-01-1436	<i>Judder based on Sub Scale Test Machine Concerning Facing</i> <i>Ivan Scansani Gregori, Car Parts Inc. ZF do Brazil; Walter Haertel Jr, ZF do Brasil</i>
3:00 p.m.	2013-01-1435	<i>Developing Generic Load Cases by Defining Maximum Spindle Loads as a Function of Corner Weight & Tire Sidewall Height</i> <i>Jacob Szczudlak, Notre Dame University; Mark Villaire, Rajesh Rao, Chrysler Group LLC</i>
	2013-01-1438	<i>Analysis of Damage Caused to Vehicle Body Panels by Impacting Hail and Various Tools and Objects (Written Only -- No Oral Presentation)</i> <i>Nikola Josevski, Andreas Sandvik, Chris Jones, Tandy Pok, Tia Orton, Shane Richardson, Delta-V Experts</i>
	2013-01-1439	<i>Test Set-Up of BIW (Body in White) Stiffness Measurements (Written Only -- No Oral Presentation)</i> <i>Karan R. Khanse, Shekhar P Pathak, Mahindra & Mahindra</i>

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00336, and also individually. To purchase visit collections.sae.org

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Thursday, April 18

Automobile Electronics Design and Systems Reliability

Session Code: AE302

Room D0-07B

Session Time: 8:20 a.m.

Meeting reliability, Design, quality and safety requirements for electrical/electronic systems becomes more challenging every year as E/E content, complexity, time-to-market and globalization pressures increase. This session focuses on intelligent practices for achieving high reliability. New approaches and techniques for integrating robust design and robustness validation into the mainstream global automotive electronics product development and manufacturing processes are discussed.

Organizers - John Day, Automotive Electronics News

Chairpersons - Edward Griffor

Time	Paper No.	Title
8:20 a.m.	2013-01-1228	<i>Robustness Testing of Real-Time Automotive Systems Using Sequence Covering Arrays</i> <i>Graciela Becci, Gunwant Dhadyalla, University of Warwick; Alexandros Mouzakitis, Jaguar Land Rover; James Marco, Cranfield University; Andrew David Moore, QM Systems, Ltd.</i>
8:40 a.m.	2013-01-1229	<i>Technical Challenges in Implementing New Electrical Features on Existing Vehicle Architecture</i> <i>Ajinkya Chinchwadkar, Alok Khare, General Motors Technical Center India</i>

9:00 a.m.	2013-01-1230	Adaptive Test System to Improve PCB Testing in the Automotive Industry Steffen Ostendorff, Joerg Sachsse, Heinz-Dietrich Wuttke, Jorge Meza Escobar, Ilmenau University of Technology
9:20 a.m.	2013-01-1231	Robustness Modelling of Complex Systems - Application to the Initialisation of a Hybrid Electric Vehicle Propulsion System Ross McMurran, Jaguar Land Rover; R. Peter Jones, University of Warwick
	2013-01-1226	Effective Voltage Sag Ride-Through using Ultra Capacitor for Armored Fighting Vehicle Application - A Case Study (Written Only - No Oral Presentation) Prabhavathy Rajappan, Jaishankar Cinnasamy, Ulaganathan Shanmuganathan, Dominic S M, CVRDE, DRDO, Ministry of Defence
	2013-01-1232	Manufacturing Support Design for Low-Cost Instrument Clusters (Written Only -- No Oral Presentation) Sreedhar Thanthy, Delphi Corp.
	2013-01-1233	Impact of Electrical Transients on Functional Safety - A Special Case of Electrification of Conventional Vehicle Platforms (Written Only -- No Oral Presentation) Sreegururaj Jayachander, Mahindra & Mahindra, Ltd.

Planned by Electrical and Electronic Systems Committee / Automobile Electronics Activity

Thursday, April 18

Vehicle Dynamics, Stability and Control (Part 3 of 4)

Session Code: AC500

Room D3-17

Session Time: 8:00 a.m.

This session is focused on vehicle dynamics and controls using modeling and simulation, and experimental analysis of passenger cars, heavy trucks, and wheeled military vehicles. This session addresses active and passive safety systems to mitigate rollover, yaw instability and braking issues; driving simulators and hardware-in-the-loop systems; suspension kinematics and compliance, steering dynamics, advanced active suspension technologies; and tire force and moment mechanics.

Organizers - W. Riley Garrott, National Hwy Traffic Safety Admin; Paul Grygier; Mark Heitz, Transportation Research Center Inc.; Gary J. Heydinger, SEA, Ltd.; David R. Mikesell, Ohio Northern University; Mohamed Kamel Salaani, Transportation Research Center Inc.; Amandeep Singh, US Army TARDEC

Chairpersons - Paul Grygier; Mark Heitz, Transportation Research Center Inc.

Time	Paper No.	Title
8:00 a.m.	2013-01-0671	Control Strategy for the Excitation of a Complete Vehicle Test Rig with Terrain Constraints Rafael Fietzek, TU Darmstadt; Philip Chin, Virginia Polytechnic Inst & State Univ.; Cannon Cheng, Purdue Univ.; Russell LaBrie, Univ. of California; John Ferris, Virginia Tech; Stephan Rinderknecht, TU Darmstadt
8:20 a.m.	2013-01-0681	Development of an Integrated Control Strategy Consisting of an Advanced Torque Vectoring Controller and a Genetic Fuzzy Active Steering Controller Kiumars Jalali, Univ. of Waterloo; Thomas Uchida, Stanford Univ.; John McPhee, Steve Lambert, Univ. of Waterloo
8:40 a.m.	2013-01-0680	Instantaneous Estimation of Road Friction based on Front Tire SAT using Kalman Filter Takuro Matsuda, Shin-ichiro Jo, Hikaru Nishira, Yoshitaka Deguchi, Nissan Motor Co., Ltd.

9:00 a.m.	2013-01-0694	Optimal Tire Force Allocation by Means of Smart Tire Technology Mustafa Ali Arat; Kanwar Singh; Saied Taheri
9:20 a.m.	2013-01-0697	Application of Electric Servo Brake System to Plug-In Hybrid Vehicle Naoto Ohkubo, Satoshi Matsushita, Masayuki Ueno, Kohei Akamine, Kunimichi Hatano, Honda R&D Co., Ltd.
9:40 a.m.	2013-01-0672	Mobility and Energy Efficiency Analysis of a Terrain Truck Vladimir V. Vantsevich, Univ. of Alabama; Dennis Murphy, TRW Automotive; Gianantonio Bortolin, Volvo Construction Equipment AB
10:00 a.m.	2013-01-0691	Cascaded Dual Extended Kalman Filter for Combined Vehicle State Estimation and Parameter Identification Ayyoub Rezaeian, Reza Zarringhalam, Univ. of Waterloo; Saber Fallah, Univ. of Surrey; William Melek, Amir Khajepour, Univ. of Waterloo; Shih-Ken Chen, General Motors Company; Bakhtiar Litkouhi, General Motors LLC
10:20 a.m.	ORAL ONLY	Multi-Axle Dynamics (SAE 2012 L. Ray Buckendale Lecture) Daniel Williams, TRW Commercial Steering Systems
	2013-01-0703	Using Performance Margin and Dynamic Simulation for Location Aware Adaptation of Vehicle Dynamics (Written Only -- No Oral Presentation) Cullen C. Matthews, Sukhwan Cho, John Ferris, Virginia Tech; Joerg Schlinkheider, Matthew Montgomery, Volkswagen Group of America, Inc.
	2013-01-0709	Development of Analytical Models for the Identification of Dynamic Parameters in a Double Wishbone Front Suspension (Written Only -- No Oral Presentation) Luz Adriana Mejía, Universidad Tecnológica de Pereira; Francisco Valero, Vicente Mata, Universidad Politécnica de Valencia
	2013-01-0713	Non-Linear Full-Car Modeling and Sky-Hook Control for a Direct-Drive Active Suspension System (Written Only -- No Oral Presentation) Dave van Casteren, Bart Gysen, John Kessels, Johan Paulides, Paul van den Bosch, Elena Lomonova, Eindhoven University of Technology

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Planned by Vehicle Dynamics Committee / Automobile Chassis Activity

Thursday, April 18

Vehicle Dynamics, Stability and Control (Part 4 of 4)

Session Code: AC500

Room D3-17

Session Time: 1:00 p.m.

This session is focused on vehicle dynamics and controls using modeling and simulation, and experimental analysis of passenger cars, heavy trucks, and wheeled military vehicles. This session addresses active and passive safety systems to mitigate rollover, yaw instability and braking issues; driving simulators and hardware-in-the-loop systems; suspension kinematics and compliance, steering dynamics, advanced active suspension technologies; and tire force and moment mechanics.

Organizers - W. Riley Garrott, National Hwy Traffic Safety Admin; Paul Grygier; Mark Heitz, Transportation Research Center Inc.; Gary J. Heydinger, SEA, Ltd.; David R. Mikesell, Ohio Northern University; Mohamed Kamel Salaani, Transportation Research Center Inc.; Amandeep Singh, US Army TARDEC

Chairpersons - Mark Heitz, Transportation Research Center Inc.; Paul Grygier

Time	Paper No.	Title
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1:00 p.m.	2013-01-0687	A Gain-Scheduled PID Controller for Automatic Path Following of a Tractor Semi-Trailer Nenggen Ding, Yipeng Zhang, Feng Gao, Guoyan Xu, Beihang University
1:20 p.m.	2013-01-0688	Development of an Advanced Fuzzy Active Steering Controller and a Novel Method to Tune the Fuzzy Controller Kiumars Jalali, Thomas Uchida, John McPhee, Steve Lambert, Univ. of Waterloo
1:40 p.m.	2013-01-0698	Development of an Advanced Torque Vectoring Control System for an Electric Vehicle with In-Wheel Motors using Soft Computing Techniques Kiumars Jalali, Thomas Uchida, Steve Lambert, John McPhee, Univ. of Waterloo
2:00 p.m.	2013-01-0689	An Inertial Sensing Based System for Lane Curvature Estimation Shun-Hung Chen, Chan Wei Hsu, Kai Yu, Automotive Research & Testing Center
2:20 p.m.	2013-01-0684	Active Kinematics Suspension for a High Performance Sports Car Isabel Ramirez Ruiz, Ferrari Spa
2:40 p.m.	2013-01-0696	The Design of a Suspension Parameter Identification Device and Evaluation Rig (SPIDER) for Military Vehicles Timothy Wagner, The Ohio State University; Dale Andreatta, Gary J. Heydinger, Anmol Sidhu, Ronald Bixel, SEA, Ltd.; Dennis Guenther, The Ohio State University
3:00 p.m.	2013-01-0683	Advanced Control Strategies for a Roll Simulator - A Feedback Linearization Technique Explored Scott Zagorski, Dennis A. Guenther, Gary J. Heydinger, Ohio State Univ.
	2013-01-0700	Improving Understeering Behaviour of a Passenger Car via Rear Axle Bushing Optimisation (Written Only -- No Oral Presentation) Mohsen Bayani Khaknejad, Ahmad Khalaj, Arash Keshavarz, Asghar Mirabdollahi, R&D Centre of SAIPA
	2013-01-0708	Use of DFSS Principles to Develop an Objective Method to Assess Transient Vehicle Dynamics (Written Only -- No Oral Presentation) Ibrahim A. Badiru, Michael W. Neal, General Motors Company
	2013-01-0710	Experimental Comparison of Anti-Roll Bar with Hydraulically Interconnected Suspension in Articulation Mode (Written Only -- No Oral Presentation) Lifu Wang, Guangzhong Xu, Nong Zhang, Holger Roser, Univ. of Technology Sydney
	2013-01-0712	Coordination of Steer Angles, Tyre Inflation Pressure, Brake and Drive Torques for Vehicle Dynamics Control (Written Only -- No Oral Presentation) Barys Shyrokau, Danwei Wang, Nanyang Technological University

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Planned by Vehicle Dynamics Committee / Automobile Chassis Activity

Thursday, April 18

Occupant Protection: Occupant Restraints (Air Bags, Seat Belts, Knee Bolsters, Child Seats, etc.)

Session Code: B403

Room D3-18

Session Time: 8:00 a.m.

Organizers - Aditya Belwadi, Childrens Hospital of Philadelphia; Lisa Fallon, Scott D. Thomas, General Motors LLC; Chris A. Van Ee, Design Research Engineering

Time	Paper No.	Title
8:00 a.m.	2013-01-1155	Evaluation of Proposed Protocols for Assessing Vehicle LATCH System Usability Kathleen D. Klinich, Miriam Manary, Carol Flannagan, Jamie Moore, Univ. of Mich. Trans. Res. Inst.; Jessica Jermakian, Insurance Institute for Highway Safety
8:20 a.m.	2013-01-1157	Distribution of Belt Anchorage Locations in the Second Row of Passenger Cars and Light Trucks Matthew Reed, Univ. of Michigan; Sheila Ebert-Hamilton, UMTRI
9:00 a.m.	2013-01-1156	The Front Center Airbag Scott D. Thomas, General Motors Company; Richard A. Wiik, Takata; Jacqueline E. Brown, General Motors Company
9:20 a.m.	2013-01-1158	Simulation of Advanced Folded Airbags with VPS₂PAMCRASH/FPM: Development and Validation of Turbulent Flow Numerical Simulation Techniques Applied to Curtain Bag Deployments Alain Tramecon, ESI Group; Joerg Kuhnert PhD, Fraunhofer ITWM
	2013-01-1159	Performance of Belt-Positioning Boosters and 5_zPoint Harness CRSs in Frontal and Side Impacts (Written Only -- No Oral Presentation) Paul R. Weber, William Van Arsdell, Charles J. Stankewich, Brian Larson, Engineering Principles LLC
	2013-01-1160	Frontal Crash Protection Performance of Integrated Child Safety Seat (Written Only -- No Oral Presentation) Libo Cao, Ruifeng Zhang, Hunan University; Huiqin Chen, Hangzhou Dianzi University; Xianyang Zhao, Lizhong Automobile
	2013-01-1162	Integrated Active and Passive Systems for a Side Impact Scenario (Written Only -- No Oral Presentation) Mauro Velardocchia, Politecnico di Torino; Michiel Unger, TASS Germany; Alessandro Vigliani, Politecnico di Torino; Nicola Leone, Kajetan Kietlinski, TASS Germany; Enrico Galvagno, Politecnico di Torino

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Planned by Occupant Protection Committee / Automobile Body Activity

Thursday, April 18

Steering and Suspension Technology Symposium

Session Code: AC300

Room D3-20

Session Time: 8:00 a.m.

The purpose of this session is to provide a forum for presentations on steering and suspension related topics as it applies to ground vehicles. Papers for this session should address new approaches as well as advances in application of steering, suspension related technologies.

Organizers - Robert Ackley, Ford Motor Co.; Prashant Patel, Chrysler Group LLC

Time	Paper No.	Title
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8:00 a.m.	2013-01-1235	The Development of FR-Based 4WD Multi-Link Suspension DaeWoo Jung, Jae Kil Lee, Byung-Kyu Lee, Seon Pyung Kim, Hyundai-Kia R&D Center
8:20 a.m.	2013-01-1236	Analysis and Optimization of Shock Absorber Behavior in Electric Vehicles Alexander Kruse, Alexander Gross, ZF Friedrichshafen AG; Jan-Welm Biermann, Institut fuer Kraftfahrwesen
8:40 a.m.	2013-01-1234	Fault Detection in Automotive Semi-Active Suspension: Experimental Results Sébastien Varrier, GIPSA-Lab; Ruben Morales-Menendez, Jorge De-Jesus Lozoya-Santos, Diana Hernandez, Tecnologico de Monterrey; John Martinez Molina, Damien Koenig, GIPSA-Lab
9:00 a.m.	2013-01-1238	H₂ Control of a Novel Low-Cost Roll-Plane Active Hydraulically Interconnected Suspension: An Experimental Investigation of Roll Control under Ground Excitation Sangzhi Zhu, Lifu Wang, Nong Zhang, Univ. of Technology Sydney; Haiping Du, Univ. of Wollongong
9:20 a.m.	2013-01-1237	Design of Hydraulically Interconnected Suspension Systems for Tri-axle Straight Trucks with Rear Tandem Axle Bogie Suspensions Fei Ding, Xu Han, Xuhui Mo, Nong Zhang, Hunan Univ.
	2013-01-1239	A Control Algorithm for Electric Power Steering of Tire Blowout Vehicle to Reduce the Impact Torque on Steering Wheel (Written Only -- No Oral Presentation) Shaosong Li, Changfu Zong, Guoying Chen, Lei He, Jilin Univ.
	2013-01-1240	Fatigue Life Calculation of an Automotive Shock Absorber Shim Assembly Using Different Simulation Techniques (Written Only -- No Oral Presentation) Swapnil Kulkarni, Muragendra Magdum, Ravi B, Gabriel India Ltd.

