

Bulk Flow Detection

PROCESS MONITORING SYSTEMS FOR SOLIDS

Product Information



FEATURES:

- Absolutely insensitive against material deposits
- For any line diameter
- With adapter, usable up to 220 °C and 20 bar
- With ceramic mounting, usable up to 1.000 °C
- Usable in dust Ex-zones
- Detection through all non-conductive walls
- Optional with trend monitoring (4 ... 20mA)
- Detection of material clogging and material standstill



certified to **ATEX**

TECHNOLOGY

USING / FUNCTION

The FlowJam S detects all kinds of bulk solid flows with regard to material movement. The FlowJam S distinguishes between the following switching conditions:

- material flow
- material jam/standstill resp. empty pipe

The system works contactless by using microwaves, whereby the material movement is detected by means of the Doppler's principle.

The FlowJam S is definitely a very reliable device, because the use of its microwaves guarantees a penetration of material build-up on the sensor, and therewith a proof detection of material flow behind it. Hence it's also possible to detect through non-metallic box walls, casings or conduits.

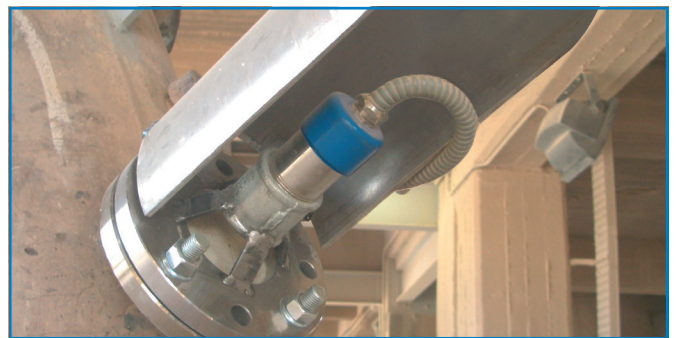
Even at difficult conditions like high process temperatures or pressures as well as Ex-version for dust hazardous areas the FlowJam S can be used by means of a process-adapter (see page 4).

APPLICATION EXAMPLES

• Monitoring of raw meal cyclones in cement plants

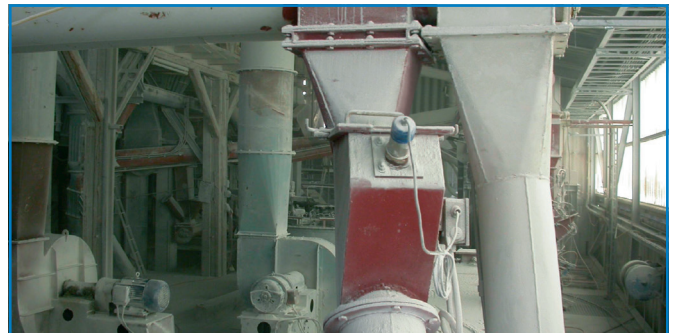
The FlowJam S monitors the cyclone through special ceramic fittings, used for high temperature isolation, in order to prevent jams inside the cyclone.

- Temperature inside the cyclone: 880 °C
- Mass flow rate: approx. 50 t/h



• Monitoring of screw-conveyors in gypsum plants

The FlowJam S is installed in the discharge part of the screw to monitor the continuity of the material flow. As soon as the material flow gets interrupted, the FlowJam S signals it by switching the relays, so that the operator can react appropriately.



• Monitoring of coal injection in steel plants

Coal as fuel is injected via several lances in the blast furnace. It's very important for a constant quality of the burning process that the even fuel distribution around the blast furnace is guaranteed. It is for this reason that every lance is monitored by the FlowJam S, so that every jam can be detected instantly, by which the process can be stopped automatically and the concerned lances freed by injecting of nitrogen.



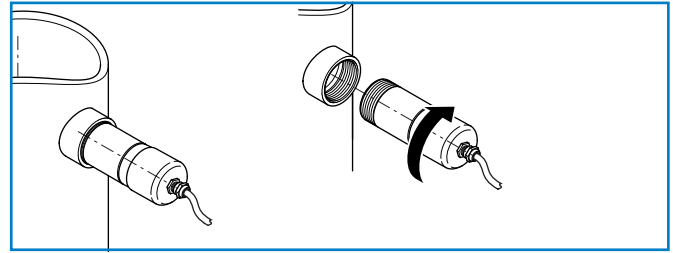
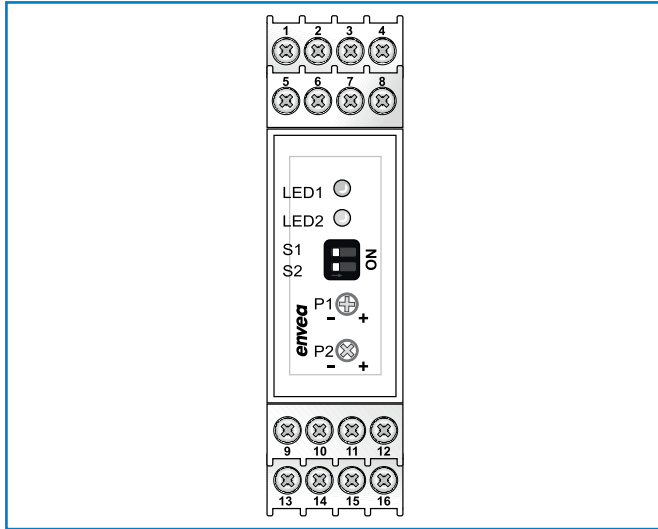
INSTALLATION

