

# Ground Vehicle Standards Newsletter

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**SAE International**

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

## SAE Cooperative Research Project focuses on RESS test procedures

SAE International's Cooperative Research Project (CRP) to Develop Repeatable Safety Performance Test Procedures for Rechargeable Energy Storage Systems (RESS) is progressing toward its objective of developing test methods and performance-based safety metrics for Li-Ion-based RESS.

Awarded a contract from the **U.S. Department of Transportation (DOT)** and the **National Highway Traffic Safety Administration (NHTSA)**, this federally-funded research project – in which SAE is partnering with five major automotive OEMs actively working on RESS – is identifying and documenting appropriate test conditions, boundary limitations, and performance criteria that can be applied to vehicle level testing when possible, and component level testing when necessary.

This CRP is also developing objective test methods and metrics for analyzing RESS safety performance with and without loss of the control system. The end result of this cooperative two-year effort will be the development of safer processes and practices by the industry, which is expected to help mitigate safety risks from rechargeable energy storage systems.

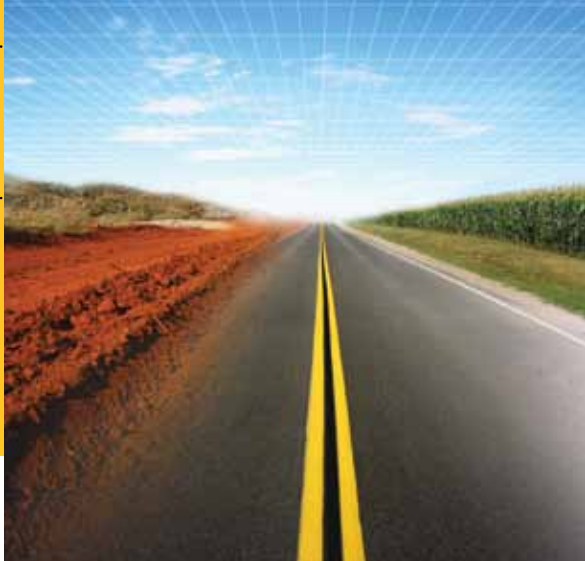
SAE International Ground Vehicle Standards staff members are providing project leadership, fiscal administration and facilitation for the CRP, with **Jack Pokrzywa, SAE Ground Vehicle Standards Manager**, serving as Project Director and **SAE Technical Project Managers Peter Byk and Keith Wilson**, providing overall project management. RESS CRP OEM partners are **General Motors Company, Mercedes Benz R&D North America, Toyota Motor Corporation, Honda Motor Company, and Nissan Motor Company. Galen Ressler of General Motors is Task Force Technical Director/Chair.** Since the October 1, 2011 project kick-off, the task force members and consultants collaborative work effort has totaled over 1600 hours.

The development of the safety test procedures was Phase 1 of a four phase approach. In Phase 2, which began in April and is expected to be completed by the end of 2012, the OEM partners will conduct testing in their respective facilities with their HEVs, PHEVs, EVs and battery systems to collect data for use in the refinement of the safety test methodologies and procedures.

Later this year, in Phase 3 of the project, SAE will contract with **Sandia National Laboratory** and an undetermined independent test laboratory to retest OEM project partner vehicle models using the refined associated test. Following that, SAE will finalize and document industry Li-Ion RESS safety test procedures and recommend industry metrics for HEVs, PEVs and EVs.

The CRPs final report is slated to be released to NHTSA in October 2013.

For further information on the SAE Cooperative Research Project (CRP) to Develop Repeatable Safety Performance Test Procedures for Rechargeable Energy Storage Systems (RESS), contact Project Managers Peter Byk (peterbyk@sae.org) and Keith Wilson (kwilson@sae.org).



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## New Crash Data committee, other committees, seeking experts

The recently created **Crash Data Collection and Analysis (CDCA) Committee** is actively seeking members. The CDCA committee is responsible for developing and maintaining SAE standards, recommended practices, and information reports related to safety-relevant data across the crash timeline, including pre-crash, crash, and post-crash phases of impact.

The committees under the CDCA will consider methods that define, develop, and evaluate real-world crash data that relates to passenger and heavy motor vehicles that travel on public roads. Data sources include epidemiological databases (e.g., NASS/GES, FARS), field investigations (e.g., scene, vehicle, witness), vehicle data archives (e.g., Controller Area Network bus (CAN), event data recorders (EDR), naturalistic driving recorders), and infrastructure data archives (e.g., cellular, Wi-Fi, Wi-Max, dedicated short-range communications (DSRC)).

The CDCA committees consider traditional and advanced data collection methods and operational definitions as well as robust analytic methods based on either a single data source or fusion of data types (e.g., epidemiological, field investigation, naturalistic, experimental). The committees may also facilitate applicable discussion and develop work products (SAE standards, recommended practices, information reports) relating to the collection and analysis of crash data in areas such as policy issues (e.g., privacy), harmonization, or other data-related issues that may support the development and enhancement of crash avoidance and crashworthiness countermeasures.

The CDCA is seeking active members interested in serving within three initial committees including: Data Collection & Archiving, Data Analysis, and Cross-Cutting Issues. Members will contribute to the committee's mission to develop consensus documents with the ultimate goal of improving driver safety through ensuring crash data is collected and analyzed using robust methods. For additional information and to become a member, please contact Nikki Ameredes, SAE Standards Specialist at [nameredes@sae.org](mailto:nameredes@sae.org).

**The Truck and Bus Wheel Committee** (of the Truck and Bus Brake and Stability Control Committee) is looking for members in the User (OEM) Category. This committee is responsible for initiating, developing, reviewing, and approving recommended practices, standards, and information reports related to hubs, wheels and the wheel mounting systems of buses, trucks, and tractor-trailer combinations intended for highway use. For information on participating on this committee, contact [jwright@sae.org](mailto:jwright@sae.org).

**The Truck and Bus Corrosion Committee**, which has previously developed "SAE J2721: Recommended Corrosion Test Methods for Commercial Vehicle Components," is seeking general and OEM members. Contact [jwright@sae.org](mailto:jwright@sae.org) for additional information.

**The Capacitive Energy Storage Committee** is seeking experts in the battery area from both OEMs and suppliers to become members. This committee will be involved in the creation of a performance specification for super-capacitors for use in automotive traction applications. For more information, contact [pebejer@sae.org](mailto:pebejer@sae.org). If you are interested in participating in these or other SAE standards committees, you can also do so at <http://www.sae.org/standardsdev/participateReq.htm>.

### 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/>



## SAE Ground Vehicle Standards staff adds liaison in China

A new member of SAE's Ground Vehicle Standards staff team is working to develop relationships and cooperative efforts with standard organizations in China.

Based in Shanghai, **Shawn Song**, Senior Program Manager began work in the first quarter of 2012 to establish on-going communications with key personnel at the **China Automotive Technical and Research Center (CATARC)**, the organization which develops automotive standards in China. He is also developing relationships and serving as a liaison between SAE and other organizations and companies in China, and promoting SAE's certification programs in China.

