

# HDDF19 & 20 – outcome of the meetings status report to GFV

Brussels 12 July 2012

Geneva 01 October 2012

# Major points resulting from HDDDF19-20

- Type 2A will not exist in EURO V
  - Collateral damage: "Type 1A" idling with solely diesel fuel are not allowed in EURO V
- No road-test at certification unless decided by the manufacturer
  - In case of PEMS test at certification, full EURO VI procedure will apply (using EURO V emission limits)

# OBD

- Basic principles
  - EURO V Diesel OBD rules shall apply (incl. deficiencies)
  - Electrical failures of the DF system as well as major functional failures of the specific catalyts of the DF system (in the sense of stage 1 OBD) shall be monitored when the engine is on DF mode.
  - The EURO V monitoring exception clauses shall also apply when operated in a DF mode.
  - It will be allowed in case of a failure in the DF mode to switch to the pure Diesel mode (for Type B dual-fuel engines)
  - It will be allowed to have 2 separate OBD systems, one for dual-fuel mode, one for Diesel mode (Type B DF engines)
  - Monitoring of the gaseous fuel supply as in EURO VI

- ISC tests shall be performed in the Dual Fuel mode according to the applicable EURO V requirements (PEMS testing optional, left to the decision of the manufacturer)
- In case of Type B dual Fuel engines
  - the tests will be also performed in the pure Diesel mode on the same engine.
  - Pass would require pass both in Diesel mode and in DF mode

# Approximation of the emissions on the road

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- The EURO V principles are kept, provided the GER on the road is comparable to the GERs measured under lab conditions
  - If a type 1 DF engine is compliant on ETC, it supposed to be compliant on the road
  - If a type 2 DF engine is compliant on both ETC and ESC, it is supposed to be compliant on the road
- Consequences
  - No mandatory road-test at certification
  - A GER test at certification under lab conditions
    - A type 1 on ETC shall remain a "type 1 on ESC
    - The difference between  $GER_{ETC}$  and  $GER_{ESC}$  shall not exceed a certain value (to be determined in HDDF21)
  - A EURO VI PEMS test may alternatively be chosen by the manufacturer

# PEMS-test at certification (optional)

- Principles (when a PEMS test is decided by the OEM)
  - Perform a PEMS test at certification on the dual fuel mode according to EURO VI requirements (Annex VI)
  - In particular
    - the resulting NO<sub>x</sub> level shall be lower or equal to (1.5 \* €V NO<sub>x</sub> emission limit)
    - the resulting HC level shall be lower or equal to (1.5 \* €V HC emission limit over the driving cycle)

*(Notes:*

*No mandatory PEMS test at certification for EURO V Diesel vehicles*

*Dependence of the HC actual emission limit on the actual GER. The issue is the uncertainty of the GER determination. Too complex at this stage. To be worked out )*

# NOx control measures

- The EURO V NOx control measures apply in DF mode and for Types B also in Diesel mode.
- In addition, for Types B
  - If torque reduction is required in DF-mode, then the system may automatically switch to Diesel mode and stay in diesel-mode until the issue causing inducement is fixed.
  - It is allowed to switch to service mode and stay in service mode instead of diesel-mode
- In addition, for Type 1A
  - If torque reduction is required in DF-mode, then the system shall reduce the torque according to the EURO V general requirements, or, at the choice of the manufacturer, automatically switch to service mode and stay in service mode until the issue causing inducement is fixed.

# service mode

- Service mode is not mandatory, but in absence of service mode:
  - in case of lack of gas, T1A vehicles will have to stop when operability restriction is required
  - In case of warming-up on diesel, T1A engines shall not be able to move the vehicle
  - Types B will have to automatically switch to diesel mode when service mode would be required by the regulation



# Remaining work

- Next HDDF/GFV meetings
  - HDDF21 – 12 Dec – Brussels
    - Finalising draft Annex 11
  - HDDF 22 – Geneva / GRPE – Jan 2013
    - Prepare amendments to R49 rev.5 (informal document)
  - HDDF work in 2013:
    - Prepare working document for GRPE June 2013
    - Work on retrofit rules, according to the decisions of GRPE Jan 2013
- Retrofit
  - Wait for GFV workshop and GRPE position on the way to set the rules before effectively starting the work