

Informal document GRSP-54-01
(54th GRSP, 17 - 20 December 2013,
agenda item 20)

Transposition of GTR No.13 “Hydrogen and fuel cell vehicles” into UN Regulation

- Explanatory material -

20/September/2013
The European Commission and OICA

Background

- Global technical regulation No.13 on “Hydrogen and fuel cell vehicles” has been established on 27 June 2013 (ECE/TRANS/180/Add.13)
- The European Commission made a statement at the 160th WP29:
 - ◆ The European Commission, together with OICA, will lead transposition of the GTR into UN Regulation
 - ◆ Once the UN Regulation is established, EU will adopt as an alternative to existing EU regulation
- The editorial team (COM, OICA volunteers) developed the base draft of UN Regulation, with the considerations as shown in this material

Principle

- Transposition of GTR into UN Regulation
 - ➔ **No additional technical requirement**
(in principle, correction & clarification may be required)
 - ◆ Any addition of technical requirements should be discussed for phase 2 of GTR at the informal WG
 - ◆ Non-safety related requirements should be developed by relevant bodies.
- Minimum changes in existing Regulations
 - ◆ If existing Regulations allows approval of vehicles satisfying GTR requirements, no amendment is required on such Regulations.

Correlation between GTR and ECE

GTR requirements	Relevant ECE
5.1./6.2. Compressed hydrogen storage system	New ECE
5.2.1./6.1.3-6. In-use fuel system integrity	New ECE
5.2.2./6.1.1-2. Post-crash fuel system integrity	New ECE (see below)
5.3.1./6.3.1-4. Electrical safety requirements – in-use	R100 (slide #5)
5.3.2./6.3.5. Electrical safety requirements – post-crash	R12/R94/R95 (slide #6)
7.2./7.4. LHSS design qualification requirements	New ECE
7.3./7.5. LHSS fuel system integrity	New ECE

- Existing crash test procedures are applied to post-crash fuel system integrity requirements
 - Use similar approach as REESS tests in R100-02
- LHSS requirements are optional for CPs in GTR
 - LHSS requirements are included as separate Parts. If it will become an obstacle to establish a new ECE, LHSS requirements may be separated

Electrical safety – in-use

- Difference between R100-01 & HFCV-GTR
 - ◆ Isolation resistance monitoring system
 - HFCV-GTR(5.3.1.2.4.1.) – installation is mandatory
 - R100-01 (5.2.3.8) – installation is optional

(with respect to in-use electric safety requirements)
GTR compliance will allow the approval under R100



Conclusion

No amendment to R100 is necessary

Electrical safety – post-crash

➤ Difference between R94-02 & HFCV-GTR

(relevant requirements exist also in R12 and R95)

◆ Available compliance options

- GTR will not allow “low energy” option

GTR compliance will allow the approval under ECE

◆ Isolation resistance for combined DC- & AC-buses

- Combination with physical protection (GTR 5.3.2.2.2.2. (b)) does not exist in ECE

No issue, if physical protection option is generally allowed

◆ Electrolyte leakage

- GTR does not have 5L limit for open-type batteries.

