

INFORMAL GROUP ON GASEOUS FUELLED VEHICLES
Within the UN GRPE (WP29)
PROPOSED AMENDMENT

Name of Organisation submitting Amendment/Work Item

AEGPL

Person submitting Item

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Regulation name and reference number

Regulation 83

Name of Amendment/Work Item

Proposal for an amendment to Regulation 83 introducing a new class of bi-fuel vehicle/gas system

Specific language for Amendment/Work Item

English

Rationale: (Why is it important/required?)

Specific provisions are necessary for gas systems intended to be fitted on direct injection petrol vehicles in order to safeguard the petrol injectors (a certain amount of petrol need to be injected also in gas mode, especially when particular temperature conditions are reached).

The proposed amendment introduces a new definition for these systems and sets the associated requirements (notably in Annex 12 where a methodology to measure the amount of LPG consumed plus a limit are introduced).

Please submit new work items to:

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Acting secretariat(s)

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Changes to revision 4 are made on bold characters:

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2. Definitions

...

2.23. *"Bi-fuel vehicle"* means a vehicle with two separate fuel storage systems that can run part-time on two different fuels and is designed to run on only one fuel at a time.

2.23.1. "Bi-fuel gas vehicle" means a bi fuel vehicle that can run on petrol and also on either LPG, NG/biomethane or hydrogen.

2.23.2 "Bimix-fuel gas vehicle" means a vehicle with a gas storage and a separated petrol storage, of a capacity exceeding 15 litres, that can run on petrol (petrol mode) and also on either LPG or CNG (LPG or CNG mode), and in gas mode it is designed to make a limited use of petrol also simultaneously with gas.

...

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“Annex 12

Granting of an ECE type approval for a vehicle fuelled by LPG or NG/biomethane

...

3.2.6. Notwithstanding the requirements of paragraphs 6.4.1.3. of Annex 4a and 3.2.5. of this annex, in case of bimix-fuel gas vehicle it is permissible to use petrol during the entire test cycle and also simultaneously with LPG provided that the consumption of LPG in energy unit is equal or higher than 80% of the total energy consumed during the test. This percentage shall be calculated in accordance with the methodology provided in Appendix 1 of this Annex.

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New part to be added after the annex 12:

Appendix 1

Bi-mix vehicle Type 1 test - Calculation of LPG energy consumption

1. Measurement of the LPG mass consumed during the cycle

Measurement of the LPG mass consumed during the cycle shall be done by a fuel weighing system capable to measure the LPG storage container at the beginning and at the end of the test in accordance with the following:

(a) an accuracy of ± 2 per cent of the difference between the two readings at the beginning and the end of the test or better;

(b) a precision of ± 1 per cent of full scale or better.

Precautions shall be taken to avoid measurement errors.

Such precautions shall at least include the careful installation of the device according to the instrument manufacturers' recommendations and to good engineering practice

2. Calculation of energy percentage of LPG use on total energy consumed

The following condition shall be fulfilled:

$$\text{Mlpg} * 100 / (\text{FCmean} * \text{dist} * \text{d}) \geq 80\%$$

Where

Mlpg: the LPG mass consumed during the cycle

FCmean: the mean fuel consumption calculated in accordance with par. 6.1.2.4.3.2

dist= distance travelled during the cycle.

d=0.538kg/liter

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