

UFM

Specialist in Ultrasonic Flow Measurement



Ultrasonic
measurement
solutions

We measure flow

Within every production and distribution process, the need for reliable measurement data continues to grow. Ultrasonic instruments offer a solution that goes beyond flow measurement alone: they make industrial flow processes transparent and manageable, without costly interruptions.

We specialise in fixed and portable clamp-on measurement systems. Using this non-invasive technology, we measure from the outside of a pipe or tube, without the need to open the system. Faster and more cost-effective than inline installation, and highly accurate.

Industrial applications

Ultrasonic flow meters are used across a wide range of sectors: from water authorities and the pharmaceutical industry to the petrochemical sector, power stations and offshore installations. U-F-M knows these environments and understands what is technically required of a measurement instrument. Including in hard-to-reach locations: grant us access, and we will take care of the rest.

Optimisation and continuity of your flow process are central to everything we do. It may well be that you encounter us in suit and tie one moment, and find us in overalls and a hard hat walking your plant the next.

We typically respond to enquiries within one working day, whether by e-mail, telephone or in person. We feel personally involved in every assignment. You can count on that.

www.u-f-m.com

U-F-M

Accuracy

Accurate measurement data is essential for a qualitative and efficient production process. We configure the measurement system to your specific application. With our flow meters, an accuracy of 0.5% is well within reach.

Sales

Available from stock and delivered promptly. We advise you on the right instrument and ensure a smooth process from first consultation to working measurement system.

Rental

A flexible solution for temporary or one-off measurements. Our portable flow meters are available for hire from as little as one day. Leasing is also an option. From our extensive stock, we deliver, where possible, the same day.

Technical support

Correct installation and configuration are essential for reliable measurement results. Our engineers commission the flow meter fully and, if required, carry out the measurements themselves.



Clamp-on

Measuring from the outside
what flows within



When to use a clamp-on flow meter?

1
2

For clean and contaminated liquids, and for gases.

For existing installations, retrofits and new builds. Particularly at locations where no suitable measurement solution was previously possible, clamp-on ultrasonic flow meter systems are increasingly being applied.

Advantages

- Easy to install.
- No process interruption.
- No risk of contamination or leakage.
- Accurate, repeatable measurement.
- Suitable for all pipe materials.
- For pipe diameters from 5 mm.
- Wear-free and maintenance-free.

Applications (incl.)

- Petrochemicals.
- Oil and gas.
- Pharmaceuticals.
- Building management.
- Marine and shipbuilding.
- Food & Beverage.
- Water and wastewater.

TIP Combine a clamp-on flow meter with pressure and temperature measurements for simultaneous insight into flow rate, pressure and temperature.

Ultrasonic measurement techniques

Transit-time or Doppler?

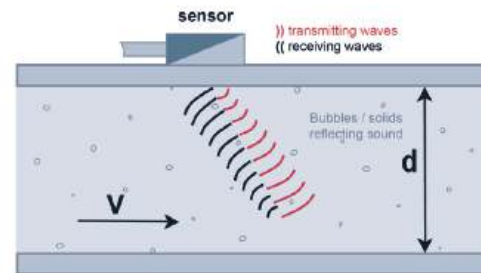
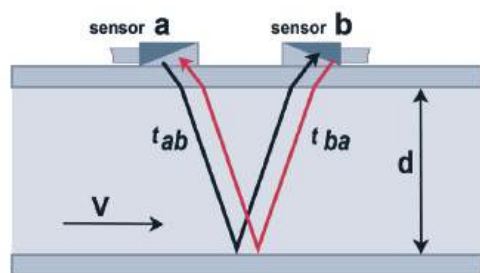
Every measurement is different, and not every technique suits every situation. Understanding the differences helps in making the right choice.

Transit-time

- For clean liquids and gases.
- Two sensors.
- Accuracy 0.5 – 1%.
- Pipe diameter 3 mm to 6,500 mm.
- Suitable for drinking water, cooling water, oil and chemicals.

Doppler

- For contaminated liquids (>30%).
- One or two sensors.
- Accuracy from 2%.
- Pipe diameter 30 mm to 4,000 mm.
- Suitable for sewage and wastewater.



Two techniques. One choice.

