WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:17 PM

Tuesday, April 8

Controls for Hybrids and Electric Powertrains Part 1 of 3

Session Code PFL750

Room 140 A Session 8:00 a.m.

This session covers propulsion control processes related to achieving stringent market fuel economy, emissions, performance, reliability, and quality demands of hybrid and electric powertrains. Topics include the control, calibration, and diagnostics of the engine, powertrain, and supporting electromechanical subsystems related to energy management. (For Chargers and Charging Electronics Architecture/Design see AE600)

Organizers - Sumanth Reddy Dadam, Ford Motor Company; Quan Zhou, Univ. of Birmingham; Di Zhu, Ford Motor Company

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Energy Harvesting from Vehicle Braking and Vibration Using an Axial Flux Generator Sunny Rong, Jerry Zuo, Jianuo Huang, Xiaofan Li, University of Michigan
8:30 a.m.	2025-01-8582	Bi-Level Control Co-Design for Parallel Electric-Hydraulic Hybrid Vehicles Amirhossein Taaghi, Yongsoon Yoon, Oakland University
9:00 a.m.	2025-01-8577	Study on Optimal Shift Schedule for Single-shaft Parallel PHEVs Considering Driver's Performance Expectation Xiaofeng Yin, Hong Li, Xihua University; Jinhong Zhang, Jeely Auto Research Institute Co., Ltd.; Yulong Lei, Jilin University
9:30 a.m.	2025-01-8585	Torque Control of Electrified Powertrains with a degree of freedom in Actuator Acceleration and Output Torque. Krishna Chaitanya Madireddy, Abdulquadri Banuso, Nadirsh Patel, Hangxing Sha, Stellantis; Shishir Khanal, TEC Group

Planned by Hybrid and Electric Propulsions Committee / Energy and Propulsion Activity

Tuesday, April 8

Fuel Injection and Sprays Part 1 of 3

Session Code PFL320

Room 140 A Session 1:30 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 gasoline, diesel and alternative fuel sprays and fuel injection equipment are encouraged.

Organizers - Tarek Abdel-Salam, East Carolina University; Essam El-Hannouny, Argonne National Laboratory; Brian Gainey, Clemson University; Felix Leach, University of Oxford; Alessandro Montanaro, STEMS - CNR

Chairperson - Dan DelVescovo, Oakland University

Time	Paper No.	Title

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
1:30 p.m.	2025-01-8466	Effects of Ambient and Injection Conditions on a High-Pressure Hydrogen Jet for Direct Injection in ICE Alessandro Montanaro, Ezio Mancaruso, Giovanni Meccariello, Luigi Allocca, STEMS - CNR
2:00 p.m.	2025-01-8454	Effects of Jet Caps on Hydrogen Piezoelectric Injectors for DI Applications: Experiments and 3D-CFD Simulations Nicolò Pavan, Universita di Modena e Reggio Emilia; Giuseppe Cicalese, R&D CFD Srl; Luca Gestri, Dumarey Flowmotion Technologies SRL; Stefano Fontanesi, Sebastiano Breda, Universita di Modena e Reggio Emilia; Marco Mechi, Sara Vongher, Dumarey Flowmotion Technologies SRL; Lucio Postrioti, Universita degli Studi di Perugia; Giacomo Buitoni, STSE SRL; Manuel Martino, Universita degli Studi di Perugia
2:30 p.m.	2025-01-8456	Optical Investigation of DI Hydrogen Jet Development and Jet-Wall Interactions Under Engine-Like Conditions Miaoxin Gong, Marcus Lundgren, Lund University; Jan Eismark, Volvo Group Trucks Technology; Mats Andersson, Chalmers University of Technology
3:00 p.m.	ORAL ONLY	Development of Smart and Effective Boundary Conditions for Hydrogen Injections within Internal Combustion Engine Simulations Michele Battistoni, Jacopo Zembi, Dario Lando, Universita degli Studi di Perugia
3:30 p.m.	2025-01-8463	Numerical Investigation of Injector Cap Design on Hydrogen Jet Characteristics Abdullah Zaihi, Kevin Moreno Cabezas, Xinlei Liu, Moez Ben Houidi, Hao Wu, King Abdullah University of Science & Technology; Abdullah AlRamadan, Emre Cenker, Balaji Mohan, Saudi Aramco; William Roberts, Hong Im, King Abdullah University of Science & Technology
4:00 p.m.	2025-01-8459	Numerical Investigation on Behaviors of Under-Expanded Hydrogen Jets: Influence of Straight Nozzle Geometry Lang Jiahui, Yanfei Li, Lubing Xu, Ma Xiao, Shijin Shuai, Tsinghua University

Planned by Fuels and Lubricants / Energy and Propulsion Activity

Tuesday, April 8

Transmission Systems/ Drive Unit

Session Code PFL610

Room 140 B Session 8:00 a.m.

This session features papers on the automotive transmissions of different types. It includes development of new transmission concepts, transmission enhancements and the advancement of the state of the art of transmission system design & integration with the objective of improving the transmission efficiency, NVH, durability and shift pleaseability.

Organizers - Pradeep Attibele, FCA US LLC; Gang Chen; Hussein Dourra, Magna International; Hong Jiang, Ford Motor Company; Mark Levine, Stellantis; Dongxu Li, General Motors LLC; Berthold Martin, FCA US LLC; Azadeh Narimissa, General Motors; Paul Otanez, General Motors LLC; Darrell Robinette, Darrell Robinette, Michigan Technological Univ.; Zhe Xie, Stellantis NV; Bangalore Yashwanth, AAM

Chairperson - Hong Jiang, Ford Motor Company; Azadeh Narimissa, General Motors

Time	Paper No.	Title

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:19 PM

Time	Paper No.	Title
8:00 a.m.	2025-01-8508	Systematic Design Considerations of Motor Selections for EV Powertrain Abstract Ehsan Movahed, Jonathan Godbehere, Yijiang Jia, Ansys Inc.
8:30 a.m.	ORAL ONLY	Implementation of Drivetrain Disconnect Units in Battery Electric Vehicles Thomas Wellmann, FEV NA Inc.
9:00 a.m.	2025-01-8506	Design and Diagnostics Features of Automatic Transmissions of the GM 6T Family Bakhtiyor Turakulov, Tashkent State Transport University
9:30 a.m.	2025-01-8513	A Method for Optimal Clutch Torque Neutralization for Quick Disengagement on Suspended Multispeed Transmissions Using System-Identification and Linear Quadratic Regulation Rohit Koli, Nathan Smith, Dana Inc.

Planned by Electrified and Conventional Transmission and Driveline Com / Energy and Propulsion

Tuesday, April 8

Fuel and Combustion Fundamentals

Session Code PFL311

Room 140 B Session 1:30 p.m.

Organizers - Abdullah Bajwa, Southwest Research Institute; Stefania Esposito, University Of Bath; Derek Splitter, Daanish Tyrewala, Oak Ridge National Laboratory

Chairperson - Derek Splitter, Oak Ridge National Laboratory

Time	Paper No.	Title
1:30 p.m.	2025-01-8449	Comparison of Gasoline Particulate Indices Using U.S. Market Gasoline Samples Sarah Goralski, Pat Geng, Jon Dozier, General Motors LLC; Aron Butler, U.S. Environmental Protection Agency
2:00 p.m.	2025-01-8451	Effects of Critical Compression Ratio on Rating Gasoline Knock Propensity Christopher Kolodziej, Alexander Hoth, Argonne National Laboratory
2:30 p.m.	2025-01-8452	Knock Assessment in Wankel Rotary Engine Adopting Low Octane Rating Fuels Sirio Brunialti, Giovanni Vorraro, James Turner, Mani Sarathy, King Abdullah University of Science & Technology
3:00 p.m.	ORAL ONLY	A 0D/1D CFD Approach for Chemistry-Based Calculations of Laminar Flame Speed and Ignition Delay Time of eFuels Compared to Conventional Gasoline

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Time	Paper No.	Title
		Luca Dalseno, Giuseppe Cicalese, R&D CFD Srl; Stefano Fontanesi, Sebastiano Breda, Universita di Modena e Reggio Emilia; Andrea Berton Ing, Lorenzo Tommolini, Dr. Ing. h.c. F. Porsche AG
3:30 p.m.	ORAL ONLY	Development of Advanced Compression Ignition (ACI) Gasoline Rating Methods on a Variable Compression Ratio CFR Engine
		Christopher Kolodziej, Alexander Hoth, Argonne National Laboratory

Planned by Fuels and Lubricants / Energy and Propulsion Activity

Tuesday, April 8

0-D and 1-D Modeling and Numerics Part 1 of 2

Session Code PFL110

Room 140 C Session 8:00 a.m.

Separate sub-sessions cover 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 - Aaron Costall; Federico Millo, Politecnico di Torino; Angelo Onorati, Politecnico di Milano

Chairperson - Federico Millo, Luciano Rolando, Politecnico di Torino

Time	Paper No.	Title
8:00 a.m.	2025-01-8354	Theoretical Study of Electrically Assisted Two-Stage Turbocharger Boost System Applied to Large-Bore Gas SI ICE
		Oldrich Vitek, Jan Macek, Bohumil Mares, Czech Technical University; Jiri Klima, Martin Vacek, PBS Turbo
8:30 a.m.	2025-01-8355	Evaluating the Potential of a Turbo-Compound System for a Heavy-Duty Natural Gas Engine: A Modelling Study
		Navid Balazadeh, Simon Fraser University; Sandeep Munshi, Westport Fuel Systems Inc.; Mahdi Shahbakhti, University of Alberta; Gordon McTaggart-Cowan, Simon Fraser University
9:00 a.m.	2025-01-8356	Study on End Gas Auto-Ignition and Ion Current Formation Mechanism Based on One-Dimensional Flame Ionization Model
		Yanxiong Zhou, Guangyu Dong, Xiaoci Ni, Jie Xu, Xian Li, Liguang Li, Tongji University
9:30 a.m.	2025-01-8357	An Investigation into the Surface Area-to-Volume Ratio of Wankel Rotary Engines and how it Affects Heat Transfer and Heat Losses within them
		Giovanni Vorraro, James Turner, KAUST
10:00 a.m.	ORAL ONLY	Methane Ignition Delay Times and Chemical Kinetic Models under Engine Crevice Conditions
		Matthew Fraze, Justin Urso, Ramees Khaleel Rahman, Michael Pierro, University Of Central Florida; Sreenath gupta, Argonne National Laboratory; Subith Vasu, University Of Central Florida

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Technical Session Schedule

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Planned by General Powertrain Development / Energy and Propulsion Activity

Tuesday, April 8

0-D and 1-D Modeling and Numerics Part 2 of 2

Session Code PFL110

Room 140 C Session 1:30 p.m.

Separate sub-sessions cover 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 - Aaron Costall; Federico Millo, Politecnico di Torino; Angelo Onorati, Politecnico di Milano

Chairperson - Fabio Bozza, Universita di Napoli Federico II; Andrea Piano, Politecnico di Torino

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	Calibration of a 1D Single Cylinder Research Engine Combustion Model with Integrated Laminar Flame Speed Neural Network Lorenzo Ferrari, University of Bologna; Giuseppe Sammito, FEV Italia S.r.l.; Bartosch Jagodzinski, FEV Group GmbH; Nicolo Cavina, University of Bologna
2:00 p.m.	ORAL ONLY	An ignition and combustion model for lean and ultra-lean hydrogen-air mixtures in spark-ignition engines. Part I: the ignition model development, analysis and validation Marco Pretto PhD, University of Udine; Emanuele Ugliano, Universita Degli Studi di Napoli; Pietro Giannattasio, University of Udine; Fabio Bozza, Universita di Napoli Federico II; Vincenzo De Bellis, Univ of Naples
2:30 p.m.	ORAL ONLY	An ignition and combustion model for lean and ultra-lean hydrogen-air mixtures in spark-ignition engines. Part II: modeling of thermo-diffusive instabilities and comparisons with experimental data Vincenzo De Bellis, Univ of Naples; Luigi Teodosio, Universita di Napoli Federico II; Marco Pretto PhD, Pietro Giannattasio, University of Udine; Ricardo Novella, Josep Gomez-Soriano, Universitat Politecnica de Valencia; Fabio Bozza, Universita di Napoli Federico II
3:00 p.m.	ORAL ONLY	Measurements of Laminar Burning Velocity and Markstein Length of Hydrogen/Air Mixtures under Different Combustion Residuals at Elevated Temperatures Ahmed Barain, MSU; Berk Can Duva, Rolls-Royce North America Inc; Elisa Toulson, Michigan State University

Planned by General Powertrain Development / Energy and Propulsion Activity

Tuesday, April 8

Powertrain Adaptation for Connectivity and Automation

Session Code PFL150

Room 140 D Session 8:00 a.m.

This session will cover technologies that use connectivity and automation to optimize vehicle dynamics and powertrain systems operations, with the goal of reducing energy consumption. Contributions may include vehicle dynamics and powertrain control technologies, implemented on single vehicles or across a cohort of cooperating vehicles, showing potential to significantly improve individual vehicle energy efficiency. Concepts and technologies supported by experimental studies are welcome.

Organizers - Marcello Canova, The Ohio State University; Bharatkumar Hegde, General Motors LLC; Scott Hotz, Simplify Tech LLC

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Chairperson - Bharatkumar Hegde, General Motors Company

Time	Paper No.	Title
8:00 a.m.	2025-01-8384	Eco-Approach and Departure Algorithm for Connected and Automated PHEVs: Simulation and in-Vehicle Results Dennis Kibalama, Mehmet Fatih Ozkan, Stephanie Stockar, Marcello Canova, Giorgio Rizzoni, The Ohio State University
8:30 a.m.	2025-01-8386	Learning-Based Cell Level Battery Digital Twin for Electric Vehicles Shobhit Gupta, Bharatkumar Hegde, Ibrahim Haskara, Su-Yang Shieh, Insu Chang, General Motors LLC
9:00 a.m.	2025-01-8388	On-Vehicle Optimum Route Selection for a Plug-In Hybrid Electric Vehicle Andrew Robare, Aman Poovalappil, Anirudh Udipi, Mayur Bhure, Mojtaba Bahramgiri, Darrell Robinette, Jeffrey Naber, Bo Chen, Michigan Technological University
9:30 a.m.	2025-01-8389	Real-Time Dynamic Mass Learning Algorithm for Connected and Automated Light-Duty Vehicles Aman Poovalappil, Andrew Robare, Peter Apostol, Mojtaba Bahramgiri, Bo Chen, Jeffrey Naber, Darrell Robinette, Michigan Technological University
10:00 a.m.	2025-01-8385	Energy-Efficient Maneuvering of Connected and Automated Vehicles: NEXTCAR Phase II Results Piyush Bhagdikar, Stanislav Gankov, Jayant Sarlashkar, Scott Hotz, Shreshta Rajakumar Deshpande, Sankar Rengarajan, Kartik Adsule, Joseph Drallmeier, Daniel D'Souza, Joshua Alden, Shuvodeep Bhattacharjya, Southwest Research Institute

Planned by General Powertrain Development / Energy and Propulsion Activity

Tuesday, April 8

Engine Flows and Combustion Diagnostics

Session Code PFL140

Room 140 D Session 1:30 p.m.

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

Organizers - Sadiyah Chowdhury, Cummins Inc.; Matthew Hall, Univ. of Texas-Austin; Dan Richardson

Chairperson - Matthew Hall, Univ. of Texas-Austin

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	Characterization of DI-H2 mixture formation and temperature distribution using two-color laser-induced fluorescence (LIF) technique Taesong Lee, Ales Srna, Vasco DUKE, Humaid Qasem, Sandia National Laboratories

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Time	Paper No.	Title
2:00 p.m.	2025-01-8381	A Study on Reconstructing in-Cylinder Combustion Images Based on Local Images Mianheng Wang, Yixiao Zhang, Haoyu Du, Ma Xiao, Jianshu Mao, Yuwen Fang, Tsinghua University
2:30 p.m.	2025-01-8382	Development of Telemetry Solutions for Internal Combustion Engines Ansel Higgs, Bernhard Rossegger, LEC Gmbh; Francesco Marzemin, Nicole Wermuth, ITnA Graz University of Technology
3:00 p.m.	2025-01-8383	Experimental Analysis of Piston Surface Temperature in a Heavy-Duty Compression Ignition Engine Brian Gainey, Aditya Datar, Avinash Ravikumar, Ankur Bhatt, Kunal Vedpathak, Mohit Kumar, Clemson University; Eric Gingrich, Michael Tess, Vamshi Korivi, U.S. Army GVSC; Benjamin Lawler, Clemson University
3:30 p.m.	ORAL ONLY	High-Speed IR Thermography of Radiant Heat Transfer on Chamber Wall Impinged by Diesel Spray Flame Fumika Shimizu, Hiroyuki Kinoshita, Areno Naganawa, Masato Morooka, Tatsuya Tsuchihata, Ryo Shibata, Tets Aizawa, Meiji University

Planned by General Powertrain Development / Energy and Propulsion Activity

Tuesday, April 8

Advanced Hybrid and Electric Vehicle Powetrains Part 1 of 4

Session Code PFL710

Room 140 E Session 8:00 a.m.

This session covers new production and near-production electric & hybrid propulsion architectures, testing, analysis and new concepts.

Organizers - Norman Bucknor, General Motors; Michael Duoba, Argonne National Laboratory; Matthew Fleming, Hyundai-Kia America Technical Center Inc.; Vinod Ravi, General Motor GM; Toby Rockstroh, Shell Global Solutions (Deutschland); Rafael Sari, Aramco Research Center; Ratnak Sok, Waseda University; Darryl S. Taylor, Dana Inc.; Di Zhu, Ford Motor Company

Chairperson - Norman Bucknor, General Motors

Time	Paper No.	Title
8:00 a.m.	2025-01-8532	Model-Based Evaluation of Hybrid Powertrains for a Light Duty Pickup Truck Application Dhanraj Fnu, Bruno Correia Garcia, Sumit Paul, Satyum Joshi, Michael Franke, FEV North America Inc.
8:30 a.m.	2025-01-8543	An Approach for Estimating Contributions of Real-World Factors towards Attained Well-to-Wheels Greenhouse Gas Emissions of Plug-in Hybrid Electric Vehicles Karim Hamza, Kenneth Laberteaux, Toyota Motor Corporation; Kang-Ching Chu, Idaho National Lab
9:00 a.m.	2025-01-8531	Evaluation of Different Powertrain Topologies for a Premium Plug-in Hybrid Electric Vehicle Duc-Khanh Nguyen, Alexandra Tokat, Annika Kristoffersson, Jan-Ola Olsson, Aurobay Sweden AB

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Time	Paper No.	Title
9:30 a.m.	ORAL ONLY	How the Mix of Vehicle Powertrains Impacts the Life Cycle Greenhouse Gas Emissions of the Light Duty Fleet in the United States Taemin Kim, Argonne National Laboratory
10:00 a.m.	2025-01-8537	On the Potentially Misleading Evaluation of CO_2 Emissions for Hybrid-Electric Vehicles James Turner, Giovanni Vorraro, KAUST

Planned by Hybrid and Electric Propulsions Committee / Energy and Propulsion Activity

Tuesday, April 8

Advanced Hybrid and Electric Vehicle Powetrains Part 2 of 4

Session Code PFL710

Room 140 E Session 1:30 p.m.

This session covers new production and near-production electric & hybrid propulsion architectures, testing, analysis and new concepts.

Organizers - Norman Bucknor, General Motors; Michael Duoba, Argonne National Laboratory; Matthew Fleming, Hyundai-Kia America Technical Center Inc.; Vinod Ravi, General Motor GM; Toby Rockstroh, Shell Global Solutions (Deutschland); Rafael Sari, Aramco Research Center; Ratnak Sok, Waseda University; Darryl S. Taylor, Dana Inc.; Di Zhu, Ford Motor Company

Chairperson - Vinod Ravi, General Motor GM

Time	Paper No.	Title
1:30 p.m.	2025-01-8536	Fully Automated Global Powertrain Optimization for Electric Truck Using Active Learning Algorithm and Backwards Simulation Approach Bicheng Chen, FEV Europe GmbH; Christoph Wellmann, MMP, RWTH Aachen University; Feihong Xia, Rene Savelsberg, FEV Europe GmbH; Jakob Andert, MMP, RWTH Aachen University; Stefan Pischinger, TME, RWTH Aachen University
2:00 p.m.	ORAL ONLY	Development of a simplified model of the next-generation light-duty battery electric trucks for hardware-in-loop-simulation validated against on-road driving data Ratnak Sok, Enbo Cui, Ziyu Guan, Jin Kusaka, Waseda University; Keiki Tanabe, Goro Iijima, Mitsubishi Fuso Truck and Bus Corp.
2:30 p.m.	2025-01-8541	Powertrain Components Aging Model Selection for Energy Efficient Vehicles: Selection Strategy and Challenges Md Ragib Rownak, Athar Hanif, Qadeer Ahmed, The Ohio State University; Muhammad Qaisar Fahim, Hamza Anwar, Hui Li, Dat Le, Matthew Nelson, Cummins Inc.
3:00 p.m.	2025-01-8525	Lessons and Challenges from Crowd-Sourced Data in Rural Michigan to Assess EV Suitability based on Analyzing Personal Driving Ashwin Manoj, Sally Yin, Omar Ahmed, Parth Vaishnav, Anna Stefanopoulou, Sabina Tomkins, University of Michigan-Ann Arbor

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Time	Paper No.	Title
3:30 p.m.	ORAL ONLY	High-Fidelity Simulation of Electric Vehicle Thermal Management: Addressing Complex Trade-Offs Romain Nicolas, Siemens Digital Industries Software
4:00 p.m.	ORAL ONLY	Multi-Objective Optimization Framework for UAV Architecture Generation using a Mission-Flexible Powertrain Brahadeesh Suresh, Univ. of Wisconsin-Madison; Harsh Sapra, University of Wisconsin-Madison

Planned by Hybrid and Electric Propulsions Committee / Energy and Propulsion Activity

Tuesday, April 8

Advanced Battery Technologies - Part 1 of 2

Session Code PFL730

Room 140 F Session 8:00 a.m.

This session provides a forum for both theory-oriented and application-oriented manuscripts that address state-of-art battery technologies at the cell, array, pack or vehicle levels. Typical domains encompass, but not limited to the battery component, chemistries, modeling, simulations, testing, diagnosis, prognosis, safety, reliability, durability, battery economics/cost reduction, battery charging, battery thermal management, battery management systems and controls and system integration/optimization.

Organizers - Matilde D'Arpino, Ohio State University; Yi Ding, TARDEC; Santhosh Gundlapally, Gamma Technologies LLC; Yasaman Masoudi, Stellantis; James Miller, Argonne National Laboratory; Francesco Porpora; Prashanth Ramesh, The Ohio State University; Gene Saltzberg; Di Zhu, Ford Motor Company

Chairperson - Matilde D'Arpino, Ohio State University; James Miller, Argonne National Laboratory

Assistant Chairpersons - Xianke Lin, Ontario Tech. University

Time	Paper No.	Title
8:00 a.m.	2025-01-8557	Overview of Battery-Integrated Modular Multilevel Converter Topologies for Automotive Applications Arvind Balachandran, Tomas Jonsson, Lars Eriksson, Linkoping University
8:30 a.m.	2025-01-8559	13D Modeling of Thermal Runaway in Pouch Cells: Effects of Surface Heating and Heating Rates Deivanayagam Hariharan, Santhosh Gundlapally, Gamma Technologies LLC
9:00 a.m.	2025-01-8560	A Minimalist High-Power Boost Charging Solution Integrated into Electric Drives Baocheng Yuan, Yong Ma, Xi Xie, Shaowei Liu, Tianyu Guan, Kai Ge, Lifu Zheng, Xu Xu, Li Auto Inc.
9:30 a.m.	ORAL ONLY	Shift Left: A Virtualized E/E Integration Solution for EV Powertrains Gerald Sammer, AVL

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Time	Paper No.	Title
10:00 a.m.	ORAL ONLY	Electric Micromobility Batteries – An application-focused global overview Shay Natarajan, Mobility Impact Partners

Planned by Hybrid and Electric Propulsions Committee / Energy and Propulsion Activity

Tuesday, April 8

Advanced Battery Technologies - Part 2 of 2

Session Code PFL730

Room 140 F Session 1:30 p.m.

This session provides a forum for both theory-oriented and application-oriented manuscripts that address state-of-art battery technologies at the cell, array, pack or vehicle levels. Typical domains encompass, but not limited to the battery component, chemistries, modeling, simulations, testing, diagnosis, prognosis, safety, reliability, durability, battery economics/cost reduction, battery charging, battery thermal management, battery management systems and controls and system integration/optimization.

Organizers - Matilde D'Arpino, Ohio State University; Yi Ding, TARDEC; Santhosh Gundlapally, Gamma Technologies LLC; Yasaman Masoudi, Stellantis; James Miller, Argonne National Laboratory; Francesco Porpora; Prashanth Ramesh, The Ohio State University; Gene Saltzberg; Di Zhu, Ford Motor Company

Chairperson - Matilde D'Arpino, Ohio State University; Yi Ding, TARDEC

Assistant Chairpersons - Xianke Lin, Ontario Tech. University

Time	Paper No.	Title
1:30 p.m.	2025-01-8561	A Data-Driven Framework for Battery Capacity Estimation in Real-World Electric Vehicles Using Virtual Impedance and Incremental Capacity Analysis Siyi Tao, Jiangong Zhu, Tongji University; Yuan Li, Wei Chang, Shanghai Cloudready Technology Co., Ltd.; Haifeng Dai, Xuezhe Wei, Tongji University
2:00 p.m.	2025-01-8558	Impact of Battery Aging on the State of Charge-Open Circuit Voltage Relationship and Its Effects on Battery Capacity Estimation Gabrielle Vuylsteke, Hao Wu, William Moore, Donnell Washington, Ford Motor Co.
2:30 p.m.	ORAL ONLY	A Review of the Application of Electrochemical Impedance Spectroscopy in Lithium-Ion Batteries Tao Wang, Youhang zhou, Xiangtan University; Kunjun Wang, Xiongwu Zhong, CRRC Times Electric Vehicle Co.Ltd
3:00 p.m.	ORAL ONLY	Ionization Based Sensor for Early Detection of Thermal Runaway Events in Lithium-Ion Batteries (SAE Paper 2024-01-4326) Youssef Mansour, Detroit Engineered Products (DEP) Inc.

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Tuesday, April 8

Multi-Dimensional Engine Modeling - Part 1 of 2

Session Code PFL120

Room 140 G Session 8:00 a.m.

The spectrum of papers solicited for this session reflect the truly multi-disciplinary nature of the field of Multi-Dimensional Engine Modeling. The session covers advances in the development and application of models and tools involved in multi-dimensional engine modeling. This includes advances in chemical kinetics, combustion and spray modeling, turbulence, heat transfer, 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; Anand Nageswaran Bharath, Sadiyah Chowdhury, Sadiyah Chowdhury, Cummins Inc.; Sujan Dhar, Simerics Inc.; Stefano Fontanesi, Universita di Modena e Reggio Emilia; Haiwen Ge, Zhejiang Laboratory; Yuanjiang Pei, Aramco Americas; Dan Richardson

Time	Paper No.	Title
8:00 a.m.	2025-01-8358	Achieving Lagrangian-esque Fuel Mass Tracking in an Eulerian Frame of Reference CFD Diesel Engine Simulation James Gohn, Mohit Kumar, Brian Gainey, Benjamin Lawler, Clemson University
8:30 a.m.	2025-01-8360	Development of a Detailed Ignition Model with Energy Deposition and its Application to Full Engine Simulation Kyeongmin Kim, Matthew Hall, University of Texas-Austin; Sachin Joshi, Cummins Inc.; Ron Matthews, University of Texas-Austin
9:00 a.m.	2025-01-8361	3D Virtual Simulations of Crankcase Dynamics for Oil Pan Aeration Analysis Raghu Vamsee Godavarthi, Simerics Inc.; Yung-Ming Chen, Ford Motor Co.; Ashutosh Pandey, Chiranth Srinivasan, Simerics Inc.
9:30 a.m.	2025-01-8362	Intebrake 3-D CFD Transient Simulation Studies for Predicting Flow Performance Ranjit Ramchandra Tawar, Cummins Technologies India Private Ltd.; Shyam Sundar Pasunurthi, Simerics Inc.; Sanjeev Bedekar, Cummins Technologies India Private Ltd.; Raj Ranganathan, Simerics Inc.
10:00 a.m.	ORAL ONLY	Cell-based Livengood Wu ignition integral model to predict knock in spark-ignited engines Arun Ravindran, Yu Zhang, Cummins Inc.; Shuqi Zhang, Shuaishuai Liu, Convergent Science Inc

Planned by General Powertrain Development / Energy and Propulsion Activity

Tuesday, April 8

Multi-Dimensional Engine Modeling - Part 2 of 2

Session Code PFL120

Room 140 G Session 1:30 p.m.

The spectrum of papers solicited for this session reflect the truly multi-disciplinary nature of the field of Multi-Dimensional Engine Modeling. The session covers advances in the development and application of models and tools involved in multi-dimensional engine modeling. This includes advances in chemical kinetics, combustion and spray modeling, turbulence, heat transfer, 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; Anand Nageswaran Bharath, Sadiyah Chowdhury, Sadiyah Chowdhury, Cummins Inc.; Sujan Dhar, Simerics Inc.; Stefano Fontanesi, Universita di Modena e Reggio Emilia; Haiwen Ge, Zhejiang Laboratory; Yuanjiang Pei, Aramco Americas; Dan

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Richardson

Time	Paper No.	Title
1:30 p.m.	2025-01-8365	Numerical Study of the Hydrogen/Air Mixing in a High Performance 2 Stroke Opposed Piston Engine Alessandro Marini, Antonello Volza, Antonio Baudone, Enrico Mattarelli, Stefano Fontanesi, Universita di Modena e Reggio Emilia; Michele Di Sacco, Roberto Tonelli, Ferrari S.p.A; Sebastiano Breda, Universita di Modena e Reggio Emilia
2:00 p.m.	2025-01-8366	Enhancing Dual Fuel Combustion Simulation: A Novel Geometric Approach for Accurate Flame Entrainment Estimation Somayeh Parsa, Arthur Daenens, Ghent University; Roel Verschaeren, ABC Engines; Jeroen Dierickx, Sebastian Verhelst, Ghent University
2:30 p.m.	ORAL ONLY	Numerical investigation of the combustion process of different prechamber systems for high-speed large bore gas engines Massimiliano Zanatta, Andrea Piano, Federico Millo, Politecnico di Torino; Francesco Accurso, Francesco Pesce, Matteo Luci, Dumarey Automotive Italia S.p.A.
3:00 p.m.	2025-01-8363	Steady Temperature of a Cylindrical Roller to Ring in Pump under Friction Heating – Analytical and Experimental Study Michael L. Pang, Srinu Gunturu, Dave Mothes, Michael O'Brien, Stanadyne Operating Company LLC
3:30 p.m.	2025-01-8367	Virtual Evaluation of Ceramic Glow Plug Design using Multiphysics Simulation Approach Nilankan Karmakar, Hatem Orban, General Motors LLC

Planned by General Powertrain Development / Energy and Propulsion Activity

Tuesday, April 8

Panel Discussion: Vehicle Integration and Efficiency

Session Code HX1320

Room 141 Session 8:00 a.m.

As the automotive industry adopts an eclectic/powertrain agnostic approach towards decarbonization goals and significantly reduced tailpipe emissions, new challenges and opportunities arise in the development of novel propulsion technologies such as internal combustion engines running on low carbon fuels like natural gas and hydrogen, batteries and fuel cells. These technologies give rise to elevated temperatures and conditions within certain powertrain and vehicle-level components during normal operation that could potentially pose safety issues for the passengers/operators. Moreover, the elevated temperatures in these components may also cause efficiency degradation of the entire powertrain/propulsion system. It is therefore important to investigate the impact of transitioning to alternative powertrains on the thermal management challenges of existing and novel components, and how these issues can be resolved through new design considerations. This panel will consist of speakers from academia, industry and non-profit/government research labs to perform a technical deep dive on the need for thermal management for vehicles equipped with low-carbon fuel engines, batteries and/or fuel cells. Speakers will cover the thermal management requirements and considerations for components on the powertrain and vehicle propulsion systems, as well as propose novel thermal management solutions to mitigate efficiency losses or prevent unsafe operation.

Learn more about the Panel

Moderators - Sowmya Jayaraman, General Motors

Panelists - James Bratby, Ford Motor Company; Vince Costanzo, Hyundai America Technical Center; Nilabza Dutta, Jaguar Land Rover; Larry Laws, General Motors LLC; Craig Lindquist, FCA US LLC;

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Tuesday, April 8

Vehicle Cabin Air Quality & Human Factors

Session Code HX200

Room 141 Session 9:30 a.m.

Cabin indoor air quality is becoming very important as we are spending more time in our vehicles. This is becoming even more important in the post pandemic era. In today's some of the vehicles a unique climate control system with sensors to address the air quality within the cabin to ensure comfort and safety of the occupants. This session will support design and development related to solutions to cabin air quality.

Organizers - Bashar AbdulNour, Kettering University; Jeffrey Bozeman; Gursaran Mathur, Ford Motor Company; Jie Zeng, DENSO International America Inc.; Sowmya Jayaraman, General Motors

Time	Paper No.	Title
8:00 a.m.	2025-01-8176	Modeling Virus Infection Risks in Automobile Cabin Gursaran Mathur, Ford Motor Company
8:30 a.m.	2025-01-8177	Development of Ceramic Humidity Regulator (CHR) Using Honeycomb Type PTC Heater to Improve Electric Vehicle Driving Range in Winter Takafumi Hamada, Narimasa Shinoda, Yoshiki Konno, Yukio Ihara, Masaki Ito, NGK Insulators, Ltd.

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

Tuesday, April 8

Panel Discussion - Evolution of Electrified Drivetrains in Light Duty Mobility: 10-year horizon

Session Code PFL698

Room 141 Session 1:30 p.m.

For the past 30 years, the light duty vehicle electrified drivetrain has evolved and expanded from the early demonstrator compact car to all platforms, including full size truck and SUV BEVs. This evolution has touched all aspects of the electrified drivetrain, including torque transfer mechanisms, electric motor(s) and the configuration or arrangement of gears, clutches and electric machine(s). The capability of modern electric motors minimizes the need for multiple gear ratios, while the inclusion of ICE technology as range extending or blended operation provides opportunity for architecture innovation. The expert panel will discuss technologies and approaches that will drive continued evolution of electrified drivetrains for the next 10 years and beyond.

Learn more about the Panel

Organizers - Pradeep Attibele, FCA US LLC; Hong Jiang, Ford Motor Company; Mark Levine, Stellantis; Azadeh Narimissa, General Motors; Paul Otanez, General Motors LLC; Darrell Robinette, Michigan Technological Univ.; Thomas Wellmann, FEV NA Inc.

Moderators - Darrell Robinette, Michigan Technological Univ.

Panelists - Greg Goleski, Ford Motor Company; Steven Hayslett, FCA US LLC; Goro Tamai, GM; Thomas Wellmann, FEV NA Inc.; Hossain Mohammadi, Schaeffler;

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Technical Session Schedule

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Tuesday, April 8

Advanced Fuel Cell Vehicle Applications Part 1 of 3

Session Code PFL720

Room 142 A Session 8:00 a.m.

This session covers advancements in PEM fuel cell applications in vehicles including, but not limited to: advanced materials for cell or stack components, balance of plant (BOP) components, stack or system design, control strategies, modeling, testing, diagnostics and lifetime monitoring, hydrogen safety, durability, economics/cost reduction, and system integration/optimization. These topics can be addressed at the cell, stack, system or vehicle levels. A special focus on durability of stack and BOP components is also planned and topics covering accelerated tests and operating strategies to improve durability are encouraged.

Organizers - Ashok Kumar, Cummins Inc.; Santhosh Gundlapally, Gamma Technologies LLC; Matthew Kubesh, Southwest Research Institute; Rafael Sari, Aramco Research Center; Di Zhu, Ford Motor Company; Vikas Narang, Cummins Inc.

Chairperson - Ashok Kumar, Cummins Inc.

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Advanced Energy and Thermal Management Control Strategy for Fuel Cell Powertrains Sadaf Batool, Gaurav sadekar, Adithya Baburaj, Satyum Joshi, Michael Franke, FEV North America Inc
8:30 a.m.	2025-01-8550	Initial Assessment of Component Sizing and Power-Split for Fuel Cell Hybrid Electric Heavy-Duty Trucks Ali Mandviwala, University of Michigan - Ann Arbor; Serhat Yesilyurt, Sabanci University; Anna Stefanopoulou, University of Michigan - Ann Arbor
9:00 a.m.	2025-01-8556	Health and Condition Monitoring Tool for Real-Time and on-Board Diagnosis of PEM Fuel Cell in Heavy Duty Vehicles Luca Di Napoli, Eaton - European Innovation Center; Francesco Mazzeo, Politecnico di Torino - DIMEAS
9:30 a.m.	2025-01-8547	Platform Development of Fuel Cell Air Compressors Qianzhen Wang, Xixin Yuan, Zhang Tao, Jin Zeng Feng, Juan Wang, Yong Xiao, Lei Zhou, Jun Xin, Sinobrook New Energy Technologies (Shanghai) Co., Ltd.

Planned by Hybrid and Electric Propulsions Committee / Energy and Propulsion Activity

Tuesday, April 8

Advanced Fuel Cell Vehicle Applications Part 2 of 3

Session Code PFL720

Room 142 A Session 1:30 p.m.

This session covers advancements in PEM fuel cell applications in vehicles including, but not limited to: advanced materials for cell or stack components, balance of plant (BOP) components, stack or system design, control strategies, modeling, testing, diagnostics and lifetime monitoring, hydrogen safety, durability, economics/cost reduction, and system integration/optimization. These topics can be addressed at the cell, stack, system or vehicle levels. A special focus on durability of stack and BOP components is also planned and topics covering accelerated tests and operating strategies to improve durability are encouraged.

Organizers - Ashok Kumar, Cummins Inc.; Santhosh Gundlapally, Gamma Technologies LLC; Matthew Kubesh, Southwest Research Institute; Rafael Sari, Aramco Research Center; Vikas Narang, Cummins Inc.; Di Zhu, Ford Motor Company

Chairperson - Matthew Kubesh, Southwest Research Institute

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Time	Paper No.	Title
1:30 p.m.	2025-01-8548	A Loss-Based Approach to Controlling the Optimum Power Request of an Energy Provider Such as a Fuel Cell Nadirsh Patel, Harshal Kudupley, Stellantis
2:00 p.m.	2025-01-8555	Methodology for the Design Optimization of PEM Fuel Cells Edoardo Rossi, Federico Croci, Lorenzo Martoccia, Università di Modena e Reggio Emilia; Giuseppe Cicalese, R & D CFD Srl; Alessandro D'Adamo, Università di Modena e Reggio Emilia
2:30 p.m.	2025-01-8549	Effects of Cell Design Improvement on an Automotive PEMFC System Lorenzo Martoccia, Universita di Modena e Reggio Emilia; Christian Antetomaso, Simona Merola, CNR Stems; Carmine Marra, Sebastiano Breda, Alessandro D'Adamo, Universita di Modena e Reggio Emilia
3:00 p.m.	2025-01-8546	Capillary Transport Analysis in Macro-Homogeneous Diffusion Media of PEM Fuel Cells Carmine Marra, Federico Croci, Stefano Fontanesi, Fabio Berni, Alessandro D'Adamo, Universita di Modena e Reggio Emilia
3:30 p.m.	2025-01-8553	Modeling of Battery and Fuel Cell Powered Systems with Their Real-World Applications Nicholas Ingarra, Munro and Associates
4:00 p.m.	2025-01-8551	Effective Pt-Based N-Doped Carbon Nanosphere Electro-Catalyst for the Application in PEMFC Yuchen Liu, Xin Liu, Xin Cai, Aimin Du, Rui Lin, Tongji University

Planned by Hybrid and Electric Propulsions Committee / Energy and Propulsion Activity

Tuesday, April 8

Thermal Systems for Hybrid and Electric Vehicles - Part 1 of 2

Session Code HX100

Room 142 B Session 9:00 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 - Alaa El-Sharkawy, Lawrence Technical University; Edward Gerges, Dana Inc.; Sowmya Jayaraman, General Motors; Gursaran Mathur, Ford Motor Company; Romain Nicolas, Siemens Digital Industries Software; Kumar Srinivasan, Kumar Srinivasan, Cadence Design Systems Inc.; Andy Sutherland, EAVX; Arpit Tiwari, Rivian Automotive

Time	Paper No.	Title
9:00 a.m.	2025-01-8139	Real-Time PMV Thermal Comfort Index Observer Based on Artificial Neural Networks for Infrared Heating Panel Control Ivan Cvok, Rimac Technology; Isha Yerramilli-Rao, Princeton University; Filip Miklauzic, Rimac Technology

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Time	Paper No.	Title
9:30 a.m.	2025-01-8144	Control Trajectory Optimization of Electric Vehicle Heat Pump-Based Cabin Heating System Ivan Cvok, Rimac Technology; Josko Deur, University of Zagreb

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

Tuesday, April 8

Thermal Systems for Hybrid and Electric Vehicles - Part 2 of 2

Session Code HX100

Room 142 B Session 1:30 p.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 - Alaa El-Sharkawy, Lawrence Technical University; Edward Gerges, Dana Inc.; Sowmya Jayaraman, General Motors; Gursaran Mathur, Ford Motor Company; Romain Nicolas, Siemens Digital Industries Software; Kumar Srinivasan, Kumar Srinivasan, Cadence Design Systems Inc.; Andy Sutherland, EAVX; Arpit Tiwari, Rivian Automotive

Time	Paper No.	Title
8:30 a.m.	2025-01-8145	Demonstration of Model Predictive Control to Optimise Cabin Thermal Comfort in a Battery Electric Vehicle Peter Fussey, University of Sussex; Nilabza Dutta, Jaguar Land Rover; Gareth Milton, He Ma, Ricardo UK Ltd.
1:30 p.m.	2025-01-8140	A Thermal Behaviour of Battery Cell Using Different Electrochemical Models (ECM and NTGK) Anil Wakale, Shihu Ma, Xiao Hu, Ansys, Inc.
2:00 p.m.	2025-01-8143	The Effect of Rotor Notches on Air Gap Heat Transfer Coefficient and Electromagnetic Performance in a Permanent Magnet Synchronous Motor for Traction Applications Arthur Zajac, MAME - University of Windsor; Buddhika De Silva, Sun Lee, ECE - University of Windsor; Jigar Mistry, Reza Nasirizarandi, R&D Americas - Schaeffler; Ofelia Jianu, MAME - University of Windsor; Narayan Kar, ECE - University of Windsor
2:30 p.m.	2025-01-8148	Enhancing and Validating Numerical Models for Oil-Jet Cooing on Corrugated Surfaces of Electric Motor Windings Jayesh Ramesh Mutyal, Ahmad Haghnegahdar, Mohana Gurunadhan, Santosh Konangi, Omkar Champhekar, Ansys, Inc.

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Tuesday, April 8

Driveline Modeling

Session Code PFL680

Room 142 C Session 8:00 a.m.

This session features papers focusing on electrified transmission and driveline modeling, including topics related to hardware, software, and system integration.

Organizers - Pradeep Attibele, FCA US LLC; Dongxu Li, General Motors LLC; Darrell Robinette, Michigan Technological Univ.

Time	Paper No.	Title
8:00 a.m.	2025-01-8521	Validation of Hybrid and Electric Vehicle Models for ALPHA v3.0 John Kargul, Andrew Moskalik, Daniel Barba, Karla Butters, U.S. Environmental Protection Agency
8:30 a.m.	2025-01-8522	Electric Vehicle Drive Unit Power Losses and Efficiency Estimation: A Coupled 1D Analytical and 3D CFD Approach for High Fidelity Prediction Abdul Motin, Alain Ganamet, Rivian Automotive Inc.

Planned by Electrified and Conventional Transmission and Driveline Com / Energy and Propulsion

Tuesday, April 8

Driveline Components / Subsystems

Session Code PFL670

Room 142 C Session 9:00 a.m.

This session features papers on the full array of transmission and driveline related components.

Organizers - Joel Gunderson, General Motors LLC; Chunhao Lee; Mark Levine, Stellantis; Thomas Wellmann, FEV NA Inc.

Chairperson - Chunhao Lee, General Motors Global R & D

Time	Paper No.	Title
9:00 a.m.	2025-01-8519	Coupled Lateral-Longitudinal Vehicle Dynamics Modeling to Predict the Loads Experienced by Side Gears in the Differentials Prashant Sondkar, Anudeep Karra, Jaspal Sandhu, Charles Fischer, Stellantis
9:30 a.m.	2025-01-8518	A Sensitivity Study of Frequency Response Method for Setting Bearing Preload to Manufacturing and Design Variation David Gruzwalski, James Mynderse, Lawrence Technological University
10:00 a.m.	2025-01-8520	A Sensitivity Study of Frequency Response Method for Setting Bearing Preload Due to Uncontrollable Parameters

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Time	Paper No.	Title
		David Gruzwalski, James Mynderse, Lawrence Technological University

Planned by Electrified and Conventional Transmission and Driveline Com / Energy and Propulsion

Tuesday, April 8

SI Combustion (Prechamber)

Session Code PFL213

Room 142 C Session 1:30 p.m.

This session focuses on the SI combustion ignition process and advanced ignition systems. Papers cover 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. This specific section focuses on developments for both active and passive prechamber ignition systems..

