

SolidFlow 2.0

EUROTEC

Solid Volume Measurement

PROCESS MONITORING SYSTEMS FOR SOLIDS

Product Information



FEATURES:

- active roping compensation for highest reliability
- can be used in free fall and in pneumatics
- simple retrofitting using a welding socket
- no installations in the material stream
- almost all types of dust, powder and granules can be measured
- Throughput measuring up to 20 t/h
- ATEX-certified

certificated according to ATEX

TECHNOLOGY

USE

SolidFlow 2.0 has been specially developed for measuring solid volumes conveyed through pipelines.

SolidFlow 2.0 is used for online measuring:

- all types of dust, powder, granulates, etc.
- with particle sizes between 1 µm and 10 mm
- which are conveyed pneumatically
- or in free fall after mechanical conveyor systems

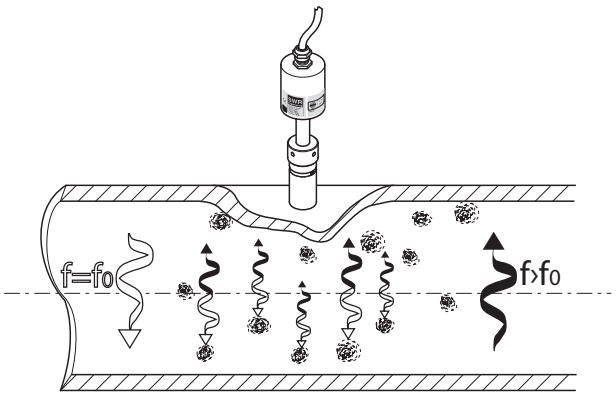
SolidFlow 2.0 is extremely easy to install and has a wear-resistant design.



SolidFlow 2.0 is the latest generation of microwave-based measuring systems for measuring the flow of solids.

Based on our many years of expertise, ENVEA Process has developed a second generation version of this sensor.

SolidFlow 2.0 is a reliable sensor which eliminates the disadvantages encountered in current technologies available on the market.



FUNCTION

The SolidFlow 2.0-sensor uses the latest microwave technology. The sensor is used exclusively in metal pipelines. The special integration of microwave technology creates the measurement field together with the metal pipeline. The microwave radiation in the pipeline is reflected by the solid particles and received by the sensor.

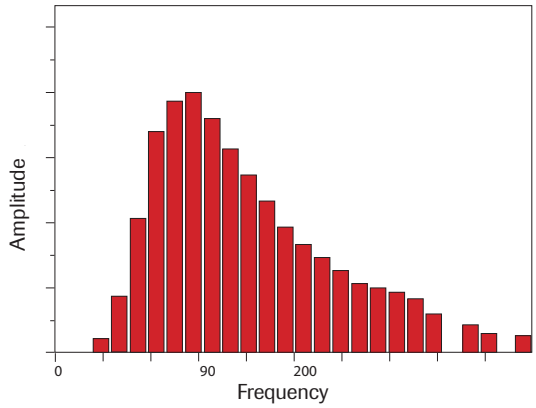
The frequency and amplitude of the received signals are analysed.

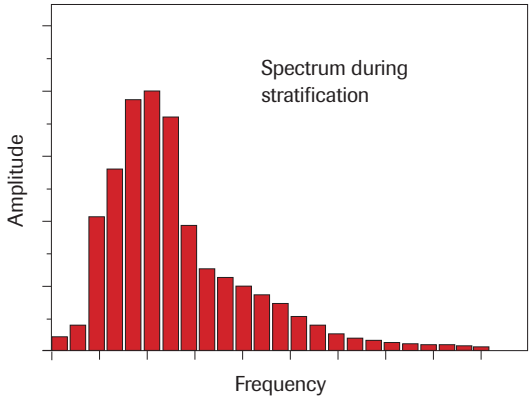
The sensor works like a particle counter, counting the quantity of flowing particles per unit of time. The frequency-selected evaluation system ensures that only flowing particles are measured while deposits are suppressed.

SolidFlow 2.0 features active stratification compensation which compensates measurement errors caused by stratification, in particular while materials are being pneumatically conveyed.

Based on new processing technology, the measurement signal is converted into its frequency spectrum which is used to detect the material's flow pattern. The sensor will be calibrated under process conditions. For the calibration the sensor raw values will be compare with a reference.

