

DRAFT Minutes PMP Webconference

22th Nov. 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 117 participants.

1. Review Meeting Minutes last PMP meeting 28.09.2023

RV reviewed the meeting minutes of the last PMP Meeting, 28.09.2023 which are available at the UNECE website. Comments may be sent to RV/BG within the next two weeks.

2. Discussion on GTR24 open points

i. Brake dust filters

Marcel Mathissen (MM, OICA/FORD) presented questions to be addressed in order to develop a robust testing procedure.

Tobias Wörz (TW, CLEPA/M+H) presented answers to OICA discussion point. Some answers and proposal were given, not all is currently resolved. Description of the filter definitions, handling of filter systems, i.e. reinjection of filtered air flow were given. New condition of the brake particle filter system should be tested and testing should involve all sections of a brake emissions test (i.e. cooling, bedding, emissions).

Regarding topic 2.5. (impact of wheel air flow) data is available and could be presented during next PMP meeting.

3.1. GTR-24 would not require a replication of real-world conditions.
Active filters: temperature tolerances are achievable.

Theo Grigoratos (TG/JRC) presented: GTR-24 allows testing of brake filters, as long as GTR-24 specifications on parameters like dimensions, flows, temperatures, etc. are respected. They can be tested, some details will need to be added. Further specification for active filters will be added in 2nd amendment.

JRC stated that initial aspects will be detailed based upon data to be presented. Real-world testing is no in scope of the GTR-24 in analogy with the already defined testing procedure for brake systems.

“1s” was proposed as a simplified compromise to cover active filters – but not to consider function of vehicle. Active filters would only be started 1 sec before brake event and may not run permanently.

Jarek Grochowicz (JG, OICA/FORD): The topic presented so far is on active filters. Passive brake particle filters efficiency will deteriorate. How shall this be handled?

TG stated that this can be handled in the Implementing Regulation.

If deterioration occurs this could be included in the Emission factor calculation for the vehicle. However, PMP should look into the deterioration of the filter until serviced.

JG: How about the temperature impact of passive filters? Temperature regimes are based on brakes without filters mounted.

JRC: In order to test passive filters, they need to keep temperature requirements stated in the GTR-24. If there is a problem, CLEPA needs to provide data and it could be considered for update in the second amendment.

MM commented that the 1s requirement is not needed. Predictive system with a thorough description can be included in the 2nd amendment.

TW commented that for a predictive system a “brake-on” signal plus actual speed information could be o.k. currently, there is not aligned opinion in CLEPA, yet.

TG: replied that JRC is o.k. to delete the “1s” allowance and define a maximum allowed time for the pump after the end of the brake event.

RV summarized the understanding: The new proposal will be based on “Brakes-On signal” in combination with “vehicle speed signal”, or “0s” before (fixed) braking event and allowing to run the filter pump for some seconds after the brake event. Further, a statement would be derived that a more detailed description for predictive systems will be part of 2nd amendment. There was no agreement if this would be part of the progress report presented to the GRPE in January 2024, or of the regulatory text.

Heinz Bacher (OICA/BMW, HB) is struggling to introduce Brake Filters, w/o data being presented. For example, the volume flow needs to be proven. For robust development of the procedure, it should be moved to the second amendment.

JvW asked in which TF this would be handled? Needs to consider the energy consumption of the active filter.

TG stated there is no agreement, however JRC would like to start with something in the first amendment as this has been requested by several contracting parties as well as CLEPA. TG does not see the need to start more TFs. Discussion can continue in next PMP meeting. Questions can be submitted before to next meeting.

Paolo Alburno (CLEPA, PA): CLEPA cannot answer all questions at this point in time, however need some certainty that brake particle filters are not banned.

HB: we need a robust procedure and regulation.

ii. Definitions for aftermarket

JG presented OICA slide on definitions. Two groups of parts need to be certified.

TG: stated that definitions used like in UNR Nr 90. TG will update slide.

Andreas Jandl (FEMFM, AJ). Likely there is agreement from the friction material manufacturer.

There was some discussion on the meaning of "identical brake part" and how they are defined?

