

# Ground Vehicle Standards Newsletter

Volume I, Issue 2  
July 2010

**SAE International™**

Creating harmonized standards solutions. Moving the on- and off-road vehicle industry forward.

## New standard lays groundwork for communication between plug-in electric vehicles, utility grid

As plug-in electric vehicles become more common in garages and carports around the nation, the result will be an increased demand on local utility grids that supply the power to charge them.

Recognizing the need for a standard set of requirements addressing this issue, SAE International created the new standard, J2836/1—Use Cases for Communication between Plug-In Vehicles and the Utility Grid.

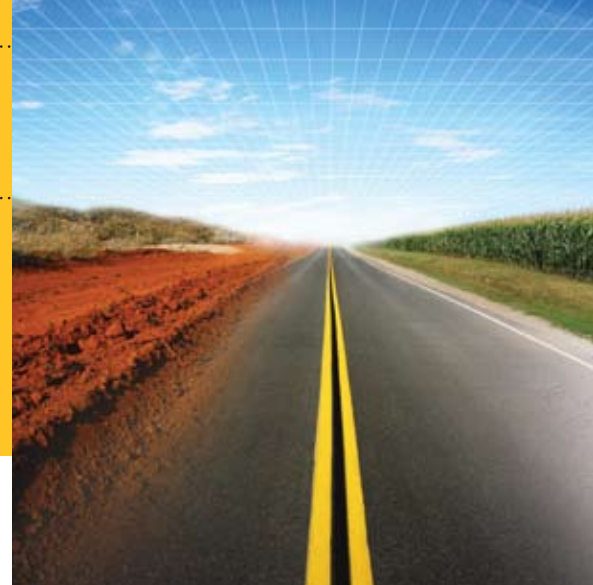


According to Ford's Rich Scholer, Chair of SAE International's Hybrid Task Force and sponsor of J2836/1, the new standard will help enable consumers to charge their vehicles at off-peak hours and help utilities better manage the grids during peak hours, thus minimizing cost and grid impacts.

The standard establishes use cases for two-way communication between plug-in electric vehicles and the electric power grid, for energy transfer and other applications. Also, it provides a set of communication requirements for use with various load management and rate programs that will be established by utility companies related to the charging of plug-in electric vehicles. The various utility programs will enable consumers to charge their vehicles at the lowest cost during off-peak hours, and help utilities reduce grid impacts by minimizing electric vehicle charging during peak periods.

**Rich Scholer, HEV E/E Systems Engineer, Ford Motor Co., is Chair of SAE International's Hybrid Task Force** and sponsor of the new standard. "The biggest challenge for utilities is managing the grid during peak times, a time when energy is the most expensive and demand is greatest. As we add more plug-in electric vehicles to the grid, we're increasing our need for on-peak power and infrastructure. This standard will help enable consumers to charge their vehicles at off-peak hours and help utilities better manage the grids during peak hours, thus minimizing cost and grid impacts," he said.

J2836/1 is the first in a series of five standards that are being developed by SAE International to address utility programs for plug-in electric vehicles. It was developed by **SAE's Hybrid Task Force**. For more information on the standard, visit [www.sae.org/technical/standards/J2836/1\\_201004](http://www.sae.org/technical/standards/J2836/1_201004).



### Issue Highlights:

SAE hosts green engineering and technology workshop ....	<b>C2</b>
Standard measures exhaust emissions and fuel economy of hybrid vehicles .....	<b>1</b>
Ambulance occupant safety standard issued .....	<b>2</b>
Wheel Conformance Program being developed by SAE .....	<b>3</b>
Vehicle electrification standards discussed at 35th ISO TC22 Plenary Meeting .....	<b>3</b>
SAE participates in fully networked car workshop in Geneva ..	<b>4</b>
New standard establishes first guidelines for fueling of gaseous hydrogen .....	<b>4</b>
Battery Standards Committee Task Forces plan three forthcoming standards .....	<b>5</b>
Vehicle Software Assessment Repository created .....	<b>6</b>
SAE participates at SAE Asia Congress; presents role in US smart grid strategy .....	<b>7</b>
KSAE, JSAE, and SAE hold joint session on EV standards ..	<b>10</b>
NFPA and SAE to hold national safety summit on the safe implementation of EVs .....	<b>11</b>
Cooperation between SAE and CATARC to eliminate duplication of vehicle electrification solutions .....	<b>14</b>
MOU with Taiwan research/testing focuses on vehicle electrification standards .....	<b>14</b>

World Headquarters, 400 Commonwealth Dr.,  
Warrendale, PA 15096 USA; 1-724-776-4841

Automotive Headquarters, 755 W. Big Beaver, Suite 1600,  
Troy, MI 48084 USA; 1-248-273-2455

[www.sae.org](http://www.sae.org)

## SAE hosts green engineering and technology workshop

Going green beyond fuel efficiency is quickly becoming a needed reality in the automotive industry. Recently, SAE International partnered with the State of Michigan Department of Natural Resources and Environment (MDNRE) and the Michigan Green Chemistry Roundtable to address these issues and make mobility engineering part of the solution to green technology.

Funded by a grant from MDNRE, SAE International hosted a workshop at its Automotive Headquarters in Troy, MI to examine the feasibility of creating a Center for Green Innovation and Technology Transfer for the automotive industry.



Attendees of the Green Engineering and Technology Transfer Workshop participate in discussion on greening the automotive industry.

The workshop included panelists and discussions centering on topics that could be the focus of a new “green” center, including materials and research and development; technology transfer and the supply chain; education, training and workforce needs; and principles, standards and regulatory trends.

“This workshop was an important first step as we collectively address the green engineering issues that affect not only the automotive industry in Michigan, but around the world,” **David L. Schutt, PhD, Chief Executive Officer, SAE International**, said. “SAE International is pleased to be partnering with MDNRE and the Michigan Green Chemistry Roundtable as we work toward the solutions that will benefit the entire automotive industry and society as a whole.”

The workshop attendees agreed that a center could be one means to achieve the goal of green innovation for the auto industry, but other approaches could be initiated, such as forming a virtual network that leverages individuals, existing resources, organizations, and/or centers.

Support from automotive Original Equipment Manufacturers (OEMs) and suppliers is the most critical element for any action in this arena, while language, terminology, definitions and environmental sustainability must be articulated for green, greener, green chemistry and engineering and what these mean for the auto industry.

All of the areas examined by the workshop were deemed important by the workshop attendees:

- Materials and Research and Development;
- Technology Transfer;
- Education, Re-training, and Workforce Needs; and
- Principles, Standards, and Regulatory Trends.

Standards, materials, and education were first priority, but there was also a wide diversity of other suggestions, indicating a broad need. However, there was also concern that standards and regulations might discourage potential innovation and solutions. Business development and job creation were also seen as important. To facilitate industry collaboration, a pre-competitive environment for research and technologies was recommended.

In response to the recommendations from the workshop attendees and with endorsement from the workshop Steering Committee, SAE has initiated the following actions over the next six months, using existing SAE infrastructure:

...continued on page 1

...continued from previous page

- An inventory and action plan for auto industry standards for environmental, sustainable, and green issues;
- Development of a strategy for greener and more sustainable auto vehicle materials; and
- Integrating green and sustainable concepts into professional development courses, with the goal of establishing a professional certification process.

The Steering Committee for the workshop recommended a mission statement for these initial SAE activities: "To become a network of green innovation for the global automotive stakeholders."

Finally, the Steering Committee recommended reassessment of the needs for green innovation in the auto sector after these initial activities. If these are successful and supported by the industry, it will be clearer whether a center or collaboration with existing organizations, or a virtual network, would be the most practical, effective, cost-efficient means to implement green innovation in the auto industry.

The full report from the Green Engineering and Technology Workshop is available at <http://www.sae.org/events/green/>

SAE is looking for experts to volunteer for the green standards development committees and the activities identified as a result of this workshop. If interested, call 1.248.273.2455.



John Warner of the Warner Babcock Institute speaks on applying principles of green chemistry to develop sustainable materials

## Standard measures exhaust emissions and fuel economy of hybrid vehicles

With the increase in both popularity and production of hybrid and plug-in electric hybrid vehicles (PHEV) worldwide, attention often turns to the exhaust emissions and fuel economy of such vehicles. A new revised standard from SAE International provides the procedures to accurately measure both of these readings.

J1711 – Recommended Practice for Measuring the Exhaust Emissions and Fuel Economy of Hybrid Electric Vehicles, including Plug-in Hybrid, was recently released by SAE International. The revised standard provides test procedures cognizant of the expanded design diversity of PHEVs. Also, it provides procedures to more consistently evaluate these vehicles under a wider range of evaluation cycles, and offers a technology neutral way allowing potential fuel savings of these vehicles to be evaluated in a realistic manner.

**Michael Duoba, an automotive engineer with the U.S. Department of Energy's Argonne National Laboratory and also chair of the SAE Hybrid J1711 Task Force**, which created the revised standard, said the new procedure helps to provide consistent information to the consumer. "Until now, the fuel economy claims for plug-in hybrids were not calculated according to similar procedures, making car-to-car comparisons virtually impossible. What makes this procedure – and other SAE-developed recommended practices – significant is that EPA typically considers them as the basis for the automotive regulations it promulgates. Ultimately, the consumer benefits with valuable vehicle information that can help guide a purchase decision."

For more information about the standard, visit [http://standards.sae.org/j1711\\_201006](http://standards.sae.org/j1711_201006).

## Ambulance occupant safety standard issued

A new SAE Recommended Practice issued by the **Truck Crashworthiness Committee** is expected to lead to improved occupant safety in ambulances. J2917—Occupant Restraint and Equipment Mounting Integrity – Frontal Impact System-Level Ambulance Patient Compartment, describes the test procedures, instrumentation, photographic and video coverage, and the test fixtures recommended for use when conducting frontal impact integrity tests for seating, litters, and equipment to be installed in an ambulance patient compartment.

