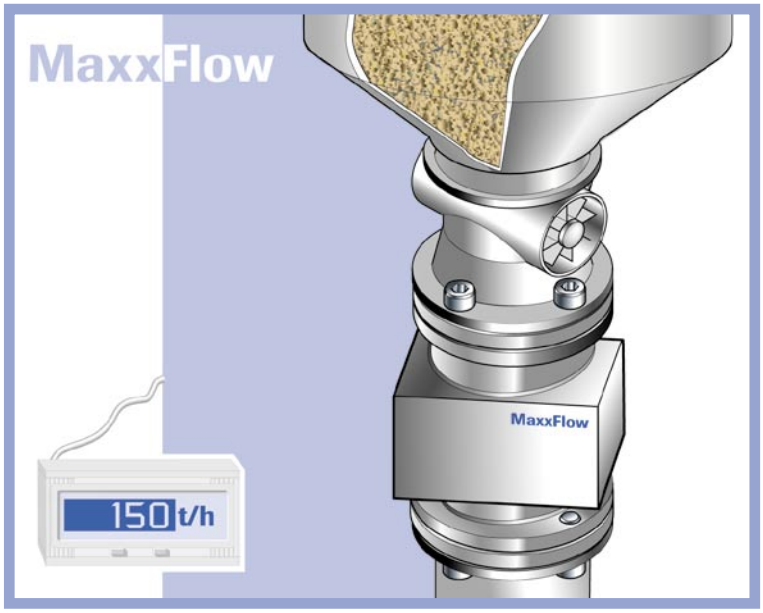
Product Information

SEMRAD

MaxxFlow

Measurement for Bulk Solids for High Flow Rates



Using

MaxxFlow 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 MaxxFlow is applicable everywhere, where so far only complex mechanical solutions, e.g. impact weighers or sensing plate systems were possible. The installation of the MaxxFlow can be made easily - no matter - how the configuration of the pipe is.

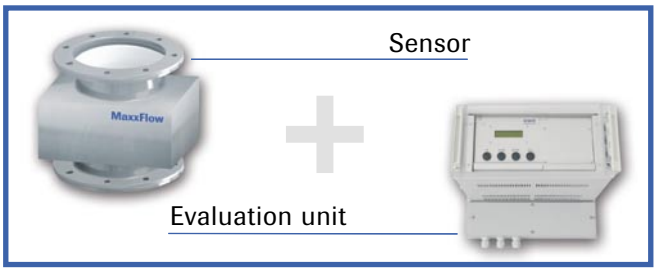
System

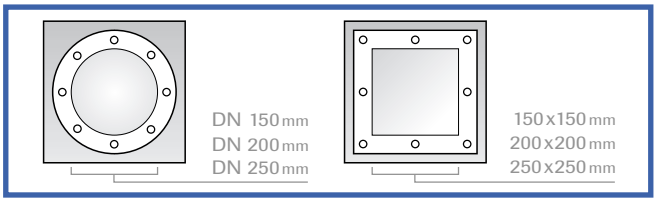
A complete measuring unit consists of the following components:

- 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.

There are two types of MaxxFlow. It can be implemented alternatively for round or rectangular cross-sections of a pipe. For round cross-sections following specifications are available with DN 150/200/250 mm . For the rectangular specifications 150x150/200x200/250x250 mm. Other sizes of both variants on request. An optimal condition is given, if the filling degree of the sensor is at least 20 %.

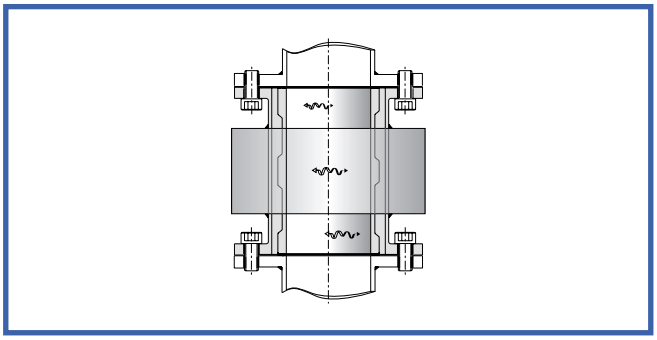




Function

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 to be conveyed in the measuring pipe (kg/m^3).

