

for more than 100 years Process Instrumentation



1911-2011

# Product Range



 made  
in  
Germany

**Heinrichs Messtechnik GmbH**

**1911 - 2011**

Heinrichs Messtechnik can look back to a company tradition of 100 years.

The history of the company began with the construction of variable area flowmeters.

As soon as electronics conquered measuring technology, the product portfolio could be extended by magnetic-inductive flowmeters.

As one of the first European companies, Heinrichs designed a mass flowmeter working with the Coriolis principle, 25 years ago.

The adaptation of microprocessor technologies by the end of the nineties lead to more communication technologies as e. g. HART® and Profibus®.

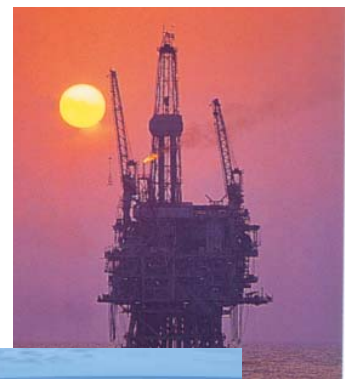
Following main industries are served:

Chemical / Petrochemical  
Oil and gas  
Energy and Engineering  
Heinrichs offers competence, flexibility and tailor-made solutions as e. g. special materials, high temperature designs, high pressure designs, heat jacketing

**Your measuring problem is our challenge.**



## Company Profile



## Diverse Application Fields



### Petrochemical Industry

Extreme temperature on liquids, gases and steam - difficult conditions - we help you to cope with processes which become more and more complex.



### Power Stations

Beside conventional EPCs we deliver also measuring technology into nuclear power plants and thus we are familiar with the corresponding demands. Special for us is normal.



### Laboratory Equipment

The laboratory - here everything begins - since more than 50 years we produce low volume instruments for lab use - if needed also for special applications.



### Water and Waste Water

Present right from the start - since the 1960's we manufacture electromagnetic instruments and level meters with highest reliability.



### Chemical Industry

Reliable partner for the chemical industry since more than 100 years. We supply our instruments nearly to all well known chemical companies. With our great variability of instruments you cover nearly the most applications. Benefit from our experience.



### Oil and Gas

We solve even extreme applications for high pressures and viscosities. We are used to rough environmental conditions. Here reliability is our highest mark.

### Shipbuilding

Since decades we deliver solutions for flow and level into the shipbuilding industry. Robustness and durability are also demanded besides reliability.

### Machine and Plant Engineering

You need instruments which are not standard or which are adapted to your demands? We develop solutions for your machines and plants together with your engineering.



Flowmeters

**Coriolis Mass Flowmeter**

Measurement of Mass-, volume, density and temperature  
 Material: stainless steel 1.4571 or 1.4404, Hastelloy C22 or C4, tantalum, other materials on request

**Model: TM (Universal Line)**  
 High Accuracy · special versions available · heating jackets



Measuring range: Water: 0 - 0.8 kg/h...0 - 65 000 kg/h  
 $t_{max} +260\text{ }^{\circ}\text{C}$ ;  $p_{max}$  40 bar (up to 900 bar on request)  
 Connection: flange DN 10 - 100; ANSI 1/2" - 4"; JIS, NPT  
 Accuracy  
 Liquids:  $\pm 0,1\%$  of reading  $\pm$ ZP-stability  
 Gases:  $\pm 0,5\%$  of reading  $\pm$ ZP-stability

**Coriolis Mass Flowmeter**

Mass flow, density, temperature and volume flow  
 Material: stainless steel, Hastelloy C22 or C4

**Model: TMU (Classic Line)**  
 High measuring span



Measuring range: 0 - 60 kg/h...0 - 2 200 000 kg/h  
 $t_{max} +260\text{ }^{\circ}\text{C}$ ;  $p_{max}$  40 bar/300 lbs (up to 750 bar on request)  
 Connection: flange DN 10 - 400 / ANSI, JIS  
 Accuracy  
 Liquids:  $\pm 0,1\%$  of reading  $\pm$ ZP-stability  
 Gases:  $\pm 0,5\%$  of reading  $\pm$ ZP-stability

**Coriolis Mass Flowmeter**

Compact mounting length, compatible with different PD meters  
 Material: Stainless steel, Hastelloy, tantalum

**Model: TMR (Kompakt Line)**  
 Replacement for oval gear flowmeter

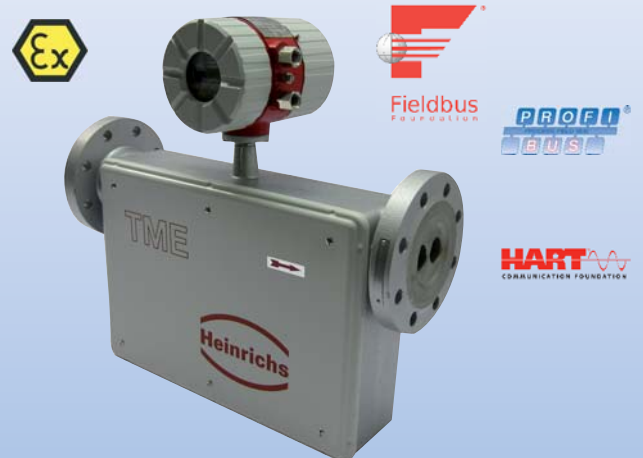


Viscosity range: 0.3 - 50 000 mPas  
 Measuring range: 0 - 120 kg/h...0 - 120000 kg/h Water  
 $t_{max} +260\text{ }^{\circ}\text{C}$ ;  $p_{max}$  40 bar/600 lbs  
 Connection: flange DN 20 - 100 / ANSI 3/4" - 4"  
 Accuracy:  $\pm 0.1$  (0.15) % of reading  $\pm$ ZP-stability

**Coriolis Mass Flowmeter**

Mass flow, density, temperature and volume flow  
 Material: stainless steel, Housing: cast iron

**Model: TME (Economy Line)**



Measuring range: Water: 0 - 60 kg/h...0 - 60 000 kg/h  
 $t_{max} 180\text{ }^{\circ}\text{C}$ ;  $p_{max}$  40 bar/300 lbs  
 Connection: flange DN 10 - 80 / ANSI 1/2"-3"  
 Accuracy  
 Liquids:  $\pm 0.15\%$  of reading  $\pm$ ZP-stability  
 Gases:  $\pm 0.5\%$  of reading  $\pm$ ZP-stability



# Flowmeters/-switches

## Coriolis Mass Flowmeter

High pressure version  
For high pressure - filling applications (H2)



Measuring range: up to 600 kg/h gas  
 $p_{max}$  up to 1000 bar

## Coriolis Mass Flowmeter

Material: stainless steel, Hastelloy C22 or C4, Housing: cast iron  
Economy series **TME / UMC4**  
Transmitter series **UMC4**



Measuring range: 0.4 ... 60 000 kg/h  
 $t_{max}$  180 °C;  $p_{max}$  40 bar / 300 lbs  
Connection: flange DN 10 - 80 / ANSI 1/2" - 3"  
Accuracy  
Liquids:  $\pm 0.15\%$  of reading  $\pm ZP$ -stability  
Gases:  $\pm 0.5\%$  of reading  $\pm ZP$ -stability