Organizers - Richard Davis, Michigan Technological University; Alessandro D'Adamo, Universita di Modena e Reggio Emilia; Cinzia Tornatore, Italian National Research Council

Chairperson - Richard Davis, Michigan Technological University; Xin Yu, Aramco Americas

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	Turbulent Jet Ignition to Ignite Low-Temperature, Low-Pressure Jet Fuel/Air Mixtures
		Grace Trombley, Michigan State University; Kenneth Kim, Eric Mayhew, Chol-Bum Kweon, DEVCOM Army Research Laboratory; Elisa Toulson, Michigan State University
2:00 p.m.	2025-01-8406	A Computational Investigation of Hydrogen Pre-Chamber and Spark-Ignition Combustion Engines at Different Load Conditions
		Rafael Menaca, Xinlei Liu, King Abdullah University of Science & Technology; Balaji Mohan, Emre Cenker, Abdullah AlRamadan, Saudi Aramco; Hong Im, King Abdullah University of Science & Technology
2:30 p.m.	2025-01-8405	Effect of Geometrical Manipulation of the Pre-Chamber Design Parameters on the Combustion Performance of an Argon Power Cycle Engine
		Eshan Sharma, Joohan Kim, Argonne National Laboratory; Tyler Strickland, Noble Thermodynamic Systems, Inc.; Riccardo Scarcelli, Argonne National Laboratory; Guillaume Beardsell, Christopher Nilsen, Miguel Sierra Aznar, Noble Thermodynamic Systems, Inc.
3:00 p.m.	2025-01-8407	Exploring the Effects of Varying Pre-Chamber Geometry in a Heavy-Duty Natural Gas Optical Engine under Dilution Conditions
		Akash Dhotre, University Of Minnesota-Twin Cities; Gustav Nyrenstedt, Sandia National Laboratories; Rajavasanth Rajasegar, Colorado School of Mines; Arun Varma, Satbir Singh, Carnegie Mellon University; William Northrop, University Of Minnesota-Twin Cities; Ales Srna, Sandia National Laboratories

Planned by Engine Combustion / Energy and Propulsion Activity

WCX SAE World Congress Experience

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Tuesday, April 8

Fatigue Analysis and Design - Part 1 of 2

Session Code M200

Room 250 A Session 8:00 a.m.

1 customer usage development 2 structural stress generation 3 fatigue of metallic material including new lightweight metals 4 fatigue of non-metallic materials 5 fatigue of joints and bearings 6 environmental effects on fatigue performance 7 effect of manufacturing processes on fatigue behavior 8 vibration fatigue 9 probabilistic fatigue 10 microstructure-mechanics based fatigue 11 machine learning 12 battery pack, electrical motor and BEV drivetrain fatigue and durability.

Organizers - Gavin Song, Ford Motor Company; Paul Lubinski, Thermo King Corp.; Hong Tae Kang, Univ. of Michigan-Dearborn; Matteo Luca Facchinetti, Stellantis; Mingchao Guo, FCA US LLC; Jeong Hong, Thornton Tomasetti; Xijia Wu, National Research Council Canada

Chairperson - Gavin Song, Ford Motor Company; Paul Lubinski, Thermo King Corp; Mingchao Guo, FCA US LLC

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Keynote: Vehicle Durability & Fatigue: Enhancing Reliability and Longevity in Modern Automotive Engineering Organizers - Paul Lubinski, Thermo King Corp. Prashant Khapane, Rivian Automotive LLC Keynote Speakers Prashant Khapane, Rivian Automotive LLC
8:30 a.m.	2025-01-8240	Automotive fatigue Load Spectra: Modeling, Identification and Applications Matteo Luca Facchinetti, Tana Tjhung, Sébastien Jaffre lng, Sandip Datta, Romain Hayat lng, Mingchao Guo, Stellantis
9:00 a.m.	2025-01-8235	Validation of SLA Control Arm Bushing Fatigue Life Under Multi-Channel Road Load Input Will Mars, Endurica LLC; Kevin Barbash, Matthew Wieczorek, Liem Pham, General Motors LLC; Scott Braddock, Tenneco; Ethan Steiner, Endurica LLC; Scott Strumpfer, General Motors LLC
10:00 a.m.	2025-01-8238	Fatigue Strength of Gray Cast Iron – New Insights Regarding the Size Effects Christoph Bleicher, Axel Kansy, Fraunhofer LBF
9:30 p.m.	2025-01-8237	Advanced Characterization of Mechanical and Cyclic Fatigue Properties of Aluminum Cast Materials for Optimized Industrial Applications Ahmad Qaralleh, Jan Niewiadomski, Christoph Bleicher, Fraunhofer Institute LBF

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 8

Advances in Lightweight Materials

Session Code M102

Room 250 A Session 1:30 p.m.

This session presents the latest developments in automotive applications of wrought products. The papers cover a wide range of the technical aspects including alloy development, lightweight design, multi-material usage for body structures, process development and simulation as well as performance optimization.

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Organizers - Raghu Echempati; Jidong Kang; Jonathan Weiler, Meridian Lightweight Technologies

Chairperson - Jidong Kang; Jonathan Weiler, Meridian Lightweight Technologies

Time	Paper No.	Title
1:30 p.m.	2025-01-8230	Microstructure, Tensile and Fracture Behaviors of Squeeze Cast Wrought Mg Alloy AZ80 Peilin Ying, Henry Hu, Anita Hu, Wutian Shen, University of Windsor
2:00 p.m.	2025-01-8231	Self-Piercing Riveting (SPR) of Magnesium High Pressure Die Casting and Dissimilar Materials Yousef Tabatabaei, Gerry Wang, Jonathan Weiler, Meridian Lightweight Technologies
2:30 p.m.	ORAL ONLY	Increasing Mechanical Properties of Recycled Aluminum 6xxx Alloy Sheets for Sustainable Lightweighting Katherine Rader, Shivakant Shukla, Hrishikesh Das, Aashish Rohatgi, Nicole Overman, Pacific Northwest National Laboratory; Sergey Golovashchenko, Oakland University; Mert Efe, Pacific Northwest National Laboratory

Planned by Metallic Materials Committee / Materials Engineering Activity

Tuesday, April 8

Fatigue Analysis and Design - Part 2 of 2

Session Code M200

Room 250 A Session 1:30 p.m.

1 customer usage development 2 structural stress generation 3 fatigue of metallic material including new lightweight metals 4 fatigue of non-metallic materials 5 fatigue of joints and bearings 6 environmental effects on fatigue performance 7 effect of manufacturing processes on fatigue behavior 8 vibration fatigue 9 probabilistic fatigue 10 microstructure-mechanics based fatigue 11 machine learning 12 battery pack, electrical motor and BEV drivetrain fatigue and durability.

Organizers - Gavin Song, Ford Motor Company; Paul Lubinski, Thermo King Corp.; Mingchao Guo, FCA US LLC; Jeong Hong, Thornton Tomasetti; Xijia Wu, National Research Council Canada; Matteo Luca Facchinetti, Stellantis; Hong Tae Kang, Univ. of Michigan-Dearborn

Chairperson - Paul Lubinski, Thermo King Corp; Mingchao Guo, FCA US LLC; Gavin Song, Ford Motor Company

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	Fatigue Life Prediction of SAE Keyhole Specimen as a Subcase of Certification by Analysis Xijia Wu, National Research Council Canada
2:00 p.m.	ORAL ONLY	Study on Fatigue Characteristics and Fatigue Design of Welded In-Plane Gusset Joints Jeong Hong, Yuan Tian, Vahid Barzegar, Xin Chu, Zhi Zhang, Thornton Tomasetti
2:30 p.m.	2025-01-8236	Advanced Methodology for Accelerated Durability Block Cycle Testing of Automotive Rubber Suspension Bushings and Powertrain Mounts Touhid Zarrin-Ghalami, Sandip Datta, Stellantis

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Technical Session Schedule

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Time	Paper No.	Title
3:00 p.m.	~~2025-01-8234~~	A Robust Coarse-Mesh Fatigue Evaluation Procedure for Seam Welds in Automotive Structures Enabled by a User-Element Technique
	ORAL ONLY	
		Shengjia Wu, Lunyu Zhang, University of Michigan
3:30 p.m.	2025-01-8239	A DEM-FEM Coupled Analysis of Ultrasonic Shot Peening Dynamics and Surface Modification Parameters in Aluminum Alloys
		Muhammad Adeel, Heriot-Watt University; Naqash Azeem, University of Calabria; Hongqian Xue, Northwestern Polytechnical University; Muzammil Hussain, University of Bolton

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 8

ADAS and Autonomous Vehicle System: Fundamentals and Localization

Session Code AE101

Room 250 B Session 1:30 p.m.

This session addresses technical research related to ADAS and AVS driver interface/human factor, and cross-functional features such as architecture, performance evaluation and new technologies that are not covered by other AD or ADAS sessions. This session also address addresses state of the art technical research related to GNSS, mapping for AD/ADAS systems, novel simultaneous localization and mapping algorithm and any other localization related topics.

Organizers - Hossam Almasri, GM; Joseph D'Ambrosio, General Motors LLC; Chen Lv, Nanyang Technological University; Yixin Chen, Stellantis; Amit Choudhury, Robert Bosch

Chairperson - Joseph D'Ambrosio, General Motors LLC; Bin Li, Cummins

Time	Paper No.	Title
1:30 p.m.	2025-01-8009	Deriving Architectural Requirements for SAE J3016™ Level 3 System from Functional Safety Perspective
		Venkateswara Raju Mudunuri, Namitha Jayakumar, General Motors LLC
2:00 p.m.	2025-01-8043	Improving Vehicle Localization Confidence Under Different Road Geometries
		Nur Uddin Javed, Yuvraj Singh, Shengzhe Tan, Qadeer Ahmed, The Ohio State University
2:30 p.m.	ORAL ONLY	A systematic approach for identifying VLSS and DP
		Kaushik Madala, Jayalekshmi Krishnamoorthy, UL Solutions
3:00 p.m.	2025-01-8044	A Motion-Aware Continuous Time LiDAR-Inertial SLAM Framework
		Cigdem Kokenoz, Toukheer Shaik, Abhishek Sharma, Pierluigi Pisu, Bing Li, Clemson University
3:30 p.m.	2025-01-8046	Hierarchical Feature-based Localization using Scene Graphs in Off-road Navigation
		Fardifa Fathmiul Alam, Federico Luricich, Nianyi Li, Yunyi Jia, Bing Li, Clemson University

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Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 8

Software Defined Vehicle

Session Code AE800

Room 251 A Session 8:00 a.m.

The session seeks to define what Is a Software-Defined Vehicle and how it is being applied by OEMs and Tier Suppliers. We are seeking manuscripts and presentations that address Software-Defined Vehicle in the application of any vehicle that manages its operations, adds functionality, and enables new features primarily or entirely through software. Additional discussion being sought include how Software-Defined Vehicles are the next evolution of the automotive industry.

Organizers - Sumit Bhargava, Mahle Aftermarket Inc.; S.M. Nayeem Hasan, General Motor LLC; Yu Liu, Toyota Motor Corp.; Mark D. Miller, General Motors LLC; Mahendra Muli, Amazon Web Services

Chairperson - Sumit Bhargava, Mahle Aftermarket Inc.; S.M. Nayeem Hasan, General Motor GM

Time	Paper No.	Title
8:00 a.m.	2025-01-8136	Electronic Control Unit Hardware Design Challenges for Software Defined Vehicle S.M. Nayeem Hasan, Peter Irgens, General Motors LLC
8:30 a.m.	2025-01-8137	High Performance Computer Based Software Defined Vehicle Hardware in the Loop Testing David Obando, FEV North America Inc.; Hamzeh Alzu'bi, FEV Inc.; Erwin Carreón Vásquez, FEV Group GmbH; Qusay Alrousan, Mohammad Sami Alnajdawi, FEV North America Inc.; Thomas Tasky, FEV North America
9:00 a.m.	ORAL ONLY	A Unified Language for Innovation: Standardized Levels of SDVs? Hongki Cha, ETRI
9:30 a.m.	ORAL ONLY	Software Defined Vehicles from Silicon to Systems Randall Wade Smith, Ansys
10:00 a.m.	ORAL ONLY	Enabling the Future of Software-Defined Vehicles Siamak Moshiri, ETAS Inc; Bernd Graef, ETAS Inc.

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 8

Electrification: Chargers and Charging Electronics Architecture/Design

Session Code AE600

Room 251 B Session 8:00 a.m.

As the industry has moved to Electrified Vehicles, the need for chargers and Charging Stations have increased in quantities almost exponentially. We are seeking papers and / or oral presentations that explore all the issues of charging, charging controls, Energy / Power Management, charger to vehicle communicate, charging architecture and charging components. Some of the Topics that could be included are: Vehicle to Grid, Conductive and Wireless Vehicle Charging, Vehicle Charging Standards, (example SAE J1772, SAE J2954J, ISO 15118), New/innovative solutions for the existing HV Vehicle Charging Level 1, Level 2 and DC Fast Charging (Level 3).

Organizers - Theodore Bohn, Argonne National Lab.; Dongmin Kim, SK on; Maggie Shipman, Southwest

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Research Institue; Vincent Socci, National Instruments; Zhouquan Wu, Eaton Corporation; Liwen Zhang, The University of Tennessee; Di Zhu, Ford Motor Company

Chairperson - Theodore Bohn, Argonne National Laboratory; Zhouquan Wu, Eaton

Time	Paper No.	Title
8:00 a.m.	2025-01-8118	Uncovering Security Flaws in DC Chargers for Electric Vehicles Katherine Kozan, Southwest Research Institute
8:30 a.m.	ORAL ONLY	1500 V DC ?! – Optimal Voltage Levels for Next Generation E-Mobility Reik Laubenstein, IAV Automotive Engineering Inc.
9:00 a.m.	2025-01-8117	A Fault Prediction Model for Electric Vehicle Charging Equipment Based on Adaptive Dynamic Thresholds Hao Wang, Ning Wang, Tongji University; Yuan Li, Xinyue Tang, State Grid Zhejiang Electric Power

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 8

Electric Infrastructure

Session Code AE601

Room 251 B Session 1:30 p.m.

As the number of EVs sold increases, it is critical to evaluate and plan strategies on infrastructure development to facilitate Smart Charging and Charging EMC/EMI that are environmentally impactful. Municipalities and electric companies know that with public policy and consumer concerns, electricity generation and utility development must be cleaner than current operations. This session is seeking speakers to present their work in cost-effective, large-scale infrastructure development that can accommodate mass utilization of EV charging. Topics for consideration include; development of green energy through solar, photovoltaic, or other sustainable energy models, utilizing existing power grid connections for effective business models in charging station development, public/private partnerships and effective public policy to support large scale deployment. Additionaltopics includeharmonic distortion impact to the power grid and mitigation techniques to eliminate the harmonics and minimize EV's adverse impacts on power grid.

Organizers - Phares Noel, Diversified Engineering Concepts LLC; Zhouquan Wu, Eaton Corporation; Nilabza Dutta, Jaguar Land Rover

Chairperson - Nilabza Dutta, Jaguar Land Rover; Zhouquan Wu, Eaton

Time	Paper No.	Title
1:30 p.m.	2025-01-8120	Optimizing Charging Infrastructure Management for Enhanced Grid Resilience Joon Moon, Athar Hanif, Qadeer Ahmed, The Ohio State University
2:00 p.m.	ORAL ONLY	Development of an integrated tool for EV fleet management: optimization of investments and operational costs Lorenzo Bartolucci, Edoardo Cennamo, Stefano Cordiner, Marco Donnini, Davide Frezza, Federico Grattarola, Vincenzo Mulone, Tor Vergata University of Rome
2:30 p.m.	2025-01-8121	Viability Assessment of Wind and Solar Renewable Energy Generation in Support of Nationwide Vehicle Electrification

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Time	Paper No.	Title
		Brandon Miller, Ruixiao Sun, Vivek Sujan, Oak Ridge National Laboratory
3:00 p.m.	2025-01-8122	Telematics-Based Managed EV Charging: A Pilot Case Study for Utility Bulk and Distribution Grid Services
		Chelsea Liddell, Walter Schaefer, Kora Dreffs, Jacob Moul, DNV; Carol Kay, Deepak Aswani, Sacramento Municipal Utility District

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 8

Materials & Structural Virtual Performance and Validation - Part 1 of 3

Session Code M230

Room 251 C Session 8:00 a.m.

This session presents the cutting-edge advancements in virtual modeling technologies that evaluate material and structural performance, at scales ranging from theoretical development to real-world applications, including specialized virtual simulation techniques for plug-in hybrids, electric vehicles, fuel cells, and internal combustion engine autonomous vehicles.

Organizers - Ke An, Oak Ridge National Laboratory; Peiran Ding, Farasis Energy USA; Mingchao Guo, FCA US LLC; Hamid Jahed, University of Waterloo; Fan Li, Yi Liu, General Motors LLC; Sze-Sze Ng, Dow; Wenxin(Daniel) Qin, Qigui Wang, General Motors LLC; Xijia Wu, National Research Council Canada; Zhi Yuan, Dassault Systèmes

Chairperson - Yi Liu, General Motors LLC; Sze-Sze Ng, Dow; Wenxin(Daniel) Qin, General Motors LLC

Time	Paper No.	Title
8:00 a.m.	2025-01-8314	Numerical Investigation of Gas Diffusion Layer Properties in PEMFC
		Yuki Ota, Toshiyuki Dobashi, Kumiko Nomura, Takuya Hattori, Ryosuke Maekawa, Toyota Motor Corporation
8:30 a.m.	2025-01-8316	Power Loss Estimation in Poly-V Belts for Micro and Mild Hybrid Powertrains Using the Generalized Maxwell Model
		Renato Galluzzi, Tecnologico de Monterrey; Nicola Amati, Angelo Bonfitto, Shailesh Hegde, Enrico Zenerino, Politecnico di Torino; Mario Pennazza, Emiliano Staniscia, Dayco Europe
9:00 a.m.	2025-01-8318	CFD Modeling of Elastomeric Silicone Material Dispensing to Enable Equipment Design & Optimization for Efficient Automotive Manufacturing
		J. Andy Kenney, Dow Inc.; Roberto Delgado, Graco Inc.; Arif Hossain, Sze-Sze Ng, Ryan Thomas, Marius Chyasnavichyus, Chi-Wei Tsang, Margaret Hwang, Lance Wu, Laura Dietsche, Dow Inc.; Jonathan Mcmichael, Kevin Raines, Grant Nelson, Graco Inc.
9:30 a.m.	2025-01-8319	Thermomechanical Fatigue Behavior of Gray Cast Iron in Brake Rotors
		Yi Liu, Heewook Lee, Devin Hess, Jason Coryell, General Motors LLC
10:00 a.m.	2025-01-8320	Regression Model based Method for Stiffness Design of Laminated
		Chao Yu, Thomas Cleary, Corning Inc.; Laurent Joubaud, Corning Incorporated; Evan kister, W Keith Fisher, Corning Inc

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Technical Session Schedule

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Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 8

Materials & Structural Virtual Performance and Validation - Part 2 of 3

Session Code M230

Room 251 C Session 1:30 p.m.

This session presents the cutting-edge advancements in virtual modeling technologies that evaluate material and structural performance, at scales ranging from theoretical development to real-world applications, including specialized virtual simulation techniques for plug-in hybrids, electric vehicles, fuel cells, and internal combustion engine autonomous vehicles.

Organizers - Ke An, Oak Ridge National Laboratory; Peiran Ding, Farasis Energy USA; Mingchao Guo, FCA US LLC; Hamid Jahed, University of Waterloo; Fan Li, Yi Liu, General Motors LLC; Sze-Sze Ng, Dow; Wenxin(Daniel) Qin, Qigui Wang, General Motors LLC; Xijia Wu, National Research Council Canada; Zhi Yuan, Dassault Systèmes

Chairperson - Yi Liu, General Motors LLC; Sze-Sze Ng, Dow; Wenxin(Daniel) Qin, General Motors LLC

Time	Paper No.	Title
1:30 p.m.	2025-01-8321	Effects of Aging on PVC-Based Instrument Panel Skin for Passenger Airbag Deployment Analysis Karthigan G, Tata Consultancy Services; Vesna Savic, Gowrishankar Ravichandran, General Motors LLC
2:00 p.m.	2025-01-8324	Image-Based Machine Learning Methods in Materials Microstructure and Failure Analysis Meysam Akbari, Andy Wang, Qigui Wang, Cuifen Yan, General Motors LLC
2:30 p.m.	ORAL ONLY	Challenging the Hydrogen Embrittlement in Powertrain Metal Alloys Dimitry Sediako, University Of British Columbia; Rashiga Walallawita; Jordan Kozakevich, Univ. of British Columbia Okanagan; Matthew Hinchliff, University of British Columbia
3:00 p.m.	ORAL ONLY	Keynote: Prismatic Cell Enclosure Analysis Using Ductile Damage Model Saurabh Bahuguna, General Motors LLC; Sayeed Faisal, General Motors; Alec Husemeier, General Motor; Arturo Sanchez Perez, GM

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 8

Load Simulation and Vehicle Performance: Tire and Terrain

Session Code M208

Room 252 A Session 1:30 p.m.

Focusing on tire and terrain mechanics modeling, tire model and test development, parameters identification, sensitivity analysis, road profile characterization, interactions between tire, suspension/steering/brake systems, and different terrains, spindle loads/travel variation attributes due to deterministic and rough roads, tire noise, rolling resistance, correlation studies, design of intelligent tires and ADAS, and changes in tire load duty cycles from traditional to autonomous vehicles.

Organizers - Mustafa Ali Arat, Goodyear Tire & Rubber Co.; Jennifer Bastiaan, Kettering University; Emmanuel Bolarinwa, Revvo Technologies Inc.; Nan Xu, Jilin University

Chairperson - Jennifer Bastiaan, Kettering University

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Technical Session Schedule

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Time	Paper No.	Title
1:30 p.m.	2025-01-8278	Deep Learning-Based Intelligent Tire Wear Detection Method Xie Xianyi, Hao Yang, Lisheng Jin, Yanshan University
2:00 p.m.	2025-01-8276	Experimental Modal Study of Heavy-duty Tire Considering the Influence of Tire Inflated Pressure Chengwei Zhu, Jingjing Yan, Anhui University of Science & Technology

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 8

Panel Discussion: Foretelling the Future of Tire Technology

Session Code M240

Room 252 A Session 2:45 p.m.

As a mobility engineer, you may be aware of the critical role that tires have in the dynamic behavior of ground vehicles. You may also be acquainted with the highly complex design of tires and their considerably nonlinear operation. It is a challenge to keep up with the latest tire engineering developments, but it is not impossible. In this panel discussion, you will hear from tire experts in both industry and academia. Topics to be addressed include tire mathematical modeling, physical measurement of tire responses, tire design for performance and comfort concerns, smart tire development, and the use of artificial intelligence in tire applications. Attendees can expect to acquire knowledge in tire technology and learn about important unanswered research questions in the field of tire mechanics.

Learn more about the Panel

Organizers - Jennifer Bastiaan, Kettering University

Moderators - Jennifer Bastiaan, Kettering University

Panelists - Mohammad Behroozi, General Motors; Gaurav Chauda, Yokohama Tire; Kanwar Bharat Singh, Goodyear Tire and Rubber; James Yang, Texas Tech University;

Tuesday, April 8

ADAS and Autonomous Vehicle System: Testing - Part 1 of 4

Session Code AE106

Room 252 B Session 1:30 p.m.

This session focuses on simulation and testing methodologies for ADAS and automated driving systems. Development and testing these systems often relies on simulation and advance testing methodologies due to the complex operating environment

Organizers - Jace Allen, dSPACE Inc.; Mukund Chandrasekaran, General Motors LLC; Yixin Chen, Stellantis; Amit Choudhury, Robert Bosch; Joseph D'Ambrosio, General Motors LLC; Peng Hang, Tongji University; Bin Li, Cummins; Abigayil Ostipow, dSPACE Inc.; Ramesh S, General Motors Corp.

Assistant Chairpersons - Gene Saltzberg

Time	Paper No.	Title
1:30 p.m.	2025-01-8052	Advancing Verification and Validation for ADAS and ADS

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Technical Session Schedule

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Time	Paper No.	Title
		Eric Thorn, Veronica Knisley, Joseph Auchter, Southwest Research Institute
2:00 p.m.	ORAL ONLY	Standardization in Automotive Testing: Advancing Interoperability with ASAM TestSpecification for a Holistic Approach to Modern Challenges
		Matthäus Lang, Asam e.V.
2:30 p.m.	2025-01-8053	Analysis of OEM Collision Avoidance Data Outputs during VRU Testing
		Meredith Bartholomew, Gary Heydinger, SEA Ltd.
3:00 p.m.	2025-01-8061	Developing a Vehicle-in-Virtual-Environment (VVE) Based Autonomous Driving Function Development and Evaluation Pipeline for Vulnerable Road User Safety
		Haochong Chen, Xincheng Cao, Levent Guvenc, Bilin Aksun Guvenc, The Ohio State University
3:30 p.m.	2025-01-8066	Compensation Algorithm Development in Platform for Pedestrian ADAS Testing
		Meredith Bartholomew, An Nguyen, Nicholas Helber, Gary Heydinger, SEA, Ltd.
4:00 p.m.	ORAL ONLY	Vehicle-in-the-Loop Testing for CAVs and ADAS Verification & Validation, and Certification
		Shean Huff, 4WDyno Solutions LLC

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 8

Military Ground Vehicles - Part 1 of 2

Session Code MIL400

Room 259 Session 8:00 a.m.

This session serves as a forum to address the unique challenges, current gaps, and emerging technologies related to the design, development, and manufacturing of military ground vehicles. Specific topics include the use of digital engineering tools and methodologies, propulsion and mobility analyses, and autonomous vehicle technology.

Organizers - David Gorsich, Vamshi Korivi, Michael Tess, US Army GVSC; Vikram Mittal, US Military Academy

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Elements of Unsupervised Testing for Software Systems of Autonomous Vehicles
		Sean Hickey, Nickolas Vlahopoulos, University of Michigan; Jonathon Smereka, US Army GVSC
8:30 a.m.	2025-01-8340	Workload Estimation for a Military Ground Vehicle Crew using Supervised Machine Learning of FACS Action Unit Intensity Data
		Christopher Mikulski, Kayla Riegner, U.S. Army DEVCOM GVSC

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Time	Paper No.	Title
9:00 a.m.	2025-01-8345	Containerization Enhanced Systems Integration for Robotics Code Development and deployment Harshal Babsaheb Varpe, John Coleman, Ameya Salvi, Clemson University; Jonathon Smereka, Mark Brudnak, David Gorsich, U.S. Army GVSC; Venkat N Krovi, Clemson University
9:30 a.m.	2025-01-8344	Validation of Product Requirements - Specifications Using Field Data and Next Generation Vehicle Design Strategy Using a Calibrated Digital Twin Pranav Manvi, Darryl Suber II, Kaitlyn Griffith, Cameron Turner, Clemson University; Matthew P. Castanier, U.S. Army DEVCOM GVSC; John Wagner, Clemson University
10:00 a.m.	2025-01-8348	Effects of Targeted Instruction on Non-Functional Requirement Understanding: A Case Study in Graduate Vehicle Design Meredith Sutton, Aadithan Anbuvanan, Clemson University; Matthew P. Castanier, U.S. Army DEVCOM GVSC; Cameron Turner, Mary E. Kurz, Clemson University

Planned by Integrated Design and Manufacturing Activity / Ground Vehicle Advisory Group

Tuesday, April 8

Military Ground Vehicles - Part 2 of 2

Session Code MIL400

Room 259 Session 1:30 p.m.

This session serves as a forum to address the unique challenges, current gaps, and emerging technologies related to the design, development, and manufacturing of military ground vehicles. Specific topics include the use of digital engineering tools and methodologies, propulsion and mobility analyses, and autonomous vehicle technology.

Organizers - David Gorsich, Vamshi Korivi, Michael Tess, US Army GVSC; Vikram Mittal, US Military Academy

Time	Paper No.	Title
1:30 p.m.	2025-01-8339	A Review of Off-Road Datasets, Sensor Technologies and Terrain Traversability Analysis Hannah Musau, Denis Ruganuza, Debbie Indah, Arthur Mukwaya, Nana Kankam Gyimah, South Carolina State University; Ashish Patil, Mayuresh Bhosale, Prakhar Gupta, Clemson University; Judith Mwakalonge, South Carolina State University; Yunyi Jia, Clemson University; Dariusz Mikulski, David Grabowsky, U.S. Army DEVCOM GVSC; Jae Dong Hong, Saidi Siuhi, South Carolina State University
2:00 p.m.	2025-01-8343	Real-time Terrain Analysis for Off-road Autonomous Vehicles Edwina Lewis, Aditya Parameshwaran, Laura Redmond, Yue Wang, Clemson University
2:30 p.m.	2025-01-8337	Heavy Tracked Vehicles: Preliminary Design for Mobility Haggay Vardi, Vladimir Vantsevich, Worcester Polytechnic Institute; David Gorsich, U.S. Army GVSC
3:00 p.m.	2025-01-8346	Three-Body Abrasive Wear Surface Characterization of Military Diesel Engine Piston Rings and Cylinder Bores

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Time	Paper No.	Title
		Steven Thrush, U.S. Army DEVCOM GVSC; Aijie Chen, U.S. Army DEVCOM GVSC/HII; Michael Foley, Katherine Sebeck, U.S. Army DEVCOM GVSC; Ziad Boufakhreddine, U.S. Army TACOM
3:30 p.m.	ORAL ONLY	New Use Cases for An Anti-Idle Kit on Military Tactical Vehicles
		Vikram Mittal, Caleb Kaiser, Eugene Tapahonso, Nathaniel Black, Michael Greer, Bennett Ong, Trevon Lusian, Taige Mummert, US Military Academy
4:00 p.m.	2025-01-8341	Analysis of Geo-Location Data of Tactical Vehicles to Derive Wireless Recharging Requirements
		Vikram Mittal, Ameir El Ouadi, U.S. Military Academy

Planned by Integrated Design and Manufacturing Activity / Ground Vehicle Advisory Group

Tuesday, April 8

Battery Safety Summit - Part 1 of 3

Session Code AE701

Room 260 Session 8:00 a.m.

With rapid penetration of battery energy storage systems in the mobility space (surface/aviation/aerospace), knowledge of the various aspects related to battery safety is critical. The purpose of this full day session is to communicate and share information and experience in battery safety related to transportation applications. Attendees will be provided background on EV/Battery related safety regulations, battery safety issues, latest research in the field of battery failure and mitigation technology, and feedback from real experiences dealing with EV incidents from experts. The goal in providing this content is to develop and support uniform safe practices across industry and inform attendees about effective tools and processes to deal with safety issues and incidents.

Organizers - Brian Engle, Amphenol; Vinay Premnath, UL Research Institutes; Sze-Sze Ng, Dow

Chairperson - Brian Engle, Amphenol; Sze-Sze Ng, Dow

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Thermal runaway analysis for aged batteries
		Jun Xu, Shuguo Sun, University Of Delaware
8:35 a.m.	ORAL ONLY	High-Fidelity Experimental Investigation of Hot Particle-Induced Vent Gas Ignition During Nail Penetration Testing of Li-ion Cells
		Harsh Sapra, Clemson University; Jonathan Fakkema, Saurabh K Gupta, Eric Kazyak, Sage Kokjohn, University of Wisconsin-Madison
9:00 a.m.	ORAL ONLY	Innovations in Cylindrical Cell Design
		Keith Beers, Exponent
9:30 a.m.	ORAL ONLY	Li-Ion battery fire suppression tests
		Byoungchul Kwon, Vinay Premnath, Judith Jeevarajan, UL Research Institutes

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Time	Paper No.	Title
10:00 a.m.	2025-01-8129	Comprehensive Mechanical Characterization of Prismatic Lithium-Ion Cells Huzefa Patanwala, Yihan Song, Elham Sahraei, Temple University

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 8

Battery Safety Summit - Part 2 of 3

Session Code AE701

Room 260 Session 1:30 p.m.

With rapid penetration of battery energy storage systems in the mobility space (surface/aviation/aerospace), knowledge of the various aspects related to battery safety is critical. The purpose of this full day session is to communicate and share information and experience in battery safety related to transportation applications. Attendees will be provided background on EV/Battery related safety regulations, battery safety issues, latest research in the field of battery failure and mitigation technology, and feedback from real experiences dealing with EV incidents from experts. The goal in providing this content is to develop and support uniform safe practices across industry and inform attendees about effective tools and processes to deal with safety issues and incidents.

Organizers - Brian Engle, Amphenol; Vinay Premnath, UL Research Institutes; Sze-Sze Ng, Dow

Chairperson - Brian Engle, Amphenol

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	Advancing Automotive Battery Pack Safety with Innovative Venting Units Michael Harenbrock, Mann+Hummel GmbH; Shikhar Arora, MANN+HUMMEL USA INC.; Jürgen Kosicki, Martin Ploppa, Mann+Hummel GmbH; Jacob Olsted, MANN+HUMMEL USA INC.; Robert Zbiral, Mann+Hummel GmbH
2:00 p.m.	2025-01-8131	Impact of Temperature and Current Rate Protocols on the Aging of Lithium-Ion Batteries from Capacity Testing and Impedance Analysis Antonio Garcia, Javier Monsalve-Serrano, Juan Manuel H. Egea, Universitat Politecnica de Valencia; Emilie Bekaert, Alvaro Herran, CiCEnergiGUNE; Javier Marco-Gimeno, Universitat Politecnica de Valencia
2:30 p.m.	ORAL ONLY	Model-based Prediction of Electro-Chemo-Mechanical Failures of Solid-State Batteries Ruqing Fang, Wei Li, Juner Zhu, Junning Jiao, Northeastern University
3:00 p.m.	ORAL ONLY	Electric Vehicle Battery Repurposing: Why, How and Who Apoorva Roy, Hamidreza Movahedi, University of Michigan; Sindhu Seethamraju, Nissan North America Inc; Anna Stefanopoulou, University of Michigan
3:30 p.m.	ORAL ONLY	Early Fault Detection in Lithium-Ion Batteries with Smart Battery Management Systems Reik Laubenstein, IAV Automotive Engineering Inc.
4:00 p.m.	2025-01-8134	A Framework for Modeling Mechanically Induced Thermal Runaway in Lithium-Ion Batteries

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Time	Paper No.	Title
		Huzefa Patanwala, Temple University; Kevin Kong, Vidyu Challa, Ansys, Inc.; Kurosh Darvish, Elham Sahraei, Temple University

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 8

Electric Motor & Power Electronics - Part 1 of 2

Session Code PFL740

Room 310 A Session 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. (For Chargers and Charging Electronics Architecture/Design see AE600)

Organizers - Khorshed Alam, General Motors; Le Chang, General Motor GM; Yilun Luo, General Motors; Di Zhu, Ford Motor Company

Chairperson - Khorshed Alam, General Motors; Le Chang, General Motor GM; Yilun Luo, General Motors LLC

Time	Paper No.	Title
8:00 a.m.	2025-01-8564	AI Enabled Digital Twin of the Traction Motor of an Electric Vehicle
		Rinsha Valiyil, Bharath R, Anush Nair, Shamal Puthiyapurayil, Reshma Ravi, Tata Elxsi, Ltd.
8:30 a.m.	2025-01-8566	Propulsion System Design of Cadillac Lyriq Electric Vehicle
		Faizul Momen, William Jensen, Song He, Mazharul Chowdhury, Ahsan Zahid, Alexander Forsyth, Khorshed Alam, Mohammad Anwar, Young Kim, General Motors LLC
9:00 a.m.	2025-01-8567	A Multifunctional Integrated Three-Level Inverter and On-Board Charger for Electric Vehicle Application
		Yicheng Wang, Wesam Taha, Aniket Anand, Schaeffler
9:30 a.m.	2025-01-8568	NVH Study of Axial Flux Motor for Electric Propulsion Systems
		Song He, William Jensen, Alexander Forsyth, Le Chang, Peng Zhang, Cheng Gong, General Motors LLC; Jian Yao, Yusheng Zou, Vincent Fedida, Chengwu Duan, General Motors China Inc.; Gautam GSJ, Tata Consultancy Services
10:00 a.m.	2025-01-8569	Improving Drive Cycle Efficiency and e -NVH Performance in Traction Motor Drives through High-Fidelity Models
		Aiswarya Balamurali, Hossain Mohammadi, Jigar Mistry, Reza Nasirizarandi, Schaeffler

Planned by Hybrid and Electric Propulsions Committee / Energy and Propulsion Activity

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Technical Session Schedule

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Tuesday, April 8

Electric Motor & Power Electronics - Part 2 of 2

Session Code PFL740

Room 310 A Session 1:30 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. (For Chargers and Charging Electronics Architecture/Design see AE600)

Organizers - Khorshed Alam, General Motors; Le Chang, General Motor GM; Yilun Luo, General Motors; Di Zhu, Ford Motor Company

Chairperson - Khorshed Alam, General Motors; Le Chang, General Motor GM; Yilun Luo, General Motors LLC

Time	Paper No.	Title
1:30 p.m.	2025-01-8571	A Novel EV Inverter Drive System with Integrated Single Stage Buck-Boost and Sinusoidal Output Voltage Baoming Ge, Alfredo R. Munoz, Hong Jiang, Ford Motor Company
2:00 p.m.	2025-01-8573	Analysis and Validation of Torque Ripple Cancellation to Reduce Electric Motor Noise for Electric Vehicles Song He, Cheng Gong, Le Chang, Vinod Peddi, Peng Zhang, General Motors LLC; Gautam GSJ, Tata Consultancy Services
2:30 p.m.	2025-01-8570	Efficiency Comparison between Single Channel and Double Channel operation in Dual Three-Phase PMSM Fengyang Sun, Subarni Pradhan, Jingru Yang, Babak Nahid-Mobarakeh, McMaster University; Diego Fernando Valencia Garcia, Drushan Mavalankar, Stellantis; Alessandro Allocco, Centro Ricerche Fiat SCpA
3:00 p.m.	ORAL ONLY	Weight and Size efficient approaches for bidirectional HV conversion to SELV Steve Germino, Vicor

Planned by Hybrid and Electric Propulsions Committee / Energy and Propulsion Activity

Tuesday, April 8

Panel Discussion - Hydrogen ICE: Opportunities and Challenges

Session Code PFL299

Room 310 B Session 8:00 a.m.

This cross-committee panel paints a holistic picture of the Hydrogen ICE landscape. Speakers will overview recent developments in heavy duty and light duty hydrogen combustion and emissions, as well as hydrogen's impact on ICE lubrication strategies.

Learn more about the Panel

Organizers - Mark Hoffman, Auburn University; Leonid Tartakovsky, Technion Israel Inst. of Technology; John Waldman, General Motors LLC; Svitlana Kroll, Southwest Research Institute; Riccardo Scarcelli, Argonne National Laboratory; Derek Splitter, Oak Ridge National Laboratory; Felix Leach, University of Oxford

Moderators - Mark Hoffman, Auburn University

Panelists - Thomas Briggs, SwRI; Paul Gwyther, Cummins Engine Co., Ltd.; Mitsuhiro Nomura, Toyota Motor North America; Richard Pearson, British Petroleum Co. PLC;

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Tuesday, April 8

Panel Discussion: A Year in Review on Emissions, Fuels, and Propulsion

Session Code PFL499

Room 310 B Session 1:30 p.m.

Join us at WCX for a panel discussion on 'A Year in Review on Emissions, Fuels, and Propulsion'! Learn about the latest regulations and cutting-edge technologies driving improvements in emissions control and fuel efficiency. Do not miss this opportunity to gain insights on how the industry is advancing propulsion systems for a sustainable future.

Learn more about the Panel

Organizers - Christopher Depcik, Univ. of Kansas; Mark Hoffman, Auburn Univ.; Paul Richards; Ron Silver; Andrea Strzelec, USCAR

Moderators - Christopher Depcik, Univ. of Kansas

Panelists - Wole Akinyemi, Cummins; Dirk Bosteels, AECC; Michael Geller, MECA: Supplying Clean Mobility; Christopher Sharp, Southwest Research Institute; David Vuilleumier, Chevron Energy Technology Company;

Tuesday, April 8

Foundations of Automobile Electronics: In-Vehicle Networks

Session Code AE301

Room 320 Session 8:00 a.m.

Vehicle networks and communication protocols play a key role in meeting today's complex system requirements and product flexibility. This session will feature critical talks on in-vehicle networks followed by a panel discussion on system integration and testing challenges. Come prepared to ask questions of these experts.

Organizers - Christopher Lupini, ETAS; Mark Zachos, DG Technologies; Peter Subke, Softing Automotive Electronics

Chairperson - Christopher Lupini, ETAS

Time	Paper No.	Title
8:00 a.m.	2025-01-8082	Designing Software for SAE J1939 ECUs to Improve Cybersecurity Christopher Quigley, Warwick Control Technologies, Ltd.
8:30 a.m.	2025-01-8080	Using CAN Electrical Signals for Cybersecurity and Harness Diagnostics Christopher Quigley, David Charles, Warwick Control Technologies, Ltd.
9:00 a.m.	2025-01-8079	A Time-Aware Shaper-Based Method for Addressing Traffic Bursts and out-of-Order Induced by IEEE 802.1CB in in-Vehicle Networks Feng Luo, Yi Ren, Yian Zhu, Zitong Wang, Yi Guo, Tongji University; Zhenyu Yang, UAES Co., Ltd.
9:30 a.m.	2025-01-8083	Research on Segmented Latency Testing Method for in-Vehicle Real-Time Systems Based on DDS Middleware Yanhua Yu, Feng Luo, Yi Ren, Yongping Hou, Tongji University
10:00 a.m.	2025-01-8081	Options for Introducing SOVD in SDV Architectures

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Time	Paper No.	Title
		Julian Mayer, Stefan Bschor, Oliver Fieth, Softing Automotive Electronics GmbH

Tuesday, April 8

AI and ML in Vehicle-Level Applications

Session Code IDM300

Room 321 Session 1:30 p.m.

This session focuses on automotive applications of artificial intelligence (AI) and machine learning (ML), including use of connected vehicle data sources, predictive or prescriptive, preventive maintenance, and big data analytics.

Organizers - Ramakrishna Koganti, University Of North Texas; Monika Minarcin, Accenture

Chairperson - Sameehan Joshi, Ramakrishna Koganti, University Of North Texas; Monika Minarcin, Accenture

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	Transforming Autonomous Driving Development with the Co-MLOps Platform Kazunari Kawabata, TIER IV Inc.
2:00 p.m.	2025-01-8210	Hyperparameter-Optimized Neural Network for Precise Battery State of Charge Estimation Sandeep Saini, Chinmay Admane, Schaeffler
2:30 p.m.	2025-01-8204	Research on Dangerous Driving Behavior Recognition Algorithm Based on LSTM Yinuo Huang, IEM R&D Center by Toyota; Miaomiao Zhang, Ming Xue, NavInfo Co., Ltd.; Xin Jin, IEM R&D Center by Toyota
3:00 p.m.	2025-01-8207	Enhanced Secondary Crash Classification through Functional Class-Based Weighting and Hybrid Machine Learning Models Mayur Patil, The Ohio State University; Stephanie Marik PE, Ohio Department of Transportation
3:30 p.m.	2025-01-8209	Comparative Analysis of Mass Estimation Methods for Heavy-Duty Vehicles under Varying Payload Conditions Bharat Jayaprakash, Matthew Eagon, University Of Minnesota - Twin Cities; Setayesh Fakhimi, Andrew Kotz, National Renewable Energy Laboratory; William Northrop, University Of Minnesota - Twin Cities
4:00 p.m.	2025-01-8205	A Novel Hybrid Approach for Segmenting Drivers Based on Their Driving Style Shakti Pradeep Chavan, Ratna Babu Chinnam, Wayne State University
4:30 p.m.	2025-01-8206	Machine Learning-Based Digital Twin for Optimizing Automotive Components Jalal Khan, Stefano D'Alessandro, Federico Tramaglia, Alessandro Fauda, VHIT S.p.A

WCX SAE World Congress Experience

Technical Session Schedule

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Planned by Integrated Design and Manufacturing Activity / Ground Vehicle Advisory Group

Tuesday, April 8

Smart Transportation and Infrastructure - Part 1 of 2

Session Code AE400

Room 330 A Session 8:00 a.m.

This session is seeking submissions focusing on Intelligent Transportation Systems and their associated technologies. Abstracts addressing case studies or research could include smart transportation, Automated Vehicles 3.0, V2I/V2X, testing and simulation, roads and infrastructure technologies, and similar mobility and transportation topics. Projects exploring automotive-specific applications of technologies such as 5G, edge computing, artificial intelligence/machine learning, and cloud-based application will also be considered.

Organizers - Peng Hang, Tongji University; Ozgenur Kavas-Torris, Ford Motor Company; James Li; Mohammad Naserian, General Motors LLC; Phares Noel, Diversified Engineering Concepts LLC; Xin Wang, Ford Motor Company; Zhouquan Wu, Eaton; Xiangrui Zeng, Huazhong University of Science and Tech.

Chairperson - Ozgenur Kavas-Torris, Ford Motor Company; Jan-Mou Li, Jan-Mou Li, MWCOG; Phares Noel, Oakland University

Time	Paper No.	Title
8:00 a.m.	2025-01-8101	Fuel Consumption Estimation Using Spatio-Temporal Modeling and Traffic Flow Predictions: A Comparative Analysis Mayur Patil, Joon Moon, Athar Hanif, Qadeer Ahmed, The Ohio State University
8:30 a.m.	2025-01-8098	Impact of Connected and Automated Vehicles on Longitudinal and Lateral Performance of Heterogeneous Traffic Flow in Shared Autonomy on Two-Lane Highways Tianyi Wang, Yale University; Qiyuan Guo, Chong He, Hao Li, Tongji University; Yiming Xu, University of Texas at Austin; Yangyang Wang, Tongji University; Junfeng Jiao, University of Texas at Austin
9:00 a.m.	ORAL ONLY	Artificial Intelligence Data for Ground Vehicle Applications Douglas Brooks
9:30 a.m.	ORAL ONLY	Overview of J3312 SAE Information Report: Artificial Intelligence Use Cases for Ground Vehicle Applications Hoseinali Borhan, Cummins Inc.; James Li; Douglas BROOKS; Ramesh S, GM R&D Center

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 8

Foundations of Automobile Electronics: Cybersecurity - Part 1 of 2

Session Code AE302

Room 330 A Session 1:30 p.m.

This session focuses on cybersecurity for cyber-physical vehicle systems. Topics include navigating cybersecurity risk and the interplay between threat and vulnerability analysis, application of large language models (LLMs) in fuzzing testing, the future of automotive AI and associated cybersecurity risks, quantum resistant automotive cybersecurity and a report out from the SAE TARA task force under the Vehicle Cybersecurity Systems Engineering committee.

