

Flow Measurement SITRANS F US Inline

Inline ultrasonic flowmeters

Overview

Siemens offers two types of ultrasonic flowmeters, inline flowmeters and clamp-on flowmeters. This offers the end user the maximum flexibility to choose the technology that best fits his needs. This chapter shows the inline versions.



SITRANS F US inline ultrasonic flowmeters measure flow of electrically conductive and non-conductive liquids.

Benefits

Greater flexibility:

- Sensor sizes from DN 50 to DN 3000 mm (2" to 120")
- Inline retrofit as 1-path and 2-path up to DN 3000 (120")
- Compact and remote transmitter installation
- HART and PROFIBUS PA communication
- Mains or battery powered solutions
- Dedicated transmitter portfolio for HVAC, power generation, utility and general industry as well as more demanding applications

Easier service:

- Comprehensive self-diagnostic for error indication and logging
- Exchange of the transducers without interrupting operation
- Battery lifetime of up to 6 years

Approvals/certificates:

- Custody transfer approvals within district heating
- ATEX
- Standard with calibration certificate

Application

Inline ultrasonic flowmeters are suitable for measuring the flow of liquids with good acoustic permeability, independent of conductivity, viscosity, temperature, density and pressure.

max. 3 % solids

max. 3 % air and gas

max. 350 cSt

The main applications can be found in the following sectors:

Raw water intake for water treatment plants

Treated waste water

Power generation and utility

Oil and gas industry and petrochemical industry

Irrigation systems

Cooling water plants within the industry and in power stations

Plants transporting non-conductive liquids

HART/4 to 20 mA output

PROFIBUS PA

ATEX

Flow Measurement SITRANS F S Clamp-on

Clamp-on ultrasonic flowmeters

Overview



SITRANS F S clamp-on ultrasonic flowmeters provide highly accurate measurement while minimizing installation time and maintenance expense.

Benefits

- Easy installation; no need to cut pipe or stop flow
- Minimal maintenance; external sensors do not require periodic cleaning
- No moving parts to foul or wear
- No pressure drop or energy loss
- Wide turn-down ratio
- Choice of single and dual path versions to suit your operating conditions and requirements.

System performance

Approvals	ATEX Zone 2 IECEX Zone 2 FMc Class I Div. 2
Accuracy	- 0.5 ... 1 % for velocities above 0.3 m/s and >10 diameters straight run
Repeatability	- 0.25 % (based on ISO 11631)
Pipe size range	12.7 ... 10 m (0.5 ... 394")
Wall Thickness Range	0.64 ... 76.2 mm (0.025 ... 3.0")
Pipe material	Any sonically conductive material (steel, plastic, aluminum, glass, cement, ductile iron, copper)

Applications

SITRANS FS230 standard functions are suitable for a wide variety of liquid applications, including the following:

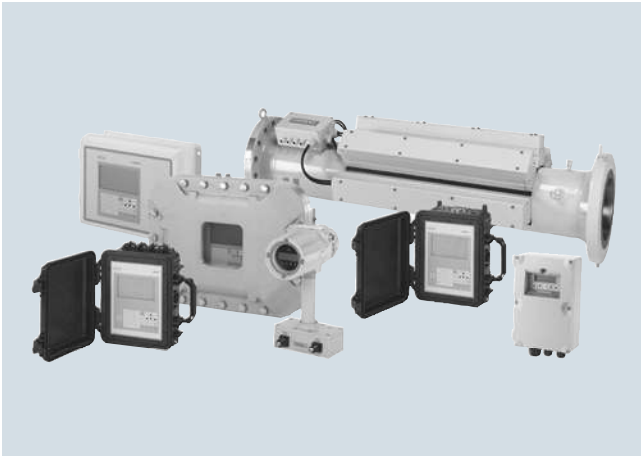
- Water industry**
 - Raw water
 - Potable water
 - Chemicals
- Wastewater industry**
 - Raw sewage
 - Effluent
 - Sludges
 - Mixed liquor
 - Chemicals
- HVAC industry**
 - Condensers
 - Hot and cold water systems
- Power industry**
 - Nuclear
 - Fossil
 - Hydroelectric
- Processing industry**
 - Process control
 - Batching
 - Rate indication
 - Volumetric and mass measurement

SITRANS FS230 hydrocarbon functions are ideal for applications carrying crude oil, refined petroleum or liquefied gas.

Standard volume (high end system)

- Standard (net) volume flow measurement
- Suitable for use in leak detection systems
- Mass flow output measurement
- Chemical and petrochemical processing
- Precise identification of interfaces on multi-liquid pipelines
- Product identification
- Standard density indication
- Applications with multiple liquids having a wide viscosity range
- Automatic gross volume compensation due to viscosity

Overview



SITRANS F US clamp-on ultrasonic flowmeters provide highly accurate measurement while minimizing installation time and maintenance expense.

Benefits

- Easy installation; no need to cut pipe or stop flow
- Minimal maintenance; external sensors do not require periodic cleaning
- No moving parts to foul or wear
- No pressure drop or energy loss
- Wide turn-down ratio
- Choice of single, dual or multiple channel versions and a variety of enclosures - to suit your operating conditions and requirements

Application

SITRANS F US clamp-on ultrasonic flowmeters have seven product families, each targeting specific applications:

SITRANS FUS1010 Standard and SITRANS FUP1010 Portable flowmeters are suitable for a wide variety of liquid applications, including the following:

- Water industry
 - Raw water
 - Potable water
 - Chemicals
- Wastewater industry
 - Raw sewage
 - Effluent
 - Sludges
 - Mixed liquor
 - Chemicals
- HVAC industry
 - Chillers
 - Condensers
 - Hot & cold water systems
- Power industry
 - Nuclear
 - Fossil
 - Hydroelectric
- Processing industry
 - Process control
 - Batching
 - Rate indication
 - Volumetric and mass measurement

SITRANS FUE1010 Energy flowmeters are ideally suited to thermal energy/power industry applications, including:

- Chilled water sub-metering
- Hot water sub-metering
- Condenser water
- Glycol
- Thermal storage
- Lake source cooling

SITRANS FUH1010 Oil flowmeters are ideal for applications carrying crude oil, refined petroleum or liquefied gas. There are three application areas: Interface detection, precision volume and standard volume.

Interface detection

- Precise identification of interfaces on multi-liquid pipelines
- Product identification
- Density indication

Precision volume

- Applications with multiple liquids having a wide viscosity range
- Automatic gross volume compensation due to viscosity changes

Standard volume (High end system)

- Standard (net) volume flow measurement
- Suitable for use in leak detection systems
- Mass flow output measurement
- Interface detection
- Scraper ("pig") detection
- Chemical and petrochemical processing

SITRANS FUG1010 Gas flowmeters are ideal for most natural and process gas industry applications, including:

- Checkmetering
- Allocation
- Flow survey verification
- Production
- Storage

SITRANS FST020 Basic flowmeters are suitable for most clean liquid applications, including the following:

- Water & wastewater industry
 - Potable water
 - Wastewater, influent & effluent
 - Processed sewage, sludge
- Chemical feed industry
 - Sodium hypochlorite
 - Sodium hydroxide
- HVAC & power industries
 - Coolant flow
 - Fuel flow
- Process control
 - Chemicals
 - Pharmaceuticals



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