

Emissions particle counter

The exhaust emissions analysis tool from Matter Aerosol enables testers to achieve a real-life measurement of nanoparticles

Matter Aerosol AG

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With a view to obtaining real-life measurements for upcoming European emission standards for vehicles, Matter Aerosol presents the all-new NanoMet3 for solid nanoparticle counting and classification. Recent measurements performed by manufacturers have demonstrated excellent operability of the NanoMet3 device under real driving conditions, as well as very good correlation of particle numbers in comparison with Particle Measurement Programme (PMP) benchmark systems on a chassis dynamometer. NanoMet3 enables testers to measure any vehicle in any place.

The new portable emission measurement system (PEMS) measures the concentration and average diameter of solid particles in the size range of 10-700nm under real driving conditions. It performs highly accurate measurements with online response over a wide range of concentrations. With these properties, it is a useful instrument for particle number concentration measurements in non-laboratory settings and even as an OBD instrument.

Several projects under real driving conditions have been carried out to evaluate NanoMet3's performance. In addition, measurements on a chassis dynamometer with different vehicle engine technologies and Euro 5 emission standards have



shown correlation factors of $R^2 > 95\%$ for particle number measurements between NanoMet3 and PMP-benchmark systems during NEDC transient driving. This fact was highlighted by the latest results published in June 2013 by Ford Research & Advanced Engineering at the international conference on combustion generated nanoparticles in Zurich.

The PEMS methodology has been recognized by many government entities, such as the US Environmental Protection Agency and the United Nations Framework Convention on Climate Change. Particle counting of diesel vehicle emissions has been mandatory through Euro 5B since September 2011, and should be performed according to the guidelines set out in the PMP. The EU and countries throughout the

ABOVE: Matter's NanoMet3 enables particle measurements to be taken away from the laboratory

world will continue to integrate particle counting into their emission standards, especially since the World Health Organization identified diesel exhaust as being one of the most dangerous pollutants. In addition, the European Commission is working on guidelines for technical assessment of PEMS for particle concentration levels emitted by light duty vehicles.

The increasing requirement for accurate and cost-effective testing has become of great importance to Matter Aerosol. Vast experience in nanoparticle measurement equipment for automotive, laboratory and environmental applications has enabled the company to develop this rugged, portable and cost-effective solid nanoparticle counter.

When a standard dilution tunnel, such as a constant volume sampling (CVS) tunnel, is used for emissions testing, the volatile substances may condense into nanodroplets, which are detected as particles together with non-volatile solid particles. To measure only the solid particle fraction, it is necessary to condition the sample thermally to eliminate the volatile fraction. NanoMet3 features a separate sample at the source (tailpipe, CVS tunnel or stack) and conditioning of the exhaust probe according to Matter's patented ThermoDilution principle, which is fully PMP compliant. ◀

NanoMet3

Measure in real environmental situations.

Test any vehicle

Classify particle sizes, wherever you are. For each vehicle type a different standard apply. Only one instrument is needed.

everywhere



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Portable Nanoparticle Counting
as easy as making a coffee

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