

Meeting Minutes PMP Webconference

29th March 2022, 13:00-15:00 CET

1. Introduction & Update on GRPE Jan '22

ca. 101 participants were welcomed by Barouch Giechaskiel (JRC, PMP Chairman) and Theo Grigoratos (JRC). This meeting is focussed around non-exhaust emissions.

2. Tires GTR on tire abrasion: ToR (UTAC)

Elodie Collot (UTAC) working for GRBP presented the UNECE-GRBP ToR on Tyre wear abrasion particles and the formation of the TF-TA. The objectives were presented, i.e. rating the abrasion performance of a wide range of tyres available in the market and to define abrasion limits for tyres in order to limit the emission of microplastics to the environment.

Timeline includes an informal document in September 23 at 78th GRBP. On 28.4.22 12-14:00 CET a kick-off meeting is planned. Interest to be expressed by Friday April 6.

Q: Rainer Vogt (OICA/Ford/Techn. Secretary PMP): Which studies are available and planned to include in TF-TA?

A. EC and TG: Studies will be collected during Kick-off. ADAC study will be presented during Kick-off. IDIADA study will follow. Japan, Korea might contribute. EU has Leon-T project.

Q: Francois Cuenot (UNECE): Is the objective a UNR, or GTR?

A: EC: UNR is the objective – not GTR.

3. Brakes

a. Michael Pohl (BTC-Technology) introduced to “Realistic measurement of brake dust particles on a stationary test bench” – a BMBF funded project. Distribution of test distance was given, however no emission data, nor reference to sampling approached as achieved in PMP work. Project runs until End of 2022.

b. Update on the Inter-Laboratory Study

Background on ILS was given by Theo Grigoratos (JRC). He thanked TF3 and particularly the steering committee. 17 labs participated, 16 completed ILS and delivered data. 75 tests were completed, the total of 15 GB data, and 10 M data lines generated.

R. Vedula reported on details of the ILS checklist. These provide a detailed description of the setup capabilities and the fulfilment of the main specs. Data include dyno climatics, PMP TF2/3, PM requirements, PN requirements, System requirements, Recommendations. Deviations of the single labs were analysed and grouped in categories.

Athanasios Mamakos (AVL) reported on the recorded time-based

files, EED data analysis with focus on the PN concentrations. Background #/km and sometimes high background #/km was discussed. One lab had long evacuation time after emission peak. Typically the ratio of TPN/SPN was around 1. Except for one lab with x50-100 higher total particle number, due to volatiles in TPN.

Comment TG: should introduce a maximum allowed PN background concentration to avoid excessive background PN.

Q.: Dymtro Lugovyy: Were volatiles only once occurring?

A: High volatiles were observed in 3 repetitions, and bedding in one lab and brake only.

Comment by Heinz Bacher (OICA/BMW): this would not have been noticed, if only total and not also solid particle number would have been measured. This could be an issue.

Jürgen von Wild (OICA/BMW): 75 EEC files were received. Variation of air temperature, air humidity, and other parameters at different labs was analysed and presented. For example, brake speed setpoint and brake speed, is mostly 1:1 line, however one lab had issue.

Friction work, average disk temperatures, and FBT were checked and plotted with WL/DM. Some measurements points outside temperature regions.

Comment by Ravi Vedula: need to analyse the time outside of T window.

TG presented first preliminary data from joint analysis carried out with Marcel Mathissen (OICA/Ford) showing the PM data and variability plots (1x Standard deviation).

In a further preliminary analysis by TG Brake 1a served as reference where most data was available from the labs. The conclusions were comparable to Brake 2. Brake 1a was 4.6 mg/km per brake with standard deviation of 1,9 mg/km. When considering the standard tests the variability was ranging from PM10 = 1.4 – 7.8 mg/km (given on a per brake level). PM2.5 = 0.5 – 4.1 mg/km (per brake). The ratios PM10/PM2.5 deviate substantially. Possible reasons could be 1.) PM underestimation due to losses 2.) PM over estimation by isokinetic issues 3.) General issues with PM sampling and measurement.

First conclusions: A 3-steps approach was followed to investigate whether the Labs carried out the ILS exercise correctly, first focussing on the underestimation of PM emissions: 1.) Identifying lab errors – exclude those data 2.) data filtering (labs not compliant with TF2 protocol). Note that no single lab complied 100% with TF2 protocol. 3.) High level quality check of PM10/PM2.5 ratio and PM10/wear ratio.

For example one lab (1.46 mg/km) with low EF identified by low PM10/wear ratio 10.1%. This underestimation of PM10 was confirmed by the participating lab. 7 labs have issues with PM10 sampling.

New PM10 average was calculated =5.8 mg/km and 1.26 mg/km standard deviation. 1x standard deviation reduced from 43% to 23%.

In conclusions: Filtering of the data shows an improvement in the overall measurement variability; however, there is still a need to identify other issues in the data.

Q.: Katharina Kolbeck (OICA/BMW): What caused the PM losses?

A.: TG could be PM inertia losses in sampling lines. Maintaining isokinetic sampling. One lab: not following 6x diameters. In other cases, labs executed the cycle with >10% reduced energy level. Finally, issues with the placement of the sampling plane were found.

Comment and Q. by Hartmut Niemann (TU Darmstadt): there appears to be large variability even after analysis and deletion of data. A factor of x2 is too high. Will there be a new ILS with a revised procedure?

A.: TG: Need to wait until after analysis. No lab has followed the spec. A small campaign could be possible, however a larger ILS would not fit timing. This could come after drafting the GTR. If adaptation is needed it can be added before limit value is active.

c. Next steps to the GTR (TG)

TF2 convene in weekly 2h meetings. A proposal for amendment to the original protocol is worked out. There will be 8x regular meeting until May 2022. 1-2 full day workshops in May.

TF2 will be presented to PMP at the end of May 2022

TF3 has completed its main task.

TF4: Currently there are two proposals available, how to deal with regenerative braking. A short testing campaign with 2-3 labs will be feasible.

Q. by Dieter Florian (AVL): Will there be a ILS repetition, ie. ILS-2?

A. by TG: No, not planned at this point.

Minutes by Rainer Vogt (Techn. Secretary/OICA/Ford)