By means of the same sensor technology within the measuring tube on two further places the change of the alternating field is measured. 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).

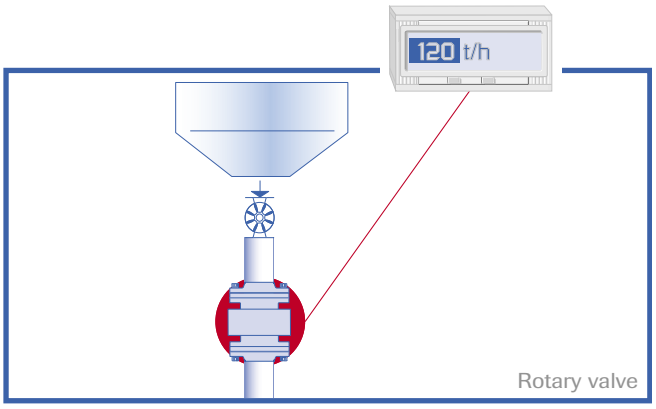


From the two measured sizes concentration (K) and velocity (V) as well as the known cross section (A) of the measuring pipe then the flow rate is determined according to: $Q = K \times V \times A$ and evaluated as a 4…20 mA-signal.

Applications – Practical Examples

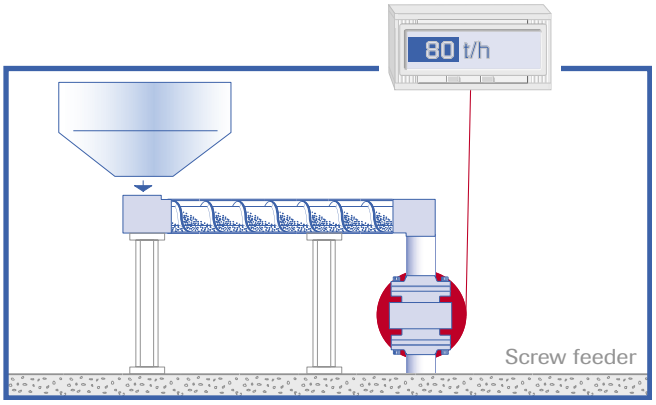
- **Rotary valve / Screw feeder**

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.



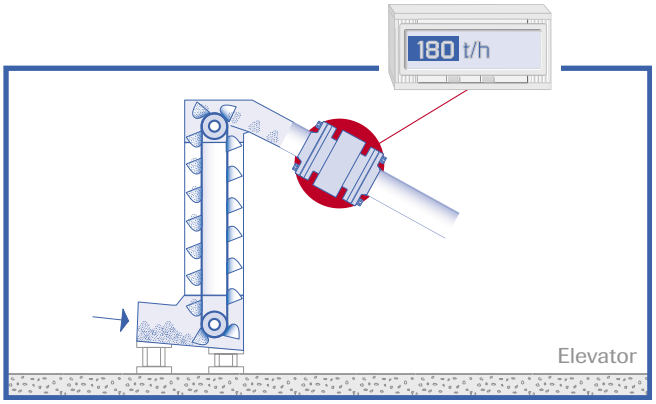
- **Elevator / Air chute**

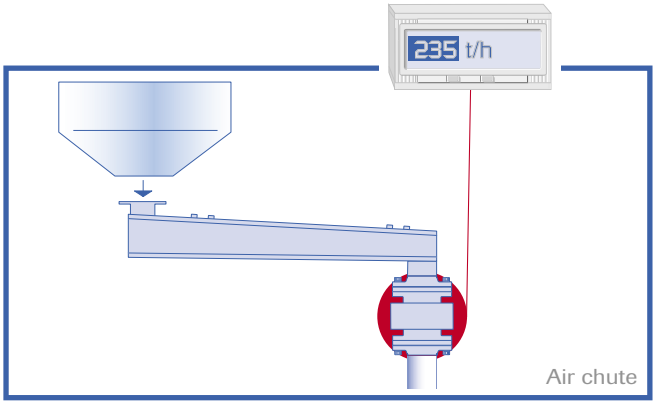
In the cement industry there is the necessity to mix iron-II-sulphate or similar materials to the raw material. In order to get an exact and constant mixing proportion an accurate addition of the conveyed raw cement quantity is needed. The quantity specification supplied by the MaxxFlow is used as reference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



