Tuesday, September 13

COMVEC 2011 Poster Session

Session Code: CV800

Room 2nd Floor Lobby  Session Time: 9:00 a.m.

Organizers - Nicole Iorfido, Sherry E. Kramer, SAE International

This session focuses on the principles, concepts and methods for the analysis and modeling of fluid power systems related to commercial on and off road vehicles. The session will include papers describing simulation approaches for the prediction of the overall system performance as well as contributions on the detailed modeling of fluid power components such as hydraulic pumps, motors and valves.

Organizers - Andrea Vacca, Purdue Univ.

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
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<tbody>
<tr>
<td>7:30 a.m.</td>
<td>2011-01-2278</td>
<td>Modeling of an Excavator System - Semi Empirical Hydraulic Pump Model</td>
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<tr>
<td>Paolo Casoli, Alvin Anthony, Universita di Parma; Manuel Rigosi</td>
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<tr>
<td>8:00 a.m.</td>
<td>2011-01-2272</td>
<td>Gerotor Pumps for Automotive Drivetrain Applications: A Multi Domain Simulation Approach</td>
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<tr>
<td>Wolfgang Schweiger, Werner Schoefmann, Magna Powertrain; Andrea Vacca, Purdue University</td>
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<tr>
<td>8:30 a.m.</td>
<td>ORAL ONLY</td>
<td>Implementation and testing of an innovative motion control system on a backhoe loader</td>
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<tr>
<td>Germano Franzoni, Parker Hannifin Corp.</td>
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Planned by Fluid Power and Hydraulics Group / Commercial Vehicle Activity

Tuesday, September 13

Fluid Power Modeling and Innovation

Session Code: CV505

Room 40  Session Time: 7:30 a.m.

This session focuses on the principles, concepts and methods for the analysis and modeling of fluid power systems related to commercial on and off road vehicles. The session will include papers describing simulation approaches for the prediction of the overall system performance as well as contributions on the detailed modeling of fluid power components such as hydraulic pumps, motors and valves.

Organizers - Andrea Vacca, Purdue Univ.

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Planned by Fluid Power and Hydraulics Group / Commercial Vehicle Activity

Tuesday, September 13

Increasing The Adoption of Electro-Hydraulics in the Commercial Vehicle Industry - (Panel)

Joint Panel with Fluid Power Committee

Session Code: CV403

Room 40  Session Time: 1:00 p.m.

A growing number of OEMs have adopted electrohydraulics for off-highway machine and mobile equipment to improve precision of control, efficiency of operation, and flexibility in packaging. Engineering teams especially at large OEMs have gained initial experience developing and integrating electrohydraulics through their first development projects. This panel discussion will provide a forum for OEMs, suppliers, and research institutes to share their insights and experiences in adopting electro-hydraulics, commercial and technical challenges, and emerging solutions.

Discussion topics will include:
Current trends in electrohydraulics technologies
Lessons learned from the first electrohydraulics-based products
Unique challenges faced by small and midsized OEM in ramping up electrohydraulics
Revamping engineer training for electrohydraulics development
**Tuesday, September 13**

**Advanced Transmission & Driveline Design & Analysis**

Session Code: CV311  
Room 40  
Session Time: 2:45 p.m.

Session C311 Advanced Transmission and Drivetrain Design & Analysis will have presentations on on-going design and analysis work on this very important element of drivetrain systems development.

**Organizers** - Richard W. Job, Richard W Job & Associates; Girish Parvate Patil, Caterpillar Tech. Center

<table>
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<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
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</table>
| 2:45 p.m.  | ORAL ONLY | Advanced Rotary Sealing of Axle Components for Extended Service and Life  
Quinn Collett, Trelleborg Sealing Solutions |
| 3:15 p.m.  | ORAL ONLY | Plastics in Driveline - Shifting into Overdrive  
Volker Plehn, DuPont Automotive |
| 3:45 p.m.  | 2011-01-2235 | Gear Shift Fork Stiffness Optimisation  
Rohit Kunal, Mahindra & Mahindra, Ltd. |
| 4:15 p.m.  | 2011-01-2238 | Lateral Vibration Prediction of Drivelines Having a Flexible Coupling  
Shannon K. Sweeney, Penn State-Erie |

Planned by Drivetrain, Powertrain and Transmissions Group / Commercial Vehicle Activity

**Drivetrain Powertrain NVH**

Session Code: CV312  
Room 41  
Session Time: 7:30 a.m.

This session is focused on analytical, experimental studies and developing solutions to noise and vibration problems of the powertrain and its components. Related topics include, but not limited to, engine NVH, mounts, accessories, fuel injection system, powertrain dynamics, pass by noise, transmission noise and vibration, gear and bearing noise.

**Organizers** - Alexander Gnesin, Antoun Calash, Navistar Inc.

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<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
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</table>
| 7:30 a.m.  | 2011-01-2239 | Determining Isolator Damping for Minimized Response from Impulse: A Theoretical Approach  
Shannon K. Sweeney, Penn State-Erie |
| 8:00 a.m.  | 2011-01-2242 | Gear Rattle Noise Prediction from Dynamic Simulation  
Amit J Bora, John Deere India Pvt. Ltd.; Robert White, Dalsang Chaudhari, John Deere, USA |
Tuesday, September 13

Advance Engine Component & Design & Analysis

Session Code: CV310

Room 41  Session Time: 1:00 p.m.

This session is focused on Advanced Engine Component / Sub-System / System Design, Development, Analysis, Testing and Validation. Related topics include, but not limited to, Base Engine Components 5C's, FEAD / Accessories, Fuel System, Air Management, Powertrain Dynamics, Gear Train, Valve Train, Bearings & Driveline Dynamics.

Organizers - Steven T. Ballard, Navistar; Antoun Calash, Navistar Inc.

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<tr>
<th>Time</th>
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<tr>
<td>1:00 p.m.</td>
<td>2011-01-2232</td>
<td>Development of a Structurally Optimized Heavy Duty Diesel Cylinder Head Design Capable of 250 Bar Peak Cylinder Pressure Operation Marc Megel, Barry Westmoreland, Guy Jones, Ford Phillips, Douglas Eberle, Mark Tussing, Southwest Research Institute; Nigel Yeomans, Grainger &amp; Worrall Ltd</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>2011-01-2306</td>
<td>FEA-Based Fatigue Life Prediction of a Notched CGI Component Xin Lei, Antoun Calash, John Cagney, Navistar Inc.</td>
</tr>
<tr>
<td>2:00 p.m.</td>
<td>2011-01-2233</td>
<td>Halogen Free Synthetic Elastomer Blend to Meet Properties of Fuel Hose Outer Cover (Return Line) Application Anandan Sivakumar, Raghvendra Gopal, Tata Motors, Ltd.</td>
</tr>
<tr>
<td></td>
<td>2011-01-2230</td>
<td>Piston Temperature Measurement Using Voltage Recorder and Numerical Simulation of the Temperature Field (Written Only -- No Oral Presentation) Zhiyong Zhang, Huazhong University of Science and Technology</td>
</tr>
<tr>
<td></td>
<td>2011-01-2231</td>
<td>Detailed Analysis of CG Variation Effect on Connecting Rod Design of a Turbocharged Diesel Engine (Written Only -- No Oral Presentation) Khalil Dilawar Nadaf, Milind V. Kulkarni, Vijay M. Mahangade, Mahindra Engineering Services; Dr.(Prof.) S. G. Joshi, Rajarambapu Institute of Technology</td>
</tr>
</tbody>
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Planned by Drivetrain, Powertrain and Transmissions Group / Commercial Vehicle Activity

Tuesday, September 13

Testing and Experimental Analysis of Chassis and Suspension / Vehicle-Driver Dynamics and Interaction

Session Code: CV206

Room 41  Session Time: 2:45 p.m.

Experimental studies are extremely valuable in better understanding the vehicle systems and sub-systems. Through testing and laboratory work one can substantially improve the design and performance of a vehicle, as well as validate computer models or theoretical assumptions. Examples of topics include experimental studies for trailer design, experimental testing for hybrid electric buses, tire-road pressure studies for heavy-vehicles.

Planned by Drivetrain, Powertrain and Transmissions Group / Commercial Vehicle Activity
Cabin Electronics and HMI

Session Code: CV406
Room 42/43  Session Time:  7:30 a.m.

The cabin of a commercial vehicle is a “perfect” place for electronics—safe from the elements of snow, ice and water. Electronics are the key to telling a driver what is going on with the vehicle, the engine, the transmission, the machine on the back of the truck. Electronics, through telematics, keep track of what the driver and vehicles are doing and where they are. Fuel economy is heavily influenced by the driver and feedback systems have been shown to improve driver behaviour and save fuel. Safety systems increase further the demand to provide instantaneous information of a critical nature to the driver. This session will look at current challenges for electronics in the cabin and the future of instrumentation and other systems.