Portable flow meters

The most flexible measurement solution

Fast to deploy, easy to transport and suitable for a wide range of measurement conditions. Portable flow meters are the obvious choice for temporary or one-off measurements, for situations where a fixed installation is not possible, and for locations that are difficult to access. Our range includes a variety of ultrasonic instruments and systems, all fitted with clamp-on sensors.



The KATflow 200 is a handheld device with a red top section containing a small LCD screen and a keypad with numeric and function buttons. A long, flexible braided cable with a clamp-on sensor at the end is attached to the top.

KATflow 200 Katronic™

The portable KATflow 200 is an ultrasonic flow meter that delivers outstanding measurement performance despite its light weight. Easy to operate and controllable with one hand. Ideal for measurements in hard-to-reach locations, such as confined spaces or at height.

With the included software, producing a representative report, for example in Excel, is straightforward. The sensors can optionally be mounted in a magnetic rail, which makes carrying out a series of measurements on a steel pipe considerably easier.

- Internal data logger: 1 million readings



Optional: magnetic mounting rail for clamp-on sensors.

Portable flow meters

Models and key specifications



Product	UFM-10	UFM-50	UFM-70 FS	KATflow 200
Model	portable, fixed, doppler switch	semi portable, doppler	portable, IP67	portable
Medium	liquids	liquids (contaminated)	liquids	liquids
Pipe diameter	30~1,000 mm	12.7~4,500 mm	10~6,500 mm	10~6,500 mm
Process temperatures	20~70 °C	-23~60 °C	-30~250 °C	-30~250 °C
Measuring channels	1	1	1 or 2 ¹⁾	1
Measuring range	0.3~4 m/s	0.03~12,2 m/s	0.01~25 m/s	0.01~25 m/s
Accuracy	5 %	2 %	0,5 %	0,5 %
Power supply Battery life	18~28 V DC, 120 mA	100~240 V AC, 50/60 Hz, max. 10 V AC or 9~32 V DC, max 10 watt	9~36 V DC, 230 V 15 days	4 x NiMH AA 2850 mAh 24 h
Process inputs	n/a	n/a	PT100 temp ²⁾ , 0/4 ~ 20 mA, pressure	n/a
Process outputs**	analogue, alarm	0/4~20 mA, pulse, relais	0/4 ~ 20 mA, pulse (OC) digital relay, frequency, voltage, HART*-compatible	n/a
Communication	RS485, Modbus	VSB, RS485, Modbus	RS232, USB (Modbus, RTU, HART*) **	RS232, USB
Internal data logger	n/a	optional	yes	yes
Energy measurement	n/a	n/a	optional	n/a
Wall thickness	n/a	n/a	optional	optional



Product	KATflow 210	KATflow 230	KATflow G	TA-SCOPE Premium
Model	portable, IP68	portable	portable, ATEX	portable, diff. pressure
Medium	liquids	liquids	gases	liquids
Pipe diameter	10~2,500 mm	10~6,500 mm	10~1,500 mm	n.v.t.
Process temperatures	-30~130 °C	-30~250 °C	-20~60 °C	-20~120 °C
Measuring channels	1 of 2 ¹⁾	1 of 2 ¹⁾	1	n/a
Measuring range	0.01~25 m/s	0.01~25 m/s	0.1~70 m/s	n/a
Accuracy	0.5 %	0.5 %	1~3 %	1 %
Power supply Battery life	1-3 LiFePo4 12,8 Ah 100~240 V AC 100 days	8 x NiMH AA 2850 mAh 24 h	100~240 V AC 50/60 Hz	5.0~5.3 V DC 25 h
Process inputs	0/4~20 mA	PT100 temp ²⁾ , 0/4~20 mA	temperature, pressure, gas	n/a
Process outputs**	0/4~20 mA, pulse (OC) digital relay, frequency, voltage, HART*-compatible	0/4~20 mA, pulse and alarm relais	0/4~20 mA, pulse (OC) digital relay	n/a
Communication	USB	USB	Modbus, RTU	optional
Internal data logger	yes	yes	yes	yes
Energy measurement	n/a	yes ³⁾	n/a	yes
Wall thickness	optional	optional	n/a	n/a

1) For simultaneous measurement on two separate pipes, or for measurement on a single pipe in a dual-path sensor configuration.

2) + 3) For simultaneous measurement on two separate pipes, or for measurement on a single pipe in a dual-path sensor configuration.

* HART® is a registered trademark of the FieldComm Group.

