

TO:

TCMV members

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Brussels, 13th October 2016

Real World Driving Emissions 3rd package

Dear TCMV members,

I am writing on behalf of Transport & Environment (T&E) that represents 50 environmental groups across Europe campaigning for sustainable transport.

The European Union will shortly make important decisions about managing particulate emissions from gasoline direct injection (GDI) engines and further developments to real-world driving emissions tests. T&E is extremely concerned that the outcome will be a poor one for the 87% of EU urban residents afflicted by high levels of particles;¹ including the half a million that die prematurely. Member States and the Commission appear to have forgotten the acrimonious discussions concerning the second RDE package that is still the subject of a legal challenge. This letter outlines a series of amendments to the draft proposal being discussed in TCMV that we believe will ensure the 3rd Package avoids such issues and produces a robust regulation that puts the EU on a pathway to clean air without imposing unreasonable demands on the automotive industry.

Accounting for cold starts

The aim of the RDE test is to assess as accurately as possible the pollutant emissions of a vehicle in real-world driving conditions. The inclusion of a cold start factor is therefore necessary because the duration of the RDE test (90-120 mins) is substantially longer than a typical median journey in Europe (15-20 minutes) and accordingly emissions, particularly for nitrogen oxides (NOx), are seriously underestimated. Inclusion of cold starts was originally planned within the first RDE package but has been repeatedly delayed.

T&E welcomes the intention to address this topic through **recitals 9 and 10**. But the proposed Approach 0 (that proportions the cold start emissions over the entire urban phase) grossly underestimates the contribution of the cold start. The Approach 2a method is more representative and the unacceptable delays by the Commission to derive an appropriate urban reference distance for cold start emissions has prevented good decision making. T&E proposes a compromise that reflects the need for both an acceptable lead time and robust assessment extending the 2 step approach adopted for NOx emissions. We propose:

- For the 1st step NOx limit the Approach 0 will apply;

¹ European Environment Agency (EEA), Air quality in Europe – 2015 Report

- For the 2nd step NO_x limit the Approach 2a will apply and the Commission will derive a robust urban reference distance and develop this method.

The choice of the right urban reference distance to make Approach 2a realistic is crucial. T&E has undertaken analysis of several European national travel surveys and used information from the PSA Group² that shows one-third of trips is performed with a cold start. Based upon the trip length distribution, a typical trip made by two thirds of EU drivers is about 10km long and this would be an appropriate urban reference distance.

T&E also supports **point 22 in Annex II** that ensures the speed requirements during the cold start period are identical to the whole RDE urban phase. Other driving boundary conditions, such as $v^*_{a_{pos}}$, etc., must be identical between the cold start period and the RDE urban phase to make sure that vehicles are driven the same way.

Nevertheless, the following issues need to be tackled to avoid a too weak cold start regulation:

- **Point 23 in Annex II:** “The idling immediately after the first ignition of the combustion engine shall not exceed **5 s**”. The 30 sec period currently proposed by the Commission must be reduced as it does not correspond to how consumers drive their vehicles. It will artificially ease manufacturers’ job by warming up after-treatment devices before the vehicle actually moves;
- The industry demand for an additional cold start factor that would apply during the cold start period in case of low ambient temperatures (meaning below 14°C, for all pollutants) should not be included. This is since **Point 25 in Annex II** already allows manufacturers to apply a 1.6 factor on pollutant emissions “if the vehicle was conditioned for the last three hours prior to the test at an average temperature that falls within the extended range”.

Particle Numbers

T&E supports the Commission’s intention to introduce PN measurements by PEMS (**recital 15**) and apply limits from 2017. We are however concerned that the proposed instruments fail to measure all the particles and the cut-off of particle size fractions used by the current PN instruments. New research³ indicates modern gasoline direct injection engines produce large number of particles in the sub 10 nm range. The Euro 6 legislation refers to all particle numbers, not particle numbers above 23 nm and accordingly the intention of the Euro 6 regulation is not being fully met. Less than half of these particles would be detected by the current instruments that measure only 50% of particles at a 23 nm diameter according to the UNECE requirements. This potential loophole could be abused by manufacturers to design combustion systems that produce larger numbers of smaller particles that are not counted. It is essential that there is an early review of proposed instruments and size fractions of particles being produced by GDI engines to ensure all relevant particles are measured. **A recital should be added to the regulation stating, “Emerging evidence indicates that a significant share of particles generated by GDI engines may be smaller than detected by current instruments and therefore will fail to be correctly counted. The Commission shall undertake a review to bring forward proposals to ensure the correct quantification of particle numbers during PEMS tests.”**