Geoffrey Angus Ross (CLEPA, GAR): there are two levels of parts: 1.) original parts and 2.) parts in warranty.

TG: Can CLEPA explain what identical part is?

PA offers written definition for identical parts.

Comments in the chat:

TÜV NORD Sven Limberger

R90: "Identical brake lining assembly" is a replacement brake lining assembly identical to the brake lining assembly supplied and fitted as original equipment and included in the vehicle type approval to Regulation No. 13 or Regulation No. 13-H with the exception of the vehicle/brake assembly manufacturers mark which is omitted.

CLEPA - ALBURNO Paolo

5.3.2. Identical brake discs/drums

5.3.2.1. The applicant for approval shall demonstrate to the approval authority that he supplies the brake discs or drums to the vehicle manufacturer as original equipment of the vehicles/axles/brakes mentioned under Annex 1B point 4. In particular, the brake discs or drums shall be produced under the same production and quality assurance

systems and conditions as for the original parts pursuant to paragraph 2.3.1.

5.3.2.2. Since the identical brake discs/drums fulfils all requirement as the Original part no testing requirements are prescribed.

the R90 requirements on "identical parts" are in par. 5.3.2. where it mandates ...the brake discs or drums shall be produced under the same production and quality assurance systems and conditions as for the original parts pursuant to paragraph 2.3.1...

RV presented OICA slides on correlation of the friction share methods – CAN versus direct pressure measurement.

TG: JRC will analyse data and provide a JRC statement/proposal.

TG presented on behalf of JRC the introduction of new default friction braking share coefficients (Tab 5.3). New would have come in data came. The earlier table did not consider 13% roadload. A factor $1/0.87 = x1.15$ needs to be applied. To be consistent with brake emission measurement.

JRC suggests to update the table now, and not in second amendment.

BG (JRC) did not observe immediate comments. They may be provided later.

TG agreed in principle with the OICA proposal "6.2. declaration".

However it should be limited and a declaration up to 50% higher, or 0.05 absolute whatever is greater, should be introduced.

RV stated that OICA will discuss the JRC proposal.

iii. Other points

a.) Brake Emissions – Multi-filter holder device (Stefan Keller, Benedikt Grob/AIP)

AIP reported that multifilter holder had somewhat higher PM levels, and no PM losses were observed. Multifilter holders should not be excluded.

TG: Systems could have 10% uncertainty. More details can be included in 2 amendment.

HB noted that the given 10% include weighing process and is not only filter handling.

b.) Experience from new particle test equipment (Peter Rothacher/Bosch, PR)

PR described the performance of new Bosch measurement setup. A mass bill was presented and discussed. The recovery was around 50-97% of mass lost.

PCRf was investigated for an ELPI+. For the PCRf calculation a 2 um point should be added. Presentation includes data on PN and size.

3. ILS-3

TG: Only three labs replied that they could participate as GTR-24 Amend.No.1 compliant already in January 2024. This means that the ILS-3 needs to be shifted later in 2024 to accommodate more testing facilities. Pre-tests and compliance to GTR-24 is needed per JRC's presentation on the topic.

HB and RV stated that TF-3 should start immediately with preparatory work.

In conclusion, TF-3 will kick-off in Dec 2023.

4. TF5 (heavy duty brakes)

TG stated that TF-5 should likely kick-off 14.12. with bi-weekly meetings. Subscription would be only to contributors. Justification of contributors will need to be provided to TF-5 Chair and Co-Chair. General information, and updates will be provided in PMP meetings.

Ergün Tutuk (OICA/Ford Otosan, ET) gave the OICA view on HDV brake wear particles (see presentation). ET pointed out which legal requirements apply for endurance brakes. Brake load distribution is to be considered. Particle measurement: Robust and applicable test procedure must be established by considering segment differentiation, same procedure for drum brakes and disc brakes? Measurement procedure capable for regenerative and endurance braking for different segmentation? Trailer brake loading and brake differences must be taken into consideration. Endurance brake effect – calculated or tested? Brake family and vehicle level emission calculation methods must be clarified for different axle configurations and segments.

5. Any other Business

Next meeting F2F/Hybrid, Jan 9, 2024 14:30-17:30 in Geneva.