

Large Particle Detector



Description

The Large Particle detector is a compact device for applications in ultra pure and chemical aggressive media. The detection limit of 1µm-particles makes this sensor particular suitable for in-line process monitoring and control of complex and high concentrated submicron dispersions, micro-emulsions, polishing slurries or pure fluids.

The integrated evaluation unit with a LCD-display, the RS485 interface as well as the free programmable analogue output minimizes additional hardware requirements and guarantees an easy connectivity to a PC or PLC.

Applications

- ▶ Large particle detection in pure fluids and in slurries
- ▶ In-line Quality monitoring of CMP slurries
- ▶ Prevention of micro scratches at polishing processes
- ▶ Filter control
- ▶ Optimization of filter lifetime
- ▶ Ultra pure and chemical aggressive liquids
- ▶ Low-cost quality monitoring of purified water
- ▶ Defect detection in supply systems

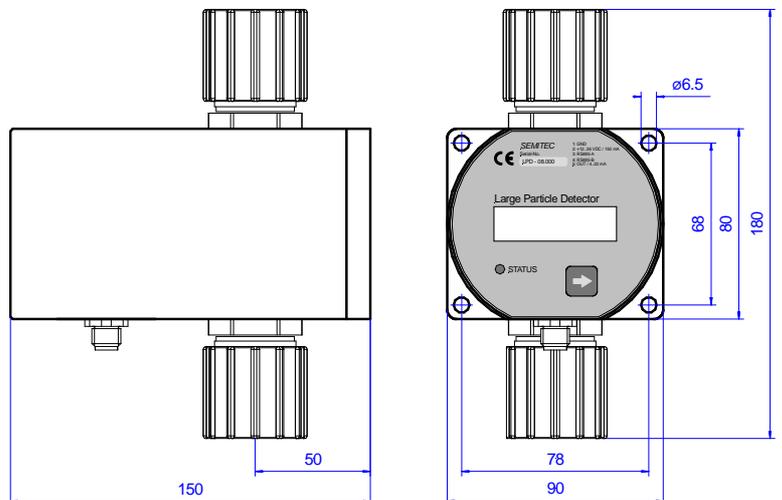


Specification

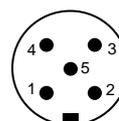
Detection Limit	1 µm - particles
Measurement slit	1 mm
max. Concentration	~10.000 p/ml
max. Pressure	8 bar
Degree of protection	IP54
Temperature range	-10 ... + 60 °C

Dimensions	150 x 90 x 180 mm
Mounting	4 drill holes Ø 6,5 mm
Process interface	Flare tube 1" (3/4"), NPT 1"
Wetted materials	Housing: PTFE Sealing: Viton® Windows: Sapphire Tube Fittings: PFA

Fully plastic housing, no metallic parts



Power supply	24 V DC (18-36 V), 200 mA
Communication	RS485
Analogue Output	4 - 20 mA
Electrical connector	5 pin - M12 male connector



- 1: GND
- 2: +12..36 VDC / 150 mA
- 3: RS485-A
- 4: RS485-B
- 5: Analogue output (4..20 mA)

Software	Easy-to-use configuration, monitoring and measurement software (Windows®)
Communication protocol	Serial ASCII-protocol for the implementation into custom specific applications

Contact

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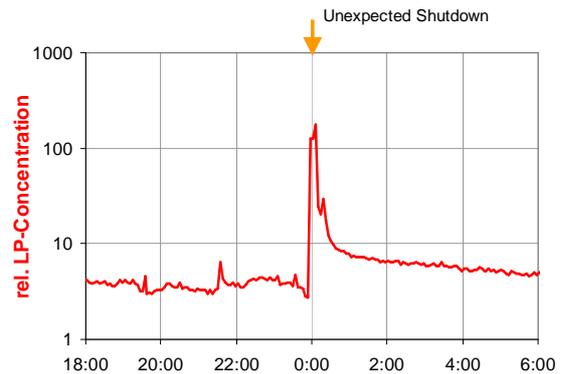
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Large Particle Concentration - Correlation to Supply Line Events

Unexpected shutdowns

Unexpected and uncontrolled shutdowns of CMP -slurry supply plants cause a significant increase of the large particle concentration. The example shows an approx. 50 times higher concentration after such an event.

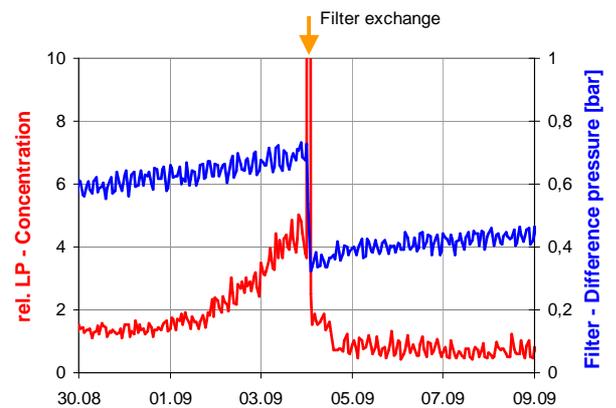
The *Large Particle Detector* enables to determine the duration for rinsing and cleaning the system from large particles.



Filter load

Common used deep-bed filters in supply plants lose their efficiency with increasing load. The filter control is often realized by a difference pressure measurement. A more significant and direct control of the filter efficiency allows the *Large Particle Detector*.

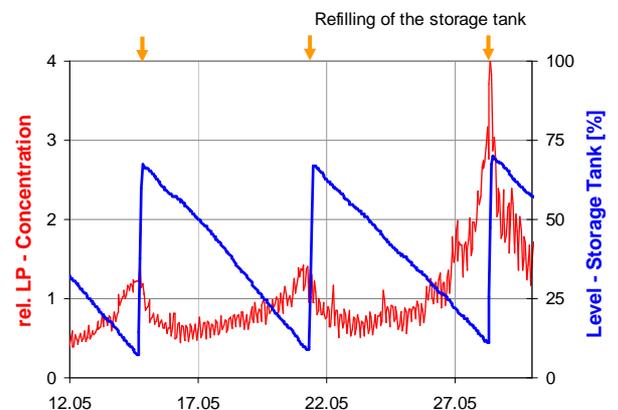
The diagram shows the increase of the large particle concentration with the increasing differential pressure of the filter. This makes the sensor excellently suitable for the optimization of filter lifetime.



Fill level of the storage tank

Process states of a supply plant have a direct influence on the supply quality. The example shows a direct correlation of the filling level of a storage tank with large particle concentration.

An increase of the concentration can be observed at very low filling levels. This behavior is caused by a contamination of the tank or by a high specific energy entry in the fluid at low filling levels due to circulation pumps or agitators.



Defects in the supply system

The large particle concentration responds very sensitive to defects or intervention in the supply system.

The diagram shows the concentration course of two alternating peristaltic pumps with one defect pump (gray shadowed stripes). The defect pump is responsible for a high and very fluctuating large particle concentration. After exchanging the defect pump the system needs a certain time for stabilizing at a low concentration level.

