

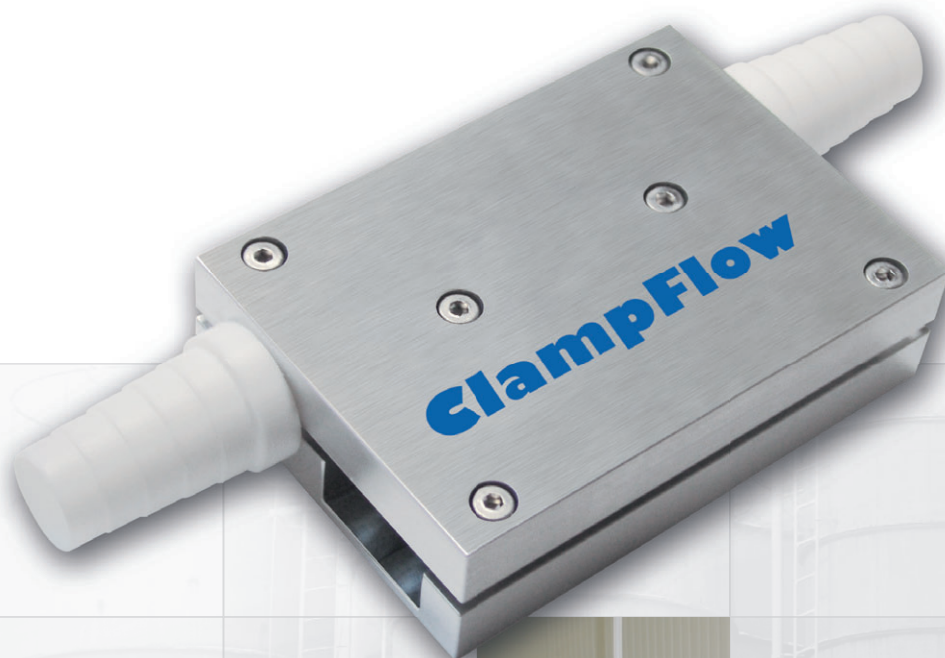


Introduces a new line of products by



ClampFlow

Flow Rate Measurement
of Solids in Hose Lines



Application

ClampFlow is a measurement system specifically designed for flow rate measurement and control of solids conveyed in flexible hose lines.

There are two premises regarding the flexible hose lines: they are made out of non-conducting material like plastics and their outer diameter is at most 0.78" (20 mm).

The sensor is available in two versions:

1 ClampFlow C:

"Measurement from the outside" by clamping the sensor around the line, so that the line does not have to be undone.

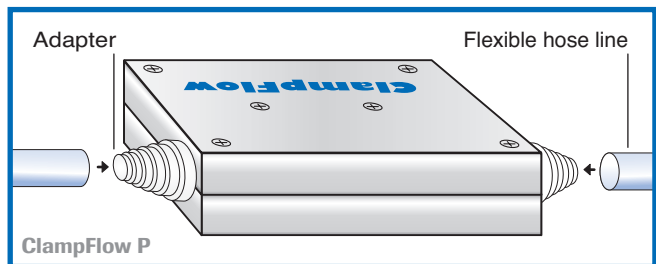
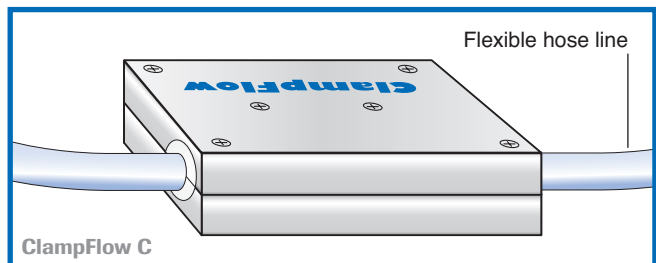
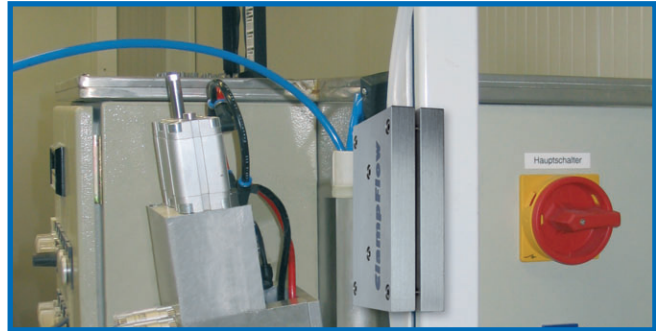
Both sensor housing parts (bottom and upper part), sandwich the hose line and have to be manufactured suitable to the outer diameter of the hose line.