Organizers -  Chinpai Jong, Daimler Trucks North America LLC

Time  Paper No.  Title

7:30 a.m.  ORAL ONLY  Specifying Usability Requirements for In-Cabin Information Devices
Anabel Beltran, Stoneridge Electronics North America; Marianella Aveledo, Facultad de Informática Universidad Politécnica

8:00 a.m.  2011-01-2256  Application of Human Factors and Cognitive Neuroscience Principles in the Design of Vehicle Information Displays
William H. Havins, Ph.D., Havins Designs

8:30 a.m.  2011-01-2258  Considerations for Implementing Telematics Solutions in Heavy, Mobile Equipment Markets
Terry Burchill, Todd Braun, Phoenix International Corporation

Planned by Chassis and Suspension Group / Commercial Vehicle Activity

Powertrain Electronics

Session Code: CV401
Room 42/43  Session Time:  1:00 p.m.

Powertrain Electronics play a key role in meeting today’s complex emissions and performance requirements, On-board Diagnostics, and proposed green house gas regulations. This session will explore the challenges and future prospects for powertrain controls. Papers are sought in the areas of: experience with 2010 On-Board Diagnostics; preparation for 2013 On-Board Diagnostics; integration with transmissions of all types (automated mechanical, automatic, hybrid electric); factory programming; service; remote control and reprogramming; software development and test; fleet management; and electronics architecture today and in the future.

Organizers -  Mehdi Ahmadian, Virginia Tech.; Brad Bean, Fame Automotive; Corina Sandu, Virginia Tech.
Hardware-in-the-Loop (HIL) Simulation - Testing Functions, System Integration, and Communication of Electronic Control Units (ECUs)

**Session Code:** CV407  
**Room 42/43**  
**Session Time:** 2:45 p.m.

Hardware-in-the-loop (HIL) simulation is the method used to test the functions, system integration, and communication of electronic control units (ECUs). The technical environment of the ECUs and interconnected system parts are simulated in HIL simulation. The main goal is to detect errors in ECUs. Once detected, the situation that produces the error can be reproduced whenever and however required. This session will discuss HIL applications in the Off-Highway and Commercial Vehicle Industry.

**Organizers:**  
Mark Thomas, Daimler Trucks North America  
Chad W. Harnish, dSPACE Inc.

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<td>2:45 p.m.</td>
<td>2011-01-2259</td>
<td>Predictive Engine Control with On-Board Fuel Efficiency Optimization Marc Allain, Detroit Diesel Corp.</td>
</tr>
<tr>
<td>3:15 p.m.</td>
<td>2011-01-2261</td>
<td>Experience with Using Hardware-in-the-Loop Simulation for Validation of OBD in Powertrain Electronics Software Jim Priest, Daimler Trucks North America</td>
</tr>
</tbody>
</table>

Planned by Electrical and Electronics Group / Commercial Vehicle Activity

Tuesday, September 13

Advanced Suspensions for On and Off-road Vehicles

**Session Code:** CV205  
**Room 44**  
**Session Time:** 7:30 a.m.

CV205 is focused on advanced and novel theoretical and experimental investigations of various on and off-road vehicle suspension systems. Papers that help with the advancement of suspension system design and manufacturing are welcome. Papers on suspension components and related systems will also be considered for this session.

**Session Time:** 7:30 a.m.

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Planned by Electrical and Electronics Group / Commercial Vehicle Activity

Tuesday, September 13

During the 2010 COMVEC Government and Industry panels, NHTSA research and development and supplier activities were introduced related to vehicle stability systems and potential regulations. In 2011, NHTSA is expected to release its NPRM regarding tractors and motorcoach regulations for enhanced stability requirements. The panel will review the NPRM details and what industry activities are being pursued to meet this anticipated and other future regulations, such as tire pressure monitoring, electronic data recorders and other technologies related to improving highway safety.

In parallel with the new vehicle product developments and regulations, new products and regulations regarding vehicles in service continues at the same pace. The panel will update the latest activities from FMCSA, CVSA, the broader connected vehicle initiatives for trucks, and changing vehicle inspection procedures due to CSA 2010. The panel will also look at OEM vehicle developments that may impact vehicle control systems and a look at what future changes are of interest to the fleets.

Organizers - Mehdi Ahmadian, Virginia Tech.; Brendan Chan, Bendix Commercial Vehicles; Alireza Farjoud, Virginia Tech.; Xinjie Zhang; Xinjie Zhang

Moderators - Nathaniel Beuse, National Hvy Traffic Safety Admin; Timothy Blubaugh, Truck Manufacturers Association; Richard John Conklin, Bendix; Alan Korn, Meritor Wabco Vehicle Control Systems; Robert Kreeb, NHTSA; Leigh S. Merino, Motor & Equipment Mfrs Association;

Panelists - Ross K Brown, Motile Robotics Inc.; Jason Pusey, Muthuvel Murugan, Dy Le, U.S. Army Research Laboratory; Shuang Chen, Changfu Zong, Lei He, Jilin University, Changchun China; Gang Yin, Chongqing Changan Automobile Company Ltd

Planned by Chassis and Suspension Group / Commercial Vehicle Activity

Tuesday, September 13


In parallel with the new vehicle product developments and regulations, new products and regulations regarding vehicles in service continues at the same pace. The panel will update the latest activities from FMCSA, CVSA, the broader connected vehicle initiatives for trucks, and changing vehicle inspection procedures due to CSA 2010. The panel will also look at OEM vehicle developments that may impact vehicle control systems and a look at what future changes are of interest to the fleets.

Organizers - Mark Iasiello, Heavy Duty Manufacturers Assn.; Paul Johnston, Meritor Wabco; Randall Petresh, Haldex Brake Systems Inc.; Alik L. Svenson, NHTSA; James Szudy, Bendix Commercial Vehicle Systems LLC

Moderators - Paul Johnston, Meritor Wabco Vehicle Control Systems

Panelists - Nathaniel Beuse, National Hvy Traffic Safety Admin; Timothy Blubaugh, Truck Manufacturers Association; Richard John Conklin, Bendix; Alan Korn, Meritor Wabco Vehicle Control Systems; Robert Kreeb, NHTSA; Leigh S. Merino, Motor & Equipment Mfrs Association;

Planned by Braking and Steering Group / Commercial Vehicle Activity
Tuesday, September 13

Energy Efficiency Optimization/Recovery (Joint session with the Chassis and Suspension Committee CV210)

Session Code: CV103
Room 45    Session Time: 7:30 a.m.

In modern commercial vehicles, the cost of operation is becoming a more important factor in design and engineering. As a result, the development of systems that reduce energy consumption and/or potentially recover energy (either mechanical or electrical) are gaining more momentum. The advancement of such systems is integral to efforts to reduce fuel consumption and increase vehicle efficiency. This session invites the submission of papers showcasing the latest development in such systems for commercial vehicles.

Organizers - Brendan Chan, Bendix Commercial Vehicles; Daniel Williams, TRW Commercial Steering Systems
Planned by Braking and Steering Group / Commercial Vehicle Activity; Chassis and Suspension Group / Commercial Vehicle Activity

Tuesday, September 13

Energy Efficiency Optimization/Recovery (joint with Braking and Steering CV103)

Session Code: CV210
Room 45    Session Time: 7:30 a.m.

In modern commercial vehicles, the cost of operation is becoming a more important factor in design and engineering. As a result, the development of systems that reduce energy consumption and/or potentially recover energy (either mechanical or electrical) are gaining more momentum. The advancement of such systems is integral to efforts to reduce fuel consumption and increase vehicle efficiency. This session invites the submission of papers showcasing the latest development in such systems for commercial vehicles.

Organizers - Mehdi Ahmadian, Virginia Tech.; Brendan Chan, Bendix Commercial Vehicles; David Herbert, Sun Hydraulics Corp.

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<tr>
<td>ORAL ONLY</td>
<td>Waste Heat Recovery in a Heavy Duty Diesel Engine</td>
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<td>Sandeep Singh, Rakesh Aneja, Kevin Sisken, Detroit Diesel Corp</td>
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<td>ORAL ONLY</td>
<td>140 and 160 ksi High Strength Low Alloy Steel characterization for CV</td>
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<td>frame rail application</td>
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<td>Pedro Cardenas, Metalsa</td>
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<td>ORAL ONLY</td>
<td>Accessory Power On Demand for Energy Savings and Vehicle Performance</td>
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<td>Robert A. Smithson, FallBrook Technologies Inc.</td>
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Planned by Chassis and Suspension Group / Commercial Vehicle Activity

Tuesday, September 13

Modeling of Chassis, Suspension, and Tires (part I)

Session Code: CV207
Room 45    Session Time: 1:00 p.m.

This session is dedicated to aspects related to chassis, suspension, and tire modeling and simulation as developed for and applied to vehicle systems. The applications of chassis, suspension, and tire modeling and simulation include but not limited to vehicle modeling, vehicle dynamic simulation analysis (handling, ride comfort, mobility, durability, etc.), and vehicle design.
### Tuesday, September 13

**Modeling of Chassis, Suspension, and Tires (part II)**

**Session Code:** CV207

**Room 45**

**Session Time:** 2:45 p.m.

This session is dedicated to aspects related to chassis, suspension, and tire modeling and simulation as developed for and applied to vehicle systems. The applications of chassis, suspension, and tire modeling and simulation include but not limit to vehicle modeling, vehicle dynamic simulation analysis (handling, ride comfort, mobility, durability, etc.), and vehicle design.