The recommended practice is based on results from the crash testing of ambulances conducted by the National Institute for Occupational Safety and Health (NIOSH). NIOSH began ambulance crash testing research in 2002, when the institute partnered with other groups (both public and private) to conduct ambulance frontal crash tests. NIOSH received funding and in-kind support from the US Army Tank-Automotive and Armaments Command, Canadian Forces Medical Group, US Fire Administration, and the Ontario Ministry of Health and Long-Term Care on the public side and Allied Safety Systems, Inc. Ferno Inc., H. Koch and Sons, Inc., Pacific Scientific, and Schroth Safety Products on the private side.

Development of the recommended practice was completed through an industry-government partnership with the Ambulance Manufacturer's Division of the National Truck Equipment Association (AMD-NTEA) in 2009. The team also received input from the National Highway Traffic Safety Administration (NHTSA) and private entities representing test labs, and seat, gurney, and restraint manufacturers.

With an overarching goal of improving patient compartment occupant safety, the guidance provided in this recommended practice is now influencing the development of a series of industry-based safety standards led by the AMD-NTEA with support from NIOSH and NHTSA.

These new industry standards are expected to cover the specific design and testing requirements for seating, occupant restraints for EMS workers and patients, patient litters and restraints, and equipment mounts to improve their strength and performance.

"We realized in 2002 that we didn't have good published design criteria for the patient compartment," explains Jim Green, Safety Engineer at NIOSH, whose team's original research was instrumental in the development of J2917. "Working collaboratively with industry and government partners, a second team has now been assembled to write the component specific standards, utilizing the vehicle and patient compartment response data embodied in the recommended practice, in order to make patient compartments safer. Later this year, the team also hopes to bring language to the SAE Truck Crashworthiness Committee, for a second recommended practice which will quantify vehicle response in the side impact condition."

The 2007 SAE technical paper "Crash Testing of Ambulance Chassis Cab Vehicles," co-authored by Green, was among the data used as the basis for this recommended practice.

### Engineering Aids from SAE

SAE provides products that support testing procedures set forth in SAE standards, Recommended Practices, Information Reports, and other SAE documents including the **OSCAR H-Point Machine**, which is used in the design of seating and interior packages and in conjunction with SAE J 826 (rev. 1995), FMVSS regulations, and ISO standards—making it the required design and auditing tool for current production.

Also available is the newly designed **HPM II H-Point Machine**, which includes enhancements over the OSCAR H-Point machine for use in advance design applications.

Available at <http://store.sae.org/ea/>



## Vehicle electrification standards discussed at 35th ISO TC22 Plenary Meeting

The 35th International Organization for Standardization (ISO) TC22 Plenary meeting was hosted by the China Automotive Technology and Research Center (CATARC) in Beijing, China on June 8-10. TC22 Plenary meetings are held every 18 months and focus on reviewing current standardization work and plans for the future. Organizations representing the United States (SAE International), Japan (JSAE), Korea (KSAE), Germany (VDA), France (AFNOR/BNA), Italy (CUNA), Sweden (SIS), China (CATARC), Malaysia (MIRSR) attended the meeting.

The major focus of this meeting was on ISO vehicle electrification standards currently in progress and ISO organizational issues around this. While Road Vehicles standardization is the responsibility of ISO TC22 committees, the IEC (International Electrotechnical Commission) committees, whose scope of work includes electronics, have increased the number of specifications affecting road vehicles. A Memorandum of Understanding clarifying responsibilities of each of the two organizations was discussed and proposed. The proposal will be submitted to the ISO Technical Management Board for review and consideration.

### A look at SAE's involvement with ISO in developing global standards

SAE International plays a key role in bringing standards for and from the United States market to the global table through ISO (International Organization for Standardization).

SAE regularly works with United States Technical Advisory Groups (US TAG), which are accredited by ANSI (American National Standards Institute). A US TAG, which undertakes technical activities relating to the creation and advancement of international standards, reports to an ISO technical committee.

The US TAG Administrator oversees US TAG committees. Committees (as well as associated subcommittees and work groups) address technical issues in their various areas of expertise to arrive at a consensus, which becomes the official United States position on that international standard.

The US TAG Administrator acts as a liaison between all of the committees/groups and ANSI in order to relay the technical information to the international standards organizations. SAE International's Ground Vehicle Standards Group serves as the US TAG Administrator for 55 committees.

These committees cover not only road vehicles, but also aircraft and space vehicles, machinery for forestry, earth moving machinery, building construction machinery and equipment, and internal combustion engines.

In addition, SAE International holds the role of Secretariat for four ISO TC22 (Road Vehicle) committees: Impact Test Procedures (SC10); Glazing (SC11); Passive Safety Crash Protection Systems (SC12); and Wheels (SC19). In this role, SAE is responsible for monitoring, reporting, and ensuring active progress of the work, and ensuring the provision of technical and administrative services to those technical committees.

## Wheel Conformance Program being developed by SAE

In response to an industry request, SAE International is developing a wheel conformance program, with the purpose of assuring consumers that wheel manufacturers are following and meeting the performance criteria set by SAE standards.

SAE J-2530 (Aftermarket Wheels – Passenger Cars and Light Trucks Performance Requirements and Test Procedures), developed and issued by the **SAE Wheel Standards Technical Committee**, will form the basis for the testing and performance criteria.

The program will encompass three main areas: the identification and registration of wheel manufacturers and their required markings on the wheels they produce; the verification of acceptable testing results; and the accreditation of testing facilities.

This program is expected to begin within the next few months, with the first phase being the registration of manufacturers. Detailed procedures are currently being developed by the Wheel Standards Technical Committee and SAE staff. SAE's administration of this program will include the establishment of a web site and database to accept submittals, verify claims, and post verified results.

## SAE participates in fully networked car workshop in Geneva

The Fully Networked Car, 2010 workshop, organized by the International Telecommunication Union (ITU), the International Organization for Standardization (ISO), and the International Electrotechnical Commission (IEC), took place in Switzerland's PALEXPO, during the Geneva International Motor Show (March 3-4).

The event was held during the second press day and the first public day of the motor show, and was an opportunity for experts and executives to share their vision and strategies with particular focus on the latest developments in technology and network requirements for electric vehicles.

For the first time, SAE International was invited to provide its perspective on standardization. **SAE International Chief Executive Officer David L. Schutt** reviewed the latest SAE standards work in the area of vehicle-to-vehicle (V2V) and vehicle-to-grid (V2G) during the Executive Roundtable on March 3. The presentation included an overview of the first-in-the-world standard on connecting plug-in hybrid-electric vehicles with the electrical grid (SAE J1772), communication protocols standards between vehicle and the grid (currently in development), and SAE J1835—Dedicated Short Range Communications (DSRC) Message Set Dictionary. The roundtable session was attended by industry executives from Europe, Asia, and Japan.

**Jack Pokrzywa, Manager of the SAE Ground Vehicle Standards business unit**, facilitated Session 7, "Wireless Systems and Technologies I" with technical experts from the U.S., Italy, U.K., and Australia reviewing their latest research activities.

## New standard establishes first guidelines for fueling of gaseous hydrogen

The implementation of hydrogen vehicles into the market necessitates having a universal fueling protocol for every vehicle. The goal is to achieve "customer acceptable" fueling, which means a full tank of hydrogen within a reasonable amount of time without exceeding the temperature, pressure, and density (state of charge) limits. However, fueling performance may be limited by the pre-cooling capacity of the station dispenser.

In March 2010, SAE Technical Information Report J2601—Fueling Protocols for Light Duty Gaseous Hydrogen Surface Vehicles, was issued by the **SAE Fuel Cell Standards Committee** establishing the first industry-wide protocol for the fueling of gaseous hydrogen into on-road passenger vehicles operating with nominal working pressures of 35 and 70 MPa (5075 and 10,150 psi). Fueling stations are to employ fueling algorithms and equipment to conduct the fueling process within these guidelines. Vehicles filled at stations using these protocols should be designed appropriately for fueling according to these guidelines.

The document establishes safety limits and performance requirements for gaseous hydrogen fuel dispensers.

The criteria include maximum fuel temperature at the dispenser nozzle, maximum fuel flow rate, maximum rate of pressure increase, and other performance criteria based on the cooling capability of the station's dispenser.

SAE J2601 establishes the first guideline worldwide for fuel-cell vehicle demonstration projects for fueling with hydrogen. This document was requested by the U.S. Department of Energy, U.S. Department of Transportation, California Air Resources Board, and the U.S. Environmental Protection Agency.



In January 2010, Honda began operating its next-generation solar hydrogen station prototype at Honda R&D Americas Inc. in Los Angeles, CA. The system is ultimately intended for use as a home-refueling appliance capable of an overnight refill of fuel-cell electric vehicles.

## Battery Standards Committee Task Forces plan three forthcoming standards

**The Vehicle Battery Standards Committee**, formed last November, now has ten active task force groups working on the development or revision of battery performance and safety standards.

The ten task forces are: Testing; Safety; Electronic Fuel Gauge for EVs; Labeling; State of Shipping; State of Charge; Standardization; Starter Battery; Truck and Bus Battery; and Advanced Battery Concepts. Each task force has been meeting twice a month.

In addition to working on revisions of existing battery standards, three task forces have new standards in development.

**The Battery Safety Task Force** is working on J2929—Electric and Hybrid Vehicle Propulsion Battery System Safety Standard. This standard will define a minimum set of acceptable safety performance criteria for a battery system to be considered for use in a vehicle propulsion application. The task force hopes to have this standard available by the end of the year.

**The Battery Labeling Task Force** is developing J2936—Vehicle Battery Labeling Guidelines, a recommended practice which will provide labeling guidelines for any electrical storage device at all levels of sub-component, component, subsystem, and system level architectures. The standard will describe content, placement, and durability requirements of labels.

**The Battery State of Charge Task Force** is developing J2946—Battery Electronic Fuel Gauging Recommended Practices. Because the range, fuel economy and other critical calculated performance criteria rely on fuel gauge details, the development of a clearly defined fuel gauge performance requirement will improve vehicle safety and customer satisfaction. The document will detail the accuracies, error conditions, and other reporting and diagnostic requirements responsible for delivering an accurate assessment of the amount of available electromechanical fuel.

