GRSP TF on the transposition of GTR 13 Phase 2 to UN-R 134 (12)

Meeting Date: 27/04/2023 07:30 – 09:45 am (CET)
Location: Microsoft Teams Meeting

Participants:

- ☑ Amy Ryan (Toyota/OICA)
- ☑ Anais Garo (Utac, France)
- ☑ Annett Schuessling (LIFTE H2)
- ☑ Antoine Azzopardi (Ministry of Energy, France)
- ☑ Anton Weiler (IAV)
- ☑ Ayumu Ishizuka (Honda/OICA)
- ☑ Bill Mezher (Luxfer)
- ☑ Chris San Marchi (Sandia Lab)
- ☑ Christian Bonato (JRC /EU Commission)
- ☑ Frank Otremba (NPROXX)
- ☑ Gerhard Gissibl (BMW/OICA)
- ☑ Gilles Jouvenot (Plastic Omnium)
- ☑ Hans Lammers (RDW, Netherlands)
- ☑ Hiroaki Tamura (Jari, Japan)
- ☑ Ikuya Yamashita (Honda/OICA
- ☑ Livio Gambone (ISO TC 197)
- ☑ Masaaki Iwasaki (Toyota/OICA)
- ☑ Matthias Kuntz (Bosch)
- ☑ Özkan Öztürk (Ford/OICA)
- ☑ Richard Trott (Forvia/CLEPA)
- ☑ Romary Daval (Luxfer)
- ☑ Salim Abdennadher (Renault/OICA)
- ☑ Sekiya (KHK, Japan)
- ☑ Seonghoon Kim (Hyundai/OICA)
- ☑ Shinohara (KHK, Japan)
- ☑ Shinya Yamamura (MLIT, Japan)
- ☑ Shougo Suda (Toyota/OICA)
- ☑ Takashi Iijima (AIST/Japan)
- ☑ Tatsumi Takehana (KHK, Japan)
- ☑ Tohru Nakanishi (METI, Japan)
- ☑ Vuthy Phan (Volvo/OICA)
- ☑ Warren Hepples (Luxfer)
- ☑ Wataru Okuyama (MLIT, Japan)
- ☑ Yoshinori Tanaka (NTSEL, Japan)
- ☑ Yoshio Fujitmoto (NTSEL, Japan)

- □ Alessia Bolla (Iveco/OICA)
- □ Alexandra Mulot (Utac, France)
- □ Andres Fernandez Duran (Iveco/OICA)
- □ Ansgar Pott (Hyundai/OICA)
- □ Ayako Sugita (Toyota/OICA)
- □ Baptiste Ravinel (Daimler Trucks/OICA)
- □ Emi Miyake (Tokushima University)
- □ Harald Beck (MAN/OICA)
- □ Hisamoto (KHK, Japan)
- □ Hyungki Kim (Hyundai/ OICA)
- □ Ito (KHK, Japan)
- □ Johan Broeders (DAF/OICA)
- □ Junichi Tsukada (JASIC, Japan)
- □ Kawashima Tomoko
- □ Kazumi Watanabe (JASIC, Japan)
- □ Keobo Ku (Hyundai)
- □ Klaus Keck (Daimler Truck/OICA)
- □ Lukasz Rozanski (EU)
- □ Mabuna Matsuda
- □ Manoj Desai (India)
- □ Marco Aimo-Boot (Iveco/OICA)
- □ Marc Antoine Marcellin
- □ Marta Angles (IDIADA, Spain)
- □ Martin Koubek (NHTSA, USA)
- □ Mike Levet (DfT, UK)
- □ Muhammad Yasir (Forvia/CLEPA)
- □ Myrna Cashatt (Linamar)
- □ Nick Hart (ITM Power)
- □ Ohgami Nobuyuki (Toyota/OICA)
- □ Patrick Breuer (Hexagon Purus)
- □ Paul Dijkhof (Kiwa)
- □ Bart Thedinga (EU Commission)
- □ Saya Tanaka
- □ Sigurd Sonderegger (Volvo/OICA)
- □ Toshinori Narumiya (KHK, Japan)
- □ Volker Rothe (Stellantis/OICA)
- □ Ylva Castenhag Blomström (Scania /OICA)
- □ Yusuke Ito (KHK, Japan)
- □ Yves van der Straaten (OICA)

Minutes

1. Welcome & Roll call
2. Feedback on Working document
3. Review of open items

ii. Material compatibility – Comments:

i. Japan

- Japanese experts are not opposing the component tests completely. The newly proposed tests should however, be discussed based on data in a next phase of GTR 13, e.g. phase 3.
- The alternative component tests have not been discussed during phase 2.

ii. Sandia

- Dr. Chris San Marchi provided a presentation on the statistical approach regarding failure data using WeiBayes analysis.
- It shows that 15,000 cycles using H_2 is sufficient for component lifetime qualification.