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Planned by Steering and Suspension Committee / Automobile Chassis Activity

Thursday, April 18

Occupant Protection: Biomechanics

Session Code: B401

Room D3-22

Session Time: 8:00 a.m.

Organizers - Elizabeth Mary Fievisohn, Virginia Tech.; Jacob L. Fisher, Exponent Inc.; Warren N. Hardy, Virginia Tech.; David Raymond, California State University - LA

Time	Paper No.	Title
8:00 a.m.	2013-01-1243	Foot and Ankle Injuries to Drivers in Between-Rail Crashes Richard M. Morgan, George Washington Univ.; Chongzhen Cui, Hunan Univ; Kennerly Digges, George Washington Univ.; Libo Cao, Hunan Univ; Cing-Dao Kan, George Washington Univ.
8:40 a.m.	2013-01-1245	Older Drivers' Physiological Responses during Last-Minute Braking in a Driving Simulator Myung Kug Moon, Murali Subramaniam, Se Jin Park, Korea Res. Inst. of Standards & Science

9:00 a.m.	2013-01-1244	<i>The Effect of Age on Fat and Bone Properties along the Vertebral Spine</i> Chantal Parenteau, Sven Holcombe, Peng Zhang, Carla Kohoyda-Inglis, Stewart Wang, University of Michigan
9:20 a.m.	2013-01-1242	<i>Validation of Age-Specific Human FE Models for Lateral Impact</i> Yasuhiro Dokko, Toshiyuki Yanaoka, Honda R&D Co.,Ltd.; Kazuki Ohashi, PSG Co., Ltd.
9:40 a.m.	2013-01-1249	<i>Statistical Considerations for Evaluating Biofidelity, Repeatability, and Reproducibility of ATDs</i> Guy S. Nusholtz, Zine Aoun, Laura Di Domenico, Timothy Hsu, Manuel A. Gracián, Jesús A. Prado, Chrysler Group LLC
	2013-01-1246	<i>Development of Cost Effective Footpad to Mitigate Lower Leg Injury During Anti Vehicle IED Blast (Written Only -- No Oral Presentation)</i> Bhavesh Prabhulal Gangani, Anil Vidye, Tata Motors Ltd.

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Planned by Occupant Protection Committee / Automobile Body Activity

Thursday, April 18

Vehicle Aerodynamics (Part 6 of 7): Fundamental Aerodynamics

Session Code: B500

Room D3-24/25

Session Time: 8:00 a.m.

Organizers - Edward G. Duell, Jacobs Technology Inc.; Gregory Fadler, Navistar; Adrian P. Gaylard, Jaguar Land Rover; Mark E. Gleason, Chrysler Group LLC; Kevin Golsch, Navistar; Arturo Guzman, Chrysler Group LLC; Taeyoung Han, GM; Bahram Khalighi, General Motors; Todd Lounsberry, Chrysler Group LLC; Thomas N. Ramsay, Honda R & D Americas Inc.; David Sims-Williams, Durham University; Sandeep Sovani, ANSYS Inc.

Time	Paper No.	Title
8:00 a.m.	2013-01-0462	<i>Aerodynamic Drag Reduction on a Simple Car-Like Shape with Rear Upper Body Taper</i> Jeff Howell, Tata Motors European Technical Centre; Martin Passmore, Simon Tuplin, Loughborough University
8:20 a.m.	2013-01-0463	<i>The Impact of Underbody Roughness on Rear Wake Structure of a Squareback Vehicle</i> Anna-Kristina Perry, Martin Passmore, Loughborough University
8:40 a.m.	2013-01-0464	<i>Experimental and Numerical Investigations of the Base Wake on an SUV</i> Lennert Sterken, Chalmers University of Technology; Simone Sebben, Tim Walker, Volvo Car Corporation; Lennart Lofdahl, Chalmers University of Technology

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00329 and SUB-TP-00004, an individually. To purchase visit collections.sae.org

Planned by Vehicle Aerodynamics Committee / Automobile Body Activity

Thursday, April 18

Vehicle Aerodynamics (Part 7 of 7): Test Facilities

Session Code: B500

Room D3-24/25

Session Time: 9:20 a.m.

Organizers - Edward G. Duell, Jacobs Technology Inc.; Gregory Fadler, Navistar; Adrian P. Gaylard, Jaguar Land Rover; Mark E. Gleason, Chrysler Group LLC; Kevin Golsch, Navistar; Arturo Guzman, Chrysler Group LLC; Taeyoung Han, GM; Bahram Khalighi, General Motors; Todd Lounsberry, Chrysler Group LLC; Thomas N. Ramsay, Honda R & D Americas Inc.; David Sims-Williams, Durham University; Sandeep Sovani, ANSYS Inc.

Time	Paper No.	Title
9:20 a.m.	2013-01-1349	Application of Helmholtz Resonators in Open Jet Wind Tunnels Amir Kharazi, Edward G. Duell, Joel Walter, Jacobs
9:40 a.m.	2013-01-1350 ORAL ONLY	Validation of Blockage and Pressure Gradient Correction Methods in 3/4-Open Jet Wind Tunnels Mark Gleason, Todd Lounsberry, Chrysler Group LLC; Joel Walter, Jacobs; William Pien, Ford Motor Co
10:20 a.m.	2013-01-1352	Progress in Aeroacoustic and Climatic Wind Tunnels for Automotive Wind Noise and Acoustic Testing Edward G. Duell, Joel Walter, Joseph Yen, Tony Nagle, Jacobs
	2013-01-1351	Test Process and Correction of Automotive Wind Tunnel in Jilin University China (Written Only -- No Oral Presentation) Yingchao Zhang, Zhe Zhang, Jie Li, Shuxin Shao, Sai Guo, ASCL, Jilin University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00329 and SUB-TP-00004, an individually. To purchase visit collections.sae.org

Planned by Vehicle Aerodynamics Committee / Automobile Body Activity

Thursday, April 18

Engineering Education

Session Code: B600

Room D3-26

Session Time: 8:00 a.m.

There has never been a time when the demand for engineers has been greater. The skills shortage has afflicted the Auto sectors in particular, but no branch of engineering has been untouched. With the demand for engineering skills in general comes a specific requirement for skills in systems, electronics, power management and new design methods and processes. At the same time engineers are expected to be accomplished in project and team skills in addition to demonstrating a substantial technical depth. In this session we will consider the factors that cause change in the requirement for engineering skills, and how both employers and higher education is meeting those needs. Factors that influence the complete pipeline from early education to graduation are of great interest. Topics will include: how the demand for skills develops as industry changes; of particular interest is how companies are addressing the lack of graduates in electrical and systems disciplines, how re-profiling of skills is being done in order to bring then engineering function up to date, how the higher education sector is addressing new skills needs, what new teaching and learning methods are under development, benchmarking with other industry sectors, and observations on the acquisition of soft skills.

Organizers - Richard K. Stobart, Loughborough Univ.; Massoud Tavakoli

Time	Paper No.	Title
8:00 a.m.	2013-01-1260	Evaluation of an Automotive Simulator Based Driver Safety Training Program for Run-Off-the-Road and Recovery Paul Freeman, Sameer Samant, John R. Wagner, Kim Alexander, Philip Pidgeon, Clemson University
8:20 a.m.	ORAL ONLY	How Does AWIM Prepare Students on the Global Stage? Christopher M. Ciuca, SAE International

8:40 a.m.	ORAL ONLY	What is the future for Collegiate Design Competitions in a Multi-Discipline, Diverse World? Gregory W. Davis, Kettering Univ.
9:00 a.m.	ORAL ONLY	From Graduation to Profession - Can We Go Faster? Jose Lopes, Jaguar Land Rover Limited
9:20 a.m.	Panel	Panel Discussion: From Primary Education to Professional Engineer: strengths and weaknesses Moderators - Richard K. Stobart, Loughborough Univ. Panelists - Christopher M. Ciuca, SAE International; Gregory W. Davis, Kettering University; Jose Lopes, Jaguar Land Rover Limited;

Planned by Faculty Advisors Committee / Education Board; Automobile Body Activity / EMB Land and Sea Group

Thursday, April 18

Occupant Protection: Event Data Recorders (EDR)

Session Code: B402

Room D3-28

Session Time: 8:00 a.m.

This session includes the latest research on Event Data Recorders (EDRs) equipped in passenger cars, light trucks, and commercial vehicles (heavy trucks and motorcoaches). Emphasis is placed on the application, interpretation and use of EDRs in the investigation of motor vehicle crashes.

Organizers - John C. Steiner, KEVA Engineering; Timothy Cheek, DELTA [v] Forensic Engineering; Brian J. Everest, General Motors LLC; Heath Spivey, Delta V Forensic Engrg

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Automotive Emergency Call and NG(Next Generation) 911 Hirofumi Onishi, Alpine Electronics of America Inc.
8:20 a.m.	2013-01-1263	Accuracy of Pre-Crash Speed Recorded in 2009 Mitsubishi Lancer Event Data Recorders Wesley Vandiver, Orange County District Attorney's Office; Isaac Ikram, Bryan Randles, Biomechanical Research & Testing
8:40 a.m.	2013-01-1264	Accuracy and Characteristics of 2012 Honda Event Data Recorders from Real-Time Replay of Controller Area Network (CAN) Traffic Aaron Diacon, Jeremy Daily, University of Tulsa; Richard Ruth, Ruth Consulting Inc.; Carsten Mueller, University of Tulsa
9:00 a.m.	2013-01-1265	Validation of Event Data Recorders in High Severity Full Frontal Crash Tests Ada Tsoi, Virginia Tech; John Hinch; Richard Ruth, Ruth Consulting Inc; Hampton Gabler, Virginia Tech
9:20 a.m.	2013-01-1267	Timing and Synchronization of the Event Data Recorded by the Electronic Control Modules of Commercial Motor Vehicles - DDEC V David Plant, D P Plant & Associates; Timothy Cheek, DELTA [v] Forensic Engineering; Timothy P. Austin, Wisconsin State Patrol; John C. Steiner, KEVA Engineering; Michael Farrell, Fox Valley Technical College; Heath Spivey, DELTA [v] Forensic Engineering
9:40 a.m.	2013-01-1268	The Accuracy and Sensitivity of 2005 to 2008 Toyota Corolla Event Data Recorders in Low-Speed Collisions Craig Wilkinson, Jonathan Lawrence, Tim Nelson, James Bowler, MEA Forensic Engineers & Scientists

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00006, and also individually. To

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Planned by Occupant Protection Committee / Automobile Body Activity

Thursday, April 18

Advanced Hybrid and Electric Vehicle Powertrains (Part 3 of 4)

Session Code: PFL100

Room O2-33

Session Time: 8:00 a.m.

This session covers new production and near-production hybrid powertrains, hybrid architecture, and testing.

Organizers - Michael Duoba, Argonne National Laboratory; Ryan McGee, Ford Motor Co.; Constantine N. Raptis, Mark A. Theobald, GM Powertrain

Time	Paper No.	Title
8:00 a.m.	2013-01-1446	The Modular Hybrid Transmission Kit from ZF Ralf Kubalczyk, ZF Friedrichshafen AG
8:20 a.m.	2013-01-1475	DC Charging and Standards for Plug-in Electric Vehicles Richard Scholer, Chrysler Group LLC
8:40 a.m.	2013-01-1469	The Development of a Range Extender Electric Vehicle Demonstrator Michael Bassett, Jonathon Hall, Gordon Kennedy, Tony Cains, John Powell, Marco Warth, Mahle Powertrain Ltd.
9:00 a.m.	2013-01-1447	Development of Electric Vehicle System for City Commuter Vehicle Takahito Nozawa, Sumikazu Shamoto, Tomoya Katanoda, Toyota Motor Corporation
9:20 a.m.	2013-01-1478	Development of a New Powertrain for Subcompact Electric Vehicles Akira Kabasawa, Kenichiro Kimura, Takeshi Taguchi, Akihiro Anekawa, Honda R&D Co., Ltd.
9:40 a.m.	2013-01-1464	Validation Test Result Analysis of Plug-in Hybrid Vehicle Kenji Itagaki, Hiroaki Takeuchi, Shizuo Abe, Keita Hashimoto, Toyota Motor Corp.
10:00 a.m.	2013-01-1476	Development of a New Two-Motor Plug-In Hybrid System Naritomo Higuchi, Yoshihiro Sunaga, Masashi Tanaka, Hiroo Shimada, Honda R&D Co., Ltd.

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

Thursday, April 18

Advanced Hybrid and Electric Vehicle Powertrains (Part 4 of 4)

Session Code: PFL100

Room O2-33

Session Time: 1:00 p.m.

This session covers new production and near-production hybrid powertrains, hybrid architecture, and testing.

Organizers - Michael Duoba, Argonne National Laboratory; Ryan McGee, Ford Motor Co.; Constantine N. Raptis, Mark A. Theobald, GM Powertrain

Time	Paper No.	Title
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1:00 p.m.	2013-01-1472	A Comparative Study of Hydraulic Hybrid Systems for Class 6 Trucks Namwook Kim, Aymeric Rousseau, Argonne National Laboratory
1:20 p.m.	2013-01-1450	Assessing the Battery Cost at Which Plug-in Hybrid Medium-Duty Parcel Delivery Vehicles Become Cost-Effective Laurie A. Ramroth, Jeffrey D. Gonder, Aaron D. Brooker, National Renewable Energy Laboratory
1:40 p.m.	2013-01-1455	Study on the Application of the Waste Heat Recovery System to Heavy-Duty Series Hybrid Electric Vehicles Daebong Jung, Seoul National Univ.; SungJin Park, Hongik Univ.; Kyoungdoug Min, Seoul National Univ.
2:00 p.m.	2013-01-1459	System Design and Control Strategy for a Battery/Supercapacitor Electric Bus with an Integrated Fast Charger/Bus Stop Station Yi-Hsuan Hung, Hong-Wei Li, Hung-Chun Lee, National Taiwan Normal University; Chien-An Chen, Automotive Research & Testing Center; Chien Hsun Wu, Industrial Technology Research Institute
2:20 p.m.	2013-01-1452	Using Pneumatic Hybrid Technology to Reduce Fuel Consumption and Eliminate Turbo-Lag Ran Bao, Richard Stobart, Loughborough University
2:40 p.m.	2013-01-1448	Conceptualization and Implementation of an AWD Parallel Hybrid Powertrain Concept Paul Venhovens, Pierluigi Pisu, Robert Prucka, Bhavuk Makkar, Patrik Frommann, Tejas Sonavane, Chris D'Amico, CU-ICAR Clemson Univ Int'l Center For Automotive Research
3:00 p.m.	2013-01-1463	Development of the Electrically-Controlled Regenerative Braking System for Electrified Passenger Vehicle Junzhi Zhang, Chen Lv, Xiaowei Yue, Mingzhe Qiu, Dept. of Automotive Eng, Tsinghua Univ; Jinfang Gou, Chengkun He, Chinese Academy of Sciences
3:20 p.m.	2013-01-1454	Dynamic Analysis and Experimental Verification of a Clutchless Geared Smart Transmission System for Hybrid Cars Chiwoong Song, Sun Je Kim, KAIST; Sang Hun Lee, Hyundai Wia; Kyung-Soo Kim, Yong-San Yoon, KAIST
	2013-01-1479	Development of a Hydraulic Hybrid System for Urban Traffic (Written Only -- No Oral Presentation) Sebastian Wohlgemuth, Georg Wachtmeister, TU Muenchen; Peter Kloft, HYDAC Technology GmbH
	2013-01-1480	Two Motor Two Speed Power-Train System Research of Pure Electric Vehicle (Written Only -- No Oral Presentation) Bo Zhu, University of Technology Sydney; Nong Zhang, Paul Walker, University of Technology, Sydney; Wenzhang Zhan, Beijing Automobile Group; Wei Yueyuan, Nanji Ke, BAIC Motor Electric Vehicle Co.Ltd; Xingxing Zhou, University of Technology Sydney
	2013-01-1482	Operating Mode and Simulation Study for an Electromagnetic Coupling Hybrid Electric Vehicle (Written Only -- No Oral Presentation) Hanyu Chen, Chengji Zuo, Hefei University of Technology

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

Thursday, April 18

Particle Emissions from Combustion Sources (Part 2 of 2)

Session Code: PFL409

Room O2-35/36

Session Time: 8:00 a.m.

