

PMP – Particle Measurement Program Informal Working Group

Task Force 2– Brake Dust Sampling and Measurement

Meeting #8 – Thursday 25 January, 2018, 14:00 – 15:00

Minutes of Meeting – Final Version

1. Tour de table: Participants: AVL-(TM) Thanasis Mamakos; BMW-(RL) Rasmus Leicht; BMW-(KL) Katharina Lammel; BREMBO-(FR) Francesco Riccobono; CARB-(SC) Sonya Collier; DEKATI-(MM) Mikko Moisio; FORD-(JG) Jarek Grochowicz; FORD-(MMF) Marcel Mathissen; Federal Mogul-(MM) Marcus Morbach; General Motors-(MR) Matt Robere; Horiba-(DL) Dmytro Lugovyy; ITT-(AS) Agusti Sin; JRC-(TG) Theodoros Grigoratos; Link Engineering-(CA) Carlos Agudelo; Opel-(RE) Reinhold Enders; Opel-(TN) Thomas Neff; TMD-(IP) Ilja Plenne; TSI-(JS) Jurgen Spielvogel; TSI-(SP) Stephan Percot; TSI-(RA) Bob Anderson; TU Ilmenau-(TF) Toni Feissel; TU Ostrava-(MV) Michal Vojtsek

2. Changes in TF2 composition: Presentation of new colleagues from BMW and Opel. Katharina Lammel (BMW) and Thomas Neff (TN) will substitute Thomas Kuhn and Max Votteler, respectively. They shortly presented themselves and joined the TF2 officially.

3. Addition of Federal Mogul: The Group has been consulted regarding the participation of Federal Mogul to the TF2. The Group unanimously agreed to include FM in the TF2 and Marcus Morbach was invited to follow the meetings. He briefly presented himself and was agreed to have a bilateral meeting with TG in order to get informed about the activities of the group so far.

4. Discussion on the way forward: TG informed the group than only few inputs are missing to conclude – for the time being – the compilation document. There is an intention to circulate the document to the whole group next week.

TG summarized the situation and proposed a way forward. The idea is to start answering open questions giving priority to the definition of the scope. Afterwards, some minimum requirements shall be set both for the sampling and the measurement equipment taking under consideration the diversity of the configurations presented so far in the TF2. It is clear that not all questions can be answered right away and that there will be a need for experimental campaigns to run in order to find the appropriate answers. One proposal could be that technical questions are separated and distributed among the group based on the on-going activities in order to avoid duplications and reach answers faster. Another proposal would be to create Work Packages as previously suggested by CA. A discussion on the proposed approaches followed.

CA asked to narrow down the possibilities in terms of sampling and measurement equipment and he suggested to do so by setting a minimum of requirements.

DL emphasized on the need to define the scope. He mentioned that in terms of research it would be very interesting to see what else could be measured in addition to PM and PN. TG reminded that there is a need to stick with the scope of the PMP group, therefore the study of possible impact or adverse health effects of brake wear particles does not concern this group.

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TM highlighted that we should focus on PM_{10} and $PM_{2.5}$ measurements and try to define the appropriate procedures to calculate the penetration of these particles. Regarding PN he mentioned that we need to see what the extra effort that will be required is. Calibration issues were also brought up by AVL colleagues.

MM (Ford) agreed that we should focus on PM_{10} and $PM_{2.5}$ measurements but we need to keep open on what else we could do. The objective should be the metrics and they should be defined as soon as possible. He expressed his reluctance to rely on existing exhaust procedures.

MM (Dekati) mentioned that we should define the needs and answer to the question what could be done. Then follow a stepwise approach depending on the answers we give.

FR agreed with MM and MM but mentioned that at least for PN we need to look into what has been done on the side of exhaust emissions. He emphasized on the need to define the scope without leaving any doubt.

BA (TSI) mentioned that after we define the scope we should look into the very well established procedures for mass measurements and try to adjust them from brake particle emissions measurement. Reproducibility and repeatability should be the driving parameters for the method. Regarding PN, it will definitely help to look into lessons learned from aviation and exhaust side but it will require a different approach. Maybe 2 groups focusing on PM and PN, respectively, would be required. Size distribution of brake wear particles is a fundamental property and should be measured.

TM also mentioned that losses shall be treated by not making corrections after the measurements but prior by setting specific limitations to the sampling and measurement system.

TG summarized the discussion and an agreement to start answering the question with the definition of the scope was reached. A stepwise approach will be followed with the next step being the set of a minimum of requirements for the sampling and measurement systems based on the scope.