

**National Hydrogen and Fuel Cell Codes and Standards Coordinating Committee
(NHFCSCC)**

Wednesday, April 13, 2022

TIME: 2:00 – 3:00 pm (Eastern Standard Time)

Minutes

Attendees

**Antonio Ruiz
Bob Boyd
Bob Davidson
Christina Daniels
Christine Watson
Clark Crawford
Connor Dolan
Eric Prause
Heath Plagmann
Ian MacIntire**

**Jay Keller
Jeff Puckett
John Eihusen
Juana Williams
Karen Quackenbush
Kelvin Hecht
Laura Hill
Mark Duda
Mark Luth
Michael Cox**

**Mike Steele
Nick Barilo
Ray Rahaman
Rudolf Coertze
Shinichi Hirano
Stella Papasavva
Trey White
Yuk Wong**

I. Welcome and Housekeeping Items

The Committee reviewed FCHEA's anti-trust guidelines and the meeting agenda.

The Committee approved the previous meeting minutes.

II. DOE/HQ Update

Laura Hill

- 1) AMR Registration is open now: [Annual Merit Review and Peer Evaluation Meeting | Hydrogen Program Annual Merit Review & Peer Evaluation Meeting \(energy.gov\)](#)
- 2) The presentations from the bulk storage and LH2 workshops are now available online: [Bulk Storage of Gaseous Hydrogen Workshop | Department of Energy](#) and [Liquid Hydrogen Technologies Workshop | Department of Energy](#)

III. Codes & Standards Events and Fuel Cell Safety Information

<http://www.hydrogenandfuelcellsafety.info/events/>

Karen Quackenbush

Request: technical resource updates for the Hydrogen and Fuel Cell Safety website. Any committee members who have materials they would like hosted on the website can send them to Karen Quackenbush (kquackenbush@fchea.org) or Connor Dolan (cdolan@fchea.org).

IV. Global Technical Regulations

Ian MacIntire

Drafting task force is close to finishing up work on the informal document. A meeting should be held next week to review any final edits needed. The document should be ready for submission to the full IWG for their meeting coming up on April 25 and 26. Once approved at the IWG level,

the document would be introduced at the GRSP level for potential consideration at their May meeting, which will be held the first week of May. This would have a 6-month review period upon which this piece would then move from informal to a formal document.

V. Codes and Standards Organization Updates

Institute of Electrical and Electronics Engineers

Mark Siira

The ballot review for the draft of IEEE 1547.3 is underway and will be closing soon. FCHEA sent a memo to our stationary power working group for review. This document is taking all the cybersecurity requirements out of the main document and fleshing them out a bit in this separate document. If cybersecurity for DER systems is of interest, please contact Karen Quackenbush for discussion.

International Electrotechnical Commission IEC TC 105

Kelvin Hecht

- ❖ IEC 62282-6-401
 - Micro Fuel Cells – Performance Test Methods for Laptop computers
 - After review and comments, committee will distribute a Committee Draft for Vote by 4/1/22.
- ❖ IEC 62282-4-101 Ed 2
 - Fuel cell power systems for electrically powered industrial trucks – Safety
 - After Committee Draft was approved, the Final Draft International Standard will be registered by 4/1/22.
- ❖ IEC 62282-4-600
 - Fuel cell/battery hybrid system performance test method for excavators
 - After Committee Draft was approved, the Final Draft International Standard will be registered by 4/1/22.
- ❖ Fuel Cells in the Maritime Sector
 - New ad hoc committee
 - Chair – Mr. Dunlop, Australia

International Standards Organization ISO/TC 197

Karen Quackenbush/Jay Keller

WG 22 – Gaseous h2 station hoses document is undergoing first revision. Meeting on April 26th to review a working draft and all comments received.

WG 23 – Fittings – Successfully launched Committee internal ballot to address scope issue. Once ballot closes, will move forward with adjudicating all comments received.

WG 29 – Responsible for basic advice on how to operate safety rules for a hydrogen environment. Technical reference. Scope on that work was updated to address cryowork and materials work. The materials and cryo work are both completed.

WG 15 – Tank storage - Getting close to engage with WG 29 to understand some of the materials issues.

