

# PAMAS S50 and S50P Online Particle Counter

Contamination Control and Condition Monitoring of  
Hydraulic and Lube Oil Systems Parts Cleaning and Roll Off Cleanliness Testing



## PAMAS S50 and S50P

The PAMAS S50 and S50P are cost effective-high performance laser based online particle counting systems with simple integration in industrial data managing systems.

Comprehensive build options ensure an application specific system to ensure low cost and minimal capital expenditure –without compromise.

The S50 and S50P count particles with a high resolution and analyse them into 8 particle size channels.

The systems contain a display which shows the 3 contamination classes according to ISO 4406:1999, based on 4 µm(c), 6 µm(c) and 14 µm(c).

The particle number distribution of all 8 size channels is real time reported to PC, to trend the contamination events over time in combination with different early alarm features (incl. external condition monitoring sensors).

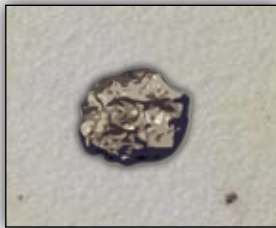
Due to these early alarms, the PAMAS S50 and S50P are money saving systems, which reduce the risk for failures and ensure production.

# Save money using the PAMAS S50 and S50P in Contamination Control and Condition Monitoring

of Hydraulic and Lube Oil Systems as well as Parts Cleaning



| Size $\mu\text{m}$ (c) | Particles / 100 ml |
|------------------------|--------------------|
| > 4                    | 29497              |
| > 6                    | 7090               |
| > 10                   | 2393               |
| > 14                   | 960                |
| > 21                   | 383                |
| > 25                   | 190                |
| > 38                   | 133                |
| > 70                   | 12                 |



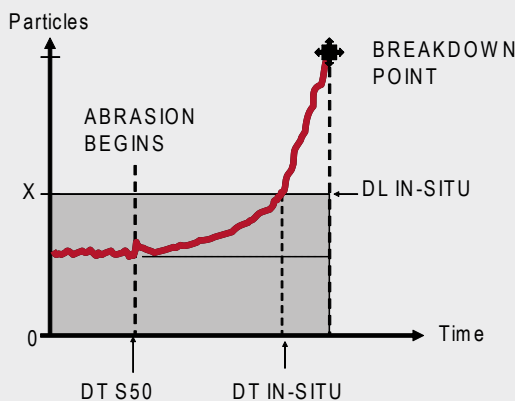
## Save money: recognise failures at an early stage and ensure production

An online particle counter with 8 size channels gives you the advantage in detecting the contamination of bigger sized particles, besides the three cleanliness classes based on ISO 4406:1999.

Beginning failures in hydraulic and lube oil systems result in the early appearance of such relatively bigger particles.

PAMAS S50 and S50P do provide also the online detection of the bigger abrasion particles and can therefore prevent production breakdown in an early stage.

This is why the S50 and S50P can save you a lot of money.

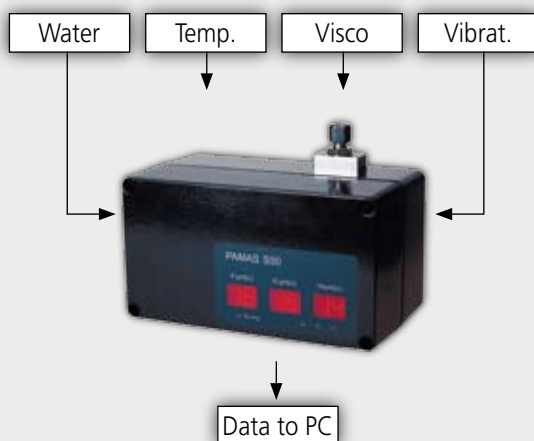


## Sensitive detection gives shorter reaction times and more time to plan and perform repair service actions

Due to a high quality laser based measuring cell based on the volumetric sensor technology, the PAMAS S50 and S50P notice immediately every small increase in particle number, even in very clean environment.

This provides shorter reaction times to undertake corrective actions (DL = Detection Level, DT = Detection Time).