Organizers - John Krzeszewski, Eaton; Mark Pope, Mark Monohon, DG Technologies; William Mazzara, Stellantis NV; Chuck Brokish, Green Hills Software; Mert D. Pesé, Clemson University; Ben Gardiner, TMNA; Tohyun Pyun, Sumitomo Electric Wiring Systems Inc.; Andre Weimerskirch, Lear

Corporation; Christopher Lupini, ETAS; Vivek Venkatachalam, CNH; Brian Murray, STEER Tech.; Charles Wilson

Chairperson - John Krzeszewski, Eaton; Mert D. Pesé, Clemson University

Time	Paper No.	Title
1:30 p.m.	2025-01-8091	LLM-Powered Fuzz Testing of Automotive Diagnostic Protocols John McShane, Eastern Michigan University; Levent Celik, Iwinosa Aideyan, Richard Brooks, Mert D. Pesé, Clemson University
2:00 p.m.	ORAL ONLY	Beyond LLMs: The Future of Automotive AI and Its Cybersecurity Risks Numaan Huq, VicOne
2:30 p.m.	ORAL ONLY	Quantum Resilient Automotive Cybersecurity Chad Childers, Qorvo
3:00 p.m.	ORAL ONLY	Navigating Cybersecurity Risks: The Interplay Between Threat Analysis and Vulnerability Analysis Yuanbo Guo, Vultara Inc.
3:30 p.m.	ORAL ONLY	Threat Analysis and Risk Assessment (TARA) Task Force Progress Report Chad Childers, Qorvo; Christopher Lupini, ETAS; Luis Molleda, UL Solutions

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 8

ADAS and Autonomous Vehicle System: AD/ADAS Path Planning and Control - Part 1 of 2

Session Code AE103

Room 330 B Session 1:30 p.m.

This session addresses technical research related to path planning and control for ADAS and autonomous vehicle systems. The topics cover latest technologies of both longitudinal and lateral path planning and motion control for various real-world applications, such as vehicle speed control, park assist/self-parking, lane changing, evasive steering, etc.

Organizers - Yixin Chen, Stellantis; Subramaniam Ganesan, Oakland University; Chen Lv, Nanyang Technological University; Samer Rajab, May Mobility Inc.; Xin Wang, Ford Motor Company

Chairperson - Xin Wang, Ford Motor Company

Time	Paper No.	Title
1:30 p.m.	2025-01-8024	Safe Cooperative Control Framework for Highway On-Ramp Merging PeiYu Chang, Sidra Bhatti, Nur Uddin Javed, Qadeer Ahmed, Ohio State University

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Technical Session Schedule

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Time	Paper No.	Title
2:00 p.m.	2025-01-8025	Development of a Rule-Based Lidar Lane-Keeping Assistance System for Autonomous Vehicles Applications Valentin Soloiu, Shaen Mehrzed, Luke Kroeger, Kody Pierce, Timothy Sutton, Robin Lange, Georgia Southern University
2:30 p.m.	2025-01-8029	On-Road Investigation of Energy Saving Opportunity for Autonomous Light-Duty Vehicles through Automated Vehicle-Following in Safe Distance Scenarios Aman Poovalappil, Andrew Robare, Logan Schexnaydre, Pruthwiraj Santhosh, Mojtaba Bahramgiri, Jeremy P. Bos, Bo Chen, Jeffrey Naber, Darrell Robinette, Michigan Technological University
3:00 p.m.	2025-01-8030	Collision Avoidance System at Urban Intersections Using V2X Communication Seo-Wook Park, Raynier Suresh, Anusha Ailuri, MathWorks
3:30 p.m.	ORAL ONLY	Evolution of high-performance compute modules for AD/ADAS applications. Harsha Badarinarayan, Hitachi Astemo Americas Inc.; Taisetsu Tanimichi, Hitachi Astemo Ltd.

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 8

Body Engineering and Design - Part 1 of 2

Session Code SS100

Room 331 A/B/C Session 8:00 a.m.

Body Engineering & Desxign covers several important areas that are related to vehicle body, including its components such as instrument panel, steering column and wheel, seats, hood, decklid, transmission cross-member, hard mounted chassis, CRFM, etc. Topics included are: Novel concepts, Analysis, Design, Testing, Predictions of strength, stiffness, and fatigue life, welding methods, vehicle body quality, durability, reliability, safety, ride & handling, NVH, aerodynamics, mass reduction, as well as fuel economy.

Organizers - Mallikarjuna Bennur, Sudeep Chavare, General Motors LLC; Raghu Echempati; Ramakrishna Koganti, University Of North Texas; Vesna Savic, General Motors LLC

Chairperson - Mallikarjuna Bennur, Vesna Savic, General Motors LLC

Time	Paper No.	Title
8:00 a.m.	2025-01-8609	Aspects for the Optimization of Car Production Regarding Efficiency, Availability and Sustainability Christoph Bleicher, Ahmad Qaralleh, Fraunhofer LBF; Dirk Lehmhus, Marco Haesche, Leonardo Fernandes Gomes, Fraunhofer IFAM; Manuel Pintore, Robert Kleinhans, Fraunhofer IGCV; Silke Sommer, Johannes Tlatlik, Fraunhofer IWM
8:30 a.m.	2025-01-8617	A Methodology for Minimizing Liftgate-Induced Low-Frequency Boom Noise in Vehicles Ahmad Abbas, Syed Haider, Stellantis
9:00 a.m.	2025-01-8618	Study on Relative Displacement in Assembly Structure Sections for Pre-Validation of Door Trim Noise

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
		Wonhyung Cho, Hyunghyun Na, Donghyeon Kim, JongSoo Kim, Dongwan Shin, Seoyon E-hwa
9:30 a.m.	2025-01-8621	Barrier Weight Prediction for Vehicle Compatibility in North America Market Using Finite Element Analysis
		Harsha Kusnoorkar, Basavaraj Koraddi, Hyundai-Kia America Technical Center Inc.; Michael Guerrero, Hyundai Motor Group; Venu Vinod Sripada, Hyundai-Kia America Technical Center Inc.; Ravi Tangirala, Hyundai Motor America

Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 8

Body Engineering and Design - Part 2 of 2

Session Code SS100

Room 331 A/B/C Session 1:30 p.m.

Body Engineering & Desxign covers several important areas that are related to vehicle body, including its components such as instrument panel, steering column and wheel, seats, hood, decklid, transmission cross-member, hard mounted chassis, CRFM, etc. Topics included are: Novel concepts, Analysis, Design, Testing, Predictions of strength, stiffness, and fatigue life, welding methods, vehicle body quality, durability, reliability, safety, ride & handling, NVH, aerodynamics, mass reduction, as well as fuel economy.

Organizers - Mallikarjuna Bennur, Sudeep Chavare, General Motors LLC; Raghu Echempati; Ramakrishna Koganti, University Of North Texas; Vesna Savic, General Motors LLC

Chairperson - Mallikarjuna Bennur, Vesna Savic, Vesna Savic, General Motors LLC

Time	Paper No.	Title
1:30 p.m.	2025-01-8620	Development of a New Concept Structure for 4-Way Electric Headrest Adjustment
		Sanguk Yu, Hyundai & Kia Corp.
2:00 p.m.	ORAL ONLY	System Design of Drivetrain for a Baja SAE Four-Wheel Drive Vehicle
		Yucheng Liu, South Dakota State Univ.
2:30 p.m.	2025-01-8610	Modeling and Evaluation of FSAE Vehicle Cockpit Ergonomics
		J.Rhett Mayor, Megan Bezaitis, Negar Oromi, Emily Winters, Alex Repp, Georgia Institute of Technology
3:00 p.m.	2025-01-8619	Application of Machine Learning Model on Automotive Subframe Design
		Jiongzhi Yang, Bikramjit Sarkaria, Prashanth Kumaraswamy, Praveen Kailkere Srinivas, F Tech R&D North America Inc.
3:30 p.m.	ORAL ONLY	Development of a Baja SAE Data Acquisition System at Kettering University
		Jake Dancel, Kettering Univ.; Arnaldo Mazzei, Jennifer Bastiaan, Gregory Davis, Kettering Univ

WCX SAE World Congress Experience

Technical Session Schedule

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Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 8

Occupant Protection: Rear Impact, Side Impact, Rollover and Biomechanics - Part 1 of 2

Session Code SS506

Room 353 Session 8:00 a.m.

This session will have presentations that address advancing the science of occupant safety in vehicle rear impact, side impact, and rollover collisions.

Organizers - Jason Jenkins, Transportation Research Center Inc.; Rakshit Ramachandra, Transportation Research Center Inc; Akshara Sreedhar, NHTSA

Chairperson - Rakshit Ramachandra, Transportation Research Center Inc.; Rakshit Ramachandra, Transportation Research Center Inc

Moderators - Devon Albert, Virginia Tech

Panelists - Devon Albert, Virginia Tech;

Time	Paper No.	Title
8:00 a.m.	2025-01-8711	Analysis and Comparison of Metrics to Assess Submarining Behavior with the Hybrid III 5th Percentile Dummy in the Rear Seat Sushant R Jagtap, Jessica S Jermakian, Marcy A Edwards, Insurance Institute for Highway Safety
8:30 a.m.	2025-01-8731	Occupant Responses in High-Speed Rear Sled Tests: Focus of Initial Position, Seat Strength and ATD Size Chantal Parenteau, Roger Burnett, Design Research Engineering
9:00 a.m.	ORAL ONLY	Biofidelity Assessment of the GHBMC M50-O Seated in a Honda Accord Seat Vikram Pradhan, State of Ohio; Rakshit Ramachandra, Transportation Research Center Inc.; Jason Stammen, NHTSA; COREY J. KRACHT, TS Tech. Americas Inc.; Kevin Moorhouse, NHTSA; John Bolte, Yun Seok Kang, Ohio State University
9:30 a.m.	2025-01-8728	The Biomechanical Effects of Neck and Back Cushion / Pillow / Support Devices in Low-Speed Rear Impacts Andrew Phan, Jamie Gross, Sagar Umale, Shannon Crowley, Gabriel Glasser, Christopher Furbish, Aperture LLC
10:00 a.m.	2025-01-8708	Aggregation of Cervical Loads in Rear Impact Crash Tests and Comparison to Activities of Daily Living Alex Kazmierczak, Sagar Umale, Alyssa Visalli, Ella Webb, Aryeh Kashdan, Bryan Randles, Judson Welcher, Aperture LLC

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 8

Occupant Protection: Integrated Safety Systems

Session Code SS503

Room 353 Session 9:00 a.m.

This session covers a wide range of aspects of integrated active and passive safety systems for enhancing safety in motor-vehicle crashes. Topics include testing, modeling and optimization methods for integrated safety systems; effects of driver assist and crash avoidance technologies on occupant protection; occupant-state technologies; integrated safety designs toward highly automated vehicles; safety

designs adapting to active safety features; and integrated sensing algorithms or systems.

Organizers - Devon Albert, Virginia Tech.; Jacob Fisher, Exponent Inc.; Samatha H. Haus, MIT; Jingwen Hu, Univ. of Michigan-Ann Arbor; Lingxi Li, Indiana Univ. Purdue Univ. Indianapolis; Whitney Marie Tatem, NHTSA

Chairperson - Jacob Fisher, Exponent Inc.; Jingwen Hu, Univ. of Michigan-Ann Arbor

Time	Paper No.	Title
9:00 a.m.	2025-01-8717	Integration of Safety Standards for a Unified Safety Framework for Automated Vehicles Ayse Aysu Sari, Morteza Soleimani, University of Warwick
9:30 a.m.	2025-01-8719	Highly Accurate Machine Learning Models for Automotive Crash Applications Using CAE Centric AI/ML Platform Radha Krishnan, Detroit Engineered Products Inc.
10:00 a.m.	2025-01-8723	Lattice Based Localized Energy Absorber for Improved Vulnerable Road User Performance for a Vehicle Vivekananda Kinila, Varun Agarwal, Rajamanickam V S, Biswajit Tripathy, Tata Consultancy Services; Vishal Gupta, General Motors LLC

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 8

Accident Reconstruction: EDR and Vehicle Dynamics Testing - Part 1 of 5

Session Code SS500

Room 353 Session 1:30 p.m.

Presentations studying ADAS systems in modern automobiles. New methods for analyzing pedestrian collisions, tire forces in low speed collisions and roll-over incidents. Simulating motorcycle motion in PC Crash

Organizers - Chris Armstrong, SAIC; Christopher Armstrong, Armstrong Forensic Reconstruction Corp.; Alan Asay, Asay Engineering LLC; Dean Beaumont, ARC Investigations; Jarrod Carter, Origin Forensics LLC; Edward Fatzinger, YA Engineering Services; David Plant, D P Plant & Associates; John Sprague; John Steiner, Mecanica Scientific Svcs Corp.; Craig Wilkinson, MEA Forensic Engineers & Scientists

Chairperson - Edward Fatzinger, YA Engineering Services; David Plant, D P Plant & Associates

Time	Paper No.	Title
1:30 p.m.	2025-01-8712	Examination of the Data Structures of the Bendix® Data Recorder Matthew DiSogra, Delta |v| Forensic Engineering; Jeffrey Hirsch, Drive Forensics; Adam Yeakley, Delta |v| Forensic Engineering
2:00 p.m.	2025-01-8713	The Effects of Collision-Related Power Loss on Toyota Safety Sense 2.5+ Event Data Charles Getz, Matthew DiSogra, Heath Spivey, Taylor Johnson, Amit Patel, Delta |v| Forensic Engineering

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
2:30 p.m.	2025-01-8714	Analysis of the Event Data Recorder Vehicle System Data of a GM Vehicle Intelligence Platform Airbag Control Module (SDM50)
		Brian Smyth, Charles L Crosby, Ryan Bickhaus, James Smith, Exponent Inc.; Dustin Edmunds, Donald Floyd, Vipul Modi, RaShawndra D. Outlaw, Jeff Wright, General Motors LLC
3:00 p.m.	2025-01-8703	Decelerations for Vehicles with Anti-Lock Brake Systems (ABS) during Wet-to-Dry Transitions on Asphalt and Concrete Road Surfaces
		Ian Miller, David King, Gunter Siegmund, MEA Forensic Engineers & Scientists
3:30 p.m.	2025-01-8704	Deceleration Testing on Various Driving Surfaces for Off-Road Vehicle Operation
		Grant Swensen, Wyatt Warner, Mark Warner, Collision Safety Engineering LC
4:00 p.m.	2025-01-8687	Dynamic Testing and Analysis of Autocycle Vehicles for Accident Reconstruction
		Wyatt Warner, Grant Swensen, Mark Warner, Collision Safety Engineering LC

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 8

Safety and Performance of Active Safety and Driving Automation Features - Part 1 of 2

Session Code SS400

Room 355 Session 1:30 p.m.

"This session will focus on evaluating the safety impacts that can be achieved by Active Safety features and Driving Automation features. Topics will include the both the predictive and retrospective safety impact assessments of these technologies, safety benefits for projected systems, the development of a safety case, human interactions and driver monitoring systems, regulatory testing, consumer acceptance, market demand, and subsystem performance assessment of perception, path planning, and other subsystems.

Organizers - Samatha H. Haus, University of Tennessee; Luke Riexinger, Insurance Institute for Highway Safety; John Scanlon, Waymo; Jeffrey Wishart, Science Foundation Arizona/Arizona Comme

Chairperson - John Scanlon, Waymo; Jeffrey Wishart, Science Foundation Arizona

Time	Paper No.	Title
1:30 p.m.	2025-01-8674	Leveraging the Automated Mobility Partnership (AMP) to Support the Evaluation of Safety of the Intended Functionality (SOTIF) in Automated Driving Systems
		Jacobo Antona-Makoshi, Virginia Tech. Transportation Institute; Vicki Williams, Gibran Ali, Kaye Sullivan, Paolo Terranova, Kevin Kefauver, Virginia Tech Transportation Institute; Alex Hatchett, GCAPS
2:00 p.m.	2025-01-8676	Identifying Negative Driver States that Share Commonalities for Interventions
		Sean Seaman, Peihan Zhong, Linda Angell, Touchstone Evaluations Inc.; Joshua Domeyer, Toyota CSRC; John Lenneman, Toyota Motor Corporation
2:30 p.m.	2025-01-8677	Do Aftermarket and Original Equipment Forward Collision Warning Systems Respond the Same to Vehicles and Pedestrians?
		David Kidd, Philip Floyd, David Aylor, Insurance Institute for Highway Safety

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
3:00 p.m.	2025-01-8679	Controllability and Driving Automation Mihir Shah, Ireri Ibarra, Dana Incorporated
3:30 p.m.	ORAL ONLY	Autonomous driving on slippery roads. Understanding the challenges and looking at the road forward. Jim Skarie
4:00 p.m.	2025-01-8672	Dynamic Driving Task Assessment Scores for Scenarios Navigated by an OEM ADS-Equipped Vehicle Jeffrey Wishart, Science Foundation Arizona; Shujauddin Rahimi, Arizona Commerce Authority; Sunder Swaminathan, Junfeng Zhao, Arizona State University; Matt Frantz, Satvir Singh, May Mobility; Steven Gerard Como, Exponent

Tuesday, April 8

Panel Discussion: IP Investment Amid the Trade Wars: What Automotive Executives Must Know

Session Code IDM400

Room 356 Session 8:00 a.m.

This fireside chat will discuss how automotive companies must take stock of their intellectual property and protect it globally in view of tariffs and other threats to their supply chain.

Learn more about the Panel

Moderators - David Stout, David B Stout Associates LLC

Panelists - Edgar Baum, Avasta; Rob Sterne, Sterne Kessler Goldstein & Fox PLLC;

Tuesday, April 8

Occupant Protection: Rear Impact, Side Impact, Rollover and Biomechanics - Part 2 of 2

Session Code SS506

Room 356 Session 1:30 p.m.

This session will have presentations that address advancing the science of occupant safety in vehicle rear impact, side impact, and rollover collisions.

Organizers - Devon Albert, Virginia Tech.; Kerry Danelson, Wake Forest Univ. School of Medicine; Jacob Fisher, Exponent Inc.; Warren Hardy, The Ohio State University; Jason Jenkins, Transportation Research Center Inc.; Elizabeth McNeil, NHTSA; Rakshit Ramachandra, Transportation Research Center Inc; Akshara Sreedhar, NHTSA

Chairperson - Rakshit Ramachandra, Transportation Research Center Inc

Time	Paper No.	Title
1:30 p.m.	2025-01-8729	Overview of Seat Design Changes and Performance

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
		Chantal Parenteau, Roger Burnett, Russell Davidson, Design Research Engineering
2:00 p.m.	2025-01-8725	A Chronology of Research and Events to-Date Significant to Occupant Protection in Rear-End Automobile Impacts
		Wyatt Warner, Brigham Young University
2:30 p.m.	2025-01-8727	Assessment of Injuries in Rear Impacts
		Joshua Greib, Renee Jurkiw, Tanja Kryzaniwskyj, Susan Owen, Paul Van Rooyen, Stacey Whelan, John Williamson, General Motors LLC
3:00 p.m.	2025-01-8709	Predicting Head Injury Criterion in Real-World Frontal Impacts
		Clyde Westrom, Rachel Tanczos, Kevin Adanty, Sean Shimada, Biomechanical Consultants
3:30 p.m.	2025-01-8730	Analyzing EV Battery Package Responses during Side Pole Impacts with Multiple Speeds and Locations
		Jian Chen; Kewei Bian; Haojie Mao

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 8

Lifecycle and Techno-Economic Analysis of Transport Technologies, Decarbonization Strategies - Part 1 of 2

Session Code SDP110

Room 357 Session 8:00 a.m.

- Life Cycle Analysis (LCA) and Techno-Economic Analysis (TEA) of vehicle technologies and energy
- Impacts of vehicle technologies and transportation energy on environmental, social, and economic sustainability
- Analysis-led decarbonization strategy development
- Individual vehicle and fleet-level assessments

Organizers - Michael Geller, MECA: Supplying Clean Mobility; Vickey Kalaskar, Southwest Research Institute; Christopher Kolodziej, Argonne National Laboratory; Amanda Lea-Langton, Univ. of Manchester; Jenny Sigelko, Porsche Cars North America Inc.

Chairperson - Michael Geller, MECA: Supplying Clean Mobility; Christopher Kolodziej, Argonne National Laboratory

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	A Life-Cycle Assessment of Different Powertrain Technologies for Light- and Heavy-duty Vehicles, Looking at the Global Warming Potential and Primary Energy Demand
		Gerfried Jungmeier, Joanneum Research; Dirk Bosteels, Joachim Demuynck, AECC
8:30 a.m.	ORAL ONLY	Comprehensive Cradle to Grave Life Cycle Analysis of On-Road Vehicles in the United States Based on GREET 2024
		Taemin Kim, Argonne National Laboratory

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:25 PM

Time	Paper No.	Title
9:00 a.m.	ORAL ONLY	Route-based time-dependent life-cycle analysis of GHG and NOx emissions from heavy-duty trucks Arnav Sinha, Univ. of Wisconsin-Madison; Harsh Sapra, Sage Kokjohn, University of Wisconsin-Madison
9:30 a.m.	ORAL ONLY	How energy efficiency standards can help achieve climate change goals in Colombia Helmer Acevedo, International Council On Clean Transport

Planned by Sustainable Development Committee / Energy and Propulsion Activity

Tuesday, April 8

Lifecycle and Techno-Economic Analysis of Transport Technologies, Decarbonization Strategies - Part 2 of 2

Session Code SDP110

Room 357 Session 1:30 p.m.

- Life Cycle Analysis (LCA) and Techno-Economic Analysis (TEA) of vehicle technologies and energy
- Impacts of vehicle technologies and transportation energy on environmental, social, and economic sustainability
- Analysis-led decarbonization strategy development
- Individual vehicle and fleet-level assessments

Organizers - Michael Geller, MECA: Supplying Clean Mobility; Vickey Kalaskar, Southwest Research Institute; Christopher Kolodziej, Argonne National Laboratory; Amanda Lea-Langton, Univ. of Manchester; Jenny Sigelko, Porsche Cars North America Inc.

Chairperson - Jenny Sigelko, Porsche Cars North America Inc.

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	Techno-Economic Assessment of Dynamic Wireless Power Transfer for Long-Haul Freight: A Fleet Operator Perspective Trentalessandro Costantino, Ezio Spessa, Federico Miretti, Politecnico di Torino
2:00 p.m.	2025-01-8592	Energy Price Sensitivity and Cost Analysis of Battery Electric and Fuel Cell Powertrains for Class 8 Heavy-Duty Trucks in Real-World Scenarios: A 2024, 2035, and 2050 Perspective Charbel Mansour, Julien Bou Gebrael, Amarendra Kancharla, Vincent Freyermuth, Ehsan Sabri Islam, Ram Vijayagopal, Olcay Sahin, Natalia Zuniga, Daniela Nieto Prada, Michel Alhajjar, Aymeric Rousseau, Argonne National Laboratory; Hoseinali Borhan, Cummins Inc; Ouafae El Ganaoui-Mourlan, IFPEN
2:30 p.m.	2025-01-8591	Comprehensive Techno-Economic Analysis of Battery-Electric Trucks: Evaluating Battery Aging Impact for Regional Delivery Missions Trentalessandro Costantino, Matteo Acquarone, Federico Miretti, Ezio Spessa, Politecnico di Torino
3:00 p.m.	2025-01-8593	Next-Gen Italian Urban Mobility: Emissions LCA and TCO Prospective for Innovative Transportation Solutions Pier Paolo Brancaleoni, Andrea Nicolò Damiani Ferretti, Enrico Corti, Vittorio Ravaglioli, Davide Moro, University of Bologna

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
3:30 p.m.	2025-01-8594	Fleet-Level Energy and Emissions Analysis of the US Off-Road Sector with VISION: Off-Road
		Shashwat Tripathi, Christopher Kolodziej, David Gohlke, Andrew Burnham, Yan Zhou, Douglas Longman, Argonne National Laboratory
4:00 p.m.	ORAL ONLY	Mining Vehicle Technologies Analysis
		Lyle Pickett, Sandia National Laboratories

Planned by Sustainable Development Committee / Energy and Propulsion Activity

Tuesday, April 8

Vehicle Aerodynamics - Part 1 of 6

Session Code SS800

Room 358 Session 8:00 a.m.

The Vehicle Aerodynamics Technical Program will be Showcased across 6 parts, over 3 days. Presentations will cover a broad range, including: Fundamentals, Numerical Methods Application & Analysis, Experimental Technologies & Correlation, Product Development, Wind Tunnel Facilities, Unsteady Aerodynamics & Aeroacoustics and Commercial vehicles.

Organizers - Jeffrey Bordner, JTiB Consulting; Edward Duell, Amentum; Chen Fu, Rivian Automotive LLC; Adrian Philip Gaylard, JAGUAR LANDROVER; Mark Gleason, Gleason Aero LLC; Arturo Guzman, Stellantis; Taeyoung Han, General Motors (retired); Jonathan Jilesen, Dassault Systemes; Timo Kuthada, Institut Fuer Kraftfahrwesen; Raymond Leto, TotalSim LLC; Todd Lounsberry, FCA US LLC; Nicholas Oettle, Jaguar Land Rover; Thomas Ramsay, Honda Development and Mfg of America LLC; Pratap Rao, Daimler; Pratap Thamanna Rao, Honda Development and Mfg of America LLC; Vishal Raul, General Motors; Frederick Ross, Siemens Corp.; Sivapalan Senthooran, Dassault Systemes; Mesbah Uddin, University of North Carolina Charlotte; H. Robert (Bob) Welge, Welge; Felix Wittmeier, FKFS; Kurt Zielinski, American Honda Motor Co. Inc.

Chairperson - Raymond Leto, TotalSim LLC; Thomas Ramsay, Honda Development and Mfg of America LLC

Time	Paper No.	Title
8:00 a.m.	2025-01-8769	An Investigation of the Inter-Vehicle Distances and Lateral offsets on Aerodynamic Forces and Wake Structures of Vehicles Platooning
		Maziar Mosavati, Arturo Guzman, Todd Lounsberry, Gregory Fadler, Stellantis
8:30 a.m.	2025-01-8766	Consistent Drag Prediction with CFD for a Vehicle with Bimodal Wake Cycling
		Michael DeMeo, Dassault Systemes Americas Corp.; Guido Parenti, Alejandro Martinez Navarro, Dassault Systemes AB; Richard Shock, Nicolas Fougere, Dassault Systemes Americas Corp.; Pooyan Razi, Danilo Oliveira, Craig Lindsey, Chenxing Yu, Flavio Breglia Sales, General Motors LLC
9:00 a.m.	2025-01-8767	Investigation of Flow Structures in Different Body Types Contributing to Drag Change Due to Crosswind
		Akihiro Nakata, Satoshi Okamoto, Shuhei Nishida, Yosuke Morikawa, Mazda Motor Corporation; Takuji Nakashima, Hiroshima University
9:30 a.m.	2025-01-8776	Comparison of Vortex Identification Methods on Base Wake Structures in Bluff Body Flows

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Technical Session Schedule

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Time	Paper No.	Title
		Matthew Aultman, Lian Duan, The Ohio State University
10:00 a.m.	2025-01-8782	Investigation of Skin Friction Topology on the AeroSUV Using GLOF Meter
		Masato Hijikuro, Keigo Shimizu, Mazda Motor Corporation; Takuji Nakashima, Takenori Hiraoka, Hiroshima University

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures

Tuesday, April 8

Vehicle Aerodynamics - Part 2 of 6

Session Code SS800

Room 358 Session 1:30 p.m.

The Vehicle Aerodynamics Technical Program will be Showcased across 5 parts, over 2.5 days. Presentations will cover a broad range, including: Fundamentals, Numerical Methods Application & Analysis, AI & Machine Learning, Experimental Technologies & Correlation, Product Development, Wheel & Tire Flows, Wind Tunnel Facilities, Unsteady Aerodynamics & Aeroacoustics, and Platooning & Vehicle Interactions.

Organizers - Jeffrey Bordner, JTiB Consulting; Edward Duell, Amentum; Gregory Fadler, Stellantis; Chen Fu, Rivian Automotive LLC; Adrian Philip Gaylard, JAGUAR LANDROVER; Mark Gleason, Gleason Aero LLC; Arturo Guzman, Stellantis; Taeyoung Han, General Motors (retired); Jonathan Jilesen, Dassault Systemes; Timo Kuthada, Institut Fuer Kraftfahrwesen; Raymond Leto, TotalSim LLC; Todd Lounsberry, FCA US LLC; Nicholas Oettle, Jaguar Land Rover; Thomas Ramsay, Honda Development and Mfg of America LLC; Pratap Rao, Daimler; Pratap Thamanna Rao, Honda Development and Mfg of America LLC; Vishal Raul, General Motors; Frederick Ross, Siemens Corp.; Sivapalan Senthooran, Dassault Systemes; Mesbah Uddin, University of North Carolina Charlotte; H. Robert (Bob) Welge, Welge; Felix Wittmeier, FKFS; Kurt Zielinski, American Honda Motor Co. Inc.

Chairperson - Edward Duell, Amentum; Gregory Fadler, Arturo Guzman, Stellantis; Mesbah Uddin, University of North Carolina Charlotte

Time	Paper No.	Title
1:30 p.m.	2025-01-8772	Design Parameter Impact of Wind-Averaged Drag Optimization
		Meghan Kaminski, Andrew D'Hooge, Zackery Borton, Rivian Automotive
2:00 p.m.	2025-01-8781	The Aerodynamic Development of the Range Rover
		Sébastien Chaligné, Adrian Philip Gaylard, Nicholas Simmonds, Ross Turner, Jaguar Land Rover
2:30 p.m.	2025-01-8763	Characterisation and Variabilities of Sprays Produced by Tyres Rotating on Wet Surfaces
		Paul Otxoterena, RISE Research Institutes Of Sweden; Jan-Erik Kallhammer, Magna Electronics; Peter Eriksson, Erik Ronelov, AstaZero
3:00 p.m.	2025-01-8784	Design and Evaluation of a Conceptual Zero-Emission Truck Model Considering Aerodynamic Efficiency
		Faegheh Ghorbanishohrat, Brian McAuliffe, Harrison O'Reilly, National Research Council Canada

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
3:30 p.m.	2025-01-8787	Energy Savings and Range Extension from Aerodynamic Improvements of Emerging Zero-Emission Heavy Vehicle Concepts Brian McAuliffe, Faegheh Ghorbanishohrat, National Research Council Canada

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures

Tuesday, April 8

Welcome and Fireside Chat with Ralph Gilles, Chief Design Officer, Stellantis

Session Code LS101

Room Exhibit Hall Session 10:30 a.m.

The goal of the fireside conversation is to get the engineering/business audience into the mind of the designer to talk about challenges and opportunities that exist in the automotive market today. As the chief designer officer for some of the most iconic brands Ralph will share his thoughts on balancing customer loyalty with business drivers and regulatory compliance issues that are moving industry towards electrification and L4/L5 automated vehicles? Hosted by Carla Bailo, SAE Past President. Sponsored by

Learn more about Ralph Gilles

Keynote Speakers Ralph Gilles, Stellantis

Tuesday, April 8

The New Growth Mandate for Automakers: Building New Businesses and Customer Experiences

Session Code LS102

Room Exhibit Hall Session 11:15 a.m.

In this new and exciting panel discussion frontline leaders from OEMs, Suppliers, Technology Providers, and Non-Traditional Automotive Partners describe transformative projects and examples helping to drive the auto industry's continuing expansion and relevance to consumer lifestyles and experiences.

Learn more about the Panel Participants

Moderators - John Waraniak, Have Blue LLC

Panelists - Mahendra Muli, Amazon Web Services; Alex Purdy, Ford Motor Co., Ltd.; Scott Vickery, Fox Factory Inc.;

Tuesday, April 8

Navigating the Future of Vehicle Development and Consumer Acceptance

Session Code LS103

Room Exhibit Hall Session 1:00 p.m.

Join a diverse group of industry experts as they explore the critical factors shaping the future of vehicle development and consumer adoption. This thought-provoking panel will dive into the impact of key elements such as evolving infrastructure, the user experience (UX), the rise of Chinese vehicle development, the politicization of electric propulsion and touch on real-world experiences at the point of sale, examining how these factors influence consumer choices. Panelists will also share insights on the transition to safer, low-carbon vehicle solutions and how the automotive industry can overcome current challenges to foster greater market acceptance.

Whether you're a stakeholder in the automotive industry, a policy maker, or a concerned consumer, this session will provide invaluable perspectives on the intersection of innovation, regulation, and public perception in the rapidly changing vehicle landscape.

Learn more about the Panel Participants

Moderators - John McElroy, Blue Sky Productions

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Technical Session Schedule

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Panelists - Alexander Edwards, Strategic Vision Inc.; Sandy Munro, Munro & Associates; Eric D. Noble, The CARLAB Inc.;

Tuesday, April 8

The Future of Vehicle Design and Deployment: Navigating Business, Technology and Regulatory Shifts Over the Next 4 Years

Session Code LS104

Room Exhibit Hall Session 2:30 p.m.

The automotive industry is undergoing a rapid transformation, driven by advancements in technology, shifting consumer expectations, and an evolving regulatory landscape. As we look toward the next four years, senior technical executives, industry leaders, and experts must consider how business models, technological innovations, and global dynamics will shape the future of vehicle design and deployment. This panel will address key trends, challenges, and opportunities that are set to disrupt the automotive sector, including the business of infrastructure, UX/AI/SDV integration, China's impact, regulatory changes, powertrain evolution, and the critical importance of consumer acceptance.

Learn more about the Panel Participants

Moderators - Hilary Cain, Alliance for Automotive Innovation

Panelists - Wassym Bensaid, Rivian; Sheldon Brown, Toyota Motor Engineering & Mfg NA Inc.; James Hawkins, Lucid Motors; Tim O'Linn, Honda American Motor Co.;

Tuesday, April 8

The Art of the Possible, A TechTalk on "Fratzonic"

Session Code LS105

Room Exhibit Hall Session 3:45 p.m.

Back by popular demand, Tech Talks provide short thought provoking discussions on the art of the possible in technology.
When Dodge unveiled the Charger Daytona EV, the new electric car checked off two boxes, a square-jawed face and a maximum output of 670 horsepower. But the question remained as to what the Charger Daytona would sound like. Come learn about a first of its kind "Fratzonic Chambered Exhaust" coming from an electric powertrain. Hearing is believing!

Learn more about the Panel Participants

Presenters - Brandon Matthew Sims, Stellantis

Tuesday, April 8

Learning Lab - Day 1

Session Code LL100

Room Hall D Session ALL DAY

Time	Paper No.	Title
9:30 a.m.	ORAL ONLY	Autodrive
		TBD
10:00 a.m.	ORAL ONLY	Autodrive
		TBD

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
10:30 a.m.	ORAL ONLY	Autodrive
		TBD
11:00 a.m.	ORAL ONLY	Autodrive
		TBD
11:30 a.m.	ORAL ONLY	Autodrive
		TBD
12:00 p.m.	ORAL ONLY	V2X Ecosystem Opportunities-Focus on Consumer Value Propositions
		As a primer to the panel discussion “V2X Quantitative Consumer Research: What They Value and Why”, this presentation will address the partnership between SAE and M-city to conduct the first-ever quantitative consumer research on V2X, building on prior studies conducted with both infrastructure stakeholders and end users.
		Thomas Pavlak, Poco Labs LLC
12:30 p.m.	ORAL ONLY	How SAE Has Shaped My Career Journey
		Jessica Swan, General Motors
1:00 p.m.	ORAL ONLY	Navigating the Shift to Software-Defined Vehicles
		TBD. TBD
2:00 p.m.	ORAL ONLY	GAMIC Finalist Presentations
2:30 p.m.	ORAL ONLY	GAMIC Finalist Presentations
3:00 p.m.	ORAL ONLY	GAMIC Finalist Presentations
3:30 p.m.	ORAL ONLY	GAMIC Finalist Presentations

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:26 PM

Time	Paper No.	Title
4:00 p.m.	Panel	Internal Combustion Engines (ICE) for a Reliable Future

The challenge of decarbonizing road transport requires more than just a shift in technology, it calls for innovative thinking and a balanced approach. While the momentum behind electrification grows, internal combustion engines (ICEs) continue to drive the majority of vehicles worldwide. Rather than viewing ICEs and EVs as opposing solutions, the path forward must integrate advancements in fuel technology, engine efficiency, and emission reduction to ensure holistic solutions are easily accessible and advantageous in response to differing challenges. This panel will delve into how advancements in fuel technology, hybrid systems, and forward-thinking policies can transform the transportation landscape while maximizing the potential of existing infrastructure. Our goal is to examine how ICE vehicles can be optimized in our path towards a lower-carbon future, ensuring a smooth transition toward sustainability.

Moderators - Zainab A. Nasif, OSP

Wednesday, April 9

Fuel Injection and Sprays Part 2 of 3

Session Code PFL320

Room 140 A Session 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 gasoline, diesel and alternative fuel sprays and fuel injection equipment are encouraged.

Organizers - Tarek Abdel-Salam, East Carolina University; Essam El-Hannouny, Argonne National Laboratory; Brian Gainey, Clemson University; Felix Leach, University of Oxford; Alessandro Montanaro, STEMS - CNR

Chairperson - Alessandro Montanaro, STEMS - CNR

Time	Paper No.	Title
8:00 a.m.	2025-01-8455	Spray Characterization in a Constant Volume Chamber of Aluminum Oxide Nanoparticles-Diesel Blends Huangchang Ji, Zhejiang University; Zhiyu Zhao, University of Illinois Urbana-Champaign
8:30 a.m.	2025-01-8453	Correlation of Total Aromatics and Speciated Aromatic Analysis by ASTM D5769 (Determination of Aromatics) and ASTM D6730 (Detailed Hydrocarbon Analysis) of US Market Gasoline Samples Jonathan Dozier, Sarah Goralski, Pat Geng, Veronica Reilly, General Motors LLC
9:00 a.m.	2025-01-8462	Impact of Injector Geometry and Parcel Injection Location on Flash Boiling Spray Simulations of the ECN Spray G Injector Aman Kumar, Noah Van Dam, University of Massachusetts Lowell

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
9:30 a.m.	2025-01-8464	Investigation of Dimethyl Ether Injection Profiles in High-Pressure Direct Injection System Binghao Cong, Simon Leblanc, Jimi Tjong, David Ting, Xiao Yu, Ming Zheng, University of Windsor
10:00 a.m.	2025-01-8457	Characterization of Dimethyl Ether (DME) Spray Using ECN Spray D Under Engine-Relevant Conditions Junghwa Yi, Kevin Wan, Lyle Pickett, Julien Manin, Sandia National Laboratories

Planned by Fuels and Lubricants / Energy and Propulsion Activity

Wednesday, April 9

Fuel Injection and Sprays Part 3 of 3

Session Code PFL320

Room 140 A Session 1:30 p.m.

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Organizers - Tarek Abdel-Salam, East Carolina University; Essam El-Hannouny, Argonne National Laboratory; Brian Gainey, Clemson University; Felix Leach, University of Oxford; Alessandro Montanaro, STEMS - CNR

Chairperson - Alessandro Montanaro, STEMS - CNR

Time	Paper No.	Title
1:30 p.m.	2025-01-8465	Evaluation of the Effect of Image Processing Methodology on Vapor Length and Spray Angle in a Constant Volume Combustion Chamber Victor Sileghem, Tara Larsson, Quinten Dejaegere, Sebastian Verhelst, Ghent University
2:00 p.m.	ORAL ONLY	Diesel Engine Performance and Combustion Imaging Analysis of GTL and OME Blended Fuels Gen Shibata, Haoyu Yuan, Hiroya Yamamoto, Shusuke Tanaka, Hideyuki Ogawa, Hokkaido Univ.

Planned by Fuels and Lubricants / Energy and Propulsion Activity

Wednesday, April 9

Powertrains, Components and Sensors

Session Code PFL190

Room 140 B Session 8:00 a.m.

Organizers - Anand Nageswaran Bharath, Sadiyah Chowdhury, Cummins Inc.; Jeffrey Naber, Michigan Technological Univ.; Dan Richardson; Cinzia Tornatore, Italian National Research Council

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Technical Session Schedule

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Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Initial Evaluation of a 422 Stainless Steel Piston in a Single-Cylinder Diesel Engine
		Michael Tess, Eric Gingrich, Katherine Sebeck, U.S. Army Ground Vehicle Systems Center; Dean Pierce, Yiyu Wang, Govindarajan Muralidharan, Rishi Pillai, Zhili Feng, James Haynes, Oak Ridge National Laboratory
8:30 a.m.	ORAL ONLY	Effects of Hydrogen on Materials for Internal Combustion Engines
		Dean Pierce, Oak Ridge National Laboratory; Rishi Pillai

Planned by General Powertrain Development / Energy and Propulsion Activity

Wednesday, April 9

Control System Design, Calibration, and Optimization

Session Code PFL130

Room 140 B Session 1:30 p.m.

This session focuses on powertrain control system design, calibration, and optimization. Examples of topics include control-oriented modeling, model based or machine learning driven calibration\control\estimation, diagnostic and prognostic, optimization of the powertrain system and subsystems such as engine (including valve train and variable valve actuation), transmission, motor, battery, etc.

Organizers - Scott Fisher, Yichao Guo, Stellantis NV; Timothy Kunz, BorgWarner; Jian Tang, Robert Bosch GmbH; Zhe Wang, Mercedes-Benz Research & Development Nor

Time	Paper No.	Title
1:30 p.m.	2025-01-8369	Neural Network Based Modeling and Model Predictive Control for Reduction in Diesel Emissions
		Jiadi Zhang, Xiao Li, Ilya Kolmanovsky, University of Michigan; Munecika Tsutsumi, Hayato Nakada, Hino Motors Ltd.
2:00 p.m.	2025-01-8374	Electro-Thermal Optimal Control for Driver-Centric DC Fast Charging of Electric Vehicles
		Shobhit Gupta, Jun-Mo Kang, Yongjie Zhu, Chunhao Lee, Wesley Zanardelli, General Motors LLC
2:30 p.m.	2025-01-8372	Study of High-Power and High-Energy Lithium-ion Batteries: From Parameter Analysis to Physical Modeling and Experimental Validation
		Qi Yao, McMaster Automotive Resource Centre; Phillip Kollmeyer, Junran Chen, McMaster University; Satyam Panchal, Oliver Gross, Stellantis; Ali Emadi, McMaster Automotive Resource Centre
3:00 p.m.	2025-01-8373	Technology Package Optimization for Power, Cost, and Efficiency in a Dedicated Range Extender Engine for Electrified Vehicles
		Nathan Peters, Joshua Marion, Sai Pothuraju Subramanyam, Alexander Hoth, Mike Bunce, Dumarey
3:30 p.m.	ORAL ONLY	Impact of Advanced Technologies on Energy Consumption of Large-sized Agricultural Tractor
		Namdoo Kim, Ram Vijayagopal, Argonne National Laboratory; Jaekwang Jung, Hanyang Univ; Ziming Yan, Xin He, Aramco Americas

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Technical Session Schedule

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Planned by General Powertrain Development / Energy and Propulsion Activity

Wednesday, April 9

Future Vehicle Lubricants - Part 1 of 2

Session Code PFL340

Room 140 C Session 8:00 a.m.

To meet the challenge of global warming, in particular global carbon dioxide reduction, a range of vehicle powertrains will be required. While full battery electric vehicles have gained significant attention, hybridized powertrains or those driven purely by internal combustion engines using a range of green fuels, such as biomass derived gasoline and diesel (carbon-neutral) or non-carbon containing compounds such as hydrogen or ammonia will be needed. In all these powertrain configurations, lubricants and greases will be essential for durable and efficient operation. This session discusses the interaction of lubricants and greases with all automotive powertrains.

Organizers - Jason Bares, BorgWarner Inc.; Richard Butcher, BP Castrol; George Dodos, ELDON'S SA; Timothy Newcomb, Lubrizol Corp.

Chairperson - Timothy Newcomb

Time	Paper No.	Title
8:00 a.m.	2025-01-8468	The Development of JASO GLV-2: Next Generation Specification for Ultra-High Viscosity Index Gasoline Engine Oils Kazuo Yamamori, Satoshi Hirano, Toyota Motor Corporation; Satoru Yoshida, Noriyuki Matsui, ENEOS Corporation
8:30 a.m.	2025-01-8471	A Study into the Engine Oil Performance on Plug-in Hybrid Electric Vehicles through an on-Road Fleet Test under Extreme Cold Environmental Condition Ruifeng Zhang, Infineum (Shanghai) Additives Co., Ltd.; Andrew Rhiann, Etienne Martin, Infineum UK Ltd; Gang Hu, Infineum USA LP
9:00 a.m.	2025-01-8467	A Transient Friction Rig Capable of Showing Lubricant Differentiation Effects for High Pressure Fuel Pump Friction in Gasoline Engines; with Friction Comparisons Using the Same Engine Running a Standard Internal Combustion Engine Transient Cycle, alongside Two Types of Hybrid Electric Richard Butcher, Nathan Bradley, Bertie Lambert, BP Castrol
9:30 a.m.	ORAL ONLY	What is Fluid Aeration, and Why does it Matter? David Growney, Lubrizol, Ltd.
10:00 a.m.	2025-01-8470	Study of the Effects on Plain Bearings in Simulated Corrosion Tests Using Carbon Neutral Fuels Makoto Kondo, Hiroki Kawaura, Tomoyasu Shiroya, Airi Watanabe, Daido Metal Co., Ltd.

Planned by Fuels and Lubricants / Energy and Propulsion Activity

Wednesday, April 9

Future Vehicle Lubricants - Part 2 of 2

Session Code PFL340

Room 140 C Session 1:30 p.m.

To meet the challenge of global warming, in particular global carbon dioxide reduction, a range of vehicle powertrains will be required. While full battery electric vehicles have gained significant attention, hybridized powertrains or those driven purely by internal combustion engines using a range of green fuels, such as biomass derived gasoline and diesel (carbon-neutral) or non-carbon containing compounds

such as hydrogen or ammonia will be needed. In all these powertrain configurations, lubricants and greases will be essential for durable and efficient operation. This session discusses the interaction of lubricants and greases with all automotive powertrains.

Organizers - Jason Bares, BorgWarner Inc.; Richard Butcher, BP Castrol; George Dodos, ELDON'S SA; Timothy Newcomb, Lubrizol Corp.