Papers are invited for this session on particle emissions from combustion engines, including measurement and testing methods, and the effects of changes in fuel composition. Papers are also invited on the topics of the environmental and health effects of elemental carbon and organic carbon that constitutes solid cored particles plus the environmental and health effects of secondary organic aerosol emissions. This includes particulate emissions from both gasoline and diesel engines.

Organizers - Imad A. Khalek, Southwest Research Institute; Matti Maricq, Ford Motor Co.

Chairpersons - Matti Maricq, Ford Motor Co; Imad Khalek, Southwest Research Institute

Time	Paper No.	Title
8:00 a.m.	2013-01-1566	Experimental Study the Influence of EP Antiwear Additive on Particle Emissions in Diesel Engines Xingyu Liang, Yuesen Wang, Ge-Qun Shu, lihui dong, Kang Yang, Yu Chen, State Key Lab Of Engines
8:20 a.m.	2013-01-1556	Strategies for Particle Emissions Reduction from GDI Engines Youngjae Kim, Yongha Kim, SangYoul Jun, Kang Hun Lee, SeungHyun Rew, Donghyeon Lee, Hyundai Autron; Simsoo Park, Korea University
8:40 a.m.	2013-01-1559	Fuel Effect on Particle Emissions of a Direct Injection Engine Yongha Kim, Youngjae Kim, Jiwon Kang, SangYoul Jun, SeungHyun Rew, Donghyeon Lee, Hyundai Autron; Simsoo Park, Korea University
9:00 a.m.	ORAL ONLY	Differences in O2 and NO2 Oxidation of Diesel Particulate Andrea Strzelec, Texas A&M Univ.; Todd Toops, C. Stuart Daw, Oak Ridge National Laboratory; Randy Vander Wal, Penn State University
9:20 a.m.	2013-01-1567	Evaluation of Partial Flow Dilution Methodology for Light Duty Particulate Mass Measurement Eric B. Foote, Matti Maricq, Michael Sherman, Daniel Carpenter, Mark Guenther, Jason Peabody, Mark Polster, Joseph Szente, Michael Loos, Ford Motor Co.
9:40 a.m.	2013-01-1563	Use of a Catalytic Stripper as an Alternative to the Original PMP Measurement Protocol Leonidas Ntziachristos, Stavros Amanatidis, Zissis Samaras, Aristotle University of Thessaloniki; Barouch Giechaskiel, Alexander Bergmann, AVL LIST GmbH
10:00 a.m.	2013-01-1551	Impact of Biomass-Derived Fuels on Soot Oxidation and DPF Regeneration Behavior Om Parkash Bhardwaj, Florian Kremer, Stefan Pischinger, VKA, RWTH Aachen University; Bernhard Lüers, Andreas F. Kolbeck, Thomas Koerfer, FEV GmbH
10:20 a.m.	2013-01-1554	Effect of Multiple Injections on Particulate Size-Number Distributions in a Common Rail Direct Injection Engine Fueled with Karanja Biodiesel Blends Atul Dhar; Avinash Kumar Agarwal, I I T Kanpur
	2013-01-1570	A Miniature Catalytic Stripper for Particles Less Than 23 Nanometers (Written Only -- No Oral Presentation) Jacob Swanson, University of Cambridge; David Kittelson, Univ of Minnesota-Twin Cities; Barouch Giechaskiel, Alexander Bergmann, AVL LIST GmbH; Martyn Twigg, TST Ltd

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Thursday, April 18

Variable Valve Actuation

Session Code: PFL304

Room O2-35/36

Session Time: 1:00 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 - Steven Nelson Ernest, Jacobs Vehicle Systems Inc.; Timothy Kunz, Delphi Automotive PLC; James Robert Westbrook, Chrysler Group LLC

Time	Paper No.	Title
1:00 p.m.	2013-01-0586	Development of a High Performance Two-Cycle Engine Brake for Medium and Heavy Duty Diesel Engines Neil Fuchs, Zdenek Meistrick, Steven Ernest, Gabe Roberts, Justin Baltrucki, Jacobs Vehicle Systems Inc.
1:20 p.m.	2013-01-0592	ζOptiVentζ - A New Approach for Controlling Mass Air Flow and Combustion in Direct Injection SI-Engines Jörn Getzlaff, Thomas Lambert, West Saxon University Zwickau; Karl Heinz Hoffman, Andreas Fischer, Chemnitz University of Technology
1:40 p.m.	ORAL ONLY	Friction and Pumping Losses Estimation in Flex Internal Combustion Engines with Variable Valve Actuation System using Chamber Pressure Measurement (paper approved by SAE Brazil- 2012-36-0363) Lucymara De Resende Alvarenga, Marcela Esteves Vianna, Marcio Caldeira Pierobom, Rodrigo Viegas Andrade, Fiat Powertrain Technologies
2:00 p.m.	2013-01-0587	Investigation of VVA-Based Exhaust Management Strategies by Means of a HD Single Cylinder Research Engine and Rapid Prototyping Systems Sebastian Gehrke, Dávid Kovács, Peter Eilts, Technische Universität Braunschweig; Alexander Rempel, Peter Eckert, IAV
2:20 p.m.	2013-01-0590	Progress in Camless Variable Valve Actuation with Two-Spring Pendulum and Electrohydraulic Latching Zheng David Lou, Qiangquan Deng, Shao Wen, Yunhai Zhang, Mengjin Yu, Jiangsu Gongda Power Technologies Ltd.; Ming Sun, Jiangnan University; Guoming Zhu, Michigan State University
2:40 p.m.	2013-01-0594	Closed Loop Electromagnetic Valve Actuation Motion Control on a Single Cylinder Engine Rudolf Seethaler, University of British Columbia Okangan; Charles R. Koch, Univ. of Alberta; Ryan Chladny; Masoud Mashkournia, Univ. of Alberta
3:00 p.m.	2013-01-0591	Development of Continuously Variable Phase and Lift/Duration Mechanism for Widely Available Automobile Engines Jun Bota, OGINO KOGYO Co., Ltd.; Tomohisa Kumagai, IDAJ Co., Ltd.; Tatsuya Kuboyama, Chiba Univ; Koichi Hatamura, Hatamura Engine Research Office Ltd
3:20 p.m.	2013-01-0589	Development of a Switching Roller Finger Follower for Cylinder Deactivation in Gasoline Engine Applications Andrei Radulescu, James McCarthy JR, Scott Brownell, Eaton Corp.

3:40 p.m. **2013-01-0588** **A Control Oriented Model with Variable Valve Timing for HCCI Combustion Timing Control**
Khashayar Ebrahimi, Charles Koch, Alex Schramm, Univ of Alberta

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00008, and also individually. To purchase visit collections.sae.org

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

Thursday, April 18

Climate Control (Part 1 of 2)

Session Code: **HX104**

Room O2-37

Session Time: **8:00 a.m.**

Climate control is a defining vehicle attribute and is associated with brand image. Thermal performance and quality of climate control are both critical to customer satisfaction. The system has strong design interaction with other vehicle systems, while its primary objective is to deliver thermal comfort and occupant safety with low energy consumption. Energy Efficient rear defog, CO₂ modeling, Suction Pressure drop, IHX optimization, and innovative airflow control are among recent advances.

Organizers - *Bashar AbdulNour, General Dynamics Land Systems; Jeffrey Bozeman, General Motors LLC; William Raymond Hill, Macrae LLC*

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Innovating the Design and Development of Climate Control Systems <i>Bashar AbdulNour, General Dynamics Land Systems</i>
8:20 a.m.	2013-01-1497	Modeling CO₂ Concentrations in Vehicle Cabin <i>Heejung Jung, Univ. of California-Riverside</i>
8:40 a.m.	2013-01-1503	Studies on AC Suction Line Pressure Drop using 1D Modeling <i>Sathish Kumar S, Chrysler India Automotive Pvt. Ltd.; Shankar Natarajan, Chrysler Canada Inc.; Michael V Rinaldi, Chrysler Group LLC</i>
9:00 a.m.	2013-01-1502	1D Modeling of AC Refrigerant Loop and Vehicle Cabin to Simulate Soak and Cool Down <i>Shankar Natarajan, Chrysler Canada Inc.; Sathish Kumar S, Chrysler India Automotive Pvt. Ltd.; Ricardo Amaral, Sadek Rahman, Chrysler Group LLC</i>
9:20 a.m.	2013-01-1507	Comprehensive Modeling of Vehicle Air Conditioning Loads Using Heat Balance Method <i>Mohammad Ali Fayazbakhsh, Majid Bahrami, Simon Fraser University</i>
9:40 a.m.	2013-01-1504	Internal Heat Exchanger Integration for a Dual Evaporator MAC System <i>Lothar Seybold, GM Europe - Adam Opel AG Engineering; William Hill, Macrae LLC; Ioannis Lazaridis, GM Europe - Adam Opel AG Engineering</i>
10:00 a.m.	2013-01-1494	Vehicle Cabin Air Quality with Fractional Air Recirculation <i>Michael L. Grady, Heejung Jung, Univ of California-Riverside; Yong chul Kim, June Kyu Park, Bock Cheol Lee, Hyundai Motor Company</i>
10:20 a.m.	2013-01-1506	Effects on Real Life Fuel Efficiency of Raising the MAC Engagement Temperature <i>Roberto Monforte, Massimiliano Mandrile, Fiat Group Automobiles S.p.A.</i>
10:40 a.m.	2013-01-1510	Smart Rear Defog <i>Gilles Delorme, General Motors of Canada</i>

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Thursday, April 18

Climate Control (Part 2 of 2)

Session Code: HX104

Room O2-37

Session Time: 1:00 p.m.

Climate control is a defining vehicle attribute and is strongly associated with brand image. Performance and quality of the climate control system are critical to customer satisfaction. The system has strong interaction with other vehicle systems. Its primary objective is to deliver thermal comfort and safety of the occupants. Energy Efficiency including lubrication variation, refrigerant distribution and improved simulation are among the recent advances.

Organizers - Bashar AbdulNour, General Dynamics Land Systems; Jeffrey Bozeman, General Motors LLC; William Raymond Hill, Macrae LLC

Time	Paper No.	Title
1:00 p.m.	ORAL ONLY	Keynote Presentation Jeffrey Bozeman, General Motors
1:20 p.m.	2013-01-1495	Experimental and Analytical Investigation of Two-Phase Ejector Air-Conditioning Cycles Using Low-Pressure Refrigerants R134a and R1234yf Neal Lawrence, Stefan Elbel, University of Illinois Urbana-Champaign
1:40 p.m.	2013-01-1493	Experimental Measurements of Condensation Heat Transfer Coefficients for Refrigerant HFO-1234yf Gursaran D. Mathur, CalsonicKansei North America Inc.
2:00 p.m.	2013-01-1498	Measurement and Visualization of R134a Distribution in the Vertical Header of the Microchannel Heat Exchanger Yang Zou, Predrag Hrnjak, Univ of Illinois at Urbana-Champaign
2:20 p.m.	2013-01-1500	Periodic Reverse Flow and Boiling Fluctuations in a Microchannel Evaporator of an R134a Mobile Air-Conditioning System Hanfei Tuo, Predrag Hrnjak, Univ. of Illinois at Urbana-Champaign
2:40 p.m.	2013-01-1499	Development of a S-FLOW System and Control (S₂FLOW: Energy Saving Air Flow Control System) Koichi Tabei, Toyota; Masashi Watanabe, Nobuyuki Doi, Kenjiro Imai, Denso; Stefan Young, Toyota Technical Center USA Inc
3:00 p.m.	2013-01-1496	Refrigerant and Lubricant Distribution in MAC System Shenghan Jin, Pega Hrnjak, Creative Thermal Solutions and ACRC, UIUC
3:20 p.m.	2013-01-1501	Compressor Body Temperature and Lubrication Yinhua Zheng, Visteon Corporation
3:40 p.m.	2013-01-1508	Effect of Lubricant on Two-phase Refrigerant Distribution in Microchannel Evaporator Huize Li, Predrag Hrnjak, Univ of Illinois at Urbana-Champaign

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Planned by Thermal Management Activity / EMB Land and Sea Group

Thursday, April 18

Thermal Systems Components

Session Code: HX101

9:00 a.m.

Room O2-38

Session Time:

This session features components used for thermal management. The papers address design, application and systems related topics.

Organizers - Ronald Semel, General Motors; Alaa El-Sharkawy, Chrysler Group LLC

Time	Paper No.	Title
9:00 a.m.	ORAL ONLY	Keynote Presentation Alfred A. Gunther, Global Engine Cooling Solutions Llc
9:20 a.m.	2013-01-1293	Development of High Efficient Radiator Cooling Fan for Automotive Application Hidetake Ota, Katayama Yuichi, Osawa Yukio, Mitsuba corp; Yokoyama Hiroshi, Mitsuba Corp
9:40 a.m.	2013-01-1288	Microstructural Analysis of Deposits on Heavy-Duty EGR Coolers Michael J. Lance, John Storey, C. Scott Sluder, Harry Meyer III, Oak Ridge National Laboratory; Brad Watkins, Michele Kaiser, Ponnaiyan Ayyappan, John Deere Power Systems
10:00 a.m.	2013-01-1292	Removal of EGR Cooler Deposit Material by Flow-Induced Shear C. Scott Sluder, John Storey, Michael J. Lance, Teresa Barone, Oak Ridge National Laboratory
10:20 a.m.	2013-01-1289	Optical and Infrared In-Situ Measurements of EGR Cooler Fouling Ashwin A. Salvi, John Hoard, Pavan Karthik Jagarlapudi, Theera Pornphaithoonsakun, Kevin Collao, Univ. of Michigan-Ann Arbor; Dennis N. Assanis, Stony Brook Univ.; Daniel J. Styles, Mehdi Abarham, Eric W. Curtis, Ford Motor Co.
10:40 a.m.	ORAL ONLY	Thermal Analysis of Rotating Components in the Presence of a Radiation Heat Source Mohannad Al-Hakeem, Alaa El-Sharkawy, Chrysler Group LLC
11:00 a.m.	2013-01-1287	Cold Storage Air Conditioning System for Idle Stop Vehicle Atsushi Yamada, Shin Nishida, Naoki Yokoyama, Jyun Abei, Takashi Danjo, Lisa Florida, Bradley Brodie, Yohei Nagano, DENSO Corporation
11:20 a.m.	2013-01-1291	Vehicle AC System Durability and Compressor Warranty Concern Chance Yinhua Zheng, Visteon Corp.
11:40 a.m.	2013-01-1294	A Systematic Approach of Cooling System Design, Development and Application for Commercial Vehicles Kiran N, B Balaji, Ashok Leyland Ltd
	2013-01-1295	High Efficiency Subcool Condenser (Written Only -- No Oral Presentation) Markus Wawzyniak, Christoph Walter, Andreas Kemle, Guillaume David, Behr GmbH & Co. KG
	2013-01-1296	Air Flow Control Servomechanism for Cooling the Radiator of a Car Engine (Written Only -- No Oral Presentation) Spiridon-Cristian-Da Dascalescu, Technical University "Gh.Asachi" Iasi; Marius Receanu, TAR MV ltd Iasi

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Planned by Thermal Management Activity / EMB Land and Sea Group

Thursday, April 18

Advanced Catalysts and Substrates

Session Code: PFL400

Room O2-43

Session Time: 8:00 a.m.