"Shawn's task is to serve as an SAE liaison to the technical standards program in China. Providing a bridge between SAE's vast engineering knowledge base and the community of engineers in China will result in better understanding of technical positions and a quicker development of standards that are hopefully harmonized," said **Jack Pokrzywa**, SAE Ground Vehicle Standards Manager.

### Standard News in China

- The Ministry of Environmental Protection recently released "implementation of the announcement of the country's IV-stage, heavy-duty vehicle gasoline engine and vehicle emission standards." The August 1st announcement pointed out that "all production, import, sale and registration of heavy vehicles with gasoline engines must meet the standard since July 1, 2013." The relevant enterprises should promptly adjust production, imports and sales plans.
- National standard "GB/T 28569-2012, Electric Vehicle Charging Pile Energy Metering," edited by China CEPRI (China Electric Power Research Institute), was approved by AQSIQ General Administration of Quality Supervision; Inspection and Quarantine of the People's Republic of China (PRC); SAC (Standardization Administration of the People's Republic of China) and released on July 18th 2012. It will be formally implemented on November 1th.
- SAC proposed to establish the national standard of "Automotive Polyurethane Synthetic Leather Safety Technical Conditions."
- The following standards were also published by SAC: "Automotive Engine Valve Technology Conditions; "Car Engine Cylinder Head Airway Steady-state Flow Characteristics of the Test Method; and Car with Metal Catalytic Converters, Platinum, Palladium, Rhodium Determination." Public comment is being accepted through the end of August. <http://www.caam.org.cn/biaozhuidongtai/20120730/1405076071.html>
- SAC announced its 13th standard of 2012: "GB/T 28542-2012, Road Vehicles-Emergency Starter Cable," approved 2012-6-29, execution date 2012-11-1. While not an NTCAS standard, the following standard was also announced: "GB/T 19056-2012, Vehicle Traveling Data Recorder," approved 2012-6-9-1, execution date 2012-9-1, replaces GB/T 19056-2003. <http://www.catarc.org.cn/NewsDetails.aspx?ID=1998>
- "GB7258-2012, Operation of Motor Vehicles Safety Technology Conditions" officially released and will be executed on September 1st, 2012.

### 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

## Initial document from On-road Autonomous Vehicle Standards Committee in progress

Established in 2011, the **SAE On-road Autonomous Vehicle Standards Committee** has its first document in progress. "SAE J3016: Taxonomy and Definitions for Terms Related to On-road Autonomous Vehicles" will establish a set of industry-accepted definitions relevant to autonomous vehicles that will be operated on existing public roadways in mixed traffic.

The committee has established a new subcommittee, the **Safety Test Working Group**, which is beginning work on developing a standard for test protocols for autonomous vehicles. This document, "Guidelines for Safe On-Road Testing of Autonomous Vehicles," will provide general safety-relevant guidelines for performing tests of prototype autonomous vehicles in mixed traffic environments. Guidelines will address only the safety-related prerequisites for and conduct of such tests.

Consisting of industry experts on autonomous vehicles, the **On-road Autonomous Vehicle Standards Committee is chaired by Paul Perrone**, founder of Perrone Robotics. With its fielding of two autonomous vehicles into the DARPA Grand Challenge and DARPA Urban Challenge, the company established itself as an early player in this emerging technology. **Committee Vice Chair is Steve Underwood**, Director of Transportation and Information, University of Michigan.



## Vehicle Communications

### Standards & Resources from SAE International

Vehicle communications provide endless opportunities for safer driving. From vehicle-to-vehicle communications (V2V) for improving the effectiveness of such advanced safety technologies as collision avoidance...or applications like intelligent speed adaption and intersection collision avoidance countermeasure systems, a transportation network featuring connectivity among vehicles, the infrastructure (V2I), and portable devices can only help to maximize automotive and public safety.

To assist in achieving connectivity, the automotive industry can look to SAE International. Providing a neutral forum for the development of needed engineering guidelines, the collective wisdom and thought leadership of the volunteers on its standards development committees can help industry advance vehicle communication technologies, increase productivity, and reduce costs.

With a 106-year history steeped in functional safety standards, SAE stands ready to tackle the complex advanced safety issues of today. Offering 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, developing, and implementing the next generation of safety systems.

For more Advanced Safety Standards & Resources, including information on Collision Avoidance/ Mitigation and Driver Vehicle Interface, visit [sae.org/standardsdev/safety/](http://sae.org/standardsdev/safety/).

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1-877-606-7323 (US, Canada)  
1-724-776-4970 (outside US, Canada)

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### Helping industry engineer safe vehicles

- Intelligent Vehicle Initiative (IVI) Technology Advanced Controls and Navigation Systems, 2011 SAE Paper Collection (Online, COLL-TP-00128)
- Autonomous Connected Vehicle Technologies (Seminar)
- In-Vehicle Networks and Software, 2011 SAE Paper Collection (Online, COLL-TP-00127)
- Telematics Communication Technologies and Vehicular Networks: Wireless Architectures and Applications (Book B-IGI-004)
- SAE J2735\_200911™ Dedicated Short Range Communications (DSRC) Message Set Dictionary
- Intelligent Vehicle Technologies (Book R-310)
- J2398™ In-Vehicle ITS Display Legibility Standard
- Automotive Telematics (Book T-105)
- Crash Avoidance II—ITS and Vehicle Safety Communication (SAE 2012 Government Industry Meeting, Session)
- SAE J2395\_200202™ ITS In-Vehicle Message Priority
- SAE J2830\_200807™ Process for Comprehension Testing of In-Vehicle Icons
- A Holistic Introduction to Commercial Telematics (Seminar ID C0947)
- SAE J2561™ Bluetooth Wireless Protocol for Automotive Applications

## Alternative mobile air conditioning refrigerants are investigated

An ongoing SAE Cooperative Research Program (CRP) project is investigating additional alternative refrigerants. The MRB CRP "Mobile Air Conditioning (MAC) Refrigerant Blend" features participation from 15 industry partners, including OEMs and suppliers from North America, Europe and Asia.

The project started in 2011 to explore low-GWP (Global Warming Potential) refrigerants which could be possible options to HFO1234yf which was investigated in an earlier SAE CRP project, CRP1234. Work on the project's current scope is tentatively scheduled to be completed by the end of 2012.

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The scope of the MRB CRP project includes conducting a risk assessment on issues such as safety and toxicity of the alternate refrigerants, and an investigation into the refrigerants' performance in air conditioning systems. The project is also looking at material compatibility issues (such as how the refrigerant reacts with required lubricants and how well it works with hoses, seals, etc.) and service and handling considerations.

If the CRP determines alternate refrigerant candidates to be promising, there is the possibility that the development of new SAE standards that address the use of new refrigerants may be initiated.

SAE's Cooperative Research Program services are available to any industry group with a common technical interest and ability to provide shared funding to conduct the project. Please contact Gary Pollak, SAE CRP Program Manager, to discuss opportunities to formulate new projects at [gary@sae.org](mailto:gary@sae.org) or call +01-724-772-7196.