Anyone interested in participating in the Battery Standards Committee or its task forces can contact Pat Ebejer at [pebejer@sae.org](mailto:pebejer@sae.org)

**SAE** International™

### For On- and Off-Road Harmonized Standards Solutions, All Roads Lead to SAE

Since 1905, SAE International has been providing the common engineering requirements for new mobility products, advanced technologies, and applications. It is uniquely positioned to provide innovative standards solutions to the global on- and off-road industries and their engineering challenges.

For automotive vehicles, SAE plays the central role in developing essential North American emissions and safety standards to meet some of the most stringent regulations in the world. Through ISO, it plays a key role in bringing standards for and from the United States market to the global table. As the center of expertise on Commercial Vehicle/ConAgg standards development, many of its standards are adopted by ANSI and ISO.

SAE offers a full suite of standards capabilities—committee management, consensus-based standards development, consortium administration, cooperative research, and database development—providing industry, companies, and individuals with extensive opportunities to participate, influence, grow, and prosper.

[www.sae.org](http://www.sae.org)

071608

## Vehicle Software Assessment Repository created

With a goal of improving automotive software development capabilities and promoting more effective software process improvement activities and assessments, SAE International created the J2746—Software Assessment Repository.

The repository is a secure online database system that facilitates accurate and secure sharing of corporations' software development capabilities. The repository does not mandate the use of one assessment method over another. Instead, it reports the salient results from industry-accepted assessment methods, such as Automotive SPICE, CMMI, and provides guidelines for understanding in a uniform manner.



Photo courtesy of General Motors

SAE International recently created the J274—Software Assessment Repository, a secure online database system that facilitates accurate and secure sharing of corporations' software development capabilities.

**Peter S. Abowd, President of Worldwide Automotive for Altia and Chairman of the J2746 Software Assessment Repository Committee** stated, "This is an important step both in terms of improving the quality and reliability of automotive embedded software and reducing developmental costs. This new repository promotes higher fidelity and more responsible disclosure of software development capability in a secure and easy-to-use format."

The fee for an organization to enter an assessment is \$500. For a limited time, SAE is offering a fee reduction of 25%. There is no fee to view information on the site. Assessed organizations can control who views their information.

The repository can be accessed via <http://sae.org/servlets/j2746/>

## SAE invited to speak at EV battery event

SAE International has accepted an invitation to send a representative to speak during an opening session of the EV Battery Tech USA conference. The two-day event, featuring a program entitled "Global Cost-Reduction Initiative," is scheduled for September 21-22 in Troy, MI.



**Robert L. Galyen, General Manager, Magna E-Car Battery and Materials Testing Group, Magna International, Inc. and chair of the SAE Battery Committee** is scheduled to represent SAE. He will address battery standards from the US perspective as well as present the current work of the battery committee, which focuses on testing, safety, safety, electronic fuel gauge for EV's, labeling, state of shipping, starter battery, truck and bus battery, and advanced battery concepts.

For more presentation times, visit [www.ev-battery-tech.com](http://www.ev-battery-tech.com)



## SAE participates at SAE Asia Congress; presents role in US smart grid strategy

SAE Asia Congress 2010 conference, "Driving for Greener Lives," was organized by the SAE International Hong Kong Section in Shanghai 10-11 June, 2010 with its focus on the newest developments in electric vehicle technology.



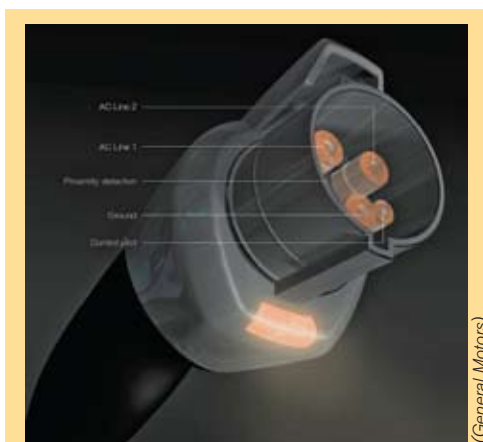
**Dr. David L. Schutt, SAE Chief Executive Officer**, (center) made a presentation of the US Smart Grid national strategy and reviewed SAE's related leading standardization efforts at the "Driving for Greener Lives" conference held at SAE Asia Congress 2010.

More than 400 of Asia's leading engineers, designers, buyers, and owners from the automotive industry attended and shared insights into the latest technology and key issues surrounding EV development. Guest speakers participating in more than 15 sessions and covering major issues in support of key automotive industry developments in China included experts from such organizations as GM, Nissan, Lotus, BYD, Chery, Haima Auto R&D, TUV SUD, CSR Zhuzhou, Zhong Xing Auto, DTE Energy, and the Beijing Institute of Technology.

**Dr. David L. Schutt, SAE Chief Executive Officer**, presented "SAE International's Role in the US Roadmap to Smart Grid Interoperability" in which he provided a glimpse of the US Smart Grid national strategy and reviewed SAE's related leading standardization efforts. This is especially relevant since SAE has been assigned by the National Institute of Standards and Technology (NIST) to be the lead standards development organization for automotive and Smart Grid interoperability in the US.

SAE will continue to engage engineers in Asia in vehicle electrification issues at its September 1-3, SAE International Vehicle Battery Summit at the Shanghai. Focused on large-format lithium-ion battery technology and chaired by the world's foremost battery expert, Dr. Menahem Anderman, President of Advanced Automotive Batteries USA, the summit will cover advances occurring worldwide, including developments in Europe, North America and Asia, but in particular in China where all of the world's major battery players have either established or maintain joint ventures and operations for research, design, or manufacturing activities.

Establishing and harmonizing battery and related industry standards will be one of the key topics of discussion as the worldwide battery community attempts to determine the appropriate balance between standardization and innovation. For additional information visit [www.sae.org/events/battery](http://www.sae.org/events/battery)



(General Motors)

### SAE and the Smart Grid

Learn about SAE's involvement in the smart grid, the Society's standards that support vehicle electrification, and view primers on the grid and charging vehicles at [www.sae.org/smartgrid](http://www.sae.org/smartgrid)

## Upcoming Standards Technical Committee Meetings

### Upcoming Standards Technical Committee Meetings

A current schedule can be found on the SAE website.

<http://www.sae.org/standards/>



### SAE Technical Standards Committee Meetings to meet October 4-6

at **SAE 2010 Commercial Vehicle Engineering Congress**, Donald E. Stephens Convention Center, Rosemont, Illinois, USA. Check online schedule for committees and meeting times, plus the following SAE standards activities will take place at the event:

**SAE Standards Information Session**, Wednesday, October 6, 2010, 7:00 - 8:30.a.m.

The SAE Construction, Agricultural and Off-Road Machinery Council and the SAE Truck and Bus Council will present the latest projects being discussed by their technical standards committees. Gain insight into technological details and industry implications for you and your organization. Session time includes audience participation and questions. The Technical Standards Board Outstanding Achievement Award, which recognizes individuals for outstanding service in the technical committee activities of the Society, will be presented at this session.

### Standards Hot Spot Lounge

*SAE Technical Committee members—and prospective committee participants—are invited to visit the Standards Lounge* for refreshments, networking, and access to the internet, SAE materials and SAE staff support. Enjoy a break from your day, meet informally with the professionals who create standards for our industry, and learn more about how you can play a role in standards development. The Standards Hot Spot Lounge is open during all event hours.

### An economical pathway for joint venture research: the Cooperative Research Program of SAE

Cooperative research ventures serve to bring more minds to the challenges and issues faced by industry. The result is a more robust project than each participating organization could complete independently. The pooling of financial resources also affords each participant more efficient use of their research budgets and eliminates duplication of efforts. Whether moving forward on the development of fuel cell standards...researching alternative refrigerants to HFC 134a...or developing a database of human body measurements to foster ergonomic designs, SAE's Cooperative Research Program can assist your company in its collaborative research needs.

To learn more contact Gary Pollak, Program Manager +1-724-772-7196; [gary@sae.org](mailto:gary@sae.org)



## Volunteer spotlight: SAE Awards

### Technical Standards Board Outstanding Contribution Award

This award recognizes individuals for outstanding service in the technical committee activities of the Society. This includes valuable contributions to the work of SAE technical committees, unusual leadership in the activities of an SAE technical committee, significant contributions as a representative of the Society to the accomplishments of technical committees of other organizations or of government agencies, and outstanding contributions to SAE technical committee work in the form of research, test methods and procedures, and/or development of standards. It is administered by the SAE Technical Standards Board.

#### Motor Vehicle Council 2010 Recipients

**Poul Andersen**, Poul Andersen Consulting

**Kenneth Boy**, Ford Motor Co.

**Sue Callihan**, General Motors (retired)

**Paul Depinet**, Denton ATD Inc.

**Christian Fernholz**, Ford Motor Co.

**Jay Joseph**, American Honda Motor Co. Inc.

**Gery Kissel**, General Motors

**Robert Krouse**, General Motors

**James Lawlis**, Ford Motor Co.

**Jerome Pfeifer**, Honeywell Int'l (retired)

**Richard Scholer**, Ford Motor Co.

**Bart Terburg**, Osram Sylvania

**Joel Walter**, Jacobs

**Mark Zachos**, DG Technologies

#### Specialized Vehicle & Equipment Council 2010 Recipient

**John Lenkeit**, Dynamic Research Inc.

#### Materials, Process & Parts Council 2010 Recipients

**Fred Barwick**, ATL Inc.

**Scott Burr**, Dow Automotive

**Jackie Rehkopf**, Exponent Inc.

**Jack Champaigne**, Electronics Inc.

**Randy Dickerman**, Chrysler Group LLC

**Luis Moreiras**, Consultant

**Sandy Niks**, SLFN2 Consulting

### 2010 class of SAE Fellows announced

Twenty-four engineers and scientists from industry and academia now have the prestigious SAE International status of "SAE Fellow." Each received the award during the SAE 2010 World Congress Awards Ceremony in April.