WG 24 – Hydrogen Fueling Protocols - Task force 1 is moving forward and meeting on May 25 (developing a general fueling protocol). Task 2 on communications is proceeding and will spend some time reviewing Task 1 materials as well. Task force 3 is focused specifically on a protocol for heavy-duty vehicles.

ISO is looking at a new proposal on PSAs out of China.

A liaison with ISO 58 is also in the works.

National Fire Protection Association NFPA 2

Chris LaFleur

International Codes Council (ICC)

Bob Davidson

Completed most of the work last cycle and got hydrogen motor fueling in fairly easily. Now working with a code group from Southern California Fire Protection Officers group. They are rewriting Chapter 23 on motor fueling. The mobile fueling for hydrogen fuels is being planned to move up to this chapter 23 on fuel for motor fueling. This would be a organization change, not a technical change. They are also working on cleaning up this language and coordinating language. The repair garage section is also planned to be broken out into a separate section for clarity.

Are there currently requirements for a trailer where you may be using hydrogen to generate electricity to charge electric vehicles? If you are using it in that manner, you need to comply with 1206 for fuel cells and what is appropriate for 1207 on energy storage systems. This does need some work for coordination.

Society of Automotive Engineers (SAE)

Mike Steele

SAE Fuel Cell Standards Committee – Active Documents

April 2022

<i>Task Force</i>	<i>Document</i>	<i>Title</i>	<i>Date</i>	<i>Status</i>
Interface	J2600_201510	Compressed Hydrogen Surface Vehicle Fueling Connection Devices	21-Oct-15	Being revised in conjunction with ISO 17268
Interface	J2601_202005	Fueling Protocols for Light Duty Gaseous Hydrogen Surface Vehicles	29-May-20	Being revised
Interface	J2601/2_201409	Fueling Protocol for Gaseous Hydrogen Powered Heavy Duty Vehicles	24-Sep-14	Needs affirmation ballot of existing content
Interface	J2601/3_201306	Fueling Protocol for Gaseous Hydrogen Powered Industrial Trucks	12-Jun-13	Ballot passed. Comment reconciliation process underway.
Interface	TIR J2601/4	Ambient Temperature Refueling		Being developed. Anticipate voting on draft 2Q21.

Interface	TIR J3219	Hydrogen Fuel Quality Screening Test of Chemicals for Fuel Cell Vehicle		Ballot passed. Comment reconciliation process underway.
Fuel Economy	TIR J3202	Recommended Practice for Measuring and Simulating Fuel Consumption and Range of Heavy Duty Fuel Cell Hybrid Road Vehicles Fueled by Compressed Gaseous Hydrogen		Being developed
Fuel Economy	J2572_201410	Recommended Practice for Measuring Fuel Consumption and Range of Fuel Cell and Hybrid Fuel Cell Vehicles Fueled by Compressed Gaseous Hydrogen	16-Oct-14	Needs affirmation ballot of existing content
Safety	J1766_201401	Recommended Practice for Electric, Fuel Cell and Hybrid Electric Vehicle Crash Integrity Testing	10-Jan-14	Revised - Action required. Awaiting GTR 13 Phase 2
Safety	J2578_201408	Recommended Practice for General Fuel Cell Vehicle Safety	26-Aug-14	Revised - Action required. Awaiting GTR 13 Phase 2

CSA

Sara Marxen

Technical Committee Activity – Call for Participation

CSA Fuel Cell Technical Committee:

CSA Group, an ANSI-accredited SDO, is seeking additional experts to serve on the bi-national Fuel Cell Technical Committee. The Fuel Cell Technical Committee develops and maintains minimum safety standards and essential requirements for the design construction and maintenance of:

- a) stationary, portable, and micro fuel cells;
- b) hydrogen generation technologies using all fuels (e.g., electrolysis, coal, natural gas);
- c) related components and equipment for stationary, portable and micro fuel cells; and
- d) related components and equipment installed for hydrogen generation technologies using all fuels.

We are seeking interested stakeholders who will actively participate and contribute to the development and maintenance of these important standards through CSA’s accredited Standards Development Process(es).

