

DRAFT Minutes PMP Webconference

28th Sept 2023, 12:00-14:30 CET

0. Introduction & Welcome

Barouch Giechaskiel (BG, JRC, PMP Chairman) and Rainer Vogt (RV, OICA/Ford/Technical Secretary PMP) welcomed about 98 participants.

1. Review Meeting Minutes last PMP meeting 29.06.2023

RV reviewed the meeting minutes of the last PMP Meeting, 29.06.2023 which are available at the UNECE website. Comments may be sent to RV/BG within the next two weeks.

2. Exhaust update (CPC round robin)

BG reported on the status of the exhaust particle investigations. A round robin is planned with condensation particle counters (CPCs) of 23 nm and 10 nm and aerosol generators including Emery oil, soot and silver aerosol calibration. The round robin will start soon. BG welcomed further participants to contribute. Please contact BG.

3. Comments on GTR main text

AVL

Christoph Weidinger, AVL (CW) reminded on the definition of repeatability and reproducibility. In this presentation PM repeatability was addressed. If the GTR minimum requirements were used the repeatability was calculated as function of coolant air flow in the order of 20-50% (see presentation). Filter loading is most important factor. Most filters (50%) are loaded with < 100ug. CW investigated mass stability of filters and showed data that 8h can be relaxed to 48h.

Repeatability (2 x sigma) of PM filters weights was about 5-7 ug.

Repeatability at 1 mg/km can be reduced to 5% with more stringent requirements at medium flow rate.

Recommendation: Maximize filter flow, minimize cooling flow.

Reduce requirement of 30 ug difference between 1 and 2nd weighing to at least 10 ug, or even better to 5 ug (as GTR-15).

Relax 8 h to 48 h – this is important for automatic test best operation.

Q: Heinz Bacher, OICA/BMW (HB): Filter weight is not the only parameter which can have impact.

CW: In this study only impacts on repeatability were investigated. The reproducibility was not subject.

Theo Grigoratos (TG): Comments will be taken into account in the amendment.

Is 10 ug requirement feasible?

Alejandro Hortet, LINK (AH): On average the filter difference is 5-10 ug. There is and impact of different filter media. Data is available and could be provided to JRC.

Peter Rothacher, Bosch (PR) via chat:

Filters are known for losing glass-fiber filter material in handling. What is the trend when comparing the single filters? Does the weight mostly decrease?

AVL: TX-40 is pretreated to remove loose fibers. No losses were seen afterwards.

Rather there is an increasing weight due to gaseous adsorption.

TG: Did you test TX-40 and Teflo?

CW: No – for this study (brake tests) only TX-40 were used. Different behavior is known from exhaust testing.

Horiba comment to GTR

Yoshinori Otsuki, HORIBA (YO) discussed 12.2.3.2. PN Sampling flow. Volumetric and mass flow measurement principles are possible. In case the mass flow is measured, then there should be no T, p measurement requirement.

TG commented that he will check the text and welcomes more comments.

OICA comments on Ducting & enclosure for brake emission testing

Simon Scholz, VW/OICA (SS) presented OICA work on a recommended design within the UN-GTR No.24 that increases the comparability and allows enough flexibility to implement in existing test rigs. For details of CFD calculations see presentation. A reduction of the air flow homogeneity criterion was discussed. OICA wishes TF-3 restart soon and plan ILS-2.

TG: 35% homogeneity criterium was made to allow some flexibility. 20% could be achievable.

CW commented that data could be provided during next meeting. The brake has impact on homogeneity.

AH: Experimental data is available. It is unclear if 10% is achievable. Data could be provided in the future.

Hartmut Niemann: The mount of the brake has impact. Today, the flow is assessed with the empty enclosure and no brake installed. The question if this has impact and meaning. Need to be clarified if impact on PM10 – no data at the moment.

HB noted that the GTR system is for homologation. The homogeneity topic should not be left entirely open.

OICA comments on Annex C (c-factors)

RV summarized the priorities and timing for 1. Amendment, and topics for 2.

Amendment – see presentation.

Jürgen vonWild, BMW/OICA (JvW) presented technical comments on ANNEX-C and the main GTR-24 text – see presentation.

HB presented OICA proposal for solving multi-sampling needs.

JvW presented the issues with (light-weight) non-grey cast iron rotors. They cannot be homologated according to current GTR-24, because the minimum temperature requirements cannot be met. Possible solutions, including a JRC proposal is included in the presentation.

RV presented OICA data on the moderate correlation of friction share determined during WLTP-Exhaust and WLTP-Brake. The new proposal is to delete WLTP-Exhaust correlation, or add a criterion that WLTP-Brake is decisive.

Filippo Lachina, OICA/GM (FL) presented a concept for selecting the vehicle to be tested and how vehicles can be grouped for friction share testing, based on the know Interpolation (IP) families.

FL introduced to the axle specific friction share concept – see presentation.

TG: Is the procedure for electro-mechanical brakes needed to be included in the first amendment? OICA and suppliers are asked for individual feedback to JRC.

TG: Light weight proposal can be agreed.

TG: Introduction of a multi-sampling chapter appears feasible. It is important that the flow remains unchanged. 8 h requirement can be removed.

TG: JRC's idea was that vehicle models shall only be tested once. Vehicle specific testing should mean a group of vehicles. There is no agreement on grouping the vehicles, yet. JRC will send proposal.

TG commented that axle vehicle friction share would likely not be for the first amendment, Oct.17. Rather this could be for a later amendment.

TG commented that JRC has been in favour to test on the WLTP-Brake cycle, or trip 10.

Aftermarket update (CLEPA)

Paolo Alburno, CLEPA (PA) reported on the extension of the aftermarket concept for replacement parts for drum brakes parts. It is based on the brake drum diameter, vehicle axis, and material (cast iron – other) – see presentation.

TG: It was clarified that aluminum alloys would fall into category “other”, since they are not in mass production yet.

Bosch presentation

Mr Rothacher, Bosch, agreed to move topic to next PMP meeting.

TFs update

TG reported on ILS-2: there are currently only 2-3 labs available which are fully compliant. During ILS-2 only fully compliant labs will be allowed.

TG suggested that labs which are fully compliant should give feedback in the next couple of weeks. Also, an indication from non-compliant labs when they will be ready would be useful at this stage.

HB proposed that the criteria should be defined and setups, testing sequence, brakes should be discussed in ILS-2 WG meeting.

TG: Agreed to HB's comment and stated that TF3 will become functional soon.

However, full GTR-24 compliance is needed for participation to the next ILS.

Torsten Holzapfel (BSCCB) via chat: We could also offer Carbon Ceramic Rotors for next the Round Robin test. Need to understand if this is within the scope.

Heavy Duty brakes (TF-5): During next PMP meeting a collection of ideas and requirements shall be discussed.

Next steps

OICA will provide text file to JRC.

JRC will compile the new working document.

Next PMP meeting: 12 October 2023 to be confirmed.

Any other Business

None.