Transmitted by the expert from OICA

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OICA PROPOSAL FOR AMENDMENTS TO REGULATION No 83

OICA proposes some minor changes to the text of the proposal from Germany, document ECE/TRANS/WP.29/GRPE/2009/7 to harmonise the definition of terms between the single and multiple regeneration calculation methods.

Changes to the text of the proposal of Germany, are shown in **bold**, except in the formulae, where this is not possible. In this case an explanation of the changes is given.

A. PROPOSAL

Paragraph 3.1 amend to read:

3.1. Exhaust emission measurement between two cycles where regenerative phases occur

Average emissions between ……
…… shall be carried out according to Annex 4, paragraphs 5., 6., 7. and 8. **Determination of average emissions for a single regenerative system shall be according to item 3.3 of this Annex and for multiple regeneration systems according to item 3.4 of this Annex**

Paragraph 3.4 amend to read:

3.4. Calculation of combined exhaust emissions of multiple periodic regenerating systems

(1) $$M_{sik} = \frac{\sum_{j=1}^{n_k} M'_{sik,j}}{n_k} \qquad n_k \geq 2$$

(2) $$M_{rik} = \frac{\sum_{j=1}^{dk} M'_{rik,j}}{d_j}$$

(3) $$M_{si} = \frac{\sum_{k=1}^{x} M_{sik} \cdot D_k}{\sum_{k=1}^{x} D_k}$$

(4) $$M_{ri} = \frac{\sum_{k=1}^{x} M_{rik} \cdot d_k}{\sum_{k=1}^{x} d_k}$$

Explanation

(not to be included in the Regulation)

Subscript "j" is replaced by subscript "k" and subscript "k" is replaced by subscript "j" in all cases

e.g. $M_{sij,k}$ *replaced by* $M_{sik,j}$

(5) $$M_{pi} = \frac{M_{si} \cdot \sum_{k=1}^{x} D_k + M_{ri} \cdot \sum_{k=1}^{x} d_k}{\sum_{k=1}^{x} (D_k + d_k)}$$

(6) $$M_{pi} = \frac{\sum_{k=1}^{x} (M_{sik} \cdot D_k + M_{rik} \cdot d_k)}{\sum_{k=1}^{x} (D_k + d_k)}$$

(7) $$K_i = \frac{M_{pi}}{M_{si}}$$

where:

M_{si} = mean mass emission of all events k of pollutant (i) in g/km without regeneration

M_{ri} = mean mass emission of all events k of pollutant (i) in g/km during regeneration

M_{pi} = mean mass emission of all events k of pollutant (i) in g/km

$\mathbf{M_{sik}}$ = mean mass emission of event k of pollutant (i) in g/km without regeneration

$\mathbf{M_{rik}}$ = mean mass emission of event k of pollutant (i) in g/km during regeneration

$M'_{sik,j}$ = mass emissions of event k of pollutant (i) in g/km over one Type I operating cycle (or equivalent engine test bench cycle) without regeneration; j test points

$\mathbf{M'_{rik,j}}$ = mass emissions of event k of pollutant (i) in g/km over one Type I operating cycle (or equivalent engine test bench cycle) during regeneration (when j > 1, the first Type I test is run cold, and subsequent cycles are hot); j test points

$\mathbf{n_k}$ = number of test points of event k at which emissions measurements (Type I operating cycles or equivalent engine test bench cycles) are made between two cycles where regenerative phases occur, ≥ 2

$\mathbf{d_k}$ = number of operating cycles of event k required for regeneration

$\mathbf{D_k}$ = number of operating cycles of event k between two cycles where regenerative phases occur

Figure 8/2, revise as follows:-

Replace the second reference to "$M_{si(1)}$" with "$M_{si(3)}$"

B JUSTIFICATION

In the current German proposal for the new section 3.4 of Annex 13 for handling multiple regeneration systems, 'k' designates the number of test points whilst 'j' designates the number of regeneration events.

In order to align the multiple regeneration calculation definitions with those for the existing calculation method for a single regenerating device, the definitions of 'j' and 'k' should be exchanged so that 'j' designates the number of test points and 'k' designates the number of regeneration events

Then M_{sij} and M_{rij} become M_{sik} and M_{rik} avoiding use of multiple definitions of the same terms between the two methods.

Additional text is added to paragraph 3.1 for clarity.

In addition a typing error in the labels of figure 8/2 should be corrected.

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