#### Organizers
Corina Sandu, Anake Umsrithong, Virginia Tech.; Xinjie Zhang

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<tr>
<td>2:45 p.m.</td>
<td>2011-01-2168</td>
<td>Parabolic Leaf Spring Fatigue Considering Braking Windup Evaluations</td>
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<td>Murathan Soner, OlgunCelik Company; Metin Guven, Daimler Trucks North America LLC; Nilay Guven, Tolga Erdogus, Olguncelik Company; Mustafa Karaagac, Olguncelik; Ahmet Kanbolat, Olguncelik Company</td>
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<td>3:15 p.m.</td>
<td>2011-01-2170</td>
<td>Design and Validation of the Integrated Wheel Hub</td>
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<td>EunHo Lee, YongSoo Lee, Hyundai-Kia Motors</td>
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<td>3:45 p.m.</td>
<td>2011-01-2169</td>
<td>A Model for Combined Tire Cornering and Braking Forces with Anisotropic Tread and Carcass Stiffness</td>
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<td>Konghui Guo, Nan Xu, Dang Lu, Jie Yang, ASCL, Jilin University</td>
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<td>4:15 p.m.</td>
<td>2011-01-2171</td>
<td>New Attempts on Vehicle Suspension Systems Modeling and Its Application on Dynamical Load Analysis</td>
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<td>Qingmin Huang, Hunan University; Jin Huang, Georgia Institute of Technology; Aiguo Cheng, Hunan University</td>
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The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00188, and also individually. To purchase visit collections.sae.org

Planned by Chassis and Suspension Group / Commercial Vehicle Activity
Modeling of Chassis, Suspension, and Tires (part III)

Session Code: CV207

Room 45 Session Time: 4:45 p.m.

This session is dedicated to aspects related to chassis, suspension, and tire modeling and simulation as developed for and applied to vehicle systems. The applications of chassis, suspension, and tire modeling and simulation include but not limit to vehicle modeling, vehicle dynamic simulation analysis (handling, ride comfort, mobility, durability, etc.), and vehicle design.

Organizers - Corina Sandu, Anake Umsrithong, Virginia Tech.; Xinjie Zhang

Time Paper No. Title

4:45 p.m. 2011-01-2172 Development and Implementation of a Warp Chassis Model
Michael Arant, NTRCI - Clemson University

5:15 p.m. 2011-01-2174 Derivation of Extreme Static Durability Load Cases for FEA Based Vehicle Strength Evaluation
Abhijit Vishnu Londhe, Mahindra & Mahindra, Ltd.; Suhas Kangde, Mahindra & Mahindra Ltd

2011-01-2173 Soil Stress State Under Loads of Commercial Vehicles (Written Only -- No Oral Presentation)
Jaroslaw Pytka, Lublin University of Technology

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00188, and also individually. To purchase visit collections.sae.org

Planned by Chassis and Suspension Group / Commercial Vehicle Activity

Tuesday, September 13

Global Executive Leadership Panel: Engine & Engine Component Manufacturers Challenges to meet CO2 Reduction and Fuel Economy Improvement Goals

Session Code: CV901

Room 46/48/50/51 Session Time: 10:00 a.m.

Engine manufacturers, as well as their suppliers, will face many challenges with the need for improvements in various technologies required to meet goals of CO2 reductions and fuel economy improvements over the next decade. This panel discussion will bring forward the perspective of the Lead Technical Officers for some of the large engine or engine component manufacturers on these challenges. Topics should include areas such as: accessory parasitic loss reduction; reducing, managing and recovering waste energy, improving the combustion process and dealing with global regulation requirements.

Organizers - Wilfried Achenbach, Daimler Trucks North America LLC; Patrick Charbonneau, Navistar Inc.; Landon K. Grogan, Daimler Trucks North America LLC

Moderators - Wilfried Achenbach, Daimler Trucks North America LLC

Panelists - Elmar Boeckenhoff, Daimler Trucks North America LLC; John L. Cagney, Navistar; Wayne Eckerle, Cummins Inc.; Thomas Lengenfelder, Robert Bosch GmbH;

Tuesday, September 13

56th Annual L. Ray Buckendale Lecture

Session Code: CV801

Room 46/48/50/51 Session Time: 1:30 p.m.

Organizers - Elizabeth Carey, Cummins Inc.

Time Paper No. Title
Electronics Executive Panel

**Session Code:** CV904  
**Room:** 46/48/50/51  
**Session Time:** 4:45 p.m.

Electronics will play a key role in improving fuel economy, fuel efficiency and reducing greenhouse gases such as CO2. Often, the electronics involved will impact safety; therefore, industry and government driven regulations for ISO 26262 development processes will need to be followed. Component suppliers will require sophisticated hardware and software, working together in multiple computers. Vehicle OEMs, whether on-road or off-road, will be looking to make all of this work effectively at the vehicle level and produce measurable results for end-user customers. The vehicle is part of the overall infrastructure of roads and the goal of moving freight efficiently. Wireless communications, fuel purchase programs, and navigation with traffic enhancements will be a part of the future.

- **Organizers:** Deborah M. Freund, Federal Motor Carrier Safety; Alain P. Jablonowski, Robert Bosch LLC; Paul Menig, Daimler Trucks North America LLC
- **Moderators:** Larry Kendrick, MathWorks Inc.
- **Panelists:** Juergen Hollstein, Deere & Company; Michael Joerg Ruf, Continental Automotive GmbH; Helmut Schelling, Vector Informatik GmbH; Andrew Wertkin, MKS Inc.

Tuesday, September 13

**Sustainability**

**Session Code:** CV709  
**Room:** 47  
**Session Time:** 7:30 a.m.

In its most basic definition, sustainability means “meeting the needs of the present without compromising the ability of future generations to meet their own needs.” Manufacturers are going green, not only to reduce regulatory costs, but also to attract the next generation of talent for their workforces. This session covers bio-materials, sustainable fuels (for example hydrogen), and lifecycle planning.

- **Organizers:** Richard Miller, NIOSH; Radhey Kushwaha, Satya Panigrahi, Univ. of Saskatchewan
- **Time** | **Paper No.** | **Title**
--- | --- | ---
8:00 a.m. | 2011-01-2299 | **Long Term Hydrogen Vehicle Fleet Operational Assessment**
Steven Eick, US Army TARDEC; Rene Parker, Greg Whiting, Select Engineering Services

**ORAL ONLY**

- **Title:** Influence of Flax Diameter on Mechanical Properties of Biocomposite
  Pradosh Kumar Panigrahi, Univ. of Saskatchewan; Satya Panigrahi, University of Saskatchewan; Anisur Rahman; Radhey Kushwaha, Univ. of Saskatchewan

*Planned by Total Vehicle Group / Commercial Vehicle Activity*

Tuesday, September 13

**Engine Exhaust Aftertreatment & Integration (part I)**

**Session Code:** CV304  
**Room:** 47  
**Session Time:** 1:00 p.m.

This session discusses technologies that address the treatment of engine exhaust emissions to meet commercial vehicle requirements. The scope covers developments in catalysis, materials, controls, and integration with the complete engine/vehicle system.
Tuesday, September 13

Engine Exhaust Aftertreatment & Integration (part II)

Session Code: CV304

Room 47  Session Time: 2:45 p.m.

This session discusses technologies that address the treatment of engine exhaust emissions to meet commercial vehicle requirements. The scope covers developments in catalysis, materials, controls, and integration with the complete engine/vehicle system.

Organizers - Brad Adelman, Navistar; Edward M. Derybowski, Navistar Inc.

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<tr>
<td>2:45 p.m.</td>
<td>2011-01-2200</td>
<td>DPF Regeneration Response: Coupling Various DPFs with a Thermal Regeneration Unit to Assess System Behaviors</td>
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<td>Adam Kotrba, Ling Bai, Argun Yetkin, Robert Shotwell, Timothy Gardner, Tenneco Inc</td>
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<tr>
<td>3:15 p.m.</td>
<td>2011-01-2203</td>
<td>A Dual - Reductant HC LNC Approach to Commercial Vehicle Tier 4 Final Solutions</td>
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<tr>
<td>3:45 p.m.</td>
<td>2011-01-2207</td>
<td>SOLID SCR&lt;sup&gt;®&lt;/sup&gt;: Demonstrating an Improved Approach to NOx Reduction via a Solid Reductant</td>
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<td>Figen Lacin, Adam Kotrba, Granville Hayworth, Henry Sullivan, Tenneco Inc; Marek Tatur, FEV Inc; Jason Jacques, Umicore; Dean Tomazic, Hoon Cho, FEV Inc</td>
</tr>
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<td>James McCarthy Jr, Eaton Corp; Yong Yue, Budhadeb Mahakul, Xinquan Gui, John Deere &amp; Co; Hanlong Yang, Evan Ngan, Eaton Corp; Kenneth Price, Umicore Autocat USA Inc</td>
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</table>
The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00189, and also individually. To purchase visit collections.sae.org

Planned by Drivetrain, Powertrain and Transmissions Group / Commercial Vehicle Activity

Tuesday, September 13

Hybrid Systems And Vehicle Dynamics

Session Code: CV208

Room 49

Session Time: 7:30 a.m.

The papers in this session are to present the attendees with the latest vehicle dynamics technologies in regards to various commercial vehicle chassis systems. Attendees should find this session informative in learning about the latest state-of-the-art technology updates.