SAE Fellowship status is the highest grade of membership bestowed by SAE International. It recognizes outstanding engineering and scientific accomplishments by an individual that have resulted in meaningful advances in automotive, aerospace and commercial-vehicle technology. The program, established in 1975, recognizes an average of 20 worldwide recipients for this honor each year. This year, four of them served on various SAE/ISO standards committees. They are:

**Mark H. Costin**, Senior System Safety Engineer, Functional Safety, GM Global Vehicle Systems & Integration (*ISO TC22 SC3 WG16 US--Functional Safety; Vehicle Architecture For Data Communications Standards; and SENT Task Force*)

**Manuch Nikanjam**, Consulting Engineer, Chevron Fuels Technology Team (*ISO TC22 SC7 WG6--Diesel Fuel Lubricity and Fuels and Lubricants TC 7 Fuels*)

*Michael G. Pecht*, Director, Center for Advanced Life Cycle Engineering, University of Maryland Ground (*Vehicle Reliability Committee*)

**Matthew Reed**, Research Associate Professor, Biosciences Group, University of Michigan Transportation Research Institute and Center for Ergonomics in Industrial and Operations Engineering (*ISO TC22 SC13 USAG--Ergonomics Applicable to Road Vehicles; ISO TC22 SC13 WG7 USAG--Hand Reach and R and H Point; ISO TC22 SC17 USAG--Visibility; ISO TC22 SC6 USAG--Dimensions and Masses; Truck and Bus Human Factors Committee; Driver Vision Standards Committee; Human Accommodations and Design Devices Committee; Dummy Testing and Equipment Committee; and Dummy Abdomen-Pelvis Round Robin (DAPRR) Task Force*)

## SAE International to be at Electronica 2010

SAE International will have an exhibit booth this fall at Electronica International Trade Fair, which presents the complex world of electronics comprehensively and in all of its facets. This every-other year global event, scheduled for November 9-12 in Munich, Germany, attracts some 3,000 attendees. SAE Standards staff representatives will be available to discuss our standards, the development program, as well as activities that address vehicle electrification standardization such as SAE's new battery committees and the new J2836/1 standard—the first in a series of being developed for plug-in utility programs



24th International Trade Fair  
New Munich Trade Fair  
09-12 November 2010

The Society's full suite of products and services—events, engineering education, access to the global ground vehicle market, and membership—will also be showcased.

Also, as a sponsor of Electronica's "Automotive Forum," SAE will be a presenter during the program. Check the website (<http://www.electronica.de/en/home/congress-events/forums#23457539>) for times and topics as they become finalized.

Visit SAE representatives in Hall A6, Stand A13 located in the automotive exhibition area to learn what role you or your company can play in addressing SAE's new standards initiatives or how you can be involved in the hundreds of SAE standards development committees that write the common engineering requirements for the advancement of the ground vehicle industry.

## KSAE, JSAE, and SAE hold joint session on EV standards

Representatives of SAE International, the Korean Society of Automotive Engineers (KSAE), the Society of Automotive Engineers of Japan (JSAE), and the Korean Agency for Technology and Standards (KATS) met May 7 at the KSAE Spring Conference in Busan, Korea, during the 2010 International Motor Show, held at the adjacent BEXCO exhibit hall.

The meeting focused on recently signed memoranda of understanding among the three organizations and plans for future cooperation on standards of similar priority. Current standardization priorities were shared among the meeting members indicating that current interest are shared by the Korean, Japanese, and U.S. automotive industries with highest priority on vehicle electrification, vehicle connectivity, and vehicle electronics standardization.

JSAE outlined standardization policies and activities toward vehicle electrification and proposed closer cooperation and relationship among the standards development organizations from the PASC (Pacific Area Standards Congress) region. SAE International was invited and presented updates on standards related to vehicle electrification. KATS provided an overview of the Korean standardization programs.

Attendees included Hiro Ishimaru, JSAE, Vice Secretary General; Eun-Tae Kim, KSAE, General Secretary; Prof. Tae-Oh Tak Ph.D., KSAE; and **Jack Pokrzywa, Manager, SAE Ground Vehicle Standards**.



SAE and various standards organizations meet at the 2010 International Motor Show and discuss plans for future cooperation on standards of similar priority at a joint session on electric-vehicle standards.

## NFPA and SAE to hold national safety summit on the safe implementation of EVs

The National Fire Protection Association (NFPA) and the SAE International will be co-sponsoring the U.S. National Electric Vehicles Safety Standards Summit on October 19-20, 2010, at the Cobo Convention Center in Detroit, MI.

The purpose of the summit is to support the rapid implementation of electrical and hybrid-electric vehicles in the United States, and to ensure that fire and electrical safety standards impacting electrical vehicles are aligned for the rapid deployment. Key stakeholder groups will develop an action plan for the safe implementation of electrical vehicles.

“Preparing for the growing number of hybrid-electric and electric vehicles arriving on U.S. roads in the next few years requires an understanding of how fire and electrical safety standards apply to them and how they may need to be adapted to support specific needs of the auto industry, while ensuring that safety is addressed,” Christian Dubay, P.E., NFPA vice president codes and standards and chief engineer. “The knowledge shared at this summit will guide the future of codes and standards for electric vehicles and their supporting infrastructure.”

“Introducing Plug-in Hybrid Electric Vehicles (PHEVs) and Battery Electric Vehicles (BEVs) within an established infrastructure requires a prudent deployment of standards and strategies by all stakeholders,” said **Dave Baxter, SAE Motor Vehicle Council Chair**. “SAE is pleased to collaborate with NFPA in hosting a summit that brings together key stakeholders to identify the necessary standards development activities and associated deployment strategies.”

Registration information will be released at a later date.



The U.S. National Electric Vehicles Safety Standards Summit is intended to support the rapid implementation of hybrid-electric and electrified vehicles in the U.S., such as the Nissan Leaf shown here, and to ensure that fire and electrical safety standards impacting electrical vehicles are aligned for the rapid deployment.

### SAE: A Global Partner in Standards Development

In addition to the maintenance and development of its family of technical standards, SAE International is also an active partner with other standards development organizations, government agencies, and regulatory bodies to support the newest, most robust, and comprehensive standards products for a changing global marketplace.

- US Department of Transportation
- Society of Automotive Engineers of Japan (JSAE)
- German Electrical and Electronic Manufacturers Association (ZVEI)
- US Federal Highway Administration
- China Automotive Technology & Research Center (CATARC)
- National Highway Traffic Safety Administration
- Korean Agency for Technology and Standards (KATS)
- US Department of Energy
- Japan Automobile Research Institute (JARI)
- US Environmental Protection Agency
- Brazilian National Standards Organization (ABNT)
- American National Standards Institute (ANSI)
- Automotive Electronics Council (AEC)
- International Organization for Standardization (ISO); US representative



## Transforming SAE International Membership

For more than a century, engineers in the aerospace, automobile, and commercial vehicle industries have enjoyed and benefited from the prestige and value of membership in SAE International.

Industry pioneers like Orville Wright and Glenn Curtiss were SAE members, as are current-day leaders including William Clay Ford Jr. and thousands of engineers across the global mobility universe.

Each of these professionals found value from the traditional SAE membership—a membership that offered access to relevant technical information and excellent local networking opportunities, like Section meetings.

For decades, this traditional model fully met the needs of millions of mobility engineers. However, in today's global engineering environment, with its increased demands on time and unfettered access to vast amounts of technical information, the longstanding value derived through SAE membership is changing.

These major trends are not lost on **Scott Klavon, Director of Membership and Professional Services for SAE International.**

"As an engineer, a former U.S. Navy officer, and a former maintenance engineer on U.S. Marine Corps helicopters, I realized that my needs and expectations of a professional society membership are changing over time, both in response to the new demands that are being placed on me as well as the different phases of my own career path," Klavon said. He further noted there is an ever-accelerating gap between the traditional membership model and the needs of today's mobility engineers.

It became clear to SAE that the modest changes we've periodically introduced in the past would not suffice to meet the sophisticated, value-oriented, and globally savvy engineering community of today and tomorrow. The economic upheaval of the global crisis of 2008-09 and its concomitant impact on the mobility industry became a clarion call for SAE International to take a fresh look at membership and contemporize its value proposition for today's engineering environment.

As with any re-engineering project, Klavon and his team of SAE staff insisted that customer requirements drive the process. Based on input from members from around the world as well as analysis of the programs, products, and services most valued by engineers, the Membership Services and Sections Board and SAE's membership team set out to design a membership model that is completely in sync with today's professionals.

As the new model began to take shape, best practices from professional societies, as well as loyalty programs (e.g., frequent traveler and preferred customer programs) commonly used throughout the commercial world, infused SAE's thinking.

The new model that emerged is unlike anything seen in traditional professional societies. As an SAE member, you can now choose the membership package that best meets your needs. Often referred to as a "tiered model," you can select from Student, Classic, Premium, and Elite membership packages.

The benefits offer customized value regardless of what stage of your career you are in. Students can attend SAE events for free and can access SAE's new student-oriented magazine, *Momentum*. Young professionals can enjoy discounts on the latest and most relevant technical information available. And, seasoned professionals can find the professional development courses to keep their skills current and cutting-edge.

All members enjoy discounts on technical literature and subscription to at least one of SAE's technical magazines.

Klavon is relentless on ensuring SAE members receive maximum value for their dues dollars.

"Continually adding value for members is a prime objective for SAE. The success of our organization depends on it," he said. "Adding value is something that always will be done, whether it's through

...continued



**The World is Changing**  
And SAE International membership has changed to help you keep pace with it.  
[saeignite.sae.org](http://saeignite.sae.org)

P100503 **SAE International**

*“Transforming SAE International Membership” continued from previous page*

small changes or, as is the case now, large transformations to the core of the organization’s existence—membership.”

Launched in April 2010, SAE’s membership model will have more enhancements and features added throughout the year to provide even greater value to members.

These include a new, members-only website called EngineerXchange. The site will allow SAE members to easily communicate with members around the world; post messages on their profile pages; join online groups; submit content and suggestions for future content to SAE; view and comment on industry and engineering information; and participate in blogs, surveys, and polls.

