

HarmonHy

"Harmonization of Standards and Regulations for a sustainable Hydrogen and Fuel Cell technology"

Proposal/Contract no. 513542

a "Specific Support action" under the 6th Framework Programme of the "European Commission"

12 months – not yet started



Goals

- make an assessment of the activities on hydrogen and fuel cell related regulations and standards on a worldwide level
- identify the needs for standards as perceived by the industry (pre-normative aspects)
- defining specific international collaborations
- identify gaps or conflicts and make propositions to solve fragmentation

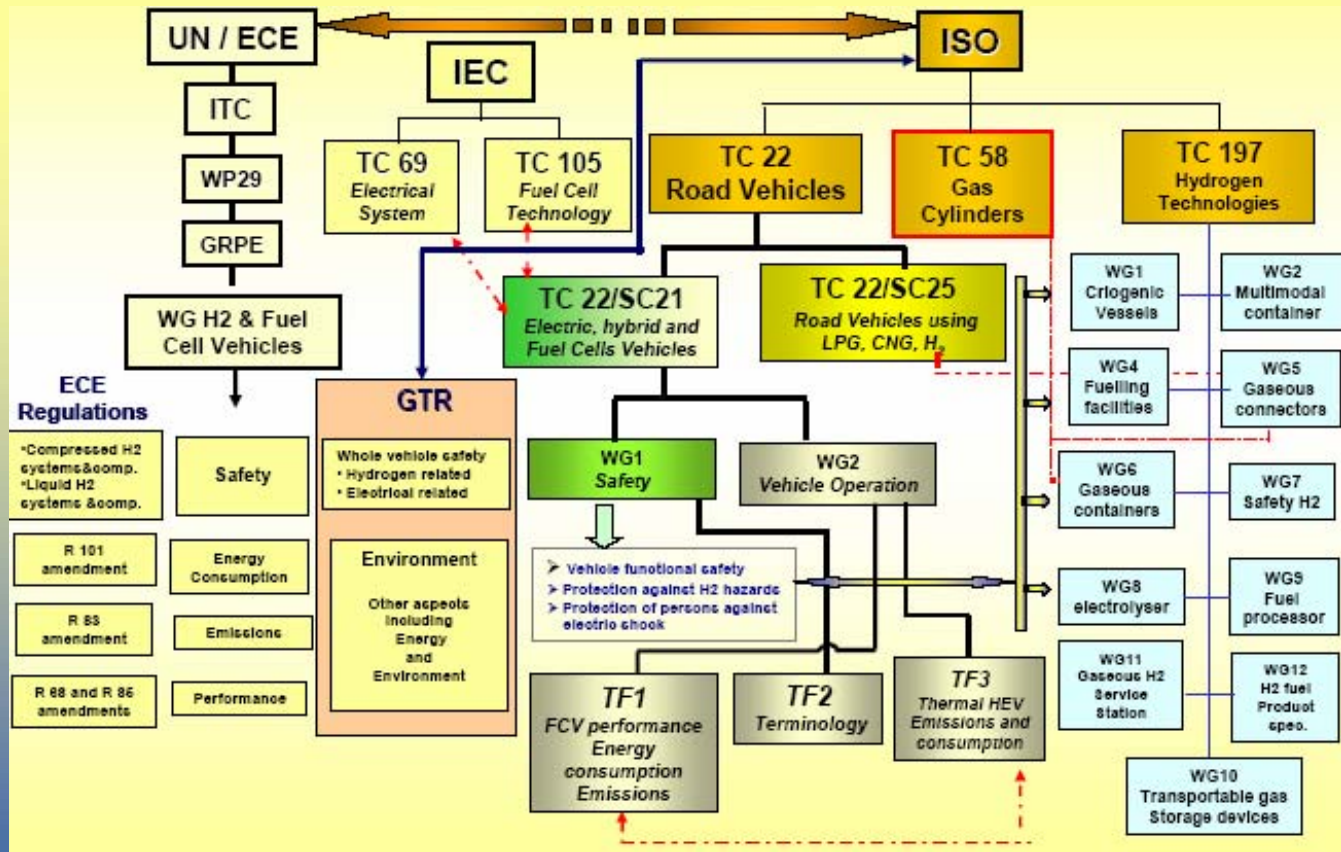


Aim

- to render European collaboration in the field as effective as possible
- to increase European contribution at the worldwide level
- to render it more effective and homogeneous
- to make sure it corresponds to its major interests

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Participants

VUB,	Vrije Universiteit Brussel
BMW,	Bayerische Motoren Werke Aktiengesellschaft
CRF,	Centro Ricerche Fiat
ENEA,	Ente per le Nuove Tecnologie, l'Energia e l'Ambiente
ENGVA,	European Natural Gas Vehicles Association
JRC-NI,	Joint Research Centre of the EC NL
LBST,	L-B-Systemtechnik GmbH
NH,	Norsk Hydro
Stuart,	Stuart Energy Europe N.V
AVERE,	European Association for Battery, Hybrid and Fuel Cell Electric Vehicles
CCS,	CCS Global Group Inc
VOLVO,	Volvo Technology Corporation



1st step

Identify and map the state of the art of ongoing activities in hydrogen specific regulations, codes and standards, in the EU as well as in major world regions like the USA and Japan.

