

Technical bulletin

«Stationary» – the flow measurement

Magnetic-inductive flow measurement system for
volume metering of liquids in water and waste
water applications



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Applications

The need for implementing usage-based cost sharing is increasing also in public waste water services. In view of the ever greater required accuracy of the measurement the measuring system «Stationary» from STEBATEC offers important advantages:

- Flow metering in public waste water administration unions
- Waste water outflow metering for industry
- Metering drainage water
- Mine and process water measurements in mine and tunnel construction sites
- Cost sharing measurements
- Infiltration water measurement
- Rainwater measurement

Success features

The fully filled stationary flow measurement has advantages both in operation and in planning/design and installation.

- Guaranteed controlled measuring accuracy– intrinsically calibrated system
- Reliable, very difficult to tamper and influenced by solid materials, deposits or external factors
- Works also when flooded
- Maintenance-friendly: Can be maintained from outside the shaft
- No backwater, emergency overflow
- Long service life – no parts subject to wear and tear
- Fits most existing structures – no modifications required
- Installation possible without diverting the water flow
- Installation completed within one day

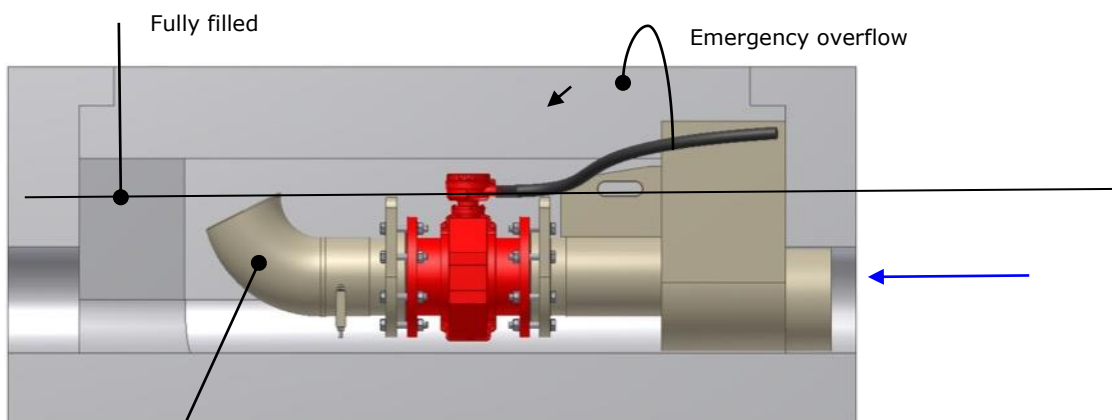
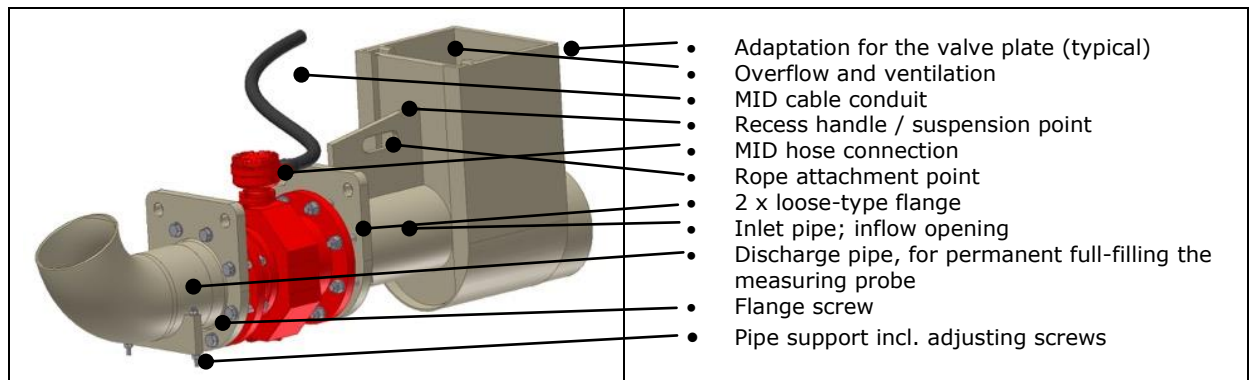
Technical layout