Also, a new members-rewards program is being developed to further maximize the benefits enjoyed by the most engaged SAE members.

Separate from the membership model but nonetheless important for engineering professionals is a new Virtual Career Fair from SAE that offers unemployed members, as well as members looking for a career change, the opportunity to review openings, all through the ease and anonymity of online service.

Again, the common thread among all of the changes in SAE’s membership structure is value for mobility-engineering professionals.

“We recognize that our members make difficult choices every day in their professional lives,” Klavon said. “We built this new model with that in mind. We offer choices and benefits that make sense to today’s engineering professional.”

**As a volunteer on an SAE Standards Committee you know first-hand the value that SAE brings to the mobility industry through its renowned consensus based standards program.**

And now, SAE’s re-engineered Membership Program brings more value to its members as it allows members to decide which level of membership is right for them. Use the exclusive **“Membership e-Valuator”** found [www.saeignite.sae.org](http://www.saeignite.sae.org) to do so.

New member benefits that would be of particular interest to Standards Committee Volunteers include these already available or soon-to-be-introduced benefits:

- Easy access to SAE technical standards in progress
- Members only advance notice of new technical papers prior to SAE conferences
- Unlimited, online access to the new “EngineerXchange,” a members-only resource for technical information, networking opportunities, career management, and more

***It’s never too early or too late to begin your SAE member journey.***

[www.sae.org](http://www.sae.org)

## ***re-engineered*** **for mobility engineers worldwide**

SAE International’s website is the gateway to the world’s largest collection of technical resources for those involved in designing and developing automotive, aerospace, and commercial vehicles and their systems.

Redesigned to better address the various industry channels and the expanding number of engineers from around the world it serves, it is now easier and faster to navigate the 105-year-old society’s vast library of technical information.

The revamped site features:

- A new, user-friendly home page and improved navigation through industry-specific channels
- Enhanced search with content from SAE’s various engineering magazines
- Improved delivery of its publication products
- Customization capabilities that deliver the content you want most
- Industry news and application stories unique to the website
- Integration with major social media platforms

**View at [www.sae.org](http://www.sae.org) June 2010**  
*Engineered for an improved user experience.*



**SAE International**

P100572

## Cooperation between SAE and CATARC to eliminate duplication of vehicle electrification solutions

On June 11, SAE International and the China Automotive Technology and Research Center (CATARC) management met in the SAE Shanghai office to discuss current issues and the future approach to cooperation.



Among topics discussed were efforts in vehicle electrification standardization at SAE and CATARC. SAE International committees are developing several critical standards applied to vehicle electrification, among them a new version of V2G (DC) connector, related communication protocols,

battery safety, and many others. The global nature of automotive business requires that technical solutions in vehicle electrification are shared and harmonized to avoid unnecessary duplication resulting in increased cost. The meeting in Shanghai resulted in agreement to enable such harmonization through more deliberate and intentional communication including observer status on each other's committees and regular reporting.

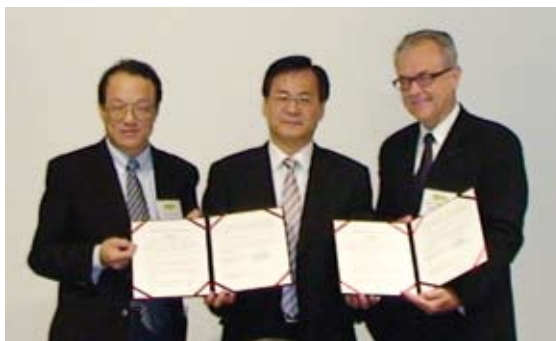
A new standardization effort connecting Pacific Rim countries, organized under the umbrella of Pacific Area Standards Congress (PASC), was discussed as a way to accommodate with other Asian countries technical positions within the international standardization process. The United States and China were invited to participate.

## MOU with Taiwan research/testing focuses on vehicle electrification standards

SAE International and the Automotive Research & Testing Center (ARTC) in Taiwan held a meeting to discuss cooperation between the two organizations in the area of vehicle electrification standards.

ARTC was established in 1990 by the Ministry of Economic Affairs together with the Ministry of Transportation and Communication, the Environmental Protection Administration and representatives of the enterprises based on the Automotive Industry Development Policy. Its mission includes vehicle research and testing, technical consultancy to the industry, industrial policy/management, and global certification services. It has well established R&D activities in the areas of intelligent vehicles, safety, green energy, innovative vehicle technology, chassis, and lighting.

The cooperation between SAE International and ARTC will be based on Memorandum of Understanding (MOU) signed on June 21, 2010 during the Taiwan Automotive International Forum and Exhibition in Novi, MI. It will include participation in SAE standards committees, exchange of results from standards validation activities in vehicle electrification, sharing of lessons learned from EV demonstration projects, and the development of standards conferences and training courses.



Present at the MOU signing ceremony involving vehicle electrification standards cooperation were (from left to right) Joe Lung-Chou Huang, President, ARTC; Jung-Chiou Hwang, Ph.D., Vice Minister, Taiwan Ministry of Economic Affairs; and **Jack Pokrzywa, Manager, SAE Ground Vehicle Standards.**



## Call for volunteers

Experts in the following areas are sought for committee participation:

### **Biodiesel**

Two new task force groups working under the **Fuels Technical Committee (TC7)** have recently been established. The first group will work on a technical report on biodiesel fuels and blends. With biodiesel's presence in the commercial automotive industry, either as part of the diesel fuel pool, or in blends of various concentrations, there is a need for a single comprehensive document that presents the state of knowledge, the challenges, and guidance for proper use.

The goal is for this document to become a one-stop source for updated information on biodiesel, much in the same way that J312 and J313 serve that purpose for gasoline fuels and diesel fuels. The end document will help users navigate through documents issued by numerous organizations involved in biodiesel.

TC7 committee members as well as biodiesel experts are invited to participate in this activity. A coordinator (sponsor) for this document is also needed.

The second group will focus on the issues and concerns of stakeholders involved in using biodiesel in railroad engines. This fuel is new in railroad applications and the specifics of issues such as engine performance, emission control, and fuel quality assurance, need to be addressed.

Contact: Pat Ebejer at [pebejer@sae.org](mailto:pebejer@sae.org).

### **CNG, LNG, and CNG/Hydrogen Blends**

The US Advisory Group (US AG) for ISO Standards covering Gaseous Fueled Vehicles (ISO TC22 SC25) is seeking new members who are interested in participating in the development of the ISO series of standards for CNG, LNG, and CNG/Hydrogen Blends. The USAG is also responsible for voting on proposed documents to establish the US position for these ISO standards. Where some travel may be called out, it is not required as the majority of the work can be done by email and webcast. A commitment to review, comment, and vote on each document is critical to the mission of the USAG. For the US members, this is also an opportunity to harmonize the ISO standards with the standards developed in the US. SAE serves as the Secretariat for ISO TC22 SC25 and reports through ANSI who is the US member of ISO.

Contact: Douglas Horne, Chair ISO TC22 SC25 USAG at [dbhorne@cleanvehicle.org](mailto:dbhorne@cleanvehicle.org)

### **Green Standards Development**

See "Green Engineering and Technology Workshop" article in this issue.

Contact: Pat Ebejer at [pebejer@sae.org](mailto:pebejer@sae.org)

### **Vehicle Batteries**

See "Battery Standards Committee Task Forces" article in this issue for more details.

Contact: Pat Ebejer at [pebejer@sae.org](mailto:pebejer@sae.org)

### **Delivery options for SAE Technical Standards**

- Handbook Supplements (HS) – Bound collections of technology related standards and reports offered at less than the collective price of the individual standards in the collection.
- JPaks - Online Standards Plans – A customizable subscription plan that lets you pay for just the documents you need and use, full text search capabilities and an alert page keep you aware of changes and updates.
- Standards on CD-ROM – An entire SAE standards library in a medium that is fast, easy to use and remains current throughout the year.
- Databases and customizable corporate solutions.

For detailed information, visit <http://standards.sae.org/>

## What's new? Who's new?

### New Committee Chairs and Vice Chairs

**Charon Morgan**, General Motors – Chair, Chassis Systems Group

**Rafi Al-Attar**, Chrysler Group LLC – Chair, Odometer and Speedometer Standards Committee

**Tony Moore**, Daimler Trucks North America LLC – Vice Chair, Truck and Bus Air Brake Tubing and Fitting Committee

### Documents in progress

#### Truck and Bus Council

##### Truck and Bus Tire Pressure Management Systems Committee

J2848/2 Tire Pressure Systems - Maintenance Type for Medium and Heavy Duty Highway Vehicles

##### Truck and Bus Electrical Systems Committee

J2891 Auxiliary Power Unit Electrical Interface Requirements for Class Eight Trucks

##### Truck and Bus Brake Actuator Committee

J2899 Maximum Readjustment Strokes for Air Brake Actuators

J2902 Air Disc Brake Actuator Test Procedure, Truck-Tractor, Bus and Trailer

J2932 Air Disc Brake Actuator Test Requirements

##### Truck and Bus Hybrid Safety Committee

J2910 Design and Test of Hybrid Electric Trucks and Buses for Electrical Safety

##### Truck and Bus Windshield Wipers and Climate Control Committee

J2918 Engine-Off Cab Heating and Air Conditioning Systems Test Procedure and Performance Requirements— Trucks With and Without Sleepers

#### Motor Vehicle Council

##### *Chassis Systems Group*

##### Brake Dynamometer Standards Committee

J2923 Brake Drag Measurement Test Procedure For Vehicles Below 4 540 kg GVWR

J2928 Rotor/Drum Crack and Strength Dynamometer Test Procedure

##### Brake NVH Standards Committee

J2933 Verification of Brake Rotor Modal Frequencies

J3001 Brake Shim Damping Procedure

J3002 Dynamometer Low-Frequency Brake Noise Test Procedure

##### *Vehicle Engineering Systems Group*

##### Interior Climate Control Committee

J2911 Certification Requirements For Mobile Air Conditioning System Components, Service Equipment, and Service Technicians to Meet SAE J Standards