Knowing that there are many types of hose lines (material, wall thickness, etc.), it is useful to make a test in-house with the hose line provided by the customer.

2 ClampFlow P:

It is a "plug-in" version which means both ends are attached on the sensor inlet and outlet side.

The sensor is equipped with an inner POM tube complying with the inner diameter of the hose line provided by the customer.



Function

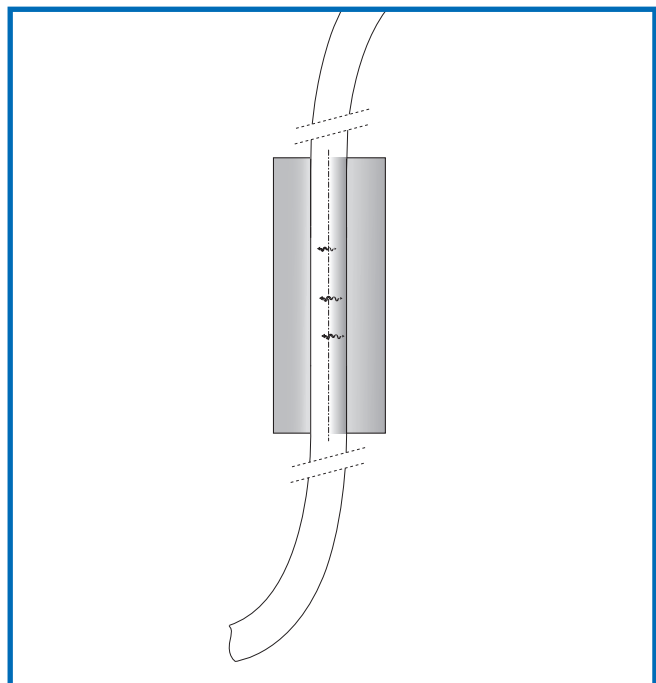
A homogeneous, high frequency, electromagnetic field is coupled in the flexible hose. Solids within this measuring field absorb the energy of this alternating field.

This leads to a measuring signal according to the concentration of the conveyed material (e.g.: kg/m³). In addition there is a continuous flow velocity measurement by means of a correlation procedure.

Thus, the flow rate is determined by both measured values, concentration (K) and velocity (v) as well as the known inner cross-section of the hose line (A), calculated by the formula

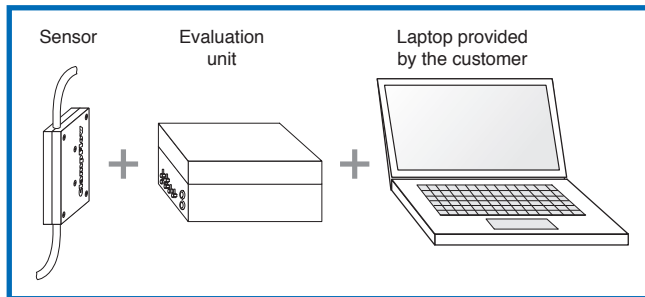
$$Q = K \times v \times A,$$

and outputted as a 4...20 mA signal.



System

A complete measurement system consists of the sensor and electronics. The commissioning is done by means of a laptop connected to the transmitter electronics. The programming software is part of the scope of delivery and is user-friendly.

