



# **Rail Safety & Standards Board**

**Towards an European Demonstration Project  
Feasibility, Funding, Standards**

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## Early European Interest in Fuel Cells for use in Rail applications

### In UK:

- RSSB research for UK Rail Industry 2005: Research Project (T531) “Feasibility Study into the use of Hydrogen Fuel”  
(<http://www.rssb.co.uk/research/allsearch.asp>)
- Future Fuels Technology Group formed, chaired by Government Department for Transport.
- Proposals for UK Passenger Train Fuel Cell Trial
- UK Participation in Hydrail and UIC FP6 Lighthouse Project.



## Early European Interest in Fuel Cells for use in Rail applications

### In Denmark:

- The Hydrogen Train: Feasibility Study for demonstration of hydrogen trains on VLTJ Railway in 2005.
- 2<sup>nd</sup> International Hydrogen Train & Hydrail Conference 2006 in Herning.
- Continued Danish participation in Hydrail and UIC FP6 Lighthouse Project.

### In Spain:

- Vossloh interest as Rolling Stock manufacturer of new or modified vehicles with Fuel Cell traction



Feasibility, Funding, Standards.



**Denmark**



**United Kingdom**



**Spain**



**vossloh**



## Hydrogen JTI Develops

### **RSSB join the H<sub>2</sub> JTI Industry Grouping:**

- The only rail representation within IG of 63 members.
- JTI now funded by EU Parliament.
- 1<sup>st</sup> Call for FP7 Projects expected in September 2008.
- In preparation an outline FP7 bid document has been written based on Vossloh, Danish and UK input.



## Preparation



### Proposed Bid

#### Passenger Train Demonstration:

- UK Donor Vehicle
- Spanish Construction
- UK Test Track
- UK Passenger Operation
- DK Passenger Operation
- Etc.....



## Funding

- The Hydrogen JTI expects 900million Euro to be available for FP7 projects in 2008 to 2013.
  - Funds will come from Industry, from Member States, and from EU contributions.
  - 50% EU matched funding likely.
- JTI Industry Grouping has ranked known outline proposals into 'High', 'Medium' and 'Low' priorities.
- Rail currently ranked as 'Medium' priority.
- JTI funding of FP7 Rail Demonstration can be expected in response to a robust bid.
- JTI Board concerned by a lack of Rail members of IG.



## New Standards Challenges

### **Modified Rolling Stock:**

- Safety assurance of New Technology
- New Systems compatibility
- Human Factors

### **Hydrogen Refuelling Infrastructure:**

- Safety assurance of New Technology
- New Systems compatibility
- Human Factors





## Why are new Standards required

- To establish interface measures between cooperating parties
- To define operating limitations
- To define maintenance requirements
- To assure system safety
- To enable train and infrastructure acceptance



## The Standards Process (1)

Discussion with UK DfT – Agree if authorisation will be in accordance with:

- UK Interoperability Regulations 2006  
(Enactment of Interoperability Directives)

Or

- UK Railways and Other Guided Transport Systems (Safety) Regulations 2006 (Enactment of Rail Safety Directive)

On the basis of:

- Is the renewal work “major”?
- Will the vehicle operate on the TENS network?



## The Standards Process (2)

In Either Case:

The Project Team will need to identify suitable standards applicable to new features that not covered by Technical Specifications for Interoperability or Railway Group Standards (UK National Standards)

Don't anticipate need to produce new H<sub>2</sub> Standards



## The Standards Process (3)

Discussion with UK National Safety Authority (NSA) (The Office of Rail Regulation) agreeing acceptability of the proposed standards for UK authorisation.

Parallel discussion with DK NSA identifying additional checks that DK require (including compatibility assessment with existing DK network).

- Necessary for TSI Open Point or ROGS route.



## The Standards Process (4)

Experience from 'Demonstration' will indicate suitability of existing H2 standards for Rail Industry use.

Will inform development of any new standards required. (Euronorms? Future TSI?)