Function

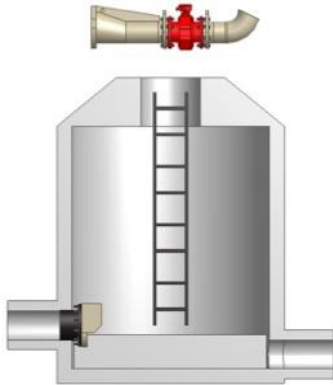
The duct is sealed by suitable means (see below) so that the medium flows through the measuring system. The discharge bend causes backwater, which fills the measuring probe completely.

The units are designed on the basis of key hydraulic data. The more water piles up in front of the system, the more water is pressed through it. So a smaller system can be used where much water piles up and conversely a larger system is needed when little water is impounded.

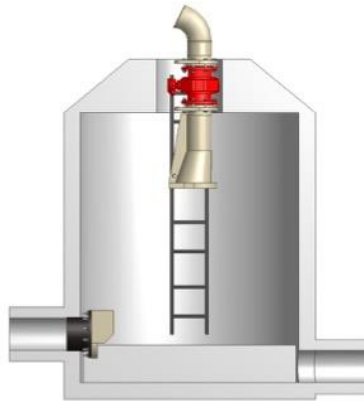
The system nominal width is designed according to the maximum volume measured – the duct size is not of relevance. Water that exceeds the measuring range is diverted through the overflow. The size of the overflow duct normally is the same as the cross section of the inflow pipe.



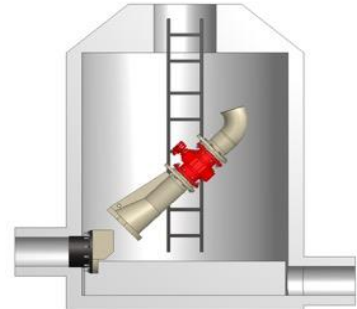
Installation procedure with suspension adaptation



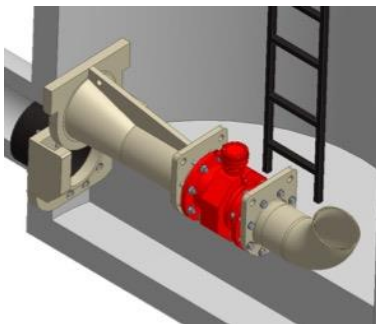
«Stationary» over shaft entry



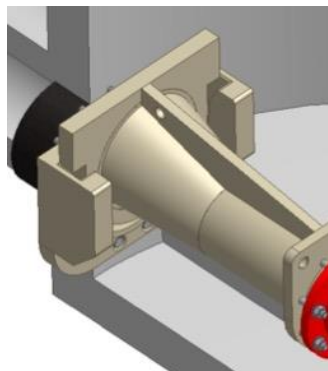
Put the «Stationary» upright and lower it on ropes



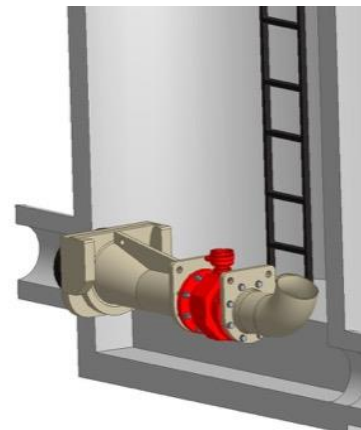
Move «Stationary» to horizontal position using rope control



