Ground Vehicle Standards *Newsletter*

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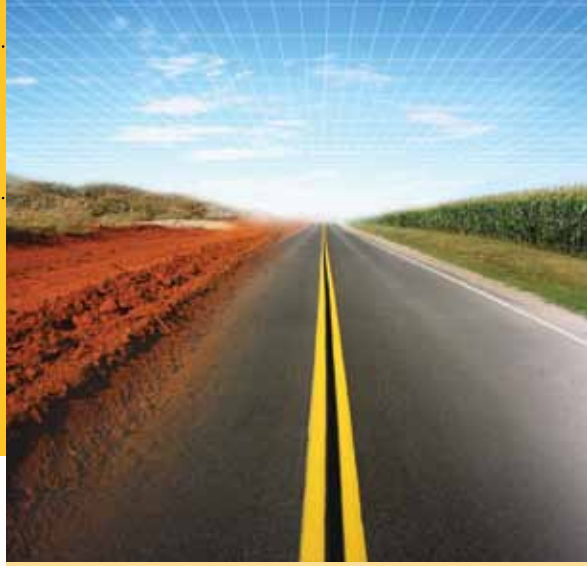
SAE International

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



SAE International plays key role in development of Smart Grid infrastructure standards

SAE International has played a key role in developing standards in the development of the Smart Grid, the infrastructure needed to recharge hybrid and electric vehicles.

The Smart Grid Interoperability Panel (SGIP) Governing Board recently approved three key standards, two of which were developed by SAE International.

"This is an important step in the development of the Smart Grid, and SAE International played a critical role," said Jack Pokrzywa, Manager, Ground Vehicle Standards, for SAE International. "SAE International is the world's preeminent standards organization and our involvement in this effort enhances that reputation."

The SGIP Board's approval of the standards signifies that these standards are now ready for inclusion on the SGIP Catalog of Standards, which will guide the development of an interoperable Smart Grid.

The standards receiving Board approval were:

- SAE J1772TM, *Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charge Coupler.* This SAE standard addresses the physical connector used to plug an electric vehicle into an AC charging station. The standard specifies such details as the dimensions, functions, and configurations of the vehicle inlet and mating conductor.
- SAE J2836/1, *Use Cases for Communication Between Plug-in Vehicles and the Utility Grid*. This SAE standard establishes use cases, specifying the electronic information the vehicle will exchange with the grid. This information could include, for example, the identity of the specific vehicle and owner, the location of the charging station, the amount of electricity used, and the price of the electricity at different times of day.
- *Internet Protocols* for the Smart Grid. This document describes a set of key protocols needed to set up an Internet network for Smart Grid applications. The standard was created by the **Internet Engineering Task Force**.

SAE International was identified in Phase 1 by the National Institute of Standard and Technology to create Framework and Roadmap for Smart Grid Interoperability Standards - "Interoperability Standards to Support Plug-In Electric Vehicles."

SAE International Ground Vehicle Standards Technical Committees are leading the vehicle transportation industry in the development of standards to provide the safe and effective implementation of hybrid/electric vehicles. SAE International standards play a key role in market access, reducing costs, increasing productivity, improving market position and advancing new technologies. To find out more about how SAE International is addressing the challenges of transportation connectivity visit the new vehicle electrification portal at http://www.EVSAE.COM

Issue Highlights:

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

Zigbee Alliance and SAE International accelerate electric vehicle connection to the Smart Grid

The ZigBee® Alliance, a global ecosystem of companies creating wireless solutions for use in energy management, commercial and consumer applications, and SAE International announced their collaboration on ZigBee Smart Energy™ standard development in February. Their efforts will make ZigBee Smart Energy the preferred technology supporting Plug-In Electric Vehicles (PEV) and enabling essential vehicle to grid (V2G) communication and power capabilities.

ZigBee Smart Energy is the market leading home area network and advanced metering infrastructure standard for the Smart Grid. The collaboration recognizes the important role SAE International plays as the focal point for integrating automobile communication with emerging energy management requirements. Using ZigBee Smart Energy to define how PEVs and the grid interact, whether at the consumer's home or at a remote location, will be one of the goals the two groups address. Ultimately, this initiative will provide future PEV drivers with the real-time information needed to control their transportation energy use, manage their charging costs and receive utility incentives for participating in PEV programs. It also provides the essential control functions necessary to safely manage the charging of PEVs while maintaining grid integrity.

"Adding ZigBee Smart Energy to PEVs will give automakers and utilities a common language to manage the charging, storage and use of energy in PEVs," said **Richard Scholer, SAE Hybrid Vehicle Communications Task Force Committee Chair**. "SAE International's formidable task is to help coordinate the urgent efforts of many different companies, industries and disciplines. It realizes the faster standards appear, the sooner electric-powered vehicles can gain consumer acceptance as a new and reliable mode of transportation."

Work between the groups is already underway with completion targeted for next year when ZigBee Smart Energy version 2.0 is scheduled for completion. SAE International joins ZigBee SmartEnergy development efforts led by some of the largest utilities, suppliers and technology companies in the world.

"With an estimated 40 million smart meters integrated with ZigBee Smart Energy in homes, SAE International's involvement will give consumers an effective way to manage their PEV energy needs," said Bob Heile , chairman of the ZigBee Alliance. "With SAE International and ZigBee working together to create the needed standardized infrastructure, millions of consumers will be able to take advantage of rechargeable vehicles, speeding their adoption and allowing everyone to benefit."

SAE International announces new technical standards for HFO-1234yf refrigerant

The has announced the publication of new SAE International documents covering the use of HFO-1234yf refrigerant in mobile air conditioning systems. This refrigerant was evaluated in 2009 within an SAE Cooperative Research project and deemed safe for use by the industry group which worked together in the SAE CRP1234.

Over the last several years, this committee's membership and extensive industry efforts, including SAE Cooperative Research Projects has resulted in the development or revision of 18 SAE International J standards for this new refrigerant. New vehicles entering production later this year will be equipped with this new low Global Warming Potential (GWP) refrigerant.

These SAE International standards cover MAC systems using HFO-1234yf refrigerant design requirements, service equipment and certification procedures for system components, service equipment and technician training.

Over the years, SAE International J Standards have been referenced by regulatory authorities, such as J639 Safety Standards for Motor Vehicle Refrigerant Vapor Compression Systems, which cover system design, components and service equipment for refrigerants used in MAC systems.

SAE standards cited in new EPA rule on refrigerants

The U.S. Environmental Protection Agency (EPA) recently issued a "Final Rule for HFO-1234yf as an Automotive Refrigerant." This document references many SAE standards, most prominently J639, *Safety Standards for Motor Vehicle Refrigerant Vapor Compression Systems*.

