Submitted by the expert from Japan

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Agenda item 13

Japan's comment on GRSP/2021/12UN Regulation No. 134 (Hydrogen and Fuel Cell Vehicles) and GRSP-69-22 Proposal to replace document ECE/TRANS/WP.29/GRSP/2021/12

The 69th session of GRSP

17-21, May 2021

JAPAN AUTOMOBILE STANDARDS INTERNATIONALIZATION CENTER

Concerns from Japan

1.Proposal from OICA (GRSP-69-22) related to Parapraph 7.2.4.2.

Paragraph 7.2.4.2., amend to read:

"7.2.4.2. Requirements on installation of the hydrogen storage system not subject to the lateral impact test:

The container shall be mounted in a position which is between the two vertical planes parallel to the centre line of the vehicle located 200 mm inside from the both outermost edge of the vehicle in the proximity of its container(s). **This requirement shall not apply to compressed hydrogen storage systems which are mounted in such a way that the lowest part of the system is higher than 1,000 mm above the ground.**"

- **Japan's Proposal**: Delete the proposed sentence.

Paragraph 7.2.4.2., amend to read:

"7.2.4.2. Requirements on installation of the hydrogen storage system not subject to the lateral impact test:

The container shall be mounted in a position which is between the two vertical planes parallel to the centre line of the vehicle located 200 mm inside from the both outermost edge of the vehicle in the proximity of its container(s). ~~**This requirement shall not apply to compressed hydrogen storage systems which are mounted in such a way that the lowest part of the system is higher than 1,000 mm above the ground.**~~"

- **Justification**: Significant concerns on the proposal from the safety risks on the following side-related impacts on hydrogen tanks:
  - Side impacts by large trucks and buses
  - Side impacts on such as polls or walls
  - Rollover impacts

2. Related to Proposal from OICA (GRSP-69-22) concerning service life and change design table

1. Premise

This proposal does not prejudge the position of Japan, since Japan expert needs to clarify the following issues:

- how the proposal , extension of the service life, submitted by the expert from the International Organization of Motor Vehicle Manufactures handles a concern of stress rapture

2. Proposal (Japan's proposals are indicated in red)

Paragraph 5., amend to read:

"5. Part I – Specifications of the compressed hydrogen storage system

This part specifies the requirements …

All new compressed hydrogen storage systems produced for on-road vehicle service shall have a NWP of 70 MPa or less and a service life of 15 years **(or upon the request of the manufacturer 20 years in case of vehicles of categories M2, M3, N2 and N3 (hereinafter referred to as "20 years"))** or less, and be capable of satisfying the requirements of paragraph 5.

…"

Paragraph 5.1.2., amend to read:

"5.1.2. Baseline initial pressure cycle life.

Three (3) containers shall be hydraulically pressure cycled at the ambient temperature of 20 (±5) ° C to 125 per cent NWP (+2/-0 MPa) without rupture for 22,000 cycles **for a 15-year service life or 30,000 cycles for a 20-year service life of vehicles of categories M2, M3, N2 and N3 (hereinafter referred to as "a 20-year service life"),** or until a leak occurs (Annex 3, paragraph 2.2. test procedure). ~~**Alternatively, vehicles** of categories M2, M3, N2 and N3 may be verified **with 15,000 cycles for a 20-year service life.**~~ Leakage shall not occur within 11,000 cycles for a 15-year service life **or 15,000 cycles for a 20-year service life**. "

Annex 4, Paragraph 2.3., amend to read:

" 2.3. Extreme temperature pressure cycling test

(c) Check valve chatter flow test: Following 11,000 operational cycles **for a 15-year service life or 15,000 operational cycles for a 20-year service life** and leak tests in Annex 4, paragraph 2.3.(b), the check valve is subjected to 24 hours of chatter flow at a flow rate that causes the most chatter (valve flutter). At the completion of the test the check valve shall comply with the ambient temperature leak test (Annex 4, paragraph 2.2.) and the strength test (Annex 4, paragraph 2.1.)."

Concerns from Japan

Paragraph 8.1., amend to read:
"8.1. Every modification to an existing type of vehicle or hydrogen storage system or specific component for hydrogen storage system shall be notified to the Type Approval Authority which approved that type. The Authority shall then**,** ~~**referring to Annex 6,**~~ either:
(a) Decide, in consultation with the manufacturer, that a new type-approval is to be granted; or
(b) Apply the procedure contained in paragraph 8.1.1. (Revision) and, if applicable, the procedure contained in paragraph 8.1.2. (Extension)."

Delete new Annex 6:
"~~Annex 6~~
~~Approval testing for CHSS modifications~~
~~...~~"

3. Justification

- Paragraphs 5.: The same expressions are used several times, so the specific term is set.
- Paragraphs 5.1.2.: The same expressions are used several times, so the specific term is set. Additionally regarding “Alternatively, vehicles of categories M2, M3, N2 and N3 may be verified with 15000 cycles for a 20 year service life” should be deleted since it could be considered as a back door to the previous sentence.
- Annex 4, Paragraph 2.3.: It is necessary to set the number of cycles for a 20-year service life.
- Paragraph 8.1. and New Annex 6: Paragraph 8.1. and new Annex 6 are substantially different from the Formal proposal submitted by the expert from the International Organization of Motor Vehicle Manufactures, so it is necessary to check consistency between this proposal and our internal regulations.

4. Information request

In order to reflect on the new Annex 6, the following information would be highly appreciated:
- Changed item is Plastic liner material: the reason of omitting initial burst test
- Changed item is Nominal working pressure: the reason of omitting sequential hydraulic test
- Changed item is Diameter ≤ 20%: the reason of omitting sequential hydraulic test

Thank you!