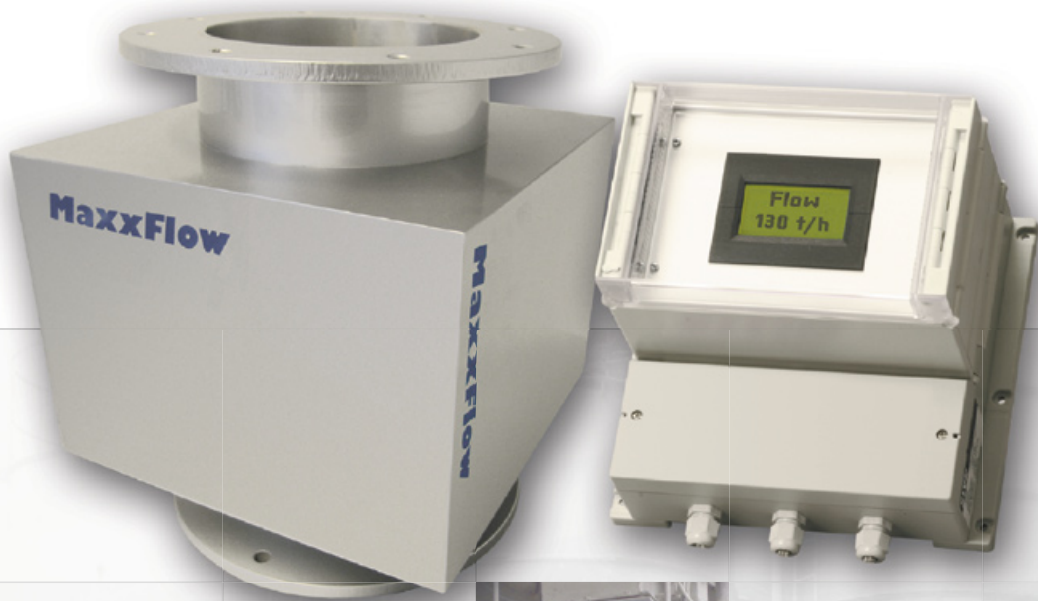


MaxxFlow

Measurement of Bulk Solids
for High Flow Rates



Using

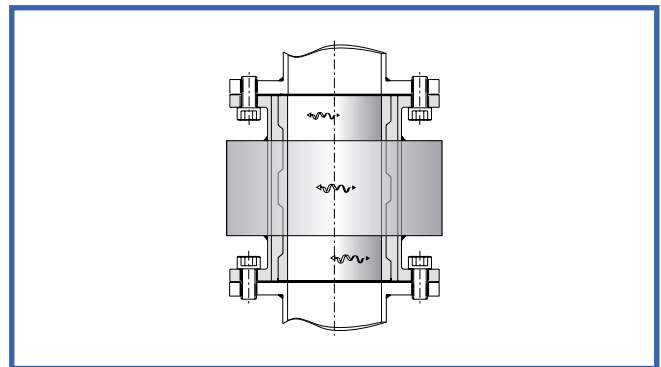
MaxxFlo is a measuring system especially developed for the measurement of high flow rates. Due to its completely open cross-section and its small height, the MaxxFlo is applicable everywhere, where so far only complex mechanical solutions, e.g. impact weighers or sensing plate systems were possible. The installation of the MaxxFlo is made in vertical pipes (free fall).



Function

In the measuring pipe a homogeneous measuring field is produced by special linking of a high frequency, electromagnetic alternating field. Solids, which are within this measuring field, absorb the energy of this alternating field. This leads to a measuring signal according to the concentration of the material conveyed in the measuring pipe (kg/m³).

By means of the same sensor technology within the measuring pipe the change of the alternating field is measured on two further places. These two sensors have a defined distance. The evaluation unit with its integrated correlator determines the time of the conveyed material between the two sensors. With the known distance the velocity of the solid is then determined (m/sec).



From the two measured sizes concentration (K) and velocity (V) as well as the known cross section (A) of the measuring pipe then the flow rate is determined according to: $Q = K \times V \times A$ and evaluated as a 4...20 mA-signal.

System

A complete measuring unit consists of the following components:

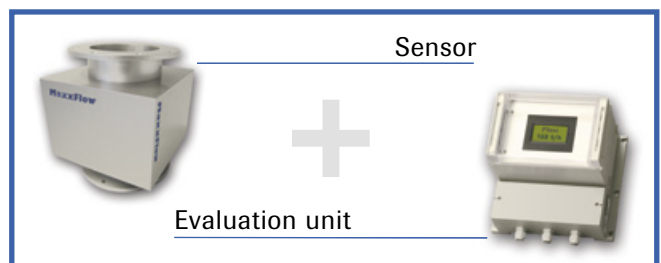
- Sensor (measuring pipe) for installation into the pipe
- Evaluation unit MFE 100

The evaluation unit is connected to the pipe by means of a 5-wired, shielded cable.