The illustrations show two frequency spectra for different flow conditions with similar mass flows. A software algorithm ensures that the measuring result is correct even with different flow conditions.



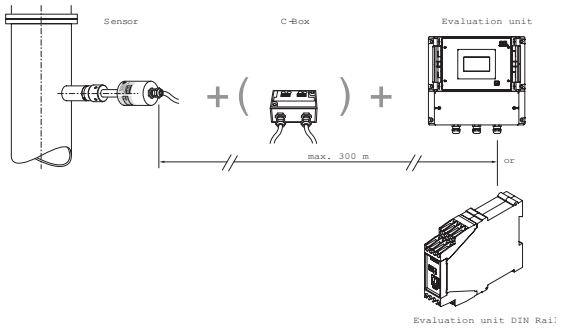


TECHNOLOGY

SYSTEM

A complete measuring point consists of the following components:

- Evaluation Unit in DIN Rail- or Field housing
- Sensor mount for welding to the pipe
- Sensor (union nut, spacer rings, sealing ring for adjusting to the wall thickness)
- Installation instructions
- Teflon sleeve (depend on application)
- C1- or C3-Box (optional)



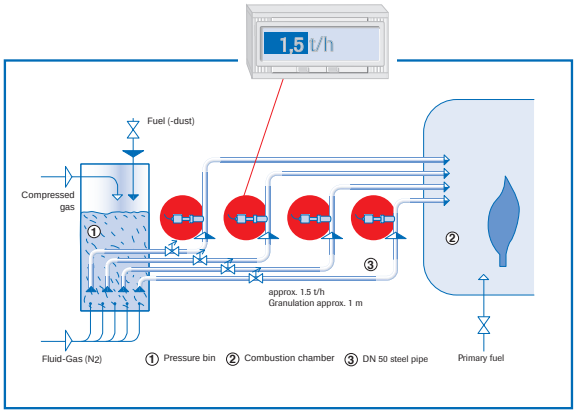
APPLICATION EXAMPLES

- **Pneumatik**

  At a boiler, dusts is conveyed as fuel into the combustion chamber.

  Each supply line is monitored by a SolidFlow 2.0 and the supply of fuel in each supply line is controlled.

  This enables accurate and uniform distribution of fuel quantities which is an essential requirement for optimum combustion.

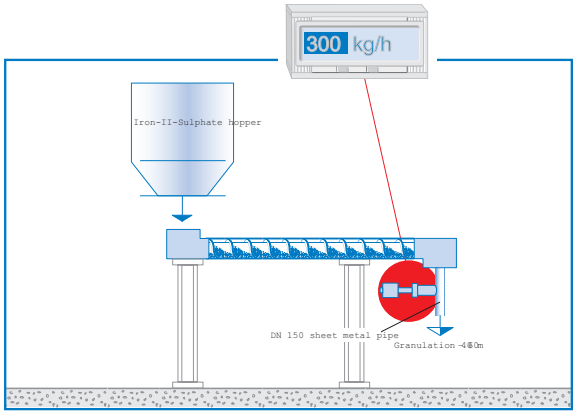


- **Freefall**

  A belt weigher records the amount of cement conveyed. This measurement is used as a guide value when metering the addition of iron(II) sulphate. This must be metered with a proportion of 0.2 ... 0.3 %.

  With SolidFlow 2.0, the actual value of the metered iron(II) sulphate is recorded and regulated by adjusting the screw conveyor‘s speed.

  The result is uniform product quality.



MOUNTING AND INSTALLATION

To install the sensor, the installation location must be determined according to the required inlet and outlet areas.

With pipe diameters larger than 200 mm, 2 or 3 sensors are used per measuring point and the sensors are arranged at angles of 90° or 120° to each other. In freefall applications (for example after screw conveyors or rotary feeders), an infeed section (drop height) of at least 300 mm is ideal.

