FLEXIM

In partnership with you

FLEXIM is an active leader in many areas of process instrumentation. As a worldwide pioneer in non-intrusive flow measurement of liquids and gases, FLEXIM has been leading the way in ultrasonic clamp-on flow metering for more than 25 years. In addition to non-intrusive flow measurement, FLEXIM specialises in innovative online process analysers using ultrasonic technology and refractometry.

Year after year, our Berlin based company continues its substantial investment in research and development in order to maintain and further improve its position as a technology leader. In keeping with its core principles, FLEXIM takes customer feedback very seriously. Every generation of FLEXIM's products is directly driven by customer and industry needs.

The FLEXIM commitment to customer service

FLEXIM considers itself not only a manufacturer of measuring instruments, but also a provider of technical and consulting services. These services include instrument rentals, on-site measurements, laboratory analysis, project handling, training, commissioning and consulting services.

The company's focus and dedication are directed towards providing the highest quality equipment with the best support and service possible.

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Technical facts

| FLUXUS® H721	Clamp-on ultrasonic measuring system for non-invasive standard volume flow measurement and API determination of hydrocarbons
Measuring quantities	flow: operating volumetric flow rate, standard volumetric flow rate according to ASTM 1250/ TP25/4311, flow velocity, mass flow rate
	→ HPI: API gravity, density, normalised density
	→ interface detection: slope of the HPI physical quantities
	→ fluid detection: according to fluid table
Measurement uncertainty	
Volumetric flow rate	±1 % of reading ±0.005 m/s
Transit time (HPI functions)	
repeatable	$1/(50 \cdot f_\alpha) \pm 10^{-4} \cdot t$
absolute	$1/(5 \cdot f_\alpha) \pm 10^{-4} \cdot t$
	f_α – transducer frequency, t – total transit time e.g. for transducers with transducer frequency M (f_α = 1 MHz): repeatable: 20 ns $\pm 10^{-4} \cdot t$, absolute: 200 ns $\pm 10^{-4} \cdot t$
Transmitter	
Explosion protection	ATEX/IECEx zone 2
Power supply	100 ... 230 V AC / 50 ... 60 Hz, 12 / 24 V DC
Outputs	4 - 20 mA active, 4- 20 mA HART active / passive, pulse / frequency / binary
Inputs	Pt100 / Pt1000, 4 - 20 mA active /passive, binary
Digital communication	Modbus RTU/TCP, HART, Profibus PA, Foundation Fieldbus
Available transducers	
Explosion protection	ATEX/IECEx Zone 2, FM Class I /Div 2
Pipe size range (inner diameter)	7 mm ... 1600 mm
Temperature range (pipe wall)	-40 °C ... +240 °C

Processing – Storage – Allocation - Distribution

FLUXUS® H721

Clamp-on Ultrasonic Standard Volume Flow Measurement and API Determination of Hydrocarbons

- Internal flow computer
- Flexible and simple parameterization
- Pipe integrity
- Tank farms
- Product quality
- Check metering

FLEXIM
when measuring matters

FLUXUS® H721

Standard Volume Flow Measurement and API Determination from the Safe Side
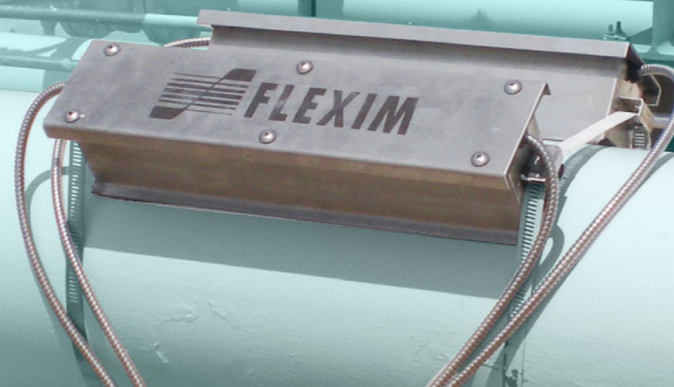
Key features measure and calculate

Non-invasive ultrasonic flow meter measures: volume flow, sound speed, temperature and computes pressure where necessary.

Internal HPI flow computer calculates: API gravity, operational density, density at base conditions and kinematic viscosity.

Volume correction factor with temperature and pressure compensation for liquid hydrocarbons in accordance with industry standard algorithms such as ASTM1250, GPA TP25 and D4311.

Flexible and simple parameterization

FLUXUS® H721 is equipped with a database for a wide range of applications from light hydrocarbons (LPG, NGL, TP25 liquids) to crude oils/refined products (ASTM1250 liquids) to heavy hydrocarbons (asphalts D4311), see table.
Application-specific parameterization is possible via an editable table on the transmitter with liquid names and specific properties (density, API).

Table of typical hydrocarbon products

Name	API gravity	Density at 15 °C [kg/m³]	Sound Speed at 15 °C [m/s]
LPG	100 ... 150	502 ... 611	768 ... 998
Butane	111	581	951
Pentane	93	630	1051
Naphtha	70 ... 85	653 ... 702	1152 ... 1213
Gasoline	47 ... 68	709 ... 792	1221 ... 1326
Kerosene	37 ... 50	779 ... 839	1309 ... 1385
Crude Oil	29 ... 45	801 ... 881	1337 ... 1439
Heating Oil	22 ... 37	839 ... 921	1385 ... 1491
Fuel Oil	17 ... 22	921 ... 952	1491 ... 1532
Marine Fuel	11 ... 17	952 ... 992	1532 ... 1607
Bitumen/Asphalts	5 ... 10	999 ... 1036	1617 ... 1666

Pipe integrity

The calculation of standard volumes allows the balancing of different measuring points in order to monitor the integrity of pipeline systems. The pipeline systems can be single or multiple products. With Modbus interface, measuring points can be compared over long distances.

The H721 meter can be used as a stand alone leak detection system or used in conjunction with a leak detection system.

Tank farms

Liquids are detected if the measured properties match the parameterization in a fluid table. This table can be edited by the user on the field device and adapted to the specific HPI application. A slope parameter can be used to output time-dynamic process variables for batch/interface detection.

Product quality

In hydrocarbon transport processes, typical quality characteristics can be monitored. For this purpose, the operating density, the standard density and the API gravity are output as process parameters in adjustable units.

Check metering

FLUXUS® H721 can be used to verify other types of custody transfer meters or vital metering locations. The particularly advantageous non-invasive installation allows a check of various third party flow meters.

Switching to operating volume flow, standard volume flow or mass flow in all common units is easily possible.

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