This task will normally be done in collaboration with CEN/CENELEC.



2nd step

Mapping of research and demonstration (R&D) projects in the field of fuel cell and hydrogen for transport and stationary applications in EU and other countries (mainly Japan and USA).

Identify the needs for standards as perceived by the industry

This is the necessary basis and input source for the identification of pre-normative data able to support the development of regulations and standards.



3rd step

Compile an analysis with industrial partners to define the needs for new or enhanced RC&S and to understand how industry can continuously initiate any measures at the international bodies required to ensure appropriate coverage of H₂&FC.



4th step

Identification of needs:

- automotive, components and Hydrogen and Fuel Cell system industry;
- governmental and public authorities needs.

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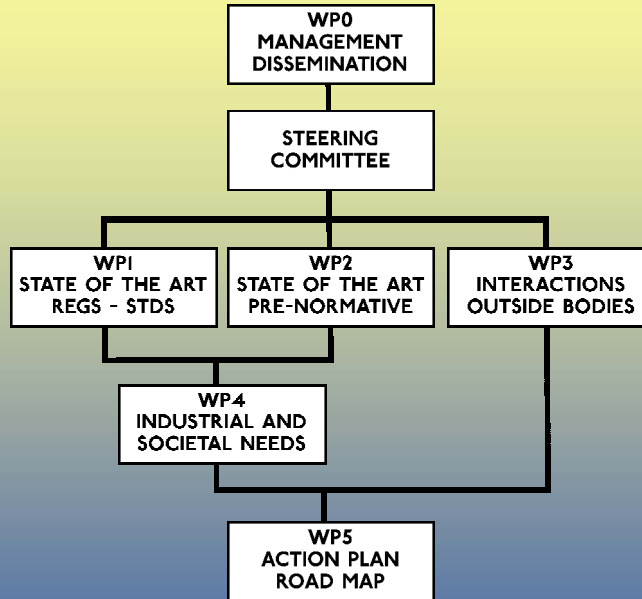


5th step

Elaborate a proposal for action plan and roadmap for further work on harmonizing standards and regulations on an international level at UNECE, GTR, ISO and IEC.



5 steps, 5 WPs



Work already achieved

Inputs to help EU Commission making comments on the IPHE draft scoping paper on Codes and Standards.

Matrix on what is already covered by the different international bodies



Reference matrix Regulations / Standards for Hydrogen/Fuel Cell Vehicles
Draft

ISO/TC 22/SC 21

Thematic items defined by the GRPE Informal Group "Hydrogen/Fuel Cell – Vehicles" for GTR(s)	Standard items under responsibility of ISO/TC22/SC21	Standard items under responsibility of ISO/TC 197	UN ECE Regulations	SAE Standards, test procedures and reports
<p>1.1 On board storage system safety</p> <ul style="list-style-type: none"> - Safety of Container and Components - Lifecycles - Requalification - Performance - Purging Limits - Damage Tolerance - Leakage - Fire protection - Aging - Material Characteristics - Mechanical Properties - Refuelling Δ 	<p>Involved: WG 1 Safety - Terminology</p> <p>Fuel Cell powered road vehicles – Safety specifications</p> <p>Part 2: Protection against hydrogen hazards for vehicles fuelled with compressed hydrogen (ISO/TC22/SC21/WG1 N°191)</p> <p>Road vehicles – Entirely or partially electrically propelled vehicles – Glossary on terms and definition - draft (ISO/TC22/SC21/WG1/TF Tem D14)</p> <p>First draft on the one SC 21 Terminology standard (ISO/TC22/SC21/WG1/TF Tem D15)</p>	<p>Involved:</p> <p>WG 1 Cryogenic vessels</p> <p>WG 2 Multimodal container</p> <p>WG 5 Gaseous connectors</p> <p>WG 6 Gaseous containers</p> <p>WG 10 Transportable gas storage devices.</p> <p>ISO CD 15869 Gaseous hydrogen and hydrogen blends – Land vehicle fuel tanks</p> <p>ISO/DIS 17268 Gaseous hydrogen – Land vehicle filling connectors Δ</p> <p>ISO/FDIS 13985 Liquid hydrogen - Land vehicle fuel tanks</p> <p>ISO 13984 Liquid hydrogen – Land vehicle fuelling system interface</p>	<p>Involved: EIHP</p> <p>- Proposal for a new Draft Regulation "Uniform Provisions concerning the approval of</p> <p>1 Specific components of vehicles using compressed gaseous hydrogen</p> <p>2 Vehicles with regard to the installation of specific components for the use of compressed gaseous Hydrogen (TRANS/ WP29/GRPE/2004/3)"</p> <p>- Proposal for a new Draft Regulation "Uniform Provisions concerning the approval of</p> <p>1 Specific components of motor vehicles using liquid Hydrogen</p> <p>2 Vehicle with regard to the installation of specific components for the use of liquid Hydrogen(TRANS/WP29/GRPE2003/14)"</p>	<p>J 2600 Compressed Hydrogen Vehicle Fuelling Connection Devices Δ</p> <p>J 2601 Compressed Hydrogen Vehicle Fuelling Communication Devices</p> <p>J 2574 SAE Information Report – Fuel Cell Electric Vehicle Terminology</p>