The rule states that "HFO-1234yf MVAC systems must adhere to all of the safety requirements of SAE J639 (adopted 2011), including requirements for a flammable refrigerant warning label, high-pressure compressor cutoff switch and pressure relief devices, and unique fittings."

The rule also requires connections with refrigerant containers of 20 lbs or greater to use fittings consistent with SAE J2844, *R-1234yf (HFO-1234yf) New Refrigerant Purity and Container Requirements for Use in Mobile Air-Conditioning Systems*."

Other SAE standards cited include J2766, *Life Cycle Analysis to Estimate the CO2-Equivalent Emissions from MAC Operation* and J1739, *Potential Failure Mode and Effects Analysis in Design (Design FMEA), Potential Failure Mode and Effects Analysis in Manufacturing and Assembly Processes (Process FMEA).*

The rule also frequently cites the work of SAE's Cooperative Research Program (CRP), particularly 2009 CRP reports assessing the risks of HFO-1234yf, which the EPA used as background information.

The rule was issued under the EPA's Significant New Alternatives Policy (SNAP) program, which evaluates and regulates substitutes for ozone-depleting chemicals that are being phased out under the stratospheric ozone protection provisions of the Clean Air Act.

Upcoming Standards Technical Committee Meetings

A current schedule can be found on the SAE website.

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

SAE International to promote usage of the Michigan Intellidrive Test Bed Operations for USDOT Federal Highway Administration

SAE International has been awarded a contract to work with Science Applications International Corporation (SAIC) to provide support in coordinating promotion of the USDOT Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) Technology Test Bed Operation research program.

The V2V and V2I Test Bed with roadside equipment is located in Oakland County, Michigan. The Test Bed is available for testing safety, mobility and environmental applications, services and components in an environment using the latest technology standards and architecture. The Test Bed provides the capability for companies to test applications that have the potential to save lives and provide continuous real-time connectivity among users.

Safety applications will have the potential to reduce crashes through advisories and warnings. For instance, vehicles operators may be advised of a school zone, sharp ramp curve, or slippery patch of roadway ahead.

Mobility applications will provide a connected, data-rich travel environment based on information transmitted anonymously from thousands of vehicles that are using the transportation system at a particular time.

Environmental applications will provide travelers with real-time information about traffic congestion and other travel conditions to help them make more informed decisions that can make trips more fuel-efficient and eco-friendly.

The V2V and V2I Test Bed enables network users to send SAE J2735, *Dedicated Short ange Communications Message Set Dictionary*," compliant road sign, advisory and probe data management messages to vehicles, and enables the distribution of J2735 compliant probe data from vehicles through roadside equipment to network user subscribers.

To learn more about the V2V and V2I Test Bed, contact Walter Fehr, Systems Engineering and Test Bed Manager, ITS Joint Program Office at (202) 366-0278 or Walton/fehr@dot.gov. Or speak directly with Mr. Fehr at the Chat with the Experts session during the SAE 2011 World Congress Wednesday, April 13th 4-5 p.m., Room D0-03C. Visit too the DOT/ITS booth in the exhibit hall.

New committees and chairs

- The following committees have recently been formed: Vehicle Electronics Embedded Security Committee; Small Task Oriented Vehicle Batteries Task Force; Battery Materials Testing Task Force; and the Battery Terminology Task Force. Those interested in volunteering their expertise to any of these efforts may direct their inquiry to http://www.sae.org/standardsdev/participationReq.htm
- **Paul Aurand**, Performance Friction Corp, replaces Chip Evans as Chair, Brake Lining Standards Committee. SAE wishes to thank Chip on his leadership of the committee over the past eight years and welcomes Paul to the role.

Revision of airborne sound barrier standard issued

A revised version of SAE J1400, *Laboratory Measurement of the Airborne Sound Barrier Performance of Flat Materials and Assemblies* was issued in August 2010.

Issued by the **Acoustical Materials Committee**, this Recommended Practice presents a test procedure for determining the airborne sound barrier performance of materials and composite assemblies commonly installed in surface vehicles and marine products. The document provides a means of rank ordering barrier materials according to their sound transmission loss.

The Recommended Practice was significantly modified to improve inter-laboratory reproducibility based on the results and recommendations of a round robin study conducted by the Acoustical Materials Committee. The revision improves the accuracy of reference sample field incident STL calculations, particularly for low surface density materials. Additionally, the materials and construction of a simple and robust control sample with target STL values is now defined to allow individual laboratories to check their correlation.

Committee develops safety standards for rechargeable cells

SAE International's **Battery Standards Committee** has created safety performance standards for lithium ion battery systems.

These are the first minimum base standards for safety performance expectations - i.e., pass-fail criteria - for lithium ion battery systems.

The document, J2929, *Electric and Hybrid Vehicle Propulsion Battery System Safety Standard - Lithium-based Rechargeable Cells*, provides a common foundation from which all battery and vehicle manufacturers can create safe battery systems. The standards will build consumer confidence in the safety of lithium ion battery systems.

"There's no doubt lithium-ion battery technology will continue to play a vital role in the alternative powertrain systems of the future," said **Galen E. Ressler, chair of the Battery Safety Standards Task Force**. "As with any propulsion system, we need to assure that all of our systems are safe for our vehicle occupants. The adoption of new technologies such as advanced battery systems, require the industry to adopt new standards to increase vehicle safety and this standard will play a vital role in making that a reality. The committee already is working on the second version of the standard which will expand and enhance the standard to include additional aspects related to thermal propagation, flammability, toxicity, EMC and impact resistance."

SAE International battery committees are working to limit the potential for danger by developing standards that cover all aspects, from battery design, testing, storage, shipping and recycling of

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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/

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large advanced-technology batteries used in electric vehicles (EVs) and hybrid-electrics. Battery standards are useful for several reasons, but safety is paramount.

SAE International also is working with other organizations such as the National Fire Protection Association to recognize opportunities for improving EV battery safety knowledge, training, communications and vehicle designs for the First Responder community. In addition, the committees are supporting ISO12405 (electrically propelled road vehicles – test specification for Lithium-ion traction battery packs and systems) [GER1] standards development. **Robert Galyen, Chair of the Vehicle Battery Standards Committee**, commented on the collaboration of the document. "From project initiation to publication, these standards were completed in 13 months, a significant achievement given the sensitivity of the subject. More than 35 industry professionals from the U.S., Asia and Europe actively participated in the process, representing vehicle manufacturers, battery system and component suppliers, and other interested organizations. The diversity of this organization helps to make it a true global industry standard," he said.