² Working document for the [protocol for real-world fuel consumption measurements](#) by PSA Group, T&E, FNE and Bureau Veritas

³ Joint Research Centre (JRC), B. Giechaskiel & G. Martini, Review on engine exhaust sub-23 nm solid particles, 2014

Conformity Factors

T&E supports the introduction of a one-step approach for PN conformity factor (**point 4 Annex II**). However the Conformity Factor should only be based upon a representative measurement uncertainty whereas the value proposed by the Commission represents a worst-case scenario. Commission analysis shows that the average measurement error was 30% and only as high as 50% in some cases. T&E recommends **point 4 in Annex II** is revised and a value of 1.3 should be inserted in place of the present 1.5. The proposal from the industry to adopt a Conformity Factor of at least 3 for PN emissions must be ignored and is simply intended to enable carmakers to meet the limit with minimal effort and, if adopted, would be highly controversial.

T&E fully supports the Commission's proposal to "keep under annual review the appropriate level of the final conformity factor for gaseous pollutants and particulate number in light of technical progress" (**recitals 15 and 24**). However, the Commission must define as soon as possible the procedures and methodologies that will be used for this purpose.

T&E supports the obligation for manufacturers to declare in the Certificate of Conformity what Conformity Factors were used for the type-approval (**recital 22 and new annex III**). This will clearly distinguish the emissions of those vehicles fitted with a GPF and those that are not. However, to avoid any doubt, the text should be amended to "**shall be introduced**" rather than "should".

Regeneration events

Higher emissions during diesel particulate filter regeneration events must be taken into account for the calculation of emissions during RDE tests. However, the proposed approach is not appropriate and the use of manufacturer-declared Ki factors goes against the principle of real-world conditions (as it is based upon low engine loads experienced during the NEDC test). Independent tests show that realistic regeneration intervals are about half the ones used for type-approval. Similarly to cold starts, T&E proposes a 2 step approach to resolve this issue:

- For Step 1 NOx limits, conservative values calculated by the Handbook Emission Factors for Road Transport should be used⁴
- For Step 2 NOx limits, the Commission should undertake a compilation of realistic data on emissions occurring during regeneration events and on typical intervals between two consecutive regenerations to establish a sound database of Ki factors based on real-driving conditions. This database must be public.

In addition, there should be no connection between the ECU and PEMS equipment for the purpose of detecting regeneration events. Such connections are completely unnecessary as the measurement of the exhaust temperature and emissions by the PEMS equipment already enables a reliable detection of regeneration events (for DPFs and NOx-traps) during the data validation phase. Crucially any connection to the ECU could be used to initiate the use of a defeat device. For GPFs, gasoline engines have an intrinsically higher exhaust temperature so regeneration would be mainly passive, thus this is not a concern.

Implementation dates

T&E fully supports the chosen agenda for the introduction of RDE legislation: September 2017 for the approval of new types and September 2018 for the approval of all new vehicles. Any delay is unacceptable as the discussions have started in 2011 with the solution for the industry (fitting GPF) being known for several years. Any delays are likely to result in strong opposition to the proposals, including probably from European Parliament that will be required to approve the regulation.