Chairperson - Timothy Newcomb

Time	Paper No.	Title
1:30 p.m.	~~2025-01-8469~~	Exploring Compatibility Limits for Lubricating Greases Formulations.
	ORAL ONLY	
		George S. Dodos, Nora Kaframani, ELDON'S S.A.
2:00 p.m.	ORAL ONLY	Understanding effect of insulating materials on copper conductive deposit tests
		Christopher Prengaman, Lubrizol Corp.

Planned by Fuels and Lubricants / Energy and Propulsion Activity

Wednesday, April 9

Recent Developments in Propulsion Technologies for Ground Transportation - Part 1 of 2

Session Code PFL180

Room 140 D Session 8:00 a.m.

Technical presentation, review, and investigation on recent progress in general ground propulsion technologies, including powertrain technology roadmap, regulation review, product development and localization, off-road applications, new technology evaluation, decarbonization, and emission control. PFL 180 covers both conventional and alternative vehicle propulsion system technologies.

Organizers - Yichao Guo, Stellantis NV; Xin He, Aramco Americas; Chuanli Liu, General Motors Corporation; Qilong Lu, Southwest Research Institute; Lu Qiu, Cummins Inc.; Jian Tang, Robert Bosch GmbH; Ziming Yan, Aramco Americas; Peng Zhao, University of Tennessee

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Assessing the Readiness of Consumers and Technology to meet U.S. Regulatory Requirements Driving Electric Vehicles. Are U.S. Standards and Market Factors Sufficiently Aligned?
		Rick Gezelle, Toyota Motor Corp.
8:30 a.m.	ORAL ONLY	China Auto Powertrain Development in the Last Quarter Century
		Jun Xin, Sinobrook New Energy Technologies
9:00 a.m.	2025-01-8396	The Impact of GCI Engines on Long-haul Trucks in the US and China
		Daniela Nieto Prada, Ram Vijayagopal, Argonne National Laboratory; Ziming Yan, Rafael Sari, Xin He, Aramco Americas

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Time	Paper No.	Title
9:30 a.m.	ORAL ONLY	A Projection to the Future Heavy-Duty Vehicle Powertrain Systems Hailin Li, West Virginia Univ.
10:00 a.m.	ORAL ONLY	Feasibility, cost and environmental effects of electric trucks in China Shaojun Zhang, Tsinghua Univ.

Planned by General Powertrain Development / Energy and Propulsion Activity

Wednesday, April 9

Recent Developments in Propulsion Technologies for Ground Transportation - Part 2 of 2

Session Code PFL180

Room 140 D Session 1:30 p.m.

Technical presentation, review, and investigation on recent progress in general ground propulsion technologies, including powertrain technology roadmap, regulation review, product development and localization, off-road applications, new technology evaluation, decarbonization, and emission control. PFL 180 covers both conventional and alternative vehicle propulsion system technologies.

Organizers - Yichao Guo, Stellantis NV; Xin He, Aramco Americas; Chuanli Liu, General Motors Corporation; Qilong Lu, Southwest Research Institute; Lu Qiu, Cummins Inc.; Jian Tang, Robert Bosch GmbH; Ziming Yan, Aramco Americas; Peng Zhao, University of Tennessee

Time	Paper No.	Title
1:30 p.m.	2025-01-8397	Development of Ultra-Fast AI-Driven Diesel Engine Model for Real-Time Optimization Markus Frey, Dirk Itzen, Johannes Sautter, Louis Weller, IFS, University of Stuttgart; Timo Hagenbucher, Qirui Yang, Michael Grill, FKFS; Andre Casal Kulzer, IFS, University of Stuttgart
2:00 p.m.	ORAL ONLY	Hybrid Now for a Sustainable Future Guoqing Liu, Geely
2:30 p.m.	ORAL ONLY	Hybrid Systems Integration for Commercial Vehicles Chris Bitsis, Southwest Research Institute
3:00 p.m.	ORAL ONLY	Low-Carbon Liquid Fuels for U.S. Road Transportation Ian Sutherland, General Motors LLC
3:30 p.m.	ORAL ONLY	Flash Boiling Behavior and Spray Dynamics of Liquid Ammonia as a Future Fuel Tiegang Fang, North Carolina State Univ.

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
4:00 p.m.	ORAL ONLY	Model-Based Development of a Modular Hydrogen Fuel System David Farrell, ITK Engineering LLC

Planned by General Powertrain Development / Energy and Propulsion Activity

Wednesday, April 9

Advanced Hybrid and Electric Vehicle Powetrains Part 3 of 4

Session Code PFL710

Room 140 E Session 8:00 a.m.

This session covers new production and near-production electric & hybrid propulsion architectures, testing, analysis and new concepts.

Organizers - Norman Bucknor, General Motors; Michael Duoba, Argonne National Laboratory; Matthew Fleming, Hyundai-Kia America Technical Center Inc.; Vinod Ravi, General Motor GM; Toby Rockstroh, Shell Global Solutions (Deutschland); Rafael Sari, Aramco Research Center; Ratnak Sok, Waseda University; Darryl S. Taylor, Dana Inc.; Di Zhu, Ford Motor Company

Chairperson - Ratnak Sok, Waseda University

Time	Paper No.	Title
8:00 a.m.	~~2025-01-8526~~ ORAL ONLY	Enhancing Safety in Automotive High Voltage Systems: Practical Design Considerations Jody Nelson, SecuRESafe LLC (SRES)
8:30 a.m.	2025-01-8544	Optimizing Hybrid Powertrains for Light Duty Commercial Vehicles Prathik Meruva, Alexander Michlberger, Pruthvi Bachu, Daniel Christopher Bitsis, Southwest Research Institute
9:00 a.m.	2025-01-8529	Real-Time Application of Torque Converter Modeling for Enhanced System Response in a Hybrid Powertrain Krishna Chaitanya Madireddy, Abdulquadri Banuso, Hangxing Sha, Nadirsh Patel, Stellantis; Indrasen Karogal, FEV North America; Shishir Khanal, TEC Group
9:30 a.m.	ORAL ONLY	Simulation Based Development of a Novel Dedicated Hybrid Engine for Light-Duty Applications Rafael Sari, Aramco Research Center
10:00 a.m.	2025-01-8535	HEV Fuel Consumption Analysis, Including Transmission Losses Patrick Phlips, Oakland University

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Technical Session Schedule

As of March 20, 2025 19:40:26 PM

Planned by Hybrid and Electric Propulsions Committee / Energy and Propulsion Activity

Wednesday, April 9

Advanced Hybrid and Electric Vehicle Powetrains Part 4 of 4

Session Code PFL710

Room 140 E Session 1:30 p.m.

This session covers new production and near-production electric & hybrid propulsion architectures, testing, analysis and new concepts.

Organizers - Norman Bucknor, General Motors; Michael Duoba, Argonne National Laboratory; Matthew Fleming, Hyundai-Kia America Technical Center Inc.; Vinod Ravi, General Motor GM; Toby Rockstroh, Shell Global Solutions (Deutschland); Rafael Sari, Aramco Research Center; Ratnak Sok, Waseda University; Darryl S. Taylor, Dana Inc.; Di Zhu, Ford Motor Company

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	Understanding the Potential of Hybrid Electric Powertrains to Meet Greenhouse Gases Phase 3 Regulations in the Commercial Transport Sector Rafael Sari, David Cleary, Aramco Research Center; Santiago Martinez
2:00 p.m.	2025-01-8539	Activity and Performance of Zero and Near-Zero Emissions Port Equipment for Emissions Reduction in the Maritime Sector Chas Frederickson, Alexander Vu, Maedeh Makki, Kent Johnson, Thomas Durbin, University of California Riverside; Andrew Burnette, MeasureMission; Eddy Huang, Erica Alvarado, Tetra Tech, Inc.; Leela Rao, Port of Long Beach
2:30 p.m.	2025-01-8540	Impact of Hybrid Electric Vehicles on Energy Consumption and Emission Reduction for Agricultural Applications Lakshmi P. Prasad, Satyanarayana PS, Tejas Paygude, Purushottam Gangsar, Mangesh Thakre, Nagesh Choudhary, Ajinkya Gitapathi, John Deere India Pvt Ltd
3:00 p.m.	2025-01-8524	Selection of Energy-Efficient Powertrain Architecture for the Application in Off-Highway Vehicle Hend Abououf, Center For Automotive Research; Athar Hanif, The Ohio State University; Jon Dickson, Nitish Chandramouli, Cummins Inc.; Qadeer Ahmed, The Ohio State University

Planned by Hybrid and Electric Propulsions Committee / Energy and Propulsion Activity

Wednesday, April 9

Advanced Fuel Cell Vehicle Applications Part 3 of 3

Session Code PFL720

Room 140 E Session 3:30 p.m.

This session covers advancements in PEM fuel cell applications in vehicles including, but not limited to: advanced materials for cell or stack components, balance of plant (BOP) components, stack or system design, control strategies, modeling, testing, diagnostics and lifetime monitoring, hydrogen safety, durability, economics/cost reduction, and system integration/optimization. These topics can be addressed at the cell, stack, system or vehicle levels. A special focus on durability of stack and BOP components is also planned and topics covering accelerated tests and operating strategies to improve durability are encouraged.

Organizers - Ashok Kumar, Cummins Inc.; Santhosh Gundlapally, Gamma Technologies LLC; Matthew Kubesh, Southwest Research Institute; Rafael Sari, Aramco Research Center; Vikas Narang, Cummins Inc.; Di Zhu, Ford Motor Company

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:27 PM

Time	Paper No.	Title
3:30 p.m.	2025-01-8554	Accelerated Reactive Force Field Molecular Dynamics Simulation on the Diffusion Process in Ni/YSZ Anode of SOFCs with Collective Variable-Driven Hyperdynamics Haoyu Du, Kaiqi Zhang, Ma Xiao, Xiaoqing Zhang, Shijin Shuai, Tsinghua University
4:00 p.m.	2025-01-8545	Parameter Identification of Solid Oxide Fuel Cell Using Teaching-Learning Based Collective Intelligence Zheyu Wang, Yitao Shen, AoTong Sun, Harbin Institute of Technology; Beibei Han, Ningobo Institure of Materials Technology and Engineering; Xiao Ma, Shijin Shuai, Tsinghua University

Planned by Hybrid and Electric Propulsions Committee / Energy and Propulsion Activity

Wednesday, April 9

Sustainable Materials, Manufacturing, Supply Chain, Infrastructure, and Policies

Session Code SDP140

Room 140 F Session 8:00 a.m.

• The latest advancements and innovative approaches in automotive sustainable materials, manufacturing, and supply chain management.
• Critical infrastructure and policy developments driving the future of sustainable automotive practices.

Organizers - George Dodos, ELDON'S SA; Xin He, Aramco Americas; Rakesh Iyer, Argonne National Laboratory; Andrea Strzelec, USCAR; Shengyong Zhang, Purdue University Northwest

Chairperson - Tarek Abdel-Salam, East Carolina University; Yi Ding, TARDEC

Time	Paper No.	Title
8:00 a.m.	2025-01-8608	Hydrogen and Electric Charging Infrastructure for Heavy-Duty Trucks: A Nationally Scalable Megaregion Assessment Vivek Sujan, Ruixiao Sun, Gurneesh Jatana, Junchuan Fan, Oak Ridge National Laboratory
8:30 a.m.	2025-01-8606	How carbon quota policy guides the sustainable and rapid development of China's new energy vehicle industry Jiaqi Zhao
9:00 a.m.	ORAL ONLY	An Examination to the V2G Potential of the Electrified School Bus Fleet in Rural Communities Rupesh Dahal, John Recktenwald, James Pritz, Bhaskaran Gopalakrishnan, Hailin Li, West Virginia University
9:30 a.m.	2025-01-8605	A Comparative Analysis of Acceleration and Deceleration Profiles for Aggressive Driving Styles and Fuel Economy Test Cycles Gandhimathi Padmanaban, Fred Feng, University of Michigan; Edward Dai, Ankit Saini, Guopeng Hu, Yanan Zhao, Ford Motor Company
10:00 a.m.	2025-01-8607	Objective System Level Sustainability Evaluation of Competing Materials for Demanding Automotive Applications Adam Halsband, Forward Engineering North America; Tomke Leinemann, Markus Beer, Forward Engineering GmbH; Eric Haiss, IDI Composites International

WCX SAE World Congress Experience

Technical Session Schedule

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Planned by Sustainable Development Committee / Energy and Propulsion Activity

Wednesday, April 9

Sustainable Transport Technologies: Alternative Energy Sources

Session Code SDP120

Room 140 F Session 1:30 p.m.

This session's topics include:
• Novel sources of energy (e.g. Hydrogen) used for propulsion of light- and heavy-duty on- and off-road vehicles, marine and small engine.
• How these new energy sources are used in small and large fleets to achieve sustainability goals.

Organizers - Vickey Kalaskar, Southwest Research Institute; Simona Merola, CNR Stems; Tarek Abdel-Salam, East Carolina University; Teresa Donateo, University Of Salento; Jenny Sigelko, Porsche Cars North America Inc.

Chairperson - Tarek Abdel-Salam, East Carolina University; Jenny Sigelko, Porsche Cars North America Inc.

Time	Paper No.	Title
1:30 p.m.	2025-01-8597	Regional Analysis for an Economically and Environmentally Viable Transition to Heavy-Duty Vehicles with Alternative Powertrains Nathan Goulet, Ruixiao Sun, Junchuan Fan, Vivek Sujan, Brandon Miller, Oak Ridge National Laboratory
2:00 p.m.	2025-01-8595	Development of the Power- and Usage-Based Simulator for Evaluating Off-Road Mobile Machinery Energy Consumption Namdoo Kim, Jigu Seo, Ram Vijayagopal, Andrew Burnham, David makarczyk, Vincent Freyermuth, Argonne National Laboratory

Planned by Sustainable Development Committee / Energy and Propulsion Activity

Wednesday, April 9

Combustion Controls and Optimization

Session Code PFL280

Room 140 G Session 8:00 a.m.

This session covers engine combustion control and optimization techniques. Topics include engine combustion diagnostics as specialized for control, control methodologies and algorithms, optimization, related combustion sensing, etc.

Organizers - Michael Prucka, Stellantis NV; Gabriele Di Blasio, CNR; Jun-Mo Kang, General Motors LLC

Chairperson - MICHAEL Prucka, Stellantis; Jun-Mo Kang, General Motors LLC

Time	Paper No.	Title
8:00 a.m.	2025-01-8437	Effects of Intake and Exhaust Continuously Variable Valve Duration on Fuel Consumption and Emission Characteristics in Engine and Vehicle Tests Jinyoung Jung, Sangyeon Han, Sangjae Park, Ki Young Kwon, Yousang Son, Back-Sik Kim, Youngnam Kim, Hyundai Motor Co.

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
8:30 a.m.	2025-01-8438	Six Stroke Engine Optimization for Mid to High Loads Using Genetic Algorithm Ankith Ullal, Shengrong Zhu, Kyoung Pyo Ha, Hyundai America Technical Center, Inc.; Ashwin Karthik Purushothaman, Youngchul Ra, Michigan Technological University
9:00 a.m.	ORAL ONLY	Development of an Optimal Cold Start Strategy for a Light Duty Gasoline Compression Ignition Engine. Rafael Sari, Aramco Research Center
9:30 a.m.	ORAL ONLY	Effect of Increasing Substitution Ratio on Performance and Emissions of a PFI Hydrogen-Diesel Dual Fuel Engine Patrick O'Donnell, Argonne National Laboratory

Planned by Engine Combustion / Energy and Propulsion Activity

Wednesday, April 9

Combustion in Gaseous-Fueled Engines - Part 2 of 4

Session Code PFL270

Room 140 G Session 1:30 p.m.

This session focuses on fuel injection, combustion, controls, performance and emissions of SI engines fueled with gaseous fuels such as methane, natural gas (NG), biogas, producer gas, coke oven gas, hydrogen, or hydrogen-NG blends. Papers on Diesel-NG or diesel-hydrogen dual-fuel engines will also be accepted in this session.

Organizers - Diego Bestel, Caterpillar Inc.; Vickey Kalaskar, Southwest Research Institute; Joshua Lacey, KU Leuven; Ezio Mancaruso, STEMS - CNR; Gordon McTaggart-Cowan, Simon Fraser University; Ales Srna, Sandia National Laboratories; Leonid Tartakovsky, Technion Israel Inst. of Technology

Chairperson - Gordon McTaggart-Cowan, Simon Fraser University; Diego Bestel, Caterpillar Inc

Time	Paper No.	Title
1:30 p.m.	2025-01-8424	Experimental and Numerical Investigation of Different Dilution Techniques in a High-Performance H2 - Fueled SI Engine Roberto Tonelli, Massimo Medda, Fabrizio Gullino, Nicola Silvestri, Francesco Zaffino, Roberto Mariconti, Vincenzo Rossi, Ferrari S.p.A.
2:00 p.m.	2025-01-8435	Development of Non-Road Spark Ignited H2-ICE with Port Fuel Injection for Fixed Speed Applications Xander Seykens, Erik Doosje, Cemil Bekdemir, TNO; Peter Wezenbeek, NPS Driven B.V.
2:30 p.m.	2025-01-8422	Operating the Tour Split-Cycle Engine on Hydrogen/Methane Fuel Blends to Achieve High Efficiency and Reduction of Both GHG and NOx Emissions Pratik Bhanage, Kukwon Cho, Bradley Anderson, Tour Engine, Inc.; Ryan Kemmet, Mend Energy LLC; Gilad Tour, Tour Engine, Inc.; Chris Atkinson, The Ohio State University; Hugo Tour, Oded Tour, Tour Engine, Inc.
3:00 p.m.	ORAL ONLY	Phenomenology visualization of pre-chamber ignited hydrogen combustion in heavy-duty optical engine compared to natural gas baseline

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
		Vasco O. DUKE, Taesong Lee, Gustav Nyrenstedt, Sandia National Laboratories; Rajavasanth Rajasegar, Colorado School of Mines; Ales Srna, Sandia National Laboratories
3:30 p.m.	2025-01-8426	Effect of Hydrogen Addition on Abnormal Combustion of Pre-Chamber Natural Gas Engine at High Load
		Koji Morikawa, Chiba University; Shin Kimura, Sustainable Engine Research Center; Shunya Sakai, Yasuo Moriyoshi, Chiba University
4:00 p.m.	~~2025-01-8431~~ ORAL ONLY	Effect of Hydrogen Addition on Combustion Characteristics and Performance of Pre-Chamber Natural Gas Engine at High Load
		Shin Kimura, Sustainable Engine Research Center; Koji Morikawa, Shunya Sakai, Yasuo Moriyoshi, Chiba University

Planned by Engine Combustion / Energy and Propulsion Activity

Wednesday, April 9

Panel Discussion: H2 Combustion in Engines – Technical Status and R&D Opportunities

Session Code PFL298

Room 141 Session 8:00 a.m.

Leading experts from industry and academia will discuss the technical aspects of hydrogen internal combustion engine (H2-ICE) development. The panel will provide an overview of the current state of H2-ICE technology and explore research and development opportunities for it to effectively compete with traditional diesel engines in heavy-duty transport and off-road sectors. Key topics will include the trade-offs associated with various injection technologies and combustion approaches, the durability and compatibility of components, strategies for addressing pre-ignition and power density challenges, and the potential for H2-ICE technology to replace diesel engines across a range of applications and compete with FCEV.

Learn more about the Panel

Organizers - Gordon McTaggart-Cowan, Simon Fraser University; Ales Srna, Sandia National Laboratories

Moderators - Ales Srna, Sandia National Laboratories

Panelists - Mike Bunce, MAHLE Powertrain; Gavin Dober, PHINIA; Ahmad Hadadpour, Scania CV AB; Hui Xu, Cummins Inc.; Roy Zakrzewski, TRATON;

Wednesday, April 9

Combustion in Gaseous-Fueled Engines - Part 1 of 4

Session Code PFL270

Room 141 Session 9:30 a.m.

This session focuses on fuel injection, combustion, controls, performance and emissions of SI engines fueled with gaseous fuels such as methane, natural gas (NG), biogas, producer gas, coke oven gas, hydrogen, or hydrogen-NG blends. Papers on Diesel-NG or diesel-hydrogen dual-fuel engines will also be accepted in this session.

Organizers - Diego Bestel, Caterpillar Inc.; Vickey Kalaskar, Southwest Research Institute; Joshua Lacey, KU Leuven; Ezio Mancaruso, STEMS - CNR; Gordon McTaggart-Cowan, Simon Fraser University; Ales Srna, Sandia National Laboratories; Leonid Tartakovsky, Technion Israel Inst. of Technology

Chairperson - Vickey Kalaskar, Southwest Research Institute; Gordon McTaggart-Cowan, Simon Fraser University

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
9:30 a.m.	2025-01-8430	Experimental Study of Direct-Injection Compression-Ignition Hydrogen Combustion in an Opposed-Piston Two-Stroke (OP2S) Engine Ming Huo, Achates Power Inc.; Essam El-Hannouny, Douglas Longman, Argonne National Laboratory
10:00 a.m.	ORAL ONLY	Air-Handling Systems Evaluation for a Heavy-Duty H2ICE Engine Concept Praveen Kumar, Rafael Lago, David Cleary, Aramco Americas; Sriram Popuri, Cummins Inc

Planned by Engine Combustion / Energy and Propulsion Activity

Wednesday, April 9

Panel Discussion - Navigating Regulatory Challenges: Testing & Measurement

Session Code PFL498

Room 141 Session 1:30 p.m.

Our expert panel will address the evolving world of testing and measurements in response to emerging regulations. Experts will discuss challenges related to on-board emissions and fuel consumption monitoring, battery state of health, non-tailpipe emissions, PHEVs, and more. Learn how innovative solutions are shaping the future of compliance and performance in the automotive industry.

Learn more about the Panel

Organizers - Svitlana Kroll, Southwest Research Institute; J. Felipe Rodriguez, International Council On Clean Transport; Mert Zorlu, Cummins Inc.; Mahmoud Yassine, Stellantis; Susumu Sato, Institute of Science Tokyo

Chairperson - Svitlana Kroll, Svitlana Kroll, Southwest Research Institute; Mahmoud Yassine, Stellantis

Moderators - Svitlana Kroll, Southwest Research Institute; Mahmoud Yassine, Stellantis

Panelists - Imad Khalek, Southwest Research Institute; Benjamin Shade, AVL LIST GmbH; Susumu Sato, Institute of Science Tokyo; Eric Miller, Cummins Inc;

Wednesday, April 9

High Efficiency IC Engines Concepts - Part 1 of 2

Session Code PFL170

Room 142 A Session 8:00 a.m.

This session focuses on technologies that have to potential for improving the efficiency of internal combustion engines such as advanced combustion, cooled EGR boosting, ignition and direct injection technologies, pressure boosting, intelligent combustion, thermal management, fully variable valvetrains, alternative or modified engine cycles, Variable Compression Ratio, and other new and developing technologies. Papers focused on waste heat recovery are located in sessions HX102 or HX103.

Organizers - David Roth, Roth Engine Science LLC; Yu Zhang, Cummins; Cinzia Tornatore, Italian National Research Council; Aaron Costall; Jeffrey Naber, Michigan Technological Univ.

Chairperson - Yu Zhang, Cummins Inc.

Time	Paper No.	Title

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:27 PM

Time	Paper No.	Title
8:00 a.m.	2025-01-8392	Innovative Use of Basic Technologies for a High-Efficiency, Low-Cost Small Displacement Gasoline Engine Amandeep Singh, Jaspreet Singh, Ankit Jalan, Narinder Kumar, Maruti Suzuki India Limited
8:30 a.m.	2025-01-8395	Development of the New 2.0L In-Line 4 NA Gasoline Direct Injection Engine Takashi Kondo, Takeyuki Ohmori, Junpei Yamamoto, Kentaro Miki, Honda Motor Co., Ltd.
9:00 a.m.	ORAL ONLY	Development of an Extended-Expansion Engine with Variable Compression Ratio Justin Ketterer, General Motors LLC
9:30 a.m.	2025-01-8394	Development of the Tour Split-Cycle Internal Combustion Engine Oded Tour, Kukwon Cho, Tour Engine, Inc.; Yehoram Hofman, Hofman Design, Inc.; Bradley Anderson, Tour Engine, Inc.; Ryan Kemmet, Mend Energy LLC; Daniel Morris, Lucid Motors; Michael Wahl, Next Step Engineering Solution LLC; Pratik Bhanage, Tour Engine, Inc.; Ehud Sivan, The Weitzman Institute; Gilad Tour, Tour Engine, Inc.; Chris Atkinson, The Ohio State University; Hugo Tour, Tour Engine, Inc.
10:00 a.m.	ORAL ONLY	A Small-Displacement Hybrid Engine Achieving Over 50% Gross Indicated Thermal Efficiency with Turbulent Jet Controlled Compression Ignition Concept Xin Yu

Planned by General Powertrain Development / Energy and Propulsion Activity

Wednesday, April 9

High Efficiency IC Engines Concepts - Part 2 of 2

Session Code PFL170

Room 142 A Session 1:30 p.m.

This session focuses on technologies that have to potential for improving the efficiency of internal combustion engines such as advanced combustion, cooled EGR boosting, ignition and direct injection technologies, pressure boosting, intelligent combustion, thermal management, fully variable valvetrains, alternative or modified engine cycles, Variable Compression Ratio, and other new and developing technologies. Papers focused on waste heat recovery are located in sessions HX102 or HX103.

Organizers - David Roth, Roth Engine Science LLC; Yu Zhang, Cummins; Cinzia Tornatore, Italian National Research Council; Aaron Costall; Jeffrey Naber, Michigan Technological Univ.

Chairperson - Yu Zhang, Cummins Inc.

Time	Paper No.	Title
1:30 p.m.	2025-01-8390	10 % Fuel Economy Benefit at Part Load and up to 33 % at Idle for a Diesel Engine via Reducing Friction. Testing the Rotating Liner Engine and an Identical Baseline Under Load Dimitrios Dardalis, Matthew Hall, Sebastian Riley, Amiyo Basu, Ron Matthews, University of Texas-Austin

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
2:00 p.m.	2025-01-8391	Achieving Ultra-Low NO_x and Meeting Full Useful Life Requirement for CARB 2027 NO_x and GHG 2027 Phase 2 CO_2 Regulation w/Opposed Piston 2-Stroke Engine and a Conventional ATS Vaibhav Kale, Zoltan Bako, Achates Power Inc.
2:30 p.m.	ORAL ONLY	Model-Based Optimization of Direct Injection Compression Ignition of Hydrogen in an Internal Combustion Engine Rohan Verma, FEV North America; Satyum Joshi, FEV North America Inc
3:00 p.m.	2025-01-8380	Experimental Investigation between Pre-Ignition, Knocking, Vibration and Performance in an Internal Combustion Engine Claudio Santana, Universidade Federal de Ouro Preto

Planned by General Powertrain Development / Energy and Propulsion Activity

Wednesday, April 9

Exhaust Emission Control Systems - Part 1 of 2

Session Code PFL420

Room 142 B Session 8:00 a.m.

Multiple sub-sessions cover the following exhaust emissions control topics: System integration and durability, advances in catalyst substrates, advances in particulate filter substrates, advances in NOx reduction technology, and on-board measurement and control.

Organizers - Rasto Brezny, Kevin Brown, MECA Clean Mobility; Danan Dou, Deere & Company; Michael Geller, MECA: Supplying Clean Mobility; krishna Kamasamudram, Cummins Inc.; Mansour Masoudi, Emissol LLC; Rahul Mital, GM; Ron Silver; Shekhar Vats, Cummins Inc.

Chairperson - Kevin Brown, MECA Clean Mobility; krishna Kamasamudram, Cummins Inc.

Time	Paper No.	Title
8:00 a.m.	2025-01-8478	Advanced Aftertreatment System Meeting Future HD CNVII Legislation II Yan Wang, Guangxia Fu, Shuyue Chen, Andreas Aberg, Shuiyan Jiang, Jun Zhang, Umicore Autocat (China) Co., Ltd.
8:30 a.m.	2025-01-8479	Experimental Study of DOC-on-Filter Using Next Generation Filter Solutions for Non-Road Applications Mrinmoy Dam, Jason Warkins, Suhao He, Corning Inc.
9:00 a.m.	ORAL ONLY	Examining Vanadium SCR for Light-Off and Close Coupled SCR Technologies Bryan Zavala, Kevin Trinh, Christopher Sharp, Southwest Research Institute
9:30 a.m.	2025-01-8481	Development of a Zeolite-Based (HC Trap Type) Cold-Start Catalyst (CSC) for the Future more Stringent Vehicle Tailpipe Emission Standards, Part III Lifeng Xu, Fucheng Zhao, Hong Wei, Pengfei Zhao, Jiajia Zhao, Ruibo Ma, Philip Newman, Geely Powertrain Research Institute; Lin Wang, Wangmu

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Technical Session Schedule

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Time	Paper No.	Title
		Qian, Menghan Qian, Ningbo Kesen Exhaust Gas Cleaner Manufacturing Co., Ltd.
10:00 a.m.	~~2025-01-8475~~ ORAL ONLY	An approach to optimize PGM loading and performance of After-treatment system for CNG powertrains
		Amit kumar, Harmeet singh, Vivek Singhal, Deepak Garg, Ajay Kumar Vashisth, Vikram Khanna, Karan Yadav, Deepti mahra, Maruti Suzuki India Limited

Planned by Mobile Source Emissions Committee / Energy and Propulsion Activity

Wednesday, April 9

Exhaust Emission Control Systems - Part 2 of 2

Session Code PFL420

Room 142 B Session 1:30 p.m.

Multiple sub-sessions cover the following exhaust emissions control topics: System integration and durability, advances in catalyst substrates, advances in particulate filter substrates, advances in NOx reduction technology, and on-board measurement and control.

Organizers - Rasto Brezny, Kevin Brown, MECA Clean Mobility; Danan Dou, Deere & Company; Michael Geller, MECA: Supplying Clean Mobility; krishna Kamasamudram, Cummins Inc.; Mansour Masoudi, Emissol LLC; Rahul Mital, GM; Ron Silver; Shekhar Vats, Cummins Inc.

Chairperson - Kevin Brown, MECA Clean Mobility; krishna Kamasamudram, Cummins Inc.; Rahul Mital, GM

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	High Porosity Flow Through Substrate for Plug-in Hybrid Electric Vehicle
		Kai Matsumoto, NGK Insulators, Ltd.; Kentaro sugimoto, Takashi Aoki, NGK Insulators Ltd; Reghunathan-Nair Anoop, Sho Eijima, NGK Automotive Ceramics USA Inc.
2:00 p.m.	2025-01-8482	Improved Three-Way Catalyst with Ignition Layer for Reducing Cold Emissions
		Takahiro Nishio, Nobuyuki Takagi, Takumi Tojo, Toyota Motor Corporation; Naoto Fujita, Mizuho Mori, Yosuke Toda, CATALER CORPORATION
2:30 p.m.	ORAL ONLY	Visualization of Oxygen Storage Distribution in a Model Three-Way Catalyst under Different Oxygen Storage Conditions
		Tsuyoshi Nagasawa, Yuki Watanabe, Yuma Hayashi, Susumu Sato, Hidenori Kosaka, Institute of Science Tokyo; Hiroyuki Itoyama, Chengwei Huang, Nissan Motor Co Ltd
3:00 p.m.	2025-01-8476	Fundamental Science on Oxygen Storage Capacity of Cerium Complex Oxides for Advanced On-Board Diagnostics (2) Quantitative Observation of Oxygen Released from Cerium Complex Oxides
		Shota Hamada, Shinya Uegaki, Hidetaka Tanabe, Tomohito Nakayama, Itsuki Jinjo, Seita Kurono, Kwansei Gakuin University; Shunsuke Oishi, Keiichi Narita, Cataler Corp; Tetsuro Onishi, Kazuya Yasuda, Daihatsu Motor Co., Ltd.; Daiju Matsumura, Japan Atomic Energy Agancy; Hirohisa Tanaka, Kwansei Gakuin University

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
3:30 p.m.	2025-01-8474	Fundamental Science on Oxygen Storage Capacity of Cerium Complex Oxides for Advanced On-Board Diagnostics (1) Kinetic Observation of Cerium Valence Change Using Synchrotron Radiation Hirohisa Tanaka, Kwansei Gakuin University; Daiju Matsumura, Japan Atomic Energy Agency; Shinya Uegaki, Shota Hamada, Takuro Aotani, Kwansei Gakuin University; Saeka Kamezawa, Masami Nakamoto, Shingo Asai, Daihatsu Motor Co., Ltd.; Tomohisa Mizuno, Riku Takamura, Takashi Goto, Cataler Corp.

Planned by Mobile Source Emissions Committee / Energy and Propulsion Activity

Wednesday, April 9

Thermal Modeling and Simulations - Part 1 of 2

Session Code HX700

Room 142 C Session 8:00 a.m.

The session will focus on the use of latest simulation technologies in the design and evaluation of new thermal systems and their control strategies. Contributions will focus on both 1D and 3D simulation tools as applied to steady and transient phenomenon.

Organizers - Bashar AbdulNour, Kettering University; Ales Alajbegovic, Siemens Digital Industries Software; Wilko Jansen, JLR; Vamshi Korivi, US Army; Gursaran Mathur, Ford Motor Company; Romain Nicolas, Siemens Digital Industries Software; Nilesh Purohit, Honeywell; Kumar Srinivasan, Cadence Design Systems Inc.; Sudhi Uppuluri, Siemens Digital Industries Software; Sowmya Jayaraman, General Motors

Time	Paper No.	Title
8:00 a.m.	2025-01-8195	Modeling and Control Strategy of Engine Cooling System for a Light Weight Commercial Vehicle Bing Li, Min Li, South China University of Technology; Runhai Ying, Xinling Wang, Yaolong Duan, Xuelong Group Co., Ltd.; Wen-Bin Shangguan, South China University of Technology
8:30 a.m.	2025-01-8186	Modelling of Vehicle Efficiency Through Thermal System Plant and Controls Integration Abbas Tourani, Christopher Price, Nilabza Dutta, Jaguar Land Rover; Eduardo Moran Ruiz, Jaguar & Land Rover
9:00 a.m.	2025-01-8184	Model-Predictive Control for Heat Pump-Based Battery Thermal Management in Off-Road Autonomous Electrified Vehicles During Transient Operation Anirudh Sundar, Atharva Ghate, Qilun Zhu, Robert Prucka, Clemson University; Yeefeng Ruan, Miriam Figueroa-Santos, Morgan Barron, US Army Ground Vehicle Systems Center

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:28 PM

Wednesday, April 9

Thermal Modeling and Simulations - Part 2 of 2

Session Code HX700

Room 142 C Session 1:30 p.m.

The session will focus on the use of latest simulation technologies in the design and evaluation of new thermal systems and their control strategies. Contributions will focus on both 1D and 3D simulation tools as applied to steady and transient phenomenon.

Organizers - Bashar AbdulNour, Kettering University; Ales Alajbegovic, Siemens Digital Industries Software; Wilko Jansen, JLR; Vamshi Korivi, US Army; Gursaran Mathur, Ford Motor Company; Romain Nicolas, Siemens Digital Industries Software; Nilesh Purohit, Honeywell; Kumar Srinivasan, Cadence Design Systems Inc.; Sudhi Uppuluri, Siemens Digital Industries Software; Sowmya Jayaraman, General Motors

Time	Paper No.	Title
2:00 p.m.	2025-01-8192	Downsizing 12 Volts Battery for EV Using Effective Energy Management Strategies when Vehicle Is Inactive Nilabza Dutta, Sheldon Overs, Jaguar Land Rover
3:00 p.m.	2025-01-8191	A Novel Co-Simulation Framework for Optimizing Human Thermal Comfort and Energy Consumption Shankar Natarajan, Stellantis; Sudharsan Balasubramanian, Meda Ltd.
3:30 p.m.	2025-01-8188	A Co-Simulation Methodology for Predicting Occupant Thermal Comfort for Cabin Cooldown and Warmup Scenarios Sudharsan Balasubramanian, Meda Ltd.; Shankar Natarajan, Stellantis

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

Wednesday, April 9

Vehicle Dynamics - Part 1 of 2

Session Code SS900

Room 250 A Session 8:00 a.m.

This session is focused on vehicle dynamics and controls using modeling and simulation, and experimental analysis of ICE, BEV and Hybrid passenger cars, heavy trucks, and wheeled military vehicles. This session addresses active and passive safety systems affecting the yaw, pitch and roll of the vehicle; 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 - Mahmoud Abdelfatah, Hitachi Astemo; Gary Heydinger, SEA, Ltd.; Bin Li, Cummins; Gianpiero Mastinu, Politecnico d Milano; Sughosh Rao, Transportation Research Center Inc.; Scott Zagorski, SEA, Ltd.; Jian Jun Zhu, Cruise Automation Inc.

Chairperson - Gianpiero Mastinu; Gary Heydinger, SEA Ltd

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	A Comprehensive Understanding of Basic Characteristics of In-Wheel Motor Integrated Corner Module (Testbed) from R&H Performance Perspective

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
		JinHee Lee, Hyundai Motor Company
8:30 a.m.	ORAL ONLY	An investigation of Real-Time Estimator on Maximum Tire Grip for Yaw Moment Control Jaeyong Park, Hyundai & Kia Corp.
9:00 a.m.	2025-01-8792	Comparative Kinematic Performance Testing to SAE J3230 on a Dynamometer and Test Track Meredith Bartholomew, Dale Andreatta, Scott Zagorski, Gary Heydinger, SEA, Ltd.
9:30 a.m.	2025-01-8790	Improved Model and Physical Prototype of an Online Corrective Look-Ahead Road Profiling System (CLARPS) for Active Suspension Applications Dane Morison, James Mynderse, Lawrence Technological University
10:00 a.m.	2025-01-8794	Modal Analysis Approach for Analysis and Design of Vehicle Transient Behavior Kaoru Kusaka, Takahiro Yuhara, Honda Motor Co., Ltd.

Planned by Vehicle Dynamics Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 9

Vehicle Dynamics - Part 2 of 2

Session Code SS900

Room 250 A Session 1:30 p.m.

This session is focused on vehicle dynamics and controls using modeling and simulation, and experimental analysis of ICE, BEV and Hybrid passenger cars, heavy trucks, and wheeled military vehicles. This session addresses active and passive safety systems affecting the yaw, pitch and roll of the vehicle; 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 - Mahmoud Abdelfatah, Hitachi Astemo; Gary Heydinger, SEA, Ltd.; Bin Li, Cummins; Gianpiero Mastinu, Politecnico d Milano; Sughosh Rao, Transportation Research Center Inc.; Scott Zagorski, SEA, Ltd.; Jian Jun Zhu, Cruise Automation Inc.

Chairperson - Gianpiero Mastinu; Scott Zagorski, Gary Heydinger, SEA Ltd

Time	Paper No.	Title
1:30 p.m.	2025-01-8800	Validation of a New Road and Contact Model for Vehicle-Soft Soil Terrain Interaction through an Elaborate Modeling of the FED-Alpha Vehicle Lampros Papapostolou, Altair Engineering Inc.; Evangelos Koutras, Aristotle University; Felipe Leila, Adrijan Ribaric, Altair Engineering Inc.; Sotirios Natsiavas, Aristotle University
2:00 p.m.	2025-01-8797	Design of A Differential Braking Controller Based on Road Reaction Force Estimation to Respond to Steering System Failure in Autonomous Driving Situations Sukwon Kim, Young Gwang Kim, SungDo Kim, Sung Jin Moon, Hyundai Motor Company

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:28 PM

Time	Paper No.	Title
2:30 p.m.	2025-01-8791	Predictive Steering Angle Generation Algorithm for High Efficiency Vehicle's Path Optimization Matteo De Carlo, Simone Manzone, Henrique de Carvalho Pinheiro, Massimiliana Carello, Politecnico di Torino
3:00 p.m.	2025-01-8796	Cost-Effective Sideslip Measurement: Beta for the People! Andrew Hannah, Marc Compere, Embry Riddle Aeronautical University
3:30 p.m.	ORAL ONLY	Early detection of the loss of control of a road vehicle Gianpiero Mastinu, Politecnico d Milano; Matteo Fontana, Samuele Giacintucci, Massimiliano Gobbi, Giorgio Previati, Fabio Della Rossa, Politecnico di Milano
4:00 p.m.	ORAL ONLY	Assessment of Hydroplaning Risk Through Water Film Thickness Measurements on Maryland Highways Alexandru Vilsan, Corina Sandu, Virginia Tech; Gabriel Anghelache, Politehnica Univ Bucharest

Planned by Vehicle Dynamics Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 9

Reliability and Robust Design in Automotive Engineering

Session Code IDM100

Room 250 B Session 8:00 a.m.

This session focuses on reliability and robust design methods, good practices and applications, including among others uncertainty quantification, RBDO as well as accelerated reliability and durability testing.

Organizers - Paul Lubinski, Thermo King Corp.; Zissimos Mourelatos, Vijitashwa Pandey, Oakland University; Zhen Hu, University of Michigan; An Li, Stellantis

Chairperson - Paul Lubinski, Thermo King Corp.; Vijitashwa Pandey, Oakland University

Time	Paper No.	Title
8:00 a.m.	2025-01-8199	Uncertainty Quantification in Machine Learning Using an Ensemble Approach with Gaussian Process Regression Sudeep Chavare, Zissimos P. Mourelatos, Oakland University
8:30 a.m.	2025-01-8201	Evaluation of Additively Manufactured Thermoplastic Composite Magnetic Field Shielding for Stepper Motors Henry Hu, Albert E. Patterson, Muhammad Faeyz Karim, Logan Porter, Pavan V. Kolluru, Texas A&M University
9:00 a.m.	2025-01-8200	Usability and scalability of performing software FMEA integration with software architecture design PoongGyoo Han, Hyundai Kefico

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
9:30 a.m.	2025-01-8198	Weld Fatigue Life Variational Assessment for Exhaust System Using Monte Carlo Approach Rajapandian Ramamoorthy, Tata Consultancy Services; Ramzi Bazzi, General Motors LLC

Planned by Integrated Design and Manufacturing Activity / Ground Vehicle Advisory Group

Wednesday, April 9

Panel Discussion: Artificial Intelligence Regulations, Standards and Application Challenges

Session Code AE113

Room 250 B Session 1:30 p.m.

As AI technologies advance and their deployment accelerates across various domains, particularly in the automitive sector, there is a pressing need for a structured and collaborative approach to address regulatory, standardization, and application-related challenges. This panel aims to facilitate a comprehensive dialogue among industry leaders, regulatory experts, standards organizations, and AI practitioners to develop a shared understanding of: o Current and Emerging AI Regulations: Insight into how global and regional regulations are shaping the deployment and development of AI solutions in automotive and transportation sectors, focusing on compliance, risk mitigation, and public safety. o Industry Standards and Best Practices: Exploration of current and emerging industry standards (such as those by SAE, ISO, and IEEE) that guide the development of safe, secure, and ethical AI systems. The panel will discuss how these standards are helping to bridge regulatory requirements and practical applications. o Technical and Operational Challenges: Examination of the technical barriers and operational challenges facing AI integration in transportation, such AI Safety privacy, explainability, and ensuring model robustness and resilience in dynamic environments.

Learn more about the Panel

Organizers - Jan-Mou Li, MWCOG; Wei Tong, GM R&D

Chairperson - Jan-Mou Li, MWCOG

Moderators - Majed Mohammed, Aptiv

Panelists - Arpan Kusari, UMTRI; Jan-Mou Li, MWCOG; Wei Tong, GM R&D; Lisa Savage, Aptiv; Jan Mauersberger, ANSYS medini analyze AG;

Wednesday, April 9

Smart Transportation and Infrastructure - Part 2 of 2

Session Code AE400

Room 250 B Session 3:00 p.m.

This session is seeking submissions focusing on Intelligent Transportation Systems and their associated technologies. Abstracts addressing case studies or research could include smart transportation, Automated Vehicles 3.0, V2I/V2X, testing and simulation, roads and infrastructure technologies, and similar mobility and transportation topics. Projects exploring automotive-specific applications of technologies such as 5G, edge computing, artificial intelligence/machine learning, and cloud-based application will also be considered.

Organizers - Peng Hang, Tongji University; Ozgenur Kavas-Torris, Ford Motor Company; James Li; Mohammad Naserian, General Motors LLC; Phares Noel, Diversified Engineering Concepts LLC; Xin Wang, Ford Motor Company; Zhouquan Wu, Eaton; Xiangrui Zeng, Huazhong University of Science and Tech.

Chairperson - Ozgenur Kavas-Torris, Ford Motor Company; Jan-Mou Li, MWCOG; Mohammad Naserian, General Motors LLC

Time	Paper No.	Title

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
3:00 p.m.	2025-01-8097	Decentralized Perception System with Multiple Viewpoints Quentin Picard, Malo Morice, Maryem Fadili, Steve Pechberti, Institut VEDECOM
3:30 p.m.	ORAL ONLY	Positioning Integrity Monitoring in Mixed Traffic Scenarios: A Survey Saswat Priyadarshi Nayak, University Of California Riverside
4:00 p.m.	ORAL ONLY	Smart Transportation and Infrastructure: Pioneering the Future of Mobility with Automated Vehicles and Intelligent Systems Kelleigh Ash, Battle Motors Inc.

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Wednesday, April 9

Load Simulation and Vehicle Performance: Handling and Dynamics

Session Code M210

Room 251 A Session 8:00 a.m.

Focusing on analysis and enhancement of vehicle dynamics performance including handling/braking/traction characteristics as well as robustness and active stability under the influence of loading, tire forces, and intelligent tire technology for improving overall vehicle system dynamics and safety. Influence of load variations and other uncertainties, as well as impact of system hybridization, electrification, and autonomous systems on vehicle dynamics and controls will be discussed.