The maximum distance between pipe and evaluation unit is 300 m.

The MaxxFlo is available for round pipe cross sections with diameters DN 150/200/250.

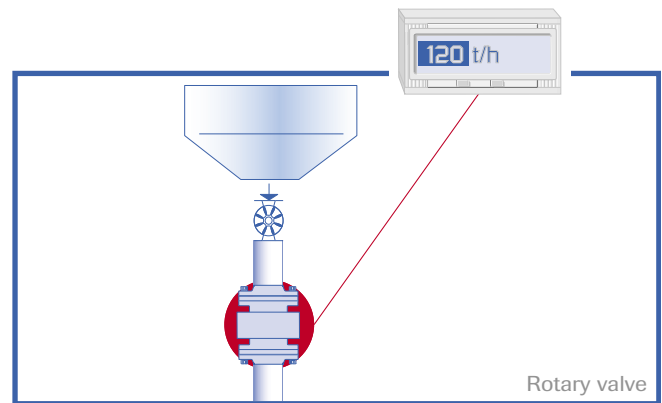
An optimal condition is given if the filling degree of the sensor is at least 20 %.



Applications - Practical Examples

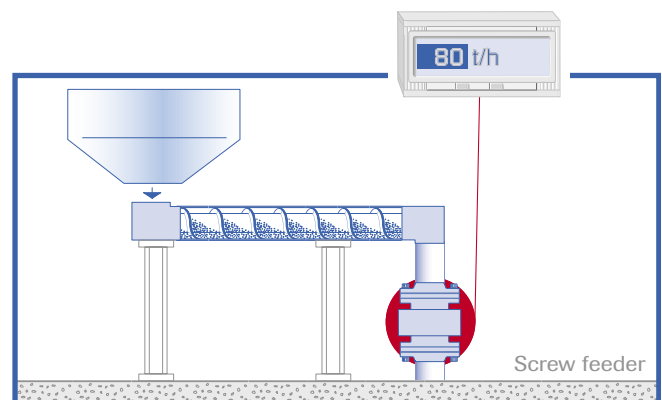
• Rotary valve / Screw feeder

The material discharge from a silo is often irregular despite constant number of revolutions of the rotary valve resp. the screw feeder. By means of the MaxxFLOW these fluctuations in the discharge quantity are recognized and can be compensated over a speed regulation of the conveyor.



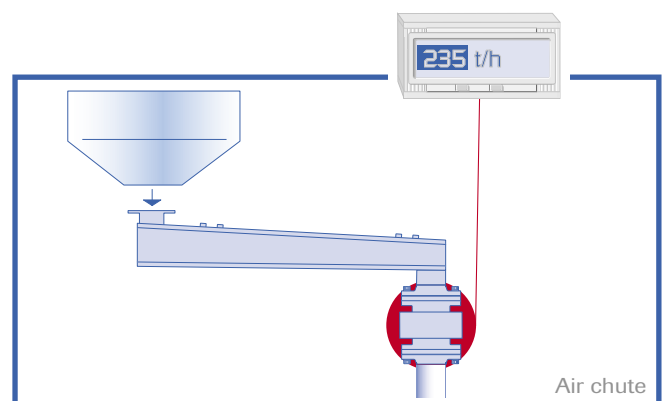
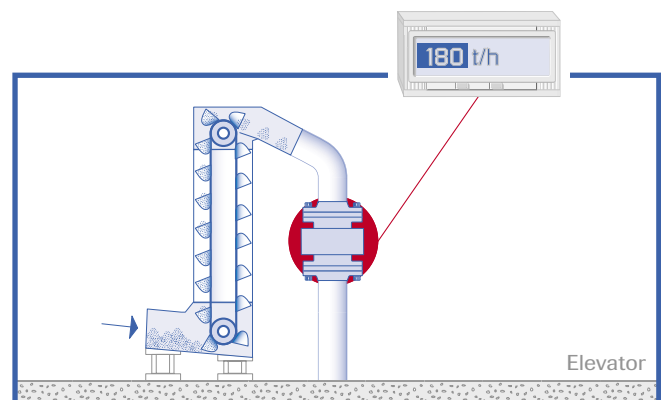
• Elevator / Air chute

In the cement industry there is a necessity to mix iron-II-sulphate or similar materials to the raw material. In order to get an exact and constant mixing proportion an accurate addition of the conveyed raw cement quantity is needed. The quantity specification supplied by the MaxxFLOW is used as reference number for the dosed material.



