

OICA comments on ECE/TRANS/WP.29/GRSG/2014/6/Rev.1 Amendments to UN Regulation No. 107 (M2 and M3 vehicles)

I. Comments

OICA is keen on improving the safety of the road user, with the most appropriate measures and wherever there is a need.

Revision 1 of ECE/TRANS/WP.29/GRSG/2014/6 took into consideration a lot of comments that were issued during GRSG 107th session.

Still OICA would like the following comments to be considered:

- Regulation should remain technology neutral to allow the rise of new technologies and development of competitive solutions to a problem.
- Regulation, in order to be applicable should describe to both vehicle manufacturers and type approval authorities the technical aspects or performances to control at type approval.
- Regulation should stay within ECE regulation scope and limited to type approval requirements.
- Proposal should follow WP.29 guidelines on supplement vs new series of amendments conditions.

This is why OICA expresses the following concerns on GRSG/2014/6/Rev.1 proposal:

1. Proposal is setting new technical requirements within a supplement, when this should lead to a new Series of Amendments and Transitional Provisions.
2. Proposal is too much design oriented as it does not take into account other available technologies than “propelled gas systems”.
3. Proposal does not include how to test combustion heater compartments.
4. Proposal does not include any criterions for fire suppression system activation.
5. Proposal requests periodic technical inspection provisions, which is not within an UN Regulation scope.

II. Proposals

- OICA requests having a new series of amendments, with heavy transitional provisions so that time is let to Bus & Coaches manufacturers to adapt or replace their current product architecture to complying fire suppression systems. An “if fitted approach”, strongly supported by OICA, would drastically shorten the need for transitional provisions. Feedback on last new series of amendments of regulations N°107(-06) and N°118(-02) might also be considered for deciding on the transitional provisions.
- This regulation should include criterions for fire suppression system activation.
- This regulation should include tests for combustion heater compartments or remove them from the scope.
- As for any regulation, the requirements should not be (even indirectly) design restrictive and OICA is keen that the following additional text amendments are taken into account (changes to document GRSG/2014/06 are indicated in red characters highlighted in yellow):

Paragraph 2.2.3., amend to read:

"2.2.3. "Fire suppression system type" for the purpose of Type-Approval as a component means a category of systems which does not essentially differ in the following aspects:

- (a) fire suppression system manufacturer;
- (b) extinguishing agent;
- (c) type of discharge point(s) used (e.g. type of nozzle, extinguishing agent generator or extinguishing agent discharge tube);
- (d) type of propellant gas, **if present.**"

Annex 1, Part 1, Appendix 1, insert new items 4.3. to 4.3.3.5. (including the insertion of a new footnote ³) to read:

"4.3. Fire suppression system [...]

4.3.3.5. Type of propellant gas , **if present:**

Annex 1, Part 1, Appendix 3, insert items 4. to 4.3.5. to read:

"4. Fire suppression system [...]

4.3.5. Type of propellant gas , **if present:**

Annex 1, Part 2, Appendix 4, amend to read:

Addendum to Type-Approval certificate No.....

concerning the Type-Approval of a fire suppression system as a component with regard to Regulation No. 107

- 1. Additional information [...]
- 1.5. Length of discharge tube (for a 4 m³ engine compartment) ¹, **if present:**
- 1.6. Type of propellant gas ¹, **if present:**
- 1.7. Pressure of propellant gas (needed in a 4 m³ engine compartment) ¹, **in case of systems in pressure:**
- 1.8. Minimum operating temperature:
- 1.9. Dimensions of pipes and fittings, **if present:**

Annex 3, paragraph 7.5.1.5.3., amend to read:

"7.5.1.5.3. The ~~alarm~~ **fire suppression** system shall be operational whenever the engine start device is operated, until such time as the engine stop device is operated, regardless of the vehicle's attitude." **It may remain operational after the ignition is switched-off or the vehicle master control switch is deactivated, wherever applicable.**

Annex 3, new paragraphs 7.5.1.5.4., amend to read:

7.5.1.5.4. The installation of the fire suppression system shall **be validated on a representative engine compartment or** comply with the following requirements;

7.5.1.5.4.1. The fire suppression system shall be installed according to the system manufacturer's installation manual.

7.5.1.5.4.2. An analysis shall be conducted prior to the installation in order to determine the location and direction of suppression agent discharge point(s) (e.g. nozzles, extinguishing agent generators or extinguishing agent discharge tube or other distribution points). Potential fire hazards within the engine compartment and each compartment where a combustion heater is located, shall be identified and discharge point(s) located such that the suppression agent will be distributed to cover the fire hazard when the system activates. The spray pattern and direction of discharge points as well as the throwing distance shall be ensured to cover identified fire hazards. The system shall also be ensured to work properly regardless of the vehicle's altitude.