Organizers - Jennifer Bastiaan, Kettering University; Hyung-Joo Hong, Ansys; Xuewu Ji, Tsinghua Univ.; Ken Kang, Honda R & D; Bin Li, Cummins; Mark Stebbins, GM

Chairperson - Hyung-Joo Hong, Hyung-Joo Hong, Ansys

Time	Paper No.	Title
8:00 a.m.	2025-01-8306	Rough Road Vehicle Dynamics Analysis for Vehicle Vibration Assessment Hyung-Joo Hong, Pavan Kumar Maddula, Hyochan Jun, ANSYS, Inc.
8:30 a.m.	2025-01-8295	A Data-Driven, Synthetic-Population Approach to Predict Durability Loads for Electric Vehicle Propulsion Systems Sankaran Ramakrishnan, Prashant Khapane, Rivian Automotive

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

WCX SAE World Congress Experience

Technical Session Schedule

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Wednesday, April 9

Load Simulation and Vehicle Performance: Ride Comfort

Session Code M207

Room 251 A Session 9:00 a.m.

Focusing on vehicle ride comfort, addressing issues such as ride evaluation, suspension tuning, occupant biomechanics, seating dynamics, and semi-active and active suspensions. Topics may include traditional vehicle primary and secondary ride issues, structural shake, brake pulsation, smooth road shake, power hop, launch shudder, freeway hop, etc. and any new ride issues raised from electric vehicles (e.g. in-wheel motors driven EVs) and autonomous vehicles (e.g. motion sickness prevention through vehicle design and driving pattern optimization).

Organizers - Haiping Du, University of Wollongong; Guangqiang Wu, Tongji University; Jinglai Wu, Huazhong University of Science and Tech.; Xuting Wu, GAC R&D Center; James Yang, Texas Tech. University; Zhi Yuan, Dassault Systèmes; Peijun Xu, Ebco Inc; Fulun Yang, Hanon Systems

Chairperson - James Yang, Texas Tech. University

Time	Paper No.	Title
9:00 a.m.	2025-01-8263	Hydro Bushing Model Identification Using Physics-Informed Neural Networks Josef Koutsoupakis, Aristotle University of Thessaloniki; Adrijan Ribaric, Altair Engineering; Ingo Nolden, Altair Engineering GmbH; George Karyofyllas, Dimitrios Giagopoulos, Aristotle University of Thessaloniki
9:30 a.m.	2025-01-8267	An incremental coordinated control method for distributed drive electric vehicle through the anti-squat/lift/dive suspension Cong Feng, Guangqiang Wu, Yuchen Yang, Tongji University
10:00 a.m.	2025-01-8273	Sensory-Driven Design Method for Personalizing Ride Comfort Tailored to Individual Vibration Perception Hironobu Kikuchi, Kazuaki Inaba, Institute of Science Tokyo

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Wednesday, April 9

Panel Discussion: V2X Quantitative Consumer Research: What They Value and Why

Session Code AE116

Room 251 B Session 8:00 a.m.

SAE and M-city recently partnered to conduct the first-ever quantitative consumer research on V2X, building on prior studies conducted with both infrastructure stakeholders and end users. This panel discussion will cover and summarize key findings including the voice of the consumer regarding various V2X use cases, and why they matter. Panelists will discuss and address the challenges and the enormous opportunities to be found in a coherent ecosystem that delivers safety, efficiency, and transactional opportunities

Moderators - thomas pavlak, Poco Labs LLC

Panelists - Fabrizio Minarini, EU; Justine Johnson, Michigan Economic Development Corporatio; Laura Chace, ITS America;

WCX SAE World Congress Experience

Technical Session Schedule

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Wednesday, April 9

Materials & Structural Virtual Performance and Validation - Part 3 of 3

Session Code M230

Room 251 C Session 8:00 a.m.

This session presents the cutting-edge advancements in virtual modeling technologies that evaluate material and structural performance, at scales ranging from theoretical development to real-world applications, including specialized virtual simulation techniques for plug-in hybrids, electric vehicles, fuel cells, and internal combustion engine autonomous vehicles.

Organizers - Ke An, Oak Ridge National Laboratory; Peiran Ding, Farasis Energy USA; Mingchao Guo, FCA US LLC; Hamid Jahed, University of Waterloo; Fan Li, Yi Liu, General Motors LLC; Sze-Sze Ng, Dow; Wenxin(Daniel) Qin, Qigui Wang, General Motors LLC; Xijia Wu, National Research Council Canada; Zhi Yuan, Dassault Systèmes

Chairperson - Yi Liu, General Motors LLC; Sze-Sze Ng, Dow; Wenxin(Daniel) Qin, General Motors LLC

Time	Paper No.	Title
8:00 a.m.	2025-01-8315	MBD-FEM Co-Simulation Approach to Assess Strength of Automotive Chassis Components Dhiren Behera, Tata Consultancy Services; Fan Li, Mine Tasci, Young-Jin Seo, General Motors LLC; Martin Schulze, Dassault Systemes Deutschland GmbH; Binu Jose Kochucheruvil, Tamer Yanni, Dassault Systemes Simulia Corp.; Kiran Bhosale, Phani Aluru, Tata Consultancy Services
8:30 a.m.	ORAL ONLY	A method to predict fatigue damage life of the advanced interconnect material in power electronics Wenwen Yi, General Motors LLC; Zhen Chen, Congjie Wang, General Motors (China) Investment Co. Lt; Wenying Yang, General Motors; Yun-Hui Mei, Tiangong University, China
9:00 a.m.	ORAL ONLY	Modern Tools for Tribological Optimization of EV Transmissions and e-Axles Boris Zhmud, Tribonex AB
9:30 a.m.	2025-01-8323	A New Inverse Method for the Determination of Mechanical Properties of an Angle-Ply Composite Laminate by the CLPT Sushree Tanaya, Anindya Deb, Indian Institute of Science

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Wednesday, April 9

Plastic Components, Polymeric, and Composites for EV, AVS and ICE Vehicles

Session Code M300

Room 252 A Session 8:00 a.m.

Presentations of this session will address the development of polymeric and composite materials for automotive interiors and exteriors, powertrain components, as well as structural and non-structural applications. Focus is on design, processes, bonding and manufacturing technologies, as well as lightweighting strategies.

Organizers - Somasekhar Bobba, SABIC; Dr. Hoda GM, General Motors; Emile Homsi, Cargill INC; Y Charles Lu, Univ. of Kentucky; Srikanth Pilla, University Of Delaware; Mark Pope, DG Technologies; Sai Aditya Pradeep, University Of Delaware; Bryant Tokarz, O-Flex Group Inc.; Holger Warth, medmix AG

Chairperson - Emile Homsi, Cargill INC; Bryant Tokarz, O-Flex Group Inc.

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
8:00 a.m.	2025-01-8327	Mechanical Analysis of a Non-Pneumatic Tire's Spokes William Collings, Ontario Tech University; Chengzhi Li, Jackson Schwarz, Akhlesh Lakhtakia, Charles Bakis, Pennsylvania State University; Zeinab El-Sayegh, Moustafa El-Gindy, Ontario Tech University
8:30 a.m.	2025-01-8329	A Systematic Review about Heat Shrink Sleeves Using Nanomaterials for the Automotive Industry Eduardo F. Kerche, HPPT do Brasil; Rodrigo Polkowski, TRL9 - Tech Reseach and Development; Lucas Horiuchi, Everaldo Goncalves, HPPT do Brasil
9:00 a.m.	2025-01-8326	Sustainable automotive composites: A systematic review of dispersion methods for cotton fibers in poly(lactic acid) matrix Marina De Andrade, Rodrigo Polkowski, Lucas Nao Horiuchi, Ana Paula Goncalves, Vinícius De Oliveira, TRL9 LAB Testing and Technical Analysis
9:30 a.m.	2025-01-8328	Nanocomposites Made with Poly(Lactic Acid)/Cellulose Nanofibers for Automotive Applications: The Impact of Annealing on 3D Printed Parts Vinícius de Oliveira, Lucas Nao Horiuchi, Ana Paula Goncalves, Marina De Andrade, Rodrigo Polkowski, TRL9 LAB Testing and Technical Analysis
10:00 a.m.	ORAL ONLY	Pack-Level Polymeric Battery Enclosure Design and Validation Testing

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Wednesday, April 9

Additive Manufacturing

Session Code MFG300

Room 252 A Session 1:30 p.m.

This session is seeking case-studies on the development, implementation, and optimization of designs for different strategies in additive manufacturing that include both metal and non-metallic materials. We are asking for authors to provide in their manuscript's examples of appropriate AM technology for specific design-manufacturing applications; to identify and explain design challenges; and where appropriate showcase solutions that identify software tools, evaluate existing designs for workflow; and design parts that leverage the strengths of AM.

Organizers - Monika Minarcin, Accenture; Sameehan Joshi, UNT; Ramakrishna Koganti, University Of North Texas; Mangesh Pantawane, The Timken Company

Chairperson - Sameehan Joshi, Ramakrishna Koganti, University Of North Texas; Monika Minarcin, Accenture

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	Keynote: Evolution of Laser Materials Processing: From Surface Engineering to Additive Manufacturing Narendra Dahotre, University Of North Texas
2:05 p.m.	2025-01-8335	Brittle or Ductile? Effects of Print Orientation and Raster Angle on Polylactic Acid (PLA) Fused Filament Fabrication (FFF) Tensile Samples Dora Strelkova, Ruth Jill Urbanic, University of Windsor

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
2:25 p.m.	ORAL ONLY	Optimizing Next-Generation Lattice Structure Heat Sinks: An Integrated Approach Combining Computational Modeling and Experimental Validation Hitesh D. Vora, Oklahoma State University
3:15 p.m.	ORAL ONLY	Keynote: Making it DED Easy Ruth Jill Urbanic, Univ. of Windsor
3:50 p.m.	ORAL ONLY	Laser Powder Bed Fusion of Electrical Steel Toroidal Cores
4:10 p.m.	ORAL ONLY	Real-Time Process Monitoring and Defect Detection in Additive Manufacturing Using AI and Machine Learning Hitesh D. Vora, Oklahoma State University
4:30 p.m.	~~2025-01-8336~~ ORAL ONLY	Metal Additive Manufacturing in Automotive Industry Alfredo Castiglione Morelli, Dario Volonta, Federico Ferrero, Pierluigi Bessone, Mirjana Milic, Marco Sesia, Loris Giovanni Marino, Italdesign-Giugaro S.p.A.

Planned by Integrated Design and Manufacturing Activity / Ground Vehicle Advisory Group

Wednesday, April 9

ADAS and Autonomous Vehicle System: Testing - Part 2 of 4

Session Code AE106

Room 252 B Session 8:00 a.m.

This session focuses on simulation and testing methodologies for ADAS and automated driving systems. Development and testing these systems often relies on simulation and advance testing methodologies due to the complex operating environment

Organizers - Jace Allen, dSPACE Inc.; Mukund Chandrasekaran, General Motors LLC; Yixin Chen, Stellantis; Amit Choudhury, Robert Bosch; Joseph D'Ambrosio, General Motors LLC; Peng Hang, Tongji University; Bin Li, Cummins; Abigayil Ostipow, dSPACE Inc.; Ramesh S, General Motors Corp.

Assistant Chairpersons - Gene Saltzberg

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Simulation Considerations of Perception Systems for Automatic Emergency Braking Victor Loya, ANSYS Inc.
8:30 a.m.	2025-01-8057	Effect of Aftermarket Modifications on ADAS Functionality – 2021 Ford F-150 Light Vehicle Jennifer Bastiaan, Kettering University; Mike Muller, Luis Morales, SEMA

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
9:30 a.m.	2025-01-8056	Advanced Driver Assistance Systems (ADAS): Assessing the Efficacy of Non-Impact Testing for Evaluating the Performance of Frontal Collision Mitigation Technology Michelle Kuykendal, Casey Easter, Giacomo Koszegi, Exponent Inc.; Ross Alexander; Marc Paradiso, Sean Scally, Exponent Inc.
10:00 a.m.	2025-01-8063	Evaluating the Impact of Sensor Accuracy on Adaptive Cruise Control Performance: A Simulation Study Arpit Awathe, Magna Electronics Inc.; Tejas Varunjikar, Magna International Inc.; Abhinandan Vijay Raut, Darsh Patel, Magna Electronics Inc.

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Wednesday, April 9

ADAS and Autonomous Vehicle System: Testing - Part 3 of 4

Session Code AE106

Room 252 B Session 1:30 p.m.

This session focuses on simulation and testing methodologies for ADAS and automated driving systems. Development and testing these systems often relies on simulation and advance testing methodologies due to the complex operating environment

Organizers - Jace Allen, dSPACE Inc.; Mukund Chandrasekaran, General Motors LLC; Yixin Chen, Stellantis; Amit Choudhury, Robert Bosch; Joseph D'Ambrosio, General Motors LLC; Peng Hang, Tongji University; Bin Li, Cummins; Abigayil Ostipow, dSPACE Inc.; Ramesh S, General Motors Corp.

Assistant Chairpersons - Gene Saltzberg

Time	Paper No.	Title
1:30 p.m.	2025-01-8067	Incorporating the Scenario-Based Framework Underpinned by Operational Design Domain (ODD) for Automated Driving Stack (ADS) Evaluation Emil Chodowiec, Xizhe Zhang, Joe Mitchell, Peter Baker, Siddartha Khastgir, Paul Jennings, WMG, University of Warwick
2:00 p.m.	ORAL ONLY	Coverage and Confidence metrics for assurance of Autonomy Safety Kaushik Madala, Marina Vasquez, Kashish Gupta, Jayalekshmi Krishnamoorthy, Ikue Warren, Sadhvi Varagiri, Zihao Wang, UL Solutions
2:30 p.m.	2025-01-8062	Portable Track-Based Connected Intersection Testing System for Connected and Automated Vehicles Kayla Hamilton, Priyashraba Misra, David Ord, Nick Goberville, Trevor Crain, Argonne National Laboratory; Shreekant Marwadi, Transportation Research Center Inc.
3:00 p.m.	2025-01-8064	Development of a Computer-Less Robotic Platform for ADAS Testing Meredith Bartholomew, Ponaravind Muthaiah, Gary Heydinger, Scott Zagorski, SEA, Ltd.
3:30 p.m.	2025-01-8059	Reproduction of Real-World Scenarios in CARLA: An Extension of CARLA Functionality Yan Ai, Bikram Adhikari, Chung-Kyu Park, Cing-Dao Kan, Duminda Wijesekera, George Mason University

WCX SAE World Congress Experience

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Time	Paper No.	Title
4:00 p.m.	2025-01-8055	Different Methods-Based Curvature Estimation and its Effect on the Lane Centering Performance Arpit Awathe, Magna Electronics Inc.; Tejas Varunjikar, Magna International Inc.; Arihant Jain, Magna Electronics Inc.

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Wednesday, April 9

Automotive Lighting Technology and Human Factors in Driver Vision

Session Code SS300

Room 259 Session 1:30 p.m.

These papers highlight the interaction of driver vision - which is itself characterized by complexity, flexibility, and high levels of performance—with ever more sophisticated vision technologies to support driver vision. In particular, LED technology continued to advance in the past year, leading to broader lighting applications. Topics covered include lighting design strategy, lighting thermal management, driver fields of view, and characteristics of camera/display systems.

Organizers - Michael Flannagan, Univ. of Michigan-Ann Arbor; Joseph Jaklic, ams-OSRAM

Chairperson - Joseph Jaklic, ams-OSRAM

Time	Paper No.	Title
1:30 p.m.	2025-01-8663	Study on the Improvement of Pedestrian and Vehicle Visibility by Geometric Patterns Projection Lighting Kazuyuki Kawamura, Kei Oshida, Honda
2:00 p.m.	ORAL ONLY	Comparision between different color temperature for headlights under different road conditions Luciano Lukacs, Scout Motors Inc.
2:30 p.m.	2025-01-8662	A Survey of Vehicle Forward Lighting System Mounting Height and Driver Eye Height John D. Bullough, Icahn School of Medicine at Mount Sinai
3:00 p.m.	2025-01-8665	Study of Indian Population’s Eye Point to Adapt Indian Vehicle Design to Indian Anthropometry for Accident Risk Mitigation Salman P H, Prerita Kalra, Ashish Rawat, Deepak Sharma, Ashwinder Singh, Maruti Suzuki India Ltd.
3:30 p.m.	2025-01-8667	Developing a Camera-Based Perspective Transformation Method for Quantifying Driver Direct Visibility for Passenger Vehicles Becky Mueller, Haden Bragg, Teddy Bird, Insurance Institute for Highway Safety
4:00 p.m.	2025-01-8666	Driving under the Influence: A Review of Fitness to Drive, Drug-Induced Impairments, and Simulation Testing Lorenzo Uccello, Politecnico di Milano; Alessandro Nobili, Luca Pasina, Alessio Novella, Chiara Elli, Istituto di Ricerche Farmacologiche Mari; Gianpiero Mastinu, Politecnico di Milano

WCX SAE World Congress Experience

Technical Session Schedule

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Planned by Human Factors Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 9

Panel Discussion: Shaping the Future of E-Mobility : Safety, Sustainability, and Design Challenges

Session Code AE110

Room 260 Session 8:00 a.m.

Hosted by SAE Battery Steering Committee, sub-commitee chairs and industry experts, we will discuss e-mobility trends featuring perspectives from OEM's, academics and public sectors in these areas: -Safety: Therlam Management/Pack Venting/Material Trend -EHS/Env. Impact/Manufacturing/First Responder Safety -Challenges/Contracts between Genera eMobility -(EV/Truck/School Bus) and Micromobility (Ebike/Scooter) Design -Storage and Transport -Work Force Development

Learn more about the Panel

Organizers - Sze-Sze Ng, Dow; Brian Engle, Amphenol; Vinay Premnath, UL Research Institutes

Chairperson - Brian Engle, Amphenol; Vinay Premnath, UL Research Institutes; Sze-Sze Ng, Dow

Moderators - Alyssia Bostrom, Dolav USA

Panelists - Oliver Gross, Stellantis NV; Jody Leber, CSA Group; Vivian Tran, University of Michigan Ann Arbor;

Wednesday, April 9

Panel Discussion: SAE Battery Steering Committee Highlights

Session Code AE115

Room 260 Session 9:30 a.m.

Hosted by the SAE Battery Steering Committee, each sub-committee chair will share a brief of their work in 2024, highlighting the latest technology designs and safety standards

Learn more about the Panel

Organizers - Sze-Sze Ng, Dow; Vinay Premnath, UL Research Institutes; Brian Engle, Amphenol

Chairperson - Vinay Premnath, UL Research Institutes; Brian Engle, Amphenol

Moderators - Sze-Sze Ng, Dow

Panelists - Daniel Barber, Parker Lord; Michael Harenbrock, Mann+Hummel GmbH; Bin Li, General Motors LLC; Todd Mackintosh, General Motors; Shay Natarajan, Mobility Impact Partners;

Wednesday, April 9

Battery Safety Summit - Part 3 of 3

Session Code AE701

Room 260 Session 1:30 p.m.

With rapid penetration of battery energy storage systems in the mobility space (surface/aviation/aerospace), knowledge of the various aspects related to battery safety is critical. The purpose of this full day session is to communicate and share information and experience in battery safety related to transportation applications. Attendees will be provided background on EV/Battery related safety regulations, battery safety issues, latest research in the field of battery failure and mitigation technology, and feedback from real experiences dealing with EV incidents from experts. The goal in providing this content is to develop and support uniform safe practices across industry and inform attendees about effective tools and processes to deal with safety issues and incidents.

Organizers - Brian Engle, Amphenol; Vinay Premnath, UL Research Institutes; Sze-Sze Ng, Dow

Chairperson - Brian Engle, Amphenol; Sze-Sze Ng, Dow

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:29 PM

Time	Paper No.	Title
1:30 p.m.	2025-01-8127	Numerical Model of the Heat-Wait and Seek and Heating Ramp Protocol for the Prediction of Thermal Runaway in Lithium-Ion Batteries Antonio Gil, Javier Monsalve-Serrano, Javier Marco-Gimeno, Carlos Guaraco-Figueira, Universitat Politecnica de Valencia
2:00 p.m.	2025-01-8123	Multi-Disciplinary Electric Cargo Scooter Battery Design & Simulation Pranav Shinde, Revolta Motors Pvt. Ltd. | QARGOS; Karthik Balachandran, Dassault Systemes; Chaitanya Gandhi, Revolta Motors Pvt. Ltd. | QARGOS; Sonu Mishra, Harish Deshmukh, Dassault Systèmes Americas Corp; Madhura Karve, Dassault Systèmes Americas Corp.; Srikrishna Chittur, Dassault SystemesDassault Systèmes Americas Corp; Alok Das, Revolta Motors Pvt. Ltd. | QARGOS
2:30 p.m.	2025-01-8124	Investigation of Impedance Evolution for Lithium Plating Detection during Multi-Stage Constant Current Fast Charging of Lithium-Ion Batteries Yudong Shen, Xueyuan Wang, Hang Wu, Xuezhe Wei, Haifeng Dai, Tongji University
3:00 p.m.	2025-01-8133	In-Situ Nanoindentation and Finite Element Analysis for Evaluating the Young's Modulus of Anode Current Collectors in Lithium-ion Batteries Rui Dai, Zhiwei Sun, Jeongjin Park, Yong Xia, Qing Zhou, Tsinghua University
3:30 p.m.	2025-01-8130	Enhanced Sorting Investigation of Retired Lithium-Ion Batteries Based on Electrochemical Impedance Spectroscopy Wenjun Fan, Xueyuan Wang, Yiqun Jin, Bo Jiang, Jiangong Zhu, Xuezhe Wei, Haifeng Dai, Tongji University
4:00 p.m.	ORAL ONLY	Innovative Energy Storage Solutions Driving Safer Transportation Weiling Luan, East China Univ. of Science and Tech.

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Wednesday, April 9

Emissions Measuring and Testing - Part 1 of 3

Session Code PFL440

Room 310 A Session 8:00 a.m.

Sub-sessions cover 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 - Svitlana Kroll, Southwest Research Institute; J. Felipe Rodriguez, International Council On Clean Transport; Dado Karim Sylla, Cummins Inc.; Yuesen Wang, Exponent; Susumu Sato, Institute of Science Tokyo; Mi-Young Kim, Mert Zorlu, Cummins Inc.

Chairperson - Svitlana Kroll, Southwest Research Institute; Dado Karim Sylla, Cummins Inc.

Time	Paper No.	Title

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:30 PM

Time	Paper No.	Title
8:00 a.m.	2025-01-8501	High Performance DPF to Tackle Nano Particulate Emissions for Off-Highway Applications
		Hussein Fakih, Zachery Elizondo, Hiroaki Ishikawa, Fumihiko Yoshioka, Kyohei Kato, NGK Automotive Ceramics USA, Inc.; Hiroaki Suzuki, Takashi Aoki, Yoshitaka Ito, NGK Insulators, Ltd.
8:30 a.m.	ORAL ONLY	Impact of High Water and Hydrogen Presence on CuSCR Catalyst Performance and Aging in H2-ICE
		Mi-Young Kim, Cummins Inc.; Arvind Suresh, Dylan Trandal, Rohil Daya, krishna Kamasamudram, Cummins Inc
9:00 a.m.	2025-01-8499	Analysis of Trapped Gases within an Aftertreatment System Reacting over a TWC after Engine Is Stopped
		Jorge Eduardo Lamas, Ma Camille Lacdan, Kenji Hara, Yoshinori Otsuki, Horiba Ltd.
9:30 a.m.	ORAL ONLY	Demonstration of Advanced Low NOX Technology on an Off-road Engine
		Christopher Sharp, Bryan Zavala, Gary Neely, Sandesh Rao, Southwest Research Institute; Yi Tan, Jeffrey Lowry, Jenna Latt, California Air Resources Board

Planned by Mobile Source Emissions Committee / Energy and Propulsion Activity

Wednesday, April 9

Combustion in Compression-Ignition Engines - Part 1 of 3

Session Code PFL220

Room 310 A Session 1:30 p.m.

Classical diesel engine combustion with relatively short ignition delay. Submissions in this session investigate the impacts of alternative fuels/blends and fuel systems in CI engines.

Organizers - Mark Hoffman, Auburn Univ.; Chad Koci, Srinath Subramanian, Caterpillar Inc.; Yu Zhang, Cummins; Antowan Zyada, General Motors

Chairperson - Chad Koci, Caterpillar Inc; Antowan Zyada, General Motors

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	Combustion and Fuel System Optimization for Renewable Diesel
		Flavio Dal Forno Chuahy, Oak Ridge National Laboratory
2:00 p.m.	2025-01-8417	Energy Conversion Efficacy of Neat Dimethyl Ether Combustion with Heat Release Characterization and Emission Analysis
		Simon Leblanc, Binghao Cong, Jace Leach, Xiao Yu, Graham Reader, Ming Zheng, University of Windsor
2:30 p.m.	ORAL ONLY	Effects of Oxygenate Composition on Heavy-Duty Gasoline Compression Ignition Engines at Low-Load Conditions
		Jorge Pulpeiro Gonzalez, Alexander Hoth, Christopher Kolodziej, Argonne National Laboratory

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
3:00 p.m.	2025-01-8415	DME-to-Propane Mixture Effects on a Light Duty Compression Ignition Engine William De Ojeda, Simon (Haibao) Wu, Wm International Engineering; Carrie Hall, King Ankobea-Ansah, Hafiz Ahmad Hassan, Christopher Harrison, Illinois Institute of Technology
3:30 p.m.	2025-01-8411	Decarbonization of Off-Road Engines by Methanol Mixing-Controlled Compression Ignition with Ignition Enhancer Sanguk Lee, Dario Lopez Pintor, James MacDonald, Abhinandhan Narayanan, Adrian Chan, Sandia National Laboratories
4:00 p.m.	ORAL ONLY	Insights into Combustion and Performance of Reforming-Controlled Compression Ignition (RefCCI) Engine Fed with Polyoxymethylene Dimethyl Ethers (PODEn) and H2-rich PODEn-Reformate Denis Buntin, Technion Israel Inst. of Technology; Leonid Tartakovsky, Technion Israel Inst of Technology

Planned by Engine Combustion / Energy and Propulsion Activity

Wednesday, April 9

Fuel and Additive Effects on Engine Systems - Part 1 of 3

Session Code PFL310

Room 310 B Session 8:00 a.m.

Topics include the effects of fuel and additives on deposit formation, intake system cleanliness, friction, wear, corrosion, and elastomer compatibility. Also covered are effects of fuel specification on drivability, on evaporative emissions, and on the relationship between emissions and drive cycle.

Organizers - Brian Gainey, Clemson University; Antonino La Rocca, University of Nottingham; Elisa Toulson, Michigan State University; Ziming Yan, Aramco Americas

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Advanced Insights into Hydrogen Fuel Adaptation for Internal Combustion Engines Mohamed Mohamed, Xinyan Wang, Hua Zhao, BRUNEL UNIVERSITY LONDON
8:30 a.m.	ORAL ONLY	Hydrogen Engines and Onboard Fuel Production: Literature Review and Analysis Muhammad Ahsan Siddique
9:00 a.m.	ORAL ONLY	Numerical and experimental study on hydrogen combustion inside a turbulent jet ignition (TJI) system Sebastian Galeano Herrera, Elisa Toulson, Ahmed Barain, Aaron Caughel, Michigan State University
9:30 a.m.	ORAL ONLY	Influence of hydrogen blending on the performance and emissions of an ultra-low NOx natural gas heavy-duty engine Troy Hurren, Elizabeth DeFrance, University Of California Riverside; Zisimos Toumasatos; Kent Johnson, Univ of California-Riverside; George Karavalakis, University Of California Riverside

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Technical Session Schedule

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Time	Paper No.	Title
10:00 a.m.	2025-01-8439	Effects of Lower Carbon Intensity Fuels on Performance and Greenhouse Gas Emissions Intensity Reduction for Conventional and Next Generation Powertrains Part II David Vuilleumier, Brian Morlan, Satoshi Ohta, Paul Loeper, Robert Lorenz, Chevron Corporation; Keishi Takada, Kenji Sugata, Naoyoshi Matsubara, Daishi Takahashi, Toyota Motor Corporation

Planned by Fuels and Lubricants / Energy and Propulsion Activity

Wednesday, April 9

Fuel and Additive Effects on Engine Systems - Part 2 of 3

Session Code PFL310

Room 310 B Session 1:30 p.m.

Topics include the effects of fuel and additives on deposit formation, intake system cleanliness, friction, wear, corrosion, and elastomer compatibility. Also covered are effects of fuel specification on drivability, on evaporative emissions, and on the relationship between emissions and drive cycle.

Organizers - Brian Gainey, Clemson University; Antonino La Rocca, University of Nottingham; Elisa Toulson, Michigan State University; Ziming Yan, Aramco Americas

Chairperson - Brian Gainey, Clemson University

Time	Paper No.	Title
1:30 p.m.	2025-01-8440	Assessment of a Heavy-Duty Diesel Engine Retrofitted to Dual-Fuel and Neat Methanol SI Operation Quinten Dejaegere, Ghent University; Alberto Ballerini, Politecnico di Milano; Sheldon Demiddeleer, Thomas Vanderbeken, Kwinten Bracke, Ben Gyselinck, Ghent University; Gianluca D'Errico, Politecnico di Milano; Sebastian Verhelst, Ghent University
2:00 p.m.	2025-01-8445	Combustion and Emission Performance from the Use of Acid-Catalysed Butanol Alcoholysis Derived Advanced Biofuel Blends in a Compression Ignition Engine Scott Wiseman, Hu Li, Alison S. Tomlin, University of Leeds
2:30 p.m.	2025-01-8446	Impact of Oxygenated Fuel Components on Engine Performance and Particulate Emissions in Gasoline Blends Vickey Kalaskar, Robert Mitchell, Southwest Research Institute; Daniel Pourreau, Lyondellbasell
3:00 p.m.	2025-01-8441	Design of a High-Pressure Fuel System for Use with Dimethyl Ether William De Ojeda, Simon (Haibao) Wu, Wm International Engineering
3:30 p.m.	2025-01-8448	Ammonia-Hydrogen Combustion in a Heavy-Duty Diesel Engine Converted to Spark Ignition Operation Luis Alvarez, Stefany Saenz Prado, Juan Trujillo Grisales, Cosmin Dumitrescu, West Virginia University

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
4:00 p.m.	2025-01-8443	Comprehensive Investigation of Combustion Characteristics, Emissions, and Tribological Properties of Synthetic Kerosene (S8) in a CVCC and CRDI Research Engine Valentin Soloiu, James Willis, Coleman Norton, Zachary Davis, Tristan Graham, Austin Nobis, Georgia Southern University

Planned by Fuels and Lubricants / Energy and Propulsion Activity

Wednesday, April 9

Vehicle Internet of Things

Session Code IOT100

Room 320 Session 1:30 p.m.

The criticality of Vehicle Internet of Things (VIOT) has grown significantly with the advancement of ADAS, Avs and Smart Transportation technologies as well as new business models on connected consumer. The organizers of these sessions are looking for abstract submissions on the following areas: smart transportation, driverless transportation, route optimization, new and emerging technologies and business practices, vehicle data (big data) analytics and machine learning algorithms, and Edge Devices.

Organizers - Sumit Bhargava, Mahle Aftermarket Inc.; Richard Brooks, Clemson Univ.; Partha Goswami, PG Mobility Analysis LLC; Mohammad Hamad, Technical University Of Munich; Ameer Kashani, DENSO Corporation; Mohammad Naserian, General Motors LLC; Mert D. Pesé, Clemson University; Kyle Taylor, Hyundai America Technical Center

Chairperson - Partha Goswami, PG Mobility Analysis LLC; Mert D. Pesé, Clemson University

Time	Paper No.	Title
1:30 p.m.	2025-01-8214	Cloud Based Digital Twin Development for High-Voltage Battery Systems in Commercial Vehicles Anita Bongards, BorgWarner Stuttgart GmbH; Xiaobing Liu, Maria Beemer, BorgWarner Inc.; Daniel Gajowski, BorgWarner Stuttgart GmbH; Neeraj Rama, Keya Shah, Amirhossein Fallahdizcheh, BorgWarner Inc.
2:00 p.m.	ORAL ONLY	Cellular Data Reduction and Data Transmission Rate Increase through the use of V2V Mesh Networks for Navigation Data Brian Wheeler, HATCI
2:30 p.m.	2025-01-8213	Avoiding the Crash: A Vision-Language Model Evaluation of Critical Traffic Scenarios David Fernandez, Pedram MohajerAnsari, Amir Salarpour, Mert D. Pesé, Clemson University

Planned by Vehicle Internet of Things Program Committee / Ground Vehicle Advisory Group

Wednesday, April 9

Panel Discussion: Surveillance Under the Hood: Privacy Risks in Connected Cars

Session Code IOT101

Room 320 Session 3:00 p.m.

A recent report from Mozilla's *Privacy Not Included project reveals unsettling information about the privacy and security concerns associated with modern internet-connected cars. The study showed that the latest models from major car brands fail to meet basic privacy and security standards. The vehicles tested were shown to collect a wide range of personal information, from driving behaviors like hard

braking or seatbelt use, to sensitive details like race, health information, and even sexual activity. Furthermore, the report disclosed a lack of data encryption practices by most OEMs and identified "privacy washing," where manufacturers may provide misleading information that can downplay legitimate privacy concerns from users. Manufacturers increasingly leverage broad data collection practices, including data from microphones, cameras, and connections to drivers' phones, while also potentially exchanging data through apps, connected services, and integrations with third parties. Several automakers claim to adhere to non-binding guidance such as the "Consumer Privacy Protection Principles," but such participation does not provide consumers with the transparency and enforcement tools necessary for robust personal data privacy protection. The risk of data breaches and potential for misuse creates a challenge for OEMs seeking to increase the monetization of their data assets while preserving their brand reputation. To meet expectations, developers must carefully implement "privacy-by-design", and early regulations such as GDPR or CCPA. In this panel discussion, experts discuss current vehicle IoT privacy challenges, trends, and the efforts being taken to enhance regulatory frameworks.

Learn more about the Panel

Organizers - Richard Brooks, Clemson Univ.; Partha Goswami, PG Mobility Analysis LLC; Ameer Kashani, DENSO Corporation; Mert D. Pesé, Clemson University

Chairperson - Partha Goswami, PG Mobility Analysis LLC

Moderators - Mert D. Pesé, Clemson University

Panelists - Baris Cakar, P3 Group; Simon Hartley, IBM; Kashmir Hill, The New York Times Company; Bill Mazzara, Stellantis NV; Nader Sehatbakhsh, UCLA;

Wednesday, April 9

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

Session Code M104

Room 321 Session 8:00 a.m.

This session 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, Ford Motor Company; Emmanuel De Moor, Colorado School of Mines; Brandon Hance, CBMM North America; Ming Shi, GM; Jatinder Singh, General Motors LLC

Chairperson - Constantin Chiriac, Ford Motor Company; Brandon Hance, CBMM North America Inc; Brandon Hance, CBMM North America Inc.

Time	Paper No.	Title
8:00 a.m.	2025-01-8221	Elevated Fracture Resistance of Q&P1180 Steel after Forming and Paint-Baking Jun Hu, Cleveland-Cliffs Inc.; Yeting Sun, University Of Central Florida; Grant Thomas, Cleveland-Cliffs Inc.
8:30 a.m.	2025-01-8220	Material Characterization of Newly-Developed Advanced High Strength Steels for Prediction of Crash Performance Kentaro Sato, Tomohiro Sakaidani, Yoichiro Ohnishi, JFE Steel Corporation; Adrian Paton, Hartwig Roesen, thyssenkrupp Steel Europe AG
9:00 a.m.	2025-01-8218	Application of 1.7GPa Martensitic Steel in Dash Lower Cross Member to Enhance Automotive Frontal Impact Safety Jongmin Lee, Donghyun Kim, Minho Jang, Hyundai Steel; Geunho Kim, Yoo Seongho, Kyu-Rae Kim, ASAN Co., Ltd.
9:30 a.m.	2025-01-8222	Understanding Forming Characteristics of Different Microstructure Steels within 980MPa and 1180MPa Hua-Chu Shih, Vasant Pednekar, United States Steel Corporation; Ming Shi, Jatinder Singh, Sarah Tedesco, Wei Wu, General Motors LLC

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Time	Paper No.	Title
10:00 a.m.	ORAL ONLY	AI-Powered Digital Twin for Sintering in Metal Additive Manufacturing Ali Kassab, Sajad Shirzad, University of Michigan

Planned by Metallic Materials Committee / Materials Engineering Activity

Wednesday, April 9

Magnetic Materials for EV Traction Motors

Session Code M103

Room 321 Session 3:00 p.m.

Vehicle electrification has been recognized and strategically taken by almost all the developed countries as well as major developing economies as one of the most important routes to reducing GHG emissions in the transportation sector. The electrification of vehicles not only involves the development of high performance/capacity batteries to ease the range anxiety, but it also needs to reduce the costs and improve the energy efficiency of the propulsion system to enable affordable electric vehicles (EVs) for wide adoption. Like the engine in a traditional internal combustion engine (ICE) vehicle, the propulsion (electric-drive) system is the heart of an EV, and traction motor is at the center of the system. Materials optimization and the development of new materials (e.g. electrical steels, permanent magnets, soft magnetic composites, etc.) play an important role in achieving these goals. This symposium provides a platform for engineers, researchers and stakeholders to share, discuss, and collaborate in magnetic materials development for the manufacturing of EV traction motors.

Organizers - Youliang He, Natural Resources Canada; Fabrice Bernier, National Resarch Council; Brandon Hance, CBMM North America Inc

Chairperson - Youliang He, Natural Resources Canada

Time	Paper No.	Title
3:00 p.m.	ORAL ONLY	Aluminum Matrix Bonded Permanent Magnets for Non-Conventional EV Motors Tej Poudel Chhetri, Xiao Li, Pacific Northwest National Laboratory; Farhan Ishrak, North Carolina State University; Hrishikesh Das, Pacific Northwest National Laboratory; Vandana Rallabandi, Oak Ridge National Laboratory; Bharat Gwalani, North Carolina State University; Mert Efe, Pacific Northwest National Laboratory
3:30 p.m.	2025-01-8217	NdFeB Magnets Manufactured by Hot Pressing Using Strip-Cast and Melt-Spun Powders Youliang He, Natural Resources Canada; Shaochang Song, Dan Walsh, CanmetMATERIALS,Natural Resources Canada; Fabrice Bernier, National Resarch Council; Yurij Mozharivskyj, McMaster University; Philip Peng, N-S New Science Magnets
4:00 p.m.	ORAL ONLY	Cube Texture Formation in Non-oriented Electrical Steel after Inclined Cold Rolling Youliang He, Natural Resources Canada

Planned by Metallic Materials Committee / Materials Engineering Activity

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:30 PM

Wednesday, April 9

Foundations of Automobile Electronics: Cybersecurity - Part 2 of 2

Session Code AE302

Room 330 A Session 8:00 a.m.

This session focuses on cybersecurity for cyber-physical vehicle systems. Topics include analyzing threats & detecting trojans using formal analysis in a semiconductor IP, detecting cybersecurity vulnerabilities in legacy safety-critical software, adaptive risk-based access control with Trusted Execution Environment for vehicles, dynamic trust model for SDVs and securing cyber-physical systems.

Organizers - John Krzeszewski, Eaton; Mark Pope, Mark Monohon, DG Technologies; William Mazzara, Stellantis NV; Chuck Brokish, Green Hills Software; Mert D. Pesé, Clemson University; Ben Gardiner, TMNA; Tohyun Pyun, Sumitomo Electric Wiring Systems Inc.; Andre Weimerskirch, Lear Corporation; Christopher Lupini, ETAS; Vivek Venkatachalam, CNH; Brian Murray, STEER Tech.; Charles Wilson

Chairperson - John Krzeszewski, Eaton; Mert D. Pesé, Clemson University

Time	Paper No.	Title
8:00 a.m.	2025-01-8085	Analyzing Threats and Detecting Trojans Through Formal Analysis in a Semiconductor 3PIP Gulam Ashrafi, Chris Dunn, Fred Roberts, Synopsys, Inc.
8:30 a.m.	2025-01-8088	Detecting Cyber-Security Vulnerabilities in Legacy Safety-Critical Software with Tight Performance Constraints Payas Awadhutkar, Ahmed Tamrawi, Jeremias Sauceda, EnSoft Corporation
9:00 a.m.	2025-01-8089	An Adaptive Risk-Based Access Control with Trusted Execution Environment for Vehicles Feng Luo, Zhihao Li, Jiajia Wang, Cheng Luo, Tongji University
9:30 a.m.	2025-01-8084	ZT4SDV Dynamic Trust for SW Defined Vehicles* Robert Kaster, Robert Bosch LLC, University of Michigan; Di Ma, University of Michigan
10:00 a.m.	ORAL ONLY	Cyber Physical Today - Secure your System! Jay Schwartz

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Wednesday, April 9

Panel Discussion: The Challenge of Protecting the Supply Chain of Connected Vehicles

Session Code AE112

Room 330 A Session 1:30 p.m.

Challenges and implications of managing security risk in the supply chain. This encompasses not only assessing security risk as a part transitions through the supply chain, but also avoidance of malicious content, by design, when sourced from companies with foreign ownership, control or influence and which have expressed hostility towards to country in which the purchaser resides. A possible concern are chipsets manufactured in another country, open source software of unknown origin, or backdoors injected during the development. Risk assessment strategies as well as solutions for helping mitigate risks in the supply chain will be discussed in the panel, such as utilization of a Software Bill of Material. An important topic for discussion is the proposed rule listed in the Federal Register, 15 CFR Part 791 [Docket No. 240919–0245] RIN 0694–AJ56 Securing the Information and Communications Technology and Services Supply Chain: Connected Vehicles. The panel will discuss the background of the regulation, concerns of and mitigation strategies for stakeholders as well

as limitations of today's avoidance and detection strategies.

Learn more about the Panel

Organizers - John Krzeszewski, Eaton

Moderators - Chris Clark, Synopsys

Panelists - Rita Michelle Barrios, Robert Bosch; Charles F. Hart, Hitachi America, Ltd.; Jeremy Muldavin, Cadence Design Systems Inc.; Andre Weimerskirch, Block Harbor Cybersecurity;

Wednesday, April 9

ADAS and Autonomous Vehicle System: AD/ADAS Path Planning and Control - Part 2 of 2

Session Code AE103

Room 330 B Session 8:00 a.m.

This session addresses technical research related to path planning and control for ADAS and autonomous vehicle systems. The topics cover latest technologies of both longitudinal and lateral path planning and motion control for various real-world applications, such as vehicle speed control, park assist/self-parking, lane changing, evasive steering, etc.

Organizers - Yixin Chen, Stellantis; Subramaniam Ganesan, Oakland University; Chen Lv, Nanyang Technological University; Samer Rajab, May Mobility Inc.; Xin Wang, Ford Motor Company

Chairperson - Xin Wang, Ford Motor Company

Time	Paper No.	Title
8:00 a.m.	2025-01-8035	Development of an Advisory System for Parking a Car with Trailer Xincheng Cao, Haochong Chen, Bilin Aksun Guvenc, Levent Guvenc, The Ohio State University; Brian Link, John Harber, Peter Richmond, Shihong Fan, Dokyung Yim, Hyundai America Technical Center Inc.
8:30 a.m.	2025-01-8033	Robust V2X Cruise Control for Class 8 Trucks in the Presence of Traffic Lights Evan Ellison, Jacob Ward, Auburn University; Lowell Brown, Daimler Truck North America; David M. Bevly, Auburn University
9:00 a.m.	2025-01-8042	Neural Network Based Kalman Filter Design for the Vehicle Lateral Maneuver Monish Dev Sudhakhar, CNH Industrial
9:30 a.m.	2025-01-8032	Efficient Sidewalk Route Planning on Aerial Images with Cost-Based A* and Mini-Max Objective Function Zhibin Bao, Haoxiang Lang, Xianke Lin, Ontario Tech University
10:00 a.m.	2025-01-8040	Aggressive Autonomous Control on Snow and Ice Yiming Yang, Jeremy P. Bos, Michigan Technological University

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

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Wednesday, April 9

CAD/CAM/CAE Technology - Part 1 of 2

Session Code SS101

Room 331 A/B/C Session 8:00 a.m.

This session publishes papers and presentations advancing the knowledge in product design, manufacturing processes, and engineering analysis using the state-of-the-art computer technology. The scope includes such areas as CFD, manufacturing and assembly simulation, crash-worthiness, computational mechanics, mold flow, ride simulation, ergonomic design, NVH, reverse engineering, etc. Developments in numerical methods applicable to automotive engineering problems will also be considered.

Organizers - Raghu Echempati, IAWMA; Randy Gu, Oakland University; Shuxin Gu, Ford Motor Company; Gary Newton, VI-grade; Chiranth Srinivasan, Simerics Inc.; Yu Teng, BAIC Motor Corporation, Ltd.; Xiyun Wang, Oakland University; Di Zhu, Ford Motor Company

Chairperson - Xiyun Wang, Oakland University; Gary Newton, AVL LIST GmbH

Time	Paper No.	Title
8:00 a.m.	2025-01-8642	Design Optimization of Electro-Hydraulic Valve Performance Through Simulation and Experimental Methods Paramesh Chintala, Ryan Hornby, Hitachi Astemo Americas Inc.
8:30 a.m.	2025-01-8625	Dynamic Tailgate Water Management Simulation Using Smoothed Particle Hydrodynamics Adrian Philip Gaylard, Duncan Weatherhead, Jaguar Land Rover
9:00 a.m.	2025-01-8632	Artificial Intelligence Approach for Fuel Cell Model Parameter Calibration Omkar Champhekar, Ansys Inc.; Arun Janakiraman, Cummins Inc.; Sreekanth Gondipalle, Ansys Inc.; Nikhil Ajotikar, Randall Zehr, Cummins Inc.
9:30 a.m.	2025-01-8624	Digital Twin, A Multiphysics Numerical Tool Chain for Next Generation Electric Drive Design Adrien Bossi, Eric Bourniche, Arnaud Leblay, Pascal David, Harsha Nanjundaswamy, BorgWarner Power Drive Systems

Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 9

CAD/CAM/CAE Technology - Part 2 of 2

Session Code SS101

Room 331 A/B/C Session 1:30 p.m.

This session publishes papers and presentations advancing the knowledge in product design, manufacturing processes, and engineering analysis using the state-of-the-art computer technology. The scope includes such areas as CFD, manufacturing and assembly simulation, crash-worthiness, computational mechanics, mold flow, ride simulation, ergonomic design, NVH, reverse engineering, etc. Developments in numerical methods applicable to automotive engineering problems will also be considered.