## Vortex Flowmeter INLINE-version/ INSERTION-version

Material: stainless steel  
Model: DVH/DVE



Measuring ranges  
Water: 0.2 - 5 ... 32 - 970 m<sup>3</sup>/h (DVH)  
Water: 5.2 - 157 ... 284 - 8537 m<sup>3</sup>/h (DVE)  
 $t_{max}$  400 °C;  $p_{max}$  100 bar  
Process connection  
DN 15 - 200 / ANSI 1/2" ... 8" (DVH)  
2" NPT, DN 50, ANSI 2" (DVE)  
Option: integrated temperature and pressure sensor, wafer type,  
Installation / removal device  
for pipes DN 50/2" - 600/24"  
Accuracy  
DVH: water:  $\pm 0.7\%$  of reading; gas:  $\pm 1\%$  of reading  
DVE: water:  $\pm 1.2\%$  of reading; gas/steam:  $\pm 1.5\%$  of reading

## Vortex Flowmeter

Analogue output / Frequency output / Compact electronic /  
Switch / Counter / Dosing Electronic  
Material: PPS/brass, PPS/stainless steel  
Model: DVZ



Measuring range: Water: 0.5 - 4.5 l/min ... 10 - 100 l/min  
 $t_{max}$  80 °C;  $p_{max}$  20 bar  
Connection: G 1/4 ... 1, 1/4 ... 1" NPT  
Accuracy:  $\pm 2.5\%$  of full scale



Flowmeters

**Magnetic Inductive Flowmeter**

for conductive liquids

Lining materials: hard rubber, soft rubber, Wagunit, PTFE

Model: EP/EPX/UMF2/UMF3



Measuring range: Water: 0 - 10 m/s

1 ... 40300 m³/h

Min. conductivity

Liquids in general:  $\geq 5 \mu\text{S/cm}$

Demineralsed water:  $\geq 20 \mu\text{S/cm}$

$t_{\text{max}}$  150 °C  $p_{\text{max}}$  40 bar

Connection: flange DN 10 - 1200 / ANSI ½" ... 48"

Outputs: analogue output, HART®, pulse and status

Accuracy:  $\pm 0.3\%$  of reading  $\pm 0.01\%$   $\times Q_{\text{max}}$

**Magnetic Inductive Flowmeter - INSERTION-version -**

Material: stainless steel, PFA, PTFE

Model: PIT



Measuring range: Water: 0,5 - 5 m/s oder 1 - 10 m/s

$t_{\text{max}}$  -40 ... +140 °C;  $p_{\text{max}}$  40 bar

Connection: flange DN 40 ... 80, ANSI 2" ... 3",

for pipelines DN 125 ... 2000

weld-on connection for pipes DN 125 ... 2000

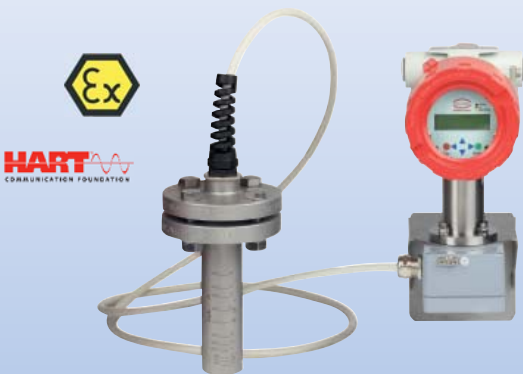
analogue output, HART®, pulse and status

Accuracy:  $\pm 1.5\%$  of reading, +0.5% of full scale

**Electromagnetic Flowmeter - Insertion version -**

Material: Stainless steel

Model: PITe



Measuring range: Water: 0 - 10 m/s

$t_{\text{max}}$  100 °C;  $p_{\text{max}}$  PN 16

Connection: weld-on nozzle  $\varnothing$  40 mm,

sensor with union nut M52x2

for pipelines DN 50 ... 400, ANSI 2" ... 16"

IP 68

Accuracy:  $\pm 1.5\%$  of full scale

**Magnetic Inductive Flowmeter - Compact version-**

Pulse/switching/ analogue output, digital indicator, counter, dosing electronics

Material: PPS/stainless steel, PVDF/Hastelloy

Model: MIK



Measuring range: Water: 10 - 500 ml/min ... 35 - 700 l/min

$t_{\text{max}}$  80 °C  $p_{\text{max}}$  10 bar

Anschluss: G ½" ... G 2 ¾" male

Accuracy:  $\pm 2.0\%$  of full scale



Flowmeters/-switches

**Orifice Plate - Differential Pressure**

Material: steel, stainless steel, Hastelloy C, titanium, Monel, tantalum  
 Model: KPL



Measuring ranges: for liquids, gases, steam  
 Connection: DN 50...600, ANSI 2"... 24"  
 $t_{max}$  500 °C;  $p_{max}$  PN 420

**Oscillation - Meter/Switch**

Material: stainless steel  
 Model: DOG-4\*



Measuring range: Air: 0,2 - 20 Nm<sup>3</sup>/h ... 60 - 6 000 m<sup>3</sup>/h  
 Pressure Drop: max. 50 mbar  
 $t_{max}$  120 °C (for EX 60 °C);  $p_{max}$  PN 40  
 Connection: flange DN 25 ... 200, ANSI 1" ... 8"  
 Accuracy:  $\pm$  1.5 % of reading

**Ultrasonic flowmeter - Inline**

Material: Stainless steel  
 Model: DUE



Measuring range: Water: 1.5 - 20 m<sup>3</sup>/h... 127 - 2000 m<sup>3</sup>/h  
 $t_{max}$  150 °C;  $p_{max}$  PN 40  
 Connection: flange DN32 - DN300  
 Accuracy:  $\pm$ 0.5 % of reading

**Ultrasonic Flow Meter - Clamp on**

stationary · portable  
 Model: DUC



Medias: ultrasonic conducting liquids  
 Temperature measuring range: -40... 150 °C  
 Flow velocities: 0...  $\pm$ 30 m/s  
 Pipe sizes: DN 10... DN 6000  
 For the most common or sound-conducting materials like steel and plastics  
 Heat quantity measurement  
 Accuracy: up to 1%

\* Sponsored by the Federal Ministry of Economics and Technology on the basis of a resolution of the German Bundestag.

