

EUROPEAN INTEGRATED HYDROGEN PROJECT - Phase 2

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- **Project partners**
- **General project information**
- **Project work packages**
- **Hydrogen regulations & standards**





Commissariat à l'Énergie Atomique



DET NORSKE VERITAS



Raufoss



Objective: Initiation and development or support of the regulations and standards needed to allow the safe and financially viable introduction of mass-produced hydrogen road vehicles and the associated refuelling infrastructure.

Predecessor: EIHP 1998-2000

Project Duration: 3 years (Feb. 2001 - Jan. 2004)

Project Budget: 5M Euro

EU Funding: 50%

Partners:

Belgium	Vandenborre Technologies
France	Air Liquide, CEA
Germany	BMW, DaimlerChrysler, Ford, FZK, LBST, Messer, Opel
Greece	NCSR-Demokritos
Netherlands	EC-Joint Research Centre
Norway	Det Norske Veritas, Norsk Hydro, Raufoss
Spain	INTA
Sweden	Volvo
United Kingdom	Air Products, BP, Shell

Work Packages:

WP1 Overall Coordination	WP2 Refuelling Station	WP3 Refuelling Interface	WP4 Vehicles	WP5 Safety	WP6 Links "EU- USA", & Other Activities
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WP2: Refuelling Station

- Develop hydrogen specific industrial codes of practice for acceptance by European authorities
- Identify refuelling station components that need to be standardised

WP3: Refuelling Interface

- Identify optimum storage pressure for on-board compressed gaseous hydrogen storage
- Seek approval of liquid and compressed hydrogen connectors/refuelling interface
- Develop refuelling procedures
- Seek standardisation of hydrogen connectors/ refuelling interface

WP4: Vehicles

- Validate existing draft ECE regulations by following approval process for vehicles
- Monitor & assist continuing development of existing draft ECE regulations for hydrogen road vehicles
- Develop Global Technical Regulations for hydrogen road vehicles
- Develop procedures for periodic vehicle inspections

WP5: Safety

- Risk assessment of hydrogen vehicles and infrastructure
- Comparative study of hydrogen and other fuels
- Support safety aspects of WP2, WP3 and WP4



ULTIMATE GOAL OF EIHP2

Introduction of safe and economic, mass-produced hydrogen road vehicles and their associated refuelling infrastructure



WHAT DO WE NEED TO ACHIEVE THIS GOAL?

Vehicles:	Regulations (uniform global requirements, i.e. equivalent requirements in all markets or preferably GTR)
Refuelling Interface:	Standards (uniform global requirements - ISO) - one standardised interface and one identical refueling procedure
Refuelling Infrastructure:	Standards and code of practice (uniform global requirements - ISO)



APPROVAL OF ROAD VEHICLES

- Vehicle manufacturer's in both Europe and the USA must meet legal requirements before a vehicle can be approved and registered for use.
- Vehicle manufacturer's need uniform legal requirements throughout the world to speed development and reduce costs.