Papers are invited for this session covering the systems engineering experience required to achieve ultra-low emission levels on light-duty vehicles. Emission system component topics for this session include the development of advanced three-way catalysts, the development of NOX control strategies for gasoline lean burn engines, the application of high cell density substrates to advanced emission systems, and the integration of these components into full vehicle emission systems.

Organizers - Douglas Ball, Umicore Autocat USA Inc.; Rasto Brezny, Manufacturers of Emission Controls Assoc.; Ronald Heck; Joseph E. Kubsh, Manufacturers of Emission Controls Assoc.

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
8:00 a.m.	2013-01-1298	Emission Performance of California and Federal Aftermarket TWC Converters Rasto Brezny, Joseph Kubsh, Manufacturers of Emission Controls Assoc
8:20 a.m.	2013-01-1300	N₂O Emissions of Low Emission Vehicles Douglas Ball, David Moser, Yonghong Yang, David Lewis, Umicore Autocat USA Inc.
8:40 a.m.	2013-01-1297	HC Traps for Gasoline and Ethanol Applications John Nunan, Umicore Autocat USA Inc; Jason Lupescu, Ford Motor Co; Gregory Denison, Douglas Ball, David Moser, Umicore Autocat USA Inc
9:00 a.m.	2013-01-1299	Exhaust Gas Aftertreatment for Lean Gasoline Direct Injection Engines - Potential for Future Applications Susanne Philipp, Ruediger Hoyer, Frank Adam, Stephan Eckhoff, Umicore AG & Co. KG, Hanau, Germany; Rolf Wunsch, Christof Schoen, Guido Vent, Daimler AG, Sindelfingen, Germany

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

Thursday, April 18

Gaseous Engine Emissions

Session Code: PFL411

Room O2-43

Session Time: 9:40 a.m.

Papers for this session on the general topic of combustion engine gaseous emissions (regulated and non-regulated). This includes hydrocarbon species production over aftertreatment devices as a result of changes in fuel specification and the inclusion of bio derived components, specific NOX species production over catalytic devices, well to wheels CO2 production for alternative technologies and consideration of secondary emissions production (slip) as a result of aftertreatment.

Organizers - Siddiq Khan, ACEEE; Amanda Lea-Langton, University of Leeds; Siddiq Khan, ACEEE

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
9:40 a.m.	2013-01-1346	Chassis Dynamometer Testing of Ammonia Emissions from Light-Duty SI Vehicles in the Context of Emissions of Reactive Nitrogen Compounds Joseph Woodburn, Piotr Bielaczyc, Andrzej Szczotka, Bosmal Automotive R&D Institute Ltd
10:00 a.m.	2013-01-1345	Research on Unregulated Emissions from an Alcohols-Gasoline Blend Vehicle Using FTIR, HPLC and GC-MS Measuring Methods Fan Zhang, Jian-hai Wang, Dong-lian Tian, China Automotive Tech. & Research Center; Jian-Xin Wang, Shi-Jin Shuai, Tsinghua Univ

10:20 a.m.	2013-01-1341	Effect of Hot Exhaust Gas Recirculation on the Combustion Characteristics and Particles Emissions of a Pilot-Ignited Natural Gas Engine Lei Zhou, Yifu Liu, Lu Sun, Haixiao Hou, Ke Zeng, Zuohua Huang, Xi'an Jiaotong University
10:40 a.m.	2013-01-1343	The Influence of Rolling Resistance on Fuel Consumption in Heavy-Duty Vehicles Marco Mammetti, David Gallegos, Alex Freixas, Jordi Muñoz, Applus Idiada
	2013-01-1348	Recommendations for the Next Generation of Hydrocarbon Modeling with Respect to Diesel Exhaust Aftertreatment and Biodiesel Fuels (Written Only -- No Oral Presentation) Jonathan M. S. Mattson, Ryan O'Malley, Christopher Depcik, Edward Peltier, University of Kansas

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00010 and SUB-TP-00012, and individually. To purchase visit collections.sae.org

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

Thursday, April 18

In-Use and On-Board Emissions Measurement

Session Code: PFL410

Room O2-43

Session Time: 1:40 p.m.

Papers are invited for this session on engine emissions measurement from an in-use and OBD perspective. This covers data collection during real-world operation, including various advanced analysis techniques to report and determine emissions levels under in-use operations. It also covers the topics related to the on-board detection of emissions for control of aftertreatment devices and to ensure continued functionality of emissions compliance strategies.

Organizers - Shouxian Ren, General Motors LLC; Hui Xu, Cummins Inc.

Time	Paper No.	Title
1:40 p.m.	2013-01-1511	Statistical Investigation of In Use Emissions and Fuel Consumption Measured by PEM on Different Gasoline Cars Livia Della Ragione, Giovanni Meccariello, Maria Vittoria Prati, Istituto Motori CNR
2:00 p.m.	2013-01-1512	About Cross-Sensitivities of NOx Sensors in SCR Operation Arnaud Frobert, Stephane Raux, Yann Creff, Eric Jeudy, IFP Energies nouvelles
2:20 p.m.	2013-01-1513	Internal Combustion Engine Response to Presence of Combustion Inhibitors in Ambient Air Yuri Shukhman, Vladimir Baibikov, Abraham Marmur, Mark Veinblat, Leonid Tartakovsky, Technion Israel Inst. of Technology
3:00 p.m.	2013-01-1515	PM Sensor Based On-Board Diagnosis of Particulate Filter Efficiency Andreas Hoepfner, Christian A. Roduner, AVL Software and Functions GmbH
3:20 p.m.	2013-01-1517	Real-Time On-Board Indirect Light-Off Temperature Estimation as a Detection Technique of Diesel Oxidation Catalyst Effectiveness Level Raymond Sutjiono; Prateek Tayal, Keqin Zhou, Purdue University; Peter Meckl, Purdue Univ-West Lafayette
3:40 p.m.	2013-01-1516	Combustion and Emission Characteristics of a Heavy-Duty Diesel Engine at Idle at Various Altitudes Xin Wang, Yunshan Ge, Linxiao Yu, Beijing Institute of Technology

- 2013-01-1514 *Real World Diesel Engine Greenhouse Gas Emissions for Diesel Fuel and B100 (Written Only -- No Oral Presentation)***
Grzegorz Przybyla, Silesian University of Technology; Seyed Hadavi, Hu Li, Univ of Leeds; Gordon E. Andrews, University of Leeds
- 2013-01-1518 *Examining the Influence of Road Grade on Vehicle Specific Power (VSP) and Carbon Dioxide (CO₂) Emission over a Real-World Driving Cycle (Written Only -- No Oral Presentation)***
David W. Wyatt, Hu Li, James Tate, University of Leeds

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00010, and also individually. To purchase visit collections.sae.org

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

Thursday, April 18

Advanced Battery Technologies (Part 3 of 4)

Session Code: **PFL103**

Room O2-44

Session Time: **8:40 a.m.**

The success of HEV's, PHEV's & EV's is highly dependent on their batteries. This session focuses on advanced battery technologies, including, but not limited to: advanced materials and cell chemistries, battery management systems and controls, modeling, testing, diagnosis and health monitoring, safety, reliability, durability, battery charging, battery economics/cost reduction, and system integration/optimization. These topics can be addressed at the cell, module, pack or vehicle levels.

Organizers - *Yi Ding, US Army; James Miller, Argonne National Laboratory; Neil M. Johnson, Ricardo Inc.; Xiaosong Huang, General Motors; Thomas Wang, GM Technical Center; Alvaro Masias, Ford Motor Co.; Xinran Xiao, Michigan State University; Wayne Cai, General Motors*

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
8:40 a.m.	ORAL ONLY	<i>Catastrophic Failures in Lithium-Ion Battery Packs Used in EV and Hybrid Vehicles</i> <i>Vijay Somandepalli, Exponent Inc; Kevin Marr, Exponent Inc; Quinn Horn, Exponent Inc</i>
9:00 a.m.	2013-01-1534	<i>Characterizing Thermal Runaway of Lithium-ion Cells in a Battery System Using Finite Element Analysis Approach</i> <i>Kim F. Yeow, Ho Teng, AVL Powertrain Engineering Inc.</i>
9:20 a.m.	2013-01-1545	<i>Investigation of the Impact Phenomenon During Minor Collision</i> <i>Masashi Takahashi, Masaru Takabayashi, Hiroyuki Mitsuishi, Japan Automobile Research Institute</i>
9:40 a.m.	2013-01-1528	<i>Application of Insulation Standards to High Voltage Automotive Applications</i> <i>Robert Foley, Rajesh Nagappala, Galen Ressler, General Motors Company; Peter Andres, General Motors Company, Opel Div; Brian Martel, General Motors Company</i>
10:00 a.m.	ORAL ONLY	<i>Requirements for Testing Lithium Batteries for Transportation</i> <i>Rich Byczek, Intertek</i>
10:20 a.m.	2013-01-1548	<i>Accelerated Life Test Methodology for Li-Ion Batteries in Automotive Applications</i> <i>Karl William Steffke, Sudhakar Inguva, Daniel Van Cleve, James Knockeart, General Motors Company</i>

10:40 a.m.	ORAL ONLY	Battery Life Prognostic Framework and Application to Lithium-Ion Graphite/Iron-Phosphate Chemistry Kandler Smith, Eric Wood, Ahmad Pesaran, National Renewable Energy Laboratory
11:00 a.m.	ORAL ONLY	Predicting Battery Pack Performance vs. Age Using Cell Data Adam Timmons, Chrysler Group LLC
11:20 a.m.	2013-01-1535	Pulse Power Testing of Batteries and Supercapacitors for Hybrid Electric Vehicle Applications: A Comparison of Constant Current, Constant Power, and Ramped Power Transients Dennis A. Corrigan, Xiao Liu, Wayne State University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00341 and SUB-TP-00011, an individually. To purchase visit collections.sae.org

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

Thursday, April 18

Advanced Battery Technologies (Part 4 of 4)

Session Code: PFL103

Room O2-44

Session Time: 1:00 p.m.

The success of HEV's, PHEV's & EV's is highly dependent on their batteries. This session focuses on advanced battery technologies, including, but not limited to: advanced materials and cell chemistries, battery management systems and controls, modeling, testing, diagnosis and health monitoring, safety, reliability, durability, battery charging, battery economics/cost reduction, and system integration/optimization. These topics can be addressed at the cell, module, pack or vehicle levels.

Organizers - Wayne Cai, General Motors; Yi Ding, US Army; Xiaosong Huang, General Motors; Neil M. Johnson, Ricardo Inc.; Alvaro Masias, Ford Motor Co.; James Miller, Argonne National Laboratory; Thomas Wang, GM Technical Center; Xinran Xiao, Michigan State University

Time	Paper No.	Title
1:00 p.m.	2013-01-1527	Vision of Electric Automotive Machines - The Future is Here Nahum Goldenberg, Nahum Goldenberg, Ltd.
1:20 p.m.	2013-01-1543	Newly Developed Lithium-Ion Battery Pack Technology for a Mass-Market Electric Vehicle Yukiko Kinoshita, Toshiro Hirai, Yasuharu Watanabe, Yasuo Yamazaki, Ryuichi Amagai, Keisuke Sato, Nissan Motor Co., Ltd.
1:40 p.m.	2013-01-1533	The Electric Drive Advanced Battery (EDAB) Project: Development and Utilization of an On-Road Energy Storage System Testbed Jeffrey Wishart, ECotality North America; Richard Barney Carlson, Idaho National Laboratory; Paul Chambon, Oak Ridge National Laboratory; Tyler Gray, ECotality North America
2:00 p.m.	2013-01-1526	Battery Development for Stop-Start Application in Brazilian Market Luiz Soeiro, Luciano Cyrne, Leandro Figueiredo, Fiat Brazil S/A; Christopher LaRochelle, Chrysler Group LLC; Maumi Tsurumaki, Johnson Controls PS do Brasil Ltda
2:20 p.m.	2013-01-1538	Lithium-Ion Battery Pack for Stop and Start System Yamato Utsunomiya, Yuki Nagai, DENSO Corp.; Jun Kataoka, Hirobumi Awakawa, Suzuki Motor Corp.

2:40 p.m.	2013-01-1525	Performance Plus Range: Combined Battery Concept for Plug-In Hybrid Vehicles Jens Bockstette, VKA RWTH-Aachen; Knut Habermann, Juergen Ogrzewalla, FEV GmbH; Martin Pischinger, FEV Inc.; David Seibert, FEV GmbH
3:00 p.m.	2013-01-1523	Connecting Vehicle Requirements with Battery Design and Testing: Linking Drive Cycles with Material Properties Brian Sisk, Peter Hallac, Qi Zhang, Zhenli Zhang, Johnson Controls Power Solutions
3:20 p.m.	ORAL ONLY	Battery Tab Dynamics under Ultrasonic Welding Bongsu Kang, Purdue Univ-Fort Wayne; Wayne Cai, General Motors; Chin-An Tan, Wayne State Univ
3:40 p.m.	ORAL ONLY	Measurement of Thermal Contact Conductance between Battery Tabs Jian Chen, Wei Zhang, Zhili Feng, Oak Ridge National Laboratory; Wayne Cai, General Motors

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

Thursday, April 18

Transmission and Driveline: Transmission Systems/Drive Unit

Session Code: PFL600

Room O3-45

Session Time: 8:20 a.m.

This session deals with papers on automotive transmissions of different types, their enhancements and controls.

Organizers - Berthold Martin, Chrysler Group LLC; Tejinder Singh, General Motors LLC

Time	Paper No.	Title
8:20 a.m.	2013-01-1271	7-XDCT: Compact and Cost-Efficient Dual Clutch Transmission for Small and Mid-Size Vehicles Kiran Govindswamy, FEV Inc.; Gereon Hellenbroich, FEV GmbH; Johannes Ruschhaupt, VKA, RWTH Aachen University
8:40 a.m.	ORAL ONLY	Development of New Dual-Clutch Transmission Systems Bernd Vahlensieck, Detlef Baasch, Markus Hoher, ZF Friedrichshafen AG
9:00 a.m.	2013-01-1270	Online Driveline Fatigue Data Acquisition Method Hussein Dourra, Chrysler Group LLC
9:40 a.m.	2013-01-1274	The World's First Transverse 8-Speed Automatic Transmission Toshihiko Aoki, Hiroshi Kato, Aisin AW Co Ltd; Naoki Kato, Morise Masaru, Toyota Motor Corp.
10:00 a.m.	2013-01-1276	The ZF Automatic Transmission 9HP48 Transmission System, Design and Mechanical Parts Lutz Gaertner, Michael Ebenhoch, ZF Friedrichshafen AG
10:20 a.m.	2013-01-1272	Optimization Potential for a State of the Art 8-Speed AT Albert Dick, ZF Friedrichshafen AG; Juergen Greiner, ZF Getriebe GmbH; Anton Locher, Friedemann Jauch, ZF Friedrichshafen AG

10:40 a.m.	ORAL ONLY	Technologies for Future Generation ATs Martin Grumbach, ZF Friedrichshafen AG
11:00 a.m.	2013-01-1273	Automatic Transmission Systems Beyond 2020 - Challenges and Competition Juergen Greiner, Martin Grumbach, ZF Friedrichshafen AG
	2013-01-1277	The Design, Development and Industrialization of an New 8 Speed Automatic Transmission in China (Written Only -- No Oral Presentation) Jan Gang Lu, SAIC Shengrui Transmission

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Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 18

Exhaust Emission Control: Modeling (Part 1 of 2)

Session Code: PFL407

Room O3-46

Session Time: 8:20 a.m.

Papers are invited for this session covering diesel engine exhaust aftertreatment system models as well as their validation and application. Technologies covered include DOC, HC Trap, DPF, LNT, SCR, ammonia oxidation catalysts, hybrid or combined catalysts, urea-water solution spray dynamics, and mixture non-uniformity. Modeling aspects range from fundamental, 3D models of individual components to system level simulation, optimization, and control.

