Ground Vehicle Standards *Newsletter*

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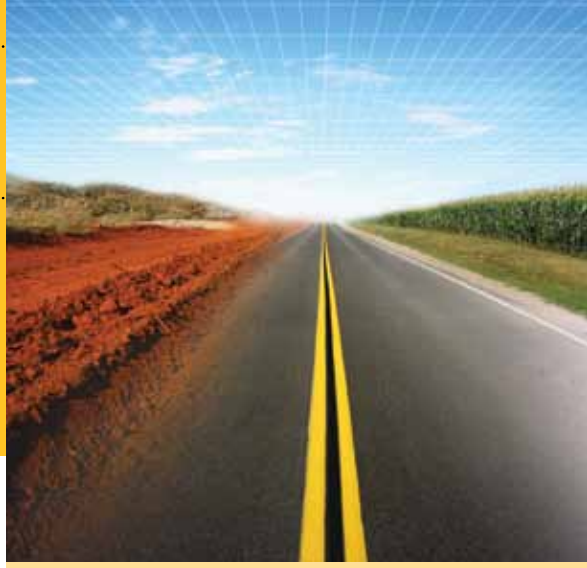

Safety and Human Factors Steering Committee addresses full range of driver-vehicle interface issues

The National Highway Traffic Safety Administration's (NHTSA) proposed guidelines on driver distraction became front-page news in February. Several SAE International standards were cited in the NHTSA proposal document, and the **SAE Safety and Human Factors Steering Committee** has been at the forefront of technical standards development in this area.

The proposed NHTSA voluntary guidelines encourage automobile manufacturers to limit the distraction risk from in-vehicle electronic devices (including communications, entertainment, information gathering, and navigation devices.)

The Safety and Human Factors Steering Committee currently has four task forces working to develop information reports directly related to DVI (driver-vehicle interface) issues. Four Information Reports on the following subjects are expected to be published by the end of 2012:

- An overall definition of "distraction"
- J2972: Definition of Automotive Hands-Free Operation of a Person-to-Person Voice and/or Data Wireless Communication System, which will provide the definition of "hands-free."
- J2988: Voice-User Interface (VUI) Principles and Guidelines, which will provide a set of high-level principles for voice-user interfaces as a means for controlling select vehicle features and functions especially the appropriate application of voice-user interfaces, their general operation, their relation to other interfaces, and other aspects of these interfaces. While not a comprehensive guideline, these high level principles will establish a general framework to promote consistency in user experiences and expectations for operation of voice-user interfaces.
- A distraction taxonomy, detailing different types of distractions.

These four Information Reports may become Recommended Practices in the future.

Also, "J2831: Development of Design and Engineering Recommendations for In-Vehicle Alphanumeric Messages," developed by the committee and published in late April, was cited in the NHTSA guidelines document.

Other SAE standards cited in the NHTSA document were "J2364: Navigation and Route Guidance Function Accessibility While Driving," which is currently being reviewed and updated by the Steering Committee, and "J941: Motor Vehicle Drivers' Eye Locations," which was developed and recently updated by the **SAE Driver Vision Committee**.

Participants in the Safety and Human Factors Steering Committee include representatives from OEMs, suppliers, academia, institutes, consulting firms, government, and other organizations.

"The committee was formed so that there was a go-to group that could provide scientific input on these issues from a technical perspective," said **Daniel J. Selke, Steering Committee Chairperson**. "Because the committee represents a very broad

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spectrum of experts, SAE can facilitate dialog and establish a good working relationship with agencies such as NHTSA on a technical level."

Another recent addition under the Steering Committee was the formation of the **Crash Warning Interface Performance (CWIP) Committee**. Late last year, the CWIP Committee met with NHTSA to discuss their recent Crash Warning Interface Metrics (CWIM) research publications and provided initial feedback on NHTSA's CWIM human factors research tasks. It is expected that the newly formed CWIP Committee will begin to draft, at a minimum, information reports after reviewing the technical aspects of the government's CWIM research.

Future documents also being developed under the auspices of the steering committee include:

- J2889-1: Measurement of Minimum Noise Emitted by Road Vehicles.
  This published recommended practice is being updated and establishes the technique that should be used to test vehicle sound for pedestrians. It is expected that NHTSA will possibly cite this document in their upcoming Notice of Proposed Rulemaking sometime in early July 2012. (Its parent document, "J2889: Vehicle Sound Measurement at Low Speeds," is also currently being worked on and is the 'rationale' for conducting this topic.)
- J2944: Operational Definitions of Driving Performance Measures and Statistics.
  This Recommended Practice will define performance measures and statistics concerned with on-road driving of both left- and right-hand drive wheeled vehicles having a steering wheel, accelerator pedal, and a brake pedal. Only measures and statistics pertaining to driver responses, and lateral and longitudinal control of a road vehicle are included. This document will define and attempt to harmonize the technical definitions for human factors terms such as "longitudinal control" operational definitions for driver's pedal responses, and vehicle-based measures, as well as "lateral control" operational definitions for driver steering responses to events, and vehicle-based measurements.
- J2399: Adaptive Cruise Control (ACC) Operating Characteristics and User Interface was recently re-balloted and updated to specify the basic minimum human factors requirements for ACC systems.

