



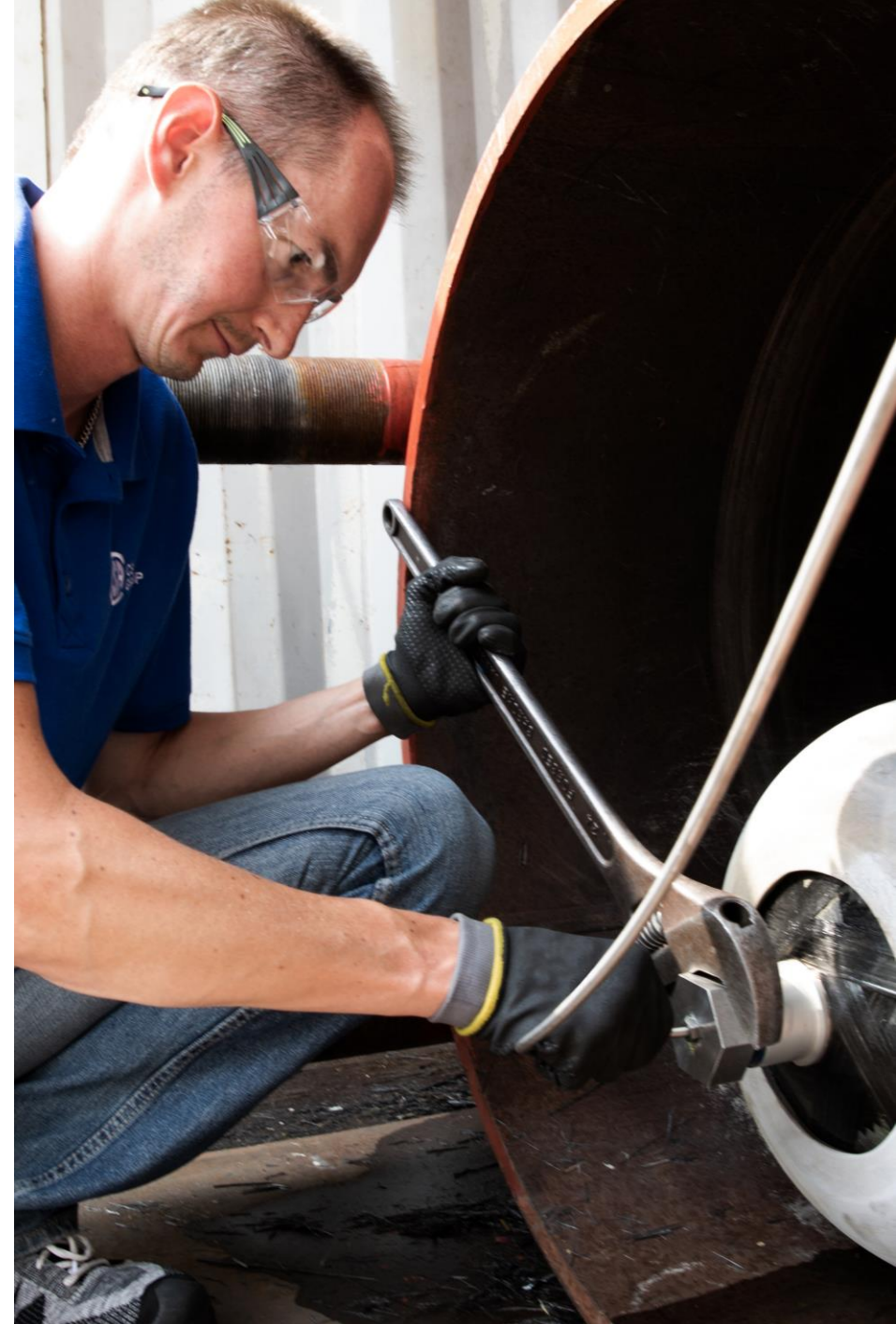
AUGUST 20, 2019

Harmonization of CSA B51 Part 2 & CSA/ANSI NGV 2



Agenda

1. A Brief History of CNG and Hydrogen Vehicle Container Standards
2. Current Status of B51 Part 2 & NGV 2
3. Current Harmonization Activities
4. Proposed Next Steps
5. Questions and Discussion



A Brief History of CNG and Hydrogen Vehicle Container Standards

1991

- The first CSA “Code” for the CNG pressure vessel components was Appendix G to CSA B51 as “Requirements for CNG Refuelling Station Pressure Piping Systems and Containers for CNG”

1992

- U.S. publishes ANSI/AGA NGV 2 standard for CNG vehicle fuel containers
 - U.S. requirements based on performance specifications specific to the service conditions involving vehicles.