** Optional.

Measuring in ATEX-environments

In potentially explosive environments, measurement equipment must meet the highest standards. U-F-M supplies fully ATEX-certified clamp-on ultrasonic flow meters for the most demanding industrial conditions, for both liquids and gases, in portable and fixed configurations.

Widely applicable

ATEX-certified ultrasonic flow meters are used across a wide range of sectors: from the petrochemical industry and offshore installations to pharmaceuticals and gas extraction.

Safe working on site

Working in ATEX zones requires more than just the right instrument. Our service engineers hold all required certifications, including NOGEPa and HUET, and undergo the mandatory safety training on a regular basis. You can therefore rely on measurements being carried out safely, professionally and in accordance with current regulations.

Our flow meters for ATEX zones (incl.)

- KATflow G: portable, for gases.
- KATflow 170: fixed, for liquids.
- KATflow 180 G: fixed, for gases.
- Cygnus 1 Ex: wall thickness gauge.



Fixed flow meters

Continuous process control

For continuous measurements in critical processes, fixed ultrasonic flow meters are the most reliable choice. They offer high measurement accuracy, stable performance and minimal maintenance requirements. Even under demanding industrial conditions.

KATflow 150 Katronic™

The KATflow 150 is suitable for measuring all types of liquids, from straightforward water flow measurements to energy flow monitoring and automated process control.

The dual-channel model offers the possibility of carrying out two independent measurements simultaneously, or of installing two pairs of sensors on a single pipe for locations where flow conditions are not ideal.

- Internal data logger: 1 million readings.



For ATEX zones we recommend the KATflow 170.



Fixed flow meters

Models and key specifications



Product	UFM-15	UFM-30	UFM-30 D	UFM-40
Model	fixed	fixed	fixed, dual-channel	fixed
Medium	liquids	liquids (water)	liquids (water)	liquids
Pipe diameter	15~64 mm	20~1,200 mm	25~5,000 mm	25~1,200 mm
Process temperatures	0~50 °C	-40~130 °C	-40~130 °C	-10~80 °C
Measuring channels	1	1	1 or 2 (redundant)	1
Measuring range	0.01~5 m/s	0.03~12 m/s	0.03~12 m/s	0.01~5 m/s
Accuracy	2 %	1 %	0.5 %	1 %
Power supply	24 V DC	10~36 V DC or 90~245 V AC	90~245 V AC or 10~36 V DC	10~36 V DC or 90~245 V AC
Process inputs	PT1000 (optional)	PT1000	PT1000	PT1000
Process outputs**	0/4~20 mA	0/4~20 mA, pulse (OC), relay	0/4~20 mA, pulse (OC), relay	0/4~20 mA, pulse (OC), relay
Communication**	RS485, Modbus	RS232 of RS485 Modbus	RS232 of RS485 Modbus	RS485 Modbus
Internal data logger	yes	optional	optional	optional
Energy measurement	n/a	optional	optional	optional



Product	KATflow 100	KATflow 150	KATflow 170	KATflow 180 G
Model	fixed	fixed	fixed, ATEX	fixed, ATEX
Medium	liquids	liquids	liquids	gases
Pipe diameter	10~3,000 mm	10~6,500 mm	10~3,000 mm	25~1,500 mm
Process temperatures	-30~80 °C	-30~250 °C	-50~115 °C	-20~60 °C
Measuring channels	1	1 or 2 ¹⁾	1 or 2 ¹⁾	1
Measuring range	0.01~25 m/s	0.01~25 m/s	0.01~25 m/s	0.1~75 m/s
Accuracy	0.5 %	0.5 %	0.5 %	1~3 %
Power supply	100~240 V or 9~36 V DC	100~240 V or 9~36 V DC	100~240 V or 9~36 V DC	100~240 V AC 50/60 Hz or 9~36 V DC
Process inputs	PT100 temp ²⁾ , 0/4~20 mA	PT100 temp ²⁾ , 0/4~20 mA	PT100 temp ²⁾ , 0/4~20 mA	PT100 temp ²⁾ , 0/4~20 mA
Process outputs**	0/4~20 mA, pulse (OC) digital relay, frequency, voltage, HART*-compatible	0/4~20 mA, pulse (OC) digital relay, frequency, voltage, HART*-compatible	0/4~20 mA, pulse (OC) digital relay, frequency, voltage, HART*-compatible	0/4~20 mA, pulse (OC) digital relay, frequency, voltage, HART*-compatible
Communication**	RS232, Modbus RTU, Profibus DP, FieldBus, LON, Bacnet, GPRS	RS232, RS485, Modbus RTU, Profibus PA/DP, FieldBus, LON, Bacnet, GPRS	RS232, Modbus RTU, Profibus DP, FieldBus, LON, Bacnet, GPRS	Modbus RTU of Modbus TCP/IP
Internal data logger	yes	yes	yes	no
Energy measurement	yes ³⁾	yes ³⁾	yes ³⁾	n/a

1) For simultaneous measurement on two separate pipes, or for measurement on a single pipe in a dual-path sensor configuration.