ii. ISO TC 197

- Livio Gambone as convener of WG 18 that a new test needs to meet several requirements to be included into a standard or regulation as a mandatory test:
  1. *Clearly define the failure mode arising from the clearly defined service condition(s) that the test is designed to address*
  2. *Demonstrate that the proposed test can discriminate against known "bad" actors and known good "actors", making sure that the items under test are representative of actual designs (alloy, forming, heat treat, temper, etc.)*
  3. *Achieve industry consensus on proposed test procedure*
- As the HG-SCC test has not met any of these pre-requisites, the test cannot be considered ready for incorporation into UN-R 134

ii. OICA

- Proposes two options on how to go forward
  a. **1. UN-R 134 02-series without** Material Compatibility requirements in §5.5 and §6.3 and annex 8 Part 1 & Part 2
     2. UN-R 134 02 (supplement 2 ot 03 series) Add Material compatibility and alternative component tests in the near term with the option to reference scientific papers, standards and / or test reports (e.g. SAE TIR compiling data on the tests currently in preparation by Chris San Marchi)
  b. 1. **UN-R134 02-series** includes Material Compatibility requirements in §5.5, §6.3 and annex 8 Part 1 & Part 2

→ Base approval method of CHSS and specific components either by Physical testing or demonstrating compliance using reference to scientific paper, standard and/or test report.
2. **UN-R134 Supplement 1 to 02-series** includes alternative component test for specific components

iii. Luxfer
- Presented their thoughts on the test protocol
- Looked at existing standards that are currently in place and have been referenced in regulations, e.g. ISO 11114

Discussion on the comments:

Hans Lammers (NL):
- Option A might be difficult to realize the inclusion of material compatibility as a mandatory requirement will make a new series of amendments necessary
- Cannot provide feedback on the proposed options.
- feedback from KIWA. Reference to scientific papers might lead to controversial interpretations among Member States and it reference standards

Antoine Azzopardi (France):
- prefers option A as presented by OICA
- many requirements in Annex 8 cannot be done in European laboratories at the moment, e.g. the fully reversed tension-compressed load cycle
- therefore clear and consistent alternatives are needed

Livio Gambone (ISO):
- prefers option A in order to allow the test to be verified appropriately
- national / regional provisions are in place in order to qualify materials

Richard Trott (CLEPA)
- no incidents in the field relating to material compatibility
- recognizes the importance of harmonizing requirements for material compatibility but does not see the urgency
- supports option A

Gerhard Gissibl (OICA):
- in favour of option B
- does not expect any progress in the discussions in other working groups and harmonization is needed now
- ISO 11114 is outdated

Chris San Marchi (Sandia):
- Fatigue is not addressed in ISO 11114
- There are test labs in Europe, there may be some testing that cannot be done but the testing requirements provide options to do tension-tension fatigue test with a notched specimen at room temperature to demonstrate material compatibility
- Test labs will not extend their capabilities out of their own pockets – industry has to support that

(Overall) Feedback from CP provided in comment documents

- **Nakanishi-san (Japan) (see documents:**
  Rev3_CP_Position_on_open_items__TF_R134.docx
  Justification for Change of Design table in Annex7_r2.docx)

Remote TPRD:
- clearly stated that supply lines need to be included in the tests
- As long as the supply lines are included in the test, Japan can accept the remote TPRDs

Change of Design Table:
- Requests justification on the manifolds and no. of chambers

Response by Luxfer:
- Typically, when no. of chambers is increased another cylinder is added on a frame of the vehicle. The number of cylinders on the frame generally does not affect the sequential testing, since you are testing only one cylinder at a time.

- **Christian Bonato (JRC, EC) (See document**
  20230228_CP_Position_on_open_items__TF_R134_EC.docx)
- *Material compatibility is important, but most important is the safety of the vehicle*

Response by OICA & Chris San Marchi:
- If the Technical Information Report currently in preparation by Chris San Marchi for SAE could be referenced in the regulation. This would simplify the process for the manufacturers.

- Draft will be ready within the next four to six weeks (adoption by SAE tbd). Will contain all of the scientific literature using the test method described in the appendix.

- Timeline proposed in both options presented by OICA can be reached with this report in mind.

- **Antoine Azzopardi (France) (See document**
  R134-12-03_FR_CP_Position_on_open_items_TF_R134.docx)
- Question on the crash requirements regarding the supply lines for remote TPRDs.

Response by Livio Gambone:
- Supply lines will be included in the crash tests. They cannot be tested in the sequential tests. However, the components are tested elsewhere and will have to undergo crash testing.
- The remote TPRD would only be installed after the tank has been installed on the vehicle.

4. Next steps:

- In addition to the two options presented by OICA, the secretariat introduced a third option to extend the TF for six months to continue the discussions.
- This would require agreement by GRSP and a CP to chair/support this TF.
- The options and positions will be reviewed at a follow-up meeting before the GRSP session.

5. Next meeting:
   - May 11th 2023:
     - 10.30 pm – 12.30 am (PST)
   - May 12th 2023:
     - 7.30 – 9.30 am (CET)
     - 2.30 – 4.30 pm (JST/KST)