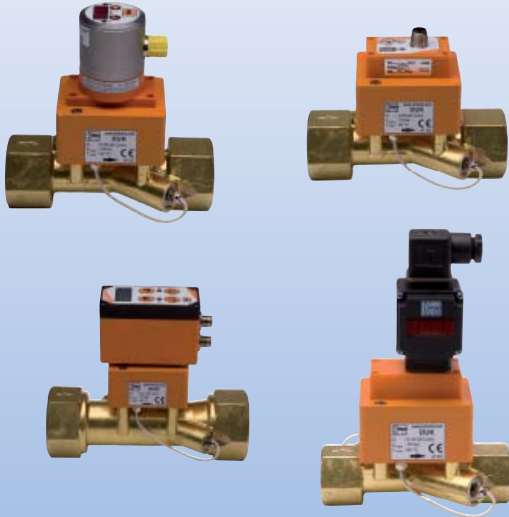


Flowmeters/-switches

**Ultrasonic Flow Meter**

Analogue output/Frequency output/Compact electronic/Switch/Counter/Dosing Electronic/Digital Display

Material: brass, stainless steel  
Model: DUK



Measuring range: Water: 0.08 - 20 l/min... 2.5 - 630 l/min  
 $t_{max}$  120 °C;  $p_{max}$  16 bar  
Connection: G 1/2... 3 female  
Accuracy:  $\pm 1,5\%$  of full scale

**Flap Flowmeter for Liquids**

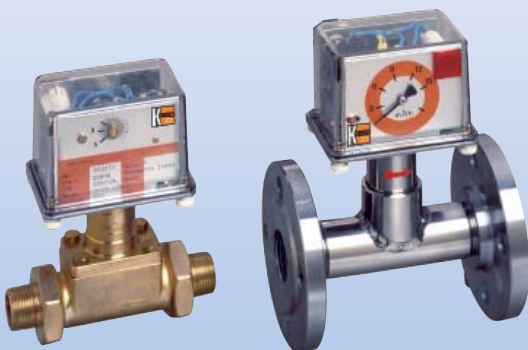
Material: steel, stainless steel, PP, PTFE, Hastelloy  
Model: TSK



Measuring range: Water: 0,5 - 3,5 m³/h... 200 - 1500 m³/h  
 $t_{max}$  -40 ... +300 °C;  $p_{max}$  40 bar, from DN 100: 16 bar, from DN 200: 10 bar, higher on request  
Connection: wafer flange DN 25 ... 500, ANSI 1 1/2" ... 20"  
Options: limit contacts, analogue output, HART®, Profibus® PA, Fieldbus® Foundation™  
Accuracy:  $\pm 2.5\%$  of full scale

**Paddle Bellows Flow Meter and Monitor**

for Liquids  
Material: brass or stainless steel  
Model: DPU



Measuring ranges: Water: 3 - 55 l/min... 50 - 600 l/min  
Connection: Rp 1/2... Rp 2 female, R 1/2... R 2 male, 1/2" ... 2" NPT  
Flange: DN 15... DN 50, ASME 1/2" ... 2"  
 $p_{max}$  16 bar;  $t_{max}$  100 °C  
Universal mounting  
Accuracy:  $\pm 3... \pm 5\%$  of full scale

**Variable Area Flowmeter - All Metal Version**

Material: stainless steel, PTFE-lining, Hastelloy, others on request  
Model: BGN



Measuring-/switching ranges: Water: 0.5 - 5... 13000 - 130000 l/h  
Air: 0.015 - 0.15 ... 240 - 2400 Nm³/h air  
Material: stainless steel, PTFE-lining, Hastelloy, others on request  
 $t_{max}$  +350 °C  $p_{max}$  40 bar (up to 550 bar on request)  
Connection:  
flange DN 15-150 ANSI 1/2" ... 6", female thread, hygienic connection, Tri-Clamp®, Swagelok, others on request DIN 11851 DN 20 ... 100  
Options: limit values, analogue output, counter, HART®, Profibus® PA, Fieldbus® Foundation™  
Accuracy:  $\pm 1.6\%$  of full scale ( $\pm 2\%$  for Gases)





Flowmeters/-switches

**Variable Area Flowmeter - horizontal mounting - All Metal Version**

Material: stainless steel or PTFE-lining, others on request

Model: BGF



Measuring-/switching ranges: Water: 10 - 100 l/h...4000 - 40000 l/h

Air: 0.3 - 3 Nm<sup>3</sup>/h... 110 - 1100 Nm<sup>3</sup>/h

t<sub>max</sub> 200 °C p<sub>max</sub> 40 bar (400 bar on request)

Connection: flange DN 15...80, ANSI ½" ...3", flange DN 15- 100 or ANSI ¼" ... 4", female thread, male thread, hygienic connection,

Tri-Clamp®, Ermeto, Swagelok, others on request

Options: 1 or 2 limit contacts, analogue output, counter,

HART®, Profibus® PA, Fieldbus® Foundation™

Accuracy: ±2,0 % of full scale

**Low Volume Variable Area Flowmeter**

Glass tube version

Material: stainless steel, glass

Model: K09/K12/K17/K32



Installation lengths: 90 mm/125 mm/175 mm/320 mm

Measuring-/switching ranges: Water: 0.02 - 0.25... 10- 100 l/h

Air: 2-20...300-3000 NI/h

t<sub>max</sub>: 0... +100 °C, (0... +70 °C with contact); p<sub>max</sub>: 16 bar

Connection: G ¼, G ½, ¼" NPT, Swagelok, Ermeto

Options: limit contacts, inlet/outlet differential pressure regulator

Accuracy: ± 1%, 2% or 3% of full scale (depending on tube length)

**Variable Area Flowmeter - All Metal Version**

Material: stainless steel

Model: KDS/BGK

NEW: KDS-E analogue output



Measuring-/switching ranges: Water: 0.1 - 1.0...20- 200 l/h

Air: 3-30... 600-6000 NI/h

t<sub>max</sub> -40... +130 °C (-25... +100 °C with contact); p<sub>max</sub> 64 bar

Connection: ¼" NPT, flange DN 10, 25 or ANSI ½", 1"

Options: limit contacts, inlet/outlet differential pressure regulator

Analogue output

Accuracy: ±3% of full scale

**Variable Area Flowmeter**

Glass tube version

Material: stainless steel, glass

Model: V31



Measuring ranges: Water: 2.5-25... 1000- 10000 l/h

Air: 0.8-8... 28-280 Nm<sup>3</sup>/h

t<sub>max</sub> -10... +100 °C; p<sub>max</sub> 15 bar

Connection: G ¼...2 female, flange DN 10...65,

ANSI ½" ...2 ½", hose connection, glue connection,

Options: limit contacts

Accuracy: Cl. 1.6 / 2.5 according VDI

Liquids: 1.6 %

Gases: 2.5 % VDE/VDI



Flowmeters/-switches

**Variable Area Flowmeter - Plastic**

Material: Polysulfone, Trogamide, PVDF  
 Model: KSK/KSM



Measuring range: Water: 1.5 - 11 l/h... 8000 - 60000 l/h  
 Air: 0.15 - 0.45 Nm<sup>3</sup>/h... 100 - 860 Nm<sup>3</sup>/h  
 KSK: t<sub>max</sub> 140 °C; p<sub>max</sub> PN 10  
 KSM: t<sub>max</sub> 100 °C; p<sub>max</sub> 16 bar  
 Connection:  
 KSK: G 1/2... G 3 1/2, glue connection  
 KSM: G 1/2... 3 1/2 female / male thread  
 Accuracy: Cl.4 according to VDI

**Turbine Wheel - Pulse Output - Analogue Output - Digital Display**

Material: PVC, PVDF  
 Model: TUR



Measuring range: Water: 0.2 - 5 m<sup>3</sup>/h... 2.5 - 100 m<sup>3</sup>/h  
 t<sub>max</sub> 70 °C; p<sub>max</sub> 10 bar  
 Connection: flange DN 25... 100  
 Accuracy: ± 1 % of full scale

**Turbine Wheel**

Material: stainless steel  
 Model: DOT



Measuring range: Water: 0.11 - 1.1 m<sup>3</sup>/h... 270 - 2700 m<sup>3</sup>/h  
 t<sub>max</sub> 150 °C p<sub>max</sub> 250 bar  
 Connection: G 1/2... 2, 1/2" ... 2" NPT, flange DN 15... 300  
 Accuracy: ± 0.5 % (linearity)