<p>1.2 Whole Vehicle safety</p> <ul style="list-style-type: none"> - Hydrogen system integrity - Fire Safety - Intentional hydrogen release - Road Hazards Exposures - Electric-Shock Protection * - EMS - Controls and Display - Crashworthiness - Functional safety (proposal) 	<p>Involved: WG 1 Safety - Terminology</p> <p>Fuel Cell powered road vehicles – Safety specifications –</p> <p>Part 1: Vehicle functional safety (ISO/TC 22/SC 21/WG 1 N° 190)</p> <p>Part 3: Protection against electrical hazards (ISO/TC 22/SC 21/WG 1 N° 188) *</p> <p>Part 2: Protection against hydrogen hazards (ISO/TC 22/SC 21/WG 1 N° 191)</p>	<p>ISO/TR 15916 Basic considerations for the safety of Hydrogen system</p>	<p>- Proposal for a new Draft Regulation "Uniform Provisions concerning the approval of</p> <p>1 Specific components of vehicles using compressed gaseous hydrogen</p> <p>2 Vehicles with regard to the installation of specific components for the use of compressed gaseous Hydrogen (TRANS/ WP25/GRPE/2004/3)"</p> <p>- Proposal for a new Draft Regulation "Uniform Provisions concerning the approval of</p> <p>1 Specific components of motor vehicles using liquid Hydrogen</p> <p>2 Vehicle with regard to the installation of specific components for the use of liquid Hydrogen(TRANS/WP25/GRPE2003/14)"</p> <p>See the two Proposal for new Draft Regulation reported above with regard to parts 2 (concerning the installation of specific components).</p> <p>R.94, concerning vehicle approval with regard to protection of occupants in the event of frontal collision. Amendment proposal, to be developed.</p> <p>R.95, concerning vehicle approval with regard to protection of occupants in the event of a lateral collision. Amendment proposal, to be developed.</p> <p>R.100, concerning provisions for safety for electric vehicles, which can be regarded as a reference for Fuel Cell Electric Vehicle new Regulation proposal</p>	<p>J 2578 Recommended Practices for General Fuel Cell Vehicles Safety</p> <p>J 2579 Recommended Practices for Hazardous Fluid Systems in Fuel Cell Vehicles</p>
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<p>1.3 Other aspects including energy and environmental considerations</p> <ul style="list-style-type: none"> - Fuel consumption * - Pollutant Emissions - Hydrogen & water emissions - Fuel quality * - Engine power - Fuel Cell System Power measurement - EMI (Electro-Magnetic Integrity) - Low Temperature - Road performance (proposal) ■ 	<p>Involved: WG 2/TF1 Road operation – energy consumption</p> <p>Fuel Cell Electric Hybrid Road Vehicles - Energy consumption measurement +Part 1: Fuelled with compressed Hydrogen (ISO/TC22/SC21/WG2/TF1 N°47)</p> <p>Pure Fuel Cell Road Vehicles - Energy consumption measurement +Part 1: Fuelled with compressed Hydrogen (ISO/TC22 /SC21/WG2/TF 1 N°38-2)</p> <p>Electric Hybrid Road Vehicles - Road operating ability measurement (ISO/ TC22/SC21/WG2/TF1 N°46) ■</p> <p>Pure Fuel Cell Road Vehicles - Road operating ability measurement (ISO/TC22/SC21/WG2/TF1 N°41) ■</p>	<p>ISO 14687 Hydrogen fuel – Product specification *</p>	<p>R. 101 Amendment proposal concerning energy consumption measurement for Pure and Hybrid Fuel Cell Vehicles fuelled with gaseous Hydrogen (Proposal by OICA, based on FUEVA Project consortium) *</p> <p>R. 85, concerning the approval of internal combustion engines or electric drive trains, ... with regard to the measurement of Net Power and 30 min Power. Amendment proposal, to be developed.</p> <p>R. 83, concerning the approval of vehicles with regard to the emission of pollutants according to engine fuel requirements. Amendment proposal, to be developed.</p>	<p>J 2572 Recommended practice for measuring the exhaust emissions, energy consumption and range of fuel cell powered electric vehicles using compressed gaseous hydrogen *</p> <p>J 2601 Compressed hydrogen vehicles fuelling communication devices</p> <p>J 2615 References test procedures of fuel cell systems for Automotive application</p> <p>J 2616 Performance test procedures for the fuel processor subsystem for automotive application</p> <p>J 2617 Performance test procedures of PEM fuel cell stack subsystem for automotive application</p> <p>J 2574 SAE Information Report – Fuel Cell Electric Vehicle Terminology</p>
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Need for clarification