Organizers - Brendan Chan, Bendix Commercial Vehicle Systems LLC; Benjamin Duprey, Mechanical Simulation Corp.; Tjong T. Lie; Jeffrey S. Nibbelink, Link Manufacturing, Ltd.; Saied Taheri, Virginia Polytechnic Inst. & State Univ.

Time Paper No. Title

8:00 a.m. 2011-01-2176 Pneumatic Regenerative Engine Braking Technology for Buses and Commercial Vehicles
Cho-Yu Lee, Hua Zhao, Tom Ma, Brunel University

8:30 a.m. ORAL ONLY Four Quarters of Vehicle Model
Liborio Bortoni-Anzures, M. B. Ortiz-Moctezuma, Roger Miranda, Universidad Politecnica de Victoria

Planned by Chassis and Suspension Group / Commercial Vehicle Activity

Tuesday, September 13

Hybrid Panel & Hybrid Service Issues

Session Code: CV708

Room 49

Session Time: 1:00 p.m.

Hybrid vehicles are rapidly entering the commercial and consumer marketplaces. However, hybrids introduce safety and service issues many Owners and Service Technicians are not familiar with. Components and systems may be so new existing standards need to be located or new standards developed. Technicians may need to learn new skills, acquire new tools and their service bays modified. Learn as solutions and problems are shared involving servicing hybrid vehicles.

Organizers - Mark N. Pope, General Motors LLC; Arnold Taube, John Deere Company
Moderators - Mark N. Pope, General Motors Company
Panelists - Russell George Christ, Deere & Company; Mark Quarto, General Motors Company; Arnold Taube, DEERE AND CO;

Planned by Total Vehicle Group / Commercial Vehicle Activity

Tuesday, September 13

Service Issues & Plug-In Hybrids

Session Code: CV707

Room 49

Session Time: 2:45 p.m.

Vehicle designs are being electrified at a rapid pace and their motive systems are incorporating a variety of electro-combustion systems. Few Service Technicians have experience in working with, nor diagnosing, such products. Learn how world-class designs are effectively applying Condition Based Maintenance, Prognostics and Machine Health concepts to these new and complicated products while keeping Owners and Service Technicians productive, safe and happy.
### Tuesday, September 13

**Fuel Economy Improvement & CO2 Reduction (Part I)**

**Session Code:** CV302  
**Room 52/53**  
**Session Time:** 7:30 a.m.

This session covers the engine/powertrain/drivetrain technologies and design/analysis/testing techniques related to fuel economy improvement and CO2 reduction. It covers steady-state or transient performance for different applications (on/off-road, heavy/light-duty, etc.). The topics may include energy policy/analysis, engine waste heat recovery, friction reduction, thermal management, aftertreatment solutions for fuel savings.

**Organizers:**  
Mark N. Pope, General Motors LLC; Arnold Taube, John Deere Company

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
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</table>
| 7:30 a.m.     | 2011-01-2192  | Option for a European Certification Procedure for CO\textsubscript{2} Reduction of Heavy Duty Vehicles  
Antonius Kies, Stefan Hausberger, Martin Rexeis, TU Graz, Institute for ICE & Thermodyn. |
| 8:00 a.m.     | ORAL ONLY     | Path to 50% Engine Thermal Efficiency in a Heavy Duty Diesel Engine  
Kevin Sisken, Detroit Diesel Corp; Rakesh Aneja, Sandeep Singh PhD, Igor Gruden, Detroit Diesel Corp. |
| 8:30 a.m.     | ORAL ONLY     | Look-ahead powertrain control to tame aggressive drivers and improve fuel efficiency  
Zhijun Tang, Benjamin Saltsman, Omkar Halbe, Amol Patil, Michael Nowak, Eaton Corporation |
|               | 2011-01-2190  | Impact of Idling on Engine Temperatures in Winter Conditions (Written Only -- No Oral Presentation)  
Marius-Dorin Surcel, Rob Jokai, FPINNOVATIONS |

Planned by Total Vehicle Group / Commercial Vehicle Activity

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### Tuesday, September 13

**Fuel Economy Improvement & CO2 Reduction (Part II)**

**Session Code:** CV302

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This session covers the engine/powertrain/drivetrain technologies and design/analysis/testing techniques related to fuel economy improvement and CO2 reduction. It covers steady-state or transient performance for different applications (on/off-road, heavy/light-duty, etc.). The topics may include energy policy/analysis, engine waste heat recovery, friction reduction, thermal management, aftertreatment solutions for fuel savings.

Organizers - Xubin Song, Eaton Corp.; Brian Walker, AVL Powertrain Engineering Inc.; Qianfan (Harry) Xin, Navistar Inc.

Time | Paper No. | Title
--- | --- | ---
1:00 p.m. | 2011-01-2189 | Systems Engineering Approach for the Design of a Low Carbon, Fuel Efficient, Diesel Engine Powertrains for Commercial Vehicles
Jeffrey Seger, Long-Kung Hwang, Josh Shao, Thomas Grana, Steve Charlton, Cummins, Inc.

Soduk Lee PhD, Byungho Lee, Houshun Zhang PhD, Chien Sze PhD, Lisandro Quinones, James Sanchez, Environmental Protection Agency

Alberto Boretti, Univ. of Ballarat; Houshsng Masudi, Texas A&M Univ; Joseph Scalzo, Scalzo Automotive Research Pty Ltd, Melb

Planned by Drivetrain, Powertrain and Transmissions Group / Commercial Vehicle Activity

Tuesday, September 13

Human Factors

Session Code: CV706

Room 52/53 | Session Time: | 1:00 p.m.
--- | --- | ---

The Human Factors, Safety, and Occupant Safety are important related topics in commercial vehicles. These sessions are meant to cover the broad range of topics of interest to those researchers, engineers, and managers integrating these ideas into tomorrows vehicles and fleets.

Organizers - Radhey Kushwaha, Univ. of Saskatchewan; Richard Miller, Richard Current, NIOSH; Jude Liu, Pennsylvania State Univ.

Time | Paper No. | Title
--- | --- | ---
2:45 p.m. | 2011-01-2293 | FMCSA’s Advanced System Testing Utilizing a Data Acquisition System on the Highway

3:15 p.m. | 2011-01-2294 | Characterization of Commercial Vehicle Crashes and Driver Injury
Thomas Klena II, TRW Automotive US LLC; Daniel Blower PhD, Univ. of Michigan-Trans. Research Inst; Kurt Fischer P.E., TRW Automotive US LLC; John Woodrooffe, Univ. of Michigan-Trans. Research Inst

3:45 p.m. | 2011-01-2295 | Sleeper Cab Occupant Protection in Heavy Truck Rollovers
Keith Friedman, John Hutchinson, Dennis Mihora, Friedman Research Corporation; Sri Kumar, Daniel Strickland, Safety Research Institute LLC

4:15 p.m. | 2011-01-2302 | Field Performance Analysis of a Tractor and a Large Square Baler
Jude Liu, Benjamin Kemmerer, Pennsylvania State Univ.

Planned by Total Vehicle Group / Commercial Vehicle Activity
Tuesday, September 13

Alternate Fuels

Session Code: CV308

Room 54/56/58  Session Time: 7:30 a.m.

High volatility in petroleum pricing, finite resources and increased concerns with climate changes have intensified search for alternative fuels and their application to transport vehicles and other equipment. This session will address that challenges presented by alternative fuels as potential replacement of petroleum fuels, specifically in terms of engine system interactions on performance and emissions.

Organizers - Radhey Kushwaha, Univ. of Saskatchewan; Jude Liu, Pennsylvania State Univ.; Satya Panigrahi, Univ. of Saskatchewan; Girish Parvate Patil, Caterpillar Tech. Center

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<tr>
<th>Time</th>
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<tr>
<td>7:30 a.m.</td>
<td>2011-01-2223</td>
<td>Characterization and Potential of Dual Fuel Combustion in a Modern Diesel Engine</td>
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<td>Fredrik Königsson, Per Stalhammar, AVL Sweden; Hans-Erik Angstrom, Royal Institute of Technology</td>
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<tr>
<td>8:00 a.m.</td>
<td>2011-01-2226</td>
<td>Transesterification of Waste Cooking Oil in Presence of Crushed Seashell as a Support for Solid Heterogeneous Catalyst</td>
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<td>Essam Oun Al-Zaini, John Olsen, Tuan Huy Nguyen, Adesoji Adesina, University of New South Wales</td>
</tr>
<tr>
<td>8:30 a.m.</td>
<td>2011-01-2224</td>
<td>Experimental Performance and Emission Analysis of Vegetable oil Ester Operated C.I. Engine for various Injection Pressure</td>
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<td>Sundarapandian S, Sethu Institute of Technology</td>
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<tr>
<td>8:30 a.m.</td>
<td>2011-01-2227</td>
<td>Use of Bio-Ethanol and Bio-Diesel The Key Solution for a More Sustainable Road Transport (Written Only -- No Oral Presentation)</td>
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<td>Alberto Boretti, Univ. of Ballarat</td>
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Planned by Drivetrain, Powertrain and Transmissions Group / Commercial Vehicle Activity

Tuesday, September 13

Wiring Harness Challenges

Session Code: CV409

Room 54/56/58  Session Time: 1:00 p.m.