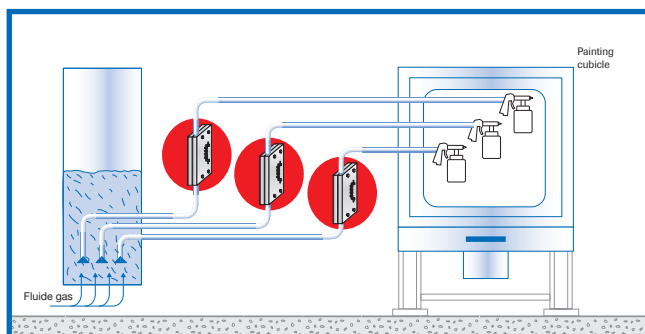


Applications – practical examples

• Powder coating

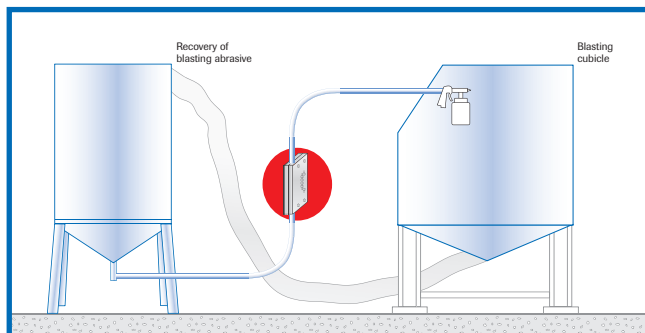
It is very difficult to assure a constant powder stream out of the spray jets during the lacquering of working pieces or devices. So far it has been almost impossible to prevent conveying dropouts, which has a bad influence on the lacquering result.

With ClampFlow there is a continuous control and measurement of the powder stream by which it is possible to regulate the flow rate.



• Blasting plant

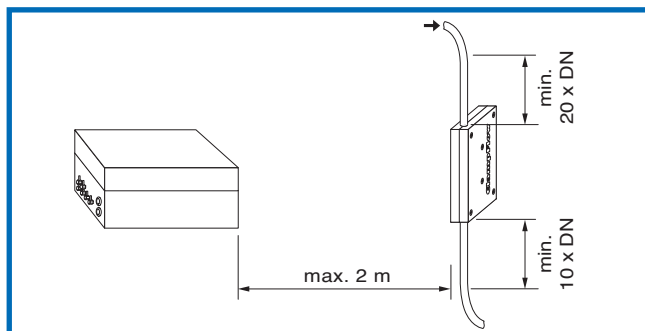
For processing of surfaces, different blasting adhesives are used. The necessity of constant flow rates applies here as well. ClampFlow measures and controls the blasting material flow. In addition, it is possible to totalize the amount of blasting materials used to help manage inventory.



Mounting and Installation

The mounting location is determined by the inlet and outlet straight-run requirements (see adjoining illustration). As you see under “Function”, either the flexible hose line is placed in and clamped in the sensor by screwing the sensor’s base and upper part, or the line is cut and both parts are plugged into both sensor sides. For the plugging there is no need for any tools.

The maximum distance between the sensor and transmitter is 2 m which is provided as part of the package.



Technical Data

Sensor	
Housing	Aluminium
Protection category	NEMA 4x (IP 65)
Ambient temperature	+14 ... +113°F (+10 ... +60°C)
Weight	4.4 lb (2.0 kg)
Dimensions	4.1 x 2.9 x 1.1 inch (L x H x D) (105 x 75 x 28 mm)

Evaluation unit	
Voltage supply	24 VDC
Power consumption	12 W
Protection category	IP40
Ambient temperature	+14 ... +113°F (+10 ... +45°C)
Weight	2.0 kg
Signal output	4 ... 20 mA for flow rate; relay output
Serial output	RS 485, modbus protocol
Dimensions	6.3 x 7.9 x 3.5 inch (L x H x D) (160 x 200 x 90 mm)