## SAE updates trailer towing standard

SAE International has updated its trailer towing standard, "J2807: Performance Requirements for Determining Tow-Vehicle Gross Combination Weight Rating and Trailer Weight Rating." The guidelines require vehicles to be tested under consistent conditions and parameters, giving consumers accurate information when comparing the trailer-towing capacities of similar models.

Updates include revision of standard trailer weight range descriptions and clarification of test setup, ballast procedures, and test requirements in several areas. The standard can be applied to passenger cars, multipurpose passenger vehicles, and trucks with a gross vehicle weight rating of up to 13,000 lb.



"We have a great committee with representatives from all over the auto and trailer industries who have put a lot of time and effort into developing standards for trailer weight ratings," said **Robert J. Krouse**, General Motors North America Trailering Engineer, BFO – Trailering, and **SAE Tow Vehicle Trailer Rating Committee Chairman**. "I think trailering customers will really benefit from this effort."

The standard is available at [http://standards.sae.org/j2807\\_201205](http://standards.sae.org/j2807_201205)

## Green Technology Steering Committee proposes information report on landfill free attainment; task force members sought

The **SAE Green Technology Steering Committee** (GTSC) has drafted a proposal for the development of an SAE Best Practices Information Report on Landfill Free Attainment.

The automotive industry has developed a wide variety of practices to recycle and reuse materials across its operations, including manufacturing and administrative activities. Those individual company practices have not been widely disseminated across the industry. The goal of the information report will be to share these practices among the SAE community and industry members.

The information report will provide definitions, establish criteria for determining value of waste and by-products, and establish procedures for achieving the goal of landfill free attainment. Draft definitions and procedures are provided in the draft proposal for initial discussions.

The draft proposal's definition of "landfill-free" takes into account all by-products (waste) generated from ongoing, day-to-day operations (including episodic/periodic events such as pit cleanouts). To qualify for landfill-free status, the draft proposal notes that facilities "must disposition by-products by any other method except placement in a landfill."

The GTSC is looking for members for a task force to build upon the draft document, to further reflect the variety of landfill free attainment practices used in the industry. If you are interested in reviewing the draft proposal and participating in the task force, please contact Pat Ebejer at [pebejer@sae.org](mailto:pebejer@sae.org).

## Battery standards vital, says Committee Chair

"In order for the technical community to protect itself, and for it to flourish, it has to have documentation written by a large cross section of professionals," said **Bob Galyen, Chair of the SAE Battery Standards Steering Committee**. Galyen, President of Magna E-Car Systems Battery Business Unit says SAE's standards work is extremely important to the young electrification-of-the-automobile sector.

"There are a lot of people out there who do not understand batteries, who do not understand electrified systems," he said, noting that without standards and the work of the nearly 500 members of SAE's battery standards committees, there might be "a lot of people out there who don't know what they're doing who can cause physical damage to themselves or others because they're not designing safe and efficient systems."

Aside from safety considerations, standards also make possible reductions in costs. If automakers can agree on a standard battery module or cell size, that would result in manufacturing economies of scale. No standardization results are imminent, as automakers want to retain as much packaging flexibility as possible, said Galyen, who is temporarily serving as Chair of the **Battery Size Standardization Committee**.

One imminent standard is "SAE J2936: Vehicle Battery Labeling Guidelines," being developed by the **Battery Standards Labeling Committee**. This SAE Recommended Practice provides labeling guidelines for any electrical storage device at all levels of sub-component, component, subsystem, and system-level architectures describing content, placement, and durability requirements of labels. It addresses dimensional, positioning, and copy nomenclature, product description, voltage and manufacturing information, as well as end-of-life disposal, shipping, and electrical connection data.

*Adapted from June 2012 issue of SAE International's Vehicle Electrification magazine.*

### 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



## SAE launches new Global Technology Library - a complete database for electric vehicle technology

The *SAE Global Technology Library—Electric Vehicle* is a new, comprehensive resource from SAE International that covers the latest developments in vehicle electrification worldwide. Unique to the market, the library is designed specifically for professionals and businesses in the hybrid-electric and electric vehicle industry, and provides news and in-depth analysis on the competitive landscape; market performance; private and government research; intellectual property developments; and new and proposed regulations.

"Today's development engineers are tasked with a formidable goal: converge mechanical, electrical and chemical knowledge into vehicles that are reliable, economical and fun to drive; and do it using a completely new propulsion technology," said **Michael Thompson, Manager of Electronic Publishing at SAE International**. "Our new *Global Technology Library* brings together the right information in a database that is simple and meaningful."

Content includes SAE International technical papers and standards, SAE International eBooks and SAE International magazine content. In addition, the *Global Technology Library – Electric Vehicle* contains data from sources outside of SAE International, including global regulations, patents and patent applications, news articles, and market forecasts and industry reports.

For the initial launch, much of the information is made available through content partnership agreements between SAE International and other publishers, including Bloomberg BNA, InterRegs, SupplierBusiness, Advanced Automotive Batteries, The Patent Board, the U.S. Department of Energy, Honda Corporation, Cars21.com and ABOUT Publishing. SAE has plans to continue adding content post-launch as well. Content from partners like IDTechEx and NASA Tech Briefs is already in the works.

Future Global Technology Libraries, information databases dedicated on very narrowly defined topics, will be produced based on customer demand and detailed market-gap analysis.

For more information about the product or to sign up for a free two-week trial, go to [www.sae.org/ev](http://www.sae.org/ev).

**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)

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## Volunteer recognition: document sponsors (May 31 – August 1, 2012)

These following individuals have served as active committee members and 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.*

**David Antanaitis**, General Motors LLC  
**Ken Archibald**, Independent Test Services  
**Daniel Arens**, Baldwin Filters Inc  
**Paul Baltusis**, Ford Motor Co  
**Jeffrey Bauer**, John Deere Dubuque Works  
**James Becker**, C E Niehoff & Co  
**William Biondo**, General Motors LLC  
**Vern Caron**, Caron Engineering  
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**Larry Moore**  
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**Timothy Neveau**, Continental Automotive Systems US Inc  
**Daniel Ostrosky**, Yamaha Motor Corp USA  
**Max Pace**, Navistar Inc  
**Hiralal Patel**  
**Mark Rogus**, Link Testing Laboratories Inc  
**Stephen Rouhana**, Ford Motor Co  
**Richard Scholer**, Chrysler LLC  
**Jeffery Smith**, Vee Engineering  
**Mark Smith**, Veyance Technologies Inc  
**Donald Smolenski**, General Motors LLC  
**Michael Soltis**, Ford Motor Co  
**Thomas Soupai**, Meritor Wabco  
**Stanley Stokes**, Braketec  
**Bart Terburg**, Osram Sylvania  
**Paul Tuckner**  
**James Van Orsdel**, Bridgestone Americas Inc  
**Scott Willis**, Ford Motor Co  
**Kevin Wolford**, Ameca Inc  
**Philip Yaccarino**, General Motors LLC  
**Mark Zachos**, DG Technologies

