

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

Uniform provisions concerning the approval of:

- I. Specific components of motor vehicles using compressed natural gas (CNG) and/or liquefied natural gas (LNG) in their propulsion system;
- II. Vehicles with regard to the installation of specific components of an approved type for the use of compressed natural gas (CNG) and/or liquefied natural gas (LNG) in their propulsion system.

A. Proposal for amendments to permit use of gas system to fuel a generator to provide electrical power

The aim of this proposal is to allow the vehicle gas system to be used to provide gaseous fuel to a generator to provide electrical power to accessories or other systems on the vehicle.

The proposal is similar to the already permitted use of the gas system to provide gaseous fuel to a refrigeration system on the vehicle. (ECE/TRANS/WP.29/GRSG/2017/9.)

The proposed amendments are marked in **bold and underlined**.

All adaptations are based on UN Regulation No. 110.01, consolidated up to Supplement 6 (i.e. Revision 3, amendment 6).

Paragraphs 18.1.7.1. and 18.1.7.2., amend to read:

"18.1.7.1. Notwithstanding the provisions of paragraph 18.1.7., vehicles may be fitted with **an extra engine for use on the vehicle(e.g. for cooling, heating etc.)** ~~heating system to heat the passenger compartment and/or the load area or a refrigeration system to cool the cargo compartment or a generator system to provide electrical power~~ which is connected to the CNG and/or LNG system.

18.1.7.2. The ~~heating or refrigeration system or generator system~~ **second engine** referred to in paragraph 18.1.7.1. shall be permitted if, in the view of the Technical Services responsible for conducting type approval, ~~the heating or refrigeration system or generator system~~ **second engine** is adequately protected and the required operation of the normal CNG and/or LNG system is not affected."

Paragraph 18.5.1.3., amend to read:

"18.5.1.3. Notwithstanding the provisions of paragraph 18.5.1.2.

- (a) The automatic cylinder valve may stay in an open position during commanded stop phases; and
- (b) In the case where a fire alarm system is installed in the autonomous CNG and/or LNG heater compartment, the automatic valve(s) may be opened by an electronic control unit to permit the warming of the engine. Any defect or failure of the system shall cause the automatic valve of the cylinder supplying the heating system to close; and
- (c) In the case where a fire alarm system is installed in the refrigeration system compartment of the cargo compartment, the automatic valve(s) may be opened by an electronic control unit to permit the cooling of the cargo compartment. Any defect or

failure of the system shall cause the automatic valve of the cylinder supplying the refrigeration system to close.

(d) In the case where a fire alarm system is installed in the generator system second engine compartment, the automatic valve(s) may be opened by an electronic control unit to permit the provision of electrical power. Any defect or failure of the system shall cause the automatic valve of the cylinder supplying the refrigeration system to close."

Annex 1A

Items 1.2.4.5.15. to 1.2.4.5.15.6., amend to read (footnote ¹ remains unchanged):

"1.2.4.5.15. Connection to CNG/LNG system for ~~heating~~**second engine** system: yes/no¹

~~Or connection to CNG/LNG system for refrigeration system: yes/no¹~~

~~**Or connection to CNG/LNG system for generator system: yes/no¹**~~

1.2.4.5.15.1. Make(s) of the ~~refrigeration~~**second engine** system:

1.2.4.5.15.2. Type(s) of the ~~refrigeration~~**second engine** system:.....

1.2.4.5.15.3. Description and drawings of installation of the ~~refrigeration~~**second engine** system:

~~1.2.4.5.15.4. Make(s) of the refrigeration system:.....~~

~~1.2.4.5.15.5. Type(s) of the refrigeration system:.....~~

~~1.2.4.5.15.6. Description and drawings of installation of the refrigeration system:..... "~~

Insert new items 1.2.4.5.15.7. to 1.2.4.5.15.9., to read:

~~**"1.2.4.5.15.7. Make(s) of the generator system:**~~

~~**1.2.4.5.15.8. Type(s) of the generator system:**~~

~~**1.2.4.5.15.9. Description and drawings of installation of the generator system:"**~~

Annex 1B

Item 1.2.4.5.15., amend to read (footnote ² remains unchanged):

"1.2.4.5.15. Connection to CNG/LNG system for ~~heating~~**second engine** system: yes/no²

~~Or connection to CNG/LNG system for refrigeration system: yes/no²~~

~~**Or connection to CNG/LNG system for generator system: yes/no^{2"}**~~

Insert new items 1.2.4.5.15.7. to 1.2.4.5.15.9., to read:

~~**"1.2.4.5.15.7. Make(s) of the generator system:**~~

~~**1.2.4.5.15.8. Type(s) of the generator system:**~~

~~**1.2.4.5.15.9. Description and drawings of installation of the generator system:!"**~~

B. Justification

The above mentioned proposals are made upon the request of the LNG/CNG market.

LNG is stored in vehicle fuel tanks at very low temperatures: between -162°C to -130°C is typical. Over time, if not used by driving the vehicle, the LNG can warm and the tanks vent to prevent over pressure, releasing gas to the atmosphere.

This proposal is to allow [the](#) use of a generator to use some gas in these circumstances [in order](#) to reduce the tank pressure and to prevent or delay venting.

The generator could also power other systems on the vehicle providing overnight power for the driver in sleeper cabs, or to maintain battery charge during high electrical power use with loading or lifting equipment etc.

By the above given requirements, the Netherlands propose to make this technology available for the market.

By the wish of UK mentioned in the GRSG 114 the document is adjusted with second engine to cover all external technology (eg. Heating system, cooling system, electrical generator or further engine).

By the wish of Japan the description “for use on the vehicle” is added to prevent that for instance the second engine is used for energy supply to external use.