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CLEPA presentation :

Comments concerning the introduction of a Regulation for retrofit systems for Heavy Duty and NRMM

Brussels, 27 SEPT 2010

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1. TESTCYCLE

Annex XXVII specifies a transient test ETC and NRTC for on road and NRMM.

- *The ETC for on Road vehicles is composed of urban, country side and highway driving conditions. This is representative of drive conditions which every truck or bus will fit during its life. Test execution is without problem under normal test bench and engine conditions.*
- *BUT*
- *The NRTC for NRMM was not used for any of the engines included stage 3a (actual engine emission legislation). No transient test at all was used for NRMM up to upcoming stage 3b. All those engines have been tested with stationary cycles. The NRMM is a cycle composed out of engine performance conditions based on different machines. The cycle tries to certify one engine for all kinds of applications. Today the NRMMs are often used only in specific engine points with a kind of power switch. All larger NRMM will drive and work with the help of hydraulic pumps and engines and therefore a real "On Road" like transient engine behavior is not needed. In contrast to the "big" On Road engines the majority of smaller engines in the displacement from 0.8 to 2 l of displacement are mechanically controlled without any electronics.*

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1. TESTCYCLE

Annex XXVII specifies a transient test ETC and NRTC for on road and NRMM.

- *The Transient testing of NRMM engines of all displacements and all emission stages (1-3a) is not orientated to practical field requirements. The challenge for retrofit of NRMM is the single application. The NRTC is in contrast to this a relative hot test cycle, which does not represent the in use boundary conditions of specific machines.*

Conclusion : Although we are aware that this would need some legal accommodations, CLEPA proposes that the testcycle to type approve retrofit systems for NRMM will be similar (if not identical) to the testcycle which was initially used for type approval of the NRMM. This is also very important form a practical point of view. The necessary information to make an engine run on NRTC (with which it was not initially tested) will always be very difficult to be obtained. (CLEPA has experience with comparable situations in similar fields).

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2. REGENERATION TESTING

- *The max. 100h cycle and/or the soot filling procedure as specified in Par. 4.3. of Annex XXVII are procedures that have a very poor degree of reproducibility This results in a situation whereby the initial conditions for the actual testing of efficiency vary largely resulting in a largely varying testresult. We refer to one of the conclusions of the TNO report (Real world efficiency of retrofit partial-flow diesel filters for trucks) of 26 NOV 2009. We quote : " The precise load pattern and load pattern history have a large impact on the filtration efficiency. This explains the difference with the phase 1 results (…)"*
- *CLEPA could further produce evidence of such situations which have lead to dramatic disorders in the market.*

Conclusion : CLEPA is working on a much simplified alternative method that would allow for :

1. *Always identical conditions at the start of the efficiency measurements*
2. *a. reasonable proof of the regeneration capabilities of the system. We would like to present an outline of this method in one of the future meetings of this group.*

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3. COSTS / BENEFITS

- *The concerns expressed in part 1 and 2 are even further justified by the extravagant costs linked with the Annex XXVII type approval testing.*
- *Many of our industries have refrained from offering retrofit systems on the market because of the mentioned technical problems but also of the excessive testing costs. This would work against the interests of the environment and the consumers and would create an economical distortion in the market.*

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4. CATEGORIES OF RETROFIT SYSTEMS

- Categories for emission devices:
  - a) PM reduction
  - b) PM reduction and not significantly increase the direct emission of NO2
  - c) PM and NOx reduction.
  - d) The group has agreed in its last session to foresee a category of systems which only reduce NOx. *CLEPA strongly supports this initiative.*

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5. NO_2 DISCUSSION

- NO_2 limit for retrofit systems

- *The amount of increase of NO2 is connected with the test cycle temperature profile. Using the NRTC means higher temperature profile than ETC or any other cycle. Similar systems used for HD and NRMM will show different levels of NO2 increase. Testing procedures need to consider the in use applications with very low temperatures in the sector of NRMM.*

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6. SUMMARY

- *CLEPA is ready to contribute to the efforts in this working group with the aim to :*

1. *Largely improve the cost / benefit impact of the type approval testing for retrofit systems under discussion.*
2. *Come up as soon as possible with a concrete proposal for*
    1. *An adapted testcycle particularly for NRMM applications*
    2. *A more reproducible procedure for proving the regeneration fitness and physical stability of soot filters.*

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Thank you for your attention