## New chairs, committees, and task forces

**Lisa Boran**, Ford, Chair Automotive Security Guidelines and Risk Development Task Force (under the Vehicle Electrical System Security Committee)

**Neil Borkowicz**, Chrysler, Chair Vehicle Electrical Hardware Security Task Force (under the Vehicle Electrical System Security Committee)

**Mike Larsen**, General Motors, Chair, SAE Regulatory Cooperation Task Force (under the Lighting Coordinating Advisory Group)

- Cross-Cutting Standards Committee (under Crash Data Collection and Analysis Steering Committee) Currently seeking volunteers, contact Nikki Ameredes; nameredes@sae.org
- Collection and Archiving Committee (under Crash Data Collection and Analysis Steering Committee) Currently seeking volunteers, contact Nikki Ameredes; nameredes@sae.org
- Analysis Standards Committee (under Crash Data Collection and Analysis Steering Committee) Currently seeking volunteers, contact Nikki Ameredes; nameredes@sae.org
- Truck Driver Distraction Task Force (under the Truck & Bus Human Factors Committee)

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- Automotive Security Guideline and Risk Development Task Force (under the Vehicle Electrical System Security Committee)
- Hands Free Definition Task Force (under the Advanced Traveler Information Systems Committee)
- Battery Cell and Module Connections Committee  
SAE J3005 Guidance for Remote OBD Task Force (under the Vehicle Electronic and Electrical System Diagnostic Standards Committee)
- Brake Component Hydraulic Flow Rate Measurement Task Force (under the Hydraulic Brake Actuating Forum Advisory Group)
- SAE J2521 Disc and Drum Brake Dynamometer Squeal Noise Matrix Task Force (under the Vehicle Electronic and Electrical System Diagnostic Standards Committee)
- Standard Duty Cycle Conditions for Durability Testing Task Force (under the Vehicle Electronic and Electrical System Diagnostic Standards Committee)

If interested in volunteering your technical expertise towards any of the activities listed, you can do so at <http://www.sae.org/standardsdev/participateReq.htm> or via the contact if noted.

## Volunteer spotlight: SAE Awards

**Congratulations to the following SAE 2012 Technical Standards Board Outstanding Contribution Award winners** recognized 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.

**Carolos Agudelo**, Link Engineering Company, Specialized Vehicle and Equipment Council

**Vern Caron**, ArvinMeritor Inc., Truck and Bus Council

**Paul Dicke**, Holistech Energy Solutions LLC, Motor Vehicle Council

**Gregory Felder**, Michelin North America Inc., Truck and Bus Council

**Rob Frost**, Cummins Inc., Truck and Bus Council

**David Gamble**, John Deere & Co., Construction, Agricultural and Off-Road Machinery Council

**Marty Kapanowski**, Ford Motor Co., Motor Vehicle Council

**Michael Larsen**, General Motors LLC, Motor Vehicle Council

**Raj Rajamanickam**, Haldex Hydraulics Corp., Construction, Agricultural and Off-Road Machinery Council

**Galen Ressler**, General Motors LLC, Motor Vehicle Council

**Jeffery Smith**, Vee Engineering, Motor Vehicle Council

**John Yurtin**, Delphi Connection Systems, Motor Vehicle Council

## Nominate a deserving individual for an SAE award

**AE/InterRegs Standards and Regulations Award**

**Nomination deadline: September 30**

This award recognizes a practicing engineer who has provided significant contributions to the standards, regulations, or conformity assessment systems for improved safety or reduced emissions in a ground vehicle mobility product. The individual can work on the standards/regulation language and/or product to comply with the standards/regulation. The award was established in 2000 by InterRegs Ltd. as a way to reward significant participation in standards, regulations or conformity assessment systems to engineers and to encourage increased participation in the future. Submit nominations at [www.sae.org/awards](http://www.sae.org/awards) or call 1-877-606-7323 (U.S. and Canada only) or 1-724-776-4970 (outside U.S. and Canada).

## SAE Ground Vehicle Standards “On the Road”

SAE Ground Vehicle Staff members, **Jack Pokrzywa**, **Peter Byk** and **Keith Wilson** participated in the Department of Energy (DOE) Annual Merit Reviews in Washington D.C. on May 17 to gain knowledge on industry projects and research efforts in the area of PHEV (Plug-in Hybrid Electric Vehicles) and BEV (Battery Electric Vehicles) including charging solutions, battery safety, interoperability and communication between EV and the electric grid.

**Galen Ressler, Chair SAE Battery Safety Standards Committee, Robert Galyen, Chair SAE Battery Steering Committee, Jack Pokrzywa**, SAE Ground Vehicle Standards Manager, and SAE Ground Vehicle Standards Technical Project Managers **Peter Byk** and **Keith Wilson** attended the DOT/NHTSA Battery Safety Symposium on May 18 in Washington D.C. to gain knowledge on industry projects and research efforts in the area of battery safety. Mr. Galyen provided a presentation on SAE Hybrid/EV related standards activities and research efforts including battery safety. He also provided an overview of standard development activities by each of the 16 SAE battery committees, and discussed the development of two new SAE battery standards committees.

**Sue Bai, Chair SAE Dedicated Short Range Communication (DSRC) Committee** presented an overview of the standards development work the committee is engaged in at the 12th Annual Telematics Detroit, MI 2012 Conference on June 6-7.

**Peter Byk** and **Keith Wilson** presented an overview of the SAE Standardization Process and SAE EV Standards at the IEEE Transportation Electrification Conference (ITEC 2012) in Dearborn, MI on June 18.

**Gery Kissel, Chair of the SAE J1172 Conductive Charger Committee, and Richard Scholer, Chair of the J2836, J2847 & J2931 Communications Committee**, provided presentations on SAE conductive charge connector standards to the Electric Power Research Institute (EPRI) Infrastructure Working Council Meeting, June 27 in Chicago, IL.

**Gary Pollak**, SAE Program Manager, Technical Projects, attended the OEM Small Engine User Conference hosted by Kawasaki on July 11-12 in Grand Rapids, MI and presented details of SAE's Certified Power Program for small engine manufacturers. The purpose was to raise awareness of Kawasaki's participation in this SAE Program and urge OEM users to require their engine suppliers to obtain SAE Certification.

**Keith Wilson** represented SAE at the the Electric Power Research Institute (EPRI) Plug-In 2012 conference in San Antonio, TX on July 23-26 to gain knowledge on industry projects and research efforts in the area of PHEV (Plug-in Hybrid Electric Vehicles) and BEV (Battery Electric Vehicles) including charging solutions, interoperability and communication between EV and the electric grid.

**Peter Byk** will be speaking at the U.S.-China Electric Vehicle and Battery Technology Workshop in Boston, MA on August, 23 on the topic of the “Status of SAE EV Standards Development in the US.”

**Joern Tinnemeyer, Chair of the SAE Battery Standards Electronic Fuel Gauge Committee**, will speak at the EV Battery Technology Conference to be held in Novi, MI on September 25-26. Joern will provide an overview of standard development activities by each of the 19 SAE battery committees.

