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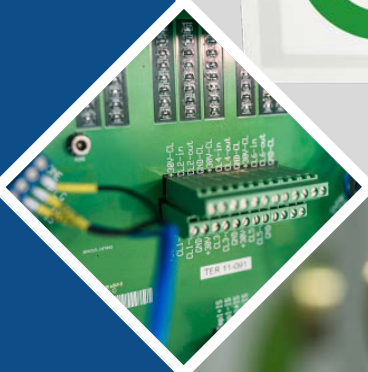
Fluenta FGM 160 Dual-Path Flare Gas Meter



High Accuracy and Redundancy Ensuring Reliable Measurement

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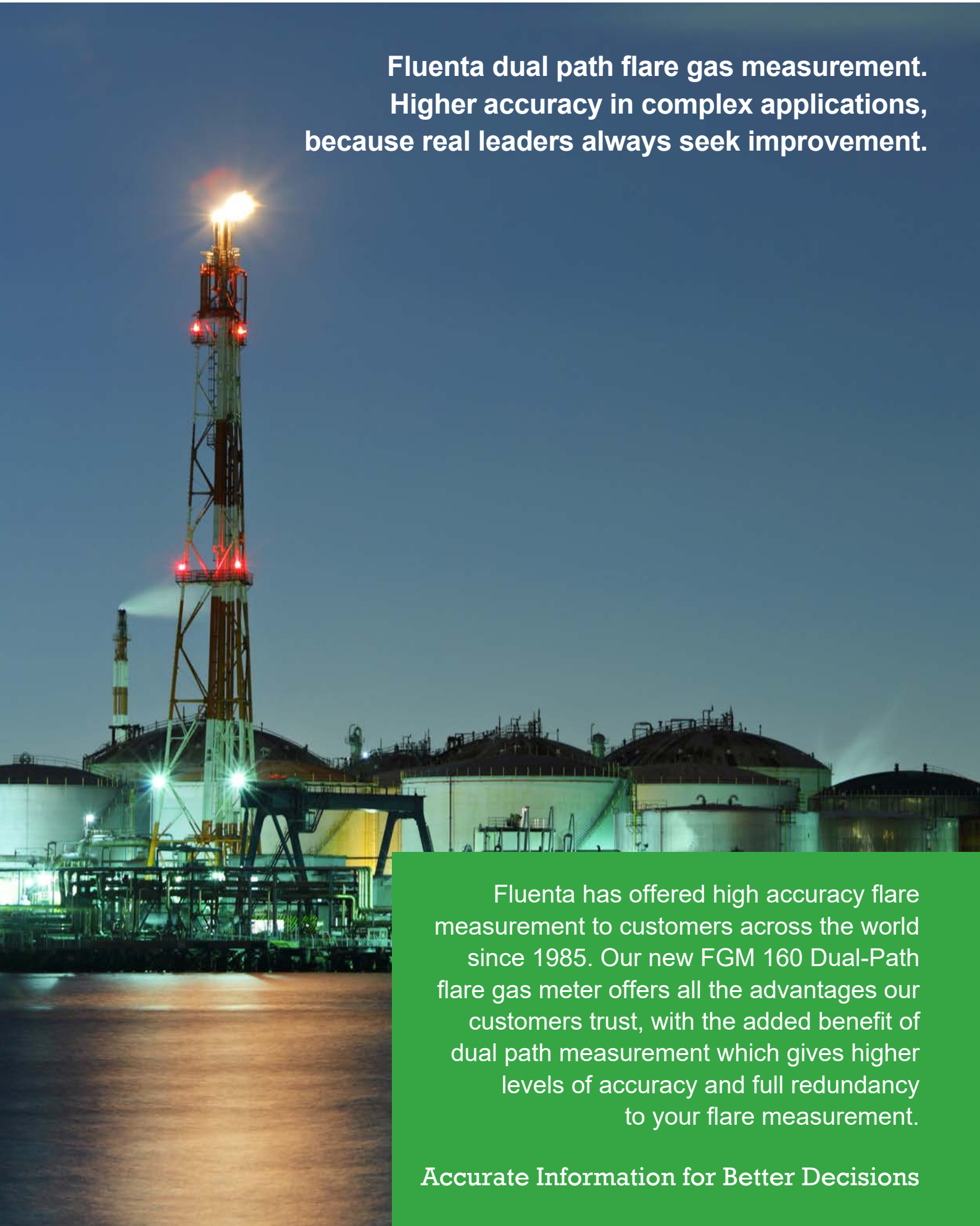


