

## **Comments on ECE/TRANS/WP.29/GRPE/2017/4 “Proposal for a Supplement to the draft Regulation on uniform provisions concerning the approval of Heavy Duty Dual-Fuel Engine Retrofit Systems (HDDF-ERS) to be installed on heavy duty diesel engines and vehicles”**

The text reproduced below was prepared by the experts from OICA and AEGPL to restrict the scope of the alternative method proposed in the ECE/TRANS/WP.29/GRPE/2017/4 only to NMHC and CO emissions. The modifications to the text are marked in bold for new characters and strikethrough for deleted characters.

### **I. Proposals**

*Annex 6, paragraph 10.1., amend to read:*

"10.1. Tests and requirements

An engine representative of the desired extension of the application range shall be tested in accordance with the provisions set out in paragraph 5.2.2. or 10.1.1. at the choice of the dual-fuel engine retrofit system manufacturer. Engine tests in accordance with paragraph 5.2.2. are always required for the extension of an application range with an engine family equipped with EGR.

The tests in accordance with paragraph 10.1.1. shall be carried out on a representative engine equipped with a member of the dual-fuel engine retrofit system family.

The same tests shall be performed in diesel mode and in dual-fuel mode in such a way that the operating points and conditions are as similar as possible.

The NO<sub>x</sub>, Non-Methane Hydrocarbons (NMHC), CO and PM emission test results in dual-fuel mode shall be lower than or equal to the results in diesel mode.

Alternatively, at the request of the engine retrofit system manufacturer, **the following provisions apply:**

- **as for Non-Methane Hydrocarbons (NMHC) and CO emissions only**, the CO<sub>2</sub> specific emission results of the test in accordance with paragraph 10.1.1.1. in dual-fuel mode shall not exceed the applicable **R49** original emission limits ~~for diesel operation as specified in Regulation No. 49 and~~ transposed into CO<sub>2</sub> specific emission limits with the following equation:

$$\text{CO}_2 \text{ specific emission limit} = 1.6 \times 1.5 \times \text{brake specific emission limit}$$

Where:

CO<sub>2</sub> specific emission limit is **the equivalent limit** expressed in [g/kgCO<sub>2</sub>]

1.6 is the conversion factor from brake specific to CO<sub>2</sub> specific emissions

- 1.5 is the Conformity Factor
- brake specific emission limit is **the applicable R49 original emission limit** expressed in [g/kWh]
- **the NOx and PM emission test results in dual-fuel mode shall be lower than or equal to the results in diesel mode."**

## II. Justification

1. The proposed modification aims at restricting the application of CO2 specific emission limits only to NMHC and CO emissions, whereas as for NOx and PM the back-to-back comparison continues to apply in any case.
  2. From editorial point of view, where relevant, the text has been aligned with the definition of par. 2.3.15: *"R49 original emission limits" means the emission limits as defined in Regulation No. 49 to which the original engine system was approved.*
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