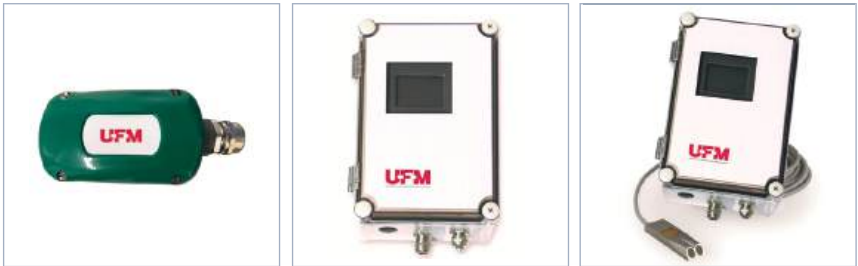
2) + 3) For non-contact measurement of thermal energy consumption; units available: W, kW, MW, J, kJ, MJ, BTU (on request).

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** Optional.

Fixed flow meters

Models and key specifications



Product	UFM-10	UFM-50	UFM-AVFM
Model	portable, fixed, doppler switch	fixed, doppler	fixed, open channel
Medium	liquids (contaminated)	liquids (contaminated)	liquids (contaminated)
Pipe diameter	30~1,000 mm	12.7~4,500 mm	> 150 mm
Process temperatures	20~70 °C	-23~60 °C	-15~80 °C
Measuring channels	1	1	1
Measuring range	0.3~4 m/s	0.03~12,2 m/s	± 0.03~6.2 m/s
Accuracy	5 %	2 %	level ± 0.25 % velocity ± 2.0 %
Power supply	18~28 V DC, 120 mA	100~240 V AC, 50/60 Hz, max. 10 V AC or 9~32 V DC, max 10 watt	100~240 V AC, 50/60 Hz, max. 10 V AC or 9~32 V DC, max 10 watt
Process inputs	n/a	n/a	n/a
Process outputs**	analogue, alarm	0/4~20 mA, pulse, relay	3 x 0/4~20 mA, pulse, relay
Communication**	RS485, Modbus	VSB, RS485, Modbus	USB, RS485, Modbus
Internal data logger	n/a	optional	yes
Energy measurement	n/a	n/a	n/a.

1) For simultaneous measurement on two separate pipes, or for measurement on a single pipe in a dual-path sensor configuration.

2) + 3) For non-contact measurement of thermal energy consumption; units available: W, kW, MW, J, kJ, MJ, BTU (on request).

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** Optional.

Wall thickness & pipe monitoring

Clamp-on measurement solutions

Non-invasive wall thickness measurement is one of the most common applications within ultrasonic measurement technology. In addition to quality control, our systems are used to detect damage caused by erosion and corrosion, for example on ships, storage tanks, pipelines and valves.



UFM-7 U-F-M™

The UFM-7 is our own ultrasonic wall thickness gauge. This compact instrument features a switching function to measure through a coat of paint or coating, for both metallic and non-metallic walls.

Suitable for high and low temperatures. Depending on the application, a choice of probe and sensor types is available.



PT04 PT06 PT08

GT12 ZT12

Wall thickness & pipe monitoring

Models and key specifications



Product	Katronon WTG	UFM-7	UFM-8	UFM Guard
Model	wall thickness gauge	wall thickness gauge	wall thickness gauge	pig detector
Echo-echo-principle	n/a	n/a	yes	n/a
Medium	metals	metals	metals, non-metals	liquids
Wall thickness Pipe diameter	1.0~200 mm -	≥ 1.0 mm ≥ 10 mm	0.5~508 mm	onbeperkt
Process temperatures	-20~500 °C	-20~300 °C	-10°C~300°C	-40~92 °C / -40~125 °C
Measuring channels	1	1	1	1
Measuring range	1,000~9,999 m/s	1,000~9,999 m/s	500~9,999 m/s	unlimited
Accuracy	± 0.05 mm	± 0.05 mm	± 0.05 mm	dependent on application
Power supply Battery life	2 x 1.5 V AA 200 h	2 x 1.5 V AA 200 h	2 x 1.5 V AA 40 h	24~26 V DC
Process inputs	n/a	n/a	n/a	n/a
Process outputs	n/a	n/a	n/a	0~10 V
Communication	n/a	n/a	USB	n/a
Internal data logger	n/a	n/a	yes	n/a