The installation of the FlowJam S sensor is easily made by the following ways:

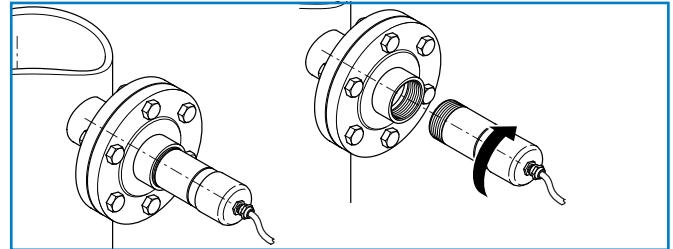
- screwing it into a G 1½-inch-screw neck
- by means of a DN 40 flange
- by means of a pipe clip or an other mounting

Commissioning

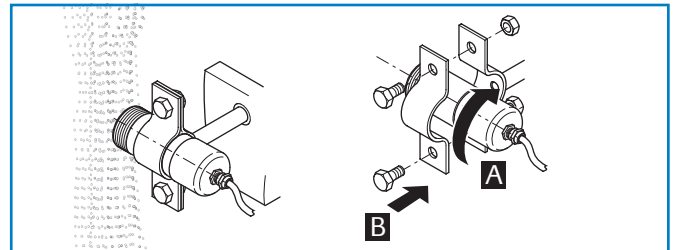
Operating elements for the commissioning are located in the accessible transmitter. It's possible to adjust both the switch sensibility and the response delay. An analogue output for trend display is available as an option.



Thread mounting



Mounting with separating flange



Mounting with pipe clamp

TECHNICAL DATA

Sensor		Transmitter (DIN Rail)	
Voltage	12 V DC powered by transmitter	Power supply	24 V DC ± 10 %
Power consumption	Approx. 1.5 W	Power consumption	Approx. 3.5 W
Housing material	Stainless steel 1.4571	Relay output	Max. rated load: 250 V AC
Protection type	IP65		Max. peak current: 6 A
Using in Ex-zones	Outside pipe: Cat. 3D (only with process adapter)		Max. rated load 230 V AC: 250 VA
Process temperature	-20 ... +80 °C -20 ... +220 °C (with process adapter) Max. 1000 °C (with ceramic flange)	Max. breaking capacity DC1: 3/110/220 V: 3/0.35/0.2 A	Min. switching load: 500 mW (10 V/5 mA)
Ambient temperature	-20 ... +60 °C	Fall-delay time	250 ms ... 15 s (continuously adjustable)
Working pressure	Max. 20 bar (with process adapter)	Analog output (optional)	1 x 4 ... 20 mA (0 ... 20 mA), load < 500 Ω (Active)
Detection range	0 ... 2 m (dependent on application)	Weight	Approx. 172 g
Required material speed for detection	Min. 0.1 m/s		
Measuring frequency	K-Band 24.125 GHz; ±100 MHz		
Transmitting power	Max. 5 mW		
Dimension FlowJam S	Housing: L 107 mm / Ø 52 mm Thread: L 30 mm / Ø G 1½"		
Dimension FlowJam S Ex	Housing: L 155 mm / Ø 60 mm Thread: L 30 mm / Ø G 1½"		
Cable gland	M16 (Ø 5-10 mm)		
Weight FlowJam S	Approx. 560 g		
Weight FlowJam S Ex	Approx. 880 g		

SPECIFICATIONS

USE AS PRESSURE ADAPTER / TEMPERATURE ADAPTER

The FlowJam S sensor can be used at a pressure of 1 bar and process temperatures up to 80 °C.

For higher pressures (up to 20 bar) a pressure adapter made of POM, for higher temperatures a Tecapeek

adapter (max. 220 °C) and a ceramic adapter (max. +1000 °C) are available.

A process adapter for applications in the food industry is also available.

MOUNTING OF PRESSURE ADAPTER / TEMPERATURE ADAPTER

The mounting of the pressure adapter / temperature adapter is identical. It is screwed into a welded G 1½ inch thread neck, provided by the customer.

Only the ceramic adapter is supplied as a flange and must be mounted separately. The housing of the FlowJam S is screwed into the internal thread of the adapter.

TECHNICAL DATA

	Pressure adapter	Temperature adapter	Food adapter	High temperature adapter
Material	Stainless steel 1.4571 POM diaphragm	Stainless steel 1.4571 Tecapeek diaphragm	Stainless steel 1.4571 Tecapeek GF30 diaphragm	Steel Ceramic diaphragm
Temperature	-20 ... +80 °C	Max. +220 °C	Max. +220 °C	Max. 1000 °C
Pressure	Max. 20 bar	Max. 20 bar	Max. 20 bar	Max. 40 bar
Thread	G 1½" on both sides	G 1½" on both sides	G 1½" on both sides	G 1½" on sensor side
Wrench width	55 mm	55 mm	55 mm	17 mm



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