



# Pegasor PPS-G2

## Regulation-ready PNC sensor for PTI systems

Pegasor PPS-G2 is a Particle Number Counter (PNC) sensor engineered for integration into periodic technical inspection (nPTI) systems.

The technology is deployed in regulatory PNC inspection frameworks and used in approved PTI equipment across Europe.

Designed for OEM integration, PPS-G2 provides a robust and scalable measurement platform for diesel and gasoline particle number inspection.

- PNC detection aligned with nPTI requirements
- Suitable for both diesel and gasoline exhaust measurements
- Robust diffusion charging technology
- Integrated VPR and hot exhaust capability
- Extensive diagnostics for reliable operation
- Designed in Finland. Available globally.



## PNC Sensor for PTI systems

Pegasor PPS-G2 is a Particle Number Counter (PNC) sensor engineered for PTI applications. It provides a robust, regulation-ready PNC measurement core designed for integration into vehicle inspection systems. Thousands of PPS-based PNC sensors are already deployed in PTI systems across Europe.

**THIS IS FIELD-PROVEN INDUSTRIAL TECHNOLOGY, NOT A LABORATORY INSTRUMENT.**

### OPERATING PRINCIPLE

PPS-G2 is based on Pegasor's patented diffusion charging technology using the escaping current detection principle. Ions are generated in a controlled corona discharge using clean air. The ionized clean air stream is mixed with the exhaust sample, allowing the ions to attach to the particles. Because the corona is isolated from the exhaust flow, the charging section remains clean and stable during long-term operation. The charged particles are detected electrically as they exit the sensor, and the resulting signal is directly proportional to the particle number concentration (PNC).

The flow-through design of the PPS-G2 sensor ensures continuous and stable sample flow while keeping critical internal components clean. This minimizes contamination effects and significantly reduces maintenance requirements, even in high-concentration exhaust environments. For PTI applications, PPS-G2 includes integrated heating up to 200 °C and a built-in Volatile Particle Remover (VPR), enabling direct hot exhaust measurement in a compact all-in-one configuration suitable for regulatory nPTI systems.

PPS-G2 additionally features Pegasor's patented dynamic trap sequencing technology. This optimizes detection efficiency across different particle sizes and improves the accuracy and linearity of the particle number concentration calculation across a wide range of exhaust conditions.

### FEATURES FOR PTI INTEGRATION

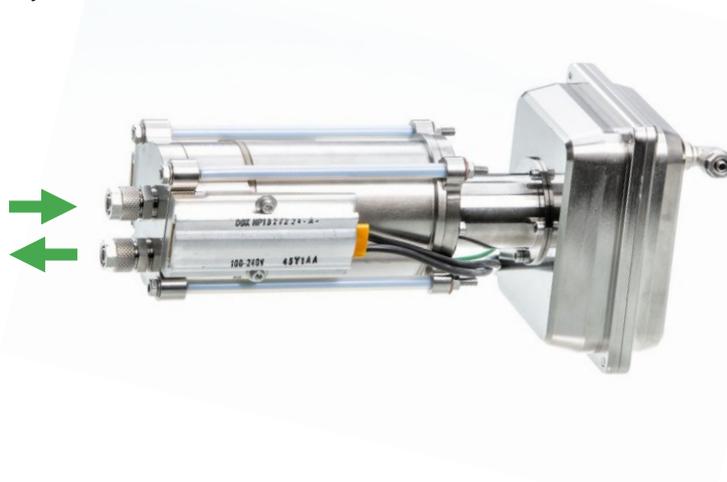
- PNC detection aligned with nPTI regulatory requirements
- Diffusion charging measurement principle
- No moving parts and no working fluids, no sample filters
- Integrated VPR
- Direct hot exhaust measurement up to 200 °C
- Capable of direct measurement without dilution
- Flow-through construction enabling long maintenance intervals
- Response time of 0.2 s
- Wide concentration range
- Reliable, repeatable, and linear signal response
- Extensive self-diagnostic system for operational reliability

### ADDITIONAL MEASUREMENT CAPABILITY

In addition to PNC, PPS-G2 can provide:

- Lung Deposited Surface Area (LDSA)
- PM estimation
- Median particle size indication

This enables extended functionality for advanced inspection systems.



Concentration range	30 – 100 000 000 #/cm <sup>3</sup>
Sampling rate	1–100 Hz
Response time	0.2 s
Sample flow rate	5.5 lpm
Data output options	Serial, USB, Ethernet, CAN-BUS, Modbus
Power requirements	5 VDC, heater options 230 V or 12/24 V
Dimensions	230 x 110 x 90 mm
Weight	1.4 kg

Designed for integration

Engineered for reliability

pegasor

## DESIGNED FOR SYSTEM MANUFACTURERS

PPS-G2 is engineered as a self-contained PNC measurement core for integration into complete PTI inspection systems. Sample treatment, particle charging, detection, heating, and volatile particle removal are integrated into a single compact sensor module. This reduces system complexity and simplifies mechanical design.

PPS-G2 is designed for straightforward OEM integration. External requirements include:

- Filtered air supply
- Heater control (including VPR temperature measurement)
- Sensor power (5 VDC)
- Standard data communication interface
- Sampling lines

The clear separation between the sensor core and system components enables flexible PTI system architecture.

## INTEGRATED DIAGNOSTICS

The PPS-G2 incorporates an extensive internal diagnostic system. The sensor continuously monitors:

- Diffusion charger and electrostatic trap
- Air pressure
- Pump air humidity
- Flow conditions
- Electronics temperature
- Additional internal status and quality indicators

Measurement validity is automatically controlled. If fault conditions occur, the sensor flags the error and prevents invalid measurement results. This reduces system-level validation complexity and supports reliable PTI operation in workshop environments.