1995-96

- CSA B51 moved Appendix G into Part 2 for CNG vehicle fuel cylinders & Part 3 for CNG fueling stations
 - Part 2 was based on the 1995 ISO 11439 draft standard
- NGV 2 used as basis for developing the ISO 11439 standard for CNG cylinders
- Intensive harmonization meetings take place

A Brief History of CNG and Hydrogen Vehicle Container Standards

2000

- NGV 2 republished as ANSI/CSA standard.
- ISO 11439 finally published, which in many respects is a Euro-centric document.
- CSA B51 Part 2 republished with modifications following changes to NGV 2 and ISO 11439.

2005

- Supplement to B51-03 published to include hydrogen vehicle fuel cylinders.
 - First standards in the world for hydrogen vehicle fuel tanks
- Two minor changes to CSA B51 Part 2 have occurred since 2005.

2007-2019

- NGV 2 revised in 2007, 2012, and 2016. Current edition of CSA/ANSI NGV 2 was published in January, 2019.
- ISO 11439 republished in 2013.
- U.S. publishes ANSI/CSA HGV 2 in 2014 – a standard for hydrogen vehicle fuel containers for hydrogen FCEVs.

Current Status of B51 Part 2 & NGV 2/HGV 2

- CNG containers are installed on vehicles crossing the border for travel and import/export.
- There is a common experience in the use and the technology of CNG containers in North America.
- There are two CSA documents used in two countries that are very similar but confusing in their differences.
- There are two CSA committees with overlapping membership, in part, and the effort to create a requirements acceptable in both countries is duplicated.
- Both documents recently published and will be commencing new editions this year

The conditions are conducive to the creation of a single standard.

Current Harmonization Activities

- Consulting on this activity with relevant Strategic Steering Committees, Technical Committees, and Technical Subcommittees
 - Mechanical Industrial Equipment Safety (MIES) Strategic Steering Committee (SSC)
 - CSA B51 Part 1, Part 2, and Part 3
 - Transportation SSC
 - Natural Gas Transportation Technical Committee (oversight includes NGV 2, NGV 6.1, B108, and B109)
 - Hydrogen Transportation Technical Committee (oversight includes HGV 2)
- CSA has initiated activities to support harmonization of NGV 2 and CSA B51 Part 2
 - Clause-by-clause analysis of B51 Part 2 and NGV 2
 - Analysis of rationale for specific clauses in B51 Part 2 and NGV 2
 - Report on comparison and path forward for harmonization
 - Assess the major changes to referenced and related codes and standards
 - Provide proposed changes based on analyses
 - Consultation with regulators regarding any specific jurisdictional requirements
 - Recommend location for hydrogen container requirements (e.g., HGV 2)

Proposed Next Steps

- **Form a Task Force**
 - Representation from all interested parties, including existing B51 Part 2 and NGV 2 members
 - Seek a balance of representation from both Canada and U.S.
 - Participation and acceptance by regulators is important
 - Report to NGTTC, B51 TC, and H2TTC
 - Meetings proposed to begin in October 2019
- **Task Force Scope of Work**
 - Review major technical issues from the analyses and report
 - Harmonize natural gas and hydrogen coverage based on proposed changes from the analyses and report
 - Specific Canadian requirements will be respected
 - Recommend potential “new home” for the coverage
 - Propose path forward for development and publication
- **Post-Task Force Action**
 - Consequential changes will be analyzed and executed in upcoming revision cycles of B51 and NGV 2

Goal:

New edition of binational NGV 2 that can be referenced by B51 Part 2 in 2024 edition.

Discussion

- Feedback on proposed plan, timelines, and goal?
- Interest in participation in the harmonization task force?
- Related issues from the change to B51 Part 2?
 - Hydrogen Vehicle Containers
 - New binational edition of HGV 2 recently commenced (2020 edition)
 - Reference in Part 2? Similar path as NGV 2
 - Future of B51 Part 3
 - Retain as a separate part?
 - Relocate CNG aspects to B108?
 - Relocate hydrogen aspects to Canadian Hydrogen Installation Code?
 - Integrate Part 3 into Part 1?





Questions?



Thank you.

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