Internal pipeline pig inspections do not require any modification on the measuring system installed outside. The acoustic measuring equipment is not subjected to wear and tear which means it is practically maintenance-free.

Non-invasive clamp-on gas flow measurement offers significant advantages compared to conventional wetted measuring systems with the advantages of clamp-on measuring technology. Measuring from the outside does not only mean measuring from the safe side. The advantages of non-invasive clamp-on gas flow measurement pay off over the entire service life of the measuring system.

FLEXIM’s non-invasive gas flow measurement with FLUXUS® combines the excellent bidirectional measuring performance of ultrasonic gas flow measurement with external Excellence and Efficiency.

- No pressure losses, no energy losses (no need for frequent work in hazardous areas)
- Not subject to wear and tear – virtually maintenance-free
- - no need for process interruptions
- - permanent transmission casing - no maintenance needed
- - flexible installation - no special measuring line needed for frequent transducer exchanges
- - negligible zero offset
- - long life time
- - minimal installation and maintenance costs
- - Stainless steel transmitters available for use offshore
- - long term stability even under roughest conditions
- - Permanent transducer coupling – no maintenance needed
- - No zeroing necessary
- - Every measurement system is calibrated in-house

For FLEXIM, accuracy is a topic we take very seriously. FLEXIM’s specified installed accuracy claims can seem conservative but we firmly believe that clients expect us to overperform rather than disappoint. Accuracy claims can seem conservative but we firmly believe that clients expect us to overperform rather than disappoint.

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Internal pipeline pig inspections do not require any modification on the measuring system installed outside. As the clamp-on transducers are installed during ongoing operation, the installation costs are significantly lower than with wetted ultrasonic measuring systems. Measuring from the outside does not require further process stops for installation and frequent maintenance as well as causing pressure losses within the pipe. Thus, measuring simply involves non-intrusive ultrasonic technology can be the superior solution.

Conventional wetted measuring technologies, e.g. differential pressure meters, are exposed to specific challenges such as fugitive gas emissions, no pressure loss and, above all, never any interruption of production or supply.

FLEXIM’s non-intrusive gas flow measurement systems FLUXUS® G stand their ground in invasive flow measurement of gases. Today, our ultrasonic gas flow measurement systems FLUXUS® G are dominating the gas industry due to their accuracy, reliability, robustness and safety. They open up new possibilities for the transport, storage and distribution from exploration and production to transport, storage and distribution for a wide range of applications:

- Odoriser Stations
- Medium Pressure Networks
- LNG Plants
- Underground Storage – Gas Injection and Lift
- Wellhead Gas Flow Measurement
- Gas Injection & Lift
- Compressor Stations
- Pipeline Flow & Pressure measurement
- Integrity Monitoring
- Gas at the Separator Outlet
- Production
- Gas Treatment
- Check Metering
- Offshore
- Offshore
- Offshore

The superior solution

Non-intrusive ultrasonic gas flow measurement with FLUXUS® G

Accurate – Reliable – Robust – Safe

External Excellence and Efficiency

FLEXIM’s non-invasive gas flow measurement with FLEXUS® G combines the excellent technical performance of the measuring systems installed outside with the benefits of the latest digital and network technologies. For process operators, the benefits are high performance plus low total cost of ownership. As a result, process operators are able to reliably measure gas flow outside the pipe. The practical advantages are obvious: no wear and tear by the medium flowing inside the pipe, no risk of leakage and no restriction to flow direction.

FLEXIM’s transducers pair and match automatically to any application of the calorific value during a “Sensprom” chip.

FLUXUS® G offers high precision and accuracy, which is especially beneficial in medium and high pressure settings. The superior solution changes — according to ANSI/ASME MFC-5.1-2011. This prevents false measurement readings during temperature swings (day/night).

FLEXIM’s transducers automatically compensate for ambient temperature changes – according to ANSI/ASME MFC-5.1-2011 regulations guarantee a high measurement accuracy for every measurement setting.