Fire hazards to be taken into account in the analysis shall at least consist of the following: Components whose surface may reach temperatures above the auto-ignition temperature for fluids, gases or substances that are present within the compartment and electrical components and cables with a current or voltage high enough for an ignition to occur as well

as hoses and containers with flammable liquid or gas (in particular if those are pressurized). The analysis shall be fully documented.

Maintenance instructions shall be part of the analysis.

- 7.5.1.5.4.3. The suppression system shall be scaled from the tested system, based on the total gross volume of the engine and auxiliary heater compartments where the system is to be installed. When measuring the engine compartment and the auxiliary heater compartment, the gross volume of these compartments shall be measured, i.e. the volume of the engine and its components should not be subtracted.

If the suppression system contains more than one discharge point and propellant gas is used then The scaling of the system includes the mass of the suppression agent, all discharge points and the mass of the propellant gas container. The system pressure shall remain the same as in the tested system. If the system includes a discharge tube for the extinguishing agent, the length of the tube shall be scaled without nozzles. It is acceptable if the suppression system has more extinguishing agent and/or more discharge points and/or a longer discharge tube for the extinguishing agent and/or more propellant gas than required according to the scaling models found below.

If the gross volume of the engine and auxiliary heater compartments exceed 4 m^3 , the suppression system shall be scaled up using the following scaling factor calculated in (1) below. If the gross volume is less than 4 m^3 , it is allowed to scale down the suppression system using the scaling factor (2) below. S_x denotes the scaling factor and x denotes the total gross volume including the engine and auxiliary heater compartments [m^3].

$$S_x = 0.1 \cdot x + 0.6 \quad (1)$$

$$S_x = 0.15 \cdot x + 0.4 \quad (2)$$

The scaled number of nozzles or other discharge points, if the suppression system has more than one discharge point may be rounded to the closest whole number."

If the suppression system does not comprise cylinders, it shall be scaled to guarantee, as declared by the manufacturer, the extinguishing of the fire and stabilization of the environment for enough time to avoid restarting fire, considering all possible dispersions too.

Annex 13 Part 1 paragraph 1.3.2 amend to read:

- 1.3.2. The test shall be conducted with the extinguishing agent and the propellant gas vessel **or the suppression agent generator** cooled to the minimum operating temperature for the fire suppression system, as declared by the manufacturer.

Annex 13 Part 2 paragraph 1.4.2 amend to read:

- 1.4.2. The test shall be conducted with the extinguishing agent and the propellant gas vessel or the suppression agent generator cooled to the minimum operating temperature for the fire suppression system, as declared by the manufacturer.**

Annex 13 Appendix 1 paragraph 3.1 amend to read:

- 3.1. To obtain the minimum discharge rate condition, an extinguishing system is to be assembled using its maximum piping limitations with respect to the number of fittings and size and length of pipe, if relevant. The cylinder is to be used with its rated capacity and the cylinder or gas cartridge pressurized with propellant gas to the normal operating pressure, if relevant.**

III. Justifications

Development lead-time for a new heavy Buse or Coach platform, including validation tests and type approval is up to [4 years].

Paragraph 2.2.3, Annex 1 Part 2 Appendix 4, Annex 3 new paragraphs 7.5.1.5.4.2 and 7.5.1.5.4.3., Annex 13 paragraph 1.3.2., Annex 13 Part 2 paragraph 1.4.2., Annex 13 Appendix 1 paragraph 3.1. :

Some systems have only one discharge point so it is better to put the s in brackets. Some systems do not use propellant gas.

Last sentence of 7.5.1.5.4.3 is applicable for systems based on condensed aerosol technology.

Annex 3, paragraph 7.5.1.5.3:

The additional sentence has been inserted to clarify that the system can be operational also with the engine stopped.

Annex 3, new paragraphs 7.5.1.5.4.2.:

The last sentence has been removed as periodic technical inspection is not within 58 agreement scope.
