pegasor

- Accurate and fast particle ultrafine particle sensor
- PN, LDSA, PM and particle size
- Customizable for integration

Pegasor Particle Sensor PPS-G2

INDUSTRIAL PARTICLE SENSOR FOR OEM INTEGRATION

Ultrafine particle sensor

The Pegasor PPS-G2 sensor offers a comprehensive solution for precise and consistent particle number concentration monitoring. Originally designed for periodic technical inspection (NPTI) measurements, the PPS-G2 now comes with a range of features that make it an ideal choice for a variety of ultrafine particle monitoring applications. Designed for OEM integration, the PPS-G2 offers a range of data communication options that allow seamless integration into larger systems. With thousands of PPS-G2 sensors deployed in the market already, we can assure the availability of the sensor even in large quantities and short delivery times.

PPS-G2 Operation

The PPS-G2 operation is based on the unique Pegasor patented technology using the escaping current technique to detect particles. In this technique, the particles are first charged in a corona-ionized flow and then detected electrically as they exit the sensor. The unique design of the PPS-G2 sensor ensures continuous and stable sample flow and it keeps critical parts of the sensor clean, eliminating the need for frequent maintenance even during long-term measurements and high-concentration environments. In high temperature applications, the PPS-G2 sensor can be heated up to 200 °C and equipped with heater elements and a volatile particle remover (VPR) for efficient hydrocarbon and water removal.

In the PPS-G2, the charged particles are detected by a sensitive electrometer to determine the number of particles and their lung deposited surface area (LDSA). The built-in software additionally calculates the mass and median size of the particles, offering comprehensive information on the measured particles using only one sensor. The PPS-G2 sensor's features include:

- PN, LDSA, PM concentration measurement of ultrafine particles
- Median particle size measurement with dynamic trap sequencing: Optimizes detection efficiency for various particle sizes.
- Fast operation with 0.2 s response time
- Wide concentration range
- Reliable, repeatable, and linear response
- Improved sensitivity since no dilution is needed

PPS-G2 Features

- Flow-through design ensures minimal maintenance
- Does not require frequent attention or care from the user.
- No consumables, no operating liquids
- Several data communication options
- Robust structure
- Insensitive to vibrations
- Option to heat the sensor module up to 200° C to prevent condensation
- Option to add an integrated VPR for volatile particle removal
- Extensive self-diagnostic system to increase reliability

Applications

PPS-G2 particle sensor is suitable for ultrafine particle monitoring in a range of environments and applications. These include:

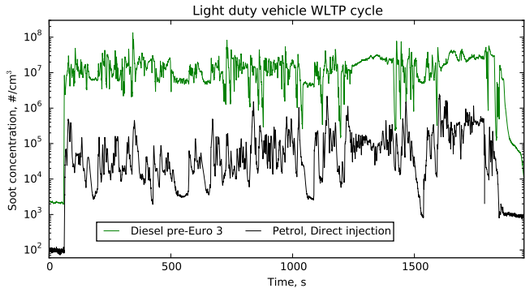
- Engine / vehicle exhaust measurements
- nPTI measurements and DPF testing
- Other emission measurements
- Nanoparticle monitoring
- Urban air quality measurements
- Occupational health and industrial hygiene

For OEM integration

The PPS-G2 sensor is engineered for seamless integration into large systems. It offers a range of data communication options, and our in-house development team is available to further customize and adapt the sensor to meet specific technological requirements. Pegasor's sensor technology is available either as ready-made sensors or through licensing agreements.

External requirements

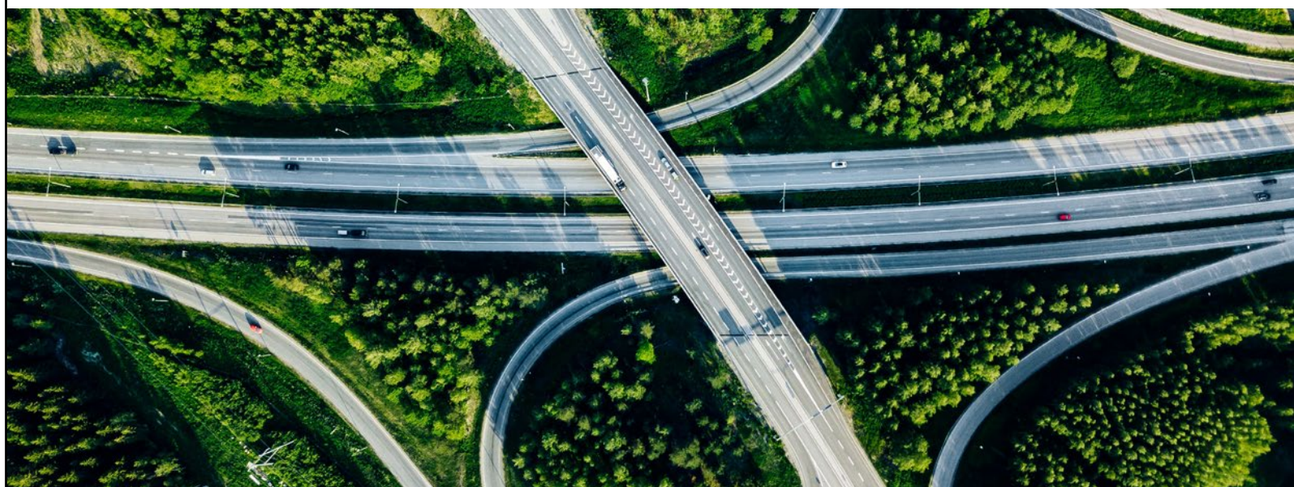
- Filtered air < 8 lpm @ 300 mbar during measurement (+possible margin for zero air)
- Heater control
- Sensor power + data channel
- Sampling lines



