

PMP – Particle Measurement Program Informal Working Group

Task Force 2– Brake Dust Sampling and Measurement

Meeting #5 – Thursday 16 November, 2017, 14:00 – 15:00

Minutes of Meeting – Draft Version

1. Tour de table: Participants: AUDI-(SG) Sebastian Gramstat; AVL-(AM) Athanasios Mamakos; BMW-(RL) Rasmus Leicht; BMW-(KL) Katharina Lammel; BREMBO-(FR) Francesco Riccobono; BREMBO-(MA) Mattia Alemani; CARB-(SC) Sonya Collier; DEKATI-(MMD) Mikko Moisis; General Motors-(MR) Matt Robere; HORIBA-(DL) Dmytro Lugovyy; ITT Motion-(AS) Agusti Sin; JARI-(HH) Hiro Hagino; JRC-(TG) Theodoros Grigoratos; LINK-(RM) Radek Markiewicz; TMD-(AP) Andreas Paulus; TMD-(IP) Ilja Plenne; TSI-(JS) Jurgen Spielvogel; TSI-(RA) Bob Anderson; TU Ilmenau-(DH) David Hesse; TU Ilmenau-(TF) Toni Feisel

2. Presentation of Brembo: MA presented Brembo's set-up for sampling and brake dust measurement. After an overview of the research activities in which Brembo has been involved in the last years MA emphasized on the functional details of the brake dyno. He provided some data CFD related to the flows which explain the selected geometry and flowrate (adjustable from 500-2500 m³/h with selected being 1175 m³/h). Very low residence time of particles both in the chamber and the duct is achieved, while a significant difference with other set-ups has to do with the adjustable outlet which allows for different flowrates. Afterwards he explained the use of ELPI+ for the brake particles measurement. 3 different probes are placed at the end of the duct. Brembo will also use CPCs in their future measurement. Background emissions in the chamber are not considered important. More details can be found in Brembo's presentation (attached).

DL expressed some reservations for possible coagulation losses due to PN concentration higher than 10⁷ #/cm³. MA and FR confirmed that this could be possible (coagulation losses is one of TF2 most important aspects to be discussed) but stated that it would be difficult to go for higher dilution since mass will be very difficult to be measured. Also there would be issues with the high background concentrations.

AM asked how the verification of the flowrate for the calculations is done since this is controlled by another flow (outlet)? MA clarified that measurement is performed both at the regulation outlet and the sampling line (correct?).

A discussion regarding the type of the flow at the probes took place with MA saying that the flow is not fully laminar but it could be characterized as well developed.

3. Other business:

TG will soon circulate a document with short description of presented set-ups and introduce the discussion to losses and uncertainties.