

Suggestion for changes to ECE/TRANS/WP.29/GRSG/2018/16 (proposed amendments to UN Regulation No. 110 (CNG and LNG vehicles) submitted by Italy)

The changes and comments below, provided by the experts from the Netherlands and NGV Global are a follow-up to the last meeting of the ad hoc Cylinder Task Force meeting in Cologne on 27-28 June 2018 where Contracting Parties and stakeholders discussed revised language included in the above-referenced document from Italy, also arising from the Task Force meeting in Cologne. The additions and deletions are shown in **bold red** text to facilitate identification of these proposed changes within the existing text. The motivation for each of the suggested changes is provided below the last textual change, as part of the section II "Justification".

I. Proposal

Paragraph 4.56. (Definitions), amend to read:

"4.56. "*Finished cylinders*" means completed cylinders that are ready for use, typical of normal production, complete with identification marks and external coating including integral insulation **and/or protection** specified by the manufacturer **on the design drawing for the cylinder, ~~,but free from non-integral insulation or protection.~~**"

Insert a new definition 4.78., to read:

"4.78. "*Certified cylinder*" means a finished cylinder that complies with the tests described in this regulation for finished cylinders and is approved."

Annex 3A, paragraphs 4.1.2. to 4.1.4.2., amend to read:

"4.1.2. Use of cylinders

The service conditions specified are also intended to provide information on how cylinders made to this Regulation may safely be used to:

- (a) Manufacturers of cylinders;
- (b) Owners of **certified** cylinders;

.....

4.1.3. Service life

The service life for which **certified** cylinders are safe shall be specified by the cylinder designer on the basis of use under service conditions specified herein. The maximum service life shall be 20 years.

4.1.4. Periodic requalification

Recommendations for periodic requalification by visual inspection or testing during the service life shall be provided by the cylinder manufacturer on the basis of use under service conditions specified herein. Each **certified** cylinder shall be visually inspected at least every 48 months after the date of its entry into service on the vehicle (vehicle registration), and at the time of any reinstallation, for external damage and deterioration, including under the support straps. The visual inspection shall be performed by a competent agency

approved or recognized by the Regulatory Authority, in accordance with the manufacturer's specifications: **Certified cEylinders** without label containing mandatory information or with labels containing mandatory information that are illegible in any way shall be removed from service. If the **certified** cylinder can be positively identified by manufacturer and serial number, a replacement label may be applied, allowing the **certified** cylinder to remain in service.

4.1.4.1. **Certified cEylinders** involved in collisions

Certified cEylinders **that which** have been involved in a vehicle collision shall be reinspected by an agency authorized by the manufacturer, unless otherwise directed by the Authority having jurisdiction. A **certified** cylinder that has not experienced any impact damage from the collision may be returned to service, otherwise the **certified** cylinder shall be returned to the manufacturer for evaluation.

4.1.4.2. Cylinders involved in fires

Certified cEylinders **that which** have been subject to the action of fire shall be reinspected by an agency authorized by the manufacturer, or condemned and removed from service."

Annex 3A, Appendix A, paragraph A.17., amend to read:

"A.17. Composite flaw tolerance tests

For type CNG-2, CNG-3 and CNG-4 designs only, one finished cylinder, complete with protective coating, **shall perform** a **flaw tolerance test** **shall be performed** on the cylindrical wall as well as on the minimum composite wall thickness of the weakest part(s) of the container as identified by an appropriate stress analysis **as determined in Annex 3A, Appendix F, paragraph F.1. or full scale tests on finished cylinders.** The flaws shall be cut in the longitudinal direction into the composite. The flaws shall be greater than the visual inspection limits as specified by the manufacturer.

The flawed cylinder shall then be destroyed."

II. Justification

Ad 4. Definitions

1. *Paragraph 4.56.:* With the addition of the clarification adding 'on the design drawing for the cylinder' the last part of this sentence recommended for strike-out becomes redundant.

2. *New definition 4.78.:* This is added to prevent confusion of the certification tests mentioned for new designs on a finished cylinder (finished cylinder in production) with the re-inspection tests necessary to perform on certified (in-use) cylinders. The use of 'certified cylinder' makes clear that the cylinder noted on the 'certified cylinder' and included in the design drawings is ready for use and will need to be inspected as a single component (fuel storage 'system' as a component).

Ad Annex 3A, paragraph 4.1.2. and subsequent paragraphs through 4.1.4.2.:

3. These paragraphs have the word ‘certified’ added to sentences including the reference to ‘cylinder’ so that, in compliance with the above suggested change and rationale, these references now are in harmony with the new definition for ‘certified cylinder’ in order to clearly distinguish the regulatory requirements from ‘finished’, non-certified cylinders.

Ad Annex 3A, Appendix A, paragraph A.17., Composite flaw tolerance tests:

4. Moving ‘*shall be performed*’ is merely a grammatical correction to the original language by Italy. (The cylinders don’t perform the test; the test is performed on the cylinders.)

5. Second, in this same paragraph the reference to the stress analysis test is provided to clarify that ‘the *appropriate* stress analysis’ cannot be misconstrued as being different than the type of analysis already called for within this Regulation.