Organizers - Maruthi Devarakonda, GE Electric Company; Thomas McKinley, Cummins Inc.; Vincenzo Mulone, University of Rome Tor Vergata; Achuth Munnannur, Cummins; Balaji Sukumar, Johnson Matthey ECT

Time	Paper No.	Title
8:20 a.m.	2013-01-1583	Development of a 3-D Model for Analyzing the Effects of Channel Geometry on Filtration Characteristics in Particulate Filter System Hoon Lee, Kyeong O. Lee, Argonne National Laboratory
8:40 a.m.	2013-01-1584	The Sensitivity of DPF Performance to the Spatial Distribution of Ash Inside DPF Inlet Channels Yujun Wang, Victor Wong, Alexander Sappok, Sean Munnis, Massachusetts Institute of Technology
9:00 a.m.	2013-01-1574	Development of a 1-D Catalyzed Diesel Particulate Filter Model for Simulation of the Oxidation of Particulate Matter and Gaseous Species During Passive Oxidation and Active Regeneration Kiran C. Premchand, John Johnson, Song-Lin Yang, Michigan Technological Univ.
9:20 a.m.	2013-01-1582	A Thermally Efficient DOC Configuration to Improve CO and THC Conversion Efficiency Isaline Lefort, Athanasios Tsolakis, University of Birmingham
9:40 a.m.	2013-01-1580	DOC Temperature Control for Low Temperature Operating Ranges with Post and Main Injection Actuation Stephan Stadlbauer; Harald Waschl; Alexander Schilling; Luigi del Re
10:00 a.m.		BREAK

10:20 a.m.	2013-01-1572	Three Way Catalyst Modeling with Ammonia and Nitrous Oxide Kinetics for a Lean Burn Spark Ignition Direct Injection (SIDI) Gasoline Engine Jian Gong, Christopher Rutland, University of Wisconsin-Madison
10:40 a.m.	2013-01-1585	Comparative Urban Drive Cycle Simulations of Light-Duty Hybrid Vehicles with Gasoline or Diesel Engines and Emissions Controls Zhiming Gao, C. Stuart Daw, David E. Smith, Oak Ridge National Laboratory
11:00 a.m.	2013-01-1577	Numerical and Experimental Investigation of Catalyst Flow and Air/Fuel Control Scott Morton, Ronald Hall, Paul Radavich, Mercury Marine

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

Thursday, April 18

Exhaust Emission Control: Modeling (Part 2)

Session Code: PFL407

Room O3-46

Session Time: 1:00 p.m.

Papers are invited for this session covering diesel engine exhaust aftertreatment system models as well as their validation and application. Technologies covered include DOC, HC Trap, DPF, LNT, SCR, ammonia oxidation catalysts, hybrid or combined catalysts, urea-water solution spray dynamics, and mixture non-uniformity. Modeling aspects range from fundamental, 3D models of individual components to system level simulation, optimization, and control.

Organizers - Maruthi Devarakonda, GE Electric Company; Thomas McKinley, Cummins Inc.; Vincenzo Mulone, University of Rome Tor Vergata; Achuth Munnannur, Cummins; Balaji Sukumar, Johnson Matthey ECT

Time	Paper No.	Title
1:00 p.m.	2013-01-1586	Enhancement of Flow Distribution and Pressure Drop Performance of SCR System for Commercial Vehicles Peter Tai, Yan Shu, Martin Romzek, Eberspaecher North America Inc
1:20 p.m.	2013-01-1579	Validation of Turbulence Models for an Automotive SCR System with Laser Doppler Anemometry Measurements Markus Zöchbauer, Simon Fischer, Thomas Lauer, Tanja Siegmann-Hegerfeld, Michael Harasek, Vienna University of Technology; Christian Krenn, Guenther Pessl, BMW Motoren GmbH
1:40 p.m.	2013-01-1575	3D-Semi 1D Coupling for a Complete Simulation of an SCR System Zainal Abidin, Kaushik Das, Charles Roberts, Southwest Research Institute
2:00 p.m.	2013-01-1581	Extended Kalman Filter Estimator for NH_3 Storage, NO, NO_2 and NH_3 Estimation in a SCR Harsha Shankar Surenahalli, Gordon Parker, John Johnson, Michigan Technological Univ
2:20 p.m.	2013-01-1573	Optimal SCR Control Using Data-Driven Models Andrew Stevens, Yannan Sun, Jianming Lian, Maruthi Devarakonda, Pacific Northwest National Laboratory; Gordon Parker, Michigan Technological Univ
2:40 p.m.	2013-01-1576	A Modeling Study of SCR Reaction Kinetics from Reactor Experiments Xiaobo Song, Gordon Parker, John Johnson, Jeffrey Naber, Michigan Technological University; Josh Pihl, Oak Ridge National Laboratory

3:00 p.m.	2013-01-1578	1D Model of a Copper Exchanged Small Pore Zeolite Catalyst Based on Transient SCR Protocol Maruthi Devarakonda, Jong Lee, George Muntean, Pacific Northwest National Laboratory; Josh Pihl, Stuart Daw, Oak Ridge National Laboratory
3:20 p.m.	2013-01-1571	Design Optimization of an Emissions Sample Probe Using a 3D Computational Fluid Dynamics Tool Xiaogang Zhang, Paul Tennison, Jianwen Yi, Ruona William, Ford Motor Co.

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

Thursday, April 18

Primary Ride - Written Only

Session Code: AC302

Room TBD

Session Time: 1:00 p.m.

This session focuses on design and analysis features that deal with vehicle motions associated with ride and ride quality. Both analytical and experimental approaches are considered, and the session generally develops into a valuable discussion of the principal efforts underway to improve ride quality in passenger vehicles, although other types of vehicles are welcome and encouraged.

Organizers - Pinhas Barak, Kettering Univ.; Richard Dale Tonda, SEA, Ltd.

Time	Paper No.	Title
	2013-01-1354	Ride Comfort Optimization of Electric Wheel Dump Truck Based on a Vehicle Test (Written Only -- No Oral Presentation) Wenguang Wu, Zhengqi Gu, Hunan Univ.
	2013-01-1355	Customer Focus in Ride Development (Written Only -- No Oral Presentation) Ibrahim Badiru, W. Bradley Cwycyshyn, General Motors Company
	2013-01-1357	A Computational Method for Efficient Hub Offset Evaluations with Deflected-Disc Dampers (Written Only -- No Oral Presentation) W. Bradley Cwycyshyn, Joseph Fedullo, General Motors Company

Planned by Steering and Suspension Committee / Automobile Chassis Activity; Vehicle Dynamics Committee / Autor Chassis Activity

Thursday, April 18

Chat with the Expert - LD/HD Future Emission Technologies

Session Code: PFLCHAT420

Room W2-60

Session Time: 1:00 p.m.

Moderators - Timothy Johnson, Corning Incorporated

Panelists - David Brooks, Ricardo (LD Engines); John German, International Council On Clean Transport; Paul A. Machiele, US EPA (fuels); Kevin D. Siskin, Daimler; Qingyuan Song, Foton (China); Aleksey Yezerets, Cummins Inc.;

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

Thursday, April 18

Powertrain NVH

Session Code: PFL504

Room W2-61

Session Time: 8:00 a.m.

This session sets out to reflect the recent advances on the research, development and practices of Powertrain NVH treatment. The technical papers are of interest to powertrain system designers, testing specialists, NVH experts, and other individuals who evaluate and develop technologies to control powertrain NVH. The coverage includes: engine, engine subsystem and components noise and vibration; powertrain systems noise measurement and instrumentation; powertrain systems noise analysis.

Organizers - Mikhail A. Ejakov, Ford Motor Co.; Gang Sheng, Marshall University

Time	Paper No.	Title
8:00 a.m.	2013-01-1708	Measurement of Piston Secondary Motion Using the New Digital Telemeter Masanori Takahashi, Ryoji Isarai, Nippon Soken, Inc.; Hiroki Hara, Toyota Motor Corp.
8:20 a.m.	2013-01-1701	A Study of Drying-Up Friction and Noise of Automotive Accessory Belt Gang Sheng, Marshall University
8:40 a.m.	2013-01-1703	New Vibration Control Methodology in Engine Mount System for Low-Fuel Consumption Engines Yusuke Sato, Masahiko Kondo, Nissan
9:00 a.m.	2013-01-1706	Powertrain Mounting System Layout for Decoupling Rigid-Body Modes in the Vehicle Concept Design Stage Hunor Etele Erdelyi, Dirk Roesems, Alessandro Toso, Stijn Donders, LMS International
9:20 a.m.	2013-01-1711	Research and Improvement of Steering Wheel's Idle Shaking Shichao Wang, Wenku Shi, Guangming Wu, Shida Nie, Jilin University
10:00 a.m.	2013-01-1702	Vibration Analysis for GDI Components Using Partial Coherence Function KiChul Shin, SangJik Lee, Dong-Ryul Lee, Junseok Yoon, Sungbok Jun, Kefico Corp.
10:20 a.m.	2013-01-1705	Engine Fault Detection Using Wavelet Packet Transforms Mohamed F. Aly, American University in Cairo
10:40 a.m.	2013-01-1714	Optimization of an Air Intake System to Reduce Multiple Whoosh Noises from an Engine Vivek Kolhe, K. Veeramani, Pawan Thakur, Tata Technologies Ltd; Ashish Tiwari, Manoj P N, Tata Motors Ltd
	2013-01-1704	Objective Evaluation of Interior Sound Quality in Passenger Cars Using Artificial Neural Networks (Written Only -- No Oral Presentation) Shuming Chen, Dengfeng Wang, Yinchong Wu, Jilin University; Zongwei Liu, Hailin Wang, Geely Automobile Institute Ltd
	2013-01-1715	Refinement of Powertrain Transmitted Vibration by Optimizing the Geometrical Parameters of Vehicle Body Structure (Written Only -- No Oral Presentation) Arash Keshavarz, Mohsen Bayani Khaknejad, Sajjad Beigmoradi, Kambiz Jahani, CAE Engineer, R&D Center of SAIPA

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

Thursday, April 18

SI Combustion (Part 2 of 3) Alternative Fuels

Session Code: PFL201

Room W2-63

Session Time: 8:00 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. The scope of topics includes studies of mixture formation, ignition, knock, engine efficiency, flame propagation, alternative fuels and emissions formation. Part 2 of 3: Alternative Fuels

Organizers - Terrence Alger, Southwest Research Institute; Richard S. Davis, General Motors LLC; Mark C. Sellnau, Delphi Corp.

Chairpersons - Mark Sellnau, Delphi Corp; Richard Davis, General Motors LLC

Time	Paper No.	Title
8:00 a.m.	2013-01-1124	Fuel Property Effects on Particulates In Spark Ignition Engines Carl Vuk, Renaissance Engineering and Consulting; Steven J. Vander Griend, ICM Inc.
8:20 a.m.	2013-01-1317	Impacts of Low-Level 2-Methylfuran Content in Gasoline on DISI Engine Combustion Behavior and Emissions Chongming Wang, Hongming Xu, Thomas Lattimore, University of Birmingham
8:40 a.m.	2013-01-1323	Emission Characteristics of Gasoline and LPG in a Spray-Guided-Type Direct Injection Engine Cheolwoong Park, Yunseo Park, Seungmook Oh, Yonggyu Lee, Tae Young Kim, Hongsuk Kim, Young Choi, Kern-Yong Kang, Korea Institute of Machinery & Materials
9:00 a.m.	2013-01-1318	In-Cylinder Spectroscopic Measurements of Combustion Process in a SI Engine Fuelled with Butanol-Gasoline Blend Cinzia Tornatore, Simona Merola, Gerardo Valentino, Luca Marchitto, Istituto Motori CNR
9:20 a.m.	2013-01-1319	Performance and Emissions of a SI Engine using Methanol-Water Blends Louis Sileghem, Thomas Huylebroeck, Arvid Van den Bulcke, Jeroen Vancoillie, Sebastian Verhelst, Ghent University
9:40 a.m.	2013-01-1316	Characterization of Ethanol Blends Combustion Processes and Soot Formation in a GDI Optical Engine Francesco Catapano, Silvana Di Iorio, Maurizio Lazzaro, Paolo Sementa, Bianca Maria Vaglieco, Istituto Motori CNR
10:00 a.m.	2013-01-1321	Fuel Economy and CO₂ Emissions of Ethanol-Gasoline Blends in a Turbocharged DI Engine Hosuk H. Jung, Thomas G. Leone, Michael H. Shelby, James E. Anderson, Travis Collings, Ford Motor Company
10:20 a.m.	2013-01-1322	Investigation to Leveraging Effect of Ethanol Direct Injection (EDI) in a Gasoline Port Injection (GPI) Engine Yuan Zhuang, Guang Hong, University of Technology, Sydney
10:40 a.m.	2013-01-1634	Effect of Ethanol on Part Load Thermal Efficiency and CO₂ Emissions of SI Engines Hosuk H. Jung, Michael H. Shelby, Ford Motor Co.; Charles E. Newman, Belcan Corporation; Robert A. Stein, AVL Powertrain Engineering Inc
11:00 a.m.	2013-01-1635	An Overview of the Effects of Ethanol-Gasoline Blends on SI Engine Performance, Fuel Efficiency, and Emissions Robert A. Stein, AVL Powertrain Engineering Inc.; James E. Anderson, Timothy J. Wallington, Ford Motor Company

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

Thursday, April 18

SI Combustion (Part 3 of 3) Ignition and Pre-Ignition

Session Code: PFL201

Room W2-63

Session Time: 1:00 p.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. The scope of topics includes studies of mixture formation, ignition, knock, engine efficiency, flame propagation, alternative fuels and emissions formation. Part 3 of 3: Ignition and Pre-Ignition

Organizers - Terrence Alger, Southwest Research Institute; Richard S. Davis, General Motors LLC; Mark C. Sellnau, Delphi Corp.

Chairpersons - Richard Davis, General Motors LLC

Time	Paper No.	Title
1:00 p.m.	2013-01-1627	The Impact of Spark Discharge Pattern on Flame Initiation in a Turbulent Lean and Dilute Mixture in a Pressurized Combustion Vessel Anqi Zhang, Khanh Cung, Seong-Young Lee, Jeffrey Naber, Michigan Technological Univ; Garlan Huberts, Michael Czekala, Qiuping Qu, Ford Motor Co
1:20 p.m.	2013-01-1630	Impact of Ignition Energy Phasing and Spark Gap on Combustion in a Homogenous Direct Injection Gasoline SI Engine Near the EGR Limit Wei Chen, Daniel Madison, Paul Dice, Jeffrey Naber, Bo Chen, Scott Miers, Michigan Technological University; Michael Czekala, Ford Engine Div; Chris Glugla, Qiuping Qu, Garlan Huberts, Ford Motor Co
1:40 p.m.	2013-01-1628	A High-Energy Continuous Discharge Ignition System for Dilute Engine Applications Terrence Alger, Jess Gingrich, Charles Roberts, Barrett Mangold, Southwest Research Institute; Mark Sellnau, Delphi Corp
2:00 p.m.	2013-01-1629	Experimental Study of a Pre-Chamber Jet Igniter in a Turbocharged Rotax 914 Aircraft Engine Eric K. Anderson, Los Alamos National Laboratory; William P. Attard; Adam Brown, Innovative Scientific Solutions Inc.; Paul Litke, Air Force Research Laboratory; Keith Grinstead, John Hoke, Innovative Scientific Solutions Inc.
2:20 p.m.	2013-01-1631	Laser Ignition of Single Cylinder Engine and Effects of Ignition Location Dhananjay Srivastava, Indian Institute of Technology - Kanpur; Avinash Kumar Agarwal, I I T Kanpur
2:40 p.m.	2013-01-1633	Investigations of Ignition Processes Using High Frequency Ignition Clemens Hampe, Mot GmbH; Heiko Kubach, Karlsruhe Institute Of Technology; Ulrich Spicher, Karlsruhe Institute of Technology; Georg Rixecker, Steffen Bohne, Borg Warner
3:00 p.m.	2013-01-1632	Effects of EGR Dilution and Fuels on Spark Plug Temperatures in Gasoline Engines Raphael Gukelberger, Terrence Alger, Barrett Mangold, Southwest Research Institute; Jeff Boehler, Fram Group - Autolite; Corey Eiden, Fram Group

3:20 p.m.	ORAL ONLY	Pre-Ignition and Super-Knock in Turbo-Charged SI Engines Gautam Kalghatgi, Saudi Aramco
	2013-01-1636	Optical Investigation on the Origin of Pre-Ignition in a Highly Boosted SI Engine Using Bio-Fuels (Written Only -- No Oral Presentation) T. Hülser, G. Grünefeld, T. Brands, LTFD, RWTH Aachen University; M. Günther, S. Pischinger, VKA, RWTH Aachen University

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Thursday, April 18

Heat Transfer and Advances in Thermal & Fluid Sciences - In-cylinder Heat Transfer, Cooling and Exhaust Systems (Part 1 of 2) Engine Heat Transfer

Session Code: PFL214

Room W2-64

Session Time: 8:00 a.m.