Use of huge open-type battery for HFCV is not realistic



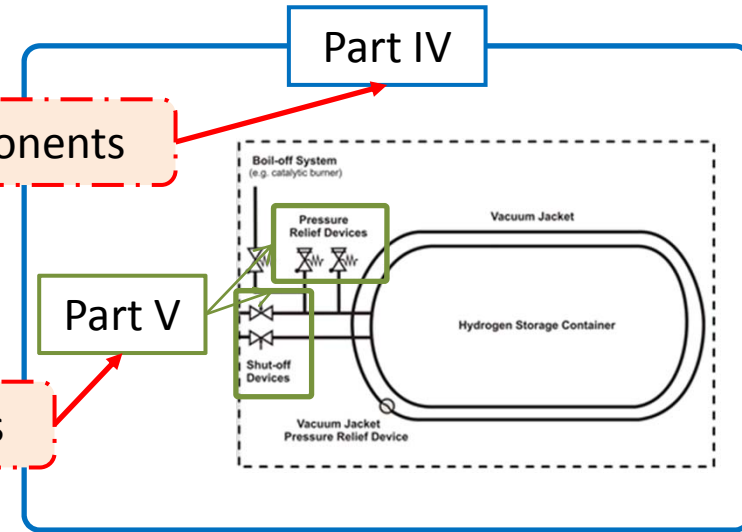
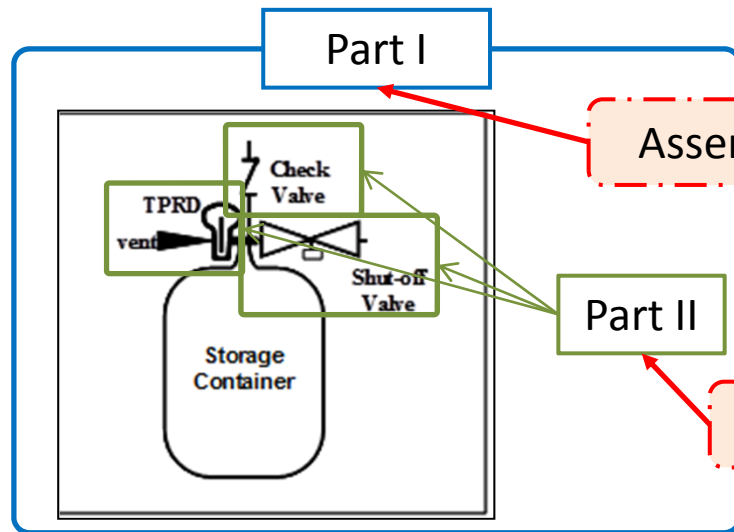
Conclusion

No urgent amendment is necessary
(Same for R12, R94 and R95)

Structure of Draft UN Regulation

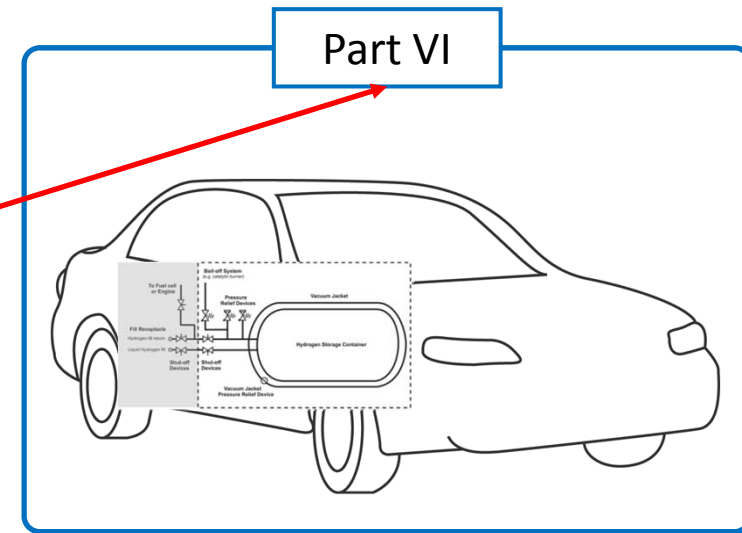
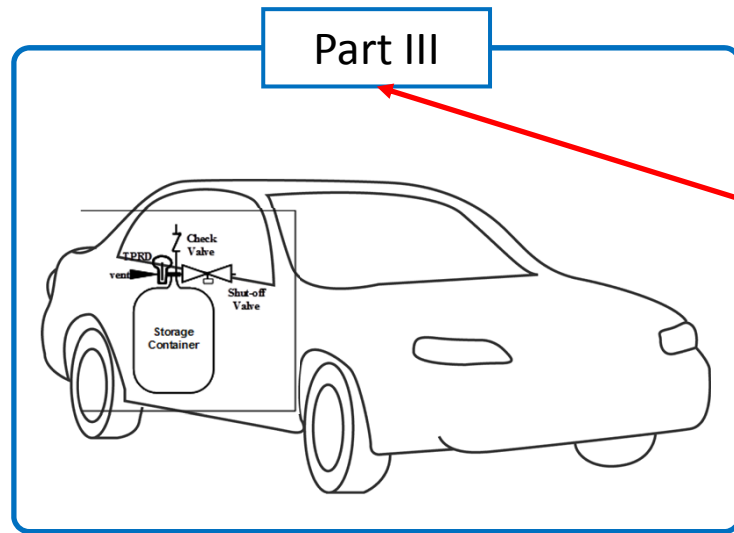
Compressed Hydrogen Storage System