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### 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



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**Gary Pollak** and **Peter Byk** will attend the SAE Commercial Vehicle Engineering Congress, October 2-3 in Rosemont, Illinois to network with industry executives at the T&B Council Meeting and to participate in the Vehicle Health Management, Industry Panel Discussion. SAE Ground Vehicle Standards staff member Jana Wright will oversee Truck and Bus Council technical committee meetings.

**Mary Doyle**, Ground Vehicle Standards staff member, will participate in the “Intersociety Materials Data Strategic Scoping Session” as part of the upcoming Materials, Science and Technology Conference & Exhibit in Pittsburgh, PA October 10. Work in the session will be related to the government's “Materials Genome Initiative” launched in 2011.

Ground Vehicle Standards staff members will attend the SAE 2012 Convergence on October 16-17 in Detroit, MI to meet with both industry and government executives to discuss Ground Vehicle Standards development activities in areas such as EV / PHEV's, advanced safety, ITS, fuel cell vehicles and SAE Cooperative Research Projects.

**Peter Byk** and **Keith Wilson** will attend the 3rd Annual Electric Vehicle Safety Standards Summit October 18, 2012 Detroit, MI to gain knowledge on industry projects and discuss research efforts in the area of battery safety.

As ISO Secretariat, SAE staff member **Nikki Ameredes** will assist in working group meetings C22 SC10 Impact Test Procedures and Anthropomorphic Test Devices (under TC22 SC12 Passive Safety Crash Protection Systems) to be held in Savannah, GA, October 22-26.

**Robert Galyen, Chairman of SAE Vehicle Battery Standards Steering Committee**, will speak at the EV Update 2nd annual PHEV/EV Infrastructure and Business Japan 2012 conference, October 30-31 in Tokyo. He will provide an overview of standard development activities by each of the 19 SAE battery committees.

The SAE MRB Cooperative Research Program partner meeting will be held in conjunction with the SAE 2012 Thermal Management Systems Symposium, October 31 – November 1 in Scottsdale, AZ. **Gary Pollak** will attend to coordinate this meeting. The SAE ICCSC Standards Committee will also meet at this venue, and Gary will present an update and new details of SAE's new MAC Conformance Program.

**Jana Wright** will attend the Truck and Bus Council's Control and Communications Network Committee to participate in J1939 Task Forces meetings, November 12-15 in Tampa, FL.

## Thank you...for your corporate support

SAE International acknowledges the following organizations who have contributed to funding the Standards Development Program—supporters who acknowledge the benefits common engineering requirements bring to industry and their business.

### 2011 Contributors

AM General	Ford Motor Company
Association of Equipment Manufacturers	General Motors LLC
Bendix Commercial Vehicle Systems	Honda of America Manufacturing
Borg Warner	Navistar Inc.
Cequent Performance Products	Nissan
Chrysler Group LLC	SEW Eurodrive
Cryotech Deicing Technology	TARDEC
Delphi Corporation	Toyota Motor Corporation
Denso America International Inc.	

### 2012 Year-to-date Contributors

American Honda Motor Company	General Motors LLC
BMW of North America LLC	Navistar Inc.
Chrysler Group LLC	Nissan
Delphi Corporation	Toyota Motor Corporation
Denso America International Inc.	
East Penn Manufacturing Company Inc.	
Ford Motor Company	

**There is still time to join our list of contributors for 2012.**

Contact [mdoyle@sae.org](mailto:mdoyle@sae.org) Support standards. Enabling industry to produce vehicles with optimal quality, safety and efficiency.

## New, revised & stabilized SAE standards (May – July 2012)

Committee	Doc	Title	Status	Pub Date
<b>CONSTRUCTION, AGRICULTURAL AND OFF-ROAD MACHINERY COUNCIL</b>				
Hydraulic Systems	J1176_201206	External Leakage Classifications for Hydraulic Systems	STABILIZED	06/01/12
Electrical Components and Systems	J180_201205	Electrical Charging Systems for Off Highway Work Machines	Revised	05/17/12
Machine Technical Steering Committee	J1069_201205	Oil Change System for Quick Service of Off-Road Self-Propelled Work Machines	STABILIZED	05/02/12
Loaders, Crawlers, Scrapers and Mounted Attachments	J49_201207	Specification Definitions - Hydraulic Backhoes	Revised	07/16/12
Excavators	J2518_201207	Lift Capacity Calculation Method Scrap and Material Handlers	Revised	07/20/12
Excavators	J31_201205	Hydraulic Backhoe Lift Capacity	STABILIZED	05/11/12
Tire and Rim	J1015_201207	Tonne Kilometer Per Hour Test Procedure	Revised	07/16/12
Personnel Protection (General)	J1042_201206	Operator Protection for General - Purpose Industrial Machines	STABILIZED	06/29/12
Personnel Protection (General)	J1083_201205	Unauthorized Starting or Movement of Machines	STABILIZED	05/02/12
<b>FUELS AND LUBRICANTS COUNCIL</b>				
Industrial Lubricants	MS1009_201207	Lubricants, Industrial Oils, and Related Products Type P Pneumatic Tool Oils – Specification	Revised	07/16/12
<b>MATERIALS, PROCESSES AND PARTS COUNCIL</b>				
Materials, Processes and Parts Council	J207_201205	Electroplating of Nickel and Chromium on Metal Parts – Automotive Ornamentation and Hardware	STABILIZED	05/11/12
Committee on Automotive Rubber Specs	J2979_201205	Test Method for Vulcanized Rubber and Thermoplastic Elastomer Determination of Compressive Stress Relaxation (CSR) Response	Issued	05/30/12
Fasteners Committee	J81_201207	Thread Rolling Screws	STABILIZED	07/05/12
Textile and Flexible Plastics Committee	J365_201205	Method of Testing Resistance to Scuffing of Trim Materials	Revised	05/08/12
Hydraulic Tube Fittings Committee	J1453/1_201205	Specification for O-Ring Face Seal Connectors: Part 1 - Tube Connection Details and Common Requirements for Performance and Tests	Revised	05/02/12
Hydraulic Tube Fittings Committee	J1453/3_201206	Specification for O-Ring Face Seal Connectors: Part 3 - Requirements, Dimensions, and Tests for Steel Unions, Bulkheads, Swivels, Braze Sleeves, Caps, and Connectors with SAE J1926-2 Inch Stud Ends	Revised	06/29/12
Hydraulic Tube Fittings Committee	J2337/2_201205	Connections for Fluid Power and High Pressure Use - Ports, Stud Ends, and Plugs with ISO 261 Threads and O-Ring Sealing - Part 2: Stud End Requirements, Dimensions, Design, and Test Methods	Revised	05/11/12
Hydraulic Tube Fittings Committee	J2337/3_201205	Connections for Fluid Power and High Pressure Use - Ports, Stud Ends, and Plugs with ISO 261 Threads and O-Ring Sealing - Part 3: Port Plug Requirements, Dimensions, Design, and Test Methods	Revised	05/11/12
Hydraulic Hose and Hose Fittings Committee	J1405_201205	Optional Test Procedures for Hydraulic Hose Assemblies	Revised	05/08/12
<b>MOTOR VEHICLE COUNCIL</b>				
Safety and Human Factors Steering Committee	J2889/1_201205	Measurement of Minimum Noise Emitted by Road Vehicles	Revised	05/14/12
Brake Linings Standards Committee	J866_201207	Friction Coefficient Identification and Environmental Marking System for Brake Linings	Revised	07/16/12
Brake Dynamometer Standards Committee	J2928_201207	Brake Rotor Thermal Cracking Procedure for Vehicles Below 4 540 kg GVWR	Issued	07/03/12
Brake NVH Standards Committee	J2598_201207	Automotive Disc Brake Pad Natural Frequency and Damping Test	Revised	07/16/12
Interior Climate Control Service Committee	J2912_201207	Performance Requirements for R-134a and R-1234yf Refrigerant Diagnostic Identifiers (RDI) for Use with Mobile Air Conditioning Systems	Revised	07/16/12