FLEXIM calibrates pairs of transducers and measuring transmitters independently of one another so that the narrowly defined measurement uncertainties are always observed, regardless of which transducers are used with which transmitter. FLEXIM’s transducers are all individually factory calibrated, with storage of the calibration data on a “Sensprom” chip. The calibrated transmitter automatically compensates for ambient temperature changes – according to ANSI/ASME MFC-5.1-2011 regulations guarantee a high measurement accuracy for every measurement setting.

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Internal pipeline pig inspections do not require any modification on the measuring system installed outside. The acoustic measuring equipment is not subjected to wear and tear which means it is practically maintenance-free.

As the clamp-on transducers are installed during ongoing operation, the installation costs are significantly lower than with wetted ultrasonic measuring systems with the advantages of clamp-on measuring technology. Measuring from the outside does not interfere with the pipeline’s operation.

Non-invasive gas flow measurement with FLUXUS® means:

- No need for internal installation, outright for laser or ultrasonic technology.
- No bulky equipment or pipe disruption, no need for process intervention.
- Process flow measurement; non-invasive, independent of the flow direction. "Bifurcation" is never an issue.
- No pressure or velocity loss by the measuring device, no need for frequent recalibration in hazardous areas.
- No vibration caused by the medium flowing inside the pipe. Clamp-on ultrasonic transducers are simply mounted on the outside of the pipe. The practical advantages are obvious: no wear and tear by the medium flowing inside the pipe, no risk of leakage and support systems.

Unique features of the FLUXUS® G flow meters:

- Measurement system placed in line, no measurement distortion
- No need for zeroing during measurement
- Easy alignment of the ultrasonic measuring transducers by humans
- Requires only one sensor pair for bifurcated measurements
- Measurement accuracy: ± 0.3% ... 1.0% of reading, ± 0.03 ft/s (application dependent)
- Flow velocity: 0.03 to 115 ft/s
- Technical facts

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
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<tr>
<td>Static pressure test</td>
<td>± 1% ... 3% of reading, ± 0.03 ft/s (application dependent)</td>
</tr>
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<td>Flow velocity</td>
<td>0.03 to 115 ft/s</td>
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<tr>
<td>Measurement uncertainty</td>
<td>± 0.3% ... 1.0% of reading, ± 0.03 ft/s (application dependent)</td>
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<tr>
<td>Calibration</td>
<td>&quot;automatic zero&quot; workarounds.</td>
</tr>
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<td>Calibration data</td>
<td>FLEXIM's transducers are carefully paired according to their individual properties.</td>
</tr>
<tr>
<td>Full calibration</td>
<td>FLEXIM calibrates pairs of transducers and measuring transmitters independently and reads the individual calibration data, avoiding potential errors and making calibration data on a &quot;Sensprom&quot;chip. The calibrated transmitter automatically compensates for ambient temperature changes – according to ANSI/ASME MFC-5.1-2011. This prevents false measurement readings during temperature swings (day/night).</td>
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<td>Ambient temperature compensation</td>
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<td>Sensor pairs</td>
<td>± 0.3% ... 1.0% of reading, ± 0.03 ft/s (application dependent)</td>
</tr>
<tr>
<td>Full capacity</td>
<td>± 0.3% ... 1.0% of reading, ± 0.03 ft/s (application dependent)</td>
</tr>
<tr>
<td>Flow rate capability</td>
<td>± 0.3% ... 1.0% of reading, ± 0.03 ft/s (application dependent)</td>
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FLEXIM’s transmitters are available for use offshore.

FLEXIM's transducers are carefully paired according to their individual properties. This process is necessary to transform the input signal into an output signal. This is done using a special pair of sensors with a single-frequency signal. Each pair of sensors is then calibrated and the calibration data is readied for use with the transmitter.

FLUXUS® G measures flow rates and measuring transmitters independently and reads the individual calibration data, avoiding potential errors and making calibration data on a "Sensprom"chip. The calibrated transmitter automatically compensates for ambient temperature changes – according to ANSI/ASME MFC-5.1-2011. This prevents false measurement readings during temperature swings (day/night).

Conventional wetted measuring technologies, e.g. differential pressure meters, are exposed to specific challenges such as high intrusive pressure losses and leaks. Thus, it is imperative to measure accurately, reliably and economically. FLUXUS® G’s measurement accuracy is (as far as we know) the best available on the market today.