Liduefied Hydrogen Storage System



Assembly of components

Components



Vehicle

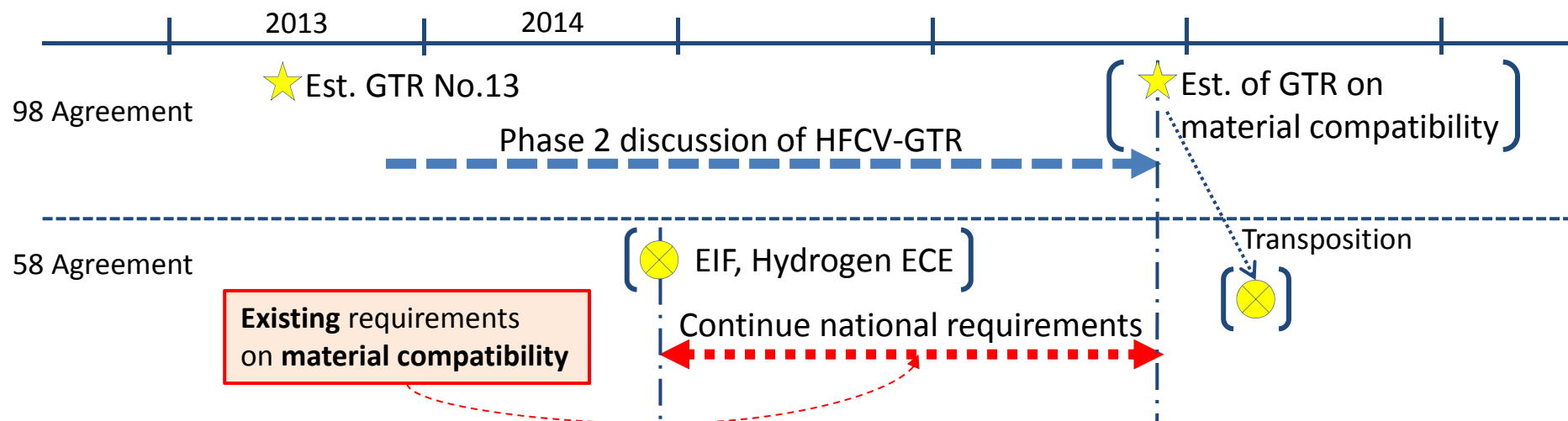
Material Compatibility & Hydrogen embrittlement - Transitional provision -

GTR No.13 Part I

1. Material compatibility and hydrogen embrittlement

156. The SGS subgroup recognized the importance of requirements for material compatibility and hydrogen embrittlement and started the work in these items. Compliance with material qualification requirements ensures that manufacturers consistently use materials that are appropriately qualified for hydrogen storage service and that meet the design specifications of the manufacturers. However, due to time constraint and other policy and technical issues, agreement was not reached during Phase 1. Therefore, the SGS working group recommended that **Contracting Parties continue using their national provisions on material compatibility and hydrogen embrittlement** and recommended that requirements for these topics be deferred to Phase 2 of the gtr activity.

To accommodate this statement under the 58 Agreement, a transitional provision is proposed



Guide for draft document

- Document is based on Part II of ECE/TRANS/180/Add.13 with following changes
 - Delete provisions only related to electrical safety
 - Add administrative provisions for type approval
 - Re-arrange layout of provisions as typical UN Regulations (test procedures in Annex)
 - Adjust paragraph numbers and cross references
 - Correct errors in GTR text → ***Amendments to GTR for correction will be separately proposed***
- In informal document, the changes from GTR contents are described in Red color (except for deletion of electrical part)
- Comments are given where careful consideration may be necessary
- Item numbers for Annex I, part 1 (information document) will be taken account for the future EU WVTA framework regulation