J1772™ "Combo Connector" displayed, revised standard expected soon

SAE International's J1772 "combo connector," which will allow for both slower AC charging and faster DC charging of plug-in vehicles using a single vehicle electrical inlet, received its first North American public demo in May after months of internal testing by automakers.

The three major domestic automakers (Chrysler, Ford, General Motors) and the five major automakers from Germany (Audi, BMW, Daimler, Porsche, Volkswagen) used the new connector—an evolution of the existing J1772 connector—to charge electrified vehicle models at the Electric Vehicle Symposium in Los Angeles. The rollout of actual production vehicles equipped with the new connector begins in CY2013.

A revision to the J1772 standard ("Electric Vehicle and Plug-in Electric Vehicle Conductive Charge Coupler") that will accommodate the combo connector technology is currently out for ballot, according to **Gery Kissel, Chair of the SAE International J1772 Task Force**. It is expected that the revision will be approved by July or August.

Kissel, Engineering Specialist, Global Codes and Standards Development at GM, said the standard will allow for charging up to 500 V, with maximum current of 200 A, "which could yield a charger up to 100 kW."

J1772 enables a single vehicle inlet to be used for AC charging and for higher-rate DC charging. The first-generation J1772 plug fits into the upper part of the inlet, with the lower pins for DC charging left open. The new "combo connector" is similar to the first-generation J1772 plug but also incorporates pins to fit into the lower portion of the inlet.

Adapted from an article in the May 3rd edition of AEI's digital magazine, Vehicle Electrification.

Join the important work of these standards committees seeking volunteers

Vehicle Engineering Systems Group/Exterior & Performance
- Light Vehicle Exterior Sound
- Road Vehicle Aerodynamics
- Speedometer & Odometer

IC Powertrain Group/ IC Powertrain Steering Committee
- Belt Drive
- Emissions
- Filter Test Methods

Vehicle Safety Systems
- Active Safety Systems

Materials, Processes & Parts Council
- Automotive Adhesives & Sealants
- Carbon & Alloy Steels (Metals Technical Executive Steering Committee)
- Non-Hydraulic Hose (Fluid Conductors Connectors Steering Committee)
- Plastics
- Textiles & Flexible Plastics

Electrical Systems Group
- Automotive Electronic Systems Reliability
- Electromagnetic Compatibility (EMR/EMI)

If you would like to influence the direction of standards and the future of the global ground vehicle industry—while benefiting from the professional development, networking, and peer recognition opportunities volunteering brings—you may express your interest online at the SAE International website at this link: http://www.sae.org/standardsdev/participationReq.htm

SAE standards applicable to new air conditioning refrigerant

We're almost ready for R-1234yf, the new low global warming automotive A/C refrigerant that is being used in place of R-134a to meet European regulations and gain U.S. EPA fuel economy credits. The refrigerant has already been installed in a number of small cars in Europe, and the Cadillac XTS, being introduced in late spring, will be the first U.S. car with R-1234yf.

Numerous SAE standards developed by the **Interior Climate Control Standards Committee**, are applicable in conjunction with the introduction of the refrigerant:

- The EPA has referenced "SAE J2788: R-134a Recovery/Recycle/Recharging Equipment for Mobil A/C Systems" as the applicable standard regarding how the refrigerant is recovered, recycled, and recharged (RRR) into vehicle systems.
- The EPA still has to accept the SAE-specified fitting on the refrigerant tanks for R-1234yf service equipment. **Ward Atkinson, chairman of the SAE Interior Climate Control Standards Committee** has asked EPA for expedited review so equipment and tanks already engineered can be used.
- Per the forthcoming EPA regulations, which will be tied to the Clean Air Act, R-1234yf will have to be serviced with new RRR machines that meet "J2843: R-1234yf Recovery/Recycle/Recharge Equipment for Flammable Refrigerants in Mobile A/C Systems, or the refrigerant recovery-only, "J2851: R-1234yf Refrigerant Recovery Equipment for Mobile A/C Systems."
- All J2843-compliant machines must have a built-identifier or a USB port for a valid R-1234yf signal from a handheld identifier before they will allow refrigerant recovery. These identifiers are covered by two SAE standards: "J2912: Performance Requirements for R134a and R1234yf Refrigerant Diagnostic Identifiers for Use with Mobile A/C Systems," which is for handhelds, and "J2927: R-1234yf Refrigerant Identifier Installed in Recovery and Recycling Equipment for Use with Mobile A/C Systems," for built-ins
- All new R-1224yf service equipment and some components (such as hoses and evaporators) must be certified to their applicable standards and to "SAE J2911: Procedure for Certification That Requirement for Mobile Air Conditioning System Components, Service Equipment, and Service Technician Training Meet SAE J Standards," a new overarching standard that covers certification to 11 SAE standards at this point. All key laboratory results for certification testing to one of the standards must be provided to SAE for posting on the new MAC Conformance Registration website (http://macdb.sae.org).

Adapted from an article in the February 14th edition of AEI Online.

