

AUTOMOTIVE PARTICLE EMISSION MEASUREMENT

PMP equipment



RS-PMP

Real-time particle counting for engine exhaust

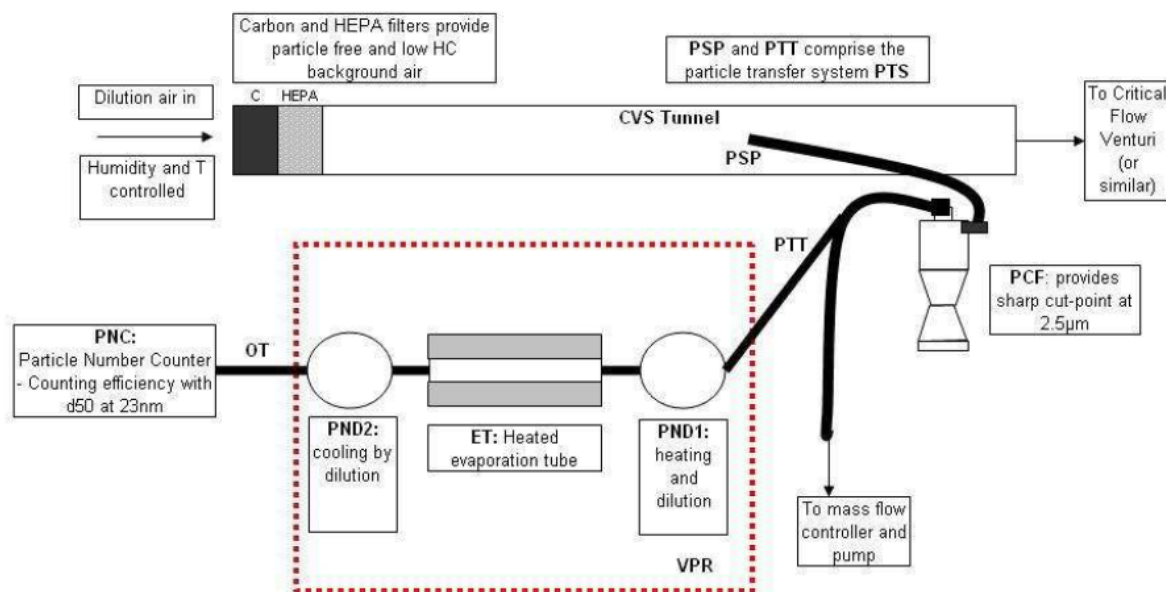
ECOMESURE

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The measurement of particulate mass emission is becoming increasingly difficult to conduct due to very low emission levels, especially after a Diesel Particulate Filter (DPF). In order to estimate these emissions, the new EU regulation defines the measurement of the total particle number per kilometre, in addition to the particle mass.

The ECOMESURE RS-PMP rack is fully PMP (Particle Measurement Program) compliant. It uses well-proven measurement systems for dilution and counting to comply with the latest draft PMP proposal to measure the number of non-volatile particles from diesel engines.



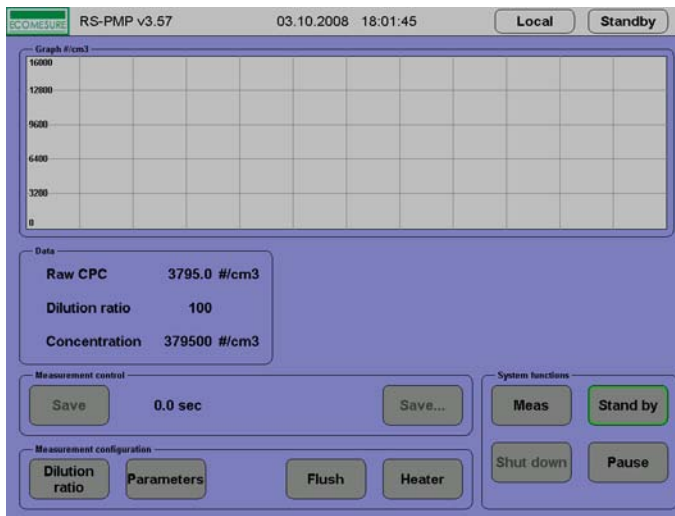
The ECOMESURE PMP rack comprises a dilution system and a particle counter. The dilution system includes a first hot dilution stage to ensure dilution in correct conditions, an evaporation tube to eliminate volatile particles and a secondary dilution system operating at ambient temperature. This dilution system, based on the ejector principle for minimizing particles losses, permits a wide range of dilution ratios under best conditions. After the dilution and volatile removal, the particles are counted by a Condensation Particle Counter (CPC) in real time. The CPC counts particles one by one to provide exact particle concentration of the sample.

RS-PMP can easily be controlled from its 15" touch screen panel on the rack, or via an external acquisition system in a host computer in the control room. Ease of operation and simplified maintenance have been of highest priorities in the development to provide a user-friendly environment.

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Thanks to its 15" touch screen panel, the PMP rack is fully self-sufficient. It does not need any external controller or logger but can be connected to such data acquisition systems.

The PMP rack includes features for internal validation, such as a dilution ratio check, a dilution air quality check and an every daily check according to PMP regulation.