Lithium ion batteries are used in hybrid and electric vehicles. Their usage is expected to grow as more of the vehicles are introduced. Market size estimates for electric and hybrid vehicle batteries range widely from $2.3 billion to $10 billion by 2015. The U.S. will have the capacity to produce 20 percent of the world's advanced batteries by 2012 and up to 40 percent by 2015 (DOE).

"Although automotive applications are significantly different than other applications, such as laptop computers, there have been safety related concerns with lithium ion batteries," Robert Galyen said. "Creation of these standards will help to ease concerns." For more information on SAE International ground vehicle standards, visit http://www.sae.org/standards/ .

SAE standards committee members receive awards

Andrew McKean, John Deere Construction & Forestry Division, Dubuque Works was honored with the 2010 SAE International/AEM Outstanding Young Engineer this past fall. McKean has been active in SAE International and ISO standards development for the off-highway industry as a member of the technical committees for protective structures and personnel protection.

Mark P. Zachos, founder and CEO of DG Technologies (DG), was honored with the SAE International L. Ray Buckendale Lecture Award this past fall. Zachos has been very active in SAE Technical Committee work for more than 20 years; he serves as vice chairman of both the Vehicle E/E Diagnostics Committee and the Vehicle Systems Network Architecture Committee, and is a contributing member of the SAE Truck and Bus Communications Sub-Committee. Also, Zachos is chairman of the J2602, J2561, J2411, J2178, J1699-3, J1939-82 and J1939-84 Task Forces.

K. Gopal Duleep, president, HD Systems, was honored with the SAE International Barry D. McNutt Award for Excellence in Automotive Policy Analysis earlier this year. Mr. Duleep has participated in SAE International standards setting committees for establishing smoke testing procedures for heavy duty diesel vehicles and participated in an experimental SAE International program to evaluate the smoke testing procedures.

Douglas C. Longhitano, senior engineer, Automotive Safety, Honda R&D Americas, Inc., was honored with the SAE International/InterRegs Standards & Regulations Award for Young Engineers earlier this. Longhitano is active on the Human Biomechanics and Simulation Standards Steering Committee as well as the U.S. Technical Advisory Groups to ISO supporting crash injury mitigation related standards.

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.

App for EV owners cites J1772

A new smartphone app which allows electric vehicle owners to share information on the availability of electric outlets references SAE J1772, *Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charge Coupler*.

The PlugShare app for iOS devices, created by Xatori, Inc in Palo Alto, California, enables electric vehicle owners to share their outlets and to designate whether they have J1772 compliant connectors or standard 120 volt outlets. J1772 plugs are compatible with the latest electric vehicle models such as the Chevy Volt and Nissan Leaf.

New standard on keyless ignition control issued

A new Recommended Practice that establishes guidelines for the operation of automotive keyless ignition systems was issued in January. Developed by the Controls and Displays Standards Committee, SAE J2948, is designed to help minimize user errors by providing design recommendations pertaining to uniform labeling, indication of vehicle ignition/control status, and physical control characteristics of keyless ignition systems.

The standard's goal is to minimize user errors including:

- The inability to start and stop the vehicle propulsion system;
- Exiting the vehicle with the automatic transmission in a non-parking gear;
- Exiting the vehicle while the vehicle propulsion system is enabled; and
- Exiting the vehicle while the vehicle propulsion system is disabled, but the accessory or electrical systems are active.

This Recommended Practice applies to keyless ignition controls permanently mounted in passenger cars, multipurpose vehicles, and trucks 10,000 GWR and under. It does not apply to systems that provide remote controls to start or stop a vehicle engine from outside the vehicle.

Revised towing standard issued

A revised version of SAE J2807, *Performance Requirements for Determining Tow-Vehicle Gross Combination Weight Rating and Trailer Weight Rating*, was issued in September 2010.

Developed by the **Tow Vehicle Trailer Rating Committee**, this document establishes minimum performance criteria at gross combination weight rating (GCWR) and calculation methodology to determine tow vehicle trailer rating for passenger cars, multipurpose passenger vehicles and light trucks up to 19,500 lb. GCWR (Class 5).

The standard provides equations to determine TWR (trailer weight rating) from GCWR in conjunction with other vehicle ratings and defined vehicle weight conditions and dimensions. It is recommended that the performance requirements be adopted for all vehicles with a model year 2013 or later.

SAE, JSAE, KSAE discuss standards development collaboration

Closer cooperation on standards development activities was the focus of a meeting held in Seoul, Korea in January between representatives of SAE International, JSAE (Society of Automotive Engineers of Japan) and KSAE (Korean Society of Automotive Engineers).

The meeting is part of a broader objective established by SAE's Motor Vehicle Council to engage other standards development organizations around the world to work closer with SAE's standards development committees.

Jack Pokrzywa, SAE International's Director of Ground Vehicle Standards, was invited to a KSAE conference in January on vehicle electrification. He presented a status report on SAE's vehicle electrification standards activities. Staff members from the three organizations later met to discuss areas in which there is a need for cooperative standards development.

SAE and JSAE identified numerous topics for cooperative standards development, including mobility electronics, electronics reliability/safety, vehicle embedded electronics security, electric motorcycles, and keyless ignition. Plans were also made for JSAE representatives to visit SAE committees in the future.

SAE, ETSI sign letter of intent to cooperate

SAE International and the European Telecommunications Standards Institute (ETSI) have signed a Letter of Intent to collaborate in the area of cooperative systems, including vehicle-to-vehicle and vehicle-to-infrastructure communication.

In international standards development activities, SAE and ETSI have agreed to keep each other aware of positions taken on technical issues, in order to better serve the needs of their respective global customers. The organizations also agreed to cooperate in participation at industry events and congresses.

The Letter of Intent was signed in February by Dr. David Schutt, SAE International Chief Executive Officer and Walter Weigel, ETSI Director-General.

ETSI, the recognized European standardization organization for telecommunications, undertakes pre-standardization and standardization activities in areas common to telecommunications, information technology, sound and television broadcasting.