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

SAE International standards collections now available on DVD

SAE International's technical standards collections now are available on DVD. Previously available on CD, the change in format provides an upgrade to this popular product and uses the latest version of the powerful Folio Views search engine, which is compatible with Windows 7 and 64-bit systems. In addition, the DVD format allows storage of more content, reducing the number of disks needed for each collection.

Each DVD contains:

- Full-text PDFs of all current, industry-specific standards. The number of standards currently on each DVD is as follows:
  - Aerospace Materials Specifications: 3,210
  - Ground Vehicle Standards: 2,492
  - Aerospace Standards: 5,010
- Full-text PDFs of any standards cancelled after January 1, 2002.
- A common index of all documents contained in the three standards DVDs. The index is fully searchable and displays summary information for each document (e.g., title, document number, scope).
- The Folio Views search engine, which allows a user-friendly, efficient way to locate SAE standards.

SAE International Standards on DVD are updated every quarter. For more information, regarding content, pricing, or usage, contact a SAE Customer Sales Representative at 1-888-875-3976 (U.S. & Canada) or 1-724-772-4086, or email customersales@sae.org.

Battery committees approach includes engagement at earlier stages of field maturity

*In his fourth update from the **SAE Battery Safety Standards Committee**, Chair Bob Galyen provides insight into how a "lean and mean standards producing machine" is charging ahead to a better—and more productive--battery future thanks to taking in a few lessons from the past.*

*Featured in the current issue of **Batteries International Magazine**.*

I've done a bit of griping in past columns about how we—both the US and the SAE International Battery Safety Standards Committee—were not moving quickly enough. I'd like to think we are beginning now to "get it." SAE International recently added two new committees: the **Ultracapacitor for Automotive Applications and Battery Field Discharge and Disconnect Committees** that mark a new way of thinking.

Both committees are examples of a new SAE International approach to emerging technologies where engagement occurs at earlier stages of maturity in the fields in order to develop high-value tools for use in the market, as well as to develop shared standards that can benefit other committees.

The Ultracapacitor Committee was formed because the energy storage industry and the automotive industry are leading technological innovations with ever-more-rapid acceleration. Ultracapacitors provide an energy storage technology complementary to electrochemical energy storage systems and understanding how to apply ultracapacitors into automotive solutions furthers the advancement of the industry's ability to develop innovative solutions for electrical drivetrains, according to **Oliver Gross, chair of the Ultracapacitor Committee** and an energy storage systems specialist.

The committee is focused on the performance, safety, and testing characteristics for ultracapacitors. Ultracapacitors have many similarities to batteries, including performance and life concerns, as well as abuse characterization. It will canvas both the energy storage and automotive industries for ideas and input on standards. According to Gross, the initial scope may need to be expanded into other technical areas as well. Ultracapacitors are quite new to the transportation area and the lack of agreed upon measurements and tests have complicated the ability to characterize these devices. One popular option has been to pair ultracapacitors with batteries and combine the best characteristics of both. Characterization tests have been proposed but not yet elevated to standards. Gross expects ultracapacitors committee members to work closely with others addressing testing methods, labeling, abuse testing, packaging, and fuel gauging, among others. Conversely, the output of the committee could possibly suggest the modifications of standards from these other committees. The realistic goal is to create a combination of unique standards and guidelines and eventually the modification of existing documents.

In other developments, **Dominico Gabrielli** is leading the newly formed **SAE International Battery Field Discharge and Disconnect Committee**, which is in the process of staffing up and preparing some basic goals.

Several of the committees may be impacted by the discussion and topic forums from the April NAATBatt Workshop held in Chicago, at which I was honored to serve as moderator of the panel entitled "OEM Expectations for Cell and System Level Solutions." Thermal safety is currently an important topic and truly a regulatory concern. I have no doubt the information shared in the workshop will be an ongoing source of information for the committees and may well affect their directions.

Also, **Rich Byczek** has taken over as chair for the 30-member strong **SAE International Battery Test Equipment Committee** and has revved the engines since taking the helm in early March. He has identified four main areas of focus: cycling (charge/discharge) performance equipment; vibration/mechanical durability; environmental simulation (temp/hum/alt); and safety factors (facility and equipment options). "Safety factors" is probably most important because it directly relates to the safety of workers performing testing. Cycling performance may develop some added complexity according to Byczek as the equipment manufacturers have a vested interest in having the standard match the equipment. While these are equipment capabilities, the reality is that

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we will come up with the best possible options. The next focus for the committee will be collecting best practices information, specifically from the past few years of Lithium-Ion testing. This committee will no doubt need to work closely with the Battery Testing Committee to be sure that any parameters specified correlate to the latest testing methods. Byczek envisions two potential recommended practice documents: one on facility and equipment safety practices and a second on equipment performance parameters related to EV batteries.