Fluenta dual path flare gas measurement.
Higher accuracy in complex applications,
because real leaders always seek improvement.

Fluenta has offered high accuracy flare measurement to customers across the world since 1985. Our new FGM 160 Dual-Path flare gas meter offers all the advantages our customers trust, with the added benefit of dual path measurement which gives higher levels of accuracy and full redundancy to your flare measurement.

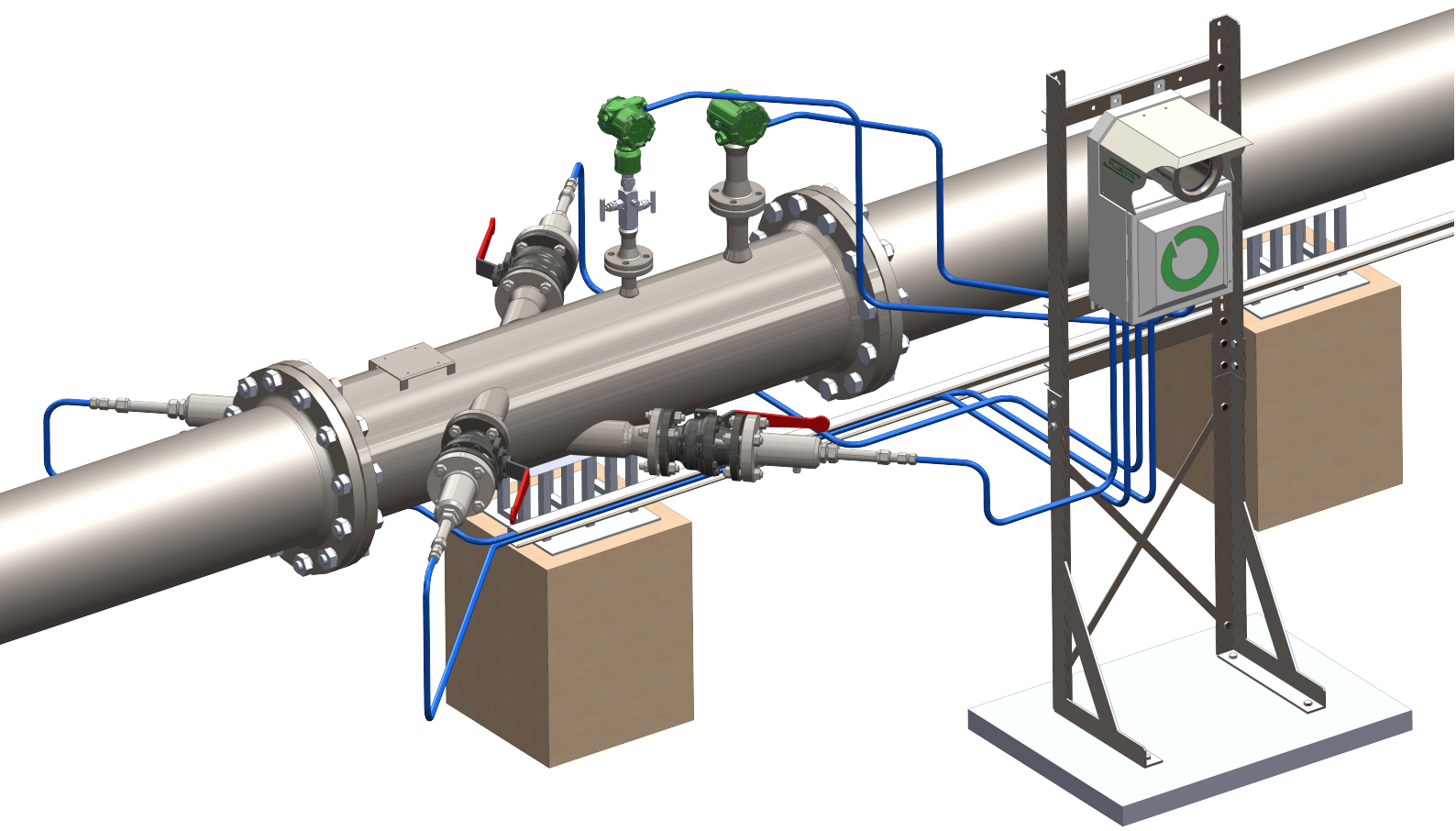
Accurate Information for Better Decisions