Lower «Stationary» with arms in the catch shackles

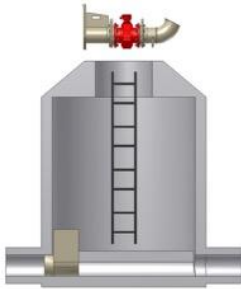


Engages automatically and is self-centering

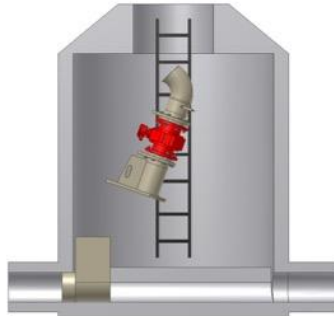


«Stationary» produces a tight seal under its own weight

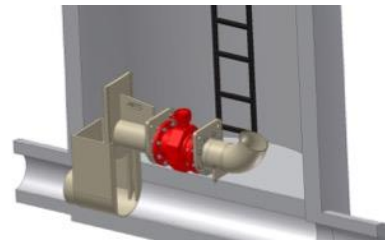
Installation procedure with valve plate adaptation and backwater box



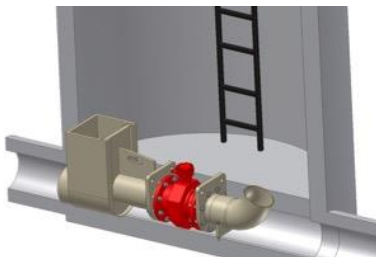
«Stationary» over shaft entry



Put the «Stationary» upright and lower it on ropes



Lower «Stationary» with valve plate in the guide rails of the adaptation



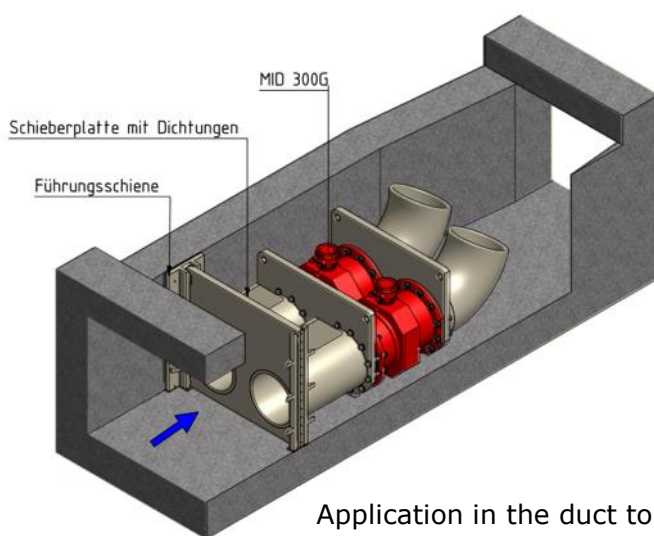
Lower «Stationary» to final position
«Stationary» produces a tight seal under its own weight



