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agenda item 5.2.)

REVISED PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 83

(Emissions of M1 and N1 categories of vehicles)

Transmitted by the experts from the GRPE Ad hoc Working Group

Note: The document reproduced below has been prepared by the experts of the GRPE Ad hoc Working Group in order to amend the requirements for bi-fuelled gas vehicles that fulfil all the primary goals of on-board diagnostic (OBD) systems. This proposal also aims to remove unnecessary restrictions and leads to similar costs as for mono-fuel gas vehicles, therefore reducing the barrier for the introduction of bi-fuel vehicles into the market. The modifications to the original text of TRANS/WP.29/GRPE/2005/10 are marked in **bold** characters.

Note: This document is distributed to the Experts on Pollution and Energy only.

*/ The previous document was circulated under the symbol
"TRANS/WP.29/GRPE/2005/10".

A. PROPOSAL

Annex 11,

Paragraphs 3.9. and 3.9.1., amend to read:

"3.9. Bi-fuelled gas vehicles

In general, for bi-fuelled gas vehicles for each of the fuel types (**petrol and NG/LPG**) all the OBD requirements as for a mono-fuelled vehicle are applicable. To this end one of the following two options in paragraphs 3.9.1. or 3.9.2. or any combination thereof shall be used.

3.9.1. One OBD system for both fuel types.

3.9.1.1. The following procedures shall be executed for each diagnostic in a single OBD system for ~~both fuel operations~~ **operation on petrol and on NG/LPG**, either independent of the fuel currently in use or fuel type specific:

- activation of malfunction indicator (MI) (see paragraph 3.5. of this annex),
- fault code storage (see paragraph 3.6. of this annex),
- extinguishing the MI (see paragraph 3.7. of this annex),
- erasing a fault code (see paragraph 3.8. of this annex).

For components or systems to be monitored, either separate diagnostics for each fuel type can be used or a common diagnostic.

3.9.1.2. The OBD system can reside in either one or more computers."

Insert new paragraphs 3.9.2. to 3.9.4., to read:

3.9.2. Two separate OBD systems, one for each fuel type.

3.9.2.1. The following procedures shall be executed independently of each other when the vehicle is operated on petrol or on ~~gas~~ **NG/LPG**:

- activation of malfunction indicator (MI) (see paragraph 3.5. of this annex),
- fault code storage (see paragraph 3.6. of this annex),
- extinguishing the MI (see paragraph 3.7. of this annex),
- erasing a fault code (see paragraph 3.8. of this annex).

3.9.2.2. The separate OBD systems can reside in either one or more computers.

3.9.3. Specific requirements regarding the transmission of diagnostic signals from bi-fuelled gas vehicles.

3.9.3.1. On a request from a diagnostic scan tool, the diagnostic signals shall be transmitted on one or more source addresses. The use of source addresses is described in ISO DIS 15031-5 "Road vehicles - communication between vehicles and external test equipment for emissions-related diagnostics - Part 5: Emissions-related diagnostic services", dated 1 November 2001.

3.9.3.2. Identification of fuel specific information can be realized:

- by use of source addresses and/or
- by use of a fuel select switch and/or
- by use of fuel specific fault codes.

3.9.4. Regarding the status code (as described in paragraph 3.6. of this annex), one of the following two options has to be used:

- the status code is fuel specific, i.e. use of two status codes, one for each fuel type;
- the status code shall indicate fully evaluated control systems for both fuel types (petrol and ~~gas~~ NG/LPG) when the control systems are fully evaluated for one of the fuel types."

Paragraph 4.4., amend to read:

"4.4. Prior to or at the time of type-approval, no deficiency shall be granted in respect of the requirements of paragraph 6.5., except paragraph 6.5.3.4. of Appendix 1 to this annex. ~~This paragraph does not apply to bi-fuelled gas vehicles.~~"

Paragraphs 4.5. to 4.5.2., should be deleted.

Paragraphs 4.6. and 4.6.1. (former), renumber as paragraphs 4.5. and 4.5.1.

Paragraph 4.6.1.1., should be deleted.

Paragraphs 4.6.2. and 4.7. (former), renumber as paragraphs 4.5.2. and 4.6.