This session focuses on fundamental numerical (1D and 3D CFD) and experimental research in the areas of heat and mass transfer and fluid flow that impacts engine and vehicle performance and design. Subject areas include convection, conduction, radiation, porous media, phase change including boiling, condensation, melting and freezing. Application areas include, combustion, emissions, cooling, lubrication, exhaust, intake, fuel delivery, external air flow, under hood and under body.

Organizers - Tarek M. Abdel-Salam, East Carolina University; Thomas Edward Briggs, Southwest Research Institute; Raj Ranganathan, Showatech Inc.; Martin Tuner, Lund Univ.

Chairpersons - Raj Ranganathan, Showatech Inc.; Martin Tuner, Lund Univ.

Time	Paper No.	Title
8:00 a.m.	2013-01-1646	Exhaust Phases in a DI Diesel Engine Based on Instantaneous Cyclic Heat Transfer Experimental Data Georgios Mavropoulos, Dimitrios Hountalas, National Technical University of Athens
8:20 a.m.	ORAL ONLY	Experimental Investigation of Piston Heat Transfer During Conventional Diesel and Reactivity Controlled Compression Ignition Combustion Regimes Terry Hendricks, Sandia National Laboratories; Jaal Ghandhi, Univ of Wisconsin Madison
8:40 a.m.	2013-01-1641	Thermal Management of Vehicular Payloads Using Nanofluid Augmented Coolant Rail - Modeling and Analysis Fan He; David Ewing; Joshua Finn; John Wagner; Lin Ma
9:00 a.m.	2013-01-1643	Study of Motor Oil Cooling at Low Reynolds Number in Multi-Port Narrow Channels Mohammed S. Saadi, Mohammed Ismail, Shahram Fotowat, Md Abdul Quaiyum, Amir Fartaj, Univ of Windsor
9:20 a.m.	2013-01-1640	Design and Simulations of an Enhanced and Cost Effective Engine Split Cooling Concept Azmi Osman, Aizad Sazrul Sabrudin, Mohd Asmu'i Hussin, Zul Ashraf Bakri, PROTON Malaysia
9:40 a.m.	2013-01-1645	Flow and Pressure Drop Characteristics for Various Non-Circular Curved Ducts Used in Automobile HVAC System with Different Bend Angles Ashok Kumar M, Kannan Kanniah, General Motors Technical Center India

2013-01-1651 Numerical Simulation of Subcooled Nucleate Boiling in Cooling Jacket of IC Engine (Written Only -- No Oral Presentation)
Hemant Puneekar, Saurish Das, Ansys Inc,

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

Thursday, April 18

Heat Transfer and Advances in Thermal & Fluid Sciences - In-cylinder Heat Transfer, Cooling and Exhaust Systems (Part 2 of 2) Exhaust Heat Transfer

Session Code: **PFL214**

Room W2-64

Session Time: **1:00 p.m.**

This session focuses on fundamental numerical (1D and 3D CFD) and experimental research in the areas of heat and mass transfer and fluid flow that impacts engine and vehicle performance and design. Subject areas include convection, conduction, radiation, porous media, phase change including boiling, condensation, melting and freezing. Application areas include, combustion, emissions, cooling, lubrication, exhaust, intake, fuel delivery, external air flow, under hood and under body.

Organizers - *Tarek M. Abdel-Salam, East Carolina University; Thomas Edward Briggs, Southwest Research Institute; Raj Ranganathan, Showatech Inc.; Martin Tuner, Lund Univ.*

Chairpersons - *Tarek M. Abdel-Salam, East Carolina University; Thomas Edward Briggs, Southwest Research Institute*

Time	Paper No.	Title
1:00 p.m.	2013-01-1644	Simulation of Organic Rankine Cycle Electric Power Generation from Light-Duty Spark Ignition and Diesel Engine Exhaust Flows <i>Ryan Valentino, Matthew J. Hall, Univ. of Texas-Austin; Thomas Briggs, Southwest Research Institute</i>
1:20 p.m.	2013-01-1647	Experimental Validation of a Dynamic Waste Heat Recovery System Model for Control Purposes <i>Emanuel Feru, Technische Universiteit Eindhoven; Frank Kupper, Chapa Rojer, Xander Seykens, Fabio Scappin, Frank Willems, TNO Automotive; Jeroen Smits, DAF Trucks; Bram De Jager, Maarten Steinbuch, Technische Universiteit Eindhoven</i>
1:40 p.m.	2013-01-1637	Study of Parallel Turbocompounding for Small Displacement Engines <i>Youssef Ismail, VALEO-Ecole Centrale de Nantes; David Durrieu, Pascal Menegazzi, VALEO; Pascal Chesse, Ecole Centrale de Nantes; David Chalet, Ecole Centrale De Nantes</i>
2:00 p.m.	2013-01-1638	BSFC Improvement by Diesel-Rankine Combined Cycle in the High EGR Rate and High Boosted Diesel Engine <i>Takuya Yamaguchi, Kurume Institute of Technology; Yuzo Aoyagi, Hideaki Osada, Kazuaki Shimada, Noboru Uchida, New Ace Inst Co Ltd</i>
2:20 p.m.	2013-01-1649	Testing a 50kW ORC at Different Heating and Cooling Source Conditions to Map the Performance Characteristics <i>Vamshi K. Avadhanula, Chuen-Sen Lin, Thomas Johnson, University of Alaska Fairbanks</i>
2:40 p.m.	2013-01-1639	Additional Power Generation from the Exhaust Gas of Diesel Engine by Bottoming Rankine Cycle <i>Shekh Nisar Hossain, Saiful Bari, University of South Australia</i>

3:00 p.m. 2013-01-1648 Analysis and Comparison of Typical Exhaust Gas Energy Recovery Bottoming Cycles
Zhengxin Xu, Jingping Liu, Jianqin FU, Chengqin Ren, Hunan University

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

Thursday, April 18

Kinetically Controlled CI Combustion (Including HCCI) (Part 1 of 2)

Session Code: **PFL206**

Room W2-65

Session Time: **8:00 a.m.**

This session focuses on kinetically controlled combustion (including, HCCI, PCCI, CAI, RCCI, etc.).

Organizers - Christopher Gehrke, Caterpillar Inc.; Scott Goldsborough, Argonne National Laboratory; Nebojsa Milovanovic, Mahle Powertrain, Ltd.; Samveg Saxena; Hongming Xu, Birmingham Univ.

Time	Paper No.	Title
8:00 a.m.	2013-01-1654	Direct In-cylinder CO₂ Measurements of Residual Gas in a GDI Engine for Model Validation and HCCI Combustion Development Yan Zhang, Hua Zhao, Brunel University; Mark Peckham, Bruce Campbell, Cambustion Ltd.
8:20 a.m.	2013-01-1655	Steady-State Combustion Development of a Downsized Multi-Cylinder Engine with Range Extended HCCI/SACI Capability Dusan Polovina, David McKenna, Jennifer Wheeler, AVL Powertrain Engineering Inc; Jeff Sterniak, Oliver Miersch-Wiemers, Alan Mond, Hakan Yilmaz, Robert Bosch LLC
8:40 a.m.	2013-01-1664	Evaluation of Emissions and Performances from Partially Premixed Compression Ignition Combustion using Gasoline and Spark Assistance Jose M Desantes, Raul Payri, Antonio Garcia, Javier Monsalve Serrano, Universitat Politecnica de Valencia
9:00 a.m.	2013-01-1657	Chemical Kinetics Study on Two-Stage Main Heat Release in Ignition Process of Highly Diluted Mixtures Kazunari Kuwahara, Takuya Tada, Osaka Institute of Technology; Masahiro Furutani, Nagoya Institute of Technology; Yasuyuki Sakai, Hiromitsu Ando, University of Fukui
9:20 a.m.	2013-01-1674	2-Stroke CAI Operation on a Poppet Valve DI Engine Fuelled with Gasoline and its Blends with Ethanol Yan Zhang, Hua Zhao, Mohammed Ojapah, Alasdair Cairns, Brunel University
9:40 a.m.	2013-01-1685	Influence of the Combination of Fuel Properties for a DI-Diesel Engine Under Partly Homogeneous Combustion Yousef Jeihouni, Ludger Ruhkamp, FEV GmbH, Aachen, Germany; Stefan Pischinger, VKA , RWTH Aachen University
10:00 a.m.	2013-01-1662	Wall Temperature Effect on SI-CAI Hybrid Combustion Progress in a Gasoline Engine Xinyan Wang, Hui Xie, Le Li, Liyan Xie, Tao Chen, Tianjin Univ; Hua Zhao, Brunel University

10:20 a.m.	2013-01-1665	Characterization of Engine Control Authority on HCCI Combustion as the High Load Limit is Approached <i>James P. Szybist, K. Dean Edwards, Oak Ridge National Laboratory; Matthew Foster, Delphi Powertrain; Keith Confer, Delphi Corp; Wayne Moore, Delphi Energy & Engine Mgmt Systems</i>
10:40 a.m.	2013-01-1658	Understanding Knock Metric for Controlled Auto-Ignition Engines <i>Amir Maria, Wai K. Cheng, Kenneth Kar, MIT; William Cannella, Chevron</i>
11:00 a.m.	2013-01-1656	Development of Dynamic Models for an HCCI Engine with Fully Variable Valve-Train <i>Yudai Yamasaki, University of Tokyo; Franz Xaver Schauer, Georg Wachtmeister, Technische Universität München</i>
11:20 a.m.	2013-01-1660	Disturbance Observation and Rejection Method for Gasoline HCCI Combustion Control <i>Kang Song; Hui Xie; Le Li; Jun Lu; Cheng Li; Zhiqiang Gao</i>
11:40 a.m.	2013-01-1663	Two-Input Two-Output Control of Blended Fuel HCCI Engines <i>Mehran Bidarvatan, Mahdi Shahbakhti, Michigan Technological Univ.</i>
12:00 p.m.	2013-01-1675	Experimental Investigation of Close-Loop Control of HCCI Engine Using Dual Fuel Approach <i>Rakesh Kumar Maurya, I I T Kanpur; Avinash Kumar Agarwal, I I T Kanpur</i>
	2013-01-1667	Development of a Model-Based HCCI Control Strategy for an Engine with a Fully Variable Valve Train (Written Only -- No Oral Presentation) <i>Franz Xaver Schauer, Thomas Zimmer, Matthias Bachhuber, Michael Scheller, TU München; Yudai Yamasaki, University of Tokyo; Kazuhiro Oryoji, Hitachi Europe GmbH; Georg Wachtmeister, TU München</i>

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

Thursday, April 18

Kinetically Controlled CI Combustion (Including HCCI) - Part 2

Session Code: PFL206

Room W2-65

Session Time: 8:00 a.m.

This session focuses on kinetically controlled combustion (including, HCCI, PCCI, CAI, RCCI, etc.).

Organizers - Christopher Gehrke, Caterpillar Inc.; Scott Goldsborough, Argonne National Laboratory; Nebojsa Milovanovic, Mahle Powertrain, Ltd.; Samveg Saxena; Ulrich Spicher, Karlsruhe Inst. of Technology; Hongming Xu, Birmingham Univ.

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

Thursday, April 18

Kinetically Controlled CI Combustion (Including HCCI) (Part 2 of 2)

Session Code: PFL206

Room W2-65

Session Time: 1:00 p.m.

This session focuses on kinetically controlled combustion (including, HCCI, PCCI, CAI, RCCI, etc.).

Organizers - Christopher Gehrke, Caterpillar Inc.; Scott Goldsborough, Argonne National Laboratory; Nebojsa Milovanovic, Mahle Powertrain, Ltd.; Samveg Saxena; Hongming Xu, Birmingham Univ.

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
1:00 p.m.	2013-01-0896	Experimental Investigation of Light-Medium Load Operating Sensitivity in a Gasoline Compression Ignition (GCI) Light-Duty Diesel Engine Paul Loeper, Youngchul Ra, Cory Adams, David Foster, Jaal Ghandhi, Michael Andrie, Roger Krieger, Univ. of Wisconsin Madison; Russ Durrett, General Motors Company
1:20 p.m.	2013-01-1669	Pressure Sensitivity of HCCI Auto-Ignition Temperature for Gasoline Surrogate Fuels Ida Truedsson, Martin Tuner, Bengt Johansson, Lund University; William Cannella, Chevron
1:40 p.m.	2013-01-1652	Investigation of Pressure Oscillation Modes and Audible Noise in RCCI, HCCI, and CDC Martin Wissink, Univ of Wisconsin; Zhi Wang, Tsinghua Univ; Derek Splitter, Arsham Shahlari, Rolf Reitz, Univ of Wisconsin
2:00 p.m.	2013-01-1659	Comparison of Compression Ignition Engine Noise Metrics in Low-Temperature Combustion Regimes Arsham J. Shahlari, Univ. of Wisconsin Madison; Chris Hocking, Eric Kurtz, Ford Motor Co; Jaal Ghandhi, Univ of Wisconsin Madison
2:20 p.m.	2013-01-1653	Effects of Biofuel Blends on RCCI Combustion in a Light-Duty, Multi-Cylinder Diesel Engine Reed Hanson, Scott Curran, Robert Wagner, Oak Ridge National Laboratory; Rolf Reitz, Univ of Wisconsin
2:40 p.m.	2013-01-1661	Particle Size and Number Emissions from RCCI with Direct Injections of Two Fuels Christopher Kolodziej, Argonne National Laboratory; Martin Wissink, Derek Splitter, Reed Hanson, Rolf Reitz, Univ of Wisconsin; Jesus Benajes, Universitat Politècnica de València
3:00 p.m.	2013-01-1666	Research on Gasoline Homogeneous Charge Induced Ignition (HCII) by Diesel in a Light-Duty Engine Dingwei Gao, Great Wall Motor Co.; Chao Yu, Tsinghua Univ; Wenbin Yu, Great Wall Motor Co.; Jianxin Wang, Zhi Wang, Tsinghua Univ; Jichun Liu, Zhiqiang Kang, Wei Guo, Great Wall Motor Co.
3:20 p.m.	2013-01-1670	Numerical and Experimental Characterization of the Dual-Fuel Combustion Process in an Optically Accessible Engine Radu Florea, Southwest Research Institute
3:40 p.m.	2013-01-1672	Characterization of PCCI Combustion in a Single Cylinder CI Engine Fuelled with RME and Bio-Ethanol Ezio Mancaruso, Bianca Maria Vaglieco, Istituto Motori CNR
4:00 p.m.	2013-01-1673	Dual-Fuel Effects on HCCI Operating Range: Experiments with Primary Reference Fuels Ali Aldawood, Saudi Aramco; Sebastian Mosbach, Markus Kraft, University of Cambridge; Amer Amer, Saudi Aramco
4:20 p.m.	2013-01-1676	An Experimental Investigation of Diesel-Gasoline Blends Effects in a Direct-Injection Compression-Ignition Engine Operating in PCCI Conditions Jesus Benajes, Alberto Broatch, Antonio Garcia, Luisa Monico Muñoz, Universitat Politècnica de Valencia
4:40 p.m.	2013-01-1678	Effect of Cetane Improvers on Gasoline, Ethanol, and Methanol Reactivity and the Implications for RCCI Combustion Adam B. Dempsey, N. Ryan Walker, Rolf Reitz, Univ. of Wisconsin

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

Thursday, April 18

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

Session Code: PFL205

Room W2-66

Session Time: 8:00 a.m.