Dual-path for higher accuracy

Dual-path ultrasonic metering allows the flow profile of flare gas to be measured across two chords simultaneously. This extra measurement channel can help to compensate for fluctuations in the flow profile which occur during normal operations, and results in accuracy levels of ±0.75%, as confirmed by independent testing performed at VSL*.

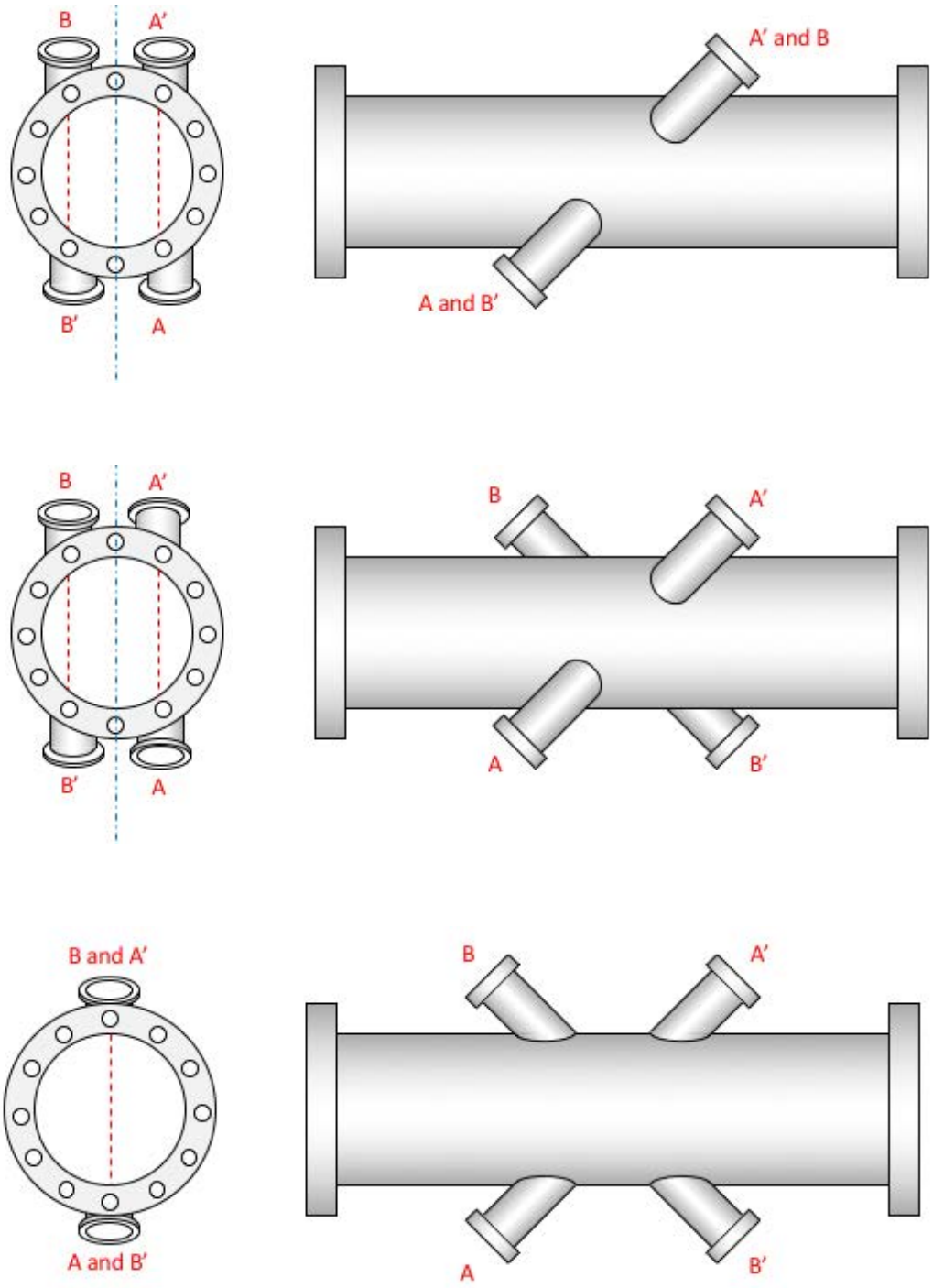
Dual-path for redundancy

The probability of a Fluenta ultrasonic transducer failing is exceedingly remote, but for operators who need to go above and beyond, the FGM 160 Dual-Path will still report flow even when one pair of transducers is inoperable. Where redundancy is the primary focus, the system can be configured to offer single-path levels of accuracy even when a pair of transducers fails.



* accuracy statement is valid for flows which result in a fully developed flow profile. Contact your Fluenta representative for more information and for a copy of the calibration testing.

Installation options