Less than stellar EV auto sales due to the economic crisis have placed a new importance on EV truck and bus fleets, and thus added focus for the **SAE International Truck and Bus Battery Committee, headed by Dan Youngs**. Many on the committee feel that the industry has a chance at standardizing at the pack level for energy storage. The work of the committee now includes standardizing key points that will support the interchangeability of energy storage system (ESS) units for truck and bus applications. Through 2012, it will focus on producing a Technical Information Report outlining applicable standards and recommended practices that will guide the design of an ESS for EV or hybrid-EV trucks or buses. One of the first steps, according to Youngs, is to pick a set of standard voltage ranges and a communication protocol. Currently, it looks like buses will head toward 600v systems and trucks are using 300v systems. The committee will focus on voltage ranges and communication messages and expect in future years to tackle energy, power, and mechanical mounting, among others in 2012.

The financial crisis is having some additional fallout for the industry and, not all of it bad for batteries in the long term. What do I mean? I absolutely believe the consolidation of the large players is in full swing. I also believe this consolidation, which comes out of the market not growing as expected, is the natural evolution of a new market because let's face it, it's a difficult job making electric cars.

Finally, several committees have either recently completed balloting on documents or are in the process. **The SAE International Labeling Committee** recently passed ballot on "J2936: Vehicle Battery Labeling Guidelines," which covers "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." Bravo to **Mark McGory** the primary author of this new standard! Now that it's tackled, the team will be re-directed toward another area of labeling.

The **Starter Battery Committee** is proving that there is always new work to be done, even for standards previously addressed. The group is tackling "J1495: Test Procedures for Battery Flame Retardant Venting Systems." This is an old document going through a five-year review. With a 29-member team, there may well be dissension now that it is out for balloting, but I am confident the importance of this document will inspire people to move through concerns and hammer out a final version very soon.

One "little" point about our eighteen committees and hundreds of volunteer members: the oil of this standards-generating-machine is a set of helpful tools provided by SAE International to guide the work of the committees. Of course, with so many chairs and members, everyone might have a very different view of how we go about the task of "standards making." However, as SAE knows a bit about standards, it is with its guidelines, request forms, reference tools, governing policies, balloting, and committee structure that we are able to streamline our work and deliver an outcome where all voices of the industry are heard. It sure beats reinventing the battery.

My many thanks to all of our dedicated committee volunteers. If interested in being involved the work of the SAE Battery Committees, please contact me at robert.galyen@magnaecar.com

Upcoming Standards Technical Committee Meetings

A current schedule can be found on the SAE website.
http://www.sae.org/standards/

SAE Ground Vehicle Standards "on the road"

- SAE Standards activities were featured in a table-top exhibition at the 2012 IEEE International Electric Vehicle Conference, March 4-8 in Greenville, South Carolina. **Keith Wilson**, Technical Project Manager, SAE Global Ground Vehicle Standards, also presented an overview of SAE Ground Vehicle Standards activities related to EVs and PHEVs and participated in a panel discussion on EV standards.
- At the SAE BRASIL New Automotive Technology Symposium on March 26 in Sao Paulo, Brazil, SAE Technical Project Manager Keith Wilson presented a comprehensive overview of the latest SAE standards development 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.
- **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, March 27, Atlanta, Georgia.
- Keith Wilson participated in a panel discussion at the National Alliance for Advanced Technology Batteries in Chicago, Illinois on April 2. Keith provided an overview of the SAE Cooperative research Project for Rechargeable Energy Storage Systems (RESS) Safety, and also provided an overview of standards development activities by **SAE's battery committees. Monique Richard, Chair of the SAE Battery Testing Standards Committee and Robert Galyen, Chair of the SAE Battery Steering Systems Committee** also participated on the panel.
- Robert Galyen, Chair of the SAE Battery Standards Steering Committee, provide 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 at the Advanced Lithium Ion Battery International Symposium in Charlotte, North Carolina on April 18-20.
- Ground Vehicle Standards staff members attended the SAE 2012 World Congress on April 22-24 in Detroit, Michigan 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. In addition, SAE Ground Vehicle Standards Committee meetings were held during the SAE 2012 World Congress event at both Cobo Hall and SAE Automotive Headquarters.
- **Peter Byk**, Ground Vehicle Standards staff member, spoke at the UL annual meeting in Chicago, Illinois on May 7, discussing SAE's activities in the green and connected technology areas.
- **Micheline Brussow**, SAE International Standards Specialist, acted in her official capacity of Secretariat and U.S. Administrator of TC22 SC13 – Road Ergonomics and to several working groups as part of the semi-annual ISO TC22 SC13 and working group meeting, May 7-11 in Berlin, Germany.

Look for SAE at these upcoming events:

- **Mary Doyle**, Ground Vehicle Standards staff member, will represent SAE Ground Vehicle Standards at the Ward's Automotive Interiors Conference, May 17 in Dearborn, Michigan.
- **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 staff members Peter Byk and Keith Wilson will attend the DOT/NHTSA Battery Safety Symposium on May 18 in Washington D.C. Mr. Galyen will provide a presentation on SAE Hybrid/EV related standards activities.
- **Nikki Ameredes**, SAE International Standards Specialist, will be in Kyoto, Japan, May 28-June 1. She will be acting in her official capacity of Secretariat and U.S. Administrator to several working groups as part of the semi-annual ISO TC22 SC10 and SC12 working group meeting.
- Peter Byk will serve as panel moderator at the ITS Michigan Annual Meeting, on May 30 in Dearborn, Michigan.