Product	Cygnus 1 Ex	Cygnus 2+	Cygnus 4+
Model	wall thickness gauge, ATEX	wall thickness gauge	wall thickness gauge
Echo-echo-principle	yes	yes	yes
Medium	metals, plastics, glass, ceramics	various (incl. plastic)	heavily corroded metals, with or without coating
Wall thickness Pipe diameter	1.0~250 mm -	0.8~250 mm	0.8~250 mm
Process temperatures	-10~50 °C	-10~50 °C	-10~50 °C
Measuring channels	1	1	1
Measuring range	2,000~7,000 m/s	1,000~9,000 m/s	1,000~9,000 m/s
Accuracy	± 0.1 of ± 0.05 mm	± 0.1 of ± 0.05 mm	± 0.1 of ± 0.05 mm
Power supply Battery life	2,5 or 5 Mhz 6~8 h	3 x AA / R6 10 h	3 x AA / R6 10 h
Process inputs	n/a	n/a	n/a
Process outputs	n/a	n/a	n/a
Communication	n/a	n/a	n/a
Internal data logger	yes	n/a	yes

Complementary products

Available from stock

Instruments and accessories for a complete measurement solution.

Level meters 	Detection sensors full/empty 	Sensors for tubing 
Pressure & temperature sensors 	GPRS 	Calibration blocks 
Sensor mounting rails 	Sensor protection caps 	Inline flow meters 

Service & support

What can we do for you?

Our measurement instruments are reliable and built to last. Throughout their entire service life, you can count on our expertise and support. From the very first point of contact through to installation, the measurement itself, maintenance and repair, calibration, advice and training.

Technical support

24/7 available

Correct installation and configuration are at least as important as choosing the right flow meter.

You may of course choose to carry out the installation and measurements yourself. However, limited time or resources are good reasons to make use of our support. We are on standby to install flow meters at your site and carry out measurements. We also handle reporting if required.

Repair and optimisation

Should you discover a fault in an ultrasonic flow meter, whether supplied by us or another manufacturer, we will investigate what has gone wrong in our own workshop. Based on that analysis, we repair or optimise the instrument. That too is sustainability.

Measurement on site

Your location, our expertise

Specific measurement requirements that cannot be handled in-house, limited time or resources: all good reasons to make use of our measurement service.

Our experienced engineers come to you, listen to your requirements and ensure that the measurement is carried out efficiently, professionally and safely. All you need to do is grant us access to the measurement location. We take care of the rest.

Working method

Before visiting your site, we provide method statements for the work to be carried out and conduct an LMRA risk assessment in accordance with VCA requirements. We work accurately, tidily and in compliance with the applicable safety policy.

Service & support

What can we do for you?



Calibration

Maximum accuracy

In our own service workshop, we calibrate all types and brands of ultrasonic and electromagnetic flow meters. Our calibration rig was developed in collaboration with NMI/VSL.

With a turnaround time of just a few working days, you will never be without your instrument for long.

We are equally happy to come to your site with our mobile calibration equipment.

When to calibrate?

If a measurement deviation compromises the quality of your flow process, it is advisable to have the flow meter calibrated periodically.



Energy advice on demand

Saving through measurement

Knowing where and when the peak in your energy consumption occurs can lead to significant cost savings. Mapping the energy flows within your building or plant is the first step.

Quickly and efficiently, we chart your energy consumption without interrupting your processes. Using a clamp-on ultrasonic flow meter, we measure flow rates to an accuracy of 0.5%. The ΔT is determined by means of paired PT100 temperature sensors.

Energy savings in focus

Knowing where energy is being lost is the first step towards cost reduction. We make that transparent, without shutting down your process.



