

HyCOMP

Enhanced Design Requirements and Testing Procedures for Composite Cylinders intended for the Safe Storage of Hydrogen

HyCOMP dissemination workshop
AFNOR, Paris, France

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March 5th 2014

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Partners: Armines, BAM, WUT, CEA, JRC, CAQ, Faber, HEXAGON, CCS



Overview of the project

- HyCOMP is a Pre-Normative Research project funded by FCH-JU on composite pressure vessels (CPVs)
- Started in January 2011 and will finish on March 31st 2014 (39 months)
- Partnership:



Why this project?

- Main objectives :
 - Demonstrate that a **reduction of safety factor** is possible while ensuring structural integrity of CPV
→ optimization of CPV design
 - Propose **testing procedures adapted to specific features of composite materials**, for:
 - Type approval
 - Manufacturing quality assurance
 - In-service inspection
- Need to better understand damage accumulation in composite wrapping in order to improve the full set of requirements for CPVs
- HyCOMP's objective was **to propose recommendations to Industry and RCS** for enhanced design requirements and testing procedures for the safe storage of compressed hydrogen.

Dissemination workshop of HyCOMP results

- Objective: disseminate and share project results with the international hydrogen and fuel cell community, and CPVs experts involved ISO groups
 - Present and explain project results to ISO members to **convince** them with results obtained in the project
 - Get their **feedbacks** on HyCOMP recommendations and the possibility to have them implemented in standards
- Workshop announcement circulated to **TC58 and TC197**, considered as the most relevant TCs for this topic
- Organized in junction with ISO TC58 / WG24 & WG35 meetings (March 6th & 7th)

SC2 - Cylinder fittings (*H. Barthélémy*)

- WG7**: Compatibility of cylinder and valve materials with hydrogen (*H. Barthélémy*)

TC 58

SC4 - Operational requirements for gas cylinders (*R. Craig*) (**)

- WG2**: Refillable seamless steel gas cylinders - Acoustic emission examination for periodic inspection (*H. Barthélémy*)
- WG10**: Periodic inspection and testing of composite gas cylinders (*R. Irani*)
- WG12**: Inspection of cylinders for compressed and liquefied gases at time of filling (*A. Webb*)
- WG15**: Cylinders of composite construction - Modal acoustic emission testing (MAE) for periodic inspection and testing (*M. Toughiry*)

SC3 - Cylinder design (*W. Hepples*) (**)

- WG17**: High pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles (*C. Webster*)
- WG24**: Factors of safety for composite cylinders (*N. Newhouse*)
- WG27**: Refillable composite gas cylinders and tubes - Design, construction and testing (*M. Trudgeon*)
- WG32**: Refillable composite reinforced tubes of water capacity between 450 and 3000L (*M. Trudgeon*)
- WG35**: Refillable permanently mounted composite tubes for transportation (*P. Heggem*)

(**) *Here are mentioned WGs whose scope is close to HyCOMP topic*