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Interior Climate Control Service Committee	J2927_201206	R-1234yf Refrigerant Identifier Installed In Recovery and Recycling Equipment for Use With Mobile A/C Systems	Revised	06/21/12
Interior Climate Control Services Committee	J2970_201207	Minimum Performance Requirements for Non-Refrigerant Tracer Gases and Electronic Tracer Gas Leak Detectors	Issued	07/19/12
Interior Climate Control Fluids Committee	J2296_201206	Retest of Refrigerant Container	Revised	06/04/12
E E System Diagnostic Standards Committee	J1699/3_201205	Vehicle OBD II Compliance Test Cases	Revised	05/11/12
EE System Diagnostic Standards Committee	J1962_201207	Diagnostic Connector Equivalent to ISO/DIS 15031-3: December 14, 2001	Revised	07/26/12
Electromagnetic Compatibility (EMC) Standards	J1113/27_201206	Electromagnetic Compatibility Measurements Procedure for Vehicle Components - Part 27 - Immunity to Radiated Electromagnetic Fields – Mode Stir Reverberation Method	Revised	06/06/12
Electromagnetic Compatibility (EMC) Standards	J551/16_201205	Electromagnetic Immunity - Off-Vehicle Source (Reverberation Chamber Method) - Part 16 - Immunity to Radiated Electromagnetic Fields	Revised	05/11/12
Electromagnetic Compatibility (EMC) Standards	J551/5_201205	Performance Levels and Methods of Measurement of Magnetic and Electric Field Strength from Electric Vehicles, 150 kHz to 30 MHz	Revised	05/11/12
Filter Test Methods Standards Committee	J363_201205	Filter-Base Mounting	STABILIZED	05/29/12
Cooling Systems Standards Committee	J1342_201206	Test Method for Determining Power Consumption of Engine Cooling Fan Drive Systems	Revised	06/19/12
Cooling Systems Standards Committee	J164_201207	Radiator Caps and Filler Necks	Revised	07/20/12
Fuel Systems Standards Committee	J2659_201207	Test Method to Measure Fluid Permeation of Polymeric Materials By Speciation	Revised	07/30/12
Fuel Systems Standards Committee	J2785_201205	Standardization of Color and Verbiage for Fuel Inlet Closures	STABILIZED	05/31/12
Fuel Systems Standards Committee	J285_201205	Dispenser Nozzle Spouts for Liquid Fuels Intended for Use with Spark Ignition and Compression Ignition Engines	STABILIZED	05/31/12
Fuel Systems Standards Committee	J829_201206	Fuel Tank Filler Cap and Cap Retainer	STABILIZED	06/29/12
Automotive Brake and Steering Hose Standards	J1288_201207	Packaging, Storage, and Shelf Life of Hydraulic Brake Hose Assemblies	STABILIZED	07/05/12
Automotive Brake and Steering Hose Standards	J1833_201207	Hot Impulse Test for Hydraulic Brake Hose Assemblies	STABILIZED	07/05/12
Automotive Brake and Steering Hose Standards	J188_201207	Power Steering Pressure Hose - High Volumetric Expansion Type	STABILIZED	07/05/12
Automotive Brake and Steering Hose Standards	J189_201207	Power Steering Return Hose - Low Pressure	STABILIZED	07/05/12
Automotive Brake and Steering Hose Standards	J190_201207	Power Steering Pressure Hose - Wire Braid	STABILIZED	07/05/12
Automotive Brake and Steering Hose Standards	J2050_201207	High-Temperature Power Steering Pressure Hose	Revised	07/05/12
Automotive Brake and Steering Hose Standards	J2076_201207	High-Temperature Power Steering Return Hose - Low Pressure	STABILIZED	07/05/12
Hybrid - EV Committee	J2931/4_201207	Broadband PLC Communication for Plug-in Electric Vehicles	Issued	07/26/12
Lighting Standard Practices Committee	J578_201207	Color Specification	Revised	07/20/12
Test Methods and Equipment Standards Committee	J1765_201206	SAE Miniature Bulb Vibration Test	STABILIZED	06/11/12
SAE IC Powertrain Steering Committee	J1033_201206	Procedure for Measuring Bore and Face Runout of Flywheels, Flywheel Housings, and Flywheel Housing Adapters	STABILIZED	06/01/12
SAE IC Powertrain Steering Committee	J373_201205	Housing Internal Dimensions for Single- and Two-Plate Spring-Loaded Clutches	STABILIZED	05/31/12
SAE IC Powertrain Steering Committee	J617_201205	Engine Flywheel Housing and Mating Transmission Housing Flanges	STABILIZED	05/31/12