Approximately 1 computer per year has been added to typical commercial vehicles over the last 10-15 years. Each computer has anywhere from 4 signal/power connections to upwards of 160 for an engine control. This has placed significant challenges to add wires to commercial vehicles. Routing, clipping, protection are just some of the issues. New processes and tools are available to improve the process. More people need to understand the process of building and delivering a harness, and the tools involved. This session is open to any topic related to the challenges of wiring harnesses and power cables for commercial vehicles, and tools and processes for design and manufacture of harnesses, and installation in truck plants.

Organizers - Jesus Gomez, Scott Larson, Daimler Trucks North America

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<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
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<tr>
<td>1:00 p.m.</td>
<td>ORAL ONLY</td>
<td>The increased challenge of Commercial Vehicle Wiring</td>
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<td></td>
<td>Jesus Gomez, Daimler Trucks North America</td>
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<td>1:30 p.m.</td>
<td>ORAL ONLY</td>
<td>Commercial Vehicle Connector Challenges</td>
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<td>Robin D. Reed, Deutsch Industrial/LADD Industries</td>
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<tr>
<td>2:00 p.m.</td>
<td>2011-01-2270</td>
<td>Standardization of Wiring Harness Data Formats between Truck OEMs and Suppliers</td>
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<td>Andres Font, Daimler AG</td>
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<tr>
<td>2:30 p.m.</td>
<td>ORAL ONLY</td>
<td>Challenges of Wire Harness Construction for Commercial Vehicles</td>
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<td>Matt Harrington, Aees</td>
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</tbody>
</table>
Advancements in Commercial Vehicle Grease

Session Code: CV606
Room 55/57                  Session Time: 1:00 p.m.

Greased components in commercial equipment are subjected to serious abuse and all types of weather. Virtually all on-road and off-road heavy-duty equipment operate under some form of heavy-load conditions. The extreme impact and conditions common to this type of equipment force pressures on the equipment components that pivot, rotate, or change position; relying on grease to prevent metal-to-metal contact or “pound-out”. New advancements and technologies are taking place in the Industry for improved protection to reduce these extreme amounts of wear and corrosion.

Organizers - Karl Dedolph III, D3 Consulting Inc.
Panelists - Gareth Fish, The Lubrizol Corporation; Gian Fagan, Chevron Lubricants; Kim Smallwood, Citgo Petroleum Corp.;

Planned by CV Maintenance Group / Commercial Vehicle Activity

Advancements in Cleanable & Re-usable Filtration Technologies

Session Code: CV605
Room 55/57                  Session Time: 2:45 p.m.

Operations today of commercial vehicles have to incorporate filtration procurement, inventory and disposal. Advancements in filtration technologies promote cost saving benefits and R.O.I for lube, air, fuel, coolant, hydraulic, and particulate filters in addition to efficiencies, capacities, and permeability.

Organizers - Karl Dedolph III, D3 Consulting Inc.
Panelists - Don Sell, K&N Engineering Inc.; Doug Dwyer, Pure Power Lubricants Inc.; Pino Pathak, Filter Technologies Group; Jeff Vandenabeele, MANN+HUMMEL USA; Steve Faria, System 1 Filtration Products;

Planned by CV Maintenance Group / Commercial Vehicle Activity

Management and Product Development (Written Only Session)

Session Code: CV300
Room TBD                  Session Time:

This session explores management techniques, organizational structures, and product development processes that are intended to facilitate or improve engineering product development.

Organizers - Timothy Prochnau, Navistar Inc.

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<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
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<tr>
<td>2011-01-2181</td>
<td>Qianfan (Harry) Xin, Navistar, Inc.</td>
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Planned by Drivetrain, Powertrain and Transmissions Group / Commercial Vehicle Activity
## Total Vehicle Paper Offers (Written Only Session)

**Session Code:** CV700  
**Room:** TBD  
**Session Time:** 

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<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
</tr>
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</table>
| 7:30 a.m.    | 2011-01-2279| Software programmed protections (soft protection system) (Written Only -- No Oral Presentation)  
### Amruta Kulkarni, Mahindra Engineering Services; Swati Bakuliya; Aparna Deokar |
| 8:00 a.m.    | 2011-01-2280| Failure Mode and Effects Analysis (FMEA): A Comparison Between VDA-Approach Versus QS-9000 (Written Only -- No Oral Presentation)  
### Ralf Fritzsche |

Planned by Total Vehicle Group / Commercial Vehicle Activity

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### Wednesday, September 14

## Engine System Design, Analysis, and Testing (part I)

**Session Code:** CV305  
**Room:** 40  
**Session Time:** 7:30 a.m.

This session covers all system-level engine technologies and design/analysis/testing techniques related to engine system design. It includes the areas of emissions, fuel economy, combustion, calibration/control, fuel systems, valvetrain integration, thermodynamic cycles, air/charging systems, EGR systems, and engine brakes. It also includes system-level integration issues for the engine/powertrain, and steady-state/transient performance for on/off-road and heavy/light-duty applications.

**Organizers:** Timothy Prochnau, Navistar Inc.; Qianfan (Harry) Xin, Navistar

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<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
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| 7:30 a.m.    | 2011-01-2179| Overview of Diesel Engine Applications for Engine System Design - Part 2: General Performance Characteristics  
### Qianfan (Harry) Xin, Navistar Inc. |
| 8:00 a.m.    | 2011-01-2212| Automated System Validation Using Telematics  
### Bill Leisenring, Control-Tec LLC; Caetano Calviti, Navistar Inc |
| 8:30 a.m.    | 2011-01-2222| EGR and Swirl Distribution Analysis Using Coupled 1D-3D CFD Simulation for a Turbocharged Heavy Duty Diesel Engine  
### Subramanian Ramanathan, AVL Powertrain Engineering Inc.; Anthony Hudson, Joshua Styron, Ford Motor Co; Brian Baldwin, AVL Powertrain Engineering Inc; David Ives, Dan Ducu, Ford Motor Co |
### Qianfan (Harry) Xin, Navistar Inc. |
|              | 2011-01-2215| Muffler Design, Development and Validation for Acoustic Advantages on Automotive Vehicles (Written Only -- No Oral Presentation)  
### Shitalkumar Ramesh Shah, Gangadhar GS, Volvo India Pvt Ltd |

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00190, and also individually. To purchase visit collections.sae.org

Planned by Drivetrain, Powertrain and Transmissions Group / Commercial Vehicle Activity
Wednesday, September 14

Engine System Design, Analysis, and Testing (part II)

Session Code: CV305

Room 40

Session Time: 1:15 p.m.

This session covers all system-level engine technologies and design/analysis/testing techniques related to engine system design. It includes the areas of emissions, fuel economy, combustion, calibration/control, fuel systems, valvetrain integration, thermodynamic cycles, air/charging systems, EGR systems, and engine brakes. It also includes system-level integration issues for the engine/powertrain, and steady-state/transient performance for on/off-road and heavy/light-duty applications.

Organizers - Timothy Prochnau, Navistar Inc.; Qianfan (Harry) Xin, Navistar

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<th>Time</th>
<th>Paper No.</th>
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<tr>
<td>1:15 p.m.</td>
<td>2011-01-2216</td>
<td>Thermodynamic Benefits of Opposed-Piston Two-Stroke Engines</td>
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<td>Randy E. Herold, Michael H. Wahl, Gerhard Regner, James U. Lemke,</td>
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<td>Achates Power, Inc.; David E. Foster, Univ. of Wisconsin - Madison</td>
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<td>1:45 p.m.</td>
<td>2011-01-2221</td>
<td>The Achates Power Opposed-Piston Two-Stroke Engine: Performance</td>
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<td>and Emissions Results in a Medium-Duty Application</td>
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<td>Gerhard Regner, Randy E. Herold, Michael H. Wahl, Eric Dion, Fabien</td>
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<td>Redon, David Johnson, Brian J. Callahan, Shauna McIntyre, Achates</td>
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<td>Power Inc</td>
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<td>2:15 p.m.</td>
<td>2011-01-2214</td>
<td>Physical Modeling of Automotive Turbocharger Compressor: Analytical</td>
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<td>Approach and Validation</td>
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<td>Mehdi Nakhjiri, Peter Pelz, Berthold Matyschok, Technische Universität</td>
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<td>Darmstadt; Lorenz Däubler, Andreas Horn, IAV GmbH</td>
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<td>2011-01-2211</td>
<td>A Basis for Estimating Mechanical Efficiency and Life of a Diesel</td>
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<td>Engine from its Size, Load Factor and Piston Speed (Written Only -- No</td>
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<td>Oral Presentation)</td>
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<td>P. A. Lakshminarayanan, Ashok Leyland; Kedar Kanase, Kirloskar Oil</td>
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<td>Engines Ltd</td>
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<td>2011-01-2217</td>
<td>Solving Valve Train Wear Problems in Medium Speed High BMEP Diesel</td>
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<td>Engines (Written Only -- No Oral Presentation)</td>
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<td>Nitin P. Gokhale, Shabir Sheikh, Yogesh Aghav, Kirloskar Oil Engines</td>
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<td>Ltd.; M N Kumar, Kirloskar Oil Engine Ltd</td>
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Planned by Drivetrain, Powertrain and Transmissions Group / Commercial Vehicle Activity

Wednesday, September 14

Managing Battery Power

Session Code: CV404

Room 41

Session Time: 7:30 a.m.