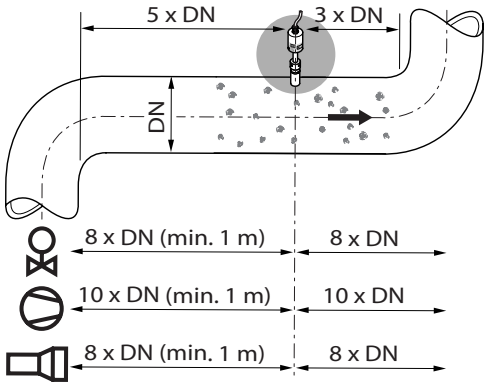
The sensor socket is welded on at the specified installation location. After this, a 20 mm-borehole is drilled through the sensor bracket and through the pipe wall. The sensor is then adjusted to the wall thickness, inserted and fixed with the aid of union nuts. Done!

Commissioning of the measurement takes place via the evaluation unit. The field housing provides a convenient, menu-driven entry of the parameters on the touch display.

The menu language can be freely selected, German, English and French are available.

An analogue output with 4 ... 20 mA, a changeover relay contact as well as a pulse output (open collector) are available for the evaluation of the sensor signals.

When using the DIN Rail transmitter, the parameters are entered via the ENVEA software.

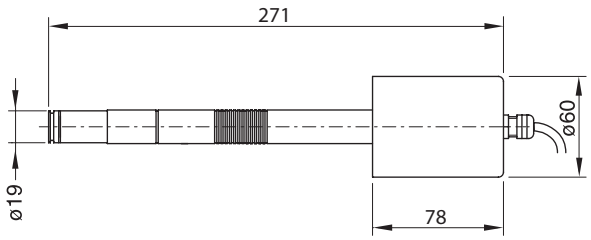


SPECIFICATIONS

SolidFlow 2.0

TECHNICAL DATA

Sensor	
Housing material	Stainless steel 1.4571
Protection type	IP65, DustEx zone 20 or GasEx zone 1 (optional)
Operating temperature	Front end of sensor: -20 ... + 80 °C Optional: -20 ... +220 °C Sensor electronic: 0 ... + 60 °C
Max. working pressure	1 bar, optional 10 bar
Working frequency	K-Band 24.125 GHz, ± 100 MHz
Transmitting power	Max. 5 mW
Weight	1.3 kg
Dimensions	Ø 60, Ø 20, L 271 mm
Accuracy	± 2 ... 5 % in calibrated range



Transmitter (DIN Rail)	
Power supply	24 V DC 310 %
Power consumption	20 W / 24 VA
Protection type	IP40 to EN 60 529
Ambient operating temperature	-10 ... +45 °C
Dimensions	23 x 90 x 118 mm (W x H x D)
Weight	Approx. 172 g
DIN rail fastening	DIN 60715 TH35
Connection terminals cable cross-section	0.2-2.5 mm² [AWG 24-14]
Current output	1 x 4 ... 20 mA (0 ... 20 mA), load < 500 Ω (Active)
Interface	ModBus RTU (RS 485) / USB
Pulse output	Open Collector - max. 30 V, 20 mA
Relay contact	Max. rated load: 250 V AC Max. peak current: 6 A Max. rated load 230 V AC: 250 VA Max. breaking capacity DC1: 3/110/220 V: 3/0.35/0.2 A Min. switching load: 500 mW (10 V / 5 mA)
Data backup	Flash Memory

Transmitter (field housing)	
Power supply	110 / 230 V AC 50 Hz (optional 24 V DC)
Power consumption	20 W / 24 VA
Protection type	IP65 to EN 60 52910.91
Ambient operating temperature	-10 ... +45 °C
Dimensions	258 x 237 x 174 mm (W x H x D)
Weight	Approx. 2.5 kg
Interface	RS 485 (ModBus RTU) / USB
Cable screw connectors	3 x M20 (4.5 - 13 mm Ø)
Connection terminals cable cross-section	0.2 - 2.5 mm² [AWG 24-14]
Current output	3 x 4 ... 20 mA (0 ... 20 mA), load < 500 Ω (Active)
Pulse output	Open Collector - max. 30 V, 20 mA
Relay contact	Max. rated load: 250 V AC Max. peak current: 6 A Max. rated load 230 V AC: 250 VA Max. breaking capacity DC1: 3/110/220 V: 3/0.35/0.2 A Min. switching load: 500 mW (10 V / 5 mA)
Data backup	Flash Memory

Via Lirone 60/i, Castel Maggiore (BO) 40013
e-mail: info@eurotecsrl.com Website: www.eurotecsrl.com
Tel: +39 051/6321595 C.F. 04103780377 P.I. 01596581205