Fluenta offers a wide range of installation options for dual-path measurement.
Top and middle images: dual path using chords at different levels of the pipe to increase accuracy. The chords can be installed at any offset from the centre of the pipe.
Bottom image: dual path in a “plus” shape, with both chords passing through the centre of the pipe. This configuration can offer single-path levels of accuracy (up to ±1%) even in the case of a transducer failure.

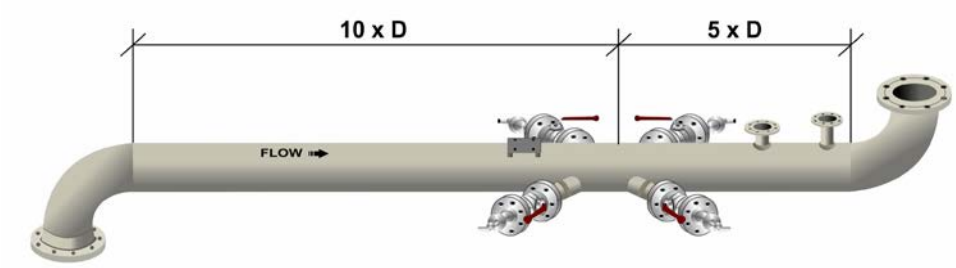
Installation options

The Fluenta FGM 160 Dual-Path can be installed using a spool piece, or with hot or cold tapping.

For the highest accuracy measurement, we strongly recommend a spoolpiece which is a length of pipe chosen to match your existing equipment. Flanges can be precision welded and quality controlled in the workshop before delivery, ensuring the highest levels of accuracy.

For operators who require it, Fluenta can provide welding alignment jigs and supervision for hot or cold tapping. These techniques negate the requirement for a major plant shutdown.