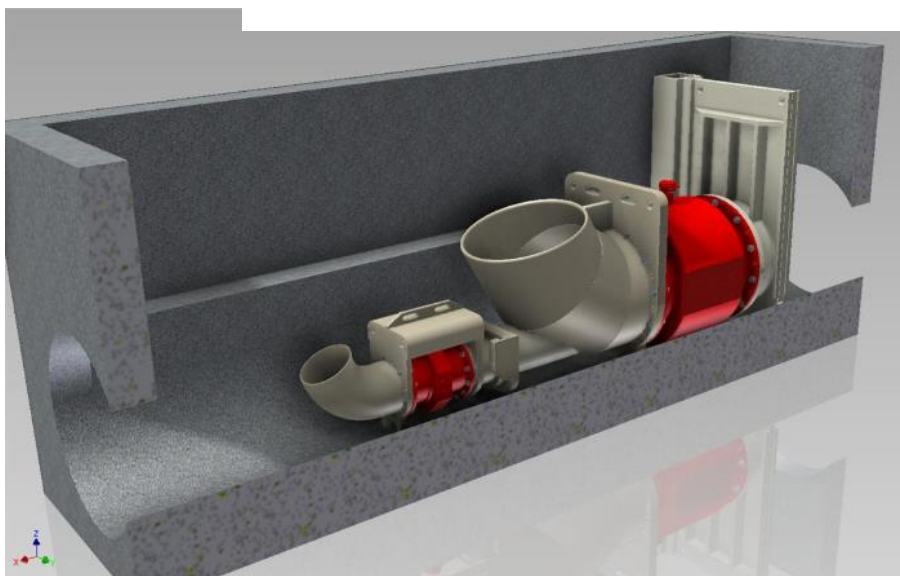
Photo of an application

Tandem version

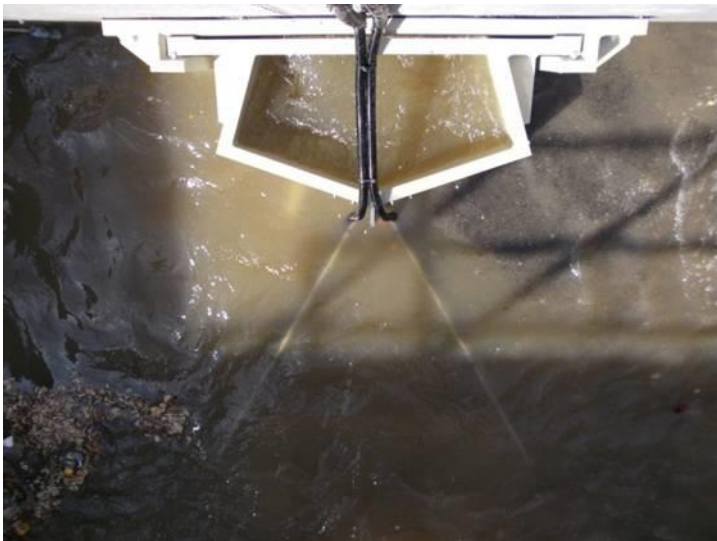
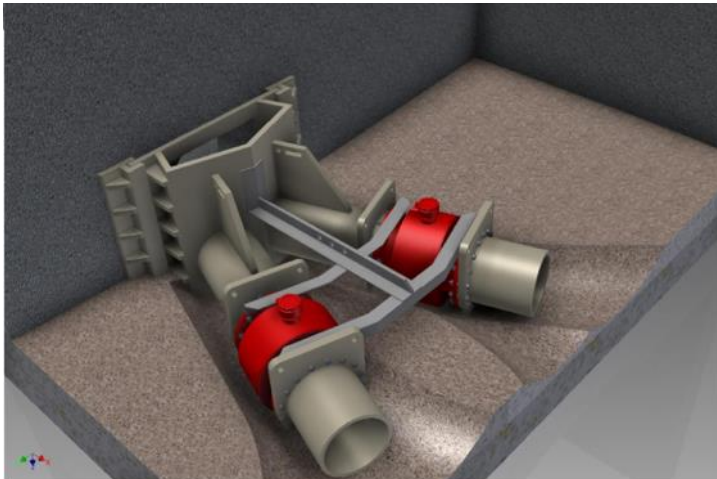
Where flow rates are high, large measuring units may be required. Because an MID must be fully filled to provide exact measuring data, a basic filling would be produced that – depending on the concrete situation – would have wide effects in the sewer network. To keep the necessary basic filling low, several systems can work in tandem.



Application in the duct to keep the basic filling low

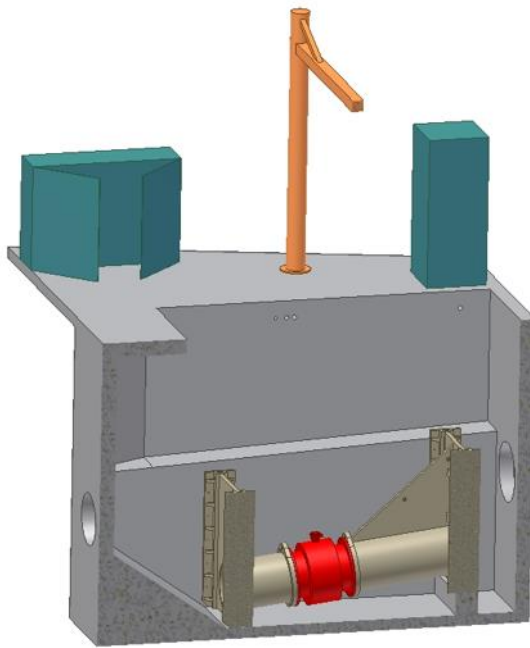


Application in the duct to measure very small volumes by an additional device with small nominal diameter