Advantages

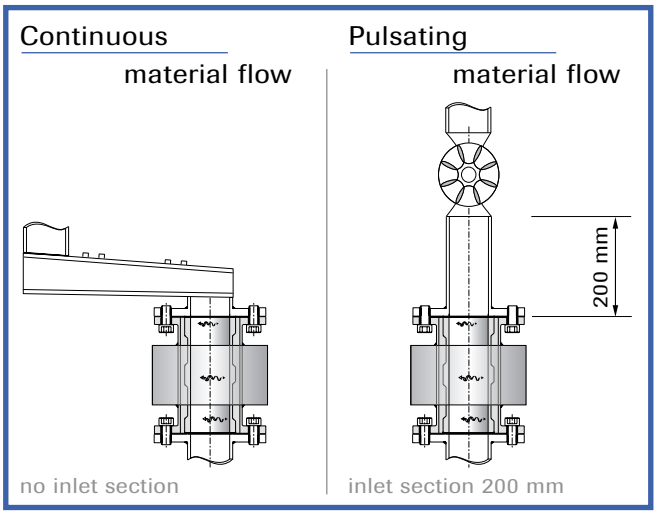
- Installation cross section free, therefore no columns and no built up possible
- Flow rates unlimited measurable
- Hardly no height necessary (400 mm)
- Measurement independent from the velocity of the material
- Easy retrofitting
- No resp. maximally 200 mm inlet section necessary
- No outlet section necessary
- Maintenance free
- Contactless measuring procedure (no mechanics)
- Installation independent from the configuration of the pipe or chute
- Installation both in round and rectangular conveying pipes possible





Mounting and Installation

With installation of the system after mechanical conveyors an inlet section of 200 mm is only necessary after pulsating conveyance such as rotary valves or elevators. Installations 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.

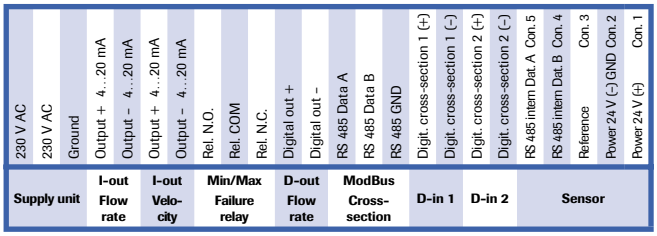


Technical Data

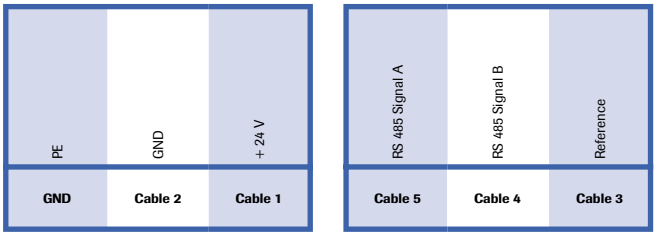
Sensor	
Housing	Steel St 52, powder-coated (optional stainless steel 1.4541) Inner diameter: 150/200/250 mm, (larger resp. smaller diameters on request) Flange: DIN 2576
Inner pipe	POM, PTFE, Ceramics
Protection category	IP65
Ambient temperature	-20 … +60 °C
Medium temperature	-20 … +80 °C (higher temperatures on request)
Max. working pressure	2 bar
Weight	Depending from the inner diameter
Dimensions	460* x 400 x 460* mm (L x W x H) * with pipe DN 250 resp. diameter 250 x 250 mm
Accuracy	± 1…3 % in calibrated measuring range
System accuracy	0.1 %

Evaluation unit	
Supply voltage	230 V, 50 Hz / 24 V resp. 110 V 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. 7.2 kg
Additional Data	
Inputs	2 x Velocity 0…20 mA 1 x Density 0…20 mA
Connectors / Conductor cross-section	0.2-2.5 mm² [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 (Evaluation unit)



Electrical Connection (Sensor)



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