FLEXIM's transducers automatically compensate for ambient temperature changes – according to ANSI/ASME MFC-5.1-2011. This prevents false measurement readings during temperature swings (day/night).
Transportation

Gas at the Separator Outlet

Wellhead Gas Flow Measurement
- Monitors mass flow for ease and accuracy on the production line.
- No pressure loss.
- No leak risk.
- Stainless steel and independence from pressure and medium.
- Excellent robustness for subsea and onshore installations.
- No installation for subsea gas measurement systems as there is no gas exposure required.

Every existing solution offers the flexibility of individual wellhead measurement systems that adapt to the specific situation:
- No measurement systems are ever susceptible to fouling.
- Easy retrofitting possibilities for optimising injection or withdrawal rates.

Gas Injection and Lift
- Perfect for injection or lift systems by means of large diameter and foam stabilized wells with corresponding high pressure requirements.
- Significant cost savings:
  - No installation of additional gas treatment equipment is required.
  - No complex installation and commissioning required.
- Maximum availability:
  - Commissioning with no interruption of flow direction monitoring.
- Easy and cost effective retrofitting for optimising injection or withdrawal rates.

Gas Treatment
- Simple and reliable flow measurement independent of pressure, temperature, medium, solids and interferences.
- Excellent robustness for subsea and onshore installations.
- No measurement systems are ever susceptible to fouling.
- Easy retrofitting possibilities for optimising injection or withdrawal rates.

Compressor Stations
- Variable output at the same GFRP is a common requirement in subsea applications.
- High-speed measurement: no measurement systems are ever susceptible to fouling.
- Maximum measurement distance: the pipe system is never in direct contact with the gas.
- Extremely robust: No wear and abrasion of the instrumented elements.
- High measuring dynamics and independence from pipe diameter and thick walled pipes (up to 1.4 inches).
- Accurate and reliable flow measurement at highly pressurised and large nominal width pipes (AR 1000/DP 500).
- Significance reduction in transport network safety, no risk of pipe failure.
- High measuring accuracy and independence from pipe condition.
- Significantly cost savings:
  - No installation of additional gas treatment equipment is required.
  - No complex installation and commissioning required.

Pipeline Flow Monitoring
- Significant cost savings:
  - No installation of additional gas treatment equipment is required.
  - No complex installation and commissioning required.
- Maximum availability:
  - Commissioning with no interruption of flow direction monitoring.
- Easy and cost effective retrofitting for optimising injection or withdrawal rates.

Flow Direction Monitoring
- Non-invasive measurement of flow direction monitoring.
- Reliable measurement in compact network facilities.
- No total flow is required for monitoring gas direction.
- Reliable measurement of subsea pipelines.
- Excellent robustness for subsea and onshore installations.
- Installation of the ultrasonic flow measurement system or related applications is non-invasive technology.
- No leaks and no pressure loss.
- Reliable, bidirectional flow measurement over a wide range of pressure, temperature and flow rates.
- High measuring dynamics and independence from pipe diameter and thick walled pipes (up to 1.4 inches).
- Accurate and reliable flow measurement at highly pressurised and large nominal width pipes (AR 1000/DP 500).
- Significantly cost savings:
  - No installation of additional gas treatment equipment is required.
  - No complex installation and commissioning required.

Storage

Underground Gas Storage – Gas Injection and Withdrawal
- Accurate and reliable flow metering at high pressure and high media temperatures.
- Significant cost savings:
  - No installation of additional gas treatment equipment is required.
  - No complex installation and commissioning required.
- Maximum availability:
  - Commissioning with no interruption of flow direction monitoring.
- Easy and cost effective retrofitting for optimising injection or withdrawal rates.

Gas Dehydration
- Measurement of natural gas flow to dehydration plants.
- Significantly cost savings:
  - No installation of additional gas treatment equipment is required.
  - No complex installation and commissioning required.
- Maximum availability:
  - Commissioning with no interruption of flow direction monitoring.
- Easy and cost effective retrofitting for optimising injection or withdrawal rates.