*Integrated VPR after ~24,000 vehicle test-equivalent load. Minimal soot accumulation observed, demonstrating long-term stability under repeated nPTI operating conditions.*

## INDUSTRIAL COMMUNICATION INTERFACE

The sensor provides structured, checksum-protected data communication with indexed measurement frames.

Available communication interfaces include:

- Native: Serial (low voltage RS232)

With optional interface:

- USB
- Ethernet
- Modbus
- CAN-BUS

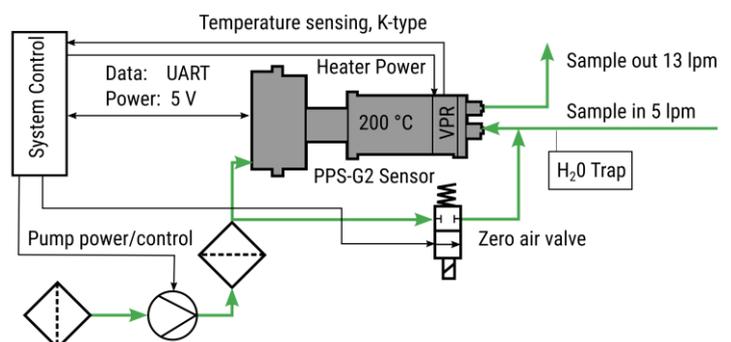
This allows flexible integration into existing PTI instrument platforms and simplifies software development.

## DESIGNED FOR HIGH-THROUGHPUT INSPECTION

- 0.2 s response time
- Fast startup diagnostics
- Automatic zeroing capability
- Continuous sample flow

This supports fast measurement sequences in high-volume inspection environments.

### PPS-G2 integration schematics



Designed in Finland

Supplied globally

pegasor

## APPROVALS AND CERTIFICATIONS

PPS-based particle number concentration (PNC) measurement technology is accepted within national nPTI frameworks under PTB (Germany), NMI (Netherlands), and METAS (Switzerland). The technology is already deployed in officially approved PTI inspection equipment operating under these national requirements. This provides system manufacturers with a proven and regulation-aligned PNC measurement core.

## SUITABLE FOR DIESEL AND GASOLINE VEHICLES

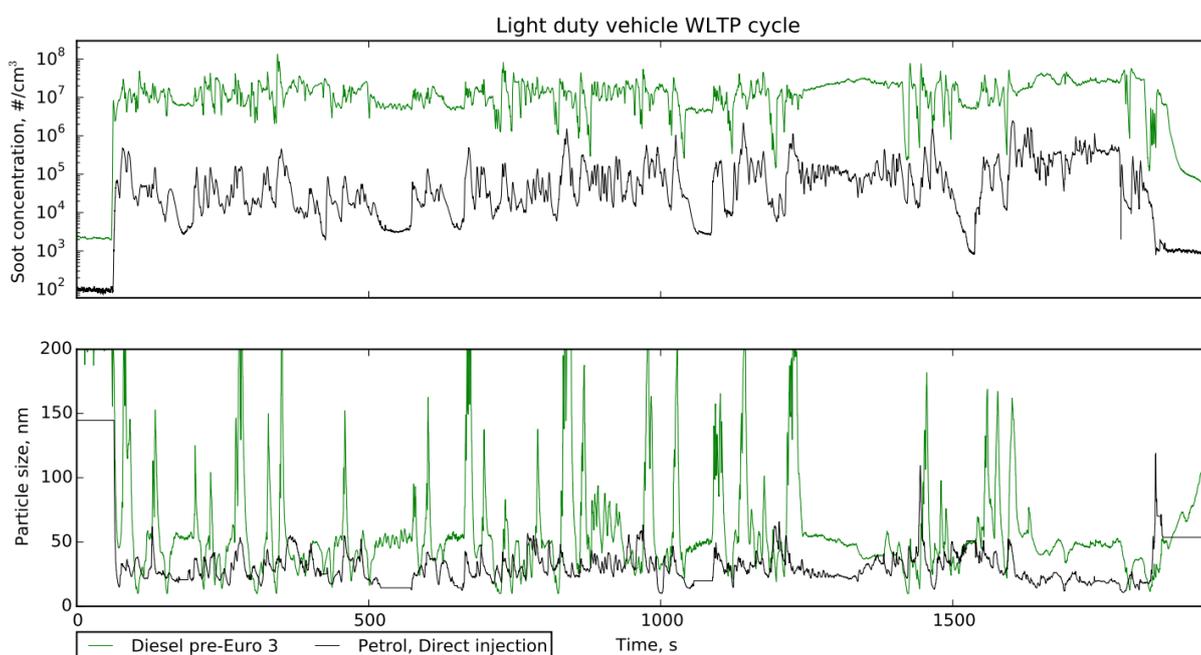
PPS-G2 supports PNC measurement for both diesel and gasoline vehicle applications, aligning with the expanding regulatory focus on particle number concentration monitoring. As PNC-based roadworthiness testing expands across Europe, flexible system capability becomes increasingly important

## PARTNERING WITH PEGASOR

Pegasor develops patented particle measurement technologies with dedicated focus on particle number concentration. For PTI instrument manufacturers, PPS-G2 offers:

- Field-proven deployment
- Regulatory alignment
- OEM-focused integration support
- Long-term technical collaboration

Pegasor can also support system manufacturers in the integration of auxiliary components related to PNC measurement, based on extensive experience in nPTI system development.



*Pegasor PPS-G2 sensor can be applied to both diesel and gasoline exhaust measurements.*

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