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SAE IC Powertrain Steering Committee	J618_201205	Flywheels for Single-Plate Spring-Loaded Clutches	STABILIZED	05/31/12
SAE IC Powertrain Steering Committee	J619_201205	Flywheels for Two-Plate Spring-Loaded Clutches	STABILIZED	05/31/12
Automatic Transmission Transaxle Committee	J641_201206	Hydrodynamic Drives Terminology	Revised	06/04/12
Automatic Transmission Transaxle Committee	J927_201206	Flywheels for Engine-Mounted Torque Converters	STABILIZED	06/11/12
Automatic Transmission Friction Standards Committee	J2487_201205	SAE No. 2 Friction Test Machine 3600 r/min Stepped Power Test	Revised	05/31/12
Tow Vehicle Trailer Rating Committee	J2807_201205	Performance Requirements for Determining Tow-Vehicle Gross Combination Weight Rating and Trailer Weight Rating	Revised	05/17/12
Battery Standards Recycling Committee	J2984_201206	Identification of Transportation Battery Systems for Recycling Recommended Practice	Issued	06/22/12
Vehicle Dynamics Standards Committee	J2717_201206	Tests to Define Tire Size (Geometry), Mass, and Inertias	Revised	06/21/12
Vehicle Dynamics Standards Committee	J2731_201205	Low Speed Enveloping Test with Perpendicular and Inclined Cleats	Revised	05/23/12
VIN-WMI Technical Committee	J2750_20120			
VIN-WMI Technical Committee	J686_201207	Motor Vehicle License Plates	STABILIZED	07/23/12
<b>TRUCK &amp; BUS COUNCIL</b>				
Truck and Bus Brake Actuator Committee	J1953_201206	Brake-Stroke Indicator Design Guideline for Cam or Disc Air-Brake Actuators	Revised	06/19/12
Truck and Bus Brake Systems Committee	J1626_201205	Braking, Stability, and Control Performance Test Procedures for Air-and Hydraulic-Brake-Equipped Trucks, Truck-Tractors and Buses	STABILIZED	05/23/12
Truck and Bus Brake Systems Committee	J2503_201205	Drawbar Pull Performance Criteria	STABILIZED	05/24/12
Truck and Bus Brake Supply and Control Components Committee	J2383_201206	Air Dryer Installation Procedure	Revised	06/04/12
Truck and Bus Advanced and Hybrid Powertrain Steering Committee	J1621_201207	Engine Retarder Dynamometer Test and Capability Rating Procedure	STABILIZED	07/02/12
Truck and Bus Advanced and Hybrid Powertrain Steering Committee	J2188_201207	Commercial Truck and Bus SAE Recommended Procedure for Vehicle Performance Prediction and Charting	Revised	07/31/12
Truck and Bus Advanced and Hybrid Powertrain Steering Committee	J2458_201207	Exhaust Brake Dynamometer Test and Capability Rating Procedure	STABILIZED	07/02/12
Truck and Bus Advanced and Hybrid Powertrain Steering Committee	J923_201207	Nomenclature and Terminology for Truck and Bus Drive Axles	STABILIZED	07/02/12
Truck and Bus Wheel Committee	J2696_201205	Inboard Mounted Disc Brake Rotor/Disc Wheel Hub Interface Dimensions - Commercial Vehicles	Issued	05/29/12
Truck and Bus Aerodynamics and Fuel Economy Committee	J1252_201207	SAE Wind Tunnel Test Procedure for Trucks and Buses	Revised	07/16/12
Truck and Bus Low Speed Communication Network Committee	J2497_201207	Power Line Carrier Communications for Commercial Vehicles	Revised	07/30/12
Truck Bus Control and Communications Network Committee	J1939/71_201205	Vehicle Application Layer (Through May 2011)	Revised	05/11/12
Truck and Bus Control and Communications Network Committee	J1939/84_201206	OBD Communications Compliance Test Cases for Heavy Duty Components and Vehicles	Revised	06/11/12
Truck and Bus Control and Communications Network Committee	J1939_201206	Serial Control and Communications Heavy Duty Vehicle Network - Top Level Document	Revised	06/01/12
Truck and Bus Control and Communications Network Committee	J2403_201206	Medium/Heavy-Duty E/E Systems Diagnosis Nomenclature	Revised	06/04/12

### Upcoming Standards Technical Committee Meetings

A current schedule can be found on the SAE website.