Organizers - Raghu Echempati, IAWMA; Randy Gu, Oakland University; Shuxin Gu, Ford Motor Company; Gary Newton, VI-grade; Chiranth Srinivasan, Simerics Inc.; Yu Teng, BAIC Motor Corporation, Ltd.; Xiyun Wang, Oakland University; Di Zhu, Ford Motor Company

Chairperson - Gary Newton, AVL LIST GmbH; Xiyun Wang, Oakland University

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Time	Paper No.	Title
2:00 p.m.	2025-01-8637	On the Characterization and Optimization of Machining Chip Washing System Using Multi-Variable Response Surface and Gradient Descent Method Abstract James Jan, Sabrina Torcellini, Aaron Khorran, Mark Hall, Ford Motor Company
2:30 p.m.	2025-01-8622	3D CFD Analysis of Predicting Engine Blowby Considering Ring Dynamics Venkata Harish Babu Manne, Simerics Inc.; Sanjeev Bedekar, Cummins Technical Center; Chiranth Srinivasan, Simerics Inc.; Debasis Das, Cummins Technical Center; Raj Ranganathan, Simerics Inc.
3:00 p.m.	2025-01-8635	Modelling Spray Washing with Lagrangian Differencing Dynamics Dmitrii Olegovich Panov, Huaxiang Zhu, ESS Engineering Software Steyr; Josip Basic, University of Split; Lingran Zhang, Vrajesh Champaneriya, Roozbeh Saghatchi, Chong Peng, Akhilesh Kotian, ESS Engineering Software Steyr; Yuya Ando, ESS Americas LLC

Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 9

Accident Reconstruction: ADAS FCW/AEB Evaluation and Validating Shadows in 3DS Max - Part 2 of 5

Session Code SS500

Room 353 Session 8:00 a.m.

Presentations studying ADAS systems in modern automobiles. New methods for analyzing pedestrian collisions, tire forces in low speed collisions and roll-over incidents. Simulating motorcycle motion in PC Crash

Organizers - Chris Armstrong, SAIC; Christopher Armstrong, Armstrong Forensic Reconstruction Corp.; Alan Asay, Asay Engineering LLC; Dean Beaumont, ARC Investigations; Jarrod Carter, Origin Forensics LLC; Edward Fatzinger, YA Engineering Services; David Plant, D P Plant & Associates; John Sprague; John Steiner, Mecanica Scientific Svcs Corp.; Craig Wilkinson, MEA Forensic Engineers & Scientists

Chairperson - Chris Armstrong, SAIC; Jarrod Carter, Origin Forensics LLC

Time	Paper No.	Title
8:00 a.m.	2025-01-8695	High-Speed FCW & AEB Testing of Tesla Model 3's Across Software Updates Shawn Harrington, Sundar Raman Nagarajan, Forensic Rock
8:30 a.m.	2025-01-8698	An Evaluation of the Performance of the Automatic Emergency Braking and Forward Collision Warning System in a 2020 Jeep Grand Cherokee During Daytime and Nighttime Conditions Shawn Harrington, Victoria Lieber, Sundar Raman Nagarajan, Forensic Rock
9:00 a.m.	2025-01-8699	Daytime and Nighttime Performance Evaluations of the Automatic Emergency Braking and Forward Collision Warning Systems on a 2020 and 2022 Kia Telluride

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Technical Session Schedule

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Time	Paper No.	Title
		Shawn Harrington, Peyton Patrick-Moline, Sundar Raman Nagarajan, Forensic Rock
9:30 a.m.	2025-01-8705	An Overview and Testing of Pedal Misapplication Systems
		Shawn Harrington, Nicholas Martin, Peyton Patrick-Moline, Shubham Ramraja Takbhate, Dino Handzic, Forensic Rock

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 9

Accident Reconstruction: Simulation, Mobile Device Data Acquisition, and Bicycle Collisions - Part 3 of 5

Session Code SS500

Room 353 Session 1:30 p.m.

Presentations studying ADAS systems in modern automobiles. New methods for analyzing pedestrian collisions, tire forces in low speed collisions and roll-over incidents. Simulating motorcycle motion in PC Crash

Organizers - Chris Armstrong, SAIC; Christopher Armstrong, Armstrong Forensic Reconstruction Corp.; Alan Asay, Asay Engineering LLC; Dean Beaumont, ARC Investigations; Jarrod Carter, Origin Forensics LLC; Edward Fatzinger, YA Engineering Services; David Plant, D P Plant & Associates; John Sprague; John Steiner, Mecanica Scientific Svcs Corp.; Craig Wilkinson, MEA Forensic Engineers & Scientists

Chairperson - Alan Asay, Asay Engineering LLC; Dean Beaumont, ARC Investigations; Edward Fatzinger, YA Engineering Services

Time	Paper No.	Title
1:30 p.m.	2025-01-8693	Sensitivity Analysis of Virtual Crash Simulation Software Using Design of Experiments (DOE)
		Julius Roberts, Nicholas Civitanova, Jacob Stegemann, David Buzdygon, Keith Thobe, Engineering Systems Inc.
2:00 p.m.	2025-01-8681	Validation of Pedestrian Collision Reconstruction Using the PC-Crash Multibody Pedestrian Model
		Nathan Rose, Connor Smith, Neal Carter, Andrew Metanias, Explico
2:30 p.m.	2025-01-8701	Quantifying the Uncertainty in Bicycle-Computer Speed Measurements
		Gabrielle R. Booth, Gunter P. Siegmund, MEA Forensic Engineers & Scientists
2:30 p.m.	2025-01-8706	An Introduction and Evaluation of Apple iOS Device Data for Use in Crash Reconstruction
		Shanon Burgess, Lance Phy, Matthew Levan, Aperture LLC
3:00 p.m.	2025-01-8696	FIT File Processing for Accident Reconstruction
		David Sweet, Gerald Bretting, Collision & Injury Dynamics Inc.

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Time	Paper No.	Title
3:30 p.m.	2025-01-8684	Bicycle Pitch-over Reconstruction Analysis
		R. Matthew Brach, Mireille Kelley, Jon Van Poppel, Engineering Systems Inc

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 9

Safety and Performance of Active Safety and Driving Automation Features - Part 2 of 2

Session Code SS400

Room 355 Session 8:00 a.m.

"This session will focus on evaluating the safety impacts that can be achieved by Active Safety features and Driving Automation features. Topics will include the both the predictive and retrospective safety impact assessments of these technologies, safety benefits for projected systems, the development of a safety case, human interactions and driver monitoring systems, regulatory testing, consumer acceptance, market demand, and subsystem performance assessment of perception, path planning, and other subsystems.

Organizers - Samatha H. Haus, University of Tennessee; Luke Riexinger, Insurance Institute for Highway Safety; John Scanlon, Waymo; Jeffrey Wishart, Science Foundation Arizona/Arizona Comme

Chairperson - John Scanlon, Waymo; Jeffrey Wishart, Science Foundation Arizona

Time	Paper No.	Title
8:00 a.m.	2025-01-8673	Developing a Safety Management System for the Automated Vehicle Industry
		David Wichner, Waymo; Jeffrey Wishart, Science Foundation Arizona; Jason Sergent, dss+; Sunder Swaminathan, Arizona State University
8:30 a.m.	2025-01-8671	Adapting the Technology Readiness Level (TRL) Framework to Automated Vehicle Development
		Sunder Swaminathan, Arizona State University; Jeffrey Wishart, Science Foundation Arizona; Junfeng Zhao, Arizona State University; Brendan Russo, Northern Arizona University; Shujauddin Rahimi, Arizona Commerce Authority
9:00 a.m.	2025-01-8678	A Model for the Design of Automated Vehicle Event Data Recorders
		Juan Pimentel, Omnex Inc.
9:30 a.m.	ORAL ONLY	Linking Scenario-Driven Safety Validation and First Responder Interactions with AVs by Generating Testing Scenarios from Real-World Incident Reports
		Alex Rudin, Garrett Moore, MITRE Corporation
10:00 a.m.	2025-01-8675	Research on Pedal Operation Characteristics for Detecting Pedal Misapplication
		Hayato Natsume; Shuncong Shen, Toshiya Hirose, Shibaura Institute of Technology

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Technical Session Schedule

As of March 20, 2025 19:40:31 PM

Wednesday, April 9

Panel Discussion: Crossing the Aisle between Passive & Active Safety

Session Code SS530

Room 355 Session 1:30 p.m.

The anticipated scope can be summarized thusly: The aim of this panel is to provide insights on safety from those who have worked in both the passive and active safety space. The goal is to share through lines and lessons learned so audience members can find ways to capitalize on the on-going research efforts in both fields. Panelists will likely talk about the safe system approach, ADAS acceptance, AEB, crash testing, VRUs, and connected vehicles (V2X).

Learn more about the Panel

Organizers - Warren Hardy, The Ohio State University

Chairperson - Warren Hardy, The Ohio State University

Moderators - Michelle Fowler, Transportation Research Center Inc

Panelists - Brian T. Bautsch, American Honda Motor Co. Inc.; Marcy Edwards, Insurance Institute for Highway Safety; Nils Lubbe, Autoliv; Rini Sherony, Toyota Motor North America Inc.;

Wednesday, April 9

Panel Discussion: Innovative Approaches to Motorcycle Safety: A Safe System Lens

Session Code SS515

Room 355 Session 3:00 p.m.

The Motorcycle Safety session presents research on motorcycle-friendly infrastructure, barrier testing, motorcycle safety technology such as ABS, AEB, and left-turn assistance, and general motorcycle technology. This includes restraint, communication, and protective equipment issues.

Organizers - Warren Hardy, The Ohio State University

Chairperson - Warren Hardy, The Ohio State University

Moderators - John Bolte, Ohio State University

Panelists - John Bolte, Ohio State University; John Griffith, Griffith Global Consulting; Nils Lubbe, Autoliv; Michele Piko, Ohio Dept. of Public Safety;

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 9

Occupant Protection: Occupant Restraints (Air Bags, Seat Belts, Knee Bolsters, Child Seats, Etc)

Session Code SS504

Room 356 Session 9:00 a.m.

The Occupant Restraints Session invites papers that document new research or proven innovation on the restraint topics of airbags, seat belts, inflatable bolsters/seat belts, knee bolsters, Child Restraint Systems (CRS) and other related areas for both conventional and unique interior autonomous vehicles. These papers could include several of the following: technology descriptions, occupant performance considerations, field data studies, forensic documentation, development and validation of methodology or results, CAE or Finite Element methods or results, packaging, and implementation or performance challenges.

Organizers - Mitesh Lalwala, General Motor GM; Julie Mansfield, Ohio State University; Scott Thomas, S D Thomas LLC; Chris Van Ee, Design Research Engineering

Chairperson - Mitesh Lalwala, General Motors; Scott Thomas, S D Thomas LLC

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:31 PM

Time	Paper No.	Title
9:00 a.m.	2025-01-8722	Machine Learning-Enabled Optimization of Vehicle Restraint Systems – Demonstration in a Real-World Crash Scenario Mitesh Lalwala, Chin-Hsu Lin, General Motors LLC; Megha Desai, Shishir Rao, TCS
9:30 a.m.	2025-01-8353	Development and Validation of a Rear Head Surround Foam Performance Specification for Stock Car Racing Alexandra N. Gray, Matthew G. Harper, Sayak Mukherjee, John P. Patalak, National Association for Stock Car Auto Racing, LLC; James Gaewsky, Elemance LLC
10:30 a.m.	2025-01-8721	Literature Review and Framework for Identifying Seat Belt Misuse and Misrouting in Frontal Collisions Emily Gu, Delta V Biomechanics; Chantal parenteau, Design Research Engineering

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 9

SAE ITC Workshop: Dispelling the Mystery: An AVSC Interactive Gaming Workshop

Session Code AE111

Room 356 Session 1:30 p.m.

This workshop will be focused on engaging with attendees on the complexity and challenges of Best Practice development, illustrating the range of internal and external factors which influence the document creation. AVSC will be introduced, explaining where it fits in the standards world. Participants will work in groups, at a high level, with the creation process of a Best Practice, from topic selection to publication, facing surprises and challenges, guided by an AVSC representative. Pre-existing knowledge of a given topic is not necessary. Although this session focuses specifically on AVSC, we aim to illustrate broader concepts about the Best Practice and Standards-making process and ecosystem.

Learn more about the Panel

Moderators - Darcyne Foldenauer, SAE-ITC; Laura Fraade-Blanar, Waymo

Wednesday, April 9

Automotive Embedded Software and Systems: Hardware and Software

Session Code AE200

Room 357 Session 8:30 a.m.

This session is seeking submissions focusing on Design Optimization Techniques in Electronics, Model-Based Controls and Software Development, Verification and Validation of Embedded Software, Electronics Design – Processes, Optimization Techniques, Hardware Design, Systems Integration, Software / System Testing and Validation, Hardware Design Engineering and Development and Engine & Transmission Control. Abstracts featuring case studies, practical applications and Research and development project are requested.

Organizers - Mahendra Muli, Amazon Web Services; Prakash Peranandam, Scott Rush, General Motors LLC; Ramesh S, General Motors Corp.; Kevin Sittner, Mitsubishi Motors R&D of America; Chirag Sonchal, John Deere India Pvt, Ltd.; Mark Steffka, University of Detroit Mercy

Chairperson - Prakash Peranandam, Ramesh S, General Motors LLC

Time	Paper No.	Title

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:31 PM

Time	Paper No.	Title
8:30 a.m.	ORAL ONLY	Automatically dimming or turn-off headlight while idling at red light
		Vadivel Palanisamy, HATCI
9:00 a.m.	2025-01-8069	Coordinated motor speed control design for seat systems
		Hanlong Yang, Miranda Li, Magna Seating of America Inc.
9:30 a.m.	2025-01-8071	Safe Deployment of AI and ML Based Software and Algorithms in ADAS Systems
		Venkateswara Raju Mudunuri, Hossam Almasri, Hsing-Hua Fan, Mukund Chandrasekaran, General Motors LLC
10:00 a.m.	2025-01-8072	Synchronizing Real-Time Control in Centralized Automotive E/E Architectures
		Automotive technologies have been rapidly evolving with the introduction of electric powertrains, Advanced Driver-Assistance System (ADAS) and Over-The-Air (OTA) upgradability. Existing decentralized architectures are not an optimal choice for these applications, due to significant increases in cost and complexity. The transition to centralized architectures enables heavy computation to be delegated to a limited number of powerful Electronic Control Units (ECUs) called domain or zone controllers. The remaining ECUs, known as smart actuators, will perform well defined and specific tasks, receiving new parameters from the dedicated domain/zone controller over a network. Network bandwidth and time synchronization are the two major challenges in this transition. New automotive standards have been developed to address these challenges. Automotive Ethernet and Time Sensitive Networking (TSN) are two standards that are well-suited for centralized architectures. This paper presents a synchronization mechanism that leverages these two standards, to establish precise control synchronization between the centralized ECUs and the smart actuators. Additionally, a testing method is introduced to evaluate the synchronization performance between the centralized ECU and the smart actuator within a TSN network.
		Mostafa Ayesh, Victor Bandur, Vera Pantelic, Alan Wassyng, McMaster University; Bryon Wasacz, Stellantis; Mark Lawford, McMaster University

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Wednesday, April 9

Panel Discussion: Circularity Approaches for Automotive Interior Polymers

Session Code M301-A

Room 357 Session 2:00 p.m.

As society continues to discuss the impacts of polymers in everyday life, the automotive interiors community is investigating approaches to reduce its polymer-related carbon footprint. This concept, called ‘circularity’, implies that polymer chain reuse will advance toward 100%, such that new polymer production is minimized. Processes and concepts are being developed to improve reuse, addressing long-standing challenges on cost, quality and performance. This panel will address opportunities to further the advance toward circularity.

Learn more about the Panel

Organizers - John Berndtson, General Motors LLC; Henry Hojnacki, Engineering Strategies; Stephen Pitrof, INTEVA PRODUCTS LLC; Ravi Thyagarajan, Texas A&M Univ.

WCX SAE World Congress Experience

Technical Session Schedule

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Chairperson - John Berndtson, General Motors LLC

Moderators - Ravi Thyagarajan, Texas A&M Univ.

Panelists - Mark Allen, Dow; Ewa M. Lebert, General Motors Co.; Kevin Lyons, Inteva Products; Paul Van Huffel, Altair Engineering;

Wednesday, April 9

Vehicle Aerodynamics - Part 3 of 6

Session Code SS800

Room 358 Session 8:00 a.m.

The Vehicle Aerodynamics Technical Program will be Showcased across 5 parts, over 2.5 days. Presentations will cover a broad range, including: Fundamentals, Numerical Methods Application & Analysis, AI & Machine Learning, Experimental Technologies & Correlation, Product Development, Wheel & Tire Flows, Wind Tunnel Facilities, Unsteady Aerodynamics & Aeroacoustics, and Platooning & Vehicle Interactions.

Organizers - Jeffrey Bordner, JTiB Consulting; Edward Duell, Amentum; Chen Fu, Rivian Automotive LLC; Adrian Philip Gaylard, JAGUAR LANDROVER; Mark Gleason, Gleason Aero LLC; Arturo Guzman, Stellantis; Taeyoung Han, General Motors (retired); Jonathan Jilesen, Dassault Systemes; Timo Kuthada, Institut Fuer Kraftfahrwesen; Raymond Leto, TotalSim LLC; Todd Lounsberry, FCA US LLC; Nicholas Oettle, Jaguar Land Rover; Thomas Ramsay, Honda Development and Mfg of America LLC; Pratap Rao, Daimler; Pratap Thamanna Rao, Honda Development and Mfg of America LLC; Vishal Raul, General Motors; Frederick Ross, Siemens Corp.; Sivapalan Senthooran, Dassault Systemes; Mesbah Uddin, University of North Carolina Charlotte; H. Robert (Bob) Welge, Welge; Felix Wittmeier, FKFS; Kurt Zielinski, American Honda Motor Co. Inc.

Chairperson - Edward Duell, Amentum; Gregory Fadler, Arturo Guzman, Todd Lounsberry, Stellantis; Mesbah Uddin, University of North Carolina Charlotte

Time	Paper No.	Title
8:00 a.m.	2025-01-8764	A Novel Method for Evaluating on-Road Drag Changes Using Constant Power Measurements Michael Gerard Connolly, Alojz Ivankovic, Malachy J. O'Rourke, University College Dublin
8:30 a.m.	2025-01-8774	On the critical importance of physical modelling for the analysis of coastdown data Bernard Tanguay, Fenella de Souza, National Research Council Canada
9:00 a.m.	2025-01-8786	Investigation of the Blockage Phenomenon in Closed Wall Wind Tunnels During the Testing of Bluff Automotive Bodies with Large Wakes in Yawed Configurations Mark Gleason, Gleason Aero LLC; Eugen Riegel, Numeric Systems GmbH
9:30 a.m.	2025-01-8771	Consideration of Factors Influencing Blockage Corrections for Road Vehicles in Closed Jet Wind Tunnels Jeff Howell, Daniel Butcher, Loughborough University; Mark Gleason, Gleason Aero LLC
10:00 a.m.	2025-01-8770	A Wide Belt Correction Strategy for Belt-Whip and Wheel Ventilation Drag Zackery Borton, Rivian

WCX SAE World Congress Experience

Technical Session Schedule

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Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures

Wednesday, April 9

Vehicle Aerodynamics - Part 4 of 6

Session Code SS800

Room 358 Session 1:30 p.m.

The Vehicle Aerodynamics Technical Program will be Showcased across 5 parts, over 2.5 days. Presentations will cover a broad range, including: Fundamentals, Numerical Methods Application & Analysis, AI & Machine Learning, Experimental Technologies & Correlation, Product Development, Wheel & Tire Flows, Wind Tunnel Facilities, Unsteady Aerodynamics & Aeroacoustics, and Platooning & Vehicle Interactions.

Organizers - Jeffrey Bordner, JTiB Consulting; Edward Duell, Amentum; Chen Fu, Rivian Automotive LLC; Adrian Philip Gaylard, JAGUAR LANDROVER; Mark Gleason, Gleason Aero LLC; Arturo Guzman, Stellantis; Taeyoung Han, General Motors (retired); Jonathan Jilesen, Dassault Systemes; Timo Kuthada, Institut Fuer Kraftfahrwesen; Raymond Leto, TotalSim LLC; Todd Lounsberry, FCA US LLC; Nicholas Oettle, Jaguar Land Rover; Thomas Ramsay, Honda Development and Mfg of America LLC; Pratap Rao, Daimler; Pratap Thamanna Rao, Honda Development and Mfg of America LLC; Vishal Raul, General Motors; Frederick Ross, Siemens Corp.; Sivapalan Senthooran, Dassault Systemes; Mesbah Uddin, University of North Carolina Charlotte; H. Robert (Bob) Welge, Welge; Felix Wittmeier, FKFS; Kurt Zielinski, American Honda Motor Co. Inc.

Chairperson - Arturo Guzman, Todd Lounsberry, Stellantis

Time	Paper No.	Title
1:30 p.m.	2025-01-8788	The Guangzhou Automotive Group Co. Aerodynamic, Acoustic, and Thermal Wind Tunnel Trevor Bender, Vahid Nasr Esfahani, Aiolos Engineering Corporation; Zheng Liu, Hui Yang, Shuya Li, Xin Song, Man Liu, Zhijian Ma, Guangzhou Automotive Group Co.
2:00 p.m.	2025-01-8779	The New China Automotive Engineering Research Institute co., Ltd Full-Scale Aero-Acoustic Wind Tunnel Lei Xu, Xijia Zhu, Qingyang Wang, Han Bu, Chao Peng, Feng Shi, Chao Yang, Tao Huang, Yi Zeng, Xiangyi Zeng, CAERI; Steffen Wallmann, Henning Münstermann, WBI; Felix Wittmeier, Edzard Mercker, Reinhard Blumrich, FKFS
2:30 p.m.	2025-01-8762	CAATS – Automotive Wind Tunnel Calibrations Katlynn Bringhurst, Scott Best, Jacobs; Vahid Nasr Esfahani, Aiolos Engineering Corporation; Victor Senft, MTS Systems Corporation; Stuart Stevenson, National Research Council Canada; Felix Wittmeier, FKFS

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures

Wednesday, April 9

Panel Discussion: Interactions between Electric Vehicle Development and the Aerodynamic Testing and Design Process

Session Code SS820

Room 358 Session 3:00 p.m.

Automotive designers and wind tunnel operators will discuss the interaction of electric vehicle (EV) and hybrid electric vehicle (HEV) development, wind tunnel testing, and the vehicle design process. The discussion will cover how EVs and hybrids change wind tunnel testing and the design process, compared to ICE powertrains, and how the results of aerodynamic testing and simulation affect EV and HEV design.

Learn more about the Panel

WCX SAE World Congress Experience

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Organizers - Edward Duell; Chen Fu, Rivian Automotive LLC; Timo Kuthada, FKFS; Raymond Leto, TotalSim LLC; Thomas Ramsay, Honda Development and Mfg of America LLC; Vishal Raul, Vidyavardhinis College of Engrg & Tech.; H. Robert (Bob) Welge

Chairperson - Edward Duell, Amentum

Moderators - Edward Duell, Amentum

Panelists - Chen Fu, Rivian Automotive LLC; Alexander Nastov, General Motors; Nicholas Oettle, Jaguar Land Rover; Thomas Ramsay, Honda Development and Mfg of America LLC;

Wednesday, April 9

Welcome and Keynote: Jack Weast, An American in China: Observations on the Future of the Automotive Industry

Session Code LS201

Room Exhibit Hall Session 10:30 a.m.

After a year of living in China, Jack Weast, Fellow, VP and GM of Intel Automotive, is ready to share his observations about the automotive industry in China. In this expansive talk, Jack will offer his perspective on everything from the evolution of vehicle architectures, differences in procurement processes, and the role of '996' and the (juàn) mindset. Is the future of the global automotive industry being created today in China? And what can the rest of world automakers do to embrace the torrid pace of innovation set by China?

Learn more about Jack Weast

Keynote Speakers Jack Weast, Intel

Wednesday, April 9

AI - Where is the Juice Worth the Squeeze

Session Code LS202

Room Exhibit Hall Session 11:15 a.m.

Artificial Intelligence in the form of machine learning are already having a meaningful impact on vehicle design and development. This panel will explore future AI and the risks, benefits and potential of its use and anticipated impacts to the automotive industry.

Learn more about the Panel Participants

Moderators - Dogan Sumer, Hyundai America Technical Center

Panelists - Milena Boytchef, AWS; Norm Marks, NVIDIA; Stefan Sellhusen, Robert Bosch LLC; Patricio Vela, Georgia Tech. Univ.;

Wednesday, April 9

Electrical/Electronic Vehicle Architecture: Insights and Industry Synergies

Session Code LS203

Room Exhibit Hall Session 1:00 p.m.

Overview: Join us as we discuss the evolving landscape of our vehicle's electrical/electronic (EE) architecture, with a continued focus on software and connectivity. What role will standards play in fostering collaboration with the vehicle and its ecosystem while still maintaining competition? Hear from our panelists as they identify key challenges, lessons learned, and opportunities in electrical architecture and share their strategies for addressing them.

Learn more about the Panel Participants

Moderators - Jessica Swan, General Motors

Panelists - Matt Jones, Ford Motor Company; Marques McCammon, Karma Automotive LLC; Jack Weast, Intel; Praveen Yalavarty, SDVerse;

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Technical Session Schedule

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Wednesday, April 9

Is Getting to SAE Level 3 Unobtanium?

Session Code LS204

Room Exhibit Hall Session 2:30 p.m.

Overview: In 2024, most major OEMs have achieved proficiency in L2 driver assistance systems. However, progressing from L2 to L3 marks a substantial transformation. Whereas L2 denotes advanced driver support features, L3 initiates conditional autonomous driving, permitting the driver to avert their attention from the road once specific conditions are met. Consequently, when OEMs introduce L3 vehicles, they must anticipate unique issues that L3 systems provide when they are enabled. They must also look at the Human Factors and other persistent challenges (HMI, Enhanced Sensor Technology, Cyber Security, ML/AI, Redundancy, HD-Maps, and Certification – state by state) that require strategies/solutions in order for OEMs to build confidence to deploy their L3 systems.

Learn more about the Panel Participants

Moderators - Christian Thiele, SAE International

Panelists - Jennifer Dukarski, Butzel; Kunimichi Hatano, Honda R&D Inc.; Marioa Maiorana, Exponent Inc.; Bruce Mehler, Massachusetts Institute of Technology; Scott Pomerantz, Focal Point Positioning;

Wednesday, April 9

The Art of the Possible, A TechTalk on Safety as a 3-Letter word - "ESV"

Session Code LS205

Room Exhibit Hall Session 3:45 p.m.

Wednesday, April 9

Learning Lab - Day 2

Session Code LL200

Room Hall D Session ALL DAY

Time	Paper No.	Title
9:30 a.m.	ORAL ONLY	Autodrive
		TBD
10:00 a.m.	ORAL ONLY	Autodrive
		TBD
10:30 a.m.	ORAL ONLY	Autodrive
		TBD
11:00 a.m.	ORAL ONLY	Autodrive
		TBD

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Time	Paper No.	Title
11:30 a.m.	ORAL ONLY	Autodrive
		TBD
12:00 p.m.	ORAL ONLY	Beyond the EV Hype: Advancing ICE Technologies for the Next Era of Mobility
		Abdulrahman Alkadhi, Oil Sustainability Program
12:00 p.m.	ORAL ONLY	Wolverines on the Move: Mobility at Michigan
		This Learning Lab presentation will introduce SAE WCX attendees to U-M centers and labs engaged in mobility and transportation research, from automated and connected vehicles to safety testing to battery development, with a focus on the Automotive Research Center, Electric Vehicle Center (EVC) and the U-M Transportation Research Center (UMTRI), including Mcity. Attendees will learn how they can get involved, be it by becoming members or affiliates of the EVC or Mcity, or following us on social media, or attending our live and virtual events.
		Henry Liu, Bogdan I. Epureanu, Alan I. Taub, University of Michigan
12:30 p.m.	ORAL ONLY	Driving Transformation AI Efficiency
		Brandon Boyle, Roland Berger
1:00 p.m.	ORAL ONLY	Achieving A Successful SDV Transition
		Craig Brown, UL Solutions
2:00 p.m.	ORAL ONLY	Recent Advances in Internal Combustion Engines: Status and Perspectives
		Dr. Medhat Ahmed Nemitallah, King Fahd University of Petroleum & Minerals

Thursday, April 10

Controls for Hybrids and Electric Powertrains Part 2 of 3

Session Code PFL750

Room 140 A Session 8:00 a.m.

This session covers propulsion control processes related to achieving stringent market fuel economy, emissions, performance, reliability, and quality demands of hybrid and electric powertrains. Topics include the control, calibration, and diagnostics of the engine, powertrain, and supporting electromechanical subsystems related to energy management. (For Chargers and Charging Electronics Architecture/Design see AE600)

Organizers - Sumanth Reddy Dadam, Ford Motor Company; Quan Zhou, Univ. of Birmingham; Di Zhu, Ford Motor Company

Time	Paper No.	Title

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Technical Session Schedule

As of March 20, 2025 19:40:32 PM

Time	Paper No.	Title
8:00 a.m.	2025-01-8583	A MIL/SIL Testing Approach for Predictive Energy Management Algorithm Yue Yan, MathWorks; Xiudan Ma, Mathworks
8:30 a.m.	2025-01-8586	Supervisory Control System Development for a Toyota Mirai FCEV Venkata Rajesh Chundru, Matthew Kubesh, Adithya Legala, Southwest Research Institute
9:00 a.m.	2025-01-8589	The Development and Real-Time Application of DP-Based Optimized A-ECMS Algorithm for Multi-Mode Series-Parallel Hybrid Electric Vehicles Jingyu Zhu, Mengwei Han, Chongfan Liu, Dalian University of Technology; Chenfan Yang, China North Engine Research Institute; Keiya Nishida, University of Hiroshima
9:30 a.m.	2025-01-8575	Consideration of Boost DC-DC Converter Losses in the Torque Control System of a Hybrid Supervisory Controller Achyut Venkataramu, IAV Automotive Engineering Inc.; McKenzie Walsh, Christoph Tischendorf, Mary Sullivan, Nadirsh Patel, Stellantis; Shichao Huo, FEV NA Inc.; Ashay Sharma, Stellantis
10:00 a.m.	2025-01-8580	Smart Boosting: A Control Strategy for Optimized Energy Management with Boost Converter in Hybrid Electric Vehicles Ameya Basutkar, Shichao Huo, Claire Sullivan, Stellantis; Daniel Berger, FEV Europe GmbH; Christoph Tischendorf, Stellantis

Planned by Hybrid and Electric Propulsions Committee / Energy and Propulsion Activity

Thursday, April 10

Controls for Hybrids and Electric Powertrains Part 3 of 3

Session Code PFL750

Room 140 A Session 1:30 p.m.

This session covers propulsion control processes related to achieving stringent market fuel economy, emissions, performance, reliability, and quality demands of hybrid and electric powertrains. Topics include the control, calibration, and diagnostics of the engine, powertrain, and supporting electromechanical subsystems related to energy management. (For Chargers and Charging Electronics Architecture/Design see AE600)

Organizers - Sumanth Reddy Dadam, Ford Motor Company; Quan Zhou, Univ. of Birmingham; Di Zhu, Ford Motor Company

Time	Paper No.	Title
1:30 p.m.	2025-01-8588	Application of control authority transfer between hierarchical control units Cristian Rostiti, Abdulquadri Banuso, Indrasen Karogal, Stellantis
2:00 p.m.	2025-01-8574	Application of Model-based Horizon Prediction to Enhance Control Algorithm Performance by Compensating for Time Delays in Automotive Drivelines Cristian Rostiti, Nadirsh Patel, Stellantis; Bilal Catkin, TOFAS Turk Otomobil Fabrikasi AS

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:32 PM

Time	Paper No.	Title
2:30 p.m.	2025-01-8584	Disturbance Estimation Approach for minimizing Control Windup in Target Engine Speed Profile on Electrified Powertrains with a Low Voltage Belt Starter Generator and a Disconnect Clutch Abdulquadri Banuso, Hangxing Sha, Stellantis; Indrasen Karogal, FEV North America; Krishna Chaitanya Madireddy, Nadirsh Patel, Stellantis
3:00 p.m.	2025-01-8578	Optimal usage of engine torque to engage a disconnect device in situations where battery power is not available Hangxing Sha, Krishna Chaitanya Madireddy, Abdulquadri Banuso, Stellantis; Shishir Khanal, TEC Group; Joe Rock, Stellantis; Nadirsh Patel

Planned by Hybrid and Electric Propulsions Committee / Energy and Propulsion Activity

Thursday, April 10

Basic SI Combustion

Session Code PFL211

Room 140 B Session 8:00 a.m.

This session focuses on basic SI combustion processes including studies of mixture formation, engine efficiency, flame propagation, knock, preignition, and emissions formation. Papers cover 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.

Organizers - Richard Davis, Michigan Technological University; Cinzia Tornatore, Italian National Research Council

Chairperson - Richard Davis, Michigan Technological University; Justin Ketterer, General Motors

Time	Paper No.	Title
8:00 a.m.	2025-01-8400	Influence of Methanol-to-Gasoline Fuel Formulation on Knock Propensity and Flame Speed James MacDonald, Dario Lopez Pintor, Sandia National Laboratories; Naoyoshi Matsubara, Koji Kitano, Ryota Yamada, Toyota Motor Corporation
8:30 a.m.	2025-01-8399	Investigation into Abnormal Combustion Events in a PFI and DI Hydrogen Spark-Ignition Engine Mohamed Mohamed, Milad Mirshahi, Xinyan Wang, Hua Zhao, Brunel University of London; Anthony Harrington, Jonathan Hall, MAHLE Powertrain Ltd.; Mark Peckham, Cambustion Ltd.
9:00 a.m.	2025-01-8401	High-Speed Optical Diagnostics of Misfire Limits in a Spark-Ignited Heavy-Duty Hydrogen Engine Peter Hallstadius, Anupam Saha, Aravind Sridhara, Öivind Andersson, Lund University
9:30 a.m.	ORAL ONLY	LES investigation of the CCV sources in a PFI H2 spark ignited ICE Stefano Sfriso, Fabio Berni, Stefano Fontanesi, Universita di Modena e Reggio Emilia; Caio Ramalho Leite, Pierre BREQUIGNY, UNIVERSITE D'ORLEANS; Jacques Borée, ENSMA (Mecanique et Aerotechnique); Fabrice Foucher, UNIVERSITE D'ORLEANS
10:00 a.m.	ORAL ONLY	Fuel Property Effects on Stochastic Preignition Events and Soot Emissions During Engine Load Transitions Derek Splitter, Oak Ridge National Laboratory; Dan DelVescovo, Oakland University; Gurneesh Jatana, Oak Ridge National Laboratory; Elana Chapman,

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Technical Session Schedule

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Time	Paper No.	Title
		General Motors; Gina Fioroni, National Renewable Energy Laboratory

Planned by Engine Combustion / Energy and Propulsion Activity

Thursday, April 10

SI Ignition (Conventional)

Session Code PFL212

Room 140 B Session 1:30 p.m.

This session focuses on the SI combustion ignition process and advanced ignition systems. Papers cover 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. This specific section focuses on conventional spark plug ignition systems.

Organizers - Xin Yu; Abdullah Bajwa, Southwest Research Institute; Cinzia Tornatore, Italian National Research Council; Richard Davis, Michigan Technological University

Chairperson - Xin Yu, Aramco Americas; Abdullah Bajwa

Time	Paper No.	Title
1:30 p.m.	2025-01-8403	Ignition and Combustion Improvement Via Ignition Modulation under Flow Conditions
		Long Jin, Xiao Yu, University of Windsor; Qing Zhou, Zhuzhou Torch Spark Plug Co., Ltd.; Graham Reader, University of Windsor; Liguang Li, Tongji University; Ming Zheng, University of Windsor
2:00 p.m.	2025-01-8402	Characterization of Spark Ignition Energy Transfer at Different Phases Using Pressure-Rise Calorimetry
		Anupam Saha, Per Tunestal, Lund University; Jakob Aengeby, SEM AB; Oivind Andersson, Lund University
2:30 p.m.	2025-01-8404	Combustion and Emissions Improvement of Engine Idling Via Advanced Ignition Strategies
		Xiao Yu, University of Windsor; Guangyun Chen, Jin Qian, Zhuzhou Torch Spark Plug Co., Ltd.; Simon Leblanc, Linyan Wang, Ming Zheng, University of Windsor
3:00 p.m.	ORAL ONLY	CFD Analysis of the Arc Stretching for a J-type Spark Plug using LESI Model
		Jacopo Zembi, Michele Battistoni, Universita degli Studi di Perugia

Planned by Engine Combustion / Energy and Propulsion Activity

Thursday, April 10

Combustion in Compression-Ignition Engines - Part 2 of 3

Session Code PFL220

Room 140 C Session 8:00 a.m.

Classical diesel engine combustion with relatively short ignition delay. Submissions in this session addresses a variety of compression ignition and mixing controlled combustion concepts, including injection manipulation, combustion refinement, and novel injection devices

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Technical Session Schedule

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Organizers - Mark Hoffman, Auburn Univ.; Chad Koci, Srinath Subramanian, Caterpillar Inc.; Yu Zhang, Cummins; Antowan Zyada, General Motors

Chairperson - Chad Koci, Srinath Subramanian, Caterpillar Inc

Time	Paper No.	Title
8:00 a.m.	2025-01-8414	Effects of Post-Injection Strategy on the Performance of Diesel Catalyst-Heating Operation Dario Lopez Pintor, Sanguk Lee, Sandia National Laboratories; Seokwon Cho, Southwest Research Institute; Stephen Busch, Cummins Inc.; Angela Wu, Abhinandhan Narayanan, Rami Abboud, Sandia National Laboratories
8:30 a.m.	ORAL ONLY	Effects of Heat Release Rate Profile on Mixing Controlled Compression Ignition Combustion for Further Increased Thermal Efficiency Teruo Machii, Noboru Uchida, New ACE Institute Co., Ltd.
9:00 a.m.	ORAL ONLY	Investigating the Impact of Multi-Injection Strategies on Combustion, Performance, and Emissions in a Heavy-Duty Diesel Engine. Almoutazbellah Kutkut, West Virginia University; Pinaki Pal, Argonne National Laboratory; Hailin Li, West Virginia University
9:30 a.m.	ORAL ONLY	First Investigation of Ducted Fuel Injection on a Retrofitted Heavy-Duty Multi-Cylinder Production Engine Ryan Ogren, Deere & Company; Kirby J. Baumgard, Baumgard Technologies; Vishnu Radhakrishna, Charles J. Mueller, Sandia National Laboratories
10:00 a.m.	ORAL ONLY	Optical-Engine Study of the Effects of Polyoxymethylene Ether Fuel on Conventional Diesel Combustion and Ducted Fuel Injection Vishnu Radhakrishna, Charles J. Mueller, Sandia National Laboratories

Planned by Engine Combustion / Energy and Propulsion Activity

Thursday, April 10

Combustion in Compression-Ignition Engines - Part 3 of 3

Session Code PFL220

Room 140 C Session 1:30 p.m.

Classical diesel engine combustion with relatively short ignition delay. Submissions in this session address the compression ignition of gasoline and gasoline surrogates. The various subtopics include: spark assisted compression ignition, premixed charged compression ignition, homogeneous charge compression ignition, and glow plug assisted compression ignition.

Organizers - Mark Hoffman, Auburn Univ.; Chad Koci, Srinath Subramanian, Caterpillar Inc.; Yu Zhang, Cummins; Antowan Zyada, General Motors

Chairperson - Mark Hoffman, Auburn Univ

Time	Paper No.	Title
1:30 p.m.	2025-01-8410	Fuel Composition Effects on Combustion Characteristics of a Low-Temperature Gasoline Combustion Engine Abhinandhan Narayanan, James MacDonald, Sanguk Lee, Dario Lopez Pintor, Sandia National Laboratories

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
2:00 p.m.	2025-01-8413	The Effect of Nitric Oxide (NO) on the Reactivity of Ethanol and Gasoline: An Experimental Study Ankur Bhatt, John Gandolfo, Kunal Vedpathak, Benjamin Lawler, Brian Gainey, Clemson University
2:30 p.m.	2025-01-8412	Experimental Study of Glow Plug Assisted Methanol Compression Ignition Brian Gainey, Clemson University, Lund University; Magnus Svensson, Lund University; Sebastian Verhelst, Ghent University; Martin Tuner, Lund University
3:00 p.m.	ORAL ONLY	A Computational Assessment of Methanol Combustion Engines in SI, SACI, and Glow-plug CI Modes Xinlei Liu, King Abdullah Univ. of Science & Tech.; Mohammad Raghib Shakeel, King Abdullah Univ of Science & Tech; Vallinayagam Raman, Balaji Mohan, Yoann Viollet, Abdullah AlRamadan, Emre Cenker, Saudi Aramco; Hong Im, King Abdullah Univ of Science & Tech
3:30 p.m.	ORAL ONLY	Numerical study of methanol and ethanol HCCI combustion in a two-stroke variable compression ratio engine Mohammad Raghib Shakeel, King Abdullah Univ. of Science & Tech.; Giovanni Vorraro, King Abdullah Univ of Science & Tech; James Turner, KAUST; Hong Im, King Abdullah Univ of Science & Tech

Planned by Engine Combustion / Energy and Propulsion Activity

Thursday, April 10

Dual Fuel Combustion

Session Code PFL260

Room 140 D Session 8:00 a.m.

This session focuses on combustion with multiple fuels, typically with one direct-injected fuel that is not fully premixed. Combustion phasing and duration may be mixing-controlled or kinetically-controlled. Papers describing experiments and test data, simulation results focused on applications, fuel/additive effects, and RCCI (Reactivity-Controlled Compression Ignition) are included. Part 1 includes methanol, hydrogen, and other dual-fuel applications.

Organizers - Giacomo Belgiorno, Dumarey Automotive Italia; Mufaddel Dahodwala, KPIT Technologies, Ltd.; Flavio Dal Forno Chuahy, Gurneesh Jatana, Oak Ridge National Laboratory

Chairperson - John Waldman, General Motors LLC

Time	Paper No.	Title
8:00 a.m.	2025-01-8418	Combustion Characterization and Heat Release Rate Modeling of a Heavy-Duty Hydrogen-Diesel Dual-Fuel Engine Reza Farzam, Simon Fraser University; Mang Guan, University Of British Columbia; Raine Gmoser, University of British Columbia; Patrick Steiche, Hydra Energy Corp.; Patrick Kirchen, University of British Columbia; Gordon McTaggart-Cowan, Simon Fraser University
8:30 a.m.	ORAL ONLY	Validated Computational Investigation of Emissions from Aqueous-Ammonia-Diesel Dual-Fuel Combustion with Hydrogen Blends Harsh Sapra, Clemson University; Daanish Tyrewala, Oak Ridge National Laboratory; David Rothamer, University of Wisconsin-Madison; J. Ghandhi, University of Wisconsin System; Sage Kokjohn, University of Wisconsin-Madison

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
9:00 a.m.	ORAL ONLY	Numerical Investigation of Advanced Combustion Technologies for Hydrogen/Diesel Dual Fuel Engines Benedetta Peiretti Paradisi, Rocco D'agostino, Andrea Piano, Federico Millo, Politecnico di Torino; Francesco Accurso, Francesco Pesce, Alberto Vassallo, Dumarey Automotive Italia
9:30 a.m.	ORAL ONLY	An optical study on the cross-spray characteristics and combustion flames of automobile engine fueled with diesel/ammonia under various injection angles and injection timings Pengyun Zhao, Chang'an University; Zhanming Chen; Xiaochen wang, Hao chen, Chang'an University

Planned by Engine Combustion / Energy and Propulsion Activity

Thursday, April 10

Powertrain Thermal Management

Session Code HX500

Room 140 D Session 1:30 p.m.

This session considers thermal-fluids modeling (zero-D, 1D, 3D CFD) and experimental presentations. Systems include combustion, lubrication, cooling, fuel, EGR, transmission etc. Components include pumps, fuel injectors, turbochargers, torque converters, gear box, bearings, valves, ports, manifolds, oil cooler, EGR cooler, after-treatment (SCR, DOC, DOF); battery cooling etc.

Organizers - Alaa El-Sharkawy, Lawrence Technical University; Vivek Kumar, Ford Motor Company; Kevin Laboe, Stellantis; Romain Nicolas, Siemens Digital Industries Software; Nilesh Purohit, Honeywell; Raj Ranganathan, Simerics Inc.; Jeff Schlautman, General Motors LLC; Kumar Srinivasan, Cadence Design Systems Inc.; Sowmya Jayaraman, General Motors; Ronald Semel, Ford Motor Company

Chairperson - Isha Mathur

Time	Paper No.	Title
1:30 p.m.	2025-01-8178	Thermal Simulation of Ball Bearing in Electric Drive Unit: A CFD Study Using Volume of Fluid and Mixed Timescale Coupled Conjugate Heat Transfer Analysis Abhishek Ballani, Simerics Inc.; Abdul Motin, Rivian Automotive; Sujan Dhar, Simerics Inc.; Alain Ganamet, Rivian Automotive; Dipak Maiti, Raj Ranganathan, Ashutosh Pandey, Simerics Inc.
2:00 p.m.	2025-01-8182	Computational Fluid Dynamics Analysis of Gearbox Churning Loss and Oil Splash Characteristics in Electric Vehicle Drive Units P. Madhan Kumar, Simerics Inc.; Abdul Motin, Rivian Automotive; Ashutosh Pandey, Simerics Inc.; Alain Ganamet, Rivian Automotive; Dipak Maiti, Haiyang Gao, Raj Ranganathan, Simerics Inc.
2:30 p.m.	2025-01-8179	A 3-D CFD Performance Simulation of a Feedback Controlled Variable Displacement Vane Pump Rachit Rajesh Khatri, Simerics Inc.; Yuchan Liu, General Motors LLC; Shyam Sundar Pasunurthi, Rayhan Ahmed, Simerics Inc.; John Stallmann, Bo Yang, Yuli Huang, Rangarajan Sivaji, David Scheffler, General Motors LLC
3:00 p.m.	2025-01-8181	3D CHT Simulation of Oil-Cooled Electric Motors: A Comparative Study of Standard and Paperless Designs Joel Varghese, Simerics Inc.; Jeff Schlautman, General Motors LLC; Yawei Chen, KLA Corporation; Srijohn Bhunia, General Motors LLC; Chiranth Srinivasan, Simerics Inc.