Need to establish clear definitions of “code”, “standard” and “regulation”, so enabling using the same terminology worldwide and take relevant actions to assure such a common language

Work by HySociety very helpfull but need to becore the reference

Need to ensure concordance between standards and regulations



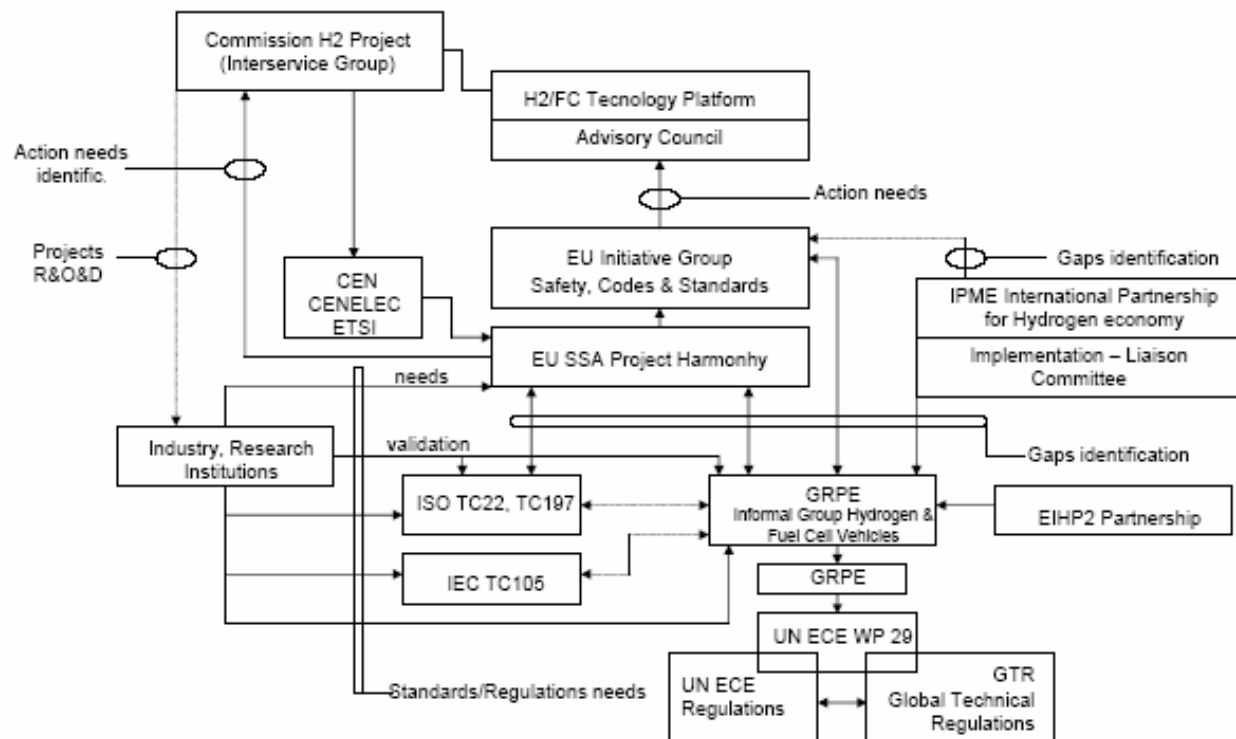
HarmonHy

- to give support to the hydrogen and fuel cell technology development, through indication how to establish a rational and harmonized body for standards and regulations;
- to serve manufacturing industries, users and governmental and public authorities, for the design and the characterization of the products in terms of safety, performance and use adequacy (pre-normative aspect).

HarmonHy should be seen as a tool to help the EU Technology platform, and in particular the IG on RC&S in its mission.



Interactions between H2&FC dedicated Bodies (t..b.c.)



Coordinator contact details

AVERE

**European Association for Battery, Hybrid and
Fuel Cell Electric Vehicles**

c/o VUB-TW-ETEC

Bd. de la Plaine, 2 - BE 1050 Brussels

avere@vub.ac.be

Tel +32 2 629 23 63 - Fax +32 2 629 36 20

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