**Oval Gear - Pulse Output - Analogue Output**

Material: POM, aluminium  
 Model: OVZ



Viscosity range: 10 - 800 mm<sup>2</sup>/s  
 Oil: 0.3 - 8 l/min ... 1.6 - 40 l/min  
 t<sub>max</sub> 80 °C; p<sub>max</sub> 40 bar  
 Connection: G 1/4... 3/4, 1/4... 3/4" NPT female  
 Accuracy: ± 2.5 % of full scale



**Oval Gear - Pulse Output**

Material: Aluminium, stainless steel  
Model: DON



Viscosity range: 0 - 1 000 000 mPas  
Oil: 0,5 - 36 l/h ... 150 - 2500 l/min  
 $t_{max}$  120 °C;  $p_{max}$  400 bar  
Connection: G 1/4 ... 4 female thread, flange DN 25 ... 100, ANSI 1" ... 4"  
Accuracy:  $\pm 0,2 - 1$  % of reading

**Calorimetric Indicator/Switch**

Material: stainless steel  
Model: KAL-K



Measuring range: Water: 0.04 ... 2 m/s  
 $t_{max}$  120 °C;  $p_{max}$  100 bar  
Connection: G 1/4 ... 1 1/2, 1/4 ... 3/4" NPT, M12, Tri-Clamp®

**Flow Indicator with Rotor**

Material: grey cast iron, cast steel, stainless steel  
Model: DAR-1/-2



$t_{max}$  260 °C;  $p_{max}$  40 bar  
Connection: G 1/4 ... 2 female, 1/4 ... 2" NPT female,  
flange DN 15 ... 200, ANSI 1/2" ... 8"

**Flow Indicator with Flap**

Material: grey cast iron, cast steel, stainless steel  
Model: DAK-1/-2



$t_{max}$  280 °C;  $p_{max}$  40 bar  
Connection: G 1/4 ... 2 female, 1/4 ... 2" NPT female,  
flange DN 15 ... 200, ANSI 1/2" ... 8"



**Flowmeter indicators  
Level Switches**

**Flow Indicator with Drip Tube**

Material: grey cast iron, cast steel, stainless steel  
Model: DAT-1/-2



$t_{max}$  280 °C;  $p_{max}$  40 bar  
Connection: G 1/4 ... 2 female, 1/4 ... 2" NPT female, flange DN 15 ... 200, ANSI 1/2" ... 8"

**Flow Indicator with Flap**

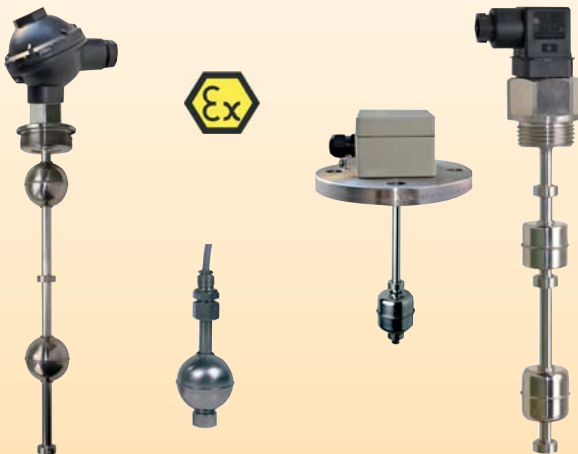
Material: red cast iron  
Model: DAZ



Measuring range: Water: 2.1 - 17 l/min...2.1 - 24 l/min  
 $t_{max}$  200 °C;  $p_{max}$  16 bar  
Connection: G 1/4 ... 1 IG

**Float Magnet Switch**

Material: Brass, stainless steel, PVC, PP, PVDF  
Model: M



Density: from 0.5 kg/dm<sup>3</sup>  
 $t_{max}$  150 °C;  $p_{max}$  100 bar  
Connection: thread G/NPT, flange DIN/ANSI

**Level Switch with Tuning Fork**

Material: stainless steel  
Model: NWS



$t_{max}$  (NWS-...20): 130 °C (150 °C for CIP), (NWS-...2.S/F): 90 °C (150 °C for CIP);  $p_{max}$ : 45 bar  
Connection: R-/NPT-thread, DIN-/ANSI-flange, Tri-Clamp®, DIN 11851, DIN 11864, DRD

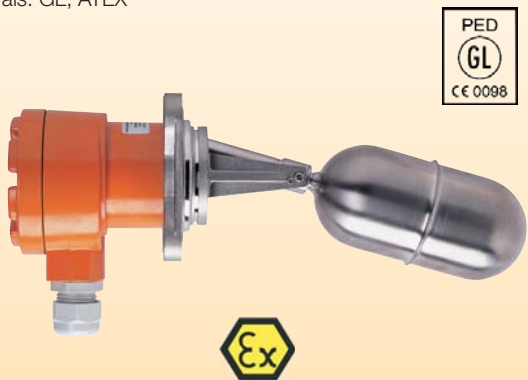


Level Switches

**Dual Magnet Float Level Switch**

Material: Stainless steel  
 Model: NGS

Housing sea water resistant  
 Approvals: GL, ATEX



Density: 0.7 kg/dm<sup>3</sup>  
 t<sub>max</sub> 250 °C; p<sub>max</sub> 25 bar  
 Connection: Square box flange, DIN flange, BSP, NPT, others on request

**Rotation Vane Switch - Bulk Materials**

Material: stainless steel  
 Model: NIR-9 / NIR-E9



Measuring range: 65 - 1000 mm  
 t<sub>max</sub> 200 °C; p<sub>max</sub> 0,5 bar  
 Connection: G 1 male,  
 Adapter: G 1¼, G 1½, round flange,  
 weld-in sleeve  
 1 relay, SPDT

**Vibration Switch - Bulk Materials**

Material: stainless steel  
 Model: NSV



Measuring range: 230 - 3 000 mm  
 Density: 0.06 kg/dm<sup>3</sup>  
 t<sub>max</sub> 80 °C; p<sub>max</sub> 25 bar  
 Connection: G 1½ male  
 1 relay, SPDT

**Ultrasonic Switch Liquids**

Material: stainless steel  
 Model: NQ-1000



t<sub>max</sub> 125 °C; p<sub>max</sub> 20 bar  
 Connection: R1 male  
 1 switch output



## Level Switches

### Microwave Switch

Material: stainless steel, PEEK  
Model: LNM



$t_{max}$  100 °C (150 °C for CIP);  $p_{max}$  10 bar  
Connection: G ½, M12 x 1.5 male,  
hygienic installation system LZE  
Open-Collector

### Capacitive Switch - Liquids

Material: stainless steel, PEEK  
Model: LNZ



$t_{max}$  100 °C (150 °C for CIP);  $p_{max}$  10 bar  
Connection: G ½ male, hygienic installation system LZE  
Open-Collector

### Conductive Switch

Material: stainless steel, PEEK  
Model: LNK/LNK-K



Measuring range: 4 - 1500 mm  
 $t_{max}$  150 °C;  $p_{max}$  10 bar  
Connection: G ½ male, G 1 male,  
hygienic installation system LZE  
Open-Collector