Training

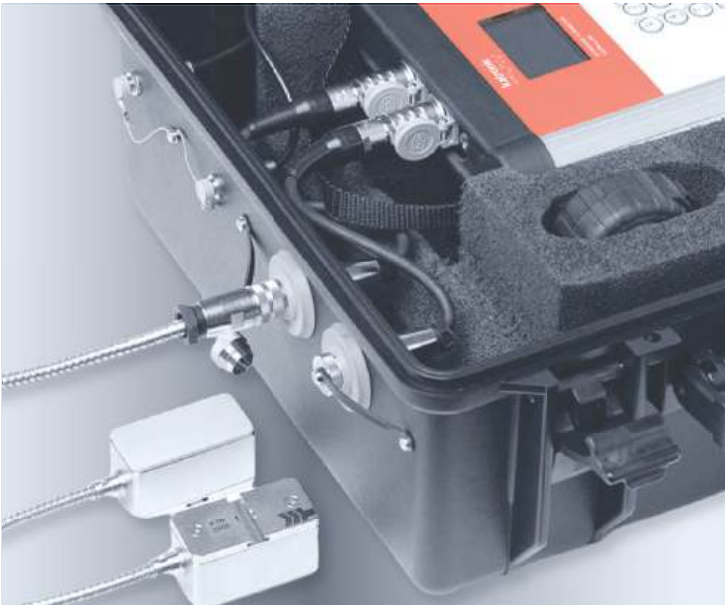
Share in our experience

Clamp-on ultrasonic flow meters are in principle straightforward to install, operate and maintain. However, in many situations training can be very valuable, for example in complex operating conditions or with a large number of users.

We provide training both in-house and on site, to familiarise you and your colleagues with ultrasonic measurement techniques. We help keep knowledge up to date and offer training and advice at every level: from basic knowledge to tailored courses, adapted to experience and the number of participants.

U-F-M training

- Theory behind the measurement.
- Installing ultrasonic flow meters.
- Use of our test bench.
- Support with troubleshooting and maintenance.



Special solutions

Tailored measurement

Not every measurement challenge fits within a standard offering. We think along with you in complex or unusual situations: from custom configurations and hard-to-reach measurement locations to specific reporting requirements and integration into existing systems.

Our engineers work closely with you to develop the best possible solution, taking your requirements and the specific demands of your application into account.

Bespoke solutions

- Software configurations for non-standard liquids or pipe materials.
- Measurement of physical liquid properties via speed of sound or concentration.
- Customised input and output configurations.
- Tailor-made cases and alternative instrument housings for application-specific conditions.

Calibration

Demonstrable accuracy

Reliable measurement data begins with accurate calibration. With our modern facilities and internationally traceable references, you are assured of demonstrable measurement certainty.

Widely applicable

- Ultrasonic / clamp-on.
- Electromagnetic.
- Coriolis.
- Thermal.
- Turbine.
- Vortex.
- Rota meter.

Pressure and temperature calibrations are also possible, separately or combined with flow measurements.

Calibration facilities

- Calibration range DN40 to DN250.
- Flow rates up to 900 m³/h.
- Own water circuit of 6000 litres.
- Two pumps (5 and 22 kW) for a wide flow rate range.
- Laser-cut flow straightener for a stable flow profile.

With multiple output calibration and a digital display, we assess real-time data, including statistical analysis of measurement uncertainty.

Why calibrate?

Quality and process certainty. Inaccurate measurement values compromise the reliability of your process data, with all the consequences that entails for product and process quality.

Compliance. Many sectors are subject to statutory or standards-based obligations with regard to measurement accuracy, environmental legislation and audit requirements. Calibration provides the evidence.

Cost savings. Small, undetected deviations can lead to significant losses on an annual basis, in energy consumption, raw material use or product rejection.

Why choose U-F-M?

- Own calibration installation.
- Collection and delivery service.
- Fast turnaround times.
- Practical experience.
- 'As found' and 'As left'-reporting, including adjustment.
- Full traceability.
- Statistical validation of results.

Brand-independant calibration. At U-F-M we also calibrate flow meters from other manufacturers.

Calibration on site

Downtime is often not an option. That is why we also carry out calibrations at your location. We work with mobile equipment, so your instruments remain in operation.

- Mobile calibration on site.
- Minimal process interruption.
- Also for periodic inspection and verification.

"Every accurate flow measurement begins with a reliable reference."

In which sector are you active?