Commercial vehicles need battery power to start the engine, supply demand when the instantaneous demands of the alternator/generator are exceeded, and supply significant power during the 10 hours per day that a driver is not driving. Further challenges arise from anti-idling regulations, hybrid and electric vehicles, lift gates, telematics systems. This session will explore challenges and developments in battery chemistry, monitoring batteries, managing electrical power, quiescent current that drains batteries, battery maintenance procedures.

Organizers - Steve Nadig, Daimler Trucks North America LLC; Joe Steiber, Southwest Research Institute

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<th>Time</th>
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<tr>
<td>7:30 a.m.</td>
<td>2011-01-2250</td>
<td>Dual Battery System for Commercial Plug-In Hybrid Electric Vehicles</td>
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<td>Farzad Ahmadkhanlou, Abas Goodarzi, US Hybrid Corporation</td>
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Wednesday, September 14

Green, Safe & Connected - Architecture Challenges for Commercial Vehicles - (Panel)

Session Code: CV412

Room 41  Session Time: 1:15 p.m.

While electronics are key in addressing emission and operating economics challenges, system cost, quality, and operator training are becoming pressing concerns. A flexible electrical and electronic architecture presents opportunities to address these concerns including the ability to implement integrated control functions for better operator efficiency. This session provides a forum to discuss benefits of a flexible architecture, successful implementations, and technology trends.

Organizers - Georg Sobczyk, Dr. Glenn R. Widmann, Delphi Automotive Systems LLC
Moderators - Dr. Glenn R. Widmann, Delphi Automotive Systems LLC
Panelists - Wes Mays, Peterbilt Motors Co.; Dr. Rainer O. Mueller-Finkeldei, Daimler Trucks Europe; Douglas D. Turner, Dana Holding Corporation; Ron Zhang, Oshkosh Truck Corp.;

Planned by Electrical and Electronics Group / Commercial Vehicle Activity

Model Based Design & Embedded Software Development

Session Code: CV408

Room 42/43  Session Time: 7:30 a.m.

To reduce development time and improve quality while delivering technical innovations, companies use math-based models and a process known as Model-Based Design for developing embedded controllers. Engineers use an executable specification to iterate quickly through design concepts using simulation and without relying on physical prototypes. The specification then serves as the basis for early verification, hardware-in-the-loop test, and production code generation.

Organizers - Wensi Jin, MathWorks Inc.

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<th>Time</th>
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<tr>
<td>7:30 a.m.</td>
<td>2011-01-2265</td>
<td>Integration of Model-Based Development throughout the System and Software Development Lifecycle</td>
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<td>Christina Perdikoulias, Brad Sommerfeld, MKS, A PTC Company</td>
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<tr>
<td>8:00 a.m.</td>
<td>2011-01-2266</td>
<td>Strategies for ISO 26262 Functional Safety Compliance</td>
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<td>ORAL ONLY</td>
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<td>Christoph Braeuchle, MKS Software, Inc.</td>
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</table>
Active Safety Systems - Recent Developments in Advanced Driver Assistance Systems

Session Code: CV402
Room 42/43
Session Time: 1:15 p.m.

Active safety systems such as lane departure warning, drowsy driver detection, forward collision warning, autonomous emergency braking, stopped vehicle detection, pedestrian detection, sensor fusion, infrastructure safety developments, blindspot detection, reverse object detection are gaining importance in both passenger and commercial automotive market. The effectiveness of some of these systems were recently reported by NHTSA. This session will explore the recent developments in different advanced driver assistance systems using radar, lidar, camera, sensor fusion, HMI including prioritizing warnings to the drivers, different warning modalities, standardizing icons for active safety systems etc.

Organizers - Ananda Pandy, Bendix Commercial Vehicle; Joe Steiber, Southwest Research Institute; Anthony Moore, Daimler Trucks North America

Time | Paper No. | Title
-----|-----------|-----------
1:15 p.m. | 2011-01-2245 | Field Demonstration of Heavy Vehicle Camera/Video Imaging Systems
1:45 p.m. | ORAL ONLY | Best Practices for In-Vehicle Network Development
2:15 p.m. | 2011-01-2244 | Multi Layered Maps for Enhanced Environmental Perception
2:45 p.m. | 2011-01-2246 | ORAL ONLY

Using the Eaton VORAD Onboard Radar System as a Tool for Vehicle Accident Reconstruction

Joseph Michael Tremblay, Richard Ziernicki, Mark Kittel, Knott Laboratory LLC

Planned by Electrical and Electronics Group / Commercial Vehicle Activity

Wednesday, September 14

Integrated Braking, Steering and Chassis Safety Systems

Session Code: CV101
Room 44
Session Time: 7:30 a.m.

This session will present work on vehicle braking and steering, and how these functions can be integrated with each other and with other functions to allow enhanced vehicle safety.

Organizers - Mark A. Eisenbarth, Volvo Trucks North America; Don Long, R H Sheppard Co. Inc.; Daniel Williams, TRW Commercial Steering Systems

Time | Paper No. | Title
-----|-----------|-----------
Wednesday, September 14

PFL Open Forum - HDEO Future Concerns & PC-11 Timeframe

Session Code: CV802

Room 44

The objective of this open forum is to discuss worldwide concerns about Heavy-Duty Engine Oil for both on-highway and off-road applications, as well as future API/ACEA/JASO oil development timelines and mutual technical alignment. In particular, issues like biodiesel compatibility, fuel economy due to GHG regulation, engine durability, oil service life or performance retention, future oil development process and cost allocation, backward compatibility, replacement engine tests for existing categories, and other industry requirements will be addressed. Overall resource optimization may be an appropriate focus when looking at the big picture with various contributing factors.

Panelists - Hind Abi-Akar, Caterpillar Inc.; Mike G. Brown, SK Lubricants; Todd Coady, Hicks Oils and Hicksgas Inc.; Hiroshi Fujita; James A. McGeehan, Chevron; Bengt Otterholm, Volvo Group; Mary Galic Raguz, Lubrizol Corp.; Keith Selby, Shell Global Solutions Ltd.; Gregory Shank, MACK VOLVO POWERTRAIN; Jerry C. Wang, Chevron Oronite Pte, Ltd.; Jerry C. Wang, Chevron Oronite Pte, Ltd.;

Wednesday, September 14

Advanced Chassis Control and Rollover

Session Code: CV201

Room 45

This session, organized by the SAE Chassis & Suspension Committee, provides a technical discussion platform on one of the current popular topics in automotive engineering: advanced control systems for enhancing stability and safety of road vehicles, especially heavy vehicles. It includes various chassis control systems, vehicle roll dynamics and stability control, handling performance and directional stability.

Organizers - Brad Bean, Fame Automotive; Benjamin Duprey, Mechanical Simulation Corp.; Brad Hopkins, Virginia Tech

Time | Paper No. | Title
--- | --- | ---
7:30 a.m. | 2011-01-2151 | Electronic Stability Control as Standard on Heavy Duty Emergency Vehicles: A Simulation Analysis
Brendan Chan, Bendix Commercial Vehicle Systems LLC

8:00 a.m. | ORAL ONLY | Forklift Vehicle Dynamic System for Increased Productivity and Safety
Oliver Wildner, Bosch Engineering GmbH
Wednesday, September 14

Off-Road Chassis Systems and Suspension / All/Multi-Wheel Drive Vehicle Dynamics and Performance

Session Code: CV202

This session presents modeling, simulation, design, and test technology of chassis and suspension as developed for and applied to off-road vehicles. It is applicable to automotive, mining and construction equipments, and military domain. This session may be targeted to various application domains such as vehicle modeling, simulation, analysis, design, fatigue, durability/reliability, mobility, ride comfort, handling, vibration, and power management.

Organizers - Lin Li, Liebherr Mining Equipment Co; Tjong T. Lie; Vladimir V. Vantsevich, Lawrence Technological Univ.; Brendan Chan, Bendix Commercial Vehicles

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<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
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<tbody>
<tr>
<td>8:30 a.m.</td>
<td>2011-01-2149</td>
<td><strong>Optimal Direct Yaw Controller Design for Vehicle Systems with Human Driver</strong></td>
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<td></td>
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<td>Seyed Hossein Tamaddoni, Virginia Tech.; Saied Taheri, Virginia Polytechnic Inst &amp; State Univ; Mehdi Ahmadian, Virginia Tech</td>
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<tr>
<td>9:00 a.m.</td>
<td>2011-01-2152</td>
<td><strong>Balance of Static and Dynamic Rollover Thresholds for a Three-Axle Vehicle</strong></td>
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<td>Xiaobo Yang, Oshkosh Corporation</td>
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<td></td>
<td>2011-01-2150</td>
<td><strong>Consideration of Steering Control Method Corresponding to Electric Vehicle Age</strong> (Written Only -- No Oral Presentation)</td>
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<td>Hiromichi Nozaki, Kogakuin Univ.; Mitsuhiro Makita, Nissan Research Center; Takahiko Yoshino, Kogakuin Univ.</td>
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</table>

Planned by Chassis and Suspension Group / Commercial Vehicle Activity

Time Paper No. Title
1:15 p.m. 2011-01-2155 **Strength Prediction of Bumper by Correlating FEA with Test**
Jingheng Wen, E-Z-Go Textron; Michael Neely, E-Z-GO Textron
1:45 p.m. 2011-01-2153 **Steer Laws for Steerable Trailer Axles to Reduce Tire Wear**
Peijun Liu, Julien Caroux, The Goodyear Tire & Rubber Company
2:15 p.m. 2011-01-2160 **Axle Drive and Brake-Based Traction Control Interaction**
Vladimir V. Vantsevich, Lawrence Technological Univ.; Gianantonio Bortolin PhD, Volvo Construction Equipment AB
2:45 p.m. 2011-01-2156 **Estimation of Sideslip Angles of a Volvo A25E Articulated All-Wheel Drive Hauler Based on GPS/INS Measurements**
Ulf Andersson; Gianantonio Bortolin; Staffan Backén; Thomas Gustafsson
3:15 p.m. 2011-01-2157 **Terrain Truck: Control of Wheel Rotational Velocities and Tire Slippages**
Timothy Wilson, Matthew Siero, Christopher Kopchick, Lawrence Technological University; Vladimir V. Vantsevich, Lawrence Technological Univ.