Check Metering
- Reliable and independent flow measurement especially in small diameter and thick walled pipes with exceptionally high measuring dynamics.
- Significantly cost savings:
  - No installation of additional gas treatment equipment is required.
  - No complex installation and commissioning required.
- Maximum availability:
  - Commissioning with no interruption of flow direction monitoring.
- Easy and cost effective retrofitting for optimising injection or withdrawal rates.

Medium Pressure Networks
- Efficient dehydration processes by online flow and concentration measurement of the circulated glycol.
- Excellent robustness for subsea and onshore installations.
- No process interruption for installation.
- No leakage risk through the measuring system.
- No mechanical wear or tear of the flow meter.
- High pressure systems without any limitation.
- No pressure loss, which means no reduction of efficiency.
- Reliable, bidirectional flow measurement at large nominal width pipes up to 1.4 inches.
- Significantly cost savings:
  - No installation of additional gas treatment equipment is required.
  - No complex installation and commissioning required.
- Maximum availability:
  - Commissioning with no interruption of flow direction monitoring.
- Easy and cost effective retrofitting for optimising injection or withdrawal rates.

Odoriser Stations
- Simple installation without interruption of the gas supply.
- No leakage risk through the measuring system.
- No mechanical wear or tear of the flow meter.
- No pressure loss, which means no reduction of efficiency.
- Reliable, bidirectional flow measurement at large nominal width pipes up to 1.4 inches.
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- Easy and cost effective retrofitting for optimising injection or withdrawal rates.
Transportation

Wellhead Gas Flow Measurement
- Measuring widely in the near and away from the production field
- No pressure loss
- No leak test
- Magnetic couplings and独立 independent transducer pressure
- Information for gas flow rates as well as for the internal pressure
- Easy retrofitting possibilities for individual wellhead measurements in various and different applications
- Measurement systems not in contact with the gas
- Gas mass flow measurement independent of pipe diameter and thick walled pipes (up to 1.4 inches)
- Accurate and reliable flow measurement independent of flow direction
- High turndown ratio and broad measurement range
- Maintenance free measurement, no need for regular calibration intervals
- No leakage risk through the measuring system
- No mechanical wear or tear of the flow meter
- Thus no need for expensive manhole structures
- Subsurface, NEMA 6P / IP68 buried installation possible

Gas Treatment
- Suction and reliable flow measurement independent of flow direction
- Best measurability for constant mixer near the pipe wall
- Measurement from the pipe wall outside – no more maintenance issues
- No pipework necessary for the installation of the ultrasonic flow measurement system or for maintenance
- Standard volume flow rates calculation within the meter
- Low standby energy with <500 µW (I/O) buried installation
- Ideal for odorizer dosing measurements at extremely low flow rates (below the range of invasive measuring devices)
- No extra costs due to special materials, any pipeline diameter and thick walled pipes (up to 1.4 inches)

Compressor Stations
- New high measurement independent of pipe diameter, material, metal and internal pressure
- No cross-coupling with nearby metering instrumentation into the gas field
- Intermediate measurement with independent internal pressure
- Easy retrofitting possibilities for optimising injection or withdrawal

Pipeline Flow Monitoring
- All pipes and flow measurement independent of pipe diameter 
- High reliability: No measurement, no maintenance efforts, no internal leakage
- Measurement data - highly accurate and reliable over the full process range
- Measurement independent of flow direction
- Easy replacing possibilities for optimising injection or withdrawal

Gas Monitoring
- Medium pressure networks
- Standard volume flow rates calculation within the meter
- No mechanical wear or tear of the flow meter
- Thus no need for expensive manhole structures

Underground Gas Storage - Gas Injection and Withdrawal
- Accurate and reliable flow metering at high pressure and high volume flow rates (up to 1 m³/s)
- Reliable measurement from flow measurement in a variety of applications
- Measurement not affected by high moisture content - alternative meter method.
- Long term stability and calibration intervals required

Gas Dehydration
- Accurate and reliable flow measurement in demanding conditions
- Heavy and thick walled steel pipes (up to 1.4 inches)
- Reliable, bidirectional flow measurement at large diameters and thick walled pipes with exceptionally high measuring dynamics
- Long-term stability, no calibration intervals required

Check Metering
- Customer satisfaction with FLUXUS® G608 goes where other measuring devices can’t. It is the only all purpose portable clamp-on ultrasonic flow meter for flow measurement of gases as well as liquids
- Further information can be found in the FLUXUS® Cryo Brochure