Approval procedures

Europe: Type approval

USA: Self-certification

Legal Requirements

ECE regulations or EC directives or

FMVSS

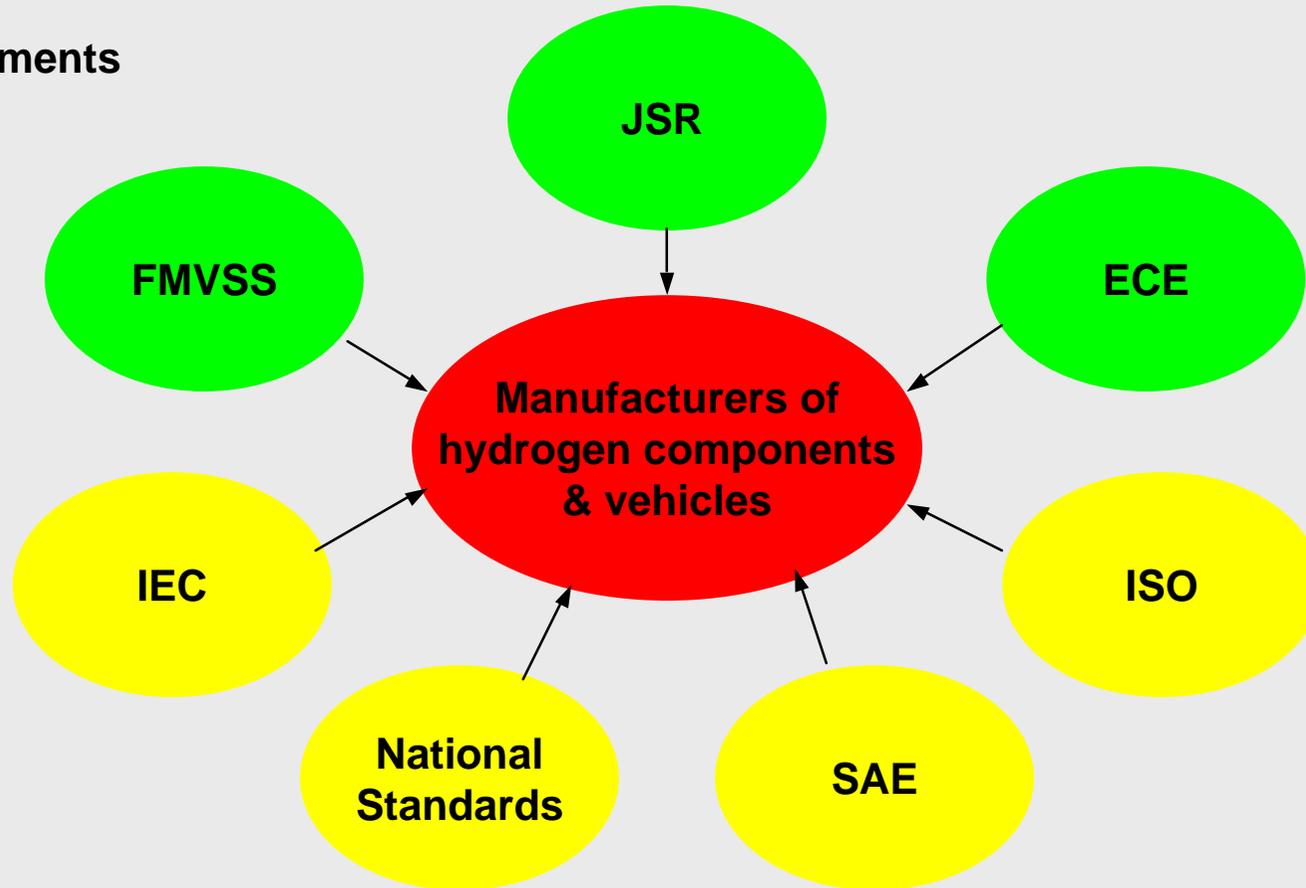
Future Legal Requirements

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Global Technical Regulation



UNACCEPTABLE FUTURE SCENARIO

Legal requirements

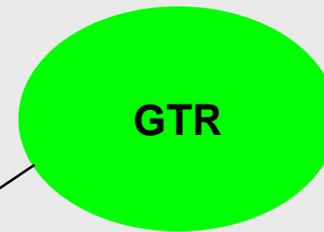


Standards



DESIRABLE FUTURE SCENARIO

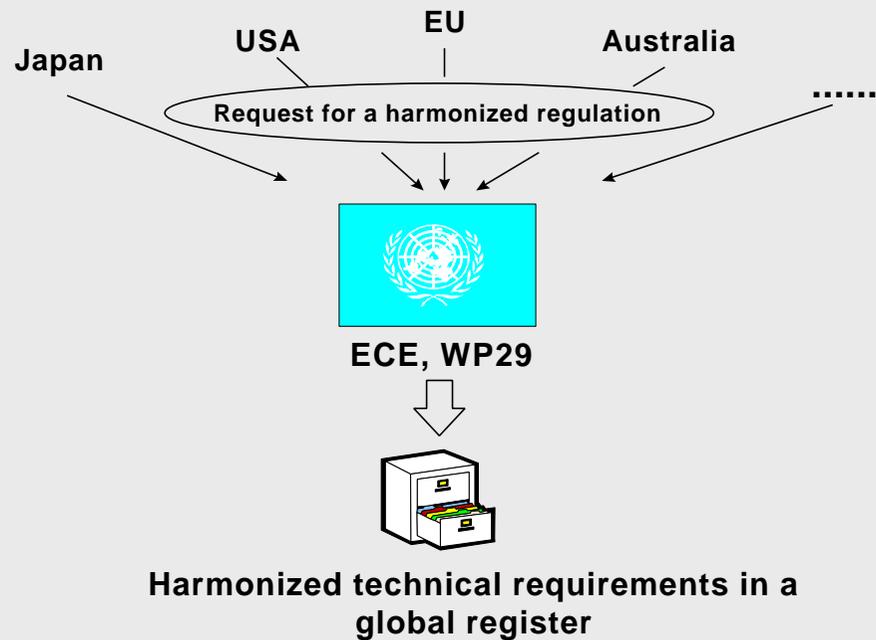
Standards



Legal Requirements



UN ECONOMIC COMMISSION FOR EUROPE (ECE) Working Party 29 The Platform For The Global Harmonisation Of Legal Requirements For Road Vehicles



- Step 1. ECE Regulation (1958 Agreement)
- Step 2. Global Technical Regulation (1998 Agreement)



RECOMMENDATIONS FOR FUTURE PROGRESS

- Establish legal requirements for hydrogen on-board storage systems, i.e. an ECE regulation
- Establish a legal requirement that is valid worldwide, i.e. upgrade the ECE regulation to a Global Technical Regulation
- In order to establish a worldwide legal requirement the involvement of authorities, technical services, vehicle manufacturers and component suppliers is essential
- The platform for the development of worldwide legal requirements for motor vehicles is United Nations ECE WP 29 (World Forum For Harmonisation Of Vehicle Regulations)
- A WP29 GRPE (Working Party On Pollution & Energy) Ad-hoc Working Group has been established
- ISO is a member of the GRPE Ad-hoc Working Group (see document ISO/TC 197 N179)
- It is strongly recommended that ISO standards and worldwide legal requirements are not published in parallel for the same subjects



SUMMARY

- SAE & EIHP2 have agreed to focus on the ultimate goal of a GTR
- ISO & EIHP2 need to co-operate at both a strategic and working level
- EIHP2 to continue the development of regulations with support from ISO and others
- ISO to continue the development of standards where there is no overlap with related regulations with support from EIHP2 and others
- EIHP2, ISO & SAE are not rival activities
- EIHP2, ISO & SAE are complementary activities

