

Proposal for amendments to UN Regulation No. 110 (CNG/LNG vehicles)

The text reproduced below was prepared by the experts from OICA. It proposes amendments to UN Regulation No. 110 to improve the specifications for inspection of CNG-cylinders / LNG-tanks and their accessories. The modifications to the current text of UN Regulation No. 110 are marked in bold for new characters and strikethrough for deleted characters.

I. Proposal

Paragraph 4.1.4., amend to read:

"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 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 cylinders shall be exposed so that covers or trims do not restrict visual checks. If necessary, other components may also be exposed. If a cylinder has external damage or corrosion, the visual inspection may be extended 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: Cylinders without label containing mandatory information or with labels containing mandatory information that are illegible in any way shall be removed from service. If the cylinder can be positively identified by manufacturer and serial number, a replacement label may be applied, allowing the cylinder to remain in service."

II. Justification

1. With this Informal Document the experts from OICA want to address the necessity to improve the requirements of the Regulation and point out a better description of the visual inspection.
2. Germany proposed in the 112th session of UNECE GRSG the document GRSG-112-33. This explicitly forbids that any components or part of protective housing which must be disassembled during inspection. This proposal is in contradiction with paragraph 4.1: "The design of tanks shall cover all relevant aspects that are necessary to ensure that every tank produced according to the design is fit for its purpose for the specified service life." Additionally Italy proposed in the 112th session of UNECE GRSG the document GRSG-112-28 that the visual inspection of cylinders has to be extended under any protective covers of the cylinders. The German proposal is related to investigations resulted in corrosion effects as reason for a burst. Italy referred to 2 cases with a structural failure of type 4 cylinder, fitted on in-use vehicles.
3. It appears that corrosion (and other damage) effects are not unlikely to happen in normal operation. Only damage beneath the retaining devices/support straps of all types of cylinders (types 1–4) can be ruled out if the support straps and support strap pads are properly installed. Based on the experience in the field, corrosion damage is to be expected due to gap corrosion between bracket and tank. It is highly probably that this condition will be discovered during a visual inspection. In regard to corrosion, the fault list allows no tolerance. If corrosion is discovered, the cylinder must be renewed! Structural damage beneath the retaining devices when there is no indication of damage to the retaining device itself or other protective components can, to the best of our knowledge, be excluded for original equipment. In any case, the qualifications of workshop personnel and technical monitoring agencies must be assured. As appropriate, existing cross-OEM maintenance and service documentation for high-pressure storage systems in CNG vehicles must be more precisely stated.