Technical specifications:

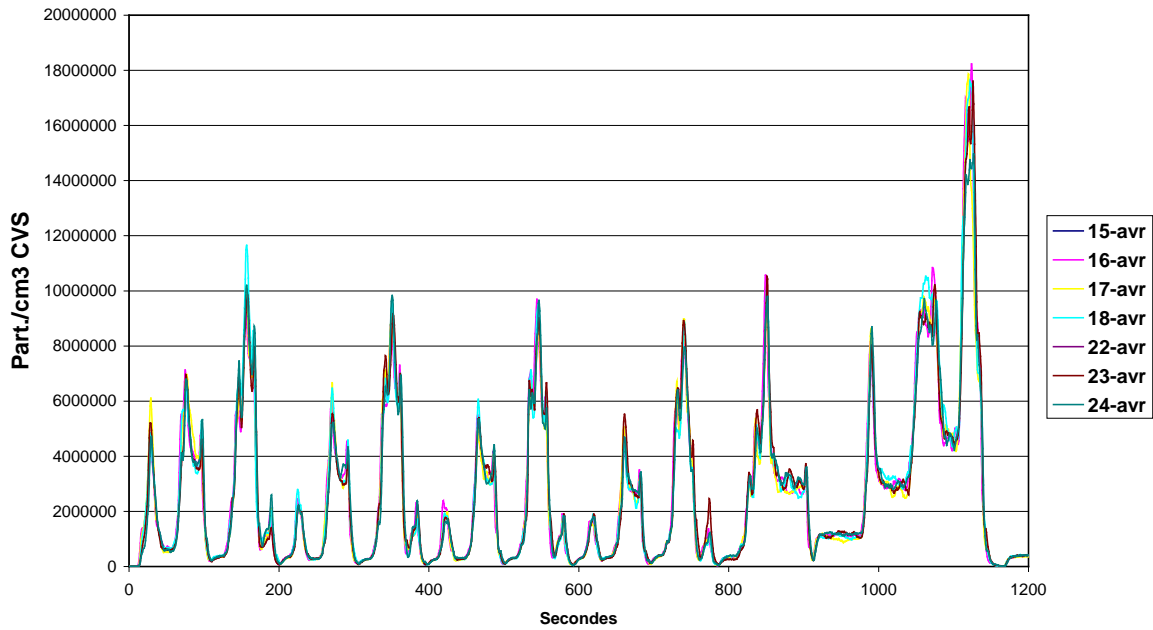
Measurement range	0 - 12 000 part/cm ³ (single count)
Detection limit	0,1 part/cm ³
CPC operation temperature	5 - 30°C
Response time CPC	< 3 sec
Sample inlet flow rate	5 - 7 L/min (20°C, 1013mbar)
Sampling conditions	CVS (dilution tunnel)
Dilution ratio range	100 - 2 000 (DR < 100 under request) > 2 000 with upstream DPF option
Evaporation tube temperature	350°C
Evaporation efficiency	higher than 99% for tetracontane
Control	from touch screen panel, remote control on external computer, AK protocol commands, trigger
Communication	RS-232, analog outputs (DR and CPC count), TCP/IP, saved data file in internal memory
Power supply	220V/50Hz - 2000 W
Dimensions	19" rack with wheels, height 1 700 mm or 1 300 mm
Optional	upstream DPF (option) up to 1 bar additional Particulate Mass sensor

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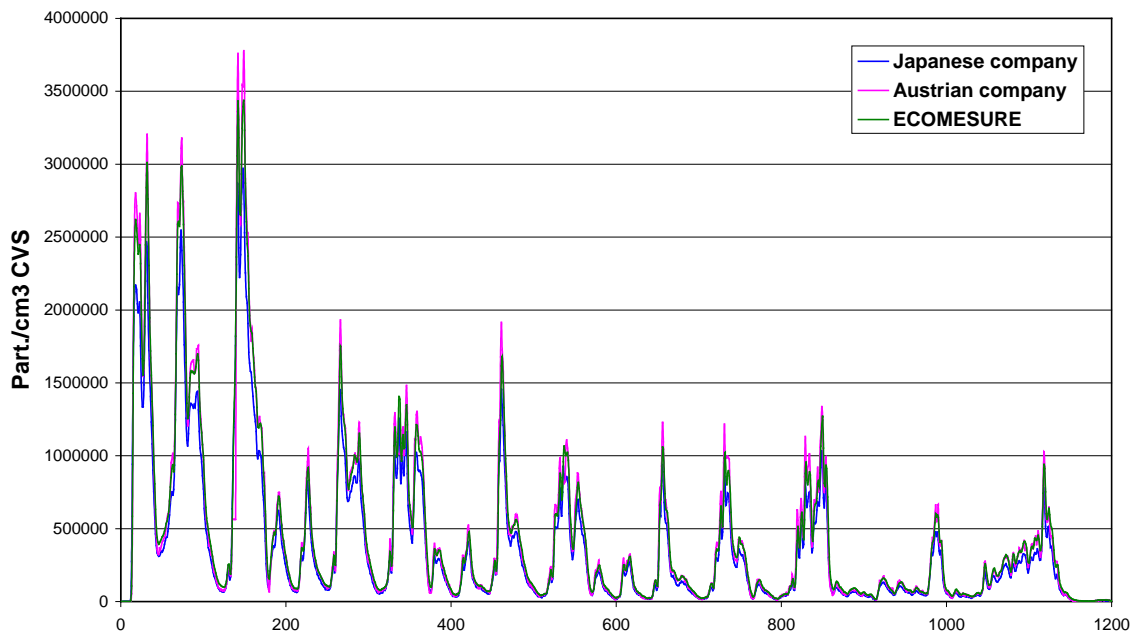
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Without DPF car - ECOMESURE - NEDC cycle



Official French Evaluation of particles measurement systems at UTAC in April 2008

15th april 2008 - GDI car - NEDC cycle



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UTAC: regulation laboratory of the French Transport Ministry

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