J2912 R-1234yf Refrigerant Identification Equipment for Use with Mobile Air Conditioning Systems

J2913 R-1234yf Refrigerant Electronic Leak Detectors, Minimum Performance Criteria

J2927 R-1234yf Refrigerant Identifier Installed In Recovery and Recycling Equipment For Use With Mobile A/C Systems

J2941 Service compressor oil for HFO-1234yf [R-1234yf]

##### Cooling Systems Standards Committee

J2914 Exhaust Gas Recirculation (EGR) Cooler Nomenclature and Application

##### Light Vehicle Exterior Sound Level Standards Committee

J2920 Measurement of Tire/Pavement Noise Using Sound Intensity

##### DSRC Vehicle Interface Methodology Committee

J2922 DSRC Vehicle Interface Methodology

**Adaptive Devices Standards Committee**

J2930 Information Report for Hoists used with an Unoccupied Mobility Device

**DSRC (Dedicated Short Range Communication) Technical Committee**

J2945/1 Dedicated Short Range Communication (DSRC) Minimum Performance Requirements

**Vehicle Safety Systems Group****Safety and Human Factors Steering Committee**

J2831 Development of Design & Engineering Standards for In-Vehicle Text Messages

**Dummy Testing and Equipment Committee**

J2900 Calibration and Linearization Methods for Potentiometers used in ATD

J2915 H-III5F Spine Box Update to Eliminate Noise

J2921 H-III5F Chest Jacket Harmonization

**Impact and Rollover Test Procedure Standards Committee**

J2906 Linear Impactor Calibration Procedure

J2926 Rollover Test Methods

**Safety and Human Factors Steering Committee**

J2944 Driving Performance Definitions

**Electrical Systems Group****Vehicle EE System Diagnostic Standards Committee**

J2901 Misfire Generator Functional Requirements

**Fuel Cell Standards Committee**

J2919 TIR for Compressed Hydrogen Fuel Systems in Fuel Cell Powered Industrial Trucks

**Materials, Processes & Parts Council****Ground Vehicle Reliability Committee**

J2924 Engineering Probabilistic Methods - Basic Concepts, Models and Approximate Methods for Probabilistic Engineering Analysis

J2925 System Reliability and Integration

J2940 Use of Model Verification and Validation in Product Reliability and Confidence Assessments

**Acoustic Materials Committee**

J2934 Laboratory Measurement of Tortuosity and Characteristic Lengths of Acoustical Materials

**Metallic Tubing Committee**

J2551-1 Hydraulic Tube Assemblies Design and Fabrication

J2551-2 Hydraulic Tube Assemblies General Specifications and Performance Requirements

J2551-3 Hydraulic Tube Assemblies Procurement

**Standards Consortium Administration**

With over a century of experience providing the common engineering requirements for new mobility vehicles, SAE can be a key component in developing any consortium-based activity, providing the expertise and worldwide technological and human resources to help you turn your vision into a successful operating reality.

Each client maintains its desired degree of autonomy, flexibility, and control. Client/project-tailored services include:

- A legal framework
- Fiscal oversight
- Policy and procedure development
- Publishing and distribution services
- Marketing and public relations activities

## Volunteer recognition: Document Sponsors (Feb – June 2010)

The SAE Standards Development Program thanks its Document Sponsors. These individuals have served not only as active committee members but have dedicated their time and talent in guiding the development of standards documents from the preparation of all drafts through balloting and publication.

*Thank you.*

Poul Andersen, Poul Andersen Consulting

Jim Angel, Mine Safety & Health Administration

Debbie Brooks

Earnest Brown, Defense Supply Center  
Columbus

Paul Casperson, Caterpillar Inc

William Collins, UTC Fuel Cells

Paul DeStefano, Valeo Sylvania LLC

Ernest DeVincent, Getrag Corp

Randy Dickerman, Chrysler Group LLC

Timothy Duncan

Michael Duoba, Argonne National Laboratory

Douglas Durant, John Deere Product  
Engineering Center

Gregory Felder, Michelin North America Inc

Steve Ferrero, EVONIK CYRO LLC

Keith Frazier, Ford Motor Co

Daniel Fritz

Rob Frost, Cummins Inc

Gregory Gillham, Detroit Diesel Corp

Jeff Glodich, Ford Motor Co

Ryan Hoover, IMMI (Indiana Mills & Mfg Inc)

David Howland, General Motors

Frederick Kelley, Prestolite Wire LLC

John Kinstler, John R Kinstler LLC

Lee Lackey, Noregon Systems Inc

J Lackore, Pierce Manufacturing Inc

Ty Lasky, Univ of California-Davis

James Lawlis, Ford Motor Co

Michael Lyons, Caterpillar Inc

James McGowan, TRW Vehicle Safety  
Systems Inc

Danny Minikey, Gentex Corp

Luis Moreiras

Arnold Nielsen

Hiralal Patel, Parker Hannifin Corp

Michael Piscitelli, Sapphire Technical  
Solutions L.L.C.

Charles Polley, Grote Industries LLC

Thomas Poorman, North American Lighting Inc

Dan Richardson, Cummins Inc

Gary Rupp

Pranab Saha, Kolano and Saha Engineers Inc

Robert Schade, Tru-Line Manufacturing Co

Richard Scholer, Ford Motor Co

Jeffery Smith, Vee Engineering

Mark Stepper, Cummins Inc

Daniel Stern, Driving Vision News

Joseph Stratton, Leading Edge Hydraulics

James Szudy, Bendix Commercial Vehicle  
Systems LLC

Bart Terburg, Osram Sylvania

Robert Van Houten, Republic Engineered  
Products LLC

Joel Walter Jacobs

Garold Yurko

## **Gain a competitive advantage. Impact your bottom line. Invest in standards.**

Standards. The workhorse documents that commonize practices, processes, and products throughout the ground vehicle industry are also paramount to the advancement of technology. Standards documents are more than the practices of today. They account for history and anticipate the future of technology, regulation, and business. The direct benefits of standards are simple in concept but extraordinary in their global impact toward ever-safer, cleaner, more efficient worldwide transportation.

### **Technical standards enable and enhance:**

- consistent and clear expectations for product performance and reliability
- regulatory compliance
- consistent product quality
- compatibility and interoperability
- more efficient procurement

### **Standardization also:**

- lowers trade barriers
- lowers purchasing costs
- decreases design time
- promotes innovation
- increases new technology speed to market

Because industry can rely on standards for globally harmonized solutions to common issues, individual companies can devote more time and resources to advance their proprietary technology. In this way, standards help foster competition, which advances the collective technology of industry and in turn, creates the need for new and revised standards. This has been the cycle for ground vehicle standards solutions.

And, at the heart of those solutions is SAE International, the recognized leader in mobility engineering for over 100 years. It plays the central role in developing North American automotive standards and a key role in bringing US documents to the global standards table, working hand-in-hand with the global community to advance industry.

While participation in the standards development process helps the advancement of the industry it can also contribute to the advancement of your company and personal career.

### **Corporate Benefits**

- Input into the direction of the standards
- Competitive intelligence through advance knowledge of standard direction
- Advance warning of pending regulations and influence over the technical basis of the regulation
- Insight into the competitive environment
- Product liability protections
- Strong relationships with customers and suppliers
- Association with the leading society for advancing mobility technology

### **Individual Benefits**

- Professional development from continuous working contact with peers
- Peer recognition for advancing your industry's sectors technologies
- Excellent networking and learning opportunities from product developers/users around the world
- Discover emerging technologies
- Contribute to the industry's body of technical knowledge

To learn more about SAE Technical Standards Development—and for a schedule of Technical Committee meetings—visit us on the web at <http://www.sae.org/standards/>

**Become a better you. Volunteer for an SAE Standards Development Committee.**

# New & Revised SAE Technical Standards (Feb 2010 – May 2010)

## Materials, Processes & Part Council

Doc	Pub Date	Status	Title	Responsible Committee
J1355	APR10	Revised	Test Method for Measuring Thickness of Resilient Insulating Paddings	Acoustical Materials
J2846	MAY10	Issued	Laboratory Measurement of the Acoustical Performance of Body Cavity Filler Materials	Acoustical Materials
J2790	FEB10	Revised	Test Method for Evaluating the Electrical Resistance of Coolant System Hose Covers	Non-Hydraulic Hose
J1268	MAY10	Revised	Hardenability Bands for Carbon and Alloy H Steels	Carbon and Alloy Steels
J1868	FEB10	Revised	Restricted Hardenability Bands for Selected Alloy Steels	Carbon and Alloy Steels
J2281	MAR10	Revised	Selecting and Specifying Hot-Rolled Steel Bar Products	Carbon and Alloy Steels
J119	MAY10	Reaffirmed	Fiberboard Crease Bending Test	Textile and Flexible Plastics
J315	MAR10	Reaffirmed	Fiberboard Test Procedure	Textile and Flexible Plastics
J913	MAR10	Reaffirmed	Test Method for Wicking of Automotive Fabrics and Fibrous Materials	Textile and Flexible Plastics
J1926/1	FEB10	Revised	Connections for General Use and Fluid Power - Ports and Stud Ends with ASME B1.1 Threads and O-Ring Sealing - Part 1: Threaded Port with O-Ring Seal in Truncated Housing	Hydraulic Tube Fittings
J1926/2	MAR10	Revised	Connections for General Use and Fluid Power - Ports and Stud Ends with ASME B1.1 Threads and O-Ring Sealing - Part 2: Heavy-Duty (S Series) Stud Ends	Hydraulic Tube Fittings
J1926/3	MAR10	Revised	Connections for General Use and Fluid Power - Ports and Stud Ends with ASME B1.1 Threads and O-Ring Sealing - Part 3: Light-Duty (L Series) Stud Ends	Hydraulic Tube Fittings
J1754/2	FEB10	Revised	Hose Assemblies, Rubber, Hydraulic, Steel Wire Reinforced - Part 2: Ordering Information	Hydraulic Hose and Hose Fittings
J1754/3	FEB10	Revised	Hose Assemblies, Hydraulic, J517 100R Series Hose - Part 3: Procurement and Ordering Information	Hydraulic Hose and Hose Fittings
J517	MAY10	Revised	Hydraulic Hose	Hydraulic Hose and Hose Fittings
J2551	MAY10	Revised	Recommended Practices for Fluid Conductor Carbon and Alloy Steel Tubing Applications	Metallic Tubing
J2658	MAR10	Revised	Carbon and Steel Alloy Tube Conductor Assemblies for Fluid Power and General Use - Test Methods for Hydraulic Fluid Power Metallic Tube Assemblies	Metallic Tubing