This session presents work investigating the effect of fuel composition on CI engine performance in terms of combustion efficiency, emissions and engine hardware durability. Variations in fuel composition include aromatic compounds, the blending of oxygenated components and the use of additives for cetane number improvement and lubricity enhancement.

Organizers - Scott Curran, Oak Ridge National Laboratory; William F. Northrop, Univ. of Minnesota; Paul Richards; Samveg Saxena; Andrea Strzelec

Time	Paper No.	Title
8:20 a.m.	2013-01-1691	The Feasibility of Using Raw Liquids from Fast Pyrolysis of Woody Biomass as Fuels for Compression-Ignition Engines: A Literature Review Charles J. Mueller, Sandia National Laboratories
8:40 a.m.	2013-01-1698	The Use of Biodiesel on the Performance and Emission Characteristics of Diesel Engined Vehicles Jorge Martins, Universidade do Minho; Felipe Torres, Ednildo Torres, Helcio Pimenta, UFBA; Vitor Ferreira
9:00 a.m.	2013-01-1680	Engine Performance Characteristics for Biodiesels of Different Degrees of Saturation and Carbon Chain Lengths P.X. Pham, The University of Sydney; T.A. Bodisco, S. Stevanovic, M.D. Rahman, H. Wang, Z.D. Ristovski, R.J. Brown, Queensland University of Technology; A.R. Masri, The University of Sydney
9:20 a.m.	2013-01-1686	The Impact Upon Durability of Heavy-Duty Diesel Engine Using 5 Percentage Biodiesel Yong-Yuan Ku, Ko Wei Lin, Ya-Lun Chen, Ching-Fu Liao, Automotive Research & Testing Center
9:40 a.m.	2013-01-1688	Phenomenology of EGR in a Light Duty Diesel Engine Fuelled with Hydrogenated Vegetable Oil (HVO), Used Vegetable Oil Methyl Ester (UVOME) and Their Blends Dai Liu, Akbar Ghafourian, Hongming Xu, Univ. of Birmingham
10:00 a.m.	2013-01-1679	Experimental Investigation on the Effects on Performance and Emissions of an Automotive Euro 5 Diesel Engine Fuelled with B30 from RME and HVO Federico Millo, Fabio Mallamo, Theodoros Vlachos, Politecnico di Torino; Claudio Ciaravino, General Motors Company; Lucio Postriotti, Giacomo Buitoni, Università di Perugia
10:20 a.m.	2013-01-1684	Formation and Removal of Injector Nozzle Deposits in Modern Diesel Cars Rod Williams, Alastair Smith, Ian Buttery, Shell Global Solutions (UK)
10:40 a.m.	2013-01-1697	Injector Fouling Performance and Solubility of GTL Diesel Dosed with Zinc Adrian James Velaers, Stefan de Goede, Christopher Woolard, Sasol Fuels Technology; Ross Burnham, University of Cape Town

11:00 a.m.	2013-01-1677	Potential of Hydrogenated Vegetable Oil (HVO) in Future High Efficiency Combustion System <i>Om Parkash Bhardwaj, Andreas F. Kolbeck, Thomas Kkoerfer, FEV GmbH; Markku Honkanen, Neste Oil Oyj</i>
11:20 a.m.	2013-01-1682	Combustion and Emissions Characteristics of JP-8 Blends and ULSD #2 with Similar CN in a Direct Injection Naturally Aspirated Compression Engine <i>Valentin Soloiu, Henry Ochieng, Jabeous Weaver, Marvin Duggan, Spencer Harp, Brian Vlcek, Craig Jenkins, Georgia Southern University; Marcis Jansons, Wayne State University</i>
	2013-01-1687	Mean Effective Pressure Oscillations in an IC-CI Engine with Hydrogen-Rich-Gas Addition (Written Only -- No Oral Presentation) <i>Michal Geca, Mirosław Wendeker, Rafał Sochaczewski, Marcin Szlachetka, Lublin University of Technology</i>

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

Thursday, April 18

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

Session Code: PFL205

Room W2-66

Session Time: 1:00 p.m.

This session presents work investigating the effect of fuel composition on CI engine performance in terms of combustion efficiency, emissions and engine hardware durability. Variations in fuel composition include aromatic compounds, the blending of oxygenated components and the use of additives for cetane number improvement and lubricity enhancement.

Organizers - Scott Curran, Oak Ridge National Laboratory; William F. Northrop, Univ. of Minnesota; Paul Richards; Samveg Saxena; Andrea Strzelec

Time	Paper No.	Title
1:00 p.m.	2013-01-1693	Water Separation Challenge for Brazilian Diesel Engine <i>Fernando Jun Yoshino, Gisela Ablas Marques, Felipe Ferrari, MAHLE Metal Leve S/A</i>
1:20 p.m.	2013-01-1696	Diesel Fuel Cleanliness at Filter Outlet in Vehicle Real Life Conditions <i>Nicolas Arnault, Guy Monsallier, SOGEFI Group</i>
1:40 p.m.	2013-01-1681	Commercial Naphtha Blends for Partially Premixed Combustion <i>C.A.J. Leermakers, P.C. Bakker, L.M.T. Somers, L.P.H. de Goey, B.H. Johansson, Eindhoven University of Technology</i>
2:00 p.m.	2013-01-1683	Butanol-Diesel Blends for Partially Premixed Combustion <i>C.A.J. Leermakers, P.C. Bakker, L.M.T. Somers, L.P.H. de Goey, B.H. Johansson, Eindhoven University of Technology</i>
2:20 p.m.	2013-01-1692	Effect of Port Injected Ethanol on Combustion Characteristics in a Dual-Fuel Light Duty Diesel Engine <i>Gabriele Di Blasio, Carlo Beatrice, Istituto Motori CNR; Santiago Molina, CMT Motores Termicos</i>
2:40 p.m.	2013-01-1695	Study of the Effect of the Engine Parameters Calibration to Optimize the Use of Bio-Ethanol/RME/Diesel Blend in a Euro5 Light Duty Diesel Engine <i>Pierpaolo Napolitano, Univ. degli Studi di Napoli Federico II; Chiara Guido, Carlo Beatrice, Gabriele Di Blasio, Istituto Motori CNR</i>

3:00 p.m.	ORAL ONLY	<i>The Effects of EGR and Injection Timing on the Engine Combustion and Emission Performances Fueled by butanol-Diesel Blends</i> MIng Huo, Univ of Illinois at Urbana-Champaign; Chia-Fon Lee, Univ of Illinois and Tsinghua Univ; Haifeng Liu, Tianjin University
3:20 p.m.	2013-01-1699	<i>Effect of Injection Pressures and Timings on the Performance Emission and Combustion Characteristics of a Direct Injection Diesel Engine Using Biodiesel-Diesel-Ethanol Blend</i> G.R Kannan, PSNA College of Engineering & Technology
	2013-01-1700	<i>Experimental Analysis of Diesel Engine Fueled with E-Diesel Produced from Madhuca Indica Flowers with the Addition of an Ignition Improver (Written Only -- No Oral Presentation)</i> Dulari Hansdah, Bhagyashree Suna, Murugan Sivalingam, NIT Rourkela, India

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

Thursday, April 18

Fuel Injection and Sprays (Part 2 of 3)

Session Code: PFL210

Room W2-67

Session Time: 8:00 a.m.

This session is devoted to experimental and computational work in the area of fuel injection systems and sprays. Topics include: spray characterization, cavitation, multi-phase jet modeling, CFD models for spray processes, wall films and impingement, hydraulic circuit analysis, and dissolved gas effects. Studies of both gasoline and diesel fuel sprays and fuel injection equipment are encouraged.

Organizers - Tarek M. Abdel-Salam, East Carolina University; Essam El-Hannouny, Argonne National Laboratory; Jacqueline O'Connor, Sandia National Laboratories

Time	Paper No.	Title
8:00 a.m.	2013-01-1606	<i>Numerical Spray Modeling for Ultra Low Cost (ULC) Gasoline Engine</i> Balamurugan Rathinam, Upendra Naithani, RNTBCI; Laurent Delahaye, Frederic Ravet, Frederic Justet, RENAULT SAS
8:20 a.m.	2013-01-1613	<i>Comparison of the Homogeneous Relaxation Model and a Rayleigh Plesset Cavitation Model in Predicting the Cavitating Flow Through Various Injector Hole Shapes</i> Federico Brusiani, Sergio Negro, Gian Marco Bianchi, University of Bologna; Maryam Moulai, Kshitij Neroorkar, David Schmidt, University of Massachusetts-Amherst
8:40 a.m.	2013-01-1603	<i>Numerical Simulations of Turbulent Sprays with a Multicomponent Evaporation Model</i> Shalabh Srivastava, Harold Schock, Farhad Jaber, Michigan State University
9:00 a.m.	2013-01-1600	<i>Numerical Simulation of Diesel Spray Combustion in a Constant Volume Chamber by Eulerian and Lagrangian Conditional Moment Closure Models</i> Hyeonsu Cho, POSTECH; Woo Kim, Kongju National University
9:20 a.m.	2013-01-1608	<i>Cavitation Process Simulation for Automotive Applications with an Isothermal Solver Approach</i> Gennady Dumnov, Alexander Muslaev, Viatcheslav Streltsov, Mentor Graphics (Russia); Boris Marovic, Mentor Graphics (Deutschland)GmbH

9:40 a.m.	2013-01-1601	Effect of Physical Properties on Spray Models <i>Sarangarajan Vijayraghavan Iyengar, Christopher Rutland, University of Wisconsin Madison</i>
10:00 a.m.	2013-01-1595	Validating Non-Reacting Spray Cases with KIVA-3V and OpenFoam <i>Sarangarajan Vijayraghavan Iyengar, Chi-Wei Tsang, Christopher Rutland, Univ of Wisconsin Madison</i>
10:20 a.m.	2013-01-1598	Modeling Evaporating Diesel Sprays Using an Improved Gas Particle Model <i>Sujith Sukumaran, Song-Charnng Kong, Iowa State University; Nam Hyo Cho, John Deere Power Systems</i>
10:40 a.m.	2013-01-1618	Simulations of Diesel Sprays Using the Conditional Moment Closure Model <i>Michele Bolla, Thordur Gudmundsson, Yuri M. Wright, Konstantinos Boulouchos, ETH Zurich</i>
11:00 a.m.	2013-01-1593	Modeling of Narrow-Angle Sprays Using a Spray Model Based on the Moments of the Droplet Size Distribution <i>Nwabueze G. Emekwuru, Univ. of Wolverhampton</i>
11:20 a.m.	2013-01-1609	Hole Cross Section Shape Influence on Diesel Nozzle Flow <i>Giancarlo Chiatti, Fulvio Palmieri, Università degli Studi "Roma Tre"</i>

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

Thursday, April 18

Fuel Injection and Sprays (Part 3 of 3)

Session Code: PFL210

Room W2-67

Session Time: 1:00 p.m.

This session is devoted to experimental and computational work in the area of fuel injection systems and sprays. Topics include: spray characterization, cavitation, multi-phase jet modeling, CFD models for spray processes, wall films and impingement, hydraulic circuit analysis, and dissolved gas effects. Studies of both gasoline and diesel fuel sprays and fuel injection equipment are encouraged.

Organizers - Tarek M. Abdel-Salam, East Carolina University; Essam El-Hannouny, Argonne National Laboratory; Jacqueline O'Connor, Sandia National Laboratories

Time	Paper No.	Title
1:00 p.m.	2013-01-1617	Development and Evaluation of the Performance Characteristics of a Poly-Disperse Droplet Stream Generator <i>Huifeng Gong, Xing Wang, Zhilong Li, Weidi Huang, Zongjie Hu, Liguang Li, Tongji University</i>
1:20 p.m.	2013-01-1611	A Study on the Hole-to-Hole Spray Variation Based on Nozzle Internal Structure <i>Ya Gao; Weidi Huang, Tongji Univ.; Yuan Gao, Argonne National Laboratory; Jun Deng, Zongjie Hu, Zhijun Wu, Liguang Li, Tongji Univ</i>
1:40 p.m.	2013-01-1587	Effect of Nozzle Geometry on Macroscopic Behavior of Diesel Spray in the Near-Nozzle Field <i>Weidi Huang, Zhijun Wu, Huifeng Gong, Ya Gao, Jun Deng, Zongjie Hu, Liguang Li, Tongji Univ.</i>

2:00 p.m.	2013-01-1594	Investigation of Key Mechanisms for Liquid Length Fluctuations in Transient Vaporizing Diesel Sprays Jaclyn Johnson, Michigan Technological Univ.; Hai-Wen Ge, ESI Mindware Inc.; Jeffrey Naber, Seong-Young Lee, Michigan Technological Univ; Eric Kurtz, Nan Robarge, Ford Motor Co
2:20 p.m.	2013-01-1607	An Experimental Approach in the Impact of Electric Fields on Liquid Fuel Spray Injection Yaru Najem Mendez Hernandez, GE Global Research Europe; Michele Bardi, Juan Viera, Raul Payri, CMT-Universidad Politecnica de Valencia
2:40 p.m.	2013-01-1589	High Pressure Poppet Injector with Electronic Flow Rate Control and Spray Guiding Andrew Meyer, Beginnings Technology Inc.
3:00 p.m.	2013-01-1614	Flash Boiling: Easy and Better Way to Generate Ideal Sprays than the High Injection Pressure Min Xu, Yuyin Zhang, Wei Zeng, Gaoming Zhang, Ming Zhang, Shanghai Jiao Tong Univ
3:20 p.m.	2013-01-1597	Investigation of Fuel Atomization and Evaporation of a DISI Injector Spray Under Homogeneous Charge Conditions Markus Heldmann, Tobias Knorsch, Michael Wensing, FAU Erlangen-Nuremberg
3:40 p.m.	2013-01-1616	High-Speed Characterization of ECN Spray A Using Various Diagnostic Techniques Maarten Meijer, Eindhoven University Of Technology; Jonas Galle, Ghent University; L.M.T. Somers, Eindhoven University Of Technology; J.G.H Griensven, Technical University - Eindhoven; Sebastian Verhelst, Ghent University
	2013-01-1619	Characteristics of High Pressure Jets for Direct Injection Gas Engine (Written Only -- No Oral Presentation) Jingzhou Yu, Ville Vuorinen, Ossi Kaario, Teemu Sarjovaara, Martti Larmi, Aalto University

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

Thursday, April 18

New CI & SI Engines and Components (Part 3 of 3)

Session Code: PFL500

Room W2-68

Session Time: 9:00 a.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 - Jeffrey Naber, Michigan Tech. University; James E. Smith, West Virginia Univ.; John Szpytman, Continental Automotive Systems; Bryon Wasacz, Chrysler Group LLC

Time	Paper No.	Title
9:00 a.m.	2013-01-1718	Diesel/Gasoline Dual Fuel Powered Combustion System based on Diesel Compression Ignition Triggered Ignition Control Dae Choi, Hyunsung Jung, Yohan Chi, Hyundai Motor Company; Shinhyuk Joo, Southwest Research Institute

9:20 a.m.	2013-01-1744	Reducing Part Load Pumping Loss and Improving Thermal Efficiency through High Compression Ratio Over-Expanded Cycle Yu Wan, Aimin Du, Tongji University
9:40 a.m.	2013-01-1722	Valve Lift Profile Development and Optimization Using Matlab Iain Cameron, Bruce Minaker, Univ of Windsor
10:00 a.m.	2013-01-1740	CO₂ Reduction Potential through Improved Mechanical Efficiency of the Internal Combustion Engine: Technology Survey and Cost-Benefit Analysis Michael Howlett, Bernhard Enzi, Georg von Falck, Wolfgang Schoeffmann, Reinhold Haslinger, Mario Brunner, AVL LIST GmbH
10:20 a.m.	2013-01-1733	Design and Modeling of a Novel Internal Combustion Engine with Direct Hydraulic Power Take-off Kevin Zaseck, University of Michigan; Aristotelis Babajimopoulos, Stony Brook University; Matthew Brusstar, US Environmental Protection Agency; Zoran Filipi, Clemson University; Dennis Assanis, Stony Brook University
10:40 a.m.	2013-01-1727	The Free Piston Linear Generator - Development of an Innovative, Compact, Highly Efficient Range-Extender Module Florian Kock, DLR Institute of Vehicle Concepts; Johannes Haag, DLR Institute of Combustion Technology; Horst E. Friedrich, DLR Institute of Vehicle Concepts
	2013-01-1743	Effect of Flywheel Mass and Its Center of Gravity on Crankshaft Endurance Limit Safety Factor and Dynamics (Written Only -- No Oral Presentation) Nil Kanth Singh, Sanjay S. Patil, Tata Motors, Ltd.