2011-01-2154 **Load Calculations for Slewing Bearings with Eccentric Radial Loads** (Written Only -- No Oral Presentation)
Noboru (Bob) Kashino, Antex Corp.
2011-01-2158 **4WID/4WIS Electric Vehicle Modeling and Simulation of Special Conditions** (Written Only -- No Oral Presentation)
Jingwen Liu, Changfu Zong, Yuqian Ma, Jilin University
Wednesday, September 14


Session Code: CV903
Room 46/48/50/51  Session Time: 9:45 a.m.

This panel discussion will explore how commercially available vehicles can be used as a platform to service the military and homeland defense requirements in the need to bring more applications to market quicker and at significantly reduced costs to conform with new DoD budget constraints. And how technology insertion can benefit by using commercial vehicles as their base platforms.

Organizers - Gregory Fredericksen, Oshkosh Corp.; Gary Schmiedel, Oshkosh Corporation; Paul F. Skalny, US Army Research & Development
Moderators - Paul F. Skalny, US Army Research & Development
Panelists - Robert Combs, Allison Transmission; Graham Compton, Product Director: Non-Standard Vehicles (PM Force Projection); Lemmart Jonsson, Eaton Corp.; Gary Schmiedel, Oshkosh Corporation; Michael A. Stone, Michigan National Guard;

Wednesday, September 14

Challenges in the Commercial Vehicle Arena relative to the need for Improved Fuel Economy / Freight Efficiency (Vehicle Focus)

Session Code: CV902
Room 46/48/50/51  Session Time: 3:45 p.m.

Commercial Vehicle manufacturers and their customers will be looking at opportunities for trucks to haul more freight with less fuel and at lower overall costs. This panel will address vehicle aerodynamics; integration of components such as engines, transmissions, axles and hybrid systems; trailer improvements and enhanced logistics.

Organizers - Wilfried Achenbach, Landon K. Grogan, Daimler Trucks North America LLC
Moderators - Landon K. Grogan, Daimler Trucks North America LLC
Panelists - Stephen Bruford, Navistar Inc.; Steve Duley, Schneider National Inc.; Tony Greszler, Volvo Powertrain; Alan Pearson, Daimler;

Wednesday, September 14

Engine Exhaust Aftertreatment & Integration (part III)

Session Code: CV304
Room 47  Session Time: 7:30 a.m.

This session discusses technologies that address the treatment of engine exhaust emissions to meet commercial vehicle requirements. The scope covers developments in catalysis, materials, controls, and integration with the complete engine/vehicle system.

Organizers - Brad Adelman, Navistar; Edward M. Derybowski, Navistar Inc.

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00192, and also individually. To purchase visit collections.sae.org
Planned by Chassis and Suspension Group / Commercial Vehicle Activity
Wednesday, September 14

Engine Exhaust Aftertreatment & Integration (part IV)

Session Code: CV304
Room 47

This session discusses technologies that address the treatment of engine exhaust emissions to meet commercial vehicle requirements. The scope covers developments in catalysis, materials, controls, and integration with the complete engine/vehicle system.

Organizers - Brad Adelman, Navistar; Edward M. Derybowski, Navistar Inc.

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<th>Time</th>
<th>Paper No.</th>
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<tr>
<td>7:30 a.m.</td>
<td>2011-01-2210</td>
<td>Diesel Particulate Filter Burner System Modeling, Control and Diagnosis</td>
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<td>Xiaopeng Fang, Dan Mastbergen, Clark Paterson, Woodward Inc</td>
</tr>
<tr>
<td>8:00 a.m.</td>
<td>2011-01-2208</td>
<td>Performance Characterization of a Thermal Regeneration Unit for Exhaust Emissions Controls Systems</td>
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<td>Adam J. Kotrba, Argun Yetkin, Bradley Gough, Arda Gundogan, Tenneco Inc; Dan Mastbergen, Clark Paterson, Woodward</td>
</tr>
<tr>
<td>8:30 a.m.</td>
<td>2011-01-2198</td>
<td>DPF Acoustic Performance: An Evaluation of Various Substrate Materials and Soot Conditions</td>
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<td>Joshua T. Hicks, William E. Hill, Adam J. Kotrba, Tenneco Inc</td>
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The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00189, and also individually. To purchase visit collections.sae.org

Planned by Drivetrain, Powertrain and Transmissions Group / Commercial Vehicle Activity

Wednesday, September 14

Hybrid & Electric

Session Code: CV303
Room 49

The combination of internal combustion engines and electric/hydraulic motors in Hybrid powertrains requires architectural and functional changes of the drive train as well as its sophisticated energy management.

This session is aimed to discuss latest developments in regard to energy recuperation and storage (hydraulic, electric), power train architectures, control systems, combustion engine strategies (incl. exhaust emissions related aspects, incl. certification), and vehicle application.

Organizers - Gary McConeghey, Sauer-Danfoss; Uwe Zink, Corning Inc.

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<th>Time</th>
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Planned by Drivetrain, Powertrain and Transmissions Group / Commercial Vehicle Activity
Hybrids and Electric Vehicles

Session Code: CV405
Room 49

Hybrid and electric vehicles are quickly growing in the market, even for commercial vehicles. There are over 6,000 commercial buses running in New York, Seattle, Toronto and elsewhere with hybrids. A major company just committed to purchasing 25,000 electric vehicles for its "commercial" fleet. Packages are delivered by both hybrid and electric vans on Long Island. Managing the motors, the generators and the batteries in such vehicles is a complex task done with multiple computers and large cables. This session is open to papers and presentations on the electrical/electronic challenges of hybrids and electric vehicles. Other topics can include the contribution of electronics, software and algorithms to the fuel economy benefits. Hybrid certification is another topic of recent interest.

Organizers - Scott Larson, Daimler Trucks North America; Joe Steiber, Southwest Research Institute

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<th>Time</th>
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<tr>
<td>1:15 p.m.</td>
<td>2011-01-2251</td>
<td>Challenges and Opportunities in Adoption of Hybrid Technologies in Medium and Heavy Duty Applications</td>
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<td>Monika A. Minarcin, Navistar, Inc.; Eric Rask, Argonne National Laboratory; Matthew R. Smith, Navistar, Inc.</td>
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<tr>
<td>1:45 p.m.</td>
<td>2011-01-2255</td>
<td>Flexible High Voltage Architecture for Commercial Hybrid Vehicles</td>
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<td>Matthew Busdiecker, Benjamin Saltzman, Douglas Hughes, Eaton Corp</td>
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<td>2:15 p.m.</td>
<td>2011-01-2252</td>
<td>Ground Fault Detection for Flexible High Voltage Power Systems</td>
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<td>Aravind Mathysaraja, Eaton Truck Component Operations</td>
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<td>2:45 p.m.</td>
<td>2011-01-2253</td>
<td>Impact of Model-Based Lithium-Ion Battery Control Strategy on Battery Sizing and Fuel Economy in Heavy-Duty HEVs</td>
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<td>Tae-Kyung Lee, Zoran S. Filipi, Univ. of Michigan</td>
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<tr>
<td>3:15 p.m.</td>
<td>ORAL ONLY</td>
<td>RunWise®: An Advanced Series Hybrid Drive System</td>
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<td>Yisheng Zhang, Parker Hannifin Corp.</td>
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The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00191, and also individually. To purchase visit collections.sae.org

Planned by Drivetrain, Powertrain and Transmissions Group / Commercial Vehicle Activity

Wednesday, September 14
Vehicle Aerodynamics and Drag Reduction

Session Code: CV701
Room 52/53
Session Time: 7:30 a.m.

This session will investigate emerging and future aerodynamic solutions and technologies that have the potential to transform the commercial vehicle industry. Aerodynamic drag reduction remains an untapped resource in the pursuit of increased fuel economy for all classes of commercial vehicles. Specific areas of interest are single unit vehicles, boattail treatments, active flow control systems and truck/cab aerodynamic designs.