## Construction, Agricultural & Off-Road Machinery Council

Doc	Pub Date	Status	Title	Responsible Committee
J1614	MAY10	Revised	Wiring Distribution Systems for Off-Road, Self-Propelled Work Machines	Electrical Components and Systems
J1810	MAY10	Revised	Electrical Indicating System Specification	Electrical Components and Systems
J371	MAY10	Revised	Drain, Fill, and Level Plugs for Off-Road, Self-Propelled Work Machines	Machine Technical Steering
J2828	APR10	Issued	Off-Road Tire Fire Handling Guidelines	Tire and Rim

## Truck & Bus Council

Doc	Pub Date	Status	Title	Responsible Committee
J2848/1	APR10	Issued	Tire Pressure Monitoring Systems - For Medium and Heavy Duty Highway Vehicles	Truck and Bus Tire Pressure Management Systems
J1513	MAY10	Reaffirmed	External Automatic Slack Adjuster Performance Requirements	Truck and Bus Foundation Brake
J1609	FEB10	Revised	Air Reservoir Capacity Performance Guide - Trucks and Buses	Truck and Bus Brake Supply and Control Components
J2133	FEB10	Revised	Disc Wheel Radial Runout Low Point Marking	Truck and Bus Wheel
J2422	FEB10	Revised	Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks	Truck Crashworthiness
J2917	MAY10	Issued	Occupant Restraint and Equipment Mounting Integrity - Frontal Impact System-Level Ambulance Patient Compartment	Truck Crashworthiness
J2728	JUN10	Issued	Heavy Vehicle Event Data Recorder (HVEDR) Standard - Tier 1	Truck and Bus Event Data Recorder
J2839	FEB10	Issued	Heavy Duty High Speed Datalink Connector	Truck and Bus Electrical Systems
J2286	MAY10	Revised	Vendor Component Program Data File Interface for OEM Assembly Operations	Truck and Bus Low Speed Communication Network
J2461	FEB10	Revised	Vehicle Electronic Programming Stations (VEPS) System Specification for Win32 TM	Truck and Bus Low Speed Communication Network
J1939/31	MAY10	Revised	Network Layer	Truck Bus Control and Communications Network

J1939/71	FEB10	Revised	Vehicle Application Layer (Through February 2009)	Truck Bus Control and Communications Network
J1939/73	FEB10	Revised	Application Layer – Diagnostics	Truck Bus Control and Communications Network
J1939	FEB10	Revised	Recommended Practice for a Serial Control and Communications Vehicle Network	Truck Bus Control and Communications Network
J2403	MAY10	Revised	Medium/Heavy-Duty E/E Systems Diagnosis Nomenclature	Truck Bus Control and Communications Network

## Motor Vehicle Council

Doc	Pub Date	Status	Title	Responsible Committee
J2881	JUN10	Issued	Measurement of Aerodynamic Performance for Mass-Produced Cars and Light-Duty Trucks	Road Vehicle Aerodynamics Forum
J1855	FEB10	Reaffirmed	Deployment of Electrically Activated Automotive Air Bags for Automobile Reclamation	Inflatable Restraints
J1930DA	MAY10	Issued	J1930 Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations, and Acronyms Web Tool Spreadsheet	Vehicle E E System Diagnostic Standards
J2284/3	MAR10	Revised	High-Speed CAN (HSC) for Vehicle Applications at 500 KBPS	Vehicle Architecture For Data Communications Standards
J2556	APR10	Revised	Radiated Emissions (RE) Narrowband Data Analysis - Power Spectral Density (PSD)	Electromagnetic Compatibility (EMC) Standards
J551/1	JUN10	Revised	Performance Levels and Methods of Measurement of Electromagnetic Compatibility of Vehicles, Boats (up to 15 m), and Machines (16.6 Hz to 18 GHz)	Electromagnetic Compatibility (EMC) Standards
J1742	MAR10	Revised	Connections for High Voltage On-Board Road Vehicle Electrical Wiring Harnesses - Test Methods and General Performance Requirements	Connector Systems Standards
J2863	APR10	Issued	Automotive Trailer Tow Connector	Connector Systems Standards
J1127	MAR10	Revised	Low Voltage Battery Cable	Cable Standards
J156	MAR10	Revised	Fusible Links	Cable Standards
J1726	FEB10	Revised	Charge Air Cooler Internal Cleanliness, Leakage, and Nomenclature	Cooling Systems Standards
J2612	MAY10	Revised	Internal Combustion Engines - Piston Vocabulary	Piston and Ring Standards
J2601	MAR10	Issued	Fueling Protocols for Light Duty Gaseous Hydrogen Surface Vehicles	Fuel Cell Standards
J941	MAR10	Revised	Motor Vehicle Drivers' Eye Locations	Driver Vision Standards
J1139	MAR10	Revised	Direction-of-Motion Stereotypes for Automotive Hand Controls	Controls and Displays Standards
J2909	MAY10	Issued	Light Vehicle Dry Stopping Distance	Highway Tire Forum Steering
J1711	JUN10	Revised	Recommended Practice for Measuring the Exhaust Emissions and Fuel Economy of Hybrid-Electric Vehicles, Including Plug-in Hybrid Vehicles	Hybrid
J2344	MAR10	Revised	Guidelines for Electric Vehicle Safety	Hybrid
J2836/1	APR10	Issued	Use Cases for Communication Between Plug-in Vehicles and the Utility Grid	Hybrid
J1432	MAY10	Revised	Rear High Mounted Stop Lamps and Rear High Mounted Turn Signal Lamps for Use on Vehicles 2032 mm or More in Overall Width	Heavy Duty Lighting Standards
J2040	APR10	Revised	Tail Lamps (Rear Position Lamps) for Use on Vehicles 2032 mm or More in Overall Width	Heavy Duty Lighting Standards
J567	MAY10	Revised	Light Source Retention System	Lighting Standard Practices
J576	FEB10	Revised	Plastic Material or Materials for Use in Optical Parts Such as Lenses and Reflex Reflectors of Motor Vehicle Lighting Devices	Lighting Materials Standards
J1383	MAY10	Revised	Performance Requirements for Motor Vehicle Headlamps	Road Illumination Devices Standards
J2338	APR10	Revised	Recommendations of the SAE Task Force on Headlamp Mounting Height	Road Illumination Devices Standards
J565	FEB10	Revised	Semiautomatic Headlamp Beam Switching Devices	Road Illumination Devices Standards
J594	FEB10	Revised	Reflex Reflectors	Signaling and Marking Devices Standards
J575	APR10	Revised	Test Methods and Equipment for Lighting Devices for Use on Vehicles Less than 2032 mm in Overall Width	Test Methods and Equipment Standards
J1263	MAR10	Revised	Road Load Measurement and Dynamometer Simulation Using Coastdown Techniques	Light Duty Vehicle Performance and Economy Measure
J1727	FEB10	Revised	Calculation Guidelines for Impact Testing	Safety Test Instrumentation Standards
J647	APR10	Revised	Automatic Transmissions - Schematic Diagrams	Automatic Transmission Transaxle

Match your expertise with the many SAE Technical Standards Development Committees that are writing the common engineering requirements for the advancement of the ground vehicle industry.