Many other "particle counters" (in-situ sensor technology) operate only under high particle numbers and therefore much longer reaction times.



## Condition Monitoring: Get more value for your money

The PAMAS S50 and S50P do have 4 analog inputs on board for 4-20 mA -signals.

Additional condition monitoring data, coming from external sensors (water content, oil temperature, viscosity, vibration, pressure, etc...) can be sent via S50 and S50P together with particle counting data in real time to PC.

This makes the PAMAS S50 and S50P a powerful instrument for Condition Monitoring.

# Global Power Local Presence



# A modern microcontroller driven automatic particle counter



## PAMAS S50

The S50 is intended to be used as a stationary online system, which combines a high performance laser based sensor with a high power digital signal conditioning and a 32-bit CPU.

The measurement principle: single particle detection using light extinction based on a highly focussed laser diode (LD). The whole measurement cell is illuminated; even very clean liquids can be measured.

If the application supplies pressure, the unit can be operated without internal pump. The S50 can determine the flow rate through the sensor continuously to achieve precise results independent of the input pressure. Every system is calibrated and certified individually.

The S50 is fully compatible to measure mineral and synthetic oils in different industrial environments. Its rugged construction makes it resistant against mechanical, environmental and electrical threats.

## PAMAS S50P = S50 + PUMP

The S50P = S50 with an additionally built-in pump for pressure less oil systems.

A wear resistant ceramic piston pump controls the flow rate to 25 ml/min.

## Options

Both PAMAS S50 and S50P can be ordered with a variety of options to fit the unit into every application:

### Accessories

- External Power Supply AC Adapter 100-240VAC / 24VDC
- Pressure Reducer 5 – 200 bar (S50)
- Degassing Unit, to prevent the measurement of air bubbles in high viscous lube systems (S50P)
- Cooler for high oil temperatures between 80 - 200°C.

## Data transmissions

- RS485 to USB convertor for PC connection (external)
- I/O-card - 4 x Analog Inputs (4-20 mA)
- 4 x Analog Outputs (4-20 mA) for 4, 6, 14 and 70 µm(c)
- 8 x Digital Inputs 0-24 V as interface to PLC or external signal sources (on request)
- 8 x Digital Outputs 0-24V as interface to PLC (24V/100mA) (on request)
- Ethernet network connection 10MBIT (on request)

## Softwares

### POV

**Pamas Online Visualization:** special software for Contamination Control and Condition Monitoring

### PCT

**Pamas Component Test:** special software for Parts Cleaning and Roll Off Cleanliness Testing

Automatic digital flow rate determination provides accurate measurement results

### Technical data:

S50 / S50P

### Operating Voltage:

- 24 VDC (22-28 VDC)

### Power Consumption:

- 10 W (S50)
- 20 W (S50P)

### Max. Viscosity:

- 1.000 cSt (S50 & S50P) (depending on system pressure)

### Flow Rate:

- 5 – 50 ml/min (S50)
- 25 ml/min (S50P)

### Pressure Range:

- 0.2 – 20 bar (S50) (option: 5 – 200 bar)
- 0 – 7 bar (S50P)

### Size: W x H x D:

- 220 x 140 x 120 mm (S50)
- 230 x 200 x 180 mm (S50P)

### Weight:

- 3.7 kg (S50)
- 5.0 kg (S50P)
- Protection: IP64

### Connectors:

- Standard DIN ISO 2353 like Bell, Schwer, Ermeto.

## PAMAS Volumetric Sensor:

### Calibration range:

- 4 – 70 µm(c) based on ISO 11171:1999

### Max. particle concentration:

- 20.000 p/ml at 25 ml/min (5 % coincidence)
- Measures from ISO class 0 - 22

### Counter:

- 8-channel particle counter, 4 µm(c), 6 µm(c), 10 µm(c), 14 µm(c), 21 µm(c), 25µm(c), 38 µm(c) and 70 µm(c)

### Controller:

- High performance digital signal conditioning and 32 bit CPU

9001: 2000



DIN EN ISO 9001:2000

Zertifikat: 01 100 061898

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