### Hygienic Mounting Systems

Material: stainless steel  
Model: LZE



$t_{max}$  250 °C;  $p_{max}$  10 bar  
M12x1,5; G ½; G 1  
Seals: metallic, PEEK-ring

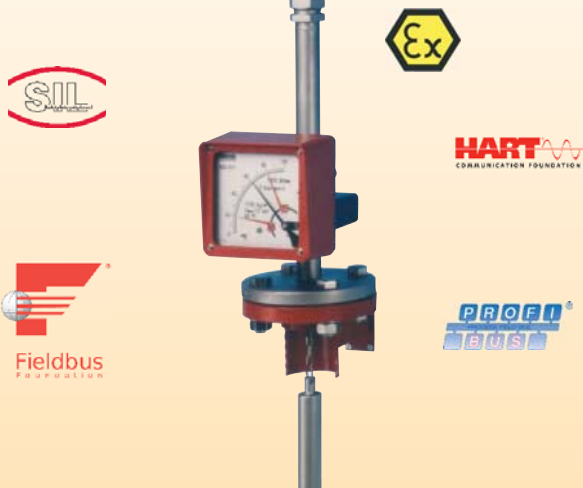


Level Meters

**Liquid Level Meter according Buoyancy principle**

Material: stainless steel, Hastelloy C

Model: BA



Measuring range: 300 - 6000 mm  
 Liquids with density: 400 - 2000 g/l  
 $t_{max}$  -40 ... +250 °C;  $p_{max}$  40 bar/300 lbs  
 Connection: flange DN 50 ... 100, ANSI 2" ... 4"  
 Options: limit contacts, analogue output, HART®, Profibus® PA, Fieldbus® Foundation™  
 Accuracy: ±5 mm of reading

**Level Indicator with Roller or Ball Indication**

Limit contacts, Transmitter

Model: NBK-MBSK



Measuring range: one-piece up to 5500 mm, > 5500 mm two or multipart  
 Viscosity: max. 200 mm<sup>2</sup>/s  
 Density: ≥0,54 kg/dm<sup>3</sup>  
 $t_{max}$  -100 ... +400 °C;  $p_{max}$  320 bar/1500 lbs  
 Connection: flange DN 15...50, thread R/NPT, ANSI ½" ... 2", others on request  
 Options: limit contacts, analogue output, HART®, Profibus® PA, Fieldbus® Foundation™

**Float Transducer - Reed Chain**

Material: Stainless steel, PVC-U, PP, PVDF

Model: MM



Measuring range: 300 - 6000 mm  
 Density: 0.4 kg/dm<sup>3</sup>  
 $t_{max}$  130 °C;  $p_{max}$  30 bar  
 Connection: G ¾" ... 2 male thread, ¾" ... 2" NPT male thread, flange DN 40 ... 100, ANSI 1 ½" ... 4"  
 Accuracy: ± 10 mm

**Capacitive Level Meter for Liquids**

Material: Stainless steel, PVDF

Model: NMC



Measuring range: 265 - 4000 mm  
 $t_{max}$  125 °C;  $p_{max}$  30 bar  
 Connection: G 1 male thread, G 2 male thread  
 Adapter: G 1 ¼, G 1 ½, round flange, weld-in sleeve  
 Analogue output  
 Measuring error: 1.5 % of probe length



## Level Meters

**Guided Wave Radar (TDR)**  
 Material :Stainless steel / PTFE  
 Model: NGM



Version: rod, rope, coaxial version  
 Application: liquids and bulk solids  
 $t_{max}$  250 °C;  $p_{max}$  40 bar  
 Connection: thread, flange  
 Analogue output, switching output  
 Accuracy:  $\pm 3$  mm or 0.03 % of measured value

**Ultrasonic Measurement**  
 Material: PP, PVDF  
 Model: NUS-4



Measuring range:: 0.2 ... 25 m (liquids)  
 0.2 ... 10 m (bulk)  
 $t_{max}$  90 °C;  $p_{max}$  3 bar abs  
 Connection: G 1½, G 2, 1½" NPT, 2" NPT male, DN 80,  
 DN 125, DN 150, ANSI 3", 5", 6"  
 Analogue output  
 Accuracy:  $\pm 0,2$  % of reading  $\pm 0,05$  % of full scale

**Ultrasonic Measurement**  
 Material: PP, PVDF  
 Model: NUS-7



Measuring range: 0.25 ... 6 m (liquids)  
 $t_{max}$  80 °C;  $p_{max}$  3 bar abs  
 Connection: G 2, 2" NPT  
 Analogue output  
 Accuracy:  $\pm 0.2$  % of reading  $\pm 0.05$  % of full scale

**Hydrostatic Diaphragm Measurement**  
 Material: stainless steel  
 Model: NPF



Measuring range: 0 - 600 ... 0 - 10 000 mmWS  
 $t_{max}$  80 °C  
 Connection: G ½ male, ½" NPT, DN 50 ... 100, ANSI 2" ... 4"  
 Accuracy:  $\pm 1.6$  % of full scale





Pressure Switches/Measurement

**Pressure Switch with Ceramic Cell**

Material: stainless Steel  
 Model: PDD



Measuring range: -1 ... 0 bar ... 0 ... +400 bar  
 Display: 3-digit LED  
 Overload protected: 1.5 - 2 times  
 Connection: G 1/4, G 1/2, 1/4" NPT, 1/2" NPT male  
 Accuracy: ±0.5 - 1 % of full scale

**Test Pressure Gauge with Bourdon Tube**

Material: aluminium, brass, stainless steel  
 Model: MAN-F



Measuring range: -0.6 ... 0 bar ... 0 ... +2500 bar  
 Housing: Ø 160, 250 mm  
 Overload protected: 1,0 times - (calm)  
 Connection: G 1/2 male  
 Accuracy: Cl. 0.25; 0.6

**Pressure Gauge with Membrane Diaphragm Seal**

Material: PVDF  
 Model: MAN-RD...DRM-632



Measuring range: 0 ... +1.6 bar ... 0 ... +16 bar  
 Housing: Ø 63 mm  
 Connection: G 1/4, G 1/2, 1/2" NPT female  
 Accuracy: Cl. 2.5

**Pressure Sensor with Ceramic Cell**

Material: stainless steel  
 Model: PDA



Measuring range: -1 ... 0 bar ... 0 ... +400 bar  
 Display: 3-digit LED  
 Connection: G 1/4, G 1/2, 1/4" NPT, 1/2" NPT male  
 Accuracy: ±0.5 - 1 % of full scale



## Pressure Measurement

### Pressure Gauges Digital with Ceramic Sensor Element, Battery Powered

Material: stainless steel/PA glass fibre reinforced  
Model: MAN-SD



Measuring range: -1 ... 0 bar ... 0 ... +1600 bar  
Housing: Ø 74 mm  
Display: LC-Display  
Overload protected: 1.3-3 times  
Connection: G ¼, G ½, ¼" NPT, ½" NPT male  
Accuracy: Cl. 0.5

### Pressure Transmitter

Material: Stainless steel, Hastelloy-C, tantalum  
Model: PAS  
High Quality - Low Cost