The Technical Committee is seeking members in the following categories:

- **User interest** — those who predominantly represent consumer interests or end users of the subject product(s), material(s), or service(s), and who are not involved in any way in

production or distribution of the subject product(s), material(s), or service(s).

- **Regulatory authority** — those who are predominantly involved in regulating the use of the subject product(s), material(s), or service(s).

What is expected?

- Strong interest and knowledge of the subject matter
- Active participation and willingness to work on a Technical Committee electronically and in-person
- Ability to represent a stakeholder category outlined above
- Ability to work in a multi-stakeholder environment, following the principles of consensus

If you are interested in participating as a new member of the CSA Fuel Cell Technical Committee, please submit a brief bio along with a statement outlining your interest and ability to contribute to the work to Mark Duda at mark.duda@csagroup.org. If you know of a colleague who may be interested in this project, feel free to have them contact CSA Group.

Active / Recently Published Projects		
TSC	Designation/Title	Status
HGV 4.3	HGV 4.3, Test methods for hydrogen fueling parameter evaluation	This project is a revision of an existing standard, and will include content related to MC formula. The new edition was published in February 2022.
HGV 4.2	HGV 4.2, Hoses for dispensing compressed gaseous hydrogen	This project is a revision of an existing standard, and will update to align with current hose technology, and remove requirements for on-board vehicle hoses (content will be transferred to HGV 3.1). The new edition was published in February 2022.
HGV 5	HGV 5.2, Compact hydrogen fueling systems	This project is to develop a NEW standard for Compact Hydrogen Fueling Systems (HGV 5.2). The TSC completed content development. The draft was available for public review (closed January 18, 2022). The Technical Subcommittee Chairs are working to pre-disposition comments, and additional TSC meetings to review the comment will be scheduled for March.
HGV 3	HGV 3.1, Onboard vehicle components for hydrogen gas vehicles	This project is a revision of an existing standard for technology updates, as well as inclusion of the on-board vehicle hose requirements (transferred from HGV 4.2). The Technical Subcommittee is currently working through the public review comments received.
HGV 2	HGV 2, Compressed hydrogen gas vehicle fuel containers	This project is a revision of an existing standard. Content development meetings continue to be held on a bi-weekly basis.
HGV 4.1	HGV 4.5, Priority and sequencing equipment for hydrogen vehicle fueling	This project is to develop a standard to REINSTATE an updated edition of a Priority and Sequencing standard. A seed document draft has been prepared and a kickoff meeting with the HGV 4.1 TSC is being scheduled for early 2022.
C22.2 No.	Hydrogen generators using water electrolysis	The CSA technical subcommittee continues to work on a binational adoption of ISO 22734. Contact Mark Duda

22734

(mark.duda@csagroup.org) with questions or for additional information.

Compressed Gas Association (CGA)

Rob Early

Annual meeting held this week. More updates to come next time.

American Society for Testing & Materials (ASTM)

Jennifer Hamilton

No update at this time.

American Society of Mechanical Engineers (ASME)

Ray Rahaman

Few standards are set for approval of changes for 2022 edition. We are still reviewing records for standards approval in advance of May 30th deadline.

VI. Discussion Topics

Facilitating Deployment

All

No update at this time.

Center for Hydrogen Safety

Nick Barilo

No updates at this time.

Regulatory Matrix Review and Comment

Karen Quackenbush

Please direct any updates, questions, or comments to Karen Quackenbush by email at kquackenbush@fchea.org.

The Committee reviewed the latest version of the matrix as of March 31, 2022.

Permitting and Installation of Hydrogen Fueling Stations

California Station Implementation

Jennifer Hamilton

Two stations have opened recently Hawaiian Gardens and Cupertino. There are several other stations with tentative HyStep review in the coming weeks.

California Div. of Measurement Standards/Fuel Quality / Metrology **Christina Daniels**

Yuk Wong will be taking over some of the reporting roles for this activity with this group for the next few months.

**Legal Metrology Standards Hydrogen Fuel
Quality and Measurement**

Juana Williams/Ralph Richter

No updates at this time.

VII. Open Discussion & Other Issues

None at this time.

VIII. Next Meeting – Wednesday, May 11th at 2:00 PM US Eastern