COMPACT INSTALLATION



No conditioning plates or other pipework inserts are required, and all Fluenta transducers require just 10 pipe diameters of straight tubing before the transducers and 5 diameters downstream. The Fluenta field computer can be mounted up to 30 meters from the transducers, allowing for easy, compact and flexible installation and positioning. The transducers require minimal maintenance as they have no moving parts.

NON-INTRUSIVE MEASUREMENT

Fluenta transducers are non-intrusive, meaning they are less prone to the build-up of dirt and corrosion which can impact the measurement accuracy, and do not affect gas flow.

Transducers which extend into the gas process are more likely to get damaged, increasing the need for repairs and replacements.

The latest in ultrasonic flow measurement

WHY MEASURE?

Often subject to taxation and strict regulations, the accurate measurement of flare gas has a variety of benefits that go beyond avoiding overtaxation on emissions or liability to penalties.

Knowing how much gas is flared or vented allows you to reduce emissions. This data can also generate revenue by selling the gas or create savings through onsite re-use. In addition, the wealth of data received lets you check for mass-balance calculation irregularities, thus identifying potential leaks before they pose a risk to health and safety.

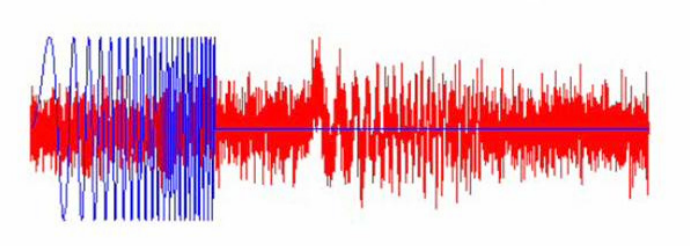
With zero flaring being the focus of international regulations and NGO initiatives, managing your flare gas emissions is not only industry best practice, but puts you at the forefront of a more sustainable way to use natural resources.

WHY ULTRASONIC?

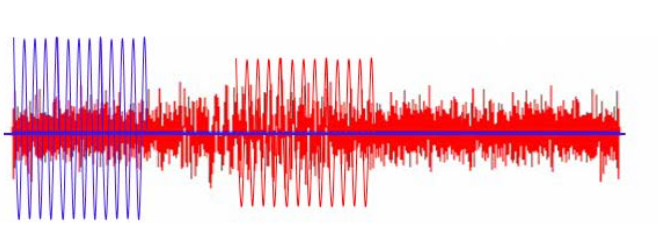
Unlike other technologies, ultrasonic measurement is not impacted by the composition or cleanliness of the gas flow. It delivers good repeatability regardless of turndown ratio or temperature ranges.

As Fluenta transducers are non-intrusive and do not have any moving parts, the requirements for maintenance and support are minimal. In fact, ultrasonic meters do not need shutdowns for installation or maintenance. This keeps the lifetime costs low and boosts return on investment.

Ultrasonic meters are the only devices which can deliver highly accurate results in flaring applications. While typical regulations today ask for 5% accuracy, only ultrasonic technology has the potential to keep up with stricter requirements, with the Fluenta dual-path system being capable of accuracy up to ±0.75%.



Variable Wave Chirp Ultrasound



Continuous Wave Ultrasound

UNIQUE SIGNAL PROCESSING

The combination of two signal types (a variable “chirp” signal and a continuous sine wave signal) enhances the accuracy and stability of the meter readings, preventing signal loss at high and low velocities.

The accuracy and reliability of this unique signal processing technology has been verified by CEESI and VSL. Achieving excellent performance in a broad spectrum of flare gas applications, the Fluenta FGM 160 Dual-Path Flare Gas Meter is the measurement solution of choice for many major companies in the Oil & Gas and Chemicals industry.