<http://www.sae.org/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.**



# Ground Vehicle Standards Committees & Staff Contacts

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

Motor Vehicle Council		Truck & Bus Council	Materials, Processes & Parts Council	Construction, Agricultural & Off-Road Machinery Council
<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>Brake NVH Standards</li> <li>Brake NVH Standards</li> <li>Highway Tire Forum Steering Cmte</li> <li>Vehicle Dynamics Standards</li> <li>Wheel Standards</li> <li><b>Hydraulic Brake Actuating Forum Adv. Grp.</b></li> <li>Brake Fluids Standards</li> <li>Automotive Brake &amp; Steering Hose Standards</li> <li>Hydraulic Brake Components Standards</li> </ul> <p><b>Vehicle Safety Systems Group</b></p> <ul style="list-style-type: none"> <li>Active Safety Systems</li> <li>Crash Data Collection and Analysis SC</li> <li>Restraints System Standards SC</li> <li>Child Restraints</li> <li>Seat Belt Systems</li> <li>Inflatable Restraints</li> <li><b>Safety Systems Components Advisory Grp</b></li> <li><b>Human Biomechanics &amp; Simulation SC</b></li> <li>Dummy Testing &amp; Equip</li> <li>Dummy Dev Eval Advisory Group</li> <li>Impact &amp; Rollover Test Procedures Stds</li> <li>Safety Test Instrumentation Standards</li> </ul> <p>Driver Vision Standards</p> <p><b>Safety &amp; Human Factors Steering Cmte</b></p> <p>Vehicle Sound for Pedestrians (VSP)</p>	<p><b>Vehicle Engineering Systems Group</b></p> <p><b>Comfort &amp; Convenience</b></p> <ul style="list-style-type: none"> <li>Adaptive Devices</li> <li>Controls &amp; Displays</li> <li>Cooling Systems</li> <li>Dedicated Short Range Communications</li> <li>Advanced Traveler Information Systems</li> <li>Human Accommodations and Design Devices</li> <li>Interior Climate Control</li> <li>Volatile Organic Compounds</li> <li>Heated Seat</li> </ul> <p><b>Exterior and Performance</b></p> <ul style="list-style-type: none"> <li>Dynamical Modeling and Simulation</li> <li>Glazing Materials</li> <li>Light Duty Vehicle Performance &amp; Economy Measurements</li> <li>Light Vehicle Exterior Sound</li> <li>On-Road Autonomous Vehicle Standards</li> <li>Road Vehicle Aerodynamics</li> <li>Child Restraints</li> <li>Speedometer &amp; Odometer</li> <li>Tow Vehicle Trailer Rating</li> <li>WIN/WMI</li> <li>Wiper Standards</li> </ul> <p><b>Lighting Coordinating Advisory Group</b></p> <ul style="list-style-type: none"> <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> </ul> <p><b>International Lighting Advisory Group</b></p> <ul style="list-style-type: none"> <li>Lighting Standard Practices Standards</li> <li>International Cooperation</li> <li>International Lighting Advisory Group</li> </ul>	<p><b>Electrified Powertrain Groups</b></p> <p><b>EV/HEV Steering Committee</b></p> <ul style="list-style-type: none"> <li>Hybrid/EV Technical Committee</li> <li>Hybrid Sound Task Force</li> <li>Hybrid J1772 Task Force</li> <li>Hybrid J2836mm, J2847, J2931, J2953 TF</li> <li>J2954 Wireless Charging Task Force</li> <li>Hybrid J1715 Task Force</li> <li>Hybrid J1711 Task Force</li> <li>Hybrid J2464 Task Force</li> <li>Hybrid Electric Motor Rating Task Force</li> <li>Hybrid and EV 1<sup>st</sup> and 2<sup>nd</sup> Responder TF</li> <li>Fuel Cell Standards Committee</li> <li>Emissions Performance Interface</li> <li><b>Battery Standards Steering Committee</b></li> <li>Labeling</li> <li>Battery Transportation</li> <li>Battery Recycling</li> <li>Safety</li> <li>Starter Battery</li> <li>E-Fuel Gauge</li> <li>Small Task Battery</li> <li>Battery Terminology</li> <li>Secondary Battery Use</li> <li>Truck and Bus Battery</li> <li>Battery Test Equipment</li> <li>Battery Materials Testing</li> <li>Battery Size Standardization</li> <li>Advanced Battery Concepts</li> <li>Battery Disconnect and Discharge Proc.</li> <li>Capacitive Energy Storage</li> </ul> <p><b>IC Powertrain Groups</b></p> <p><b>IC Powertrain Steering Committee</b></p> <ul style="list-style-type: none"> <li>Automatic Trans Transaxle</li> <li>Automatic Trans Friction</li> <li>All Wheel Drive</li> <li>Emissions</li> <li>Engine Power Test Code</li> <li>Belt Drive</li> <li>Air Cleaner Test Code</li> <li>Piston and Ring Standards</li> <li>Filter Test Methods</li> <li>Gasoline Fuel Injection</li> <li>Ignition Standards</li> <li>Fuel System Standards</li> <li>Spark Arrestor</li> </ul>	<p><b>Work Truck Safety Committee</b></p> <p><b>Advanced &amp; Hybrid Powertrain SC</b></p> <ul style="list-style-type: none"> <li>Alternative Fuels</li> <li>Hybrid Safety</li> <li>Hydraulic Hybrids</li> </ul> <p><b>Body &amp; Occupant Environment SC</b></p> <ul style="list-style-type: none"> <li>Truck Crossworthiness</li> <li>Windshield Wipers &amp; Climate Control</li> <li>Human Factors</li> </ul> <p><b>Electrical/Electronic Steering Cmte</b></p> <ul style="list-style-type: none"> <li>Low Speed Communications Network</li> <li>Control and Communications Network</li> <li>J1939 Task Forces</li> <li>Event Data Recorder</li> <li>Electrical Systems</li> </ul> <p><b>Brake and Stability Control SC</b></p> <ul style="list-style-type: none"> <li>Active Safety Systems</li> <li>Foundation Brake</li> <li>Brake Actuator</li> <li>Brake Systems</li> <li>Hydraulic Brake</li> <li>Wheel</li> <li>Stability Control Systems</li> <li>Air Brake Tubing &amp; Tube Fittings</li> <li>Brake Supply and Control Components</li> </ul> <p><b>Total Vehicle Steering Cmte</b></p> <ul style="list-style-type: none"> <li>Tire Pressure Management Systems</li> <li>Corrosion</li> <li>Aerodynamics/Fuel Economy</li> <li>Tire</li> </ul>	<p><b>Common Tests Technical SC</b></p> <ul style="list-style-type: none"> <li>Hydraulics</li> <li>Electrical Components</li> </ul> <p><b>Human Factors Technical Adv. Grp</b></p> <ul style="list-style-type: none"> <li>Machine Controls – Operator</li> <li>Machine Displays and Symbols</li> <li>Operator Seating and Ride</li> <li>Operator Accommodation</li> </ul> <p><b>Machine Technical Steering Cmte</b></p> <ul style="list-style-type: none"> <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> </ul> <p><b>Operator Protection Tech Adv. Grp</b></p> <ul style="list-style-type: none"> <li>Braking</li> <li>Lighting and Sound</li> <li>Protective Structures</li> </ul>
<p><b>Chassis Systems Group</b></p> <ul style="list-style-type: none"> <li>Vehicle E/E Systems Diagnostic</li> <li>Electronic Design Automation Standards</li> <li>Vehicle Architecture for Data Communications</li> <li>Vehicle Electric Power Supply Systems</li> <li>Embedded Software Standards</li> <li>Automotive Electronic Systems Reliability</li> <li>Vehicle Flat Panel Display Standards</li> <li>Electromagnetic Compatibility (EMC)</li> <li><b>Electrical Distribution Systems SC</b></li> <li>Connector Systems</li> <li>Cable Standards</li> <li>Harness Covering</li> <li>Circuit Protection &amp; Switch Devices</li> <li>Functional Safety</li> <li>Automotive OEM EMC</li> <li>Event Data Recorder</li> <li>Vehicle Electrical System Security</li> </ul>	<p><b>Service Development Steering Committee</b></p> <ul style="list-style-type: none"> <li>Service</li> <li>Towability</li> <li>Collision Repair</li> <li>Graphics Based Service Info</li> </ul> <p><b>Green Technology Groups</b></p> <ul style="list-style-type: none"> <li>Green Technology Steering Committee</li> <li>Green Bio-Materials Task Force</li> <li>Green Terminology Task Force</li> </ul>	<p><b>Automotive Quality &amp; Process Improvement Committee</b></p>	<p><b>Specialized Vehicle &amp; Equipment Council</b></p> <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><b>Motorcycle Technical Steering Cmte</b></li> <li>Motorcycle Sound Level</li> <li>Electric Motorcycle</li> <li><b>Marine Technical Steering Cmte</b></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><b>Ship Systems Technical Steering Cmte</b></li> <li>Ship Fluid Systems</li> <li>Fasteners</li> </ul>	<p><b>Cooperative Research Projects</b></p> <ul style="list-style-type: none"> <li>High Strain Rate Plastics</li> <li>IMAC</li> <li>ITS Projects</li> <li>CALSTAR</li> <li>Ergonomics</li> <li>Orologic Trauma</li> </ul>
<p><b>Standards Derivative Programs</b></p> <ul style="list-style-type: none"> <li>Horsepower Certification</li> <li>WM/IVIN</li> <li>On Board Diagnostics Databases</li> <li>MAC Equipment Conformance</li> </ul>	<p><b>Fuels &amp; Lubricants Council</b></p> <ul style="list-style-type: none"> <li>TC 1 – Engine Lubrication</li> <li>TC 2 – Industrial Lubricants</li> <li>TC 3 – Driveline &amp; Chassis Lubrication</li> <li>TC 7 – Fuels</li> </ul>	<p><b>Standards Derivative Programs</b></p> <ul style="list-style-type: none"> <li>MAC Refrigerant Blends (MRB CRP)</li> <li>Alternative Refrigerants</li> <li>CRP1234yf Air Refrigerant Assessment</li> <li>CRP150 Low GWP Air Refrigerants Assessment</li> <li>High Temperature Battery Study</li> <li>Gas R&amp;R of HPM</li> <li>H<sub>2</sub> Fuel Cell Station Breakaways, Hoses, Fittings and Nozzles</li> </ul>	<p><b>Standards Derivative Programs</b></p> <ul style="list-style-type: none"> <li>H-Point Machines</li> <li>WM/IVIN</li> <li>On Board Diagnostics Databases</li> <li>MAC Equipment Conformance</li> </ul>	<p><b>Standards Derivative Programs</b></p> <ul style="list-style-type: none"> <li>MAC Refrigerant Blends (MRB CRP)</li> <li>Alternative Refrigerants</li> <li>CRP1234yf Air Refrigerant Assessment</li> <li>CRP150 Low GWP Air Refrigerants Assessment</li> <li>High Temperature Battery Study</li> <li>Gas R&amp;R of HPM</li> <li>H<sub>2</sub> Fuel Cell Station Breakaways, Hoses, Fittings and Nozzles</li> </ul>
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