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- Jack Pokrzywa will present information on current SAE standards development in vehicle-to-grid at the "Will a Combo AC/DC Rapid Change Interface Be a Game Changer for the Industry" session at the World Electric Vehicle Summit 2012, June 13-14, in Copenhagen, Denmark.
- SAE International CEO **Dr. David Schutt** will provide an overview of various SAE activities including Ground Vehicle Standards activities at the Mentor Graphics Conference being held on June 14 in Dearborn, Michigan.

V2V, V2I, connected vehicle technology developments covered at 2012 SAE World Congress

The latest developments in connected vehicle technology were spotlighted throughout the SAE 2012 World Congress. A number of speakers who are involved with efforts related to the U.S. Department of Transportation's Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) Technology Test Bed discussed the test bed's use in public and private sector testing and development activities.

The keynote speaker in the AVL Technology Leadership Center on April 26 was David Strickland, Administrator, National Highway Traffic Safety Administration (NHTSA), who discussed NHTSA's efforts related to active safety, connected vehicle technology, and V2V and V2I connectivity.

A "Chat with the Experts" session on the U.S. Department of Transportation (DOT) V2V and V2I Technology Test Bed, held on April 25, featured Walton Fehr, Program Manager, Systems Engineering, at the DOT's Research and Innovative Technology Administration, and Greg Krueger, Connected Vehicle Program Manager for SAIC.

Experts from OEMs, suppliers, government and academia participated in the "Connected Vehicle Technology – Establishing a Market Base and Breaking Down the Barriers to Entry" panel discussion on April 25. The panel addressed connected vehicle technology developments and provided insight on how the industry can achieve a market niche for this technology. Participants addressed IVS, active safety, and infotainment technologies as they relate to V2V and V2I.

A panel discussion on "How the Connected Vehicle is Changing the Safety Paradigm" was held on April 26. The panel explored how to overcome the challenges created by the connected vehicle while implementing the potential safety benefits.

More information on the V2V and V2I Technology Test Bed can be found at http://www.itsdocs.fhwa.dot.gov/factsheets/v2v_v2i_tstbd_factsheet.htm

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

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.

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Volunteer recognition: document sponsors

(Feb 2012 – May 1, 2012)

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.

Carlos Agudelo, Link Engineering Co.
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Jon Walter, Polaris Industries Inc.
Richard Wood, Solus-Solutions and Technologies
Xiaobo Yang, Oshkosh Corp.
Garold Yurko

New SAE International committee chairs

- **Luis Moreiras**, Retired/Consultant, Parker Hannifin Corporation — Materials, Processes and Parts Council
- **Phil Yaccarino**, General Motors — Fuel Systems Standards, Motor Vehicle Council

  *A sincere thank you goes to Outgoing Chair **Pam Graham**, Inergy Automotive Systems LLC for her excellent support.*
- **Rob Mangan**, Link Engineering Company — All-Wheel Drive Committee, Motor Vehicle Council

  *A sincere thank you to Outgoing Chair **Ben Meilke**, Eaton Corporation for his excellent support .*

Nominate a deserving individual for an SAE award

Arch T. Colwell Cooperative Engineering Medal

Deadline: July 1

This award recognizes a unique and outstanding contribution over a period of time to the work of the technical committees under the SAE Technical Standards Board in developing standards, specifications, technical reports, and data through cooperative research.

The medal was named in honor of Arch T. Colwell, its first recipient and 1941 SAE President. Dr. Colwell symbolized the dedication and devotion of SAE members who work to further the objectives of the SAE Technical Standards Program.

Henry Souther Standards Award

Deadline: August 31

This award acknowledges accomplishments in standards development in the disciplines of environment, safety, materials, testing and emissions. It honors Henry Souther, 1911 SAE President, known as the father of SAE standards. It is administered by the Environmental Award Committee under the auspices of the SAE Sustainable Development Program Committee.

Submit nominations at www.sae.org/awards

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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SAE International acknowledges the following organizations who have contributed to funding the Standards Development Program in 2011—supporters who acknowledge the benefits common engineering requirements bring to industry and their business.

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Association of Equipment Manufacturers
Bendix Commercial Vehicle Systems
Borg Warner
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Chrysler LLC
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Delphi Corporation
Denso International America
Ford Motor Company
General Motors
Honda of America Manufacturing
Navistar
Nissan Motor Company
SEW Eurodrive
TARDEC
Toyota Motor Corporation

New, revised & stabilized SAE standards (Feb 2012 – May 1, 2012)