Measuring range:  
PAS: -1 ... +600 bar  
PAS-N: 0 ... +350 mbar ... 0 ... +600 bar  
 $t_{max}$  200 °C (PAS-N with capillary)  
Connection  
PAS: ½" NPT female  
PAS-N: thread or with flange (nominal size 15 ... 100)  
Temperature: -40 ... +120 °C (diaphragm seal up to 250 °C)  
Accuracy  
PAS: ±0.075 % of calibrated span  
PAS-N: ±0.075 % of calibrated span + influence of diaphragm seal

### Differential Pressure Transmitter

Stainless steel, Monel, tantalum, Hastelloy  
Model: PAD  
High Quality - Low Cost



Measuring range  
PAD: +0.75 mbar ... +413.70 bar  
PAD-N: 0 ... 250 mbar ... 0 ... 206.80 bar  
Power supply: 18 - 45 V<sub>DC</sub>  
 $t_{max}$  250 °C (PAD-N with capillary)  
Connection  
PAD: ¼" NPT, ½" NPT  
PAD-N: flange-, thread-, clamp on-, and in-line diaphragm seal (nominal size 15 ... 100)  
Accuracy  
PAD: ±0.075 % of measuring span  
PAD-N: ±0.075 % of calibrated span + influence of diaphragm seal

### Flange Diaphragm Seals

Material: Stainless steel, Monel, Tantalum, Hastelloy, PTFE  
Model: DRM



Standard version up to 350 °C / 40 bar:  
DN 25 ... DN 100, ANSI 1" ... 4"  
Special version up to 400 bar: up to DN 200, ANSI 8"  
Flanges according to BS, JIS or GOST standard  
All possible also with extended diaphragm



Temperature Switches / Measurement

**Temperature Switch Digital**

Material: stainless steel  
Model: TDD



Messbereich: -20 ... +120 °C  
t<sub>max</sub> 125 °C; p<sub>max</sub> 80 bar  
Anschluss: G 1/2, G 3/4, 1/2" NPT, 3/4" NPT AG  
2 Grenzkontakte  
Genauigkeit: ± 0,5 °C

**Electronic Temperature Sensor**

Material: stainless steel  
Model: TDA



Measuring range: -20 ... +120 °C  
p<sub>max</sub> 80 bar  
Connection: G 1/2, G 3/4, 1/2" NPT, 3/4" NPT AG  
Analogue output, limit contact  
Accuracy: ± 0.5 °C

**Industriel - Resistance Thermometer**

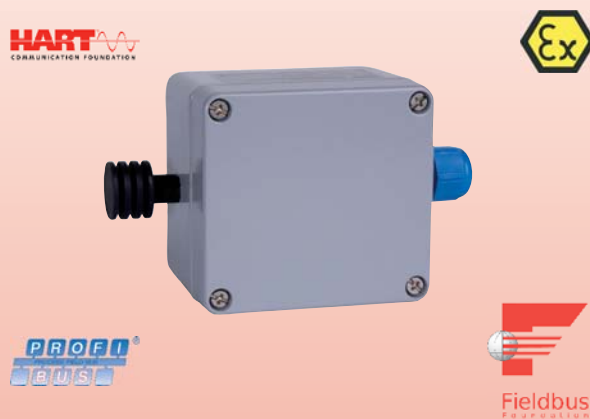
Material: stainless steel  
Model: MWD



Measuring range: -70 ... +250 °C ... -200 °C ... +600 °C  
p<sub>max</sub> 40 bar  
Accuracy: Cl. A or B

**Room Thermometer**

Material: Aluminium  
Model: TWL-ST



Measuring range: -20 ... +60 °C  
p<sub>max</sub> atmospheric  
Wall socket  
Pt 100, 4 ... 20 mA  
Accuracy: Cl. A or B



Temperature Indicator

**Resistance Temperature Measuring Unit**

Material: Stainless steel  
Model: TWL



Measuring range: -80... +600 °C  
 $p_{max}$  250 bar  
 Connection: thread, flange, weld-in sleeve  
 Output: analogue output, resistance, Profibus® PA  
 Option: digital display  
 Pt 100, 4...20 mA  
 Accuracy: Cl. A or B

**Immersion and Insertion Thermocouples**

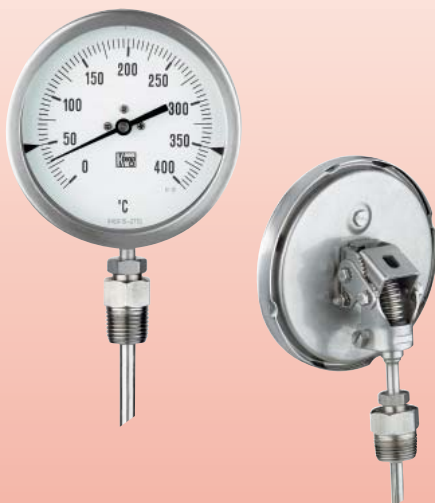
Material: stainless steel, Alloys  
Model: TTL



Measuring range: -200 ... +1100 °C  
 $p_{max}$  250 bar  
 Connection: thread, flange, weld-in sleeve  
 4 ... 20 mA  
 Accuracy: Cl. 1,0 or 2,0

**Bi-metal Thermometer**

Material: stainless steel  
Model: TBE



Measuring range: -50 ... +50 °C ... 0 ... +600 °C  
 $p_{max}$  15 bar  
 Connection: G 1/2 ... 3/4, 1/2" ... 3/4" NPT,  
 fixed, rotatable, slidable  
 Accuracy: Cl. 1,0

**Thermowells for Shaft, Capillary and Resistance Thermometer**

Material: stainless steel, special  
Model: TWL-0



$t_{max}$  800 °C;  $p_{max}$  250 bar  
 Connection: thread, flange, welding sleeve



**Industrial Dosing, Counter and Flow Indicator**  
Model: ZOK



Input: frequency  
Analogue output, limit contacts, sensor supply, battery powered

**Electronic Multi - Channel Data Logger**  
Model: ZLS



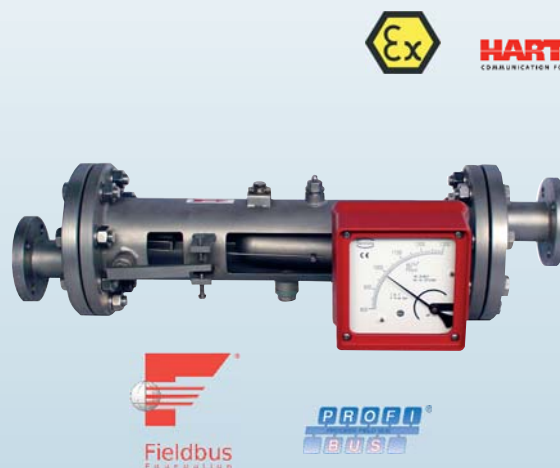
Input: 4 ... 20 mA, Pt 100, Pt 500, Pt 1000 interface, sensor supply

**Sandwich Plug-On Display**  
Model: AUF



Input: 4 ... 20 mA loop powered  
Option: Open-Collector  
Without additional power supply