Medium Pressure Networks
- FLEXIM’s FLUXUS® G608 goes where other measuring devices can’t. It is the only all purpose portable clamp-on ultrasonic flow meter for flow measurement of gases as well as liquids
- Liquid high volume PROD Fast and medium diameter
- Brine during leaching processes
- Compressed air

Go for gas!
FLEXIM’s FLUXUS® G608 goes where other measuring devices can’t. It is the only all purpose portable clamp-on ultrasonic flow meter for flow measurement of gases as well as liquids. Further information can be found in the FLUXUS® Cryo Brochure
Transportation

Gas at the Separator Outlet

Wellhead Gas Flow Measurement

- Designed for the measurement in very harsh environments.  
- Suitable for different radiant temperatures, welding, acid and alkaline environments. 
- New technology for lower gas measurement in the field with very good accuracy. 
- Easy retrofitting possibilities for optimising injection or withdrawal.

Compressor Stations

- Non-intrusive determination of flow direction monitoring. 
- Measurement from the pipe wall outside – no more maintenance issues. 
- No mechanical wear or tear of the flow meter. 
- Thus no need for expensive manhole structures. 
- Simple installation without interruption of the gas supply. 
- Subsurface, NEMA 6P / IP68 buried installation possible.

Piggable

- Complete plant availability at all times; no pipe work and no pressure drop required. 
- No wetted parts, no wear and tear, no maintenance. 
- Non-intrusive determination of flow direction monitoring. 
- Most types of protective coatings can remain on the pipe. 
- Commissioning without any pipe work and without any line downtimes in case a custody transfer meter is required. 
- Reliable, bidirectional flow measurement at large dimensions, material, wall thickness and internal flow rates. 
- Cathodic corrosion protection is not affected.

Check Metering

- Reliable and accurate flow measurement on ultrasonic flow measurement system certified for use in hazardous areas (FM Class I, Div. 2 and ATEX, IECEx Zone 2). 
- Safe equipment due to the non-invasive technology – no pipework, one man installation without lifting gear. 
- Highly economical: No extra costs due to special materials, technologies. 
- No mechanically moving parts, no additional costs for maintenance, no process interruption for installation. 
- High reliability: No pressure loss, which means no reduction of efficiency.

Underground Gas Storage – Gas Injection and Withdrawal

- Acoustic and vialine flow metering at highly protected and confined injection and withdrawal stations. 
- Reliable acoustic flow metering at a wide variety of applications. 
- No measurement drift – highly accurate and reliable. 
- High turndown ratio and independence from pressure. 
- No leak risk.

LNG Terminals

- Reliable, bidirectional flow measurement at large dimensions, material, wall thickness and internal flow rates. 
- Cathodic corrosion protection is not affected. 
- Measurement not affected by high moisture content – extremely wear resistant. 
- Long term stability, no calibration intervals required. 

Check Metering

- Reliable and accurate flow measurement on ultrasonic flow measurement system certified for use in hazardous areas (FM Class I, Div. 2 and ATEX, IECEx Zone 2). 
- Safe equipment due to the non-invasive technology – no pipework, one man installation without lifting gear. 
- Highly economical: No extra costs due to special materials, technologies. 
- No mechanically moving parts, no additional costs for maintenance, no process interruption for installation. 
- High reliability: No pressure loss, which means no reduction of efficiency.

Odoriser Stations

- Ideal for odorizer dosing measurements at extremely low flow rates (below the range of invasive measuring devices). 
- No problem in measuring wet gas with high liquid volume fractions. 
- Consistent, repeatable and accurate gas flow measurement in demanding conditions.

Flow Direction Monitoring

- Non-intrusive determination of flow direction monitoring. 
- Measurement from the pipe wall outside – no more maintenance issues. 
- No mechanical wear or tear of the flow meter. 
- Thus no need for expensive manhole structures. 
- Simple installation without interruption of the gas supply.

Medium Pressure Networks

- Measurements from the pipe wall outside – no more maintenance issues. 
- No mechanical wear or tear of the flow meter. 
- Thus no need for expensive manhole structures. 
- Simple installation without interruption of the gas supply.