SAE Ground Vehicle Standards "On the Road"

A re-cap of recent and upcoming events at which SAE will participate

- **SAE International's Motor Vehicle Council** met with John Maddox, Associate Administrator, Office of Vehicle Safety Research, National Highway Traffic Safety Administration (NHTSA) at SAE Automotive Headquarters on February 17 to discuss vehicle safety initiative activities.
- SAE Ground Vehicle Standards staff members Peter Byk and Keith Wilson attended the University of Michigan Transportation Research Institute Automotive Safety Conference on February 16 in Ann Arbor, Michigan.
- Jack Pokrzywa, SAE International Director of Ground Vehicle Standards represented SAE International at a U.S. Department of Commerce International trade Administration meeting on the Asia Pacific Economic Cooperation (APEC) project on Smart Grid Interoperability Standards on February 25 in Washington, D.C.
- Dr. David L. Schutt, Chief Executive Officer, SAE International and Jack Pokrzywa represented SAE at the Fully Networked Car Conference in Geneva, Switzerland on March 2-3. Dr. Schutt served on a panel to discuss government-industry partnerships. Pokrzywa served as panel moderator and session chairman on information and communication technologies and electric vehicles.
- Keith Wilson represented SAE International at the EV Charging Infrastructure Conference on March 1 in San Diego, California. He presented an overview of SAE standards on electric vehicle charging and smart grid interoperability.
- **Gery Kissel, Vice Chair of the SAE Hybrid Vehicle Committee** and Tim Mellon, SAE staff, represented SAE International at an American National Standards Institute (ANSI) meeting on Smart Grid Operability Standards on March 4 in Washington, D.C.
- **Robert Gaylen, Chair of the SAE Battery Standardization Steering Committee**, will speak at the EV Battery Tech Global Cost Reduction Initiative event on March 30-31 in London, UK.
- Jack Pokrzywa will speak at the Plug-In Electric Vehicle Infrastructure USA 2011 event March 31- April 1 in San Diego, California.
- Jack Pokrzywa will speak at the ANSI Workshop on Standards and Codes for Electric Vehicles on Aril 5-6 in Bethesda, Maryland.

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
- Brasilian National Standards Organization (ABNT)
- American National Standards Institute (ANSI)
- Automotive Electronics Council (AEC)
- International Organization for Standardization (ISO); US representative

Volunteer recognition: Document Sponsors (January – March 2011)

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.

Mohamed Abdelhamid, Robert Bosch LLC
Ward Atkinson, Sun Test Engineering
James Baker
Paul Begeman, Wayne State University
Brent Birch, Champion Laboratories Inc.
Pete Chisholm, Mercury Marine
Douglas Craig, Chrysler LLC
Eric Denys, Material Sciences Corporation
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Eero Laansoo, General Motors Company
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Christopher Morgan, Autoliv ASP
Alexander Moultanovsky, ACC Climate Control
Jon Olson, Ford Motor Co.
Michael Piscitelli, Sapphire Technical Solutions LLC
Danny Pridemore, Afton Chemical Corp.
Roger Reini, Ford Motor Co.
Galen Ressler, General Motors Company
Lawrence Rice, Osram Sylvania
Walter Ross
Thomas Soupal, Meritor Wabco
Douglas Stein, Autoliv ASP
Daniel Stern
Bart Terburg, Osram Sylvania
Jim Vizanko, Yamaha Motor Corp. USA
Garold Yurko, Tyco Electronics

Standards development committees seeking volunteers

Powertrain specifically Battery Standardization*; Gasoline Fuel Injection; Belt Drive; Vehicle and Engine Emissions Standards

Chassis Systems specifically Electric Power Steering; Hydraulic Brake Components; Brake Linings Standards

Truck and Bus specifically Truck and Bus Wheel

***Electrical Systems** specifically Vehicle E/E/ Systems Diagnostics; Electrical Distribution Systems Steering; Electrical Connectors; Electrical Harness Covering; Electromagnetic Compatibility (EMR/EMI); Vehicle Network for Multiplex & Data Communications; Automotive Electronic Systems Reliability; Vehicle Flat Panel Display; Circuit Protection; Vehicle Electric Power Supply

***Materials** specifically Acoustical Materials; Automotive Adhesives and Sealants; Carbon and Alloy Steels; Metals Technical; Plastics; Spring Committee; Vibration Control

***Vehicle Safety Systems** specifically Seat Belt Systems Standards; Inflatable Restraints Standards

Fuel Cells specifically Fuel Cell Performance

Vehicle Engineering Systems specifically Odometer / Speedometer

Express interest at
http://www.sae.org/standardsdev/participationReq.htm

Going to the SAE 2011 World Congress?

The **SAE Standards TechXchange Place**—Room D3-19 co-located with the Safety and Testing Lounge—is where committee members and those interested in becoming involved in creating industry standards can meet informally with one another and SAE staff representatives during the SAE World Congress. There is currently a *heightened need for experts in the asterisked (*) areas noted above*. Stop by to learn more how your technical expertise can help industry's standards initiatives.

April 12-14, Detroit, MI, USA

New, revised & stabilized SAE Technical Standards (January – March 2011)