Annex 11, Appendix 1, paragraph 3.2., amend to read :

"3.2. Fuel

The appropriate reference fuel as described in Annex 10 for petrol and diesel fuels and in Annex 10a for LPG and NG fuels must be used for testing. The fuel type for each failure mode to be tested (described in paragraph 6.3. of this appendix) may be selected by the administrative department from the reference fuels described in Annex 10a in the case of the testing of a mono-fuelled gas vehicle and from the reference fuels described in Annex 10 ~~or~~ and Annex 10a in the case of the testing of a bi-fuelled gas vehicle. The selected fuel type must not be changed during any of the test phases (described in paragraphs 2.1. to 2.3. of this appendix). In the case of the use of LPG or NG as a fuel it is permissible that the engine is started on petrol and switched to LPG or NG after a pre-determined period of time which is controlled automatically and not under the control of the driver."

Annex 11, Appendix 1, paragraph 6.4.1.1., amend to read:

"6.4.1.1. After vehicle preconditioning according to paragraph 6.2., the test vehicle is driven over a Type I test (Parts One and Two).

The MI shall activate before the end of this test under any of the conditions given in paragraphs 6.4.1.2. to 6.4.1.5. The technical service may substitute those conditions by others in accordance with paragraph 6.4.1.6. However, the total number of failures simulated shall not exceed four (4) for the purpose of type approval.

In the case of testing a bi-fuel gas vehicle, both fuel types shall be used within the maximum of four (4) simulated failures at the discretion of the type-approval authority."

Annex 11, Appendix 1, paragraphs 6.6. to 6.6.3., should be deleted.

Annex 11, Appendix 2, paragraph 2., amend to read:

"2. To this end, those vehicle types whose parameters described below are identical are considered to belong to the same engine/emission control/OBD system combination.

Engine:

- (a) Combustion process (i.e. positive-ignition, compression-ignition, two-stroke, four-stroke),**
- (b) method of engine fuelling (i.e. carburettor or fuel injection),**
- (c) fuel type (i.e. petrol, diesel, NG, LPG, bi-fuel petrol/NG, bi-fuel petrol/LPG).**

Emission control system:

- (a) type of catalytic converter (i.e. oxidation, three-way, heated catalyst, other),**
- (b) type of particulate trap,**
- (c) secondary air injection (i.e. with or without),**
- (d) exhaust gas recirculation (i.e. with or without)**

OBD parts and functioning:

The methods of OBD functional monitoring, malfunction detection and malfunction indication to the vehicle driver."

B. JUSTIFICATION

The current OBD requirement for bi-fuelled gas vehicles was realized at a very late stage through modifications of the original legislation which only differentiated between positive and compression ignited engines. Originally, the adaptation for bi-fuelled gas vehicles described a single technical solution. Due to time constraints and the knowledge that other solutions were being developed, these solutions were incorporated by the use of "allowed deficiencies".

After two years of developing OBD systems for mono- and bi-fuelled gas vehicles according to the requirements of Regulation No. 83, the industry associations CLEPA, ENGVA, AEGPL and the vehicle manufacturers members of ACEA have come to the conclusion that the OBD requirements for bi-fuelled gas vehicles compared to those for mono-fuelled gas vehicles require significant additional hardware, software and development efforts and associated costs without benefits for the environment, the vehicle owner and the repair industry.

The OBD requirements for bi-fuelled gas vehicles of the current regulation still prescribe a single technical solution. At the present time, several other solutions have been realized and type-approved, which fulfil all the primary goals of OBD successfully.

Therefore, the Associations would like to propose an amendment for the requirements for bi-fuelled gas vehicles that fulfils all the primary goals of OBD, but removes unnecessary restrictions and leads to similar costs (hardware, software, development) as for mono-fuel gas vehicles, therefore reducing the barrier for the introduction of bi-fuel vehicles (OEM) into the market.

This amendment is based on the idea of removing the need for deficiencies defined in Annex 11, paragraph 4.5. of the Regulation by allowing alternatives to the current requirements. Finally, paragraph 3.9. of Annex 11 is amended to cover all the specific requirements for bi-fuelled gas vehicles. Paragraphs 4.5. and 4.6.1.1. of Annex 11 and paragraph 6.6. of Appendix 1 of Annex 11 are, therefore, not necessary any more and are deleted.

The industry proposal was reviewed by an GRPE ad hoc group established at the fiftieth GRPE session. Clarifications on the approval process (paragraphs 3.2. and 6.4.1.1. of Appendix 1 to Annex 11, paragraph 2. of Appendix 2 to Annex 11) have also been proposed.