Pegasor PPS-G2 sensor used in GDI engine and pre-Euro3 diesel engine measurements demostrates the wide dynamic range and capability of the measurement technology.

Specifications

Range	30 – 100 000 000 #/cm³
Particle size	10 nm – 1 µm for PN and LDSA. 10 - 300 nm for PM and Dp.
Sampling rate	1–100 Hz
Response time	0.2 s
Sample flow rate	5.5 lpm
Output data	Particle number, LDSA and mass concentration, particle median size, sensor operational parameters
Data output options	Serial, USB, Ethernet, CAN-BUS, Modbus
Power requirements	5 VDC, optional heater 230 V or 12/24 V
Dimensions	230 x 110 x 90 mm
Weight	1.4 kg
Sample inlet/outlet	8 mm OD / 6 mm ID conductive tubing



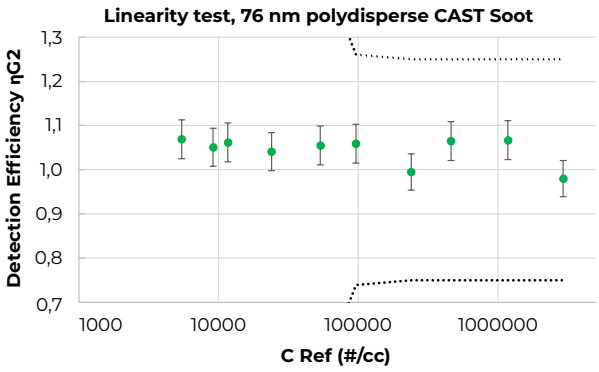
Measurement performance

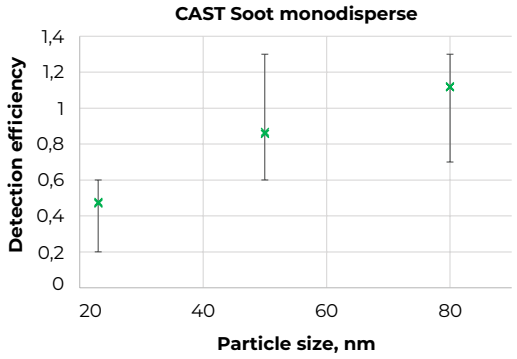
PN measurement compliance testing has been conducted by independent laboratory Metas (SUI).

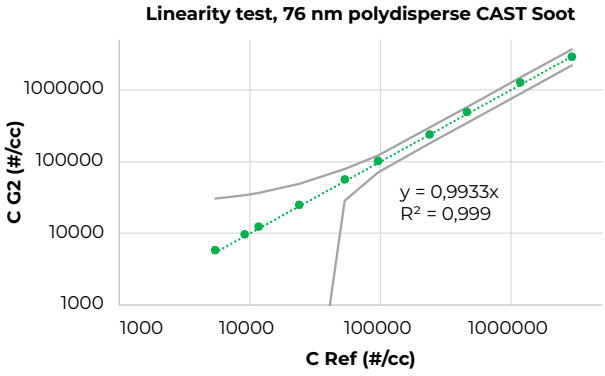
Metas conformity assesment:

Test Report No 235-11079

Test	wCriteria	Pass
Particle size; 2, 2.4.8	23 nm: 0.2 < CR < 0.6 50 nm: 0.6 < CE < 1.3 80 nm: 0.7 < CE < 1.3	Yes Yes Yes
Linearity; Part 2, 2.1	MPE (Maximum permissible error): ± 2.5e4 cm-3 or ± 25 % of reference value, whichever is greater	Yes
Repeatability; Part 1, 5.11	MPE standard deviation: 1/3 of the modulus of the MPE	Yes

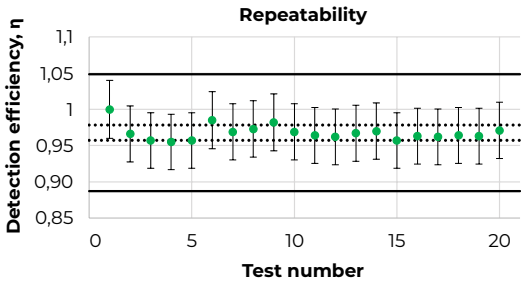






Approvals and certifications

PTB, NMI, and Metas approved method for nPTI measurements.



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