



IMPORTANT-RESPONSE REQUESTED

February 16, 2010

CSA America, Inc. is accredited by American National Standards Institute (ANSI) as a Standards Development Organization (SDO). Its current Technical Advisory Groups (TAGs) on Compressed Hydrogen Dispensing Systems & Equipment exercise general supervision of the preparation and revision of the standards for hydrogen vehicle onboard components, dispensing systems and related equipment standards.

Powered industrial truck applications (forklift and other off-road applications) for fuel cells and hydrogen are emerging quickly and there are currently no updated standards for the components or the systems. These applications will likely be the early adopters for this new technology and commercialization is anticipated for 2011. Industry has expressed concern that development of coverage for such applications needs to progress quickly. CSA America, Inc, has documents that address components used in fork lift applications but the coverage needs to be reviewed in light of this different application.

Major issues identified to date include:

- cycle life
- material
- refueling protocol
- applicable codes and standards
- specific fork lift design concerns

Hydrogen Material Compatibility

Sandia National Lab has developed a materials guide for acceptable materials for use in hydrogen applications, based on coupon samples of material. This information is a necessary resource to develop codes and standards for stationary hydrogen use, hydrogen vehicles, refueling stations, and hydrogen transportation.

Industry has expressed a need for a standard that will provide a generic method for evaluating suitability of materials for use in hydrogen environments. Requirements and uniform methods are needed for testing and evaluating the performance of materials under the temperatures and pressures anticipated in stationary or vehicle service in compressed hydrogen applications. These requirements need to be generic, not component specific.

CSA America and SAE have agreed to work as co-SDO's on this activity. CSA America will serve as the lead.

CSA America will lead development of the following new safety based and performance industry-consensus documents. The approved TAG/standards scope(s) are noted in Attachment A.



	Document Title
CSA America HPIT 1	Compressed Hydrogen Powered Industrial Truck On-board Fuel Storage and Handling Components
CSA America HPIT 2	Compressed Hydrogen Station and Components for Fueling Powered Industrial Trucks
CSA America CHMC 1	Test Method for Evaluating Material Compatibility for Compressed Hydrogen Applications

We are seeking technical experts to work on the development of these standards. Technical Advisory Groups will meet to address technical issues and draft proposed standards text for industry review and comment and ultimately for approval as American National Standards.

We would appreciate your response as quickly as possible regarding your participation on the groups noted. Please e-mail or fax the attached membership form to **Debbie Chesnik (debbie.chesnik@csa-america.org)** as soon as possible.

Please contact **Julie Cairns** with any questions or comments you may have regarding this activity by telephone 1-877-235-9791 ext. 8213, fax 1-877-539-7613 or email: **julie.cairns@csa-america.org**.

Thank you for your support in this important standards development program.

Attachment A

New Project Scopes

CSA America, HPIT 1

Compressed Hydrogen Powered Industrial Truck On-board Fuel Storage and Handling Components

Instructions to the Technical Advisory Group:

The Tags are to proceed with development and make a recommendation whether the Automotive Technical Committee should approve one document addressing all components for powered industrial truck applications or whether a series of standards should be developed.

Preference of the Automotive Technical Committee is to have one document with reference to applicable provisions of existing documents.

Proposed Technical Advisory Group Scope

This TAG shall develop standard(s) which provides performance based criteria and applicable details of construction for serially produced compressed hydrogen gas fuel storage and handling components constructed entirely of new unused parts and materials. This applies to powered industrial trucks powered by fuel cells or internal combustion engines. Such components include, but are not limited to (1) refillable containers intended only for the storage of compressed hydrogen for powered industrial truck operation, (2) pressure relief devices produced for use on compressed hydrogen fuel containers, and (3) other fuel handling system components. This TAG is intended to develop coverage to supplement the provisions contained in the existing hydrogen component documents listed below and provides coverage specific to powered industrial truck applications.

- Compressed Hydrogen Gas Vehicle Fuel Containers (CSA America HGV2)
- Pressure Relief Devices for Compressed Hydrogen Vehicle Fuel Containers (CSA America HPRD1)
- Fuel System Components for Compressed Hydrogen Powered Vehicles (CSA America HGV 3.1)

CSA America, HPIT 2

Compressed Hydrogen Station and Components for Fueling Powered Industrial Trucks

Instructions to the Technical Advisory Group:

The TAG needs to review the coverage in SAE J2601 and determine whether or not this is applicable for powered industrial truck applications. If it is applicable, then contact SAE to advise scope of J2601 should be expanded

Proposed Technical Advisory Group Scope

This TAG shall develop standard(s) which provides mechanical and electrical features and construction of newly manufactured systems that dispense hydrogen gas for powered industrial trucks, intended primarily to dispense fuel directly into the powered industrial truck fuel storage container.

This TAG is intended to develop coverage to supplement the provisions contained in the existing hydrogen fueling station and component documents listed below and provides coverage specific to powered industrial truck applications.

- Compressed Hydrogen Dispensers (CSA America HGV 4.1)
- Hoses and Hose Assemblies (CSA America HGV 4.2)
- Fueling Parameter Verification (CSA America HGV 4.3)
- Breakaway Devices for Hoses (CSA America HGV 4.4)
- Priority and Sequencing Equipment (CSA America HGV 4.5)
- Manually Operated Valves (CSA America HGV 4.6)
- Automatic Pressure Operated Valves (CSA America HGV 4.7)
- Hydrogen Gas Vehicle Fueling Station Compressor (CSA America HGV 4.8)
- Hydrogen Fueling Station Guideline (CSA America HGV 4.9)
- Hydrogen Fittings, (CSA America HGV 4.10)



CSA America, CHMC 1

Test Method for Evaluating Material Compatibility for Compressed Hydrogen Applications

Instructions to the Technical Advisory Group:

In order to perform an accelerated test, the materials may need to be tested at temperatures and pressures other than those seen in normal service. The TAG is expected to provide appropriate rationale for recommendations. This represents the difference between service conditions and test conditions.

Background:

Industry has expressed a need for a standard that will provide a generic method for evaluating suitability of materials for use in hydrogen environments. CSA Standards and SAE have agreed to work as co-SDO's on this activity. CSA Standards will serve as the lead.

Proposed TAG Scope

This TAG shall develop requirements and uniform methods for testing and evaluating the performance of materials under the temperatures and pressures anticipated in stationary or vehicle service in compressed hydrogen applications. This document is not component specific.