

PMP – Particle Measurement Program Informal Working Group Task Force 2– Brake Dust Sampling and Measurement

Meeting #38 – Wednesday 06 APRIL 2022 15:00 – 17:00 CEST

Minutes of Meeting – Final Version

1. Participants: As in the file *“38th TF2 Meeting Attendance”* uploaded in TEAMS.

2. Introduction: Theo Grigoratos (TG) welcomed the TF2 members and introduced the aim of the meeting. This is to present and discuss proposals for amendments in Clause 2 of the TF2 protocol. The final amended text will be brought again to the TF2 for a final review before its submission to the PMP group for approval.

3. Clause 2 presentation: TG provided a presentation related to the proposed amendments in Clause 2. The details of the proposal and the data-supported evidence are summarized in the attached presentation *“GTR – Clause 2”*. The amended text is available in the submitted document *“PMP Brake Protocol - Clause 2”*. Three different sub-clauses have been introduced:

Clause 2.1: Provides general information regarding the definition of the Nominal Wheel Load and the Testing Wheel Load – The content been adopted from GRPE-81-12 and amended accordingly – Additional elaboration and explanations have been provided along with the definitions for the vehicle mass following the GTR 15 – Important addition to the overall protocol is the definition of the Nominal Wheel Load for the N1 vehicle category;

Clause 2.2.: Discusses the cooling adjustment method – The content is based on the actual TF2 Protocol, the GRPE-81-12, and the ILS findings – TG went through the detailed results of the ILS and examined the *“performance”* of the TF2 cooling method over all ILS tests – older data were also examined – Rear and drum brakes were also discussed – The overall conclusion is that the method seems to perform well with a need for minor adjustments in the higher NWL/DM group – A new proposal with slightly amended targets was elaborated to fix the problems – The content of Clause 2.2 has been enriched with information at many different levels;

Clause 2.3.: Provides the means for an effective quality control of the execution of Trip #10 of the WLTP-Brake cycle for the cooling adjustment – The content follows some of the specs defined in Clause 1 for the overall cycle and the ILS data. A suggestion for implementing three different quality check criteria looking into speed, brake energy, and performance compared to Trip #10 of the 1st bedding cycle was submitted. Two topics from the issues log have been considered to elaborate on these suggestions.

Many questions and discussions followed the presentation. There were also several proposals on how to deal with different aspects of Clause 2. A discussion on the definitions and the results of the VW Crafter brake took place. The difference in the emission levels seemed low to some of the participants who reported higher differences according to their experience. TG explained that these results were obtained from 4 different labs that are considered to provide reliable measurements. Carlos Agudelo (CA) highlighted that the ECE R90 might be more suitable for the definition of the generic force distribution of the vehicles. Katharina Kolbeck (KK) asked if there would be any provision for relaxing the lower acceptable temperature values with a focus on the average temperature of 50°C. TG explained that all available data show that the temperature of this specific

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test does not fall below 50°C taking into account that the test starts at 40°C and all brakes are tested as if they were mounted in ICE vehicles. If this happens, then the lab shall adjust their cooling settings accordingly. Heinz Bacher (HB) highlighted the need for further restricting the allowed geometries for the ducts and the enclosure, while mentioned that one common cooling air flow would be the best way forward. TG agreed on the need for introducing stricter specifications for the ducts and the enclosure; however, stated that the decision of the group has always been to continue with the current approach for several reasons already discussed in the past. Sebastian Gramstat (SG) expressed some concerns on whether the method would perform adequately for other types of discs and particularly for coated discs. TG agreed that these discs seem to run at higher temperatures; however, showed data where coated discs fulfil the revised temperature targets. A discussion on possible measurement issues with the hardware took place. Alejandro Hortet (AH) discussed about similar experiences and provided some suggestions on how to deal with such situations. Several other comments and questions were introduced – comments to the proposed text will be submitted in the clean version of the Clause 2 document.

TF2 participants are invited to submit their proposal on the draft amended text by Friday 15 April EOB.

4. Next Meeting: The next meeting will take place on Wednesday 13.04.2022 at 15.00-17.00. The topic will be Clause 3-5 of the TF2 protocol.