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

Thursday, April 18

Cold Start and Transients

Session Code: PFL211

Room W2-68

Session Time: 1:00 p.m.

Classical SI combustion characterized by ignition by an external energy source that serves to control combustion phasing and a combustion rate that is determined by flame propagation. The scope of topics includes efficiency, emissions, knock, preignition, direct injection, ignition strategies, and fuel / additive effects. Papers describing experimental or applied simulation results are invited and will be placed in appropriate sub-sessions. Papers with an emphasis on the modeling aspects of combustion are encouraged to be submitted into PFL110 or PFL120 modeling sessions.

Organizers - Eric W. Curtis, Ford Motor Co.; Ouafae El Ganaoui-Mourlan, IFP School; Peter Moilanen, Ford Motor Co.; Hamidb Servati, ServoTech. Engineering

Time	Paper No.	Title
1:00 p.m.	2013-01-1309	Insights into Cold-Start DISI Combustion in an Optical Engine Operating at 7°C Petros Efthymiou, Martin H. Davy, Colin P. Garner, Graham K. Hargrave, John E.T. Rimmer, Loughborough University; Dave Richardson, Jaguar Land Rover
1:20 p.m.	2013-01-1304	An Investigation into Cold Start Emissions from Compression Ignition Engines using EU Legislative Emissions Test Procedures Piotr Bielaczyc, Joseph Woodburn, Andrzej Szczotka, Bosmal Automotive R&D Institute Ltd

1:40 p.m.	2013-01-1301	<i>Diesel Cold-Start Emission Control Research for 2015-2025 LEV III Emissions</i> Gary D. Neely, Jayant V. Sarlashkar, Darius Mehta, Southwest Research Institute
2:00 p.m.	2013-01-1307	<i>Investigation on Transient Emissions of a Turbocharged Diesel Engine Fuelled by HVO Blends</i> Cheng Tan, Hongming Xu, University of Birmingham; Shi-Jin Shuai, Tsinghua University; Akbar Ghafourian, Dai Liu, Jianyi Tian, University of Birmingham
2:20 p.m.	2013-01-1306	<i>Cold and Warm Start Characteristics using HVO and RME Blends in a V6 Diesel Engine</i> Dai Liu, Hongming Xu, Jianyi Tian, Cheng Tan, Birmingham Univ; Yanfei Li, Tsinghua University
2:40 p.m.	2013-01-1302	<i>Transient Emissions Characteristics of a Turbocharged Engine Fuelled by Biodiesel Blends</i> Jianyi Tian, Hongming Xu, Akbar Ghafourian, Dai Liu, Cheng Tan, Birmingham Univ; Shi-Jin Shuai, Tsinghua University
3:00 p.m.	2013-01-1303	<i>Improvement of Combustion Stability under Cold Ambient Condition by Mixture Control</i> Manabu Hasegawa, Toru Nishizawa, Yoshihiro Imaoka, Keiji Kawamoto, Atsushi Teraji, Shuichi Iio, Nissan Motor Co., Ltd.
	2013-01-1305	<i>The Effect of a Three-Way Catalytic Converter on Particulate Matter from a Gasoline Direct-Injection Engine During Cold-Start (Written Only -- No Oral Presentation)</i> Ian Whelan, David Timoney, William Smith, Univ. College Dublin; Stephen Samuel, Oxford Brookes University

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

Thursday, April 18

Powertrain Control & Calibration (Part 2 of 3) Powertrain Systems Control

Session Code: PFL300

Room W2-69

Session Time: 8:00 a.m.

This session covers powertrain control system and optimization processes related to achieving stringent market fuel economy, emissions, performance, reliability, and quality demands. Topics include the control, calibration, and diagnostics of the engine, powertrain, and supporting electromechanical subsystems related to energy management in conventional and hybrid operation.

Organizers - Feilong Liu, Delphi Corp.; Peter J. Maloney, MathWorks Inc.; Denise M. Rizzo, US Army TARDEC; Matti Vint, Ricardo Inc.

Chairpersons - Matti Vint, Ricardo Inc.

Time	Paper No.	Title
8:00 a.m.	2013-01-1746	<i>Development of a Motor Torque Distribution Strategy of Six-wheel-Driven Electric Vehicles for Optimized Energy Consumption</i> Seungjae Yun, Kyongsu Yi, Seoul National Univ; Seyoung Cheon, Yeogiel Yoon, Samsung Techwin

8:20 a.m.	2013-01-1751	Optimal Design Strategies for Different Hybrid Powertrain Configurations Assessed with European Drive Cycles Thomas Juergen Boehme, Bernd Becker, Michael Ruben-Weck, Matthias Roths Schuh, Alexander Boldt, Christoph Rollinger, Robert Butz, Heiko Rabba, IAV Automotive Engineering; Wolfgang Drewelow, University of Rostock
8:40 a.m.	2013-01-0349	Impacts of Two-Speed Gearbox on Electric Vehicle's Fuel Economy and Performance Guang Wu, Xing Zhang, Zuomin Dong, University of Victoria
9:00 a.m.	2013-01-0358	PHEV Cold Start Emissions Management Paul Chambon, Oak Ridge National Laboratory; Dean Deter, David Irick, Univ of Tennessee; David Smith, Oak Ridge National Laboratory
9:20 a.m.	2013-01-0347	Vehicle System Control for Start-Stop Powertrains with Automatic Transmissions Xiaoyong Wang, Ryan McGee, Ming Kuang, Ford Motor Co.
10:00 a.m.	2013-01-1747	Solutions of Hybrid Energy-Optimal Control for Model-based Calibrations of HEV Powertrains Thomas Juergen Boehme, Benjamin Frank, Matthias Schultalbers, IAV Automotive Engineering; Markus Schori, Bernhard Lampe, University of Rostock
10:20 a.m.	2013-01-1750	An Intelligent Alternator Control Mechanism for Energy Recuperation and Fuel Efficiency Improvement Venkatnarayanan Lakshminarasimhan, Tata Motors Ltd.; Gopal Athani, Tata Technologies Ltd.
10:40 a.m.	2013-01-0339	Electric Low Pressure Fuel Pump Control for Fuel Saving Matteo De Cesare, Marco Parotto, Federico Covassin, Stefano Sgatti, Magneti Marelli SpA Powertrain Division
11:00 a.m.	2013-01-0336	Multidimensional Measure of Perceived Shift Quality Metric for Automatic Transmission Applying Kansei Engineering Methods Byeong wook Jeon, Hyundai Motor Company; Sang-Hwan Kim, Heather Harrelson, University of Michigan - Dearborn
11:20 a.m.	2013-01-1748	Real-Time Optimal Energy Management of Heavy Duty Hybrid Electric Vehicles Dezong Zhao, Richard Stobart, Loughborough University
	2013-01-0337	An Application of Ant Colony Optimization to Energy Efficient Routing for Electric Vehicles (Written Only -- No Oral Presentation) Rami Abousleiman, Chrysler Group LLC; Osamah Rawashdeh, Oakland University
	2013-01-0340	A New Control Strategy of Wet Dual Clutch Transmission (DCT) Clutch and Synchronizer for Seamless Gear Preselect (Written Only - - No Oral Presentation) Mohammad Adhitya, Rashad Mustafa, Artur Plötner, Ferit Küçükay, IAE, TU Braunschweig
	2013-01-0357	Slip and Lock up Control of Torque Converter clutch at Launching Conditions and Its Temperature (Written Only -- No Oral Presentation) Zhenjie Liu, Yulong Lei, Hongpeng Zheng, Yao Fu, State Key Lab. of ASC, Jilin University; Xin Jiang, China FAW Group Corporation R&D Center
	2013-01-1753	Model-Based Design of a Plug-In Hybrid Electric Vehicle Control Strategy (Written Only -- No Oral Presentation) Jonathan King, Douglas Nelson, Virginia Tech

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Thursday, April 18

Powertrain Control & Calibration (Part 3 of 3) Emission Control

Session Code: PFL300

Room W2-69

Session Time: 1:00 p.m.

This session covers powertrain control system and optimization processes related to achieving stringent market fuel economy, emissions, performance, reliability, and quality demands. Topics include the control, calibration, and diagnostics of the engine, powertrain, and supporting electromechanical subsystems related to energy management in conventional and hybrid operation.

Organizers - Feilong Liu, Delphi Corp.; Peter J. Maloney, MathWorks Inc.; Denise M. Rizzo, US Army TARDEC; Matti Vint, Ricardo Inc.

Time	Paper No.	Title
1:00 p.m.	2013-01-0346	Immission Oriented Engine NO_x Control Christoph Rafetzeder, Johannes Kepler University Linz; Luigi del Re; Stephan Stadlbauer; Harald Waschl, Johannes Kepler University Linz
1:20 p.m.	2013-01-0352	A Post-Catalyst Control Strategy Based on Oxygen Storage Dynamics Michael Tomforde, IAV; Wolfgang Drewelow, University of Rostock; Peter Duenow, University of Wismar; Bernhard Lampe, University of Rostock; Matthias Schultalbers, IAV
1:40 p.m.	2013-01-0344	A Fast Crank Angle Resolved Zero-Dimensional NO_x Model Implemented on a Field-Programmable Gate Array Kenan Muric, Scania CV AB / Lund University; Per Tunestal, Lund University; Ola Stenlaas, Scania CV AB
2:00 p.m.	2013-01-0350	Application of Reference Governor Using Soft Constraints and Steepest Descent Method to Diesel Engine Aftertreatment Temperature Control Hayato Nakada, Toyota Motor Corporation; Gareth Milton, Peter Martin, Ricardo UK Ltd; Akiyuki Iemura, Akira Ohata, Toyota Motor Corporation
2:20 p.m.	2013-01-0356	A Semi-Physical NO_x Model for Diesel Engine Control Carole Quérel, Olivier Grondin, IFP Energies Nouvelles; Christophe Letellier, CORIA - Université de Rouen
2:40 p.m.	2013-01-0348	Transient Smoke Reduction Using a Hybrid Combination of Dimensional and Empirical Modeling Indranil Brahma, Bucknell Univ.
3:00 p.m.	2013-01-0341	Fuel Enrichment Control System by Catalyst Temperature Estimation to Enable Frequent Stoichiometric Operation at High Engine Speed/Load Condition Hiroyuki Nose, Toshiaki Inoue, Setsuo Katagiri, Akikazu Sakai, Takao Kawasaki, Manabu Okamura, Nissan Motor Co., Ltd.

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Thursday, April 18

Electric Motor & Power Electronics (Part 1 of 2)

Session Code: PFL104

Room W2-70

Session Time: 8:00 a.m.

Power electronics and electric motors are essential for improving vehicle efficiency through drivetrain electrification. Technologies that support high efficiency, high power density, and low cost motors and power modules are required for the success of vehicle electrification.

Organizers - Sergey P. Gladyshev, Michigan-Dearborn University; Laura Marlino, Oak Ridge National Laboratory; Constantine N. Raptis, Mark A. Theobald, GM Powertrain; Serdar Yonak, Infineon Technologies North America Corp.

Time	Paper No.	Title
8:00 a.m.	2013-01-1765	Development of Transverse Flux Motor with Improved Material and Manufacturing Method Daijiro Takizawa, Tadanobu Takahashi, Haruhiko Shimizu, Ryutaro Kato, Honda R&D Co., Ltd.
8:20 a.m.	2013-01-1757	Development of Rare Earth-saving Magnet Using Localized Diffusion Method Takayuki Higashi, Takehiro Miyoshi, Ryutaro Kato, Michihisa Kono, Masashi Inoue, Toshiyuki Nagumo, Takahiro Fukui, Kojiro Ohsaki, Honda R&D Co., Ltd.; Makoto Iwasaki, TDK Corporation
8:40 a.m.	2013-01-1758	Efficient Design Methodology of an All-Electric Vehicle Powertrain using Multi-Objective Genetic Optimization Algorithm Abdenour Abdelli, Fabrice Le Berr, Raouf Benlamine, IFP Energies Nouvelles
9:00 a.m.	2013-01-1760	Development and Testing of a Low Cost High Performance Hybrid Vehicle Electric Motor Deepak Hari, Christian Brace, Christopher Vagg, Sam Akehurst, University of Bath; Lloyd Ash, Richard Strong, Ashwoods Automotive
9:20 a.m.	2013-01-1762	Design and Characterization of an E-booster Driven by an High Speed Brushless DC Motor Stephane Tavernier, Samuel Equoy, Moving Magnet Technologies SA
9:40 a.m.	2013-01-1763	Development of Down-sized Motor Stator Ryosuke Utaka, Hiroshi Kaneiwa, Atsushi Umeda, DENSO Corp.; Tatsuhiko Mizutani, Akira Takasaki, Toyota Motor Corp; Mitsuru Kato, DENSO Corp.
10:00 a.m.	ORAL ONLY	Improving Traction Drive Performance with DC Bus Voltage Adaptation and Machine Winding Reconfiguration Lei Hao, General Motors

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

Thursday, April 18

Electric Motor & Power Electronics (Part 2 of 2)

Session Code: PFL104

Room W2-70

Session Time: 1:00 p.m.

Power electronics and electric motors are essential for improving vehicle efficiency through drivetrain electrification. Technologies that support high efficiency, high power density, and low cost motors and power modules are required for the success of vehicle electrification.

Organizers - Sergey P. Gladyshev, Michigan-Dearborn University; Laura Marlino, Oak Ridge National Laboratory; Constantine N. Raptis, Mark A. Theobald, GM Powertrain; Serdar Yonak, Infineon Technologies North America Corp.

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
1:00 p.m.	2013-01-1756	High Efficiency Isolated AC-DC Converter with Gradationally Controlled Voltage Inverter for On-Board Charger Takashi Kaneyama, Kazutoshi Awane, Mamoru Takikita, Naohisa Uehara, Ryota Kondo, Masaki Yamada, Mitsubishi Electric Corp.
1:20 p.m.	2013-01-1764	Development of a Smart Main Relay Assembly using IGBTs for xEV Battery System Taeyeon Lee, Byungsub Jung, HK Semitech Co., LTD.; Sang-Ryong Lee, Ho-Kyung Kim, Sa-Heun Wie, Dae-Hwan Kwon, Min-Chul Joo, Yura Corporation
1:40 p.m.	2013-01-1759	Development of an Integrated Electrified Powertrain for a Newly Developed Electric Vehicle Hirofumi Shimizu, Takahito Okubo, Izuho Hirano, Shigeaki Ishikawa, Makoto Abe, Nissan
2:00 p.m.	2013-01-1755	Model-Based Analysis of Cell Balancing of Lithium-ion Batteries for Electric Vehicles Zhenli Zhang, Johnson Controls; Brian Sisk, Johnson Controls Power Solutions
2:20 p.m.	ORAL ONLY	Wireless Charging Guideline, SAE TIR J2954: Performance, Safety and Interoperability Considerations for the Wireless Charging of Plug-In Vehicles Jesse Schneider, BMW AG
2:40 p.m.	ORAL ONLY	Wireless Charging: The Future of Electric Christopher Eric Borroni-Bird, Qualcomm Inc.
	2013-01-1761	Novel Operating Mode for DC-to-DC Converters in PHEVs (Written Only -- No Oral Presentation) Bashar Khasawneh, Maha Sabra, M. Zohdy, Oakland University

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