Committee	Doc	Title	Status	Pub Date
Construction, Agricultural & Off Road Machinery Council				
Lighting and Marking	J99_201103	Lighting and Marking of Industrial Equipment on Highways	Stabilized Mar 2011	03/08/11
Fuels & Lubricants Council				
Fuels & Lubricants TC-1				
Engine Lubrication	J2227_201101	International Tests and Specifications for Automotive Engine Oil	Revised	01/18/11
Motor Vehicle Council				
Collision Repair	J2621_201101	Qualifying Aftermarket Two-Component Structural Foams	Reaffirmed	01/18/11
Accident Investigation and Reconstruction Practices	J2314_201102	Ethics for Accident Investigation and Reconstruction	Stabilized Feb 2011	02/18/11
Brake Linings Standards	J2581_201103	Thermal Transport Properties Germane to Friction Materials and Brakes	Reaffirmed	03/08/11
Brake NVH Standards	J2933_201103	Verification of Brake Rotor Modal Frequencies	Issued	03/01/11
	J3001_201102	Brake Insulator Damping Measurement Procedure	Issued	02/04/11
Interior Climate Control	J2911_201102	Procedure for Certification that Requirements for Mobile Air Conditioning System Components, Service Equipment, and Service Technician Training Meet SAE J Standards	Issued	02/04/11
	J639_201102	Safety Standards for Motor Vehicle Refrigerant Vapor Compressions Systems	Revised	02/04/11
Interior Climate Control Service	J2762_201102	Method for Removal of Refrigerant from Mobile Air Conditioning System to Quantify Charge Amount	Issued	02/04/11
	J2843_201102	R-1234yf [HFO-1234yf] Recovery/Recycling/Recharging Equipment for Flammable Refrigerants for Mobile Air-Conditioning Systems	Issued	02/04/11
	J2845_201102	R-1234yf [HFO-1234yf] and R-744 Technician Training for Service and Containment of Refrigerants Used in Mobile A/C Systems	Issued	02/04/11
	J2851_201102	R-1234yf [HFO-1234yf] Refrigerant Recovery Equipment for Mobile Automotive Air-Conditioning Systems	Issued	02/04/11
	J2888_201102	HFO-1234yf Service Hose, Fittings and Couplers for Mobile Refrigerant Systems Service Equipment	Issued	02/04/11
	J2912_201102	Performance Requirements for R-134a and R-1234yf Refrigerant Diagnostic Identifiers for Use with Mobile Air Conditioning Systems	Issued	02/07/11
	J2913_201102	R-1234yf [HFO-1234yf] Refrigerant Electronic Leak Detectors, Minimum Performance Criteria	Issued	02/04/11
	J2927_201102	R-1234yf Refrigerant Identifier Installed in Recovery and Recycling Equipment for Use With Mobile A/C Systems	Issued	02/07/11
Interior Climate Control MAC Supplier	J2064_201102	R134a Refrigerant Automotive Air-Conditioned Hose	Revised	02/04/11
Interior Climate Control OEM	J2772_201102	Measurement of Passenger Compartment Refrigerant Concentrations Under System Refrigerant Leakage Conditions	Issued	02/04/11
	J2773_201102	Standard for Refrigerant Risk Analysis for Mobile Air Conditioning Systems	Issued	02/04/11
	J2842_201102	R-1234yf and R744 Design Criteria and Certification for OEM Mobile Air Conditioning Evaporator and Service Replacements	Issued	02/04/11
Restraint Systems Standards Steering	J128_201103	Occupant Restraint System Evaluation - Passenger Cars and Light-Duty Trucks	Stabilized	03/22/11
Inflatable Restraints	J1630_201101	Airbag Module Deployment Test Procedure	Revised	01/21/11
	J2531_201103	Impulse Noise from Automotive Inflatable Devices	Revised	03/06/11
Interior Climate Control Fluids	J2099_201102	Standard of Purity for Recycled R-134a (HFC-134a) and R-1234yf (HFO-1234yf) for Use in Mobile Air-conditioning Systems	Revised	02/04/11
	J2297_201102	Ultraviolet Leak Detection: Stability and Compatibility Criteria of Fluorescent Refrigerant Leak Detection Dyes for Mobile R-134a and R-234yf (HFO-1234yf) Air-Conditioning Systems	Revised	02/04/11
	J2670_201102	Stability and Compatibility Criteria for Additives and Flushing Materials Intended for Aftermarket Use in R-134a (HFC-134a) and R-1234yf (HFO-1234yf) Vehicle Air-Conditioning Systems	Revised	02/07/11
	J2844_201102	R-1234yf (HFO-1234yf) New Refrigerant Purity and Container Requirements for Use in Mobile Air-Conditioning Systems	Issued	02/04/11
Connector Systems Standards	J163_201102	Low Tension Wiring and Cable Terminals and Splice Clips	Stabilized	02/18/11
	J2622_201102	Battery Connections for 42 Volt Electrical Systems Tests and General Performance Requirements	Stabilized	02/18/11
	J2651_201102	Jump Start Connections for 42 Volt Electrical Systems	Stabilized	02/18/11
Cable Standards	J1128_201101	Low Voltage Primary Cable	Revised	01/11/11
Harness Covering Standards	J2302_20110	Thermal Effectiveness of Sleeve Insulation	Stabilized	02/21/11
	J2495_201102	Thermal Containment Efficiency of Sleeve Materials	Stabilized	02/21/11
Filter Test Methods Standards	J2793_201102	Fuel Dispensing Filter Test Methods	Issued	02/04/11
Cooling Systems Standards	J164_201103	Radiator Caps and Filler Necks	Revised	03/22/11
Hydraulic Brake Components Standards	J1601_201103	Rubber Cups for Hydraulic Actuating Cylinders	Stabilized	03/16/11

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Committee	Doc	Title	Status	Pub Date
Controls and Displays Standards	J2948_201101	Keyless Ignition Control Design	Issued	01/13/11
Heavy Duty Lighting Standards	J774_201102	Emergency Warning Device and Emergency Warning Device Protective Container	Stabilized	02/21/11
Road Illumination Devices Standards	J1606_201102	Headlamp Design Guidelines for Mature Drivers	Stabilized	02/24/11
	J1735_201102	Harmonized Vehicle Headlamp Performance Requirements	Stabilized	02/24/11
	J2282_201102	Distributed Lighting Systems (DLS)	Stabilized	02/24/11
	J2338_201102	Recommendations of the SAE Task Force on Headlamp Mounting Height	Stabilized	02/24/11
	J2584_201102	Headlamp Mounting Height for Passenger and Pickup Truck Vehicles	Stabilized	02/24/11
	J2739_201102	Absorptive and Interference Coatings Applied on Replaceable Headlamp Bulbs	Stabilized	02/24/11
	J2829_201102	Pedestrian Visibility - Low Beam Optimization to Reduce Night-time Fatalities	Stabilized	02/24/11
	J581_201102	Auxiliary High Beam Lamps	Stabilized	02/24/11
	J583_201103	Front Fog Lamp	Revised	03/01/11
	J600_201102	Headlamp Aim Test Machines	Stabilized	02/24/11
	J602_201102	Headlamp Aiming Device for Mechanically Aimable Headlamp Units	Stabilized	02/24/11
Signaling and Marking Devices Standards	J2087_201101	Daytime Running Light	Revised	01/11/11
	J591_201102	Spot Lamps	Stabilized	02/21/11
Impact and Rollover Test Procedures Standards	J2114_201102	Dolly Rollover Recommended Test Procedure	Stabilized	02/21/11
Safety Test Instrumentation Standards	J2052_201101	Test Device Head Contact Duration Analysis	Revised	01/05/11
Human Biomechanics and Simulations Standards Steering	J1460/2_201102	Human Mechanical Impact Response Characteristics - Response of the Human Neck to Inertial Loading by the Head for Automotive Seated Postures	Stabilized	02/21/11
	J1980_201102	Guidelines for Evaluating Out-of-Position Vehicle Occupant Interactions with Deploying Frontal Airbags	Stabilized	02/21/11
	J2189_201102	Guidelines for Evaluating Child Restraint System Interactions with Deploying Airbags	Stabilized	02/24/11
	J885_201102	Human Tolerance to Impact Conditions as Related to Motor Vehicle Design	Stabilized	02/21/11
Dummy Testing and Equipment	J2857_201103	Hybrid III 3-Year Old Child Dummy User's Manual	Issued	03/22/11
Vehicle Battery Standards	J2929_201102	Electric and Hybrid Vehicle Propulsion Battery System Safety Standard - Lithium-based Rechargeable Cells	Issued	02/18/11
Specialized Vehicle & Equipment Council				
Marine Technical Steering	J1378_201103	Electric Hourmeter Specification	Stabilized	03/08/11
	J1970_201102	Shoreline Sound Level Measurement Procedure for Recreational Motorboats	Revised	02/18/11
Marine Engine Fuel Systems	J1527_201102	Marine Fuel Hoses	Revised	02/08/11
Marine Electrical Systems	J1171_201103	External Ignition Protection of Marine Electrical Devices	Reaffirmed	03/08/11
Snowmobile Technical	J192_201103	Maximum Exterior Sound Level for Snowmobiles	Revised	03/06/11
	J278_201103	Snowmobile Stop Lamp	Reaffirmed	03/12/11
	J279_201103	Snowmobile Tail Lamp (Rear Position Lamp)	Reaffirmed	03/12/11
	J280_201103	Snowmobile Headlamps	Reaffirmed	03/12/11
Truck & Bus Council				
Truck and Bus Brake Systems	J2580_201103	Identification and Installation of Air Brake System Components	Reaffirmed	03/16/11
Truck and Bus Brake Supply and Control Components	J1409_201102	Air Brake Valves Test Procedure	Revised	02/04/11
	J1410_201102	Air Brake Valve - Performance Requirements	Revised	02/18/11
Truck and Bus Windshield Wipers and Climate Control	J2233_201102	Bus Body Heating System Test	Revised	02/18/11
Truck and Bus Electrical Systems	J1455_201101	Recommended Environmental Practices for Electronic Equipment Design in Heavy-Duty Vehicle Applications	Revised	01/04/11
Truck Bus Control and Communications Network	J1939/71_201103	Vehicle Application Layer (Through May 2010)	Revised	03/15/11
	J2403_201102	Medium/Heavy-Duty E/E Systems Diagnosis Nomenclature	Revised	02/04/11