Construction, Agricultural & Off-Road Machinery Council	Specialized Vehicle & Equipment Council	Motor Vehicle Council		Truck & Bus Council	Materials, Processes & Parts Council
<ul style="list-style-type: none"> <li>Common Tesis Technical Steering Cmte</li> <li>Hydraulics</li> <li>Electrical Components</li> <li>Cold Weather Operations</li> <li>Human Factors Technical Advisory Grp</li> <li>Machine Controls – Operator</li> <li>Machine Displays and Symbols</li> <li>Operator Seating and Ride</li> <li>Operator Accommodation</li> <li>Machine Technical Steering Cmte</li> <li>Loaders, Crawlers, Scrapers &amp; Attachments</li> <li>Sweeper, Cleaner &amp; Machinery</li> <li>Industrial Equipment</li> <li>Forestry &amp; Logging Equipment</li> <li>Excavators</li> <li>Roadbuilding Machinery</li> <li>Tire &amp; Rim</li> <li>Trenching &amp; Boring</li> <li>Operator Protection Tech Advisory Grp</li> <li>Operator Protection (General)</li> <li>Braking</li> <li>Lighting and Marking</li> <li>Protective Structures</li> <li>Sound Level Technical Steering Cmte</li> <li>Earth Moving Machinery, Sound Level</li> <li>Back-up and Forward Warning Alarms</li> </ul>	<ul style="list-style-type: none"> <li>Personal Watercraft</li> <li>Small Engine &amp; Powered Equip</li> <li>Snowmobile</li> <li>Special Purpose Vehicle</li> <li>Motorcycle Technical Steering Cmte</li> <li>Motorcycle Sound</li> <li>Marine Technical Steering Cmte</li> <li>Marine Engine Fuel Systems</li> <li>Marine Electrical Systems</li> <li>Trailer</li> <li>Gooseneck &amp; Fifth Wheel</li> <li>Trailer Dynamics</li> <li>Conventional Towing to 20,000 lbs</li> <li>Trailer Terminology</li> <li>Ship Systems &amp; Equip Steering Cmte</li> <li>Fluid Systems &amp; Components</li> <li>Fasteners</li> <li>System Cleanliness and Filter</li> </ul>	<p><b>Vehicle Engineering Systems</b></p> <p><b>Comfort &amp; Convenience</b></p> <ul style="list-style-type: none"> <li>Adaptive Devices</li> <li>Advanced Traveler Information Systems</li> <li>Controls &amp; Displays</li> <li>Cooling Systems</li> <li>Dedicated Short Range Communications</li> <li>Human Accommodations Design Devices</li> <li>Interior Climate Control</li> <li>Sound Signaling Advisory Group</li> <li>Speedometer &amp; Odometer</li> <li>Volatile Organic Compounds</li> </ul> <p><b>Exterior and Performance</b></p> <ul style="list-style-type: none"> <li>Light Duty Vehicle Performance &amp; Economy Measurements</li> <li>Light Vehicle Exterior Sound</li> <li>Lighting Coordinating Advisory Group</li> <li>Heavy Duty Lighting Standards</li> <li>Road Illumination Devices Standards</li> <li>Signaling and Marking Devices Standards</li> <li>Test Methods and Equipment Standards</li> <li>Emergency Warning Lights and Devices</li> <li>Lighting Materials Standards</li> <li>International Lighting Advisory Group</li> <li>Lighting Standard Practices</li> <li>International Cooperation</li> <li>Road Vehicle Aerodynamics</li> <li>Tow Vehicle Trailer Rating</li> <li>WIN/WMI</li> <li>Wiper Standards</li> </ul> <p><b>Vehicle Safety Systems</b></p> <ul style="list-style-type: none"> <li>Accident Investigation &amp; Reconstruction</li> <li>Driver Vision</li> <li>Restraints System Standards Steering</li> <li>Child Restraints</li> <li>Belt Systems</li> <li>Inflatable Restraints</li> <li>Safety Systems Components Advisory Group</li> <li>Human Biomechanics &amp; Simulation</li> <li>Steering Cmte</li> <li>Dummy Testing &amp; Equip</li> <li>Dummy Dev Eval Advisory Group</li> <li>Impact &amp; Rollover Test Procedures</li> <li>Safety Test Instrumentation</li> <li>Safety &amp; Human Factors Steering Cmte</li> <li>Vehicle Sound for Pedestrians (VSP)</li> </ul>		<ul style="list-style-type: none"> <li>Advanced &amp; Hybrid Powertrain Steering Cmte</li> <li>Alternative Fuels</li> <li>Axle</li> <li>Clutch, Transmission &amp; Power Take-Off Engines</li> <li>Hybrid and Electric Vehicle</li> <li>Hybrid Safety</li> <li>Hybrid Energy Storage</li> <li>Hydraulic Hybrids</li> <li>Body &amp; Occupant Environment Steering Cmte</li> <li>Truck Crashworthiness</li> <li>Windshield Wipers &amp; Climate Control</li> <li>Human Factors</li> <li>Electrical/Electronic Steering Cmte</li> <li>Low Speed Communications Network</li> <li>Control and Communications Network</li> <li>Event Data Recorder</li> <li>Electrical Systems</li> <li>Brake and Stability Control Steering Cmte</li> <li>Foundation Brake</li> <li>Brake Actuator</li> <li>Brake Systems</li> <li>Electronically Controlled Brake Systems</li> <li>Brake Supply and Control</li> <li>Hydraulic Brake</li> <li>Wheel</li> <li>Stability Control Systems</li> <li>Air Brake Tubing &amp; Tube Fittings</li> <li>Total Vehicle Steering Cmte</li> <li>Tire Pressure Management Systems</li> <li>Corrosion</li> <li>Vehicle Characterization</li> <li>Coupling &amp; Interchangeability</li> <li>Noise, Vibration and Harshness (NVH)</li> <li>Aerodynamics/Fuel Economy</li> <li>Tire</li> </ul>	<ul style="list-style-type: none"> <li>Automotive Corrosion &amp; Prevention</li> <li>Acoustical Materials</li> <li>Fasteners</li> <li>Metals Technical Executive Steering Cmte</li> <li>Carbon &amp; Alloy Steels</li> <li>Metals Test Procedures</li> <li>Automotive Iron &amp; Steel Castings</li> <li>Sheet &amp; Strip Steel</li> <li>Elev Top Prop of Ferrous Metals</li> <li>Automotive Adhesives &amp; Sealants</li> <li>Plastics</li> <li>Spline B92</li> <li>Spring Steering Cmte</li> <li>Coil Spring</li> <li>Leaf Spring</li> <li>Pneumatic Spring</li> <li>Torsion Bar Spring &amp; Stabilizer Bars</li> <li>Textile &amp; Flexible Plastics /FEAI</li> <li>Vibration Control</li> <li>Fluid Conductors Connectors Steering Cmte</li> <li>C1 Hydraulic Tube Fittings</li> <li>C2 Hydraulic Hose &amp; Hose Fittings</li> <li>C3 Training &amp; Education</li> <li>C5 Metallic Tubing</li> <li>Cmte on Automotive Rubber Specs</li> <li>Non-Hydraulic Hose</li> <li>Hose/Clamp Performance &amp; Compatibility</li> <li>Fatigue Design &amp; Eval Advisory Group</li> <li>Surface Enhancement</li> <li>Material Properties</li> <li>Structural Analysis</li> <li>Fatigue Lifetime Predictions</li> <li>Road Load Data Acquisition</li> <li>Component Testing &amp; Simulation</li> <li>Squeak and Itech Compatibility Task Force</li> <li>Ground Vehicle Reliability</li> </ul>
<p><b>Cooperative Research Projects</b></p> <ul style="list-style-type: none"> <li>Alternative Refrigerants</li> <li>CRP1234r Alt Refrigerant Assessment</li> <li>CRP150 Low GWP Alt Refrigerants Assessment</li> <li>Gage R&amp;R of HPM</li> <li>High Temperature Battery Study</li> <li>Emergency Vehicle Lighting</li> <li>Truck Cab Anthropometric Study</li> <li>Vehicle Sound Level for Pedestrians</li> <li>H<sub>2</sub> Fuel Cell Station Breakaways, Hoses, Fittings and Nozzles</li> <li>Plastics Suitable for use with H<sub>2</sub></li> </ul> <p><b>Standards Derivative Programs</b></p> <ul style="list-style-type: none"> <li>Horsepower Certification</li> <li>J2746 Software Assessment Repository</li> <li>On Board Diagnostics Databases</li> </ul>		<p><b>Chassis Systems Group</b></p> <ul style="list-style-type: none"> <li>Brake Forum Steering Cmte</li> <li>Brake Linings Standards</li> <li>Dynamometer Test Code Standards</li> <li>Road Test Procedures Standards</li> <li>Brake NVH Standards</li> <li>Highway Tire Forum Steering Cmte</li> <li>Vehicle Dynamics Standards</li> <li>Hydraulic Brake Actuating Forum Advisory Grp</li> <li>Brake Fluids Standards</li> <li>Automotive Brake &amp; Steering Hose</li> <li>Hydraulic Brake Components</li> <li>Power Steering Pump Noise Steering Cmte</li> </ul> <p><b>Powertrain Systems Group</b></p> <ul style="list-style-type: none"> <li>Air Cleaner Test Code Standards</li> <li>All Wheel Drive Standards</li> <li>Automatic Transmission Friction</li> <li>Automatic Transmission Transaxle</li> <li>Clutch Standards</li> <li>CVT Transmissions</li> <li>Diesel Exhaust Aftertreatment</li> <li>Diesel Fuel Injection Equipment</li> <li>DriveLine</li> <li>Engine Power Test Code</li> <li>Filter Test Methods</li> <li>Fuel Systems</li> <li>Gasoline Fuel Injection</li> <li>Hybrid</li> <li>Battery Abuse</li> <li>Electric Motor Rating</li> <li>Communications</li> <li>Ignition Systems</li> <li>Lev II Filler Pipe Assembly</li> <li>Manual Transmission Transaxle</li> <li>Permeation</li> <li>Piston Ring</li> <li>Power Test Code</li> <li>Transmission Axle DriveLine</li> </ul> <p><b>Electrical Systems Group</b></p> <ul style="list-style-type: none"> <li>Automotive Electronic Systems Reliability</li> <li>Circuit Protection &amp; Switch Devices</li> <li>Electrical Distribution Systems</li> <li>Electromagnetic Compatibility (EMC)</li> <li>Electronic Design Automation</li> <li>Embedded Software</li> <li>Starter Motor</li> <li>Storage Battery</li> <li>Vehicle Architecture for Data Communications</li> <li>Vehicle E/E Systems Diagnostic</li> <li>Vehicle Electric Power Supply</li> <li>Vehicle Flat Panel Display</li> <li>Vehicle Event Data Interface</li> </ul>		<p><b>Fuel Cells Standards Cmte</b></p> <ul style="list-style-type: none"> <li>Performance</li> <li>Safety</li> </ul> <p><b>Service Development Technical Committee</b></p> <ul style="list-style-type: none"> <li>Service</li> <li>Towability</li> <li>Collition</li> <li>Graphics Based Service Info</li> </ul>	
<ul style="list-style-type: none"> <li>Nikki Ameredes – nameredes@sae.org</li> <li>Micheline Brussow – mbrussow@sae.org</li> <li>Patricia Ebeyer – pebejer@sae.org</li> <li>Maryvonne Jacquemart – mjaquemart@sae.org</li> <li>Peter Byk – peterbyk@sae.org</li> </ul>	<ul style="list-style-type: none"> <li>Jack Pokrzywa – jackp@sae.org</li> <li>Gary Pollak – gary@sae.org</li> <li>Jill Kqiraj – gjysta@sae.org</li> <li>Kris Siddall – ksiddall@sae.org</li> <li>Jana Wright – jwright@sae.org</li> </ul>	<p><b>Fuels &amp; Lubricants Council</b></p> <ul style="list-style-type: none"> <li>Technical Committee 1 – Engine Lubrication</li> <li>Technical Committee 3 – Driveline &amp; Chassis Lubrication</li> <li>Technical Committee 7 - Fuels</li> <li>Technical Committee 8 – Aviation Piston Fuels and Lubricants</li> <li>Industrial Lubricants</li> </ul>		<p><b>Contact Information:</b></p> <p><b>SAE International</b>  <b>(248) 273-2455</b>  <b>www.sae.org</b></p>	