Calculation Methods Impact on Real-Driving-Emissions Particulate Number Evaluation: Moving Averaging Window in China 6 vs. Raw Mileage Averaging in Euro 6d

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ABSTRACT - RDE test has been introduced to the light-duty vehicle certification process in both China 6 and Euro 6d standards. The RDE test shall be performed on-road with PEMS, which is developed to complement the current laboratory certification of vehicles and ensure cars to deliver low emissions under more realistic on-road driving conditions. Particulate matter has been highly perceived as a significant contributor to human health risks and thus strictly regulated globally. For the RDE evaluation, the MAW method used by the China 6 standard is usually found less stringent than the RMA method used by the Euro 6d standard. In the present study, both of the MAW and RMA methods were applied to different driving cycles and operating conditions, which met the general RDE test requirements, yet resulted in different evaluated PN results. Special focus was directed towards the initial vehicle operations, for example, the vehicle lift-off time after engine ignition and driving dynamics before engine fully warmed up, in addition to the CO2 generation over the RDE cycle. The results showed that the calculation methods can greatly impact the RDE PN emission evaluation. Emphasis to details in the test procedures was recommended to appropriately protect the application and avoid underestimating the RDE emissions in case of realistic operating scenarios.

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