Documents in progress (January – March 2011)

Motor Vehicle Council		
Adaptive Devises Standards Committee	J2588	Remote Steering Control Systems
	J2671	Reduced Effort Brakes and Reduced Effort Vacuum Powered Brake Backup Systems
	J2672	Reduced Effort Power Steering and Power Steering Backup Systems
Automatic Transmission Transaxle Committee	J2964	Low Speed Mu Procedure
Brake Linings Standards Committee	J2468	Road Vehicles – Brake Linings – Compressibility Test Procedure
	J2581	Thermal Transport Properties Germane to Friction materials and Brakes
Children's Restraint Systems Committee	J1369	Anchorage Provisions for Installation of Child Restraint Tether Straps in Rear Seating Positions

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Cooling Systems Standards Committee	J1390	Engine Cooling Fan Structural Analysis
	J1474	Heavy-Duty Nonmetallic Engine Cooling Fans—Material Manufacturing, and Test Considerations
Electromagnetic Compatibility (EMC) Standards Committee	J1113/13	Electromagnetic Compatibility Measurement Procedure for Vehicle Components—Part 13: Immunity to Electrostatic Discharge
Fuel Cell Standards Committee	J2601/2	Fueling Protocols for Heavy Duty Gaseous Hydrogen Surface Vehicle
	J2601/3	Fueling Protocol for Gaseous Hydrogen Powered Industrial Trucks
Fuel Systems Standards Committee	J2044	Quick Connect Coupling Specification for Liquid Fuel and Vapor/Emissions Systems
Harness Covering Standards Committee	J2192	Recommended Testing Methods for Physical Protection of Wiring Harnesses
Hybrid Committee	J1718	Measurement of Hydrogen Gas Emission from Battery-Powered Passenger Cars and Light Trucks
During Battery Charging		
Interior Climate Control Committee	J1627	Performance Criteria for Electronic Refrigerant Leak Detectors
	J1657	Selection Criteria for Retrofit Refrigerants to Replace CFC-12 (R-12) in Mobile Air-Conditioning Systems
	J1660	Fittings and Labels for Retrofit of CFC-12 (R-12) Mobile Air-Conditioning Systems to HFC-134a (R-134a)
	J1661	Procedure Retrofitting CFC-12 (R-12) Mobile Air-Conditioning Systems to HFC-134a (R-134a)
Road Illumination Devices Standards Committee	J2595	Performance Requirements for Sealed Beam Motor Vehicle Headlamps
	J2738	Improved Roadway Illumination: Information Resource
Tow Vehicle Trailer Rating Committee	J2807	Performance Requirements for Determining Tow-Vehicle Gross Combination Weight Rating and Trailer Weight Rating
Vehicle Architecture for Data Communications Standards Committee	J2178/1	Class B Data Communication Network Messages/Detailed Header Formats and Physical Address Assignments
	J2178/2	Class B Data Communication Network Messages – Part 2: Data Parameter Definitions
	J2178/3	Class B Data Communication Network Messages – Part 3: Frame IDs for Single-Byte Forms of Headers
	J2178/4	Class B Data Communication Network Messages – message Definitions for Three Byte Headers
	J2962/1	Communication Transceivers Qualification Requirements – LIN
	J2962/2	Communication Transceivers Qualification Requirements – CAN
Vehicle Battery Standards Committee	J2185	Life Test for Heavy-Duty Storage Batteries
Vehicle EE System Diagnostic Standards Committee	J1699/4	Scan Tool to Vehicle Interface Anomalies
	J1978	OBD II Scan Tool – Equivalent to ISO/DIS 15031-4: Dec. 14, 2001
	J1979	E/E Diagnostic Test Modes
	J1979DA	Digital Annex of E/E Diagnostic Test Modes

Truck and Bus Council

Truck and Bus Control and Communications Network Committee	J1939/02	Agricultural and Forestry Off-Road Machinery Control and Communication Network
	J1939/75	Application Layer – Generator Sets and Industrial
	J1939/82	Compliance
	J1939/84	OBD Communications Compliance Test Cases for Heavy-Duty Components and Vehicles
Truck and Bus Aerodynamics and Fuel Economy Committee	J1264	SAE Fuel Consumption Test Procedure (Short Term In-Service Vehicle) Type I
Truck and Bus Brake Systems Committee	J2580	Identification and Installation of Air Brake System Components
	J2963	Stop Light Activation Information for Driver Demanded and Automated Brake Systems Applications
Truck and Bus Wheel Committee	J179	Labeling—Disc Wheels and Demountable Rims—Trucks
	J1835	Fastener Hardware for Wheels for Demountable Rims
	J1842	Disc Wheel Hub/Spoke Wheel and Axle Interface Dimensions—Commercial Vehicles
	J2133	Disc Wheel Radial Runout Low Point Marking
	J851	Dimensions—Wheels for Demountable Rims, Demountable Rims, and Spacer Bands—Truck and Bus