Committee	Doc	Title	Status	Pub Date
CONSTRUCTION, AGRICULTURAL & OFF-ROAD MACHINERY COUNCIL				
Machine Displays and Symbols	J1362_201204	Graphical Symbols for Operator Controls and Displays on Off-Road Self-Propelled Work Machines	Revised	04/09/12
Machine Technical Steering Committee	J1069_201205	Oil Change System for Quick Service of Off-Road Self-Propelled Work Machines	STABILIZED	May 2012
Excavators	J2506_201204	Material Handler Nomenclature and Specifications	Revised	04/11/12
Tire and Rim	J1098_201203	Tonne Kilometer Per Hour Application	Revised	03/01/12
Personnel Protection (General)	J1083_201205	Unauthorized Starting or Movement of Machines	STABILIZED	May 2012
Cranes and Lifting Devices Committee	J958_201202	Nomenclature and Dimensions for Crane Shovels	STABILIZED	Feb 2012
FUEL & LUBRICANTS COUNCIL				
Industrial Lubricants	MS1003_201202	Lubricants, Industrial Oils, and Related Products Type D Compressor Oils -Specification	Revised	02/29/12
	MS1007_201204	Lubricants, Industrial Oils, and Related Products Type G Slideway Lubricants –Specification	Revised	04/23/12
Driveline and Chassis Lubrication	J2360_201204	Automotive Gear Lubricants for Commercial and Military Use	Revised	04/25/12
MATERIALS, PROCESSES & PARTS COUNCIL				
Fasteners Committee	J123_201204	Surface Discontinuities on Bolts, Screws, and Studs in Fatigue Application	Cancelled	Apr 2012,
		Superseded by ASTM F788/F788M including supplementary requirements	Cancelled	04/10/12
	J995_201202	Mechanical and Material Requirements for Steel Nuts	Revised	02/21/12
Non-Hydraulic Hose Committee	J30_201202	Fuel and Oil Hoses	Revised	02/17/12
Carbon and Alloy Steels Committee	J401_201203	Selection and Use of Steels	Revised	03/12/12
Textile and Flexible Plastics Committee	J1976_201204	Outdoor Weathering of Exterior Materials	Revised	04/16/12
Automotive Adhesives and Sealants Committee	J1523_201202	Metal to Metal Overlap Shear Strength Test for Automotive Type Adhesives	Revised	02/17/12
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
MOTOR VEHICLE COUNCIL				
Safety and Human Factors Steering Committee	J2831_201204	Development of Design and Engineering Recommendations for In-Vehicle Alphanumeric Messages	Issued	04/26/12
Brake Linings Standards Committee				
Interior Climate Control Standards Committee	2727_201202	Mobile Air Conditioning System Refrigerant Emission Charts for R-134a and R-1234yf	Revised	02/23/12
Interior Climate Control Service Committee	J2843_201202	R-1234yf [HFO-1234yf] Recovery/Recycling/ Recharging Equipment for Flammable Refrigerants for Mobile Air-Conditioning Systems	Revised	02/17/12
	J2851_201202	Recovery Equipment for Contaminated Refrigerant From Mobile Automotive Air Conditioning Systems	Revised	02/16/12
	J2888_201201	R-1234yf Service Hose, Fittings and Couplers for Mobile Refrigerant Systems Service Equipment	Revised	01/31/12
Interior Climate Control Fluids Committee	J2099_201204	Standard of Purity for Recycled R-134a (HFC-134a) and R-1234yf (HFO-1234yf) for Use in Mobile Air-conditioning Systems	Revised	04/10/12
Vehicle E E System Diagnostic Standards Committee	J1930DA_201203	J1930 Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations, and Acronyms Web Tool Spreadsheet	Revised	03/16/12
	J1979_201202	E/E Diagnostic Test Modes	Revised	02/23/12