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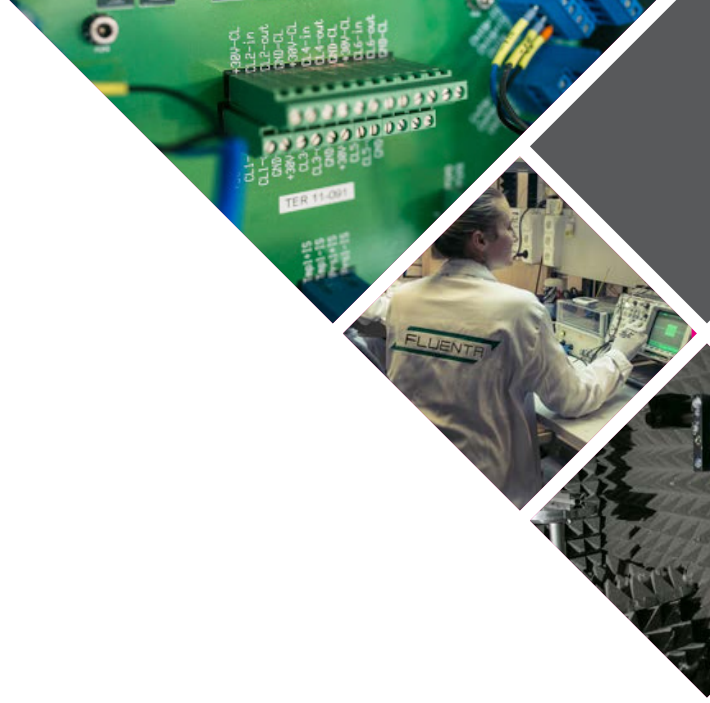
General Specifications	Standard	Optional
Transducer Type	Titanium / SS316	Titanium / Inconel Titanium / Hastelloy Titanium / 6Mo Titanium / Duplex
Transducer Cable Length	Up to 30m	
Functional Characteristics		
Velocity Range	0.03 - 120 m/s	
Accuracy	Up to ±0.75% (depending on calibration) for velocities with a fully developed flow profile	
Turn Down Ratio	4000:1	
Repeatability	Better than 1%	
Resolution	0.0008 m/s	
Measurement Parameters	Standard and actual volume flow, totalized standard volume flow, totalized mass flow, molecular weight, standard density, actual density, pressure, temperature, speed of sound, gas velocity.	
Operating Conditions		
Paths	Two ultrasonic paths in the same plane Other configurations dependent on application	
Pipe Sizes	12” to 72”	6” to 12” and 72” to 90”
Operating Temp. (Transducers)	-70 °C to +145 °C	-70 °C to +180 °C
Ambient Temp. (Field Computer)	-40 °C to +60 °C	
Design Conditions		
Design Temperature (Transducers)	-150 °C to +315 °C	
Design Pressure (Transducers)	20 barA (290 psiA)	
Certification		
General	IECEx, ATEX, CSA, INMETRO, TR CU County specific pattern approvals pending	
Field Computer	Ex de (ia) IIC T6, Tamb: -40 °C to +60 °C (Zone 1)	
Ultrasonic Transducers	EX ia IIC Zone 0	
Electrical Data		
Supply Voltage	24 VDC (20 - 32 VDC)	AC / DC conversion
Power Consumption	13 VA Max	
Communications		
Input Signal	Transit times from ultrasonic transducers. Temperature and pressure: digital HART or analogue 4/20mA. Gas composition via MODBUS protocol (optional).	
Output Signal	6 x analog 4-20 mA outputs, HART output, Pulse / frequency signal, RS422 / RS485, 2- or 4- wire, Modbus RTU Protocol.	



ABOUT FLUENTA

Founded in 1985 Fluenta is the global leader in flow monitoring, measurement and sensing using ultrasonic technology. Primarily serving the Oil & Gas market where it is the leader in European offshore flare gas monitoring, the company also provides flow monitoring and measurement services to the chemical, liquid natural gas and other industries. Fluenta is headquartered in Haugesund, Norway, with offices around the world.

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Product Support

For support on existing products, see our support page. Support helpline: +47 21 02 19 27 Email: support@fluenta.com

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