Materials, Processes & Parts Council

Acoustical Materials Committee	J2629	Standard Formats for Presenting Acoustical Data
Automotive Adhesives and Sealants Committee	J1525	Lap Shear Test for Automotive Type Adhesives for Fiber Reinforced Plastic (FRP) Bonding

Specialized Vehicle & Equipment Council

Marine Electrical Systems Committee	J1171	External Ignition Protection of Marine Electrical Devices
	J1191	High Tension Ignition Cable Assemblies - Marine
	J1320	Marine Electrical Switches
	J378	Marine Propulsion System Wiring
Marine Technical Steering Committee	J1378	Electric Hourmeter Specification
	J2005	Stationary Sound Level Measurement Procedure for Recreational Motorboats
	J917	Marine Push-Pull Control Cables
Snowmobile Technical Committee	J278	Snowmobile Stop Lamp
	J279	Snowmobile Tail Lamp (Rear Position Lamp)
	J280	Snowmobile Headlamps

Fuels & Lubricants Council

Fuel and Lubricants TC2 – Industrial Lubricants	MS1006	Lubricants, Industrial Oils, and Related Products Type

Construction, Agricultural & Off-Road Machinery Council

Agricultural Tractor Standards Committee (ATSC)	J167	Overhead Protection for Agricultural Tractors—Test Procedures and Performance Requirements
	J974	Flashing Warning Lamp for Agricultural Equipment
CTTC C2 – Electrical Components and Systems Committee	J2030	Heavy-Duty Electrical Connector Performance Standard

Helping industry engineer safe vehicles

- In-Vehicle Networks and Software, 2011 SAE Paper Collection 14 papers, online April 2011, COLL-TP-00127
- Intelligent Vehicle Initiative (IVI) Technology Advanced Controls and Navigation Systems, 2011 SAE Paper Collection 12 papers, online April 2011, COLL-TP-00128
- Driver-Vehicle Interaction SAE Standards Subscription SUB-STD-00010
- SAE J2364, J2365 & J2378 ™, In-Vehicle Navigation and Route Guidance Standards while Driving
- SAE J2831 ™ , Development of Design and Engineering Standards for In-Vehicle Text Messages
- SAE J2944 ™ , Operational Definitions of Driving Performance Measures and Statistics Standard
- What Engineers and Managers Need to Know About Human Factors, book R-331
- Performance Metrics for Assessing Driver Distraction: The Quest for Improved Road Safety, book R-402
- A Holistic Introduction to Commercial Telematics seminar, C0947
- Panels/technical sessions like “The Challenges of Implementing New Technologies While Improving Safety” and “Crash Avoidance I--Crash Causation, ESC, Lane Keeping, and Other Avoidance Technologies” at such annual events as SAE Government Industry Meeting and SAE World Congress
- SAE Convergence® 2012 Conference & Exhibition
- Driver Vehicle Interface Technical Standards Development Committee
- Visual Behavior and Metrics Technical Standards Development Committee

Look for all information, events, and standards initiatives related to Driver Vehicle Interface technologies at www.sae.org

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Driver Vehicle Interface

Standards & Resources from SAE

The National Highway Traffic Safety Administration (NHTSA) has identified it as one of its top priorities with the long-term goal of significantly reducing crashes attributable to driver inattention and workload. New laws and regulations are being passed at the state and local levels. Yet, solutions to safe, connected vehicles are as complex as the speed at which new mobile devices and in-vehicle technologies are introduced to the market.

SAE International can help the automotive OEM in finding those solutions. It offers a neutral forum for industry to develop needed DVI guidelines. Presently, the collective wisdom and thought leadership of industry volunteers involved in SAE’s technical standards development committees are working on defining “hands free” and providing guidance on voice recognition principles as well as timely comprehension. And with one of the largest libraries of intellectual property focused on mobility technology, the past and current work of the global engineering community can be referenced for designing and developing ways in which to best manage driver workload.

P110297

SAE International

Ground Vehicle Standards Committees & Staff Contacts

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

Motor Vehicle Council

Powertrain Systems Group

- Air Cleaner Test Code Standards
- All Wheel Drivetrain Standards
- Automatic Transmission Friction
- Automatic Transmission Transaxle
- Battery Committee
  - Testing
  - Safety
  - Recycling
  - Labeling
  - Transportation
  - Recycling
  - Truck and Bus
- Diesel Fuel Injection Equipment
- Driveline
- Engine Power Test Code
- Filter Test Methods
- Fuel Systems
- Gasoline Fuel Injection
- Hybrid
  - Electric Motor Rating
  - Communications
  - Connector
- Emissions
- Lev II Filler Pipe Assembly
- Manual Transmission Transaxle
- Permeation
- Piston Ring
- Power Test Code
- Transmission Axle Driveline

Chassis Systems Group

- Brake Forum Steering Cmte
  - Brake Linings Standards
  - Dynamometer Test Code Standards
  - Road Test Procedures Standards
  - Brake NVH Standards
- Highway Tire Forum Steering Cmte
- Vehicle Dynamics Standards
- Wheel Standards
- Hydraulic Brake Actuating Forum Adv. Grp.
  - Brake Fluids Standards
  - Automotive Brake & Steering Hose
  - Hydraulic Brake Components

Vehicle Safety Systems

- Accident Investigation & Reconstruction
- Active Safety Systems
- Restraints System Standards Steering
  - Child Restraints
  - Belt Systems
  - Inflatable Restraints
- Safety Systems Components Advisory Group
  - Human Biomechanics & Simulation Steering Cmte
  - Dummy Testing & Equip
  - Dummy Dev Eval Advisory Group
  - Impact & Rollover Test Procedures
  - Safety Test Instrumentation

- Driver Vision
- Safety & Human Factors Steering Cmte
- Vehicle Sound for Pedestrians (VSP)

Electrical Systems Group

- Vehicle E/E Systems Diagnostic
- Electronic Design Automation
- Vehicle Arch. for Data Communications
- Vehicle Electric Power Supply
- Embedded Software
- Automotive Electronic Systems Reliability
- Vehicular Flat Panel Display
- Electromagnetic Compatibility (EMC)
- Electrical Distribution Systems Steering Cmte.
  - Connector Systems
  - Cable Standards
  - Harness Covering
- Circuit Protection & Switch Devices
- Functional Safety
- Automotive OEM EMC
- Event Data Recorder