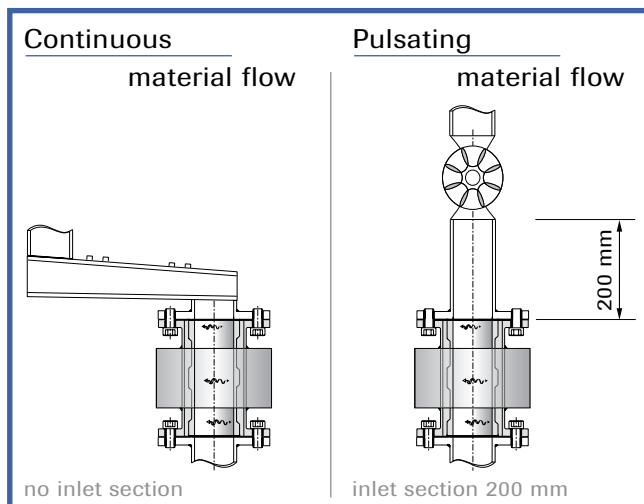
Benefits

- Installation cross section free, therefore columns and built up impossible
- Flow rates unlimited measurable
- Hardly no height necessary (400 mm)
- Measurement independent of the material's velocity
- Easy retrofitting
- No resp. maximal 200 mm inlet section necessary
- No outlet section necessary
- Maintenance free
- Measuring system without contact (no mechanics)



Mounting and Installation

With installation of the system after mechanical conveyors an inlet section of only 200 mm is necessary after pulsating conveyance such as rotary valves or elevators. Installation of the MaxxFLOW after air chutes or screw feeders can be made without an inlet section. At the fixed location the assembly of the measuring pipe will be made by means of flange installation.



Technical Data

Sensor	
Housing	Steel St 52, powder-coated (optional stainless steel 1.4541) Inner diameter: 150/200/250 mm, (larger resp. smaller diameters on request) Flange: DIN 2576
Inner pipe	GFK, PTFE, Ceramics
Protection category	IP64; dustEx Zone 22
Ambient temperature	-20 ... +60 °C
Medium temperature	-20 ... +80 °C (higher temperatures on request)
Max. working pressure	1 bar
Weight	Depending from the inner diameter
Dimensions	DN 150: 300 x 300 x 400 mm (L x B x H) DN 200: 344 x 344 x 400 mm (L x B x H) DN 250: 400 x 400 x 400 mm (L x B x H)
Accuracy	± 1...3% in calibrated measuring range
System accuracy	0.1%

Evaluation unit	
Supply voltage	230 VAC, 50 Hz / 24 VDC resp. 110 VAC (optional)
Power consumption	12 W
Operating temperature	-10 ... +45 °C
Dimensions	Field housing 320 x 225 x 320 mm (L x W x H)
Weight	approx. 2.5 kg
Additional Data	
Sensor communication	Fieldbus
Connectors / Conductor cross-section	0.2... 2.5 mm ² [AWG 24-14]
Output	Flow rate: 4 ... 20 mA Velocity: 4 ... 20 mA Load < 500 Ω
Serial output	RS 485, Mod-Bus-Protocol
Data protection	EEPROM
Screwed cable glands	4 x M16 (4.5-10 mm Ø)

Electrical Connection (Sensor)

Shield	+ 24 VDC	GND	RS 485 Signal A	RS 485 Signal B
GND	Wire 1	Wire 2	Wire 3	Wire 4

Electrical Connection (Evaluation unit)

230 VAC	230 VAC	Ground	Output + 4...20 mA	Output - 4...20 mA	Output + 4...20 mA	Output - 4...20 mA	Rel. N.O.	Rel. COM	Rel. N.C.	Pulse +	Pulse -	RS 485 ext A	RS 485 ext B	RS 485 GND	Digit. IN 1 (+)	Digit. IN 1 (-)	Digit. IN 2 (+)	Digit. IN 2 (-)	RS 485 intern A	Wire 4	RS 485 intern B	Wire 3	Power 24 VDC (-) GND	Wire 2	Power 24 VDC (+)	Wire 1
Supply unit	I-out	I-out	Min/Max	Flow	ModBus	D-in 1	D-in 2	Sensor																		
	Flow rate	Velocity	Failure relay	rate	Interface external																					