WCX SAE World Congress Experience

Technical Session Schedule

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Planned by Thermal Management Activity / Ground Vehicle Advisory Group

Thursday, April 10

Fuel and Additive Effects on Engine Systems - Part 3 of 3

Session Code PFL310

Room 140 E Session 8:00 a.m.

Topics include the effects of fuel and additives on deposit formation, intake system cleanliness, friction, wear, corrosion, and elastomer compatibility. Also covered are effects of fuel specification on drivability, on evaporative emissions, and on the relationship between emissions and drive cycle.

Organizers - Brian Gainey, Clemson University; Antonino La Rocca, University of Nottingham; Elisa Toulson, Michigan State University; Ziming Yan, Aramco Americas

Chairperson - Ziming Yan

Time	Paper No.	Title
8:00 a.m.	2025-01-8447	A Study on Cetane on Demand Technology Part 1 - Development of Fuel Reformer to Improve Fuel Ignitability Kohtaro Hashimoto, Yoshikazu Yamada, Katsuya Matsuura, Tomohide Kudo, Hiroshi Chishima, Honda R&D Co., Ltd; Maryam Al-Taher, Christos Kalamaras, Reem Albashrawi, Saudi Aramco
8:30 a.m.	2025-01-8444	A Study on Cetane on Demand Technology Part 2: Gasoline Reforming and Ignitability Evaluation Katsuya Matsuura, Kohtaro Hashimoto, Yoshikazu Yamada, Honda R&D Co., Ltd.; Maryam Al-Taher, Christos Kalamaras, Saudi Aramco; Alexander Voice, Kaustav Bhadra, Aramco Americas
9:00 a.m.	2025-01-8442	Effects of Lower Carbon Intensity Fuels on Performance and Greenhouse Gas Emissions Intensity Reduction for Conventional and Next Generation Powertrains Part I: Engine test results and WtW CO2 emissions estimation Keishi Takada, Kenji Sugata, Naoyoshi Matsubara, Daishi Takahashi, Toyota Motor Corporation; David Vuilleumier, Brian Morlan, Robert Lorenz, Satoshi Ohta, Chevron Corporation

Planned by Fuels and Lubricants / Energy and Propulsion Activity

Thursday, April 10

Particle Emissions and Control from Combustion Sources

Session Code PFL450

Room 140 E Session 1:30 p.m.

Direct gasoline injection engines are gaining popularity because of their improved fuel economy over port fueled injection engines. The downside is that direction injection engines have higher particle emissions. To meet the US Tier 4 and China 7 regulations an OEM may require a Gasoline Particulate Filter (GPF). This session covers several different GPF technologies for meeting the future particle regulations. One paper also looks at the effect of a 3-way catalyst on particle removal.

Organizers - Carlos Agudelo, Link Engineering Co.; Mark Hoffman, Auburn Univ.; Imad Khalek, Southwest Research Institute; Andrea Strzelec, USCAR

Chairperson - Imad Khalek, Imad Khalek, Southwest Research Institute; Andrea Strzelec, USCAR

Time	Paper No.	Title

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
1:30 p.m.	2025-01-8502	Effect of Fuels on Compression Ignition Engine Particle Number and Mass Emissions and DPF Filtration Efficiency Venkata Lakkireddy, Imad Khalek, Gina Buffaloe, Southwest Research Institute
2:00 p.m.	2025-01-8503	Effect of Fuels on Compression Ignition Engine Particle Size Distribution and DPF Filtration Efficiency Venkata Lakkireddy, Imad Khalek, Gina Buffaloe, Southwest Research Institute
2:30 p.m.	ORAL ONLY	Evaluation of particulate emissions of hydrogen-renewable natural gas blends from a heavy-duty natural gas engine Troy Hurren, Elizabeth DeFrance, University Of California Riverside; Zisimos Toumasatos; Kent Johnson, Univ of California-Riverside; George Karavalakis, University Of California Riverside
3:00 p.m.	ORAL ONLY	Investigation of cylinder wall temperature and injection strategy impacts on in-cylinder solid particle formation in gasoline direct injection engines Brady Wilmer, Univ. of Minnesota-Twin Cities; William Northrop, Univ of Minnesota-Twin Cities
3:30 p.m.	ORAL ONLY	Fuel Property and GDI Technology Effects on Particle Emissions of Light-Duty Gasoline Vehicles Travis Kostan, Matt Blanks, Southwest Research Institute
4:00 p.m.	ORAL ONLY	Field Demonstration of Secondary DPF Solution for Euro 7 Heavy-Duty PN10 Control Marc Cyrill Besch, Mrinmoy Dam, Suhao He, Corning Incorporated

Planned by Mobile Source Emissions Committee / Energy and Propulsion Activity

Thursday, April 10

Emission Control Modeling

Session Code PFL430

Room 140 F Session 8:00 a.m.

Papers are invited for mobile emissions control modeling, as well as their validation and application. Technologies covered include aftertreatment systems with injectors, heaters, filters and catalysts for both on-road and off-road powertrains including, but not limited to internal combustion engines and hybrid electric platforms, fed by liquid fossil fuels and alternatives such as biofuels, gaseous fuels, and hydrogen. Modeling aspects range from fundamental, 3-D thermal, fluid or reaction models of individual components to system level simulation, optimization, and control.

Organizers - Mufaddel Dahodwala, KPIT Technologies, Ltd.; Vincenzo Mulone, University of Rome Tor Vergata; Achuth Munnannur, Cummins Inc.; Grant Seuser, Caterpillar; Shekhar Vats, Cummins Inc.

Chairperson - Mufaddel Dahodwala, KPIT Technologies, Ltd.; Satyum Joshi, FEV North America Inc.; Grant Seuser, Caterpillar Inc.

Time	Paper No.	Title

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:33 PM

Time	Paper No.	Title
8:00 a.m.	2025-01-8488	Prediction and Control of Long-Term System Degradation for a Light-Off SCR in an Ultra-Low NOx Aftertreatment System Venkata Rajesh Chundru, Kartik Adsule, Christopher Sharp, Southwest Research Institute
8:30 a.m.	2025-01-8489	Potential for Reduction in NRMM Real-World Emissions Joachim Demuynck, Dirk Bosteels, AECC; Philipp Michelitsch, Hannes Noll, AVL List GmbH
9:00 a.m.	ORAL ONLY	Experimental and Modeling Study on impact of H2O and H2 on Ammonia Slip Catalyst Performance Richa Raj, Cummins Inc.; Mi-Young Kim, Anand Srinivasan, Cummins Inc
9:30 a.m.	2025-01-8486	Experimental and CFD Simulation Study of Heated and Cold Diesel Exhaust Fluid Spray Characteristics Zeyang Liu, Syracuse University; Nathan Peters, Mike Bunce, Sai Pothuraju Subramanyam, MAHLE Powertrain LLC; Benjamin Akih Kumgeh, Syracuse University
10:00 a.m.	2025-01-8491	Comprehensive Prediction of Deposit Formation in SCR Systems Using Integrated 1D Heat Transfer Model with Empirical Data from 3D CFD Simulations Kazuma Sugimoto, Yanmar Power Technology Co., Ltd.; Ken Kawabe, Yanmar Holdings Co., Ltd.

Planned by Mobile Source Emissions Committee / Energy and Propulsion Activity

Thursday, April 10

Emissions Control Modeling and New Developments

Session Code PFL415

Room 140 F Session 1:30 p.m.

Papers are invited for mobile emissions control modeling, as well as their validation and application. Technologies covered include aftertreatment systems with injectors, heaters, filters and catalysts for both on-road and off-road powertrains including, but not limited to internal combustion engines and hybrid electric platforms, fed by liquid fossil fuels and alternatives such as biofuels, gaseous fuels, and hydrogen. Modeling aspects range from fundamental, 3-D thermal, fluid or reaction models of individual components to system level simulation, optimization, and control.

Organizers - Holmes Ahari, Stellantis; Giacomo Belgiorno, Dumarey Automotive Italia; Mufaddel Dahodwala, KPIT Technologies, Ltd.; krishna Kamasamudram, Cummins Inc.; Vincenzo Mulone, University of Rome Tor Vergata; Achuth Munnannur, Cummins Inc.; Grant Seuser, Caterpillar; Ron Silver; Anand Srinivasan, Shekhar Vats, Cummins Inc.

Chairperson - Mufaddel Dahodwala, KPIT Technologies, Ltd.; Satyum Joshi, FEV North America Inc.; krishna Kamasamudram, Cummins Inc.; Rahul Mital, General Motors LLC; Grant Seuser, Caterpillar Inc.

Time	Paper No.	Title
1:30 p.m.	2025-01-8485	Efficient Modeling of SCR Urea Deposits Formation Using ANSYS Fluent Dimitrios Sofialidis, ANSYS Germany GmbH; Jayesh Mutyal, Rana Faltsi, ANSYS Inc.; Markus Braun, ANSYS Germany GmbH; Marion Börnhorst, TU Dortmund University; Thomas Esch, ANSYS Germany GmbH

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Technical Session Schedule

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Time	Paper No.	Title
2:00 p.m.	2025-01-8490	Effect of Catalyst Coating Strategy on NOx Reduction and Passive Soot Oxidation for Selective Catalytic Oxidation-Selective Catalytic Reduction Catalyst on Diesel Particulate Filter Ying-jie Chen, Piqiang Tan, Chaojie Yao, Diming Lou, Zhiyuan Hu, Tongji University; Wenming Yang, National University of Singapore
2:30 p.m.	ORAL ONLY	Pre-Turbo-EATS for an Ultra-low Emission Diesel-Hybrid Passenger Car Luis Fiore, Michael Conin, Christian Beidl, Technical Univ of Darmstadt; Günter Hohenberg, IVD Deutschland GmbH; Joachim Kreuz, Umicore AG & Co. KG; Daniel Knaf, Mathias Keck, BIN Boysen Innovationszentrum Nagold GmbH & Co. KG
3:00 p.m.	ORAL ONLY	Impact of unburned methanol on varied PGM oxidation catalysts: Experiments and Modelling Abhay Gupta, Lauren Duvall, Charles Ramia, Joshua L. Ratts, Caterpillar Inc.

Planned by Mobile Source Emissions Committee / Energy and Propulsion Activity

Thursday, April 10

Combustion in Gaseous-Fueled Engines - Part 3 of 4

Session Code PFL270

Room 140 G Session 8:00 a.m.

This session focuses on fuel injection, combustion, controls, performance and emissions of SI engines fueled with gaseous fuels such as methane, natural gas (NG), biogas, producer gas, coke oven gas, hydrogen, or hydrogen-NG blends. Papers on Diesel-NG or diesel-hydrogen dual-fuel engines will also be accepted in this session.

Organizers - Diego Bestel, Caterpillar Inc.; Vickey Kalaskar, Southwest Research Institute; Joshua Lacey, KU Leuven; Ezio Mancaruso, STEMS - CNR; Gordon McTaggart-Cowan, Simon Fraser University; Ales Srna, Sandia National Laboratories; Leonid Tartakovsky, Technion Israel Inst. of Technology

Chairperson - Ales Srna, Sandia National Laboratories; Leonid Tartakovsky, Technion Israel Inst. of Technology

Time	Paper No.	Title
8:00 a.m.	2025-01-8423	Fundamental Experimental Evaluation of Hydrogen Combustion with Low Injection Pressure Using the Focusing Compression Principle Sota Yamada, Ken Naitoh, Shotaro Baba, Hiraku Ukegawa, Tomohiko Nishizawa, Atsuhiro Yatabe, Waseda University
8:30 a.m.	2025-01-8429	Assessment of Knock Tendency in a Hydrogen-Fuelled High-Performance Internal Combustion Engine: A Chemistry-Based Numerical Study Manuel Madia, Marco Vaccari, Universita di Modena e Reggio Emilia; Luca Dalseno, Giuseppe Cicalese, R & D CFD Srl; Daire Corrigan, Davide Villa, Bugatti Rimac; Stefano Fontanesi, Sebastiano Breda, Universita di Modena e Reggio Emilia
9:00 a.m.	ORAL ONLY	Development of Advanced Simulation Methodology for High-Fidelity H-ICE Combustion Analysis Le Zhao, Rafael Lago, Anqi Zhang, Ji-Woong Park, Aramco Research Center - Detroit; Sriram Popuri, Nick Bowen, Griffin matuszak, Cummins Inc

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Time	Paper No.	Title
9:30 a.m.	2025-01-8432	A Comparison of Stoichiometric and Lean Burn Ammonia-Hydrogen Co-Fuelling in a Modern Spark Ignition Engine Ajith Ambalakatte, Sikai Geng, Reese Murugan, Amirata Varaei, Alasdair Cairns, University of Nottingham; Anthony Harrington, Jonathan Hall, Michael Bassett, MAHLE Powertrain Ltd.
10:00 a.m.	2025-01-8425	Effects of Combustion Characteristic Parameters on Emission Performance in Ammonia-Hydrogen Internal Combustion Engine Yang Yuan, Quanbo Shang, Jun Deng, Liguang Li, Tongji University; Xuemei Yin, Huilong Lai, Jiangli Ma, Fei Yu, SPMC; Feng Feng, Hao Cui, Yunnan Precious Metals Laboratory; Junchen Du, Kunming Sino-Platinum Metals Catalyst Co.

Planned by Engine Combustion / Energy and Propulsion Activity

Thursday, April 10

Combustion in Gaseous-Fueled Engines - Part 4 of 4

Session Code PFL270

Room 140 G Session 1:30 p.m.

This session focuses on fuel injection, combustion, controls, performance and emissions of SI engines fueled with gaseous fuels such as methane, natural gas (NG), biogas, producer gas, coke oven gas, hydrogen, or hydrogen-NG blends. Papers on Diesel-NG or diesel-hydrogen dual-fuel engines will also be accepted in this session.

Organizers - Diego Bestel, Caterpillar Inc.; Vickey Kalaskar, Southwest Research Institute; Joshua Lacey, KU Leuven; Ezio Mancaruso, STEMS - CNR; Gordon McTaggart-Cowan, Simon Fraser University; Ales Srna, Sandia National Laboratories; Leonid Tartakovsky, Technion Israel Inst. of Technology

Chairperson - Vickey Kalaskar, Southwest Research Institute; Joshua Lacey, KU Leuven

Time	Paper No.	Title
1:30 p.m.	2025-01-8428	Performance and Emissions Analysis of a Hydrogen-Powered Heavy-Duty High Compression Ratio SI Engine Across Various Loads and Speed at Ultra-Lean Condition Aibolat Dyuisenakhmetov, Mebin Samuel Panithasan, King Abdullah University of Science & Technology; Emre Cenker, Abdullah AlRamadan, Saudi Aramco; Hong Im, James Turner, King Abdullah University of Science & Technology
2:00 p.m.	2025-01-8433	Investigation on the Effects of Fuel Injection Systems on Evaporation for a Heavy-Duty Spark Ignition Ethanol Engine and Comparison with Methane Biagio Falbo, Diego Perrone, Teresa Castiglione, Università della Calabria
2:30 p.m.	2025-01-8436	Effects of Lubricating Oil Consumption and Operation Duration on CO_2 Accumulation and Efficiency in an Argon Power Cycle Hydrogen-Fueled Engine Chenxu Wang, Tongji University; Mo Li, MIT; Xiang SU, Jun Deng, Tongji University; Tian Tian, MIT

Planned by Engine Combustion / Energy and Propulsion Activity

WCX SAE World Congress Experience

Technical Session Schedule

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Thursday, April 10

Panel Discussion: Impact of Alternative Propulsion Technologies (Alternative-fueled IC Engines, Batteries and Fuel Cells) on Powertrain and Overall Vehicle Component Thermal Management – Challenges & Opportunities

Session Code PFL598

Room 141 Session 8:00 a.m.

As the automotive industry adopts an eclectic/powertrain agnostic approach towards decarbonization goals and significantly reduced tailpipe emissions, new challenges and opportunities arise in the development of novel propulsion technologies such as internal combustion engines running on low carbon fuels like natural gas and hydrogen, batteries and fuel cells. These technologies give rise to elevated temperatures and conditions within certain powertrain and vehicle-level components during normal operation that could potentially pose safety issues for the passengers/operators. Moreover, the elevated temperatures in these components may also cause efficiency degradation of the entire powertrain/propulsion system. It is therefore important to investigate the impact of transitioning to alternative powertrains on the thermal management challenges of existing and novel components, and how these issues can be resolved through new design considerations. This panel will consist of speakers from academia, industry and non-profit/government research labs to perform a technical deep dive on the need for thermal management for vehicles equipped with low-carbon fuel engines, batteries and/or fuel cells. Speakers will cover the thermal management requirements and considerations for components on the powertrain and vehicle propulsion systems, as well as propose novel thermal management solutions to mitigate efficiency losses or prevent unsafe operation.

Learn more about the Panel

Organizers - Anand Nageswaran Bharath, Cummins Inc.; Aaron Costall; Eric Krivitzky, Thermofluid Research Laboratory; Raj Ranganathan, Simerics Inc.; Dan Richardson; David Rutledge, Cummins Inc.; Ronald Semel, Ford Motor Company

Moderators - Nikhil Ajotikar, Cummins Inc.

Panelists - Michael Berhan, Ford Motor Company; Kevin Irrer, General Motors LLC; Abdul Motin, Rivian Automotive; Nathan Peters, Dumarey USA; Anil Yadav, General Motors Technical Center India;

Thursday, April 10

Sustainable Transport Technologies: Electrification - including battery recycling

Session Code SDP130

Room 141 Session 1:30 p.m.

Organizers - Yi Ding, TARDEC; Charbel Mansour, Argonne National Laboratory; Amanda Nummy, Hyundai & Kia Corp.; Sree Palle, FEV Consulting; Bin Xu, Univ. of Oklahoma

Chairperson - Charbel Mansour, Argonne National Laboratory; Bin Xu, Univ. of Oklahoma

Time	Paper No.	Title
1:30 p.m.	2025-01-8602	Coupled Routing and Charge Schedule Optimization of Electrified Delivery Truck Fleets: Feasibility Analyses Yared Tadesse Wendimagegnehu, Beshah Ayalew, Clemson University; Andrej Ivanco, Allison Transmission Inc; Habtamu Hailemichael, Clemson University
2:00 p.m.	2025-01-8599	Simulation of GHG Emissions for Production Phase of Battery Electric and Hydrogen Fuel Cell Electric HDVs under Different Electricity Grid Mixes Jianbo Zhao, Hu Li, Meisam Babaie, Kang Li, University of Leeds
2:30 p.m.	2025-01-8600	Analysis of the Design Space for Battery- and Fuel Cell-Powered Medium- and Heavy-Duty Trucks Based on a Simplified Cost of Ownership Evaluation Ram Vijayagopal, Argonne National Laboratory; Alicia Birky, National Renewable Energy Laboratory

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Technical Session Schedule

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Time	Paper No.	Title
3:00 p.m.	ORAL ONLY	Re-Inspect: Innovation in Battery Inspection for Reuse and Remanufacturing Anton Sediako, Carl Zeiss AG

Planned by Sustainable Development Committee / Energy and Propulsion Activity

Thursday, April 10

Automotive Thermal Systems and Components - Part 1 of 2

Session Code HX1300

Room 142 B Session 9:00 a.m.

Proper thermal management can significantly contribute to overall system energy efficiency. TMSS one of the key aspects of the vehicle development. It ensures that the temperatures in the underhood and underbody areas are in desired ranges, that thermal systems operate as designed, and that no component operation is at risk due to excessive temperatures. This session covers the design of thermal components and systems and their vehicle integration.

Organizers - Ronald Semel, Ford Motor Company; Bing Shuttlewood, General Motors Corporation; Vivek Kumar, Consultant; Jie Zeng, DENSO International America Inc.; Sowmya Jayaraman, General Motors

Time	Paper No.	Title
9:00 a.m.	2025-01-8152	Next Gen Automotive Heat Shield with Improved Thermo-Oxidative Properties Mark Vazquez, Alpha Engineered Composites
9:30 a.m.	2025-01-8162	Materials Innovation in Thermal Management: Advancing Aluminum Alloy Technologies for the Next-Generation Electrical Vehicle Battery Cold Plate Mehdi Jalili, Xu Wang, Hadi Razm-poosh, Dana Canada Corporation

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

Thursday, April 10

Thermal Management for Batteries and Battery Management - Part 1 of 2

Session Code HX1500

Room 142 B Session 9:00 a.m.

This session covers the technical trends and innovations in battery and battery management system thermal management. This includes the key trends dealing with the thermal needs of battery and battery management systems including thermal management system optimization, packaging, and technology innovations to improve efficiency. Thermal management architecture for optimized performance and the latest means for mitigating battery thermal runaway are covered in this session.

Organizers - Sowmya Jayaraman, General Motors; Aamir Khawaja, Stellantis; Bing Shuttlewood, General Motors Corporation; Gursaran Mathur, Ronald Semel, Ford Motor Company; Raj Ranganathan, Simerics Inc.; Jeff Schlautman, General Motors LLC

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Time	Paper No.	Title
9:00 a.m.	2025-01-8167	Reducing Temperature-Related Aging Inhomogeneities in Battery Modules Using a Switchable Thermal Management System
		Marcus Auch, Konstantin Weyershäuser, IFS, University of Stuttgart; Timo Kuthada, Andreas Wagner, FKFS
9:30 a.m.	2025-01-8172	Battery Thermal Management System for PHEV by using Air Conditioning Heater System
		Yu Hoshino, Toyota Motor Corporation

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

Thursday, April 10

Automotive Thermal Systems and Components - Part 2 of 2

Session Code HX1300

Room 142 B Session 1:30 p.m.

Proper thermal management can significantly contribute to overall system energy efficiency. TMSS one of the key aspects of the vehicle development. It ensures that the temperatures in the underhood and underbody areas are in desired ranges, that thermal systems operate as designed, and that no component operation is at risk due to excessive temperatures. This session covers the design of thermal components and systems and their vehicle integration.

Organizers - Ronald Semel, Ronald Semel, Ford Motor Company; Bing Shuttlewood, General Motors Corporation; Vivek Kumar, Consultant; Jie Zeng, DENSO International America Inc.; Sowmya Jayaraman, General Motors

Time	Paper No.	Title
1:30 p.m.	2025-01-8153	Research on the Thermal Balance Test Method of Fuel Cell Electric Vehicles
		Yihang Min, School of Environment, Tsinghua University; Yanhua Fang, Dongfeng Motor Corperation; Chong He, Dongfeng Motor Corporation; Chen Ming, Dongfeng Motor Corporation R&D Institute; Zhifei Mao, Dongfeng Motor Corporation
2:00 p.m.	2025-01-8155	Numerical Comparison of TPMS Structures for the Design of an Automotive Engine Oil Cooler
		Federico Torri, Fabio Berni, Universita degli Studi di Modena; Lorenzo Martoccia, Alessandro Marini, Universita di Modena e Reggio Emilia; Andrea Merulla, Ferrari Spa; Mauro Giacalone, Giulia Colombini, Universita di Modena e Reggio Emilia
2:30 p.m.	2025-01-8156	Emissions Savings from Efficient Mobile Air-Conditioning (MAC) Systems in Passenger Vehicles
		Giuseppe Di Pierro, Joint Research Centre; Davide Currò, Piksel s.r.l.; Susana Gil-Sayas, Universitat Politècnica de València; Georgios Fontaras, Joint Research Centre

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

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As of March 20, 2025 19:40:33 PM

Thursday, April 10

Thermal Management for Batteries and Battery Management - Part 2 of 2

Session Code HX1500

Room 142 B Session 1:30 p.m.

This session covers the technical trends and innovations in battery and battery management system thermal management. This includes the key trends dealing with the thermal needs of battery and battery management systems including thermal management system optimization, packaging, and technology innovations to improve efficiency. Thermal management architecture for optimized performance and the latest means for mitigating battery thermal runaway are covered in this session.

Organizers - Sowmya Jayaraman, General Motors; Aamir Khawaja, Stellantis; Bing Shuttlewood, General Motors Corporation; Gursaran Mathur, Ronald Semel, Ford Motor Company; Raj Ranganathan, Simerics Inc.; Jeff Schlautman, General Motors LLC

Time	Paper No.	Title
1:30 p.m.	2025-01-8164	Battery Thermal Runaway Propagation: A CFD Approach to Cell and Module Analysis Anil Wakale, Shihu Ma, Xiao Hu, Ansys, Inc.
2:00 p.m.	2025-01-8163	CFD-Based Performance Evaluation of Immersion Cooling Fluids for Lithium-Ion Battery Modules Antonio Garcia, Carlos Micó, Javier Marco-Gimeno, Imad Elkourchi, Universitat Politècnica de València, CMT
2:30 p.m.	2025-01-8175	Impact of Thermal Gradients on Calorimetry Testing of Battery Cells Brad Vanderwege, Ben Petersen, Ford Motor Company
3:00 p.m.	2025-01-8165	Experimental Analysis of Battery Thermal Management Techniques for Electric Vehicle Lithium-Ion Batteries Using MATLAB Simulink, Simscape, and Stateflow Simulations Shanmuganathan Thangaraju, Hindustan Institute Of Technology & Science; Meenakshi N, Maragatham Ganesan, SRM Institute Of Science & Technology
3:30 p.m.	2025-01-8173	Impact of Thermal and Electrical Dissimilarities on Battery Module Aging Andre Swarts, Swapnil S. Salvi, Daniel Juarez Robles, Southwest Research Institute

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

Thursday, April 10

Strategic Engagement: Showcasing University Innovations in the Mobility Sector

Session Code 2MSEC101

Room 250 A Session 8:00 a.m.

Organizers - Jennifer Bastiaan, Gregory Davis, Kettering University; Roger Wade Bastiaan, Enwin Utilities

Time	Paper No.	Title

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Design of a Continuously Variable Runner Length Intake Manifold for a Formula SAE Car Maxim Jarmoluk, Oakland University

Thursday, April 10

Automotive Embedded Software and Systems: Modeling, Simulation, and Testing

Session Code AE202

Room 250 A Session 1:30 p.m.

This session seeks submissions concerning innovations in automotive embedded systems with a specific focus on software methodologies to model, simulate, implement, and test them in the vehicle. Control and signal processing algorithm developments are encouraged, and topics can come from a wide range of vehicle subsystems such as Infotainment, Navigation, Driver Assistance, Battery management, Propulsion, Chassis, etc..

Organizers - Mahendra Muli, Amazon Web Services; Scott Rush, General Motors LLC; Kevin Sittner, Mitsubishi Motors R&D of America; Chirag Sonchal, John Deere India Pvt, Ltd.

Chairperson - Kevin Sittner, Mitsubishi Motors R&D of America

Time	Paper No.	Title
1:30 p.m.	2025-01-8076	Integrated Multimodal System for Real-Time Driver Fatigue Detection and Cognitive Load Assessment Abdullah Jirjees, National Research Council Canada; Taufiq Rahman, Government of Canada; Ghazal Farhani, National Research Council Canada; Daniel Singh, National Research Council Canada / Government of Canada; Dominique Charlebois, Transport Canada
2:30 p.m.	2025-01-8077	Modern Simulink DevOps Integration Jon Mathews, Ahmed Tamrawi, Sergio Ferrero, Jeremias Sauceda, EnSoft Corporation
3:00 p.m.	2025-01-8078	Introducing the ML FMEA Paul Schmitt, TORC Robotics; Heinz Bodo Seifert, TUV Rheinland of North America Inc.; Mario Bijelic, Princeton University; Krzysztof Pennar, Jerry Lopez, Felix Heide, TORC Robotics
3:30 p.m.	ORAL ONLY	GEN AI BASED VIRTUAL INTEGRATION AND VALIDATION PLATFORM Amol Gulve, Cognizant Technology Solutions US Corp.

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

WCX SAE World Congress Experience

Technical Session Schedule

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Thursday, April 10

AI and Machine Learning - Part 1 of 2

Session Code AE500

Room 250 B Session 8:00 a.m.

This session focuses on real-world and theoretical methods and advanced algorithms in AI, machine learning and related technologies for both inside and outside the Vehicle. Abstracts are being sought on the state of the art in AI and identifying potential applications of AI-bases technologies in vehicle design, control systems, human/machine interface and automated operation, as well as smart mobility and infrastructure of the future.

Organizers - Arun Adiththan, Ibrahim Haskara, Prakash Peranandam, General Motors LLC; Ramesh S, General Motors Corp.; Alok Warey, General Motors LLC

Chairperson - Ibrahim Haskara, Prakash Peranandam, Ramesh S, Alok Warey, General Motors LLC

Time	Paper No.	Title
8:30 a.m.	2025-01-8102	Responsible AI System Development in Automotive Applications: A Framework Jody Nelson; Christopher Lin
9:00 a.m.	2025-01-8107	Matchit: A Domain-Adaptable Information Extraction and Categorization Tool for Enhanced Decision Making Lijun Wang, Karunesh Arora, Ford Motor Company
9:30 a.m.	2025-01-8110	The ‘Changing Anything Changes Everything (CACE)’ Principle: Underestimated Challenges in Applying AI/ML to Automotive Safety-Critical Systems Wei Tong, General Motors Research & Development; Gang Li, Texas A&M University; Ramesh S, General Motors Research & Development; Tianbao Yang, Texas A&M University; Bing Shuttlewood, General Motors LLC; Pri Mudalige, General Motors Research & Development
10:00 a.m.	2025-01-8104	A Deep Learning Framework for Time Series Prediction of Passenger Motion Sickness Based on Vehicle Dynamics Data Srikanth Kolachalama, Daniel Sousa Schulman, Bradley Kerr, Siyuan Yin, Michael Ben Wachsman, Jedidiah Ethan Shapiro Pienkny, Nishant M. Jalgaonkar, Shorya Awtar, University of Michigan

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Thursday, April 10

AI and Machine Learning - Part 2 of 2

Session Code AE500

Room 250 B Session 1:30 p.m.

This session focuses on real-world and theoretical methods and advanced algorithms in AI, machine learning and related technologies for both inside and outside the Vehicle. Abstracts are being sought on the state of the art in AI and identifying potential applications of AI-bases technologies in vehicle design, control systems, human/machine interface and automated operation, as well as smart mobility and infrastructure of the future.

Organizers - Arun Adiththan, Ibrahim Haskara, Prakash Peranandam, General Motors LLC; Ramesh S, General Motors Corp.; Alok Warey, General Motors LLC

Chairperson - Ibrahim Haskara, Prakash Peranandam, Ramesh S, Alok Warey, General Motors LLC

WCX SAE World Congress Experience

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Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	Harnessing GenAI to Combat Massive-Scale Automotive Cyber Risks Jason Masker, Upstream Security; Ravit Stern, Upstream Security, Ltd.
2:00 p.m.	ORAL ONLY	Revolutionizing Engineering Design: Neural Concept's AI-Driven Approach F. Garrett Reis, Neural Concept Ltd
2:30 p.m.	ORAL ONLY	Revolutionizing Sheet Metal Stamping through Industry 5.0 Digital Twins: A Comprehensive Review Ossama Abou Ali Modad, Georges Ayoub, Abdallah Chehade, University of Michigan; Jason Ryska, Ford Motor Company
3:00 p.m.	ORAL ONLY	AI-Powered Digital Twins: Generative Surrogate Models for Optimizing 3D FE Simulations Ossama Abou Ali Modad, Georges Ayoub, University of Michigan
3:30 p.m.	2025-01-8228	Application of AI/ML Based Image Analytics in Auto Component Fracture Analysis Priyabrata Sahoo, Sudhanshu Rawat, Vipin Garg, Garima Naidu, Amit Sharma, Rahul Narula, Ritesh Bindra, Pankaj Khera, Pooja Goel, Arup Mondal, Maruti Suzuki India Ltd.

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Thursday, April 10

Automotive Engineering Testing and Test Methods - Part 1 of 2

Session Code M203

Room 251 A Session 8:00 a.m.

M203 is for the presentation of new results, research developments, and applications related to test activities and methods employed in automotive engineering and research. Papers with an emphasis on the application of tests and test methods to automotive design and evaluation are highly encouraged. Papers with a research focus or come from other industries that may have a potential impact on automotive testing and test methods are also welcome.

Organizers - Mikhail Temkin, Rivian Automotive; Liang Wang, Stellantis NV

Time	Paper No.	Title
8:00 a.m.	2025-01-8256	Fixture Stiffness Impact on Spindle Coupled Multi-Axial Input Durability Test for Front or Rear Axle with Non-isolated Subframes Jianghua Gao, Derek Smith, Xin Zhang, Xiao Yu, FTECH R&D NORTH AMERICA INC
8:30 a.m.	2025-01-8250	A Zero-Emissions Braking System: Experimental Setup, System Characterization and Model Validation Giuseppe Pio Tempone, Matteo De Carlo, Massimiliana Carello, Henrique de Carvalho Pinheiro, Giovanni Imberti, Politecnico di Torino

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
9:00 a.m.	2025-01-8255	Market Research & Analysis of Failures due to Environmental Gases in Automotive Electronics and Integration of Learnings in Development Testing Ramnik Marwah, Praveen Pyasi, Ritesh Bindra, Vipin Garg, Maruti Suzuki India Ltd.
9:30 a.m.	2025-01-8253	Research on Turbocharger Surge Detection Based on Multi-Domain Composite Features of Acoustic Signals Jiaxu Zhu, Hongyu Zheng, Changfu Zong, ACIB, Jilin University
10:00 a.m.	2025-01-8251	Testing Complex Circuits with Radio-frequency Reflectometry Carlos Moreno, Rakshit Sharma, Srijan Pabbi, Palitronica; Sebastian Fischmeister, University of Waterloo

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Thursday, April 10

Automotive Engineering Testing and Test Methods - Part 2 of 2

Session Code M203

Room 251 A Session 1:30 p.m.

M203 is for the presentation of new results, research developments, and applications related to test activities and methods employed in automotive engineering and research. Papers with an emphasis on the application of tests and test methods to automotive design and evaluation are highly encouraged. Papers with a research focus or come from other industries that may have a potential impact on automotive testing and test methods are also welcome.

Organizers - Mikhail Temkin, Rivian Automotive; Liang Wang, Stellantis NV

Chairperson - Mikhail Temkin, Rivian Automotive; Liang Wang, Stellantis NV

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	Scaling Battery Testing from Cells-to-Pack to Recycling Denis Solomon, Tektronix
2:30 p.m.	2025-01-8252	Spectral Estimation to Quantify Road/Track Surface Degradation Yuvraj Singh, Adithya Jayakumar, Giorgio Rizzoni, The Ohio State University
2:30 p.m.	ORAL ONLY	Enhancing Automated Vehicle Safety through a Closed-Loop Accelerated Testing Framework Chengyuan Ma, Hang Zhou, Xiaopeng Li, University of Wisconsin-Madison
3:00 p.m.	2025-01-8258	Development of Prediction Model for Vehicle Road Load Using Machine Learning Hyunseung Song, Dong Hyuk Lee, Hyun Chung, Hyundai Motor Company

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Time	Paper No.	Title
3:30 p.m.	2025-01-8259	Study on an Urban Ramp Driving Cycle Using Self-Organizing Map Neural Network Xiaofeng Yin, Zhimin Wu, Yiming Liang, Peng Wang, Yu Xie, Xihua University

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Thursday, April 10

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

Session Code M202

Room 251 B Session 8:00 a.m.

This session explores 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.

Organizers - William Altenhof, Univ. of Windsor; Guofei Chen, General Motors LLC; Jwo Pan, University of Michigan; Jun Xu, Jun Xu, University Of Delaware; Danielle Zeng, Danielle Zeng, Ford Research and Innovation Center

Chairperson - Jun Xu, University Of Delaware; Danielle Zeng, Ford Research and Innovation Center

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Electrochem-mechanical dependency of battery materials Jun Xu, Shuguo Sun, University Of Delaware
8:30 a.m.	ORAL ONLY	Informatics-led Testing and Characterization of Automotive Materials and Structures Royal Ihuaenyi, Wei Li, Juner Zhu, Northeastern University
9:00 a.m.	2025-01-8244	Optimization Methodology Development of FEA and Design Analysis on High Voltage Bolted Joints for Electric Vehicles Joon Ha Lee, Hyundai Motor Company; Zhijun Wu, Marco Gerini-Romagnoli, Sayed Nassar, Oakland University
9:30 a.m.	2025-01-8249	Material selection of a Parcel shelf for structural performance and Perceived quality improvement through an assessment of wide range composite and sustainable materials. Nareen Kumar Kinthala, Manga Patnaik, Mohit Khandelwal, Phani Kumar Kakani, Elavarasan Palaniappan, Mahindra & Mahindra Ltd.

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

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Technical Session Schedule

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Thursday, April 10

Intelligent Manufacturing / Industry 4.0

Session Code MFG200

Room 252 A Session 8:00 a.m.

This session focuses on AR/VR, collaborative robots, digital twin, robotics, artificial intelligence (AI)-including machine learning, big data-including predictive analytics, predictive/preventative maintenance, industrial internet of things (IIoT), virtual manufacturing, and other smart manufacturing technologies.

Organizers - Monika Minarcin, Accenture; Ramakrishna Koganti, University Of North Texas; Randy Gu, Ali Ahmad Malik, Oakland University; Yu Teng, BAIC Motor Corporation, Ltd.

Chairperson - Sameehan Joshi, Ramakrishna Koganti, Ramakrishna Koganti, University Of North Texas; Monika Minarcin, Monika Minarcin, Accenture

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Evaluating the Relationship between System Output and Station Reliability in Serial Production Lines: A Methodological Approach Herman Tang, Eastern Michigan University
8:30 a.m.	ORAL ONLY	Rapid Product Lifecycle Management (PLM) Adoption Barbara Nash, Rand 3D
9:00 a.m.	2025-01-8332	Automated Analysis and Cleaning of Manufacturing Data: The Power of Automation Playbooks Jonathan Jan, General Motors LLC; Joshua Preston, Red Hat Inc.; John Juncker, General Motors LLC
9:30 a.m.	ORAL ONLY	Transforming Plastics Manufacturing with Automation, AI, and Optimization
10:00 a.m.	2025-01-8334	SPC based Critical Parameters Monitoring of Vendor Supplied Parts by Auto OEM for Quality Control Priyabrata Sahoo, Ishan Garg, Sudhanshu Rawat, Rahul Narula, Ankit Gupta, Ritesh Bindra, Akkinapalli VN Rao, Vipin Garg, Maruti Suzuki India Ltd.

Planned by Integrated Design and Manufacturing Activity / Ground Vehicle Advisory Group

Thursday, April 10

ADAS and Autonomous Vehicle System: Testing - Part 4 of 4

Session Code AE106

Room 252 B Session 8:00 a.m.

This session focuses on simulation and testing methodologies for ADAS and automated driving systems. Development and testing these systems often relies on simulation and advance testing methodologies due to the complex operating environment

Organizers - Jace Allen, dSPACE Inc.; Mukund Chandrasekaran, General Motors LLC; Yixin Chen, Stellantis; Amit Choudhury, Robert Bosch; Joseph D'Ambrosio, General Motors LLC; Peng Hang, Tongji University; Bin Li, Cummins; Abigayil Ostipow, dSPACE Inc.; Ramesh S, General Motors Corp.

Chairperson - Abigayil Ostipow, dSPACE Inc.

Assistant Chairpersons - Gene Saltzberg

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Time	Paper No.	Title
8:00 a.m.	2025-01-8065	Modular Dynamometer Testing Framework to Evaluate Energy Impacts of Longitudinal Automated Driving Systems Nicholas Goberville, Kayla Hamilton, Miriam Di Russo, Jongryeol Jeong, Debashis Das, David Ord, Priyashraba Misra, Trevor Crain, Argonne National Laboratory
8:30 a.m.	2025-01-8051	Reducing Power Consumption through Effective Data Sharing in Platooning Scenarios Muhammad Zaeem Khalid, Akramul Azim, Ontario Tech University; Taufiq Rahman, Government of Canada
9:00 a.m.	2025-01-8054	Leveraging Traffic-in-the-Loop Simulations to Assess the Impact of Traffic on Vehicle Energy Consumption Elia Grano, Politecnico di Torino; Manfredi Villani, Qadeer Ahmed, The Ohio State University; Massimiliana Carello, Politecnico di Torino
9:30 a.m.	ORAL ONLY	Building High-fidelity Digital Twins for AV Development with Physically Based Sensor Simulation Gregory Stevens, Mcity at University of Michigan

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Thursday, April 10

Steering and Suspension Technology Symposium

Session Code SS600

Room 252 B Session 1:30 p.m.

The purpose of this session is to provide a forum for presentations on suspension and steering related topics as it applies to ground vehicles. Papers for this session should address new approaches in the design, control, testing and simulation of suspension and steering systems, as well as integration of the aforementioned in to drivers assistance and autonomous vehicle systems.

Organizers - Mahmoud Abdelfatah, Hitachi Astemo; Meredith Bartholomew, SEA, Ltd.; Shyam Patel; Shantha Kumari Rajendran, Harvard Univ.

Chairperson - Shantha Kumari Rajendran, Harvard Univ.; Mahmoud Abdelfatah, Hitachi Astemo

Time	Paper No.	Title
1:30 p.m.	2025-01-8754	Aerodynamic Effect on Vehicle Handling Harshvardhan Patil, Daniel Williams, Purdue University
2:30 p.m.	2025-01-8750	Design of a Stability Compensator to Optimize Steering Feel in Electric Power Steering Systems Yi Kong, Zhengjun Wei, South China University of Technology; Xiaocheng Duan, Ningbo Tuopu Group Co., Ltd.; Wen-Bin Shangguan, South China University of Technology
3:00 p.m.	2025-01-8668	Adding and Assessing Vehicle Sound and Steering Feedback: Application to an Unreal Engine Driving Simulator Lingbo Duan, Boyu Xu, Paul Green, University of Michigan

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Technical Session Schedule

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Time	Paper No.	Title
3:30 p.m.	ORAL ONLY	Merging Fluid Mechanics and Traffic Flow Theory with New Insight into Car Following Models Christopher Depcik, Luwei Zeng, Alexandra Kondyli PhD, University of Kansas

Planned by Steering and Suspension Committee / Automobile Body, Chassis, Safety, and Structures

Thursday, April 10

Unmanned Air Systems

Session Code MIL500

Room 259 Session 8:00 a.m.

The focus of this session is to showcase the research that will enable multi-fuel capable propulsion systems. Experts will cover a range of topics including alternative fuels, combustion, assisting ignition, hybridization, and control methods.

Organizers - Robert Middleton, University of Michigan; Eri Amezcua, University of Wisconsin

Chairperson - Eri Amezcua, University of Wisconsin - Madison; Robert Middleton, University of Michigan

Time	Paper No.	Title
8:00 a.m.	2025-01-8352	A Conjugate Heat Transfer Numerical Framework Applied to Energy-Assisted Ignition of Jet Fuel in a Rapid Compression Machine Surya Kaundinya Oruganti, Hao-Pin Lien, Roberto Torelli, Argonne National Laboratory; Austen Motily, Tonghun Lee, University of Illinois at Urbana-Champaign; Kenneth Kim, Eric Mayhew, Chol-Bum Kweon, Army Research Laboratory
9:00 a.m.	2025-01-8351	Control-Oriented Statistical Model of In-Cylinder Pressure, Combustion Phasing, and Torque for Compression-Ignition Engines Operating with Low Cetane Fuels Omar Ahmed, Robert Middleton, Anna Stefanopoulou, University of Michigan - Ann Arbor; Kenneth Kim, Chol-Bum Kweon, U.S. Army Research Laboratory
9:30 a.m.	2025-01-8349	Data-driven Modeling and Control Framework for Multi-Fuel Compression-Ignition Engines Sathya Aswath Govind Raju, Zongxuan Sun, University of Minnesota-Twin Cities; Kenneth Kim, Chol-Bum Kweon, Army Research Laboratory
10:00 a.m.	2025-01-8350	Impacts of Injection Pressure on Split-Injection Energy-Assisted Compression-Ignition Combustion of Low Cetane Number SAFs with a Gaussian-Shaped Ribbed Piston Bowl Design Eri Amezcua, Jacob Stafford, University of Wisconsin-Madison; Kenneth Kim, Army Research Laboratory; Chol-Bum Kweon, Dept. Of Army; David Rothamer, University of Wisconsin-Madison

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Thursday, April 10

Electric Vehicle Drivetrain and Chassis Dynamics and Control Application - Part 1 of 2

Session Code SS901

Room 260 Session 8:00 a.m.

This session deals with the analytical and experimental studies of vehicles with electric drives or any non-conventional powertrain and chassis concepts that stretch the vehicle dynamics/mobility performance using smart and multi-actuated technologies such as in-wheel motors, torque-vectoring controls, multi-wheel steer-by-wire, etc.