Organizers - Adam Golembeski, Solus-Solutions and Technologies; Dustin Sebring, Solus; Richard M. Wood, Solus-Solutions and Technologies; Drew Landman, Old Dominion Univ

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<th>Time</th>
<th>Paper No.</th>
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<tr>
<td>7:30 a.m.</td>
<td>ORAL ONLY</td>
<td>Evaluation of CFD in the SAE J1252 Wind-Averaging Standard</td>
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<tr>
<td>8:00 a.m.</td>
<td>2011-01-2284</td>
<td>Aerodynamic Effects of Roof Deflector and Cab Side Extenders for Truck-Trailer Combinations</td>
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<td>Helena Martini, Chalmers Univ. of Technology; Björn Bergqvist, Linus Hjelm, Volvo 3P; Lennart Löfdahl, Chalmers Univ. of Technology</td>
</tr>
<tr>
<td>8:30 a.m.</td>
<td>2011-01-2285</td>
<td>Continuing Cooling Performance Investigation of a Rear Mounted Cooling Package for Heavy Vehicles</td>
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<td>Lisa Larsson, Lennart Löfdahl, Chalmers Univ. of Technology; Erik Dahl, Torbjörn Wiklund, Volvo 3P</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>ORAL ONLY</td>
<td>Commercial Vehicle Aerodynamic Sensitivity with Reynolds Number</td>
</tr>
<tr>
<td>8:00 a.m.</td>
<td>2011-01-2283</td>
<td>Drag Reduction of a Modern Straight Truck (Written Only -- No Oral Presentation)</td>
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<td>Drew Landman, Matthew Cragun, Mike McCormick, Old Dominion Univ; Richard Wood, Solus-Solutions and Technologies</td>
</tr>
<tr>
<td>8:30 a.m.</td>
<td>2011-01-2286</td>
<td>Analysis of Numerical Simulation on Reducing Drag of Van Body Truck (Written Only -- No Oral Presentation)</td>
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<td>Song Li, 1. State Key Laboratory of Automobile Dy</td>
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Planned by Total Vehicle Group / Commercial Vehicle Activity

Wednesday, September 14

Fuel Economy Improvement Solutions and Technologies

Session Code: CV702
Room 52/53
Session Time: 1:15 p.m.

This session will explore new, innovative fuel efficient technologies that can be achieved in the 2015 timeframe to improve medium and heavy duty vehicle fuel economy, reduce pollutants. This session will feature manufacturers and government agencies discussing the development of advanced conventional and powertrain technologies, aerodynamics, idle reduction and other technologies to improve efficiency and emissions for medium- and heavy-duty trucks.

Organizers - Richard M. Wood, Solus-Solutions and Technologies

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<th>Time</th>
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<tr>
<td>1:15 p.m.</td>
<td>ORAL ONLY</td>
<td>Technology Path to Meet Future Fuel Economy Targets in the CV Segment</td>
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<td>Alexander Freitag, Robert Bosch LLC</td>
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Wednesday, September 14

Hydraulic Hybrid

Session Code: CV501
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Session Time: 7:30 a.m.

Although not as well known as their electric siblings, hydraulic hybrid vehicles have made strong progress in recent years. Hydraulics may in fact be the better efficiency solution for many vehicle applications. This session will examine hydraulic hybrid vehicles from research through production ready phases including: Recent technical advances, fleet experiences, collaboration between the EPA, Universities and Industry.

Organizers - David Herbert, Sun Hydraulics Corp.

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<th>Time</th>
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<tr>
<td>7:30 a.m.</td>
<td>2011-01-2273</td>
<td>Investigation of Power Management Strategies for a Multi-Actuator Hydraulic Hybrid Machine System</td>
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<td>Rohit Hippalgaonkar, Joshua Zimmerman, Purdue Univ; Monika Ivantysynova, Purdue Univ-West Lafayette</td>
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<tr>
<td>8:00 a.m.</td>
<td>2011-01-2274</td>
<td>Model-Based Approach to Estimate Fuel Savings from Series Hydraulic Hybrid Vehicle: Model Development and Validation</td>
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<td>Chinmaya Patil, Michaelolson, Benjamin Morris, Clark Fortune, Eaton Corporation; Bapiraju Surampudi, Joe Redfield, Southwest Research Institute; Heather Gruenewald, US Army RDECOM TARDEC</td>
</tr>
<tr>
<td>8:30 a.m.</td>
<td>2011-01-2275</td>
<td>Hydraulic Hybrid Powertrain-In-the-Loop Integration for Analyzing Real-World Fuel Economy and Emissions Improvements</td>
</tr>
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<td>Fernando Tavares, Rajit Johri, Ashwin Salvi, Univ. of Michigan; Simon Baseley, Bosch Rexroth Corp; Zoran S. Filipi, Univ. of Michigan</td>
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<tr>
<td>9:00 a.m.</td>
<td>ORAL ONLY</td>
<td>Hydraulic Hybrid System Optimization Using Design For Six Sigma</td>
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<td>Paul Schwark, Bosch Rexroth AG</td>
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Planned by Fluid Power and Hydraulics Group / Commercial Vehicle Activity

Wednesday, September 14

Cooling System Design and Analysis Related to Engine Thermal Protection, Emissions & Fuel Economy

Session Code: CV301
Market conditions and government legislation are driving the demand for more power, better fuel economy and lower emissions, which in turn is imposing stringent challenges to the cooling system design. This session will examine the trends in alternative cooling system design and implementation strategies including but not limited to non-traditional system layout, new cooling media (i.e., chiller systems), electronic controls, exotic materials, advanced heat exchanger design, and more...

**Organizers -** Eduardo Goncalves, Steve P. Gravante, Navistar Inc.; Steve Strepek, Navistar

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<tr>
<th>Time</th>
<th>Paper No.</th>
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<tbody>
<tr>
<td>1:15 p.m.</td>
<td>2011-01-2184</td>
<td>Neural Network-based Optimal Control for Advanced Vehicular Thermal Management Systems</td>
</tr>
<tr>
<td>1:45 p.m.</td>
<td>2011-01-2183</td>
<td>Modeling of Thermophoretic Soot Deposition and Stabilization on Cooled Surfaces</td>
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<tr>
<td>2:15 p.m.</td>
<td>2011-01-2182</td>
<td>Cooling Airflow System Modeling in CFD Using Assumption of Stationary Flow</td>
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<tr>
<td>2:45 p.m.</td>
<td>2011-01-2185</td>
<td>Effective Utilization of a System Level Simulation Tool by Proper Selection of an Engine Radiator using the Validated Empirical cum Analytical Approach</td>
</tr>
<tr>
<td>3:15 p.m.</td>
<td>2011-01-2186</td>
<td>Engine Cooling System - Components, Opportunities and Challenges (ORAL ONLY)</td>
</tr>
<tr>
<td></td>
<td>2011-01-2187</td>
<td>A Design of Cooling Water Jacket Structure and an Analysis of Its Coolant Flow Characteristics for a Horizontal Diesel Engine (Written Only -- No Oral Presentation)</td>
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**Organizers -** Al E. Cohn, Pressure Systems International Inc.

Planned by Drivetrain, Powertrain and Transmissions Group / Commercial Vehicle Activity
Wednesday, September 14

U.S. DOT Connected Vehicle program

Session Code: CV607

Room 55/57 Session Time: 1:15 p.m.

The development and deployment of a fully connected transportation system that makes the most of multi-modal, transformational applications requires a robust, underlying technological platform. The platform is a combination of well-defined technologies, interfaces, and processes that, combined, ensure safe, stable, interoperable, reliable system operations that minimize risk and maximize opportunities. This session highlights the research being conducted by the U.S. Department of Transportation on connected vehicle safety technologies for commercial vehicles. This includes Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) systems currently under development.

Organizers - Guy Walenga, Bridgestone Americas Inc.
Panelists - Cem Hatipoglu, Federal Motor Carrier Safety; Hartman Kate, Research and Innovative Technology Admin; Tom Kearney, Federal Highway Administration; Alrik L. Svenson, NHTSA;

Planned by CV Maintenance Group / Commercial Vehicle Activity

Wednesday, September 14

Vehicle Fuel Economy Testing and Evaluation (Written Only Session)

Session Code: CV704

Room TBD Session Time:

This session will explore test techniques, methods and technologies that are used in the evaluation of the fuel efficiency of light, medium and heavy commercial vehicles. A specific focus is the blending of methods and the use of SAE described methodologies.

Organizers - Richard M. Wood, Solus-Solutions and Technologies; Radhey Kushwaha, Univ. of Saskatchewan

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<tr>
<td>2011-01-2291</td>
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<td>Development of a Fuel Consumption Test Procedure for Representative Urban Duty Cycles (Written Only -- No Oral Presentation)</td>
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<td>Marius-Dorin Surcel, Jan Michaelsen, Yves Provencher, FPINNOVATIONS</td>
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<tr>
<td>2011-01-2292</td>
<td></td>
<td>Development of Fuel Consumption Test Method Standards for Heavy-Duty Commercial Vehicles in China (Written Only -- No Oral Presentation)</td>
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<td>Tianlei Zheng, Yuefu Jin, Zhao Wang, CATARC; Michael Wang, Argonne National Laboratory; Freda Fung, Fatumata Kamakate, ICCT; Huiming Gong, Energy Foundation</td>
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Planned by Total Vehicle Group / Commercial Vehicle Activity