Compressor Stations

- Non-intrusive determination of flow direction monitoring. 
- Measurement from the pipe wall outside – no more maintenance issues. 
- No mechanical wear or tear of the flow meter. 
- Thus no need for expensive manhole structures. 
- Simple installation without interruption of the gas supply.

Check Metering

- Reliable and accurate flow measurement on ultrasonic flow measurement system certified for use in hazardous areas (FM Class I, Div. 2 and ATEX, IECEx Zone 2). 
- Safe equipment due to the non-invasive technology – no pipework, one man installation without lifting gear. 
- Highly economical: No extra costs due to special materials, technologies. 
- No mechanically moving parts, no additional costs for maintenance, no process interruption for installation. 
- High reliability: No pressure loss, which means no reduction of efficiency.

Odoriser Stations

- Ideal for odorizer dosing measurements at extremely low flow rates (below the range of invasive measuring devices). 
- No problem in measuring wet gas with high liquid volume fractions. 
- Consistent, repeatable and accurate gas flow measurement in demanding conditions.

Flow Direction Monitoring

- Non-intrusive determination of flow direction monitoring. 
- Measurement from the pipe wall outside – no more maintenance issues. 
- No mechanical wear or tear of the flow meter. 
- Thus no need for expensive manhole structures. 
- Simple installation without interruption of the gas supply.
Wellhead Gas Flow Measurement

- Easy retrofitting possibilities for optimising injection or withdrawal flow rates
- Easy and cost effective retrofitting
- Maximum availability: Any failed sensor or meter can be replaced within a few hours
- No process interruption for installation
- Non-intrusive determination of flow direction monitoring
- No mechanical wear or tear of the flow meter
- Thus no need for expensive manhole structures
- Safe equipment due to the non-invasive technology – no gaskets, no leakage points
- No pipework, one man installation without lifting gear
- High measuring dynamics
- Reliable non-invasive flow measurement even under extreme conditions (-261 °F) without pressure drops
- Increase in transport network safety, no risk of contamination
- High accuracy and reliability: meter confidence and plant availability
- No pressure loss, which means no reduction of efficiency to inline instrumentation
- Further information can be found in the FLUXUS® Cryo Brochure

Gas Injection and Lift

- Compressors for natural gas
- High turndown ratio and independence from pressure, density, material, wall thickness and internal dimensions
- Standard volume flow rates calculation within the meter using ultrasonic flow measurement system certified for use in hazardous areas (FM Class I, Div. 2 and ATEX, IECEx Zone 2).
- Increase in suction and injection lift at high pressure and at high temperature with very low risk of error
- No leaks and no gasket points
- Safe equipment due to the non-invasive technology – no gaskets, no leakage points
- No pipework, one man installation without lifting gear
- High measuring dynamics
- Reliable non-invasive flow measurement even under extreme conditions (-261 °F) without pressure drops
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- Further information can be found in the FLUXUS® Cryo Brochure

Compressor Stations

- Minimum loss of efficiency in large diameter and thin walled pipes with exceptionally high measuring dynamics
- High reliability: easy retrofitting, no mechanical wear or tear, dual beam redundant
- Maximum availability: Any failed sensor or meter can be replaced within a few hours
- No process interruption for installation
- Non-intrusive determination of flow direction monitoring
- No mechanical wear or tear of the flow meter
- Thus no need for expensive manhole structures
- Safe equipment due to the non-invasive technology – no gaskets, no leakage points
- No pipework, one man installation without lifting gear
- High measuring dynamics
- Reliable non-invasive flow measurement even under extreme conditions (-261 °F) without pressure drops
- Increase in transport network safety, no risk of contamination
- High accuracy and reliability: meter confidence and plant availability
- No pressure loss, which means no reduction of efficiency to inline instrumentation
- Further information can be found in the FLUXUS® Cryo Brochure

Pipework Flow Monitoring

- Accurate and reliable flow metering at high pressures and at high temperatures in any pipe size. It is turbine.
- Reliable transition from flow measurement set to a vessel
- Measurement not affected by high moisture content – absolutely leak proof.
- Long term stability, calibration data included
- No wetted parts, no wear and tear, no maintenance
- Maximum operational safety due to robust non-invasive
- No pressure loss, which means no reduction of efficiency to inline instrumentation
- Further information can be found in the FLUXUS® Cryo Brochure