Fuel Cells Standards Cmte

- Emissions
- Interface
- Performance
- Safety

Vehicle Engineering Systems

Comfort & Convenience

- Adaptive Devices
- Advanced Traveler Information Systems
- Controls & Displays
- Cooling Systems
- Dedicated Short Range Communications
- Human Accommodations and Design Devices
- Interior Climate Control
- Sound Signaling Advisory Group
- Speedometer & Odometer
- Volatile Organic Compounds

Exterior and Performance

- Glazing Materials
- Light Duty Vehicle Performance & Economy Measurements
- Light Vehicle Exterior Sound
- Road Vehicle Aerodynamics
- Tow Vehicle Trailer Rating
- WIN/WMI
- Wiper Standards
- Dynamical Modeling and Simulation Committee

Lighting Coordinating Advisory Group

- Heavy Duty Lighting Standards
- Road Illumination Devices Standards
- Signaling and Marking Devices Standards
- Test Methods and Equipment Standards
- Emergency Warning Lights and Devices
- Lighting Materials Standards
- International Lighting Advisory Group
- Lighting Standard Practices
- International Cooperation

Green Technology Systems Group

- Green Bio-Materials Task Force
- Green Terminology Task Force

Service Development Technical Committee

- Service
- Towability
- Collision
- Graphics Based Service Info

Automotive Quality & Process Improvement Committee

Truck & Bus Council

- Advanced & Hybrid Powertrain Steering Cmte
  - Alternative Fuels
  - Axle
  - Clutch, Transmission & Power Take-Off
  - Engines
  - Hybrid Safety
  - Hydraulic Hybrids
- Body & Occupant Environment Steering Cmte
  - Truck Crashworthiness
  - Windshield Wipers & Climate Control
  - Human Factors
- Electrical/Electronic Steering Cmte
  - Low Speed Communications Network
  - Control and Communications Network
  - Event Data Recorder
  - Electrical Systems
- Brake and Stability Control Steering Cmte
  - Foundation Brake
  - Brake Actuator
  - Brake Systems
  - Electronically Controlled Brake Systems
  - Brake Supply and Control
  - Hydraulic Brake
  - Wheel
  - Stability Control Systems
  - Air Brake Tubing & Tube Fittings
- Total Vehicle Steering Cmte
  - Tire Pressure Management Systems
  - Corrosion
  - Vehicle Characterization
  - Coupling & Interchangeability
  - Noise, Vibration and Harshness (NVH)
  - Aerodynamics/Fuel Economy
  - Tire

Materials, Processes & Parts Council

- Automotive Corrosion & Prevention
- Acoustical Materials
- Fasteners
- Metals Technical Executive Steering Cmte
  - Carbon & Alloy Steels
  - Metals Test Procedures
  - Automotive Iron & Steel Castings
  - Sheet & Strip Steel
  - Elev Tep Prop of Ferrous Metals
- Automotive Adhesives & Sealants
- Plastics
- Spline B92
- Spring Steering Cmte
  - Coil Spring
  - Leaf Spring
  - Pneumatic Spring
  - Torsion Bar Spring & Stabilizer Bars
- Textile & Flexible Plastics /IFAI
- Vibration Control
- Fluid Conductors Connectors Steering Cmte
  - C1 Hydraulic Tube Fittings
  - C2 Hydraulic Hose & Hose Fittings
  - C5 Metallic Tubing
- Cmte on Automotive Rubber Specs
- Non-Hydraulic Hose
- Hose/Clamp Performance & Compatibility
- Fatigue Design & Eval Advisory Group
  - Surface Enhancement
  - Material Properties
  - Structural Analysis
  - Fatigue Lifetime Predictions
  - Road Load Data Acquisition
  - Component Testing & Simulation
- Squeak and Itch Compatibility Task Force
- Ground Vehicle Reliability
  - Terrain Modeling Task Force
  - Software System Reliability Subcommittee
  - Unmanned Ground Vehicle Reliability TF
  - CBM (Condition Based Management) SC

Construction, Agricultural & Off-Road Machinery Council

- Common Tests Technical Steering Cmte
  - Hydraulics
  - Electrical Components
  - Cold Weather Operations
- Human Factors Technical Advisory Grp
  - Machine Controls – Operator
  - Machine Displays and Symbols
  - Operator Seating and Ride
  - Operator Accommodation
- Machine Technical Steering Cmte
  - Loaders, Crawlers, Scrapers & Attachments
  - Sweeper, Cleaner & Machinery Industrial Equipment
  - Forestry & Logging Equipment
  - Excavators
  - Roadbuilding Machinery
  - Tire & Rim
  - Trenching & Boring
- Operator Protection Tech Advisory Grp
  - Personal Protection (General)
  - Braking
  - Lighting and Marking
  - Protective Structures
- Sound Level Technical Steering Cmte
  - Earth Moving Machinery Sound Level
  - Back-up and Forward Warning Alarms

Specialized Vehicle & Equipment Council

- Personal Watercraft
- Small Engine & Powered Equip
- Snowmobile
- Special Purpose Vehicle
- Motorcycle Technical Steering Cmte
  - Motorcycle Sound
- Marine Technical Steering Cmte
  - Marine Engine Fuel Systems
  - Marine Electrical Systems
- Trailer
  - Gooseneck & Fifth Wheel
  - Trailer Dynamics
  - Conventional Towing to 20,000 lbs
  - Trailer Terminology
- Ship Systems & Equip Steering Cmte
  - Fluid Systems & Components
  - Fasteners
  - System Cleanliness and Filter

Fuels & Lubricants Council

- Technical Committee 1 – Engine Lubrication
- Technical Committee 2 – Industrial Lubricants
- Technical Committee 3 – Driveline & Chassis Lubrication
- Technical Committee 7 - Fuels

Cooperative Research Projects

- MAC Refrigerant Blends (MRB CRP)
- Alternative Refrigerants
- CRP1234yf Alt Refrigerant Assessment
- CRP150 Low GWP Alt Refrigerants Assessment
- High Temperature Battery Study
- Emergency Vehicle Lighting
- Truck Cab Anthropometric Study
- Vehicle Sound Level for Pedestrians
- H_2 Fuel Cell Station Breakaways, Hoses, Fittings and Nozzles
- High Strain Rate Plastics
- IMAC
- ITS Projects
- CAESAR
- Ergonomics
- Gage R&R of HPM
- Otologic Trauma
- Plastics Suitable for use with H_2

Standards Derivative Programs

- Horsepower Certification
- J2746 Software Assessment Repository
- On Board Diagnostics Databases
- MAC Equipment Conformance
- H-Point Machines
- WMI/VIN
- WMC/PIN
- Wheel Conformance

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