



Particle Measurement Programme (PMP) Progress update

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Terms of Reference (ToR)

- In the GRPE meeting of January 2013 it was agreed that a new mandate and a new ToR are needed
- A draft version of the new ToR has been circulated to the whole group for comments
- A meeting has been held on the 16th May in Brussels to discuss this draft version
- Still a few points to be clarified mainly regarding the scope of the mandate

Terms of Reference (ToR)

- As a general approach, the scope is intentionally kept as wide as possible but the work programme will be limited to specific items
- All engine/vehicle categories should in principle be included
- A prolongation and extension of the mandate of the group, in relation to the development and validation of new test procedures, should be considered in due time by GRPE (e.g. in relation to PN measurement systems compatible with PEMS, tyre / brake wear,...)

Terms of Reference (ToR) – Scope

- i) Particulate Matter Mass (PM) exhaust measurement
- ii) Particle Number (PN) exhaust measurement
- iii) Measurement Equipment
- iv) Calibration Guidelines
- v) Investigations

Terms of Reference (ToR)

i) Particulate Matter Mass (PM) exhaust measurement

Existing scope of PM mass measurements to be adapted to technical progress as appropriate - It is not foreseen that further major technical adaptation is required in the near term.

Issue: Does the mandate of the PMP cover GTRs (1998 agreement)?

For the 1958 agreement the working group can propose changes to UN Regulations - not so for the 1998 agreement.

Whenever the PMP work will result in the need to amend/update UN GTRs, one of the Contracting Parties will have to require an authorization to develop the amendments.

Terms of Reference (ToR)

ii) Particle Number (PN) exhaust measurement

(1) Existing scope of PN measurements to be adapted to technical progress as appropriate.

(2) Extension of scope to

➤ Particle emitted during regeneration (LD)

➤ Non-road mobile machinery

Issues to be addressed: Variability and emission levels of non-road engines over the range of size and for the different test cycles

Terms of Reference (ToR) – Scope

iii) Measurement Equipment

- (1) Existing PMP PN measurement equipment d50 reduction
 - (a) Investigate the size distribution of particles emitted by positive ignition and compression ignition engines/vehicles
 - (b) Determine whether there is a clear need to revise the lower particle size d50 cut-off of the PMP of 23 nm
 - (c) If so, determine appropriate revised d50 and develop practical / appropriate measurement methodology and revise PN limits
 - (d) Determine whether light duty diesel regeneration measurements can be accurately, reliably, repeatably and reproducibly made using the new cut-off size.

Issues to be addressed: Impact on measurement equipment, test procedures, calibrations,...

Terms of Reference (ToR) – Scope

iv) Calibration Guidelines

(1) Update of existing calibration guidelines

v) Investigations

(1) Investigate the nature (solid or volatile) of exhaust particles emitted by positive ignition vehicles

(2) Compile and summarise the current knowledge regarding the physical nature and size distribution of particle emissions from brake and tyre wear.

Work Programme

- (1) NRMM – Investigation of the emission levels and variability for different engine size/power categories and over different cycles
 - Priority: high
 - Timing: Not possible to start before 2014 (availability of engines, definition of test protocol, availability of laboratories...)

- (2) Emission of particles below 23 nm from light duty vehicles
 - Priority: high
 - Timing:
 - State of the art of knowledge and gap analysis (Sept 2013)
 - Definition of an experimental programme to address the identified issues (Oct 2013)

Work Programme

- (3) Monitoring of the progress of projects working on calibration procedure
- Priority: high
 - Timing:
 - ISO 27891: Calibration of particle counters - a draft should be available early 2014
 - FP7 EMRP ENV02 project (2011-2014)
- (4) Investigation of repeatability of PM mass / PN measurement from direct injection PI vehicles equipped with GPF especially during active regeneration
- Priority: Low
 - Timing: When sufficient vehicles on the market

Work Programme

- (5) Literature survey to compile and summarise the current knowledge regarding the physical nature and size distribution of particle emissions from brake and tyre wear.
- Priority: Medium
 - Timing:
 - Literature survey to be completed within 2013

Next Step

New PMP meeting to be held in October 2013 with the following objectives:

- Define the details of the research work needed to address the identified issues
- Start organizing the experimental work (who does what)