**Inline Density Weighing System for Liquids**  
Material: Edelstahl, Hastelloy, others on request  
Model: DWF

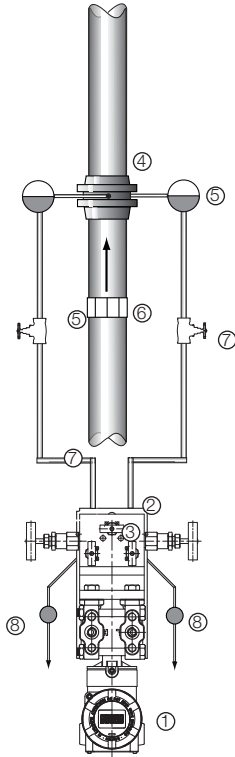


Measuring range: 700 ... 1900g/l  
Measuring span: 50 ... 600 g/l  
Flow: max. 2500/5000/10000 l/h  
 $t_{max}$  150 °C;  $p_{max}$  16 bar / 150 lbs  
Flansch DN 25 ... 50, ANSI 1" ... 2"  
Options: limit contacts, analogue output, HART®, Profibus® PA, Fieldbus® Foundation™  
Accuracy:  $\pm$  1.25 - 6.0 g/l according to span

## Steam Flow Measurement

-Complete solutions from one source-

### Example based on a differential pressure transmitter



A complete measuring system comprises of:

- ① Differential pressure transmitter PAD
- ② Flat bracket for pipe mounting ZUB-PAD/PAS-L
- ③ 5-way Block valve as accessory PAD
- ④ Orifice flange including orifice plate KPL
- ⑤ Steam condensate chambers as accessory KPL
- ⑥ Flow conditioner as accessory KPL
- ⑦ Shut-off valve as accessory KPL
- ⑧ Separator as accessory KPL

We will gladly prepare a customised offer for you.

## Highly accurate steam flow measurement with Vortex flowmeter DVH/DVE from Heinrichs Messtechnik

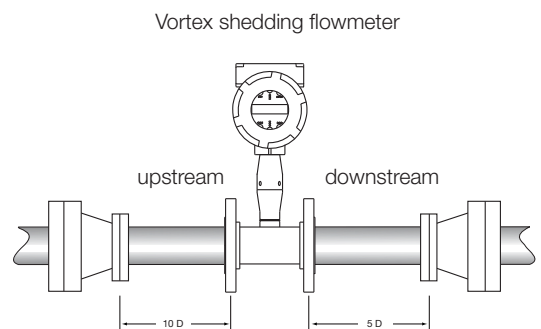
Steam is one of the most commonly used media in the process industry. It is used for example to heat tanks, pipes or produced for cleaning and sterilizing purposes in various industries.

In all cases, first of all, steam must be generated.

The generation of steam is extremely energy-intensive and for this reason expensive. Therefore it is logical not only to measure the generated steam but also the amount of steam required by the consumer. The more accurately it is done, the more energy-efficient and therefore the more economically the steam can be generated. In times of high energy costs and dwindling resources, precision is required in handling these precious commodities.

The vortex flowmeters from Heinrichs are highly accurate and always offer a functionality tailored specifically for each steam application.

All devices can be equipped optionally with an integrated pressure and temperature measurement, which allows the state of the steam to be determined precisely. The "Energy Monitoring" option which incorporates an additional external temperature sensor, makes energy consumption measurement possible. With up to 3 analogue outputs and 3 alarm outputs, pulse output, and MODBUS interface. The devices offer a vast communication spectrum for the users. A fully welded sensor design without seals also ensures stability and long-life cycle. In-line devices cover pipes up to DN 200 (8"). For bigger sizes an insertion type variant, for up to DN 600 (24") is available.



## Flow measurement of critical media

### Task:

Liquid sulfur  
Liquid Bitumen  
Asphalt

### Solution:

**Coriolis Mass Flowmeter from Heinrichs Messtechnik with directly heated measuring loop**



Advantage over instruments with indirect electric heaters:

- High accuracy
- High process reliability through precise thermal control
- Fast response
- High heating capacities

For this purpose we supply a wide range of heating systems that can be specifically adapted to the process.



- Internally routed heating loops
- Double wall Plate Heating Systems
- Multivariable heating system with flange to flange heating
- Exchangeable heating plates - designed for each liquid or steam

Heinrichs Coriolis Flowmeters are easy to maintain and can be opened for sizes of DN 100/4" or larger. This facilitates maintenance and upgrade of systems, especially with larger devices. This is a decisive cost advantage in plant operation.

## Bitumen measurements under difficult conditions

### Task:

The special challenge of this application is the exact temperature of the heat-tracing, which must be adapted to the respective type of Bitumen used. The meters must be robust and temperature-stable, and should furthermore not affect the accuracy of probable custody transfer devices.

### Solution:

**Coriolis Mass Flowmeters from Heinrichs Messtechnik**



- Precise measurements, even with high temperature fluctuations
- Durable due to bigger wall thicknesses of measuring tubes
- Variable, stable tracing systems for various heating media
- Up to DN 400/16" for media temperatures up to 260 °C
- Versions for custody transfer operation
- Maintenance easy due to open design of the devices
- Can be retrofitted

### Application:

The robust construction of our Coriolis devices allow usage in mobile plants or machinery, such as in a „HOT-RECYCLER“, which removes the tarmac and re-applies it with the addition of asphalt and bitumen. The hot recycling method is used solely for the rehabilitation of damaged asphalt surface courses. The hot recycler processes the existing road pavement, improving it with virgin mix, if necessary.



## Applications

### Flow measurement of aggressive or highly corrosive liquids

#### Task:

Flow measurement of:

- Sulfuric Acid
- Sulfur Chloride
- Sodium Carbonate
- Nitric Acid
- Phosphoric Acid

These media cannot be measured reliably with conventional instruments made of stainless steel or hastelloy. Glass and enamel, with which plants are often equipped, are not suitable for SS Coriolis Mass Flowmeters. Ultrasound measurements, depending on pipe line, also cannot be used.



#### Solution:

**Coriolis Flowmeters with pure tantalum measuring tubes from Heinrichs Messtechnik**

- High accuracy
- Process safety through use of pure Tantalum with no hidden alloy components
- Wear and Tear and chemical compatibility can be determined accurately
- High heating capacities
- Reliability through 25 years of experience in processing and calculation of measuring loops

**Coriolis Flowmeter with Tantalum Measuring loops**

- Up to DN 100/4"
- Up to +150 °C medium temperature
- Up to 40 bar
- For almost all Coriolis series
- We adjust the form and behaviour of the measuring loops

### Hydrogen vehicle fueling for fuel cell drives

#### Task:

The filling of fuel cell vehicles with highly compressed gaseous hydrogen requires the measuring system to have a high compressive strength and is a highly complex measurement task.

Reliable flow measurement is required with a single device at pressures ranging from 20 bar to 750 bar, and in future even with custody transfer approvals.



#### Solution:

**Coriolis Flowmeters with high pressure version from Heinrichs Messtechnik**

- Large Measuring Span Filling with a single device
- Currently the only usable Coriolis Flowmeter with Norm-Compliance according to SAE 2601 J
- Reliability through over 10 years of experience in high pressure hydrogen fueling
- Long-term stability

In an EU-project (HyAc) to develop the fueling and custody transfer Norm, the Heinrichs Hydrogen High Pressure Coriolis Flowmeter's have proven their accuracy and long term stability, and are therefore a reference in this application field.