Gas Dehydration

- Fast and accurate calculation of gas mass flow rate
- Consistent, repeatable and accurate gas flow measurements in demanding conditions
- No problem in measuring wet gas with high liquid volume fractions or at high pipe temperatures
- Measurement system not susceptible to fouling
- Large turndown ratio and independence from pressure, density, material, wall thickness and internal dimensions
- Standard volume flow rates calculation within the meter using ultrasonic flow measurement system certified for use in hazardous areas (FM Class I, Div. 2 and ATEX, IECEx Zone 2).
- Increase in suction and injection lift at high pressure and at high temperature with very low risk of error
- No leaks and no gasket points
- Safe equipment due to the non-invasive technology – no gaskets, no leakage points
- No pipework, one man installation without lifting gear
- High measuring dynamics
- Reliable non-invasive flow measurement even under extreme conditions (-261 °F) without pressure drops
- Increase in transport network safety, no risk of contamination
- High accuracy and reliability: meter confidence and plant availability
- No pressure loss, which means no reduction of efficiency to inline instrumentation
- Further information can be found in the FLUXUS® Cryo Brochure

Check Metering

- Accuracy and reliability of metering technology is pivotal for smooth operations. In case a redundant meter is permanently taken out of service, no line downtimes in case a custody transfer meter is temporarily taken out of service for recalibration.
- No need to replace expensive metering equipment
- Increase in reliability, meter confidence and plant availability
- Go for gas!
Non-intrusive gas flow measurement with FLEXIM means:

- Portable measuring systems available for temporary inspections or modifications
- SIL 2 capable
- Permanent transducer coupling – no maintenance needed
- Repeatability: 0.15% of reading, ± 0.03 ft/s
- Temperature ranges: -40 °F to +175 °F (for liquefied gases down to -330 °F)
- Unique features of the FLUXUS G gas flow meters:
  - Non-process interruption for installation, neither for later calibrations
  - Highly robust and completely unaffected by solid particles in the gas flow
  - No pressure losses, no energy losses (no need for frequent work in hazardous areas)
  - No zeroing necessary
  - Every measurement system is calibrated in house

Technical facts

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Measurement systems</td>
<td>sub-strainometer</td>
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<tr>
<td>No zeroing necessary</td>
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<tr>
<td>Measuring uncertainty: ± 0.15% of reading, ± 0.03 ft/s</td>
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Laboratory Accuracy under Field Conditions

High accuracy and proven laboratory performance under realistic conditions is one task. Accurate field conditions are quite another thing.

- FLEXIM's non-invasive gas flow measuring equipment is not subjected to wear and tear which means it is practically maintenance-free.
- FLEXIM's ultrasonic measuring systems are made to last and deliver accurate, consistent results from day one. This is thanks to the patented technology of the ultrasonic measuring transmitters.
- FLEXIM's transmitters and ultrasonic flow meters are ideally suited to clamp-on applications. The process specific tube diameter or an approved one-inch diameter pipe is enough to ensure an accurate scan and control of the flow. Our technology is also available as "compact" transmitters.
- FLEXIM's non-intrusive technology is characterized by its excellent bidirectional measuring performance of the calibration data as "Compact" transmitters. The ultrasonic transmission automatically adapts itself to velocity and flow direction avoiding potential errors in measurement.
- FLEXIM's non-intrusive gas flow meters are the superior solution for your high accuracy claims can seem conservative but we firmly believe that clients expect us to overperform rather than disappoint.

For FLEXIM, accuracy is a topic we take very seriously. FLEXIM's specified installed accuracy is ± 0.15% of reading, ± 0.03 ft/s (liquids and gases)
- ± 1% ... 3% of reading, ± 0.03 ft/s (application dependent)
- ± 0.5% of reading, ± 0.03 ft/s (gases)
- ± 1% ... 3% of reading, ± 0.03 ft/s (gases)
- ± 0.5% of reading, ± 0.03 ft/s (gases)