## Sources of appropriate Standards:

Euronorms

National Standards

International Standards

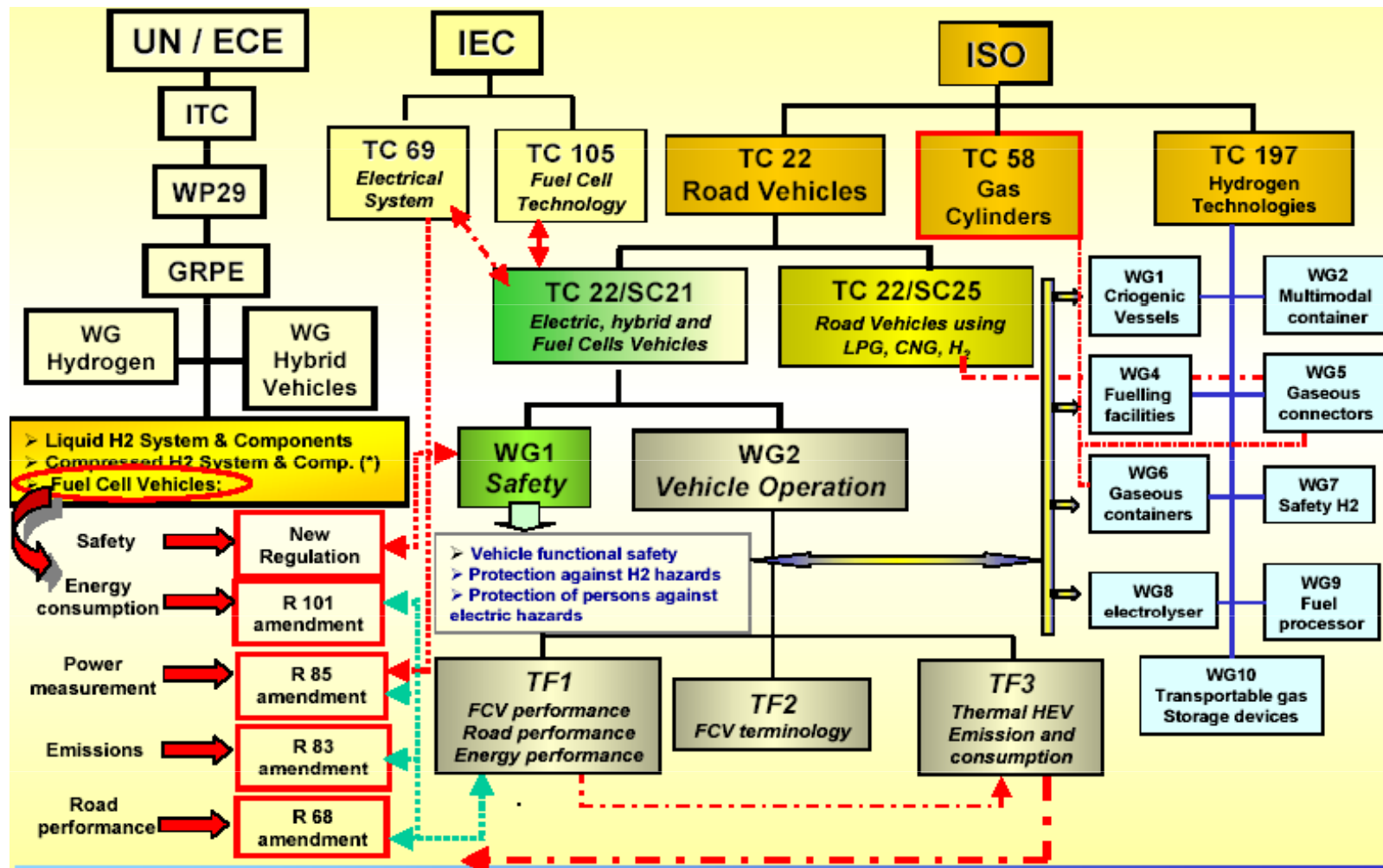
Building on the work of

Hysafe – The European Network of Excellence for  
Hydrogen Safety

European Integrated Hydrogen Project – EIHP



# Regulation Codes & Standards via HySafe Initiative





## Conclusions

- Progress is being made towards an European Rail Demonstration.
- Rail standards can build on existing hydrogen standards.
- JTI is concerned about a lack of Rail members.





The logo features a stylized circular arrangement of light grey spheres on the left. To the right, there is a cluster of green and blue spheres, with a prominent dark blue sphere at the bottom right of the cluster.

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