- Filling pressure: up to 750 bar
- Design pressure: 1050 bar
- Temperature range: -40... +60 °C



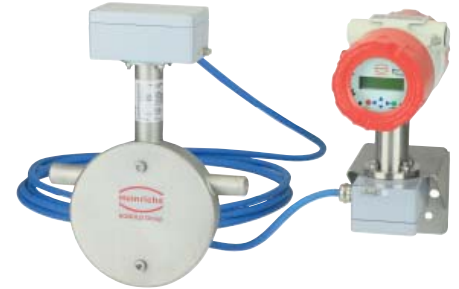


## Chemical injection in oil rigs, sub-sea drilling or fracking

### Task:

High-pressure processes for chemical injection systems, for example in oil drilling rigs or offshore platforms are a challenge for any flow measurement system.

Chemicals added by injection through a bore pipe at high pressure directly at the wellhead increase water viscosity and enable efficient detachment of oil from the reservoir rock making its transport easier. In order to control the process, the injected chemicals must be measured accurately. Conventional volumetric systems such as gear flowmeters or turbine flowmeters cannot be used for all media due to different liquid properties and big differences in density and viscosity, and do not provide the same results in terms of accuracy and reliability.



### Solution:

#### High Pressure Coriolis Flowmeters from Heinrichs Messtechnik

- High Accuracy, despite large differences in density and viscosity
- High Reliability due to no moving parts
- Small Measuring Ranges possible

For more than 15 years, Heinrichs Messtechnik have been offering solutions in high-pressure Coriolis for customers worldwide. Our experience in Coriolis Flowmeters, special forms of measuring loops, combined with special materials (different stainless steel versions, HP 160, Duplex and so on) and heat treatment methods allow you to work with operating pressures up to 1500 bar, extremely low flow rates from **1 kg/h** and thus, offer a reliable solution for high-pressure processes.

## Drill head - cooling lubricant for tunnel boring machine (TBM)

### Task:

Modern tunnel boring machines are highly complex underground mobile factories. The high drilling performance can only be guaranteed by the latest technology and only be achieved by lubrication and cooling via the supply of cooling lubricants.

In order to achieve an efficient lubrication, flushing, and cooling, the drilling emulsion is fed with pressures up to 500 bar to the drill head. For data acquisition in the drill head control, a robust measuring system is needed that can provide output signals and can withstand harsh conditions.



### Solution:

#### Variable Area Flowmeter in a High-Pressure Version from Heinrichs Messtechnik

By design our BGN variable area flowmeters are equipped with a cylindrical measuring tube, which may easily be designed for 500 bar or higher pressures with the use of thick-walled pipes. The float is kept in position via guiding stars, which are also robustly designed and do not constitute a weak point as many other rod-guided floats typically available in the market.

The measurement is coupled to the mechanical display or output transmitter via a contact-free magnet system. The transmitters are available with 4-20 mA HART®, Profibus® or Fieldbus®.

## Applications

### Flow measurement in ballast tank system on ships

#### Task:

Large ships have a ballast tank system to compensate for different loads, so that the ship is as balanced as possible in water. Water sucked in for ship balancing in one ocean is prohibited to be mixed with other ocean water due to regulations. The IMO (International Marine Organization) states that such systems would kill microbes and small animals, which are sucked in with sea water.

For this purpose, the amount of water sucked in and recirculated must be reliably measured. A big problem is space limitations inside the ship - pipelines of up to 500 mm are typically installed at the vessel wall, making an in-line flowmeters installation impossible. Inlet and outlet straight runs are typically missing, which makes the use of ultrasound devices very difficult in addition to the onboard sonar that may disturb an ultrasonic measured signal.



#### Solution:

##### Electromagnetic Insertion Flowmeter PIT from Heinrichs Messtechnik

- The strongest magnetic field in the market, thereby accurate reliable measurements
- Optimised for small inlet and outlet runs
- Small installation length
- Functional at 30 m under water via IP68 /69 Encapsulation
- The sensor head is sea water resistant - PFA coated with Hastelloy electrodes
- Installation and removal during operation possible
- Low maintenance because recalibration not required
- Ex-usage possible



The measuring system complies with the international marine guidelines and has the necessary approvals.

### Fresh water extraction at the reservoir

#### Task:

In a dam project a permanent flow measurement over the next 30-40 years must be ensured. Since the pipeline is constantly under pressure, the meter can only be installed or removed during operation. The use of a conventional in-line magnet inductive flowmeter may thus be ruled out. Even an Ultrasonic Liquid Flowmeter cannot be installed from outside of a concrete pipe.



#### Solution:

##### Magnetic Inductive Flowmeter Insertion PIT from Heinrichs Messtechnik

- Installation and removal under process pressure with help of an installation/removal device possible
- Large pipe sizes up to DN2000
- Small inlet/outlet runs
- Long term stability
- Flow rates from smallest values of up to 10 m/s
- Use in hazardous areas possible

For more than 25 years, the Insertion type PIT sets standards in measurement stability and reliability in water networks for permanent measurements in concrete or plastic pipes.



## Flow measurement in hydraulic systems of coal crushers

### Task:

In the mining industry, large hydraulic systems are used in coal crushers. These coal crushers use a large quantity of oil spread over several loops to monitor the hydraulic cylinders. The oil flow rate to be measured is commonly influenced by pressure shocks caused by heavy loads of the hydraulic cylinders, different pipe sizes from DN 40/DN 50/DN 100 (1.5" - 4"), flow rates of up to 1000 l/min, and flow which must be monitored with a low pressure drop.

### Solution:

#### Flap Flowmeter TSK from Heinrichs Messtechnik

- Very robust design with heavy duty axis and multiple bearings
- Largely linear measurement over entire sensing range
- Low pressure drop due to our uniquely shaped flap
- Accurate measurement
- Optional 4-20 mA transmitter HART®, Profibus® or Fieldbus®
- Mining approval
- Insensitive to dirt particles
- High temperature versions via extended display
- Up to nominal width of DN 500 (20")



Heinrichs Messtechnik manufactures flap type flowmeters, even for the toughest jobs in the mining industry e.g. approved by ThyssenKrupp and HITACHI. The special shape of the flap typically occupies 30% of the cross section, depending on the nominal pipe size. Available materials such as Polypropylene and PTFE, inexpensive measurement of aggressive liquids in the chemical industry is an option, as opposed to other more expensive volumetric systems.

## Density measurement in foams and non-conductive two-phase mixtures

### Task:

In the production and processing of technical foams, the gas content of the foams must be determined for reliable process control. In these two-phase mixtures, this is accomplished by measuring the density. Most foams are polymer-based and therefore non-conductive, making a density measurement via inductive measuring systems impossible. The gas proportions incur large inaccuracies in the density measurement through Coriolis Systems as well.

### Solution:

#### The mechanical density measuring system DWF from Heinrichs Messtechnik

Here the density is measured by a precisely calibrated float within the measuring chamber. This technology works well when measuring the two-phase mixtures of technical foams and adhesive-gas mixtures found in cardboard production. Our system measures densities up to 1900 g/l, temperatures up to 150 °C and pressures up to 16 bar. An optional integrated output electronic can transmit the measured value via 4-20 mA HART®, Profibus® or Fieldbus®.



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