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Electromagnetic Compatibility (EMC) Standards	J1113/11_201201	Immunity to Conducted Transients on Power Leads	Revised	01/30/12
	J1113/1_201203	Electromagnetic Compatibility Measurement Procedures and Limits for Components of Vehicles, Boats (up to 15 m), and Machines (Except Aircraft) (16.6 Hz to 18 GHz)	Revised	03/23/12
Electrical Distribution Systems Steering Committee	J1494_201203	Battery Booster Cables	STABILIZED	Mar 2012
	J1673_201203	High Voltage Automotive Wiring Assembly Design	STABILIZED	Mar 2012
	J771_201203	Automotive Printed Circuits	STABILIZED	Mar 2012
Ignition Standards Committee	J2031_201202	High Tension Ignition Cable	Revised	02/07/12
Cooling Systems Standards Committee	J1436_201203	Requirements for Engine Cooling System Filling, Deaeration, and Drawdown Tests	Revised	03/20/12
	J1474_201202	Heavy-Duty Nonmetallic Engine Cooling Fans--Material, Manufacturing, and Test Considerations	Cancelled	02/06/12
Fuel Systems Standards Committee	J1114_201204	Fuel Tank Filler Cap and Cap Retainer Threaded	STABILIZED	Apr 2012
Brake Fluids Standards Committee	J1706_201202 J1703	Production, Handling and Dispensing of SAE Motor Vehicle Brake Fluids and J1704 Borate Ester Based Brake Fluids	Revised	02/06/12
Automotive Brake and Steering Hose Standards Committee	J1873_201202	Moisture Transmission Test Procedure--Hydraulic Brake Hose Assemblies	Revised	02/16/12
Hydraulic Brake Components Standards Committee	J1153_201202	Hydraulic Master Cylinders for Motor Vehicle Brakes Test Procedure	STABILIZED	Feb 2012
	J1154_201202	Hydraulic Master Cylinders for Motor Vehicle Brakes-Performance Requirements	STABILIZED	Feb 2012
	J1568_201204	Materials for Plastic Pistons for Hydraulic Disc Brake Cylinders	STABILIZED	Apr 2012
	J1570_201204	Rubber Dust Boots for the Hydraulic Disk Brake Piston	STABILIZED	Apr 2012
	J1693_201204	Remanufactured Hydraulic Master Cylinder for Motor Vehicle Brakes - General Characteristics and Test Procedure	STABILIZED	Apr 2012
	J1694_201204	Remanufactured Hydraulic Master Cylinder for Motor Vehicle Brakes - Performance Requirements	STABILIZED	Apr 2012
	J1807_201202	Hydraulic Power Assist Brake Booster Test Procedure	STABILIZED	Feb 2012
	J1825_201204	Shelf Storage of Hydraulic Brake Components	STABILIZED	Apr 2012
	J1876_201203	Plastic Dust Shield for Hydraulic Disc Brakes	STABILIZED	Mar 2012
Hybrid - EV Committee	J1772_201202	SAE Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charge Coupler	Revised	02/21/12
	J2931/1_201201	Digital Communications for Plug-in Electric Vehicles	Issued	01/24/12
Lighting Standard Practices Committee	J2938_201202	LED Light Sources Tests and Requirements Standard - Part 2: LED Lumen and Color Maintenance Measurements	Issued	02/15/12
	J387_201204	Terminology - Motor Vehicle Lighting	Revised	04/11/12
	J759_201202	Lighting Identification Code	Revised	02/14/12
Road Illumination Devices Standards Committee	J3003_201202	Dimensional Specifications for General Service Sealed Lighting Units	Issued	02/13/12
Test Methods and Equipment Stds Committee	J575_201204	Test Methods and Equipment for Lighting Devices for Use on Vehicles Less than 2032 mm in Overall Width	Revised	04/11/12
Automatic Transmission Friction Standards Committee	J1499_201203	SAE Band Friction Test Machine Guidelines	STABILIZED	Mar 2012
	J1646_201203	Glossary of Terms - Lubricated Friction Systems	STABILIZED	Mar 2012
	J2489_201203	SAE No. 2 Friction Test Machine Durability Test	STABILIZED	Mar 2012
	J286_201203	SAE No. 2 Clutch Friction Test Machine Guidelines	STABILIZED	Mar 2012

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Battery Transportation Committee	J2950_201202	Recommended Practices (RP) for Shipping Transport and Handling of Automotive-Type Battery System - Lithium Ion	Issued	02/06/12
Battery Standards Starter Battery Committee	J2185_201202	Life Test for Heavy-Duty Storage Batteries (Lead Acid Type only)	Revised	02/21/12
Vehicle Dynamics Standards Committee	J2710_201204	Modal Testing and Identification of Lower Order Tire Natural Frequencies of Radial Tires	Revised	04/12/12

SPECIALIZED VEHICLE & EQUIPMENT COUNCIL

Motorcycle Technical Steering Committee	J1577_201203	Replaceable Motorcycle Headlamp Bulbs	STABILIZED	Mar 2012
Snowmobile Technical Committee	J1222_201203	Speed Control Assurance for Snowmobiles	Revised	03/12/12
	J1282_201204	Snowmobile Brake Control Systems	Revised	04/09/12

TRUCK & BUS COUNCIL

Truck and Bus Tire Pressure Management Systems Committee	J2848/3_201202	Tire Pressure Systems ? Management (CTIS) Type for Medium and Heavy Duty Highway Vehicles	Issued	02/13/12
Truck and Bus Foundation Brake Committee	J2686_201203	Brake Drum Qualification Recommended Practice	Issued	03/15/12
Truck and Bus Hydraulic Brake Committee	J2688_201204	Parking Brake Control Identification -- Vehicles with Hydraulic Brake Systems and Automatic Transmissions	Issued	04/09/12
Truck and Bus Wheel Committee	J1730_201203	ABS Exciter Ring Location Standardization	Revised	03/15/12
	J1992_201204	Wheels/Rims - Military Vehicles - Test Procedures and Performance Requirements	Revised	04/23/12
Truck and Bus Windshield Wipers and Climate Control Committee	J2918_201202	Engine-Off Cab Heating and Air Conditioning Systems Test Procedure and Performance Requirements - Trucks with and Without Sleepers	Issued	02/06/12
Truck and Bus Aerodynamics and Fuel Economy Committee	J1321_201202	Fuel Consumption Test Procedure - Type II	Revised	02/06/12

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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.

