



GFV 29-05rev1

With regard to **GFV 29-02**, there are a number of points that we feel need to be addressed. These are shown below with the key parts highlighted and our comments in red.

Annex I:

Engine family definition

3.1. An engine belongs to the same engine family if shares the following criteria features with the parent engine: ...

- (h) pollution control system:
- (i) exhaust after treatment system
- (ii) with or without air injection
- (iii) with or without exhaust gas recirculation (EGR)

If the parent engine is not equipped with one or more devices listed above, engines with these devices are allowed **In this case they should not be allowed to be part of the same engine family.**

6. Pollutant emissions requirements...

6.3 Euro IV, Euro V and EEV parent engines...

6.3.2 Limit values and relevant pollutants for ESC and ELR cycles.

The test results as such or corrected according to the par. 6.3.2.1. of this annex, as applicable, shall not exceed the emission limits for all the pollutants listed in table 1 of par. 5.2.1. of 05 series of amendments of Regulation No. 49.

6.3.2.1. The test results in dual fuel mode shall be multiplied by the applicable deterioration factors unless durability test as specified in par. 8. of this annex is carried out.

a) Needs to be clearer that this applies to the emissions both before and after retrofitting (and in the case of after, in both diesel and dual-fuel modes)

b) the manufacturer cannot be allowed to choose whether or not to include deterioration!

c) durability of the retrofitted system should have to be demonstrated, rather than simply taking assigned DFs

6.3.2.2. Notwithstanding the requirements of par. 6.3.2., during ESC and/or ELR tests in dual fuel mode using diesel/CNG, at the request of the manufacturer, **mass of non-methane hydrocarbons (NMHC) may be measured in place of the mass of hydrocarbons (HC).**

In this case the following provisions shall apply:

- the limit of non-methane hydrocarbons NMHC is set equal to hydrocarbons (HC) limit;
- the measured mass of CH₄ shall be included in the CO₂ emission computation according to par. 9 of this annex.

Not particularly keen that the permissible NMHC is effectively increased but agree the addition of CH₄*GWP to CO₂ is the right approach.

6.3.3. Limit values and relevant pollutants for ETC cycle.

The test results as such or corrected according to par. 6.3.3.1. of this annex, as applicable, shall not exceed the limits for all the pollutants listed in table 2 of par. 5.2.1. of regulation 49 05 series of amendments.

6.3.3.1 The test results in dual fuel mode shall be multiplied by the applicable deterioration factors unless durability test as specified in par. 8. is carried out.

6.3.3.2. Notwithstanding the requirements of par. 6.3.3., during ETC test in dual fuel mode using diesel/CNG, at the request of the manufacturer, the respect of CH₄ limit may be derogated. In this case, the measured mass of CH₄ shall be included in the CO₂ emission computation according to par. 9 of this annex.

a) Comments as for 6.3.2. & 6.3.2.1

b) “the respect of CH₄ limit may be derogated” needs to be reworded to make it clear what it means.

6.3.4. Original parent engine not meeting the engine baseline emission stage

Notwithstanding the requirements of paragraphs 6.3.2. and 6.3.3. of this annex, if the test results relating to the configuration (a) of par. 6.2. of this annex [i.e. original engine] exceed the applicable limits for one or more pollutants, the test results for such pollutants relating to the configurations (b) and/or (c) of par. 6.2. of this annex may be corrected according to the following formula:...

This provision is applicable only at request of the retrofit system manufacturer if both the following conditions are met:

a) it can be demonstrated that no other equivalent engine can be submitted as parent engine for type approval of the HDDF retrofit system.

b) no confirmed and active DTC in original OBD system.

Wholly unacceptable to give an approval based on an engine that does NOT meet the limits!

6.4 Euro VI parent engines...

6.4.2 Limit values and relevant pollutant for WHSC and WHTC cycles.

The test results as such or corrected according to par. 6.4.3. of this annex shall be below the limits listed in the following paragraphs of annex 15 of regulation 49 06 series of amendments, according to the dual fuel retrofit system type:

- par. 5.1 for type 1B dual fuel retrofit systems;
- par. 5.2 for type 2B dual fuel retrofit systems;
- par. 5.3 for type 3B dual fuel retrofit systems.

6.4.3. The test results in dual fuel mode shall be multiplied by the applicable deterioration factors unless durability test as specified in par. 8. of this annex is carried out.

Comments as for 6.3.2. & 6.3.2.1

Also we would question whether it is appropriate to have the need to meet the emissions requirements in an annex; it should be in the main document (the limits could still be in an Annex, but the need to meet certain limits should be in the main part of the Reg.)



With regard to **GFV 29-03**, we have a significant concern on the OICA definition of retrofit as “fitting new elements of design to an approved engine system without substantially modifying its emission strategies (e.g. fitting a particulate filter)”. Whilst we understand what OICA is trying to achieve with this definition, it seems to us that fitment of an SCR system (to meet Retrofit Class III of the recently-agreed retrofit Reg.) or a combined DPF & de-NOx system (to meet Retrofit Class IV) meet be seen as not meeting this criterion.