Tandem application in screw pump lifting system (inflow measurement in the RHV Braunau AT sewage treatment plant); full filling by adapted switch-off level of the lifting system.

Lowered design for reduced basic filling



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Use of the MID with DN 600 in a «measuring pit» as used in the city of Kloten. Twice a year, the system is lifted from the guide rails for cleaning and the pit flushed by a carriage.

Water level/backwater/impoundment

With the «Stationary» the water is impounded in the duct until the full level is obtained. Larger volumes of water require a higher pressure in order to press the water through the pipes. This causes the water level to rise and backwater forms in front of the measuring point. These points require special attention to avoid damage.



Advantages

«Stationary», the flow measuring system with guaranteed and controlled precision builds on three principles:

Control

Control and guaranteed accuracy are obtained in the in-house laboratory where the systems are tested under real-life conditions.

The effective measuring accuracy of every measuring and control system is defined on site and guaranteed. We even include the accounting accuracy.

Reliability

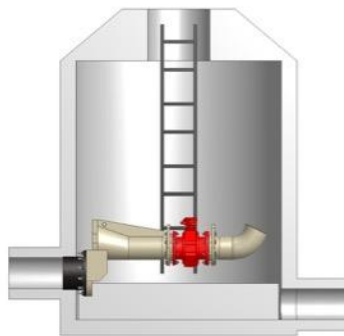
The core of the «Stationary» is the magnetic inductive flow measurement (MID) method. It measures the flow velocity across the full flow profile so that the measuring results are unaffected by solids or deposits in the flow. This gives the tried and tested measuring method the necessary reliability.

Maintenance friendly

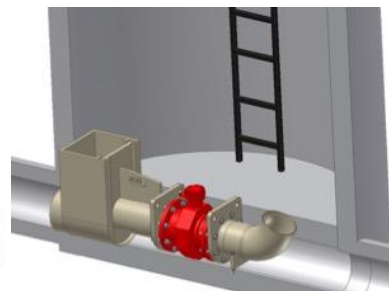
A long service life and high precision also depend on the state in which the system is maintained. Maintenance friendliness therefore is an import feature of the system. Set-up and layout are planned together with the customer and adapted to his needs and the available technical aids.



STEBATEC hydraulic lab



For maintenance, the «Stationary» is simply lifted up



«Stationary», adaptation with valve plate; in a 1 meter shaft

Material selection

Pipe wall material:	Polypropylene (PP)
Protection class:	IP 68
ATEX certification:	ATEX II 2GD EEX de, wired EEx e
Sealing material:	EPDM
Temperature range:	0 – 80 °C
pH range:	6 – 9
MID lining:	Hard rubber

Impoundment/flow: Data for guidance

Impounded from top edge of outflow	Stationary DN 100mm	Stationary DN 150mm	Stationary DN 200mm	Stationary DN 250mm	Stationary DN 300mm	Stationary DN 350mm	Stationary DN 500mm
200 mm	8 l/s	22 l/s	40 l/s	60 l/s	90 l/s	120 l/s	250 l/s
500 mm	15 l/s	32 l/s	60 l/s	95 l/s	140 l/s	190 l/s	350 l/s
800 mm	18 l/s	40 l/s	79 l/s	120 l/s	175 l/s	240 l/s	530 l/s
1000 mm	20 l/s	45 l/s	85 l/s	135 l/s	195 l/s	285 l/s	600 l/s

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