⁴ TU Graz, Update of Emission Factors for Euro 5 and Euro 6 vehicles for the HBEFA Version 3.2, Table 7, p.21

Fuel quality

T&E is extremely concerned that **recital 16** could lead to a restriction on the use of certain market fuels for RDE tests. RDE is supposed to represent real world emissions and the fuels that ACEA seek to exclude from use during tests are on sale in the EU and respects the EU Fuel Quality Directive and the CEN standard EN228. Recital 16 should be amended to state **“Market fuel plays an important role in real world emission performance of motor vehicles. It is therefore important that tests can be performed using the full range of market fuel blending variability throughout the EU.”**

Defeat devices

T&E welcomes **recital 23** as a step in the right direction to stop the current abuse of defeat devices by manufacturers and the failure of national authorities to properly enforce the current rules. However, we propose the following wording to strengthen the recital:

“(23) The provisions regarding the obligation of manufacturers to declare the AES (Alternative Emission Strategies) and BES (Base Emission Strategies) should be clearly linked to the prohibition to use defeat devices. Therefore, the need for the Type Approval Authority to make a judgement based on the risk assessment and health and environmental effects of the AES should be clearly stated in the legislation and the contents of the extended documentation package made appropriate in order to perform this judgement. The national authorities should base their AES judgements on the EU-wide harmonised technical guidelines that strictly specify all the parameters under which such strategies are allowed. These guidelines should be based on the latest state of the art technology and not permit AES that would result in unacceptably high emissions on the road.”

Other topics

On other issues:

- T&E fully supports **recital 12** introducing the obligation to do RDE tests with hot engine start. Indeed, the results from the national commissions showed that emissions from tests with hot-start engines are higher than tests with cold-start engines. This phenomenon does not follow any technical logic and is not the case in the US⁵ and strongly suggests the use of defeat strategies switching down exhaust after treatment systems. **Annex II, points 10, 33b and 33c** introduce additional details on how many hot engine tests have to be done for each PEMS test family that T&E supports.
- T&E welcomes the introduction of the concept of “finished” vehicles (**point 33a in Annex II**) to constitute a PEMS test family, even if a clearer definition of “finished” vehicles is needed. RDE tests shall be done with pre-production vehicles and a check needs to be done with a production model once the latter is available on the market. There must not be a significant deviation between results and this must be a component of RDE Package 4;
- We would like the Commission to include in its proposal provisions to establish a public database that consumers can easily use to get information about emission results from RDE tests for all models available on the market. The following wording should be added at the end of **recital 22**: **“These conformity factors should be made publically available via a database overseen by the Commission, free of charge.”**
- T&E agrees with the adaptations of speed requirements for Light Commercial Vehicles equipped with speed limiters (**recital 19, points 17, 18 and 20 in annex II**), which let a wider application of the RDE legislation;
- T&E disagrees with the current criteria proposed by the Commission to consider an ultra-small and small volume manufacturer (**recital 20 and article 1 – point 1**). We believe a lower threshold should be applied, which is based upon EU’s sale figures rather than global ones. Member States have an obligation to report the registration figures to the EEA each year for CO₂ monitoring purposes and this can be used for the purpose of determining exemptions. T&E proposes that only ultra-small volume manufacturers are exempted from the

⁵ The International Council on Clean Transportation (ICCT), John German, The emissions test defeat device problem in Europe is not about VW, published on May 12, 2016

first step of RDE NOx limits. Small-volume manufacturers should meet RDE legislation from next year as foreseen by the Regulation and detailed below:

“(20) The ultra-**small** volume manufacturers **should monitor RDE emissions during the first step of RDE and fully meet the NTE limits for the second step** since they contribute only marginally in the total emissions, since a volume of less than **1,000** vehicles is sold each year in the Union.

(21) **Small volume manufacturers should fully meet the NTE limits from the first step of RDE.**

[...]

Article 1

Regulation (EU) 2017/xxx is amended as follows:

1. In Article 2, point 32 is amended as follows:

32. 'small volume manufacturers' (SVMs) means operationally **vehicle manufacturers whose sales in the European Union represent less than 10,000 units** for the year prior to the one the type approval is granted and who have their own design centre and production facility.”

T&E would welcome the opportunity to discuss our suggestions with individual TCMV members and hope you will take account of these recommendations in your forthcoming considerations. In its current form the 3rd RDE Package has the potential to further damage the reputation of discredited EU vehicle test and approval regulations in a similar way to the 2nd RDE package that received critical media coverage and was nearly overturned by the European Parliament. Such disputes with the 3rd Package are entirely avoidable if prudent decisions are taken on points of detail now.

Sincerely yours,

Greg Archer
Transport & Environment