Organizers - Valentin Ivanov, Smart Vehicle Systems TU Ilmenaus; Barys Shyrokau, TU Delft; Dzmitry Savitski, FAW; Riccardo Groppo, Sleep Advice Technologies

Chairperson - Valentin Ivanov, Smart Vehicle Systems TU Ilmenau

Time	Paper No.	Title
8:00 a.m.	2025-01-8803	Development of Deep Reinforcement Learning Traction Controllers for Front and Rear Wheel Drive Electrified Vehicles Carmine Caponio, Mario Mihalkov, University of Surrey; Zoltan Hankovszki, AVL List GmbH; Hiroyuki Fuse, University of Ilmenau; Valentin Ivanov, TU Ilmenau; Aldo Sorniotti, Politecnico di Torino; Patrick Gruber, Umberto Montanaro, University of Surrey
8:30 a.m.	2025-01-8807	European Initiatives for User-Centric Design of Electric Vehicles Florian Ratz, Armengaud Innovate GmbH; Thomas Bäuml, Austrian Institute Of Technology; Tomaž Kompara, Elaphe Propulsion Technologies Ltd.; Alexander Kospach, Virtual Vehicle Research GmbH; Dragan Simic, Austrian Institute Of Technology; Petra Jan, Elaphe Propulsion Technologies Ltd.; Sebastian Möller, Virtual Vehicle; Hiroyuki Fuse, Technical University of Illmenau; Esteban Parades Barros, CTAG - Automotive Technology Centre of Galicia; Eric Armengaud, Armengaud Innovate GmbH; Nicola Amati, Aldo Sorniotti, Politecnico di Torino; Walter Lukesch, AVL DITEST GmbH
9:00 a.m.	2025-01-8812	Vehicle Motion Management - A Model Predictive Control Approach to Realize Holistic Redundancy to Enable Actuator Fail Operational Autonomous Driving Mark Wielitzka, Tim Ahrenhold, Moritz Vocht, Jonas Rawitzer, Jonas Schrader, IAV GmbH
9:30 a.m.	2025-01-8804	Concept of an Electromechanical Brake-By-Wire System for Battery-Electric Vehicles Marius Heydrich, Matthias Lenz, Valentin Ivanov, University of Technology Ilmenau; Julian Stoev, Johan Lecoutere, Bluways International
10:00 a.m.	2025-01-8806	European Initiatives Addressing High Efficiency and Low-Cost Electric Motors for Circularity and Low use of Rare Resources Eric Armengaud, Florian Ratz, Armengaud Innovate GmbH; Ángela Muñiz, Fundación Empresa Universidad Gallega; Javier Poza, Fernando Garramiola, Gaizka Almandoz, Mondragon University; Jenni Pippuri-Mäkeläinen, VTT; Stéphane Clenet, ENSAM; Maarten Messagie, Lea D'amore, Vrije Universiteit Brussel; Maeva Lavigne Philippot, Vrije universiteit brussel; Oriol Rillo, Daniel Montesinos, CITCEA-UPC; Hendrik Vansompel, Arne De Keyser, Ghent University; Claudio Romano, Ideas & Motion S.r.l.; Umberto Montanaro, Davide Tavernini, Patrick Gruber, Liaoyuan Ran, University of Surrey; Nicola Amati, Politecnico di Torino; Christopher Vagg, University of Bath; Matic Herzog, Elaphe Propulsion Technologies Ltd.; Martin Weinzerl, AVL List GmbH; Janne Keränen; Juho Montonen, Danfoss Editron

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Planned by Vehicle Dynamics Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 10

Emissions Measuring and Testing - Part 2 of 3

Session Code PFL440

Room 310 A Session 8:00 a.m.

Sub-sessions cover 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 - Svitlana Kroll, Southwest Research Institute; J. Felipe Rodriguez, International Council On Clean Transport; Dado Karim Sylla, Cummins Inc.; Yuesen Wang, Exponent; Susumu Sato, Institute of Science Tokyo; Mi-Young Kim, Mert Zorlu, Cummins Inc.

Chairperson - Mi-Young Kim, Dado Karim Sylla, Cummins Inc.

Time	Paper No.	Title
8:00 a.m.	2025-01-8497	Impact of Chemical Poisoning and Hydrothermal Aging on a Production Diesel AT System Arun Balakrishnan, Venkata Rajesh Chundru, Scott Eakle, Christopher Sharp, Southwest Research Institute
8:30 a.m.	ORAL ONLY	Analysis Methods of Real-world Emissions Using Small Type On-board Emissions Measurement System Susumu Sato, Chisato Fukunaga, Tsubasa Harada, Keigo Ashizawa, Tianyi Gao, Institute of Science Tokyo; Noritsune Kawaharada, National Traffic Safety & Enviro Lab
9:00 a.m.	ORAL ONLY	Real-world tailpipe ammonia emissions from light-duty gasoline vehicles Troy Hurren, Helen Nguyen, University Of California Riverside; Melan Penglin; Zisimos Toumasatos; George Karavalakis, University Of California Riverside
9:30 a.m.	2025-01-8498	Study on Energy Consumption and Emission Characteristics of EHC Coupled DOC+SDPF+SCR-ASC System under WLTC and RDE Lulu Kang, Zhiguo Zhao, Tongji University; Diming Lou
10:00 a.m.	2025-01-8500	Biodiesel and Renewable Diesel Blends Oxidation by Diesel Oxidation Catalyst Venkata Lakkireddy, Phillip Weber, Southwest Research Institute; Robert McCormick, National Renewable Energy Laboratory; Steve Howell, MARC-IV Consulting

Planned by Mobile Source Emissions Committee / Energy and Propulsion Activity

Thursday, April 10

Emissions Measuring and Testing - Part 3 of 3

Session Code PFL440

Room 310 A Session 1:30 p.m.

Sub-sessions cover 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 - Svitlana Kroll, Southwest Research Institute; J. Felipe Rodriguez, International Council On Clean Transport; Dado Karim Sylla, Cummins Inc.; Yuesen Wang, Exponent; Susumu Sato, Institute of

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Science Tokyo; Mi-Young Kim, Mert Zorlu, Cummins Inc.

Chairperson - Susumu Sato, Institute of Science Tokyo; Mert Zorlu, Cummins Inc.

Time	Paper No.	Title
1:30 p.m.	2025-01-8492	Sensor Cluster for Recording the Spread of Emissions in the Wake of a Vehicle Miles Kunze, Valentin Ivanov, Technical University Ilmenau; Sebastian Gramstat, Audi AG
2:00 p.m.	2025-01-8493	Formation and Decomposition of Ammonium Sulfate Species over a Small Pore Cu/Zeolite Catalyst Nathan Ottinger, Yuanzhou Xi, Z. Gerald Liu, Cummins Inc.
2:30 p.m.	2025-01-8495	Impact of Oxidation Catalyst Formulation and Space Velocity on Performance with Conventional and Renewable Fuels Venkata Lakkireddy, Phillip Weber, Southwest Research Institute; Robert McCormick, National Renewable Energy Laboratory; Steve Howell, MARC-IV Consulting
3:00 p.m.	2025-01-8496	The Role of Hydrogen in Exhaust Gas Aftertreatment Systems of Hydrogen Combustion Engines Stefan Sterlepper, Alexander Lampkowski, Katrin Himmelseher, RWTH Aachen University; Can Özyalcin, FEV UK Ltd.; Johannes Claßen, Stefan Pischinger, RWTH Aachen University
3:30 p.m.	ORAL ONLY	Evaluation of natural gas heavy duty emission performance under laboratory and real-world emission testing with particular interest in sensor-based emission technologies. Zisimos Toumasatos, UCR CE-CERT; Troy Hurren, Elizabeth DeFrance, Grace Johnson, Tom Durbin, George Karavalakis, University Of California Riverside; Kent Johnson, Univ of California-Riverside

Planned by Mobile Source Emissions Committee / Energy and Propulsion Activity

Thursday, April 10

Panel Discussion - The Future of Internal Combustion Engines: Innovations, Challenges, and Pathways in a Low-Carbon World

Session Code PFL198

Room 310 B Session 8:00 a.m.

This panel discussion will explore the evolving landscape of internal combustion engine (ICE) development in the context of global efforts to reduce carbon emissions and transition towards more sustainable energy sources. The discussion will address key areas including:

1. Technological Innovations: Examination of the latest advancements in ICE technology, such as improvements in efficiency, hybridization, and the integration of alternative fuels like biofuels and hydrogen.
2. Regulatory and Environmental Challenges: A discussion on the impact of increasingly stringent criteria emission regulations, the role of ICEs in a low-carbon future, and the strategies for meeting these regulatory requirements while maintaining performance and cost-effectiveness.
3. Market Dynamics and Consumer Trends: Analysis of the shifting market dynamics, consumer preferences, and how these are influencing the development and adoption of new ICE technologies.
4. Global Perspective: Consideration of the different approaches to ICE development across various regions, with a focus on the balance between economic growth, energy security, and environmental sustainability.
5. Long-Term Viability: Discussion on the potential long-term role of ICEs in the automotive industry, including the feasibility of coexistence with electric vehicles and the potential for ICEs during the energy transition.

The panel aims to provide a comprehensive view of the current state and future prospects of internal combustion engines, offering insights for industry professionals, policymakers, and academics interested in sustainable transport solutions.

Learn more about the Panel

WCX SAE World Congress Experience

Technical Session Schedule

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Organizers - Xin He, Aramco Americas; Federico Millo, Politecnico di Torino

Moderators - Kelly Senecal, Convergent Science

Panelists - Gianmarco Boretto, Dumarey; Andre Kulzer, FKFS Stuttgart; Liguang Li, Tongji University; Lee Stark, Cummins;

Thursday, April 10

Panel Discussion - Emerging Test Methods for electrified drive lubricants: Challenges and Outlooks

Session Code PFL398

Room 310 B Session 1:30 p.m.

Industry specialists discuss how the identification of new lubricant requirements is leading to new methods, the organizations and activities involved with formalizing these methods, and the challenges involved in gaining industry consensus and adoption. Some of these methods have already been incorporated into OEM specifications.

Learn more about the Panel

Organizers - George Dodos, ELDON'S SA; Timothy Newcomb, Lubrizol Corp.

Moderators - Timothy Newcomb, The Lubrizol Corporation

Panelists - Scott Halley, The Lubrizol Corporation; Cole Hudson, Southwest Research Institute; Troy Muransky, AAM (American Axle & Mfg Inc); Kalyan Mutyala, Ford Motor Co.;

Thursday, April 10

Design Optimization - Methods and Applications - Part 1 of 2

Session Code SS103

Room 320 Session 8:00 a.m.

Design Optimization Methods and Application session features papers on new and improved optimization techniques and on applications of different optimization methods. Methods include, stochastic, size, shape, topology, response surface based, single and multi-disciplinary optimization techniques. Applications include are but not limited to Crash, NVH, Durability, Aero, Vehicle Dynamics and Battery design. The session also welcomes papers focusing on CAE based Machine Learning techniques.

Organizers - Mallikarjuna Bennur, Sudeep Chavare, Vesna Savic, General Motors LLC; Andres Tovar, Purdue University; Di Zhu, Ford Motor Company

Chairperson - Mallikarjuna Bennur, Vesna Savic, General Motors LLC

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Keynote: Speeding Up Product Design and Innovation with Data Driven Methods (AI/ML) Fatma Y. Kocer, Altair Engineering
8:30 a.m.	2025-01-8649	MDO Approach for Design Synthesis of Automotive Interior Components Subjected to Conflicting Functional Requirements Rajapandian R, Tata Consultancy Services; Vinaya Koppaka, General Motors LLC
9:00 a.m.	2025-01-8645	Efficient Process for Multidisciplinary Optimization of Electric Drive Units: A Case Study on Enhancing Design Efficiency Sudeep Chavare, Sachin Bamane, Chi Chen, Jong-Eun Kim, Haiyan Li, Punit Bandi, General Motors LLC

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
9:30 a.m.	2025-01-8648	Improving Modal Frequencies in Class 5 Truck Fuel Cell Tank Structure through Topology Optimization Dong Yeon Yoo, Sudeep Chavare, Sankar Viswanathan, Adam Mouyianis, General Motors LLC
10:00 a.m.	2025-01-8644	Optimization Method for Powertrain Mounting Systems Based on Enhanced Genetic Algorithms Yang Jin; Dewei Li; Yang Zhao; Lei Xiao; Yiming Guo

Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 10

Design Optimization - Methods and Applications - Part 2 of 2

Session Code SS103

Room 320 Session 1:30 p.m.

Design Optimization Methods and Application session features papers on new and improved optimization techniques and on applications of different optimization methods. Methods include, stochastic, size, shape, topology, response surface based, single and multi-disciplinary optimization techniques. Applications include are but not limited to Crash, NVH, Durability, Aero, Vehicle Dynamics and Battery design. The session also welcomes papers focusing on CAE based Machine Learning techniques.

Organizers - Mallikarjuna Bennur, Sudeep Chavare, Vesna Savic, General Motors LLC; Andres Tovar, Purdue University; Di Zhu, Ford Motor Company

Chairperson - Mallikarjuna Bennur, Vesna Savic, General Motors LLC

Time	Paper No.	Title
1:30 p.m.	2025-01-8646	A Comprehensive Study of Gaussian Process-Based Multi-Objective Multi-Fidelity Modeling Techniques and its Applications to Shell-and-Tube Heat Exchanger Design Prathamesh Chaudhari, Andres Tovar, Purdue University
2:00 p.m.	2025-01-8655	Topology Optimization of Multibody Systems Undergoing Dynamic Loading using an Equivalent Static Displacement Method Aakash Gupta, Cummins Inc.; Andres Tovar, Purdue University
2:30 p.m.	2025-01-8656	Automatic Generation of HVAC Ducting System Designs Using Topology and Shape Optimization Dimitrios Papadimitriou, Robert Sandboge, Altair Engineering
3:00 p.m.	ORAL ONLY	Efficient Computation of the k-Closest Distances Between 3D Moving Shapes Rakesh Balamurugan, University of Connecticut

Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:34 PM

Thursday, April 10

Sheet Metal Forming Technology

Session Code M105

Room 321 Session 8:00 a.m.

This session will feature the latest developments in sheet metal forming technology. Presentations will address general areas of forming processes, formability issues and modeling. These include forming processes (Stamping, hydroforming, gas forming, and high temperature forming), formability Issues (springback, edge cracking, stretch-bend failures and fracture), Modeling (materials, forming limits, failure criteria in various deformation modes and process modeling & optimization).

Organizers - Raghu Echempati; Lu Huang, Dohyun Leem, ZiQiang Sheng, General Motors

Chairperson - Raghu Echempati; Raghu Echempati

Time	Paper No.	Title
8:00 a.m.	2025-01-8814	A review of warm forming for steels: History, Methodology and Emerging trends Caroline Kella, Tom Wormald, ArcelorMittal Dofasco Hamilton Inc.
8:30 a.m.	2025-01-8224	Zero Circumferential Material Flow Line-Based Method for Reducing Stamping Simulation Cost ZiQiang Sheng, Brian Asimba, Kleber Cabral, General Motors LLC
9:00 a.m.	2025-01-8225	Predicting Forming Limit of Hot Stamping Boron Steel Using a Modified Zener-Hollomon Parameter based Ductile Failure Criterion ZiQiang Sheng, General Motors LLC; Pankaj Mallick, University of Michigan-Dearborn
9:30 a.m.	2025-01-8223	A New Methodology to Characterize the Influence of Paint Baking and Pre-Straining on the Tensile Properties of Third Generation Advanced High Strength Steels Rhys Northcote, Avalon Berry, Advaith Narayanan, Cameron Tolton, University of Waterloo; Haea Lee, POSCO; Jonathan Smith, Eric McCarty, Auto/Steel Partnership; Cliff Butcher, University of Waterloo
10:00 a.m.	ORAL ONLY	Correction of Stress-Strain Curves in the Heat-Affected Zone of Tailor-Welded Blanks with Unequal Thicknesses Using Double-Sided DIC Lianxiang Yang, Siyuan Fang, Xiaowan Zheng, Marco Gerini-Romagnoli, Oakland University; Steven Sheng, Lu Huang, General Motors LLC; Eric McCarty, Auto/Steel Partnership

Planned by Metallic Materials Committee / Materials Engineering Activity

Thursday, April 10

Welding, Joining, and Fastening

Session Code M216

Room 321 Session 1:30 p.m.

Presentations related to welding and joining of similar or dissimilar materials of plastics, composites, aluminum, magnesium, titanium, and conventional and advanced high strength steels will be given. Papers related to friction stir (spot) welding, ultrasonic welding, resistance welding, arc welding, laser welding, brazing or soldering, riveting and bolting, and adhesive are planned as well. Papers related to strength, fracture and fatigue of welds, joints and fasteners have been invited.

Organizers - Catherine Amodeo, Ford Motor Company; Wei-Jen Lai, Ford Motor Co.; Pai-Chen Lin, National Chung Cheng University; Jwo Pan, University of Michigan

WCX SAE World Congress Experience

Technical Session Schedule

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Chairperson - Catherine Amodeo, Ford Motor Company; Pai-Chen Lin, National Chung Cheng University

Time	Paper No.	Title
1:30 p.m.	2025-01-8313	Residual Stress Analysis in Arc Welded Lap Joints of High Strength Steel Sheets and Welding Wire Using Material Properties at Heating and Cooling Yoichiro Ohnishi, Kentaro Sato, JFE Steel Corporation; Ninshu Ma, Kunio Narasaki, Li Weihao, Osaka University; Koichi Yasuda, JFE Techno-Research Corporation
2:00 p.m.	ORAL ONLY	Failure Analysis for Friction Stir Welds in Lap-Shear Specimens of Aluminum Alloy 1050 Plates Pai-Chen Lin, zihuan huang, National Chung Cheng University
2:30 p.m.	ORAL ONLY	Predictive Simulation in Laser Welding: Enhancing Weld Reliability and Mechanical Performance Satish Kumar Meenakshisundaram, Ansys; Sunil Acharya, ANSYS Inc

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Thursday, April 10

ADAS and Autonomous Vehicle System: ADAS/AVS - Perception

Session Code AE102

Room 330 A Session 8:00 a.m.

This session will focus on presentations from the session authors on the latest research on object detection and tracking methodologies for ADAS and AVS. The areas include detection of static (curbs, lanes, potholes) and dynamic objects in complex real-life scenarios and in difficult weather conditions, using camera, radar and LiDAR sensors. Advanced sensor fusion and Simultaneous Localization and Mapping (SLAM) techniques will also be discussed in this context.

Organizers - Jace Allen, dSPACE Inc.; Hossam Almasri, GM; Zachary Asher, Western Michigan Univ.; Yixin Chen, Stellantis; Amit Choudhury, Robert Bosch; Nick Goberville, Argonne National Laboratory; Libin Jia, Ford Motor Co., Ltd.; Venkateswara Raju Mudunuri, Venkateswara Raju Mudunuri, General Motors; Jacob Perrin, dSPACE Inc.

Chairperson - Venkateswara Raju Mudunuri, General Motors

Time	Paper No.	Title
8:00 a.m.	2025-01-8015	Object Detection for City and Highway Driving Scenario with YOLOX and Mask RCNN Krunal Patel, Diane Peters, Kettering University
8:30 a.m.	2025-01-8017	Empirical Analysis on Machine Vision Recognition of Green Bike Lanes for Vulnerable Road Users Safety Venkata Naga Rithika Ponnuru, Michigan Technological University; Sushanta Das, American Center for Mobility; Joseph Grant, Dow Coating Materials; Jeffrey Naber, Mojtaba Bahramgiri, Michigan Technological University
9:00 a.m.	2025-01-8023	RGB2BEV-Net: A PyTorch-Based End-to-End Pipeline for RGB to BEV Segmentation Using an Extended Dataset for Autonomous Driving Sabir Hossain, Xianke Lin, Ontario Tech University

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
9:30 a.m.	2025-01-8016	Driving in the Rain: Evaluating How Surface Material Properties Affect LiDAR Perception in Autonomous Driving Wing Yi Pao, Long Li, Martin Agelin-Chaab, Langis Roy, Ontario Tech University; Julian Knutzen, Magna Advanced Technologies; Alexis Baltazar, Magna Exterior Systems; Klaus Muenker, Magna Exteriors GmbH; Anirban Chakraborty, Magna Services of America Inc.; John Komar, Ontario Tech University
10:00 a.m.	2025-01-8020	Machine Learning-Based Lane Detection and Lateral Offset Estimation Model for Vehicle Following Applications Nirmal Raja Karuppiah Loganathan, Aman Poovalappil, Jeffrey Naber, Darrell Robinette, Mojtaba Bahramgiri, Michigan Technological University
10:30 a.m.	2025-01-8013	LiDAR Contamination Recognition Based on Optimized PointNet Ziyu Wei, Binyun Quo, Ran Lujia, Liguang Li, Tongji University

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Thursday, April 10

Foundations of Automobile Electronics: Reliability, Diagnostics & Prognostics for Safety Critical Electronic Systems

Session Code AE304

Room 330 B Session 8:00 a.m.

ADAS/ADS components require a proactive approach. The session presents ideas of condition-based (CbM) or predictive (PdM) maintenance of ADAS/ADS function(s) and safety critical components. Periodic Technical Inspections (PTI) and remaining useful life of systems components are essential for maintenance and safety assurance of AV operation. These objectives can be with new techniques such as OBM, digital twins (DT), and IOT. Applications are for light-duty, heavy duty, and airborne applications.

Organizers - Athar Hanif, The Ohio State University; Mark Monohon, Mark Pope, DG Technologies

Chairperson - Mark Pope, DG Technologies

Moderators - Mark Pope, DG Technologies

Time	Paper No.	Title
8:00 a.m.	2025-01-8090	Use of Vehicle Cyber Engineering (VCE) Testbeds to Develop AI Safety Enhancements Based on ISO TR 5469 Mark Zachos, DG Technologies; Heinz Seifert, TUV Rheinland of North America Inc.
8:30 a.m.	ORAL ONLY	LiDAR Performance Evaluation Standards: An Overview Amogh Sakpal, FKA GmbH
9:00 a.m.	2025-01-8094	Prognostic Techniques in Automated Driving System (ADS) Vehicle Safety Francesco Merola, Institute of Information Science and Tech; Athar Hanif, The Ohio State University; Giuseppe Lami, CNR - ISTI; Qadeer Ahmed, The Ohio State University; Mark Monohon, DG Technologies/ MJM & Associates

WCX SAE World Congress Experience

Technical Session Schedule

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Time	Paper No.	Title
9:30 a.m.	ORAL ONLY	Predictive Maintenance for Autonomous Vehicles: Beyond OBD for Enhanced Safety and Reliability Sneha Sudhir Shetiya, TORC Robotics Inc.
	ORAL ONLY	AI and Advanced Simulations for ADAS and ADS Prognostics Lakshmi Prasad Bhatta, Mahindra Automotive North America

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Thursday, April 10

Panel Discussion: Prognostics

Session Code AE114

Room 330 B Session 1:30 p.m.

Maintaining the safety of automated driving, ADAS/ADS vehicles require innovative prognostics to monitor for wear of the critical components. This panel is a discussion on prognostics to maintain the Safety and intended functionality of these features. By developing solutions for performance monitoring; and what needs to happen for the implementation of ADAS/ADS driven vehicles so that worn components are identified before they reach the end of their useful life.

Learn more about the Panel

Organizers - Mark Monohon, Mark Pope, DG Technologies

Chairperson - Mark Pope, DG Technologies

Moderators - Mark Monohon, DG Technologies

Panelists - Lakshmi Prasad Bhatta, Mahindra Automotive North America; Steven Holland; Sneha Sudhir Shetiya, TORC Robotics Inc;

Thursday, April 10

Accident Reconstruction: LiDAR Data Accuracy and Photogrammetry - Part 4 of 5

Session Code SS500

Room 353 Session 8:00 a.m.

Presentations studying ADAS systems in modern automobiles. New methods for analyzing pedestrian collisions, tire forces in low speed collisions and roll-over incidents. Simulating motorcycle motion in PC Crash

Organizers - Chris Armstrong, SAIC; Christopher Armstrong, Armstrong Forensic Reconstruction Corp.; Alan Asay, Asay Engineering LLC; Dean Beaumont, ARC Investigations; Jarrod Carter, Origin Forensics LLC; Edward Fatzinger, YA Engineering Services; David Plant, D P Plant & Associates; John Sprague; John Steiner, Mecanica Scientific Svcs Corp.; Craig Wilkinson, MEA Forensic Engineers & Scientists

Chairperson - Alan Asay, Asay Engineering LLC; Jarrod Carter, Origin Forensics LLC; Edward Fatzinger, YA Engineering Services

Time	Paper No.	Title

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:35 PM

Time	Paper No.	Title
8:00 a.m.	2025-01-8694	A Comparison of UAV LiDAR and Terrestrial Laser Scanner Accuracies Steven Foltz, 3D Data Pro; Toby Terpstra, JS Held LLC; Julia Clarson, 3D Data Pro
8:30 a.m.	2025-01-8692	Accuracy of Mobile Phone LiDAR on Crashed Vehicles Seth Higgins Miller, Michael Stogsdill, Seth McWhirter, JS Held LLC
9:00 a.m.	2025-01-8680	A Method for Lens Distortion Correction of Algorithmically Altered Images Kathleen Pittman, Eric Mockensturm, Taylor Buckman, Kirsten White, Talas Engineering
9:30 a.m.	2025-01-8700	Evaluation of Several Tesla Dashcam Angles for Model 3 and Y Via Reverse Project Photogrammetry Michael Jorgensen, Scott Swinford, Kevin Imada, Ali Farhat, Aperture LLC

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 10

Accident Reconstruction: Video Analysis - Part 5 of 5

Session Code SS500

Room 353 Session 1:30 p.m.

Presentations studying ADAS systems in modern automobiles. New methods for analyzing pedestrian collisions, tire forces in low speed collisions and roll-over incidents. Simulating motorcycle motion in PC Crash

Organizers - Chris Armstrong, SAIC; Christopher Armstrong, Armstrong Forensic Reconstruction Corp.; Alan Asay, Asay Engineering LLC; Dean Beaumont, ARC Investigations; Jarrod Carter, Origin Forensics LLC; Edward Fatzinger, YA Engineering Services; David Plant, D P Plant & Associates; John Sprague; John Steiner, Mecanica Scientific Svcs Corp.; Craig Wilkinson, MEA Forensic Engineers & Scientists

Chairperson - Chris Armstrong, SAIC; Dean Beaumont, ARC Investigations

Time	Paper No.	Title
1:30 p.m.	2025-01-8691	The Accuracy of Vehicle Speeds, Decelerations, and Brake Onset Times Calculated from Onboard Dash Cameras Thomas Flynn, Matthew Ahrens, Cole Young, Gunter P. Siegmund, MEA Forensic Engineers & Scientists
2:00 p.m.	2025-01-8697	The Effect of Tracker and Control Point Distributions on Vehicle Position and Speed Estimates from Dash Camera Video Cole Young, Matthew Ahrens, Thomas Flynn, Gunter P. Siegmund, MEA Forensic Engineers & Scientists
2:30 p.m.	2025-01-8688	Validation of SynthEyes for Use in Collision Reconstruction Nishan Perera, Harrison Griffiths, Greg Prentice, 30 Forensic Engineering

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Time	Paper No.	Title
3:00 p.m.	2025-01-8683	Solving Vehicle Speed and Acceleration from Video Evidence Using Optimization Sean Snyder, Michael Callahan, Christopher Wilhelm, Chris Johnk, Alvin Lowi, Gerald Bretting, Collision and Injury Dynamics Inc.
3:30 p.m.	2025-01-8690	Accuracy of Timestamps in Digital and Network Video Recorders Benjamin Molnar, Aperture LLC; Toby Terpstra, JS Held LLC; Tilo Voitel, Denver Metro Forensics, LLC
4:00 p.m.	2025-01-8682	Speed Determination Using Audio Analysis of Dash Camera Video from Passenger Vehicle Tires Frequencies for Vehicle Accident Reconstruction Henry V. Vega, JS Forensic Consulting, LLC; Long Justin Ngo, Js Forensic Consulting LLC; Ziad Hatab, JS Forensic Consulting, LLC; Anthony Cornetto, Momenta, LLC; Krystina Engleman, Eric Hunter, JS Forensic Consulting, LLC

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 10

Occupant Protection: Safety Test and Simulation Methods and Applications Part 1 of 2

Session Code SS508

Room 355 Session 8:00 a.m.

"This session reports the research work dealing with safety-related state-of-the-art experimental and computer modeling methods. The topics include evaluation of occupant safety and passive/active counter-measures development in various impact test modes; safety designs of new vehicle concepts/products (like Li-ion battery systems, EVs and self-driving cars); applications of advanced CAE and optimization techniques; characterization and utilization of novel light-weight materials."

Organizers - Clifford Chou, Wayne State Univ.; Anindya Deb, Indian Institute of Science; Binhui Jiang, Hunan University; P. Miller, MGA Research Corp.; Feng Zhu, Johns Hopkins University

Chairperson - Helen Kaleto, MGA Research Corporation; Robert McCoy, Ford Motor Company

Time	Paper No.	Title
8:00 a.m.	2025-01-8740	The Influence of Impact Location and Angle on the Dynamic Response of a Large Omnidirectional Child Dummy Head and Neck Complex Abhishikt Challa, Scott Noll, The Ohio State University
8:30 a.m.	2025-01-8732	The Influence of Reclined Seatback Angles on Occupant Injury Risks in Frontal Impacts Yanxin Wang, Tianjin University of Science and Technology; Ruyang Pan, Geely Automobile Research Institute; Yuyang Lin, Tianjin University of Science and Technology; Yutao Liu, Geely Automobile Research Institute; Lijuan He, Tianjin University of Science and Technology; Zhenqiang Wang, he zhu, Chong Liu, Kun Li, Geely Automobile Research Institute; Wenle Lv, Tianjin University of Science and Technology
9:00 a.m.	2025-01-8745	Numerical Modeling of a Sandwich Structure Integrated with Shear Thickening Fluid (STF) for Impact Energy Absorption Feng Zhu, Johns Hopkins University; Anindya Deb, Indian Institute of Science

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Time	Paper No.	Title
9:30 a.m.	2025-01-8733	A study on affections of Different Skull-brain Interface Modeling Approaches on Intracranial Responses in Finite Element Analysis
		Qiuyu Gan, Hunan University; Yejie jiang, Guang Zhou Automobile Group Co Ltd; Xu Junpeng, Hunan University; Runzhou Zhou, Liying Zhang, Wayne State University; Binhui Jiang, Hunan University
10:00 a.m.	2025-01-8746	Load Cell Data Analysis from Frontal NCAP Tests to Assess Aggressivity and Compatibility of Battery Electric and Internal Combustion Engine Vehicles
		Chung-Kyu Park, George Mason University

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 10

Occupant Protection: Safety Test and Simulation Methods and Applications - Part 2 of 2

Session Code SS508

Room 355 Session 1:30 p.m.

"This session reports the research work dealing with safety-related state-of-the-art experimental and computer modeling methods. The topics include evaluation of occupant safety and passive/active counter-measures development in various impact test modes; safety designs of new vehicle concepts/products (like Li-ion battery systems, EVs and self-driving cars); applications of advanced CAE and optimization techniques; characterization and utilization of novel light-weight materials."

Organizers - Clifford Chou, Wayne State Univ.; Anindya Deb, Indian Institute of Science; Binhui Jiang, Hunan University; P. Miller, MGA Research Corp.; Feng Zhu, Johns Hopkins University

Chairperson - Helen Kaleto, MGA Research Corporation; Robert McCoy, Ford Motor Company

Time	Paper No.	Title
1:30 p.m.	2025-01-8738	An Efficient CAE-Driven Weight Optimization Approach for an Existing Vehicle BIW
		Anindya Deb, Indian Institute of Science; Feng Zhu
2:00 p.m.	2025-01-8736	A Preliminary Study of Occupant Kinematics and Injuries in a Frontal Crash with Occupant Face-to-Face Scenario
		Chong Liu, Kun Li, Yutao Liu, Geely Automotive Research Institute; Xiaojiang Lv, Geely Automobile Research Institute; Yonghui Wang, Geely Automotive Research Institute; Dayong Zhou, Hunan University; Heping Yang, Geely Automobile Research Institute
2:30 p.m.	2025-01-8742	A Study on Affections of Active Neck Muscle Force on Neck Injury Responses in Frontal Impact with Automatic Emergency Braking Conditions
		Xu Junpeng, Qiuyu Gan, Binhui Jiang, Hunan University; Feng Zhu, Johns Hopkins University
3:00 p.m.	2025-01-8737	A Sled Test Methodology for 25% Offset Crash Tests
		Liu Yu, CAERI; Jianzhuo Chen, Chongqing University of Technology; Ming Xin Wan, Tiqiang Fan, Peilong Yang, CAERI; Zhenlong Nie, Lihai Ren, Chongqing University of Technology; James Chih Cheng, CAERI

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Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 10

Tire and Wheel Technology - Part 1 of 2

Session Code SS700

Room 357 Session 8:00 a.m.

The aim of this session is to provide a forum to bring together researchers do discuss and disseminate the research on tire and wheel technology. Examples of topics to this session include (but are not limited to) nonlinear behavior of tires and wheels, static/dynamic stress analysis, nonlinear material modeling, contact stress, impact, noise, vibration, traction, hydroplaning, effect of tires on vehicle performance, rolling resistance, and durability.

Organizers - Volker Hildebrand, Continental Tire North America Inc.; David Howland, Ben Lindemulder, General Motors LLC

Chairperson - David Howland, David Howland, Ben Lindemulder, General Motors LLC

Time	Paper No.	Title
8:00 a.m.	2025-01-8758	Modeling and Prediction of Truck Tire Temperature Using Advanced Computational Techniques Alfonse Ly, Ontario Tech University; William Collings, University of Ontario Institute of Technology; Zeinab El-Sayegh, Moustafa El-Gindy, Ontario Tech University; Inge Johansson, Fredrik Oijer, Volvo Group Trucks Technology
8:30 a.m.	2025-01-8756	Tire Thermal Model with State Observer Integration for Enhanced Real-Time Temperature Prediction Armando Longobardi, Sanjay Balaga, Mario Iabella, Goodyear Tire & Rubber Co.; Mohamed El Amine Gorine
9:00 a.m.	ORAL ONLY	A 3D Shell Tire Model with Numerical Approximation Dahan Xu, John Ferris, Corina Sandu, Virginia Tech
9:30 a.m.	2025-01-8757	Tire Wear Life Prediction Using Machine Learning Technique Takashi Ando, Honda Motor Co., Ltd.
10:00 a.m.	2025-01-8760	A Study of Tire Handling and Ride Performance Map According to Tire Tread Wear State Changsu Kim, Seungmin Kwon, Dae-Un Sung, Yonghyun Ryu, Hyundai Motor Group; Younghee Ko, Kumho Tire Co., Ltd.

Planned by Tire and Wheel Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 10

Tire and Wheel Technology - Part 2 of 2

Session Code SS700

Room 357 Session 1:30 p.m.

The aim of this session is to provide a forum to bring together researchers do discuss and disseminate the research on tire and wheel technology. Examples of topics to this session include (but are not limited to) nonlinear behavior of tires and wheels, static/dynamic stress analysis, nonlinear material modeling, contact stress, impact, noise, vibration, traction, hydroplaning, effect of tires on vehicle performance, rolling resistance, and durability.

Organizers - Volker Hildebrand, Continental Tire North America Inc.; David Howland, Ben Lindemulder, General Motors LLC

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Technical Session Schedule

As of March 20, 2025 19:40:35 PM

Chairperson - David Howland, Ben Lindemulder, General Motors LLC

Time	Paper No.	Title
1:30 p.m.	2025-01-8761	Tire–Road Friction Estimation and Classification Based on a CNN using Tire Acoustical Signals for Autonomous Driving Vehicles Youngsam Yoon, Hyungjoo Kim, Hyundai Motor Company; Sang Kwon Lee, Inha University; Jaekil Lee, Hyundai Motor Company; Sunguk Hwang, Nexen Tire Corporation; Sehwan Ku, Hyundai Motor Company
2:00 p.m.	2025-01-8759	Enhancing Tire Predictive Maintenance with Next-Generation TPMS Sensors Sparsh Sharma, Roman Son, Goodyear SA
2:30 p.m.	ORAL ONLY	Temperature-Dependent Analysis of the Tire-Road Interaction Characteristics for A Passenger Car Tire using Finite Element Analysis Haniyeh Fathi; Zeinab El-Sayegh; Jing Ren, Univ. of Ontario Institute of Technology
3:00 p.m.	ORAL ONLY	JPCM-2024-0024R2 Temperature-Dependent Analysis of the Tire-Road Interaction Characteristics for a Passenger Car Tire using Finite Element Analysis Haniyeh Fathi

Planned by Tire and Wheel Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 10

Vehicle Aerodynamics - Part 5 of 6

Session Code SS800

Room 358 Session 8:00 a.m.

The Vehicle Aerodynamics Technical Program will be Showcased across 5 parts, over 2.5 days. Presentations will cover a broad range, including: Fundamentals, Numerical Methods Application & Analysis, AI & Machine Learning, Experimental Technologies & Correlation, Product Development, Wheel & Tire Flows, Wind Tunnel Facilities, Unsteady Aerodynamics & Aeroacoustics, and Platooning & Vehicle Interactions.

Organizers - Jeffrey Bordner, JTiB Consulting; Edward Duell, Amentum; Chen Fu, Rivian Automotive LLC; Adrian Philip Gaylard, JAGUAR LANDROVER; Mark Gleason, Gleason Aero LLC; Arturo Guzman, Stellantis; Taeyoung Han, General Motors (retired); Jonathan Jilesen, Dassault Systemes; Timo Kuthada, Institut Fuer Kraftfahrwesen; Raymond Leto, TotalSim LLC; Todd Lounsberry, FCA US LLC; Nicholas Oettle, Jaguar Land Rover; Thomas Ramsay, Honda Development and Mfg of America LLC; Pratap Rao, Daimler; Pratap Thamanna Rao, Honda Development and Mfg of America LLC; Vishal Raul, General Motors; Frederick Ross, Siemens Corp.; Sivapalan Senthooran, Dassault Systemes; Mesbah Uddin, University of North Carolina Charlotte; H. Robert (Bob) Welge, Welge; Felix Wittmeier, FKFS; Kurt Zielinski, American Honda Motor Co. Inc.

Chairperson - Adrian Philip Gaylard, JAGUAR LANDROVER; Pratap Rao, Daimler

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Targeting Enhanced Numerical Stability, Solver Performance & Accuracy on Industrial Applications Shaham Hosseini, Tariq Khamlaj, Guillaume Pierrot, Punit Nayyar PhD, Jacques Papper, ICON Technology & Process Consulting

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:35 PM

Time	Paper No.	Title
8:30 a.m.	2025-01-8773	Numerical Investigation on Motorsport Overtake Manoeuvre in Crosswind Conditions Jai Makhija, Renan F. Soares, University of Southampton
9:00 a.m.	2025-01-8777	Simulating the DrivAer Notchback Car Model using Wall-Function LES Florian Menter, ANSYS Germany GmbH; Ashwini Dalvi, Ansys India; David Flad, ANSYS Germany GmbH; Patrick Sharkey, Ansys UK Ltd.
9:30 a.m.	2025-01-8765	Aerodynamic Simulation of a Parametrically Deformed Rotating Tire Alejandro Martinez Navarro, Guido Parenti, Dassault Systemes AB; Richard Shock, Dassault Systemes Americas Corp.
10:00 a.m.	ORAL ONLY	Transforming Automotive Aerodynamic Design: Integration of High-Fidelity CFD and Physics AI Varun Chitta, Peter Lyu, Luminary Cloud; Ian Pegler, Nvidia Corporation; Umachandran Muralidharan, Vasantha Jayasankaran, Scout Motors Inc

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures

Thursday, April 10

Vehicle Aerodynamics - Part 6 of 6

Session Code SS800

Room 358 Session 1:30 p.m.

The Vehicle Aerodynamics Technical Program will be Showcased across 5 parts, over 2.5 days. Presentations will cover a broad range, including: Fundamentals, Numerical Methods Application & Analysis, AI & Machine Learning, Experimental Technologies & Correlation, Product Development, Wheel & Tire Flows, Wind Tunnel Facilities, Unsteady Aerodynamics & Aeroacoustics, and Platooning & Vehicle Interactions.

Organizers - Jeffrey Bordner, JTiB Consulting; Edward Duell, Amentum; Chen Fu, Rivian Automotive LLC; Adrian Philip Gaylard, JAGUAR LANDROVER; Mark Gleason, Gleason Aero LLC; Arturo Guzman, Stellantis; Taeyoung Han, General Motors (retired); Jonathan Jilesen, Dassault Systemes; Timo Kuthada, Institut Fuer Kraftfahrwesen; Raymond Leto, TotalSim LLC; Todd Lounsberry, FCA US LLC; Nicholas Oettle, Jaguar Land Rover; Thomas Ramsay, Honda Development and Mfg of America LLC; Pratap Rao, Daimler; Pratap Thamanna Rao, Honda Development and Mfg of America LLC; Vishal Raul, General Motors; Frederick Ross, Siemens Corp.; Sivapalan Senthooran, Dassault Systemes; Mesbah Uddin, University of North Carolina Charlotte; H. Robert (Bob) Welge, Welge; Felix Wittmeier, FKFS; Kurt Zielinski, American Honda Motor Co. Inc.

Chairperson - Edward Duell, Amentum; Nicholas Oettle, JLR; Sivapalan Senthooran, Dassault Systemes

Time	Paper No.	Title
1:30 p.m.	2025-01-8778	Verification of the Impact of Coefficient of Drag Variation Due to Natural Wind on Fuel Consumption Based on Actual Driving Data Yasuyuki Onishi, Honda R&D Co., Ltd.; Larry Nichols, Honda Development and Manufacturing of America LLC; Matt Metka, Honda Dev. and Mfg. of Am.,LLC; Yasutaka masumitsu, Honda Racing Corporation; Taisuke Inoue, Honda Motor Co., Ltd.

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:35 PM

Time	Paper No.	Title
2:00 p.m.	2025-01-8780	Development of a Test Course Selection Method for Natural Wind Data Collection on US Public Roads Fortunato Nucera, Yasuyuki Onishi, Honda R&D Co., Ltd.; Matt Metka, Honda Development and Manufacturing of America LLC

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures

Thursday, April 10

Welcome and Fireside Chat with John Absmeier, CTO, Woven by Toyota

Session Code LS301

Room Exhibit Hall Session 10:30 a.m.

Accelerating Towards a World with Zero Accidents Chief Technology Officer John Absmeier sits down with Dr. Jacqueline El-Sayed, CEO of SAE International for an insightful discussion on accelerating progress toward a future with zero accidents. Woven by Toyota is a subsidiary of Toyota Motor Corporation tasked with transforming the top global automotive manufacturer into a human-centric, software-defined mobility company for the benefit of society. Absmeier and El-Sayed will explore the critical role of software and artificial intelligence in shaping the future of mobility, as well as the importance of infrastructure development and industry partnerships in achieving the ambitious vision.
https://www.woven-city.global/ Sponsored by

Learn more about the John Absmeier

Keynote Speakers John Absmeier, Woven By Toyota

Thursday, April 10

Analyst Insights on Future Propulsion Systems: Are Customers Ready for the Shift?

Session Code LS302

Room Exhibit Hall Session 11:15 a.m.

Outside Analysts review all the issues impacting the design, development, and deployment of propulsion and powertrain systems. They address the current state of consumer acceptance, regulations, and market viability. Customer acceptance is the key factor in the success of any propulsion or powertrain system. Consumers must be willing to accept the system and its associated costs and benefits. Regulations also play a significant role in the design and development of propulsion and powertrain systems. Regulations must be met in order for the system to be legally compliant. Through analyst examinations, you can gain better insights on design and systems that meets the needs of your customers, complies with regulations, and is viable in the marketplace.

Learn more about the Panel Participants

Moderators - Daniel Nicholson, GM-Retired

Panelists - Brandon Boyle, Roland Berger; Elizabeth Kargilis Krear, JD Power And Associates; Anjan Kumar, Frost & Sullivan; Sree Palle, FEV Consulting; Stephanie Valdez Streaty, Cox Automotive;

Thursday, April 10

OEM Insight on Future Propulsion Systems: How Do We Get It Right?

Session Code LS303

Room Exhibit Hall Session 1:00 p.m.

In this in-depth panel discussion, a distinguished group of Original Equipment Manufacturer (OEM) industry leaders will provide valuable insights into the current and future challenges shaping the propulsion and powertrain sectors. Focusing on the intersection of customer acceptance, market viability, and regulatory impact, the panelists will delve into the evolving landscape of automotive propulsion systems, including internal combustion engines (ICE), hybrid powertrains, and fully electric and hydrogen-powered solutions. By examining these crucial factors, the panel will provide a comprehensive understanding of how OEMs are navigating the complexities of the automotive market, ensuring that the designs and technologies of tomorrow meet both consumer demand and regulatory requirements.

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:35 PM

Learn more about the Panel Participants

Moderators - Hannah Lutz, Automotive News

Panelists - Mike Anderson, General Motors LLC; Michael Bly, Stellantis; Jordan Choby, Toyota Motor Corp.; Charles Poon, Ford Motor Co.; Christopher Reed, Nissan Motor Co., Ltd.;

Thursday, April 10

Learning Lab - Day 3

Session Code LL300

Room Hall D Session 9:30 a.m.

Time	Paper No.	Title
11:00 a.m.	ORAL ONLY	Imported Vehicles and Their Influence on Domestic Vehicle Design Leonard Kata, Chair, SAE Mobility History Committee
11:30 a.m.	ORAL ONLY	American Vehicles' Influence on Bob Elton, SAE Mobility History Committee

Thursday, April 10

Load Simulation and Vehicle Performance: Multi-body Dynamics (Written Only)

Session Code M209

Room TBD Session 11:55 p.m.

Multibody system modeling and simulation, rigid and flexible body modeling, loads predictions for vehicle body, frame/sub-frame, exhaust system, driveline, and powertrain, modeling of vehicle dynamics simulation and durability loads simulation, process considering vehicle dynamics and durability loads, data processing and analysis, loads sensitivity analyses for model parameters, design load minimization, prediction of loads effects, robust design methods, driver modeling, and system modeling.

Organizers - Yunkai Gao, Tongji University; Yunqing Zhang, Huazhong University of Science and Tech.; Hengjia Zhu

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Thursday, April 10

Driveline Modeling, Controls, Components and Subsystems - Written Only

Session Code PFL675

Room TBD Session 11:55 p.m.

This session features papers on:
- Transmission/driveline related noise, vibration, rattle issues
- Electrified transmission and driveline system controls
- Design solutions for conventional and hybrid/electrified applications
- Regenerative braking
- Algorithms design and control
- State estimation
- Mathematical modeling
- System integration controls

WCX SAE World Congress Experience

Technical Session Schedule

As of March 20, 2025 19:40:36 PM

Organizers - Gang Chen; Hussein Dourra, Magna International; Michael Fingerman, FCA US LLC; Joel Gunderson, Song He, Dongxu Li, Steve Moorman, Paul Otanez, Craig David Reynolds, General Motors LLC; Darrell Robinette, Michigan Technological Univ.; Zhe Xie, Stellantis NV; Bangalore Yashwanth, AAM

Chairperson - Paul Otanez, General Motors LLC

Planned by Electrified and Conventional Transmission and Driveline Com / Energy and Propulsion