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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
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- Strong relationships with customers and suppliers
- Association with the leading society for advancing mobility technology

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- Peer recognition for advancing your industry's sectors technologies
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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

Chassis Systems Group

Brake Forum Steering Cmte
- Brake Linings Standards
- Brake NVH Standards
- Brake Dynamometer Standards

Highway Tire Forum Steering Cmte
- Vehicle Dynamics Standards
- Wheel Standards

Hydraulic Brake Actuating Forum Adv. Grp.
- Brake Fluids Standards
- Automotive Brake & Steering Hose Standards
- Hydraulic Brake Components Standards

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 Standards
- International Cooperation
- International Lighting Advisory Group

Vehicle Safety Systems Group

- Active Safety Systems

Crash Data Collection and Analysis SC

Restraints System Standards SC
- Child Restraints
- Seat Belt Systems
- Inflatable Restraints

Safety Systems Components Advisory Grp

Human Biomechanics & Simulation SC
- Dummy Testing & Equip
- Dummy Dev Eval Advisory Group

- Impact & Rollover Test Procedures Stds
- Safety Test Instrumentation Standards

- Driver Vision Standards

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

Service Development Steering Committee

Service	Collision Repair
Towability	Graphics Based Service Info

Automotive Quality & Process Improvement Committee

Vehicle Engineering Systems Group

Comfort & Convenience
- Adaptive Devices
- Controls & Displays
- Cooling Systems
- Dedicated Short Range Communications
- Advanced Traveler Information Systems
- Human Accommodations and Design Devices
- Interior Climate Control
- Volatile Organic Compounds
- Heated Seat

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

Electrical Systems Group

- Vehicle E/E Systems Diagnostic
- Electronic Design Automation Standards
- Vehicle Architecture for Data Communications
- Vehicle Electric Power Supply Systems
- Embedded Software Standards
- Automotive Electronic Systems Reliability
- Vehicular Flat Panel Display Standards
- Electromagnetic Compatibility (EMC)

Electrical Distribution Systems SC
- Connector Systems
- Cable Standards
- Harness Covering

- Circuit Protection & Switch Devices
- Functional Safety
- Automotive OEM EMC
- Event Data Recorder
- Vehicle Electrical System Security

Green Technology Groups

- Green Technology Steering Committee
- Green Bio-Materials Task Force
- Green Terminology Task Force

Electrified Powertrain Groups

EV/HEV Steering Committee
- Hybrid/EV Technical Committee
- Hybrid Sound Task Force
- Hybrid J1772 Task Force
- Hybrid J2836tm, J2847, J2931, J2953 TF
- Hybrid J2894 Task Force
- J2954 Wireless Charging Task Force
- Hybrid J1715 Task Force
- Hybrid J1711 Task Force
- Hybrid J2464 Task Force
- Hybrid Electric Motor Rating Task Force
- Hybrid and EV 1st and 2nd Responder TF
- Fuel Cell Standards Committee
  - Emissions
  - Performance
  - Interface
  - Safety

Battery Standards Steering Committee
- Labeling
- Battery Transportation
- Testing
- Battery Recycling
- Safety
- Starter Battery

- E-Fuel Gauge
- Small Task Battery
- Battery Terminology
- Secondary Battery Use
- Truck and Bus Battery
- Battery Test Equipment
- Battery Materials Testing
- Battery Size Standardization
- Advanced Battery Concepts
- Battery Disconnect and Discharge Proc.
- Capacitive Energy Storage

IC Powertrain Groups

IC Powertrain Steering Committee
- Automatic Trans Transaxle
- Automatic Trans Friction
- All Wheel Drive
- Emissions
- Engine Power Test Code
- Belt Drive
- Air Cleaner Test Code
- Piston and Ring Standards
- Filter Test Methods
- Gasoline Fuel Injection
- Ignition Standards
- Fuel System Standards
- Spark Arrester

Truck & Bus Council

- Work Truck Safety Committee

Advanced & Hybrid Powertrain SC
- Alternative Fuels
- Hybrid Safety
- Hydraulic Hybrids

Body & Occupant Environment SC
- Truck Crashworthiness
- Windshield Wipers & Climate Control
- Human Factors

Electrical/Electronic Steering Cmte
- Low Speed Communications Network
- Control and Communications Network J1939 Task Forces
- Event Data Recorder
- Electrical Systems

Brake and Stability Control SC
- Active Safety Systems
- Foundation Brake
- Brake Actuator
- Brake Systems
- Hydraulic Brake
- Wheel
- Stability Control Systems
- Air Brake Tubing & Tube Fittings
- Brake Supply and Control Components

Total Vehicle Steering Cmte
- Tire Pressure Management Systems
- Corrosion
- Aerodynamics/Fuel Economy
- Tire

Fuels & Lubricants Council

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

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
- Vibration Control

Fluid Conductors Connectors SC
- 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 SC
- Unmanned Ground Vehicle Reliability TF
- CBM (Condition Based Management) SC

Construction, Agricultural & Off-Road Machinery Council

Common Tests Technical SC
- Hydraulics
- Electrical Components

Human Factors Technical Adv. 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 Adv. Grp
- Personal Protection (General)
- Braking
- Lighting and Sound
- Protective Structures

Specialized Vehicle & Equipment Council

- Personal Watercraft
- Small Engine & Powered Equip
- Snowmobile
- Special Purpose Vehicle

Motorcycle Technical Steering Cmte
- Motorcycle Sound Level
- Electric Motorcycle

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 Technical Steering Cmte
- Ship Fluid Systems
- Fasteners

Standards Derivative Programs

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

Cooperative Research Projects

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

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