



European wishes for a future Global Technical Regulation on Hydrogen Vehicles

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Summary



- Need for a Global Technical Regulation on Hydrogen Fuel Cell Vehicles
- Actual Situation of GTR
- Wishes from a European Manufacturer's point of view
- Next steps

Need for a Global Technical Regulation on Hydrogen Fuel Cell Vehicles

Japanese Regulation on H2 vehicles

ISO Activities on hydrogen technologies (TC 197) and electric safety (TC22/SC21)

Japanese Regulation on H2 containers (JARI)

IEC Activities on fuel cells (IEC TC 105)

Draft Geneva ECE regulation based on EIHP

SAE Activities on hydrogen vehicles

Draft European Regulation on hydrogen vehicles

Other standardisation activities:
CSA, ANSI etc.

Draft amendments to USA regulations (FMVSS 305)

Draft Chinese Technical Standards on Fuel Cell Vehicles

=> The WP29 of the UN/ECE at Geneva adopts in 2007 a structure to develop a GTR (Global Technical Regulation) on Hydrogen Fuel Cell Vehicles :

- Three sponsors: Germany, Japan and USA
- One **Sub-Group Safety** (chaired by J) which reports to GRSP
- One **Sub-Group Environment** (chaired by EU) which reports to GRPE
- One **Informal Group on Electric Safety ELSA** (chaired by Germany) which reports to GRSP

Actual Situation of GTR (June 2008) - 1

Sub-Group Environment (3rd meeting in Geneva, January 2008)

- prepares technical reports for each environmental topic of an agreed list,
- reports will include a conclusion on the need and possibility for world-wide harmonisation of each topic,
- will lead to an overall conclusion about the detail of work towards a Hydrogen GTR in the Environmental field.

Informal Group Electric Safety (2nd meeting Washington DC, May 2008)

- will suggest
 - electric safety part for GTR on Hydrogen Vehicles and
 - amendments of other existing regulations (ECE 100, ECE 94, etc.)
- will work on electric safety
 - of vehicles in-use and post-crash
 - of electric-, hybrid- and hydrogen/fuel-cell vehicles

Actual Situation of GTR (June 2008) - 2

Sub-Group Safety (3rd meeting in Washington DC, May 2008)

- ⇒ develops a GTR with 3 parts
 - ⇒ Storage system provisions
 - ⇒ Vehicle fuel system integrity provisions
 - ⇒ Electric safety provisions (taken from informal group ELSA)
- ⇒ In a first phase (until 2010), it will define safety requirements without harmonisation of world-wide crash tests.
- ⇒ In a second phase (beyond 2010), it will update the GTR considering new technologies and harmonise the crash tests.

Sub-Group Safety, Storage System Provisions

The definition of GTR requirements will be based on existing regulations and standards:

For liquid hydrogen

- Draft Geneva ECE regulation based on EIHP
- Draft European Regulation on hydrogen vehicles
- ISO 13985 Liquid hydrogen – Land vehicle fuel tanks

For compressed hydrogen

- JARI S001 Japanese Regulation on H2 containers
- JARI S002 Japanese Regulation on H2 components
- Draft Geneva ECE regulation based on EIHP
- Draft European Regulation on hydrogen vehicles
- FMVSS 304 Compressed Natural Gas Container Integrity
- ISO/DIS 15869 Gaseous hydrogen – Land vehicle fuel tanks
- SAE/TIR J2579 Fuel Systems in Fuel Cell and Other H2 Vehicles
- CSA B51 Part 2
- ANSI HGV2

SG Safety, Vehicle fuel system integrity provisions

A first draft proposal of GTR has been discussed at the last meeting:

Post-crash requirements

- ⇒ When applying the regulatory crash tests, the average leakage until 60 minutes after the crash shall not exceed 121 NL per minute (this requirement is based on the heat energy equivalent of gasoline vehicles).

Pressure relief systems

- ⇒ Requirements concerning the relief direction (not into passenger/luggage compartments, into wheel housings, to gas containers, etc.)

Single failure conditions

- ⇒ Any single failure shall not result in a hydrogen concentration in air greater than 4%.
- ⇒ The shutoff valve shall close in the case of a failure.

Fuel Cell Vehicle exhaust system

- ⇒ At the point of discharge, the average hydrogen concentration in any moving 3 seconds time interval shall not exceed 4%.

European Manufacturer's point of view - 1

Delay of rulemaking:

- We believe that the European Regulation on Hydrogen Vehicles will be in force prior to the GTR.
 - In consequence, we will be obliged to start with a type-approval by component (EC regulation approach) which is reasonable for very small series.
 - However, in the medium and long term, we would prefer a purely performance based regulation (GTR approach).

⇒ **As soon as the GTR will be adopted by WP29, the EC shall accept the GTR requirements as an alternative to the EC regulation on hydrogen vehicles.**

European Manufacturer's point of view - 2

GTR Storage System Provisions:

- Historically, the rulemaking for pressure equipments like hydrogen fuel tanks is separated from the vehicle rulemaking (different administrations).
 - In consequence and with a view to the long list of existing storage system regulations and standards, there is a risk that it may not be possible to define harmonized storage system provisions in the GTR.
 - In this case, the GTR would become worthless as the storage system is one main part of the hydrogen vehicle.
- ⇒ **Harmonized storage system requirements are an indispensable item of the GTR. All contracting parties of the 1998 agreement shall be open for a compromise.**

European Manufacturer's point of view - 3

EU Storage System Provisions:

- As the comitology part of the EC regulation will be conceived in parallel to the GTR, it should take into account the latest status of the GTR development.
- The best would be to have already harmonised storage system provisions in EC regulation and the GTR.

⇒ **The EC should actively participate in the GTR Storage System Provisions.**

Next steps

Europe

- The codecisional part of the EC Regulation is nearly adopted.
- The comitology part will be developed until summer 2009.

GTR

- Sub-Group Environment
 - still in an early stage (definition of need and possibility for world-wide harmonisation)
- Sub-Group Safety
 - will hopefully finalise the Vehicle fuel system integrity provisions during the next two meetings (Tokyo/Bonn)
 - will conceive storage system provisions in 2009
- Informal Group on Electric Safety ELSA
 - intends to present first draft for in-use requirements to GRSP in May 2009

Thank you for your attention!

All documents of GTR can be consulted on the UNECE-Website:

For Sub-Group Safety:

http://www.unece.org/trans/main/wp29/wp29wgs/wp29grsp/sgs_3.html

For Informal Group Electrical Safety ELSA:

http://www.unece.org/trans/main/wp29/wp29wgs/wp29grsp/elsa_1.html

For Sub-Group Environment:

<http://www.unece.org/trans/main/wp29/wp29wgs/wp29grpe/grpehfcv-sge03.html>