

FLUENTA

WE'RE FLUENT
IN PRECISE FLARE GAS
MEASUREMENT

FLUENTA FGM 160
FLARE GAS METER
& TFS TRANSDUCERS



FLARE GAS MEASUREMENT FOR YOUR COMPANY, AND THE ENVIRONMENT

Reducing and ultimately eliminating routine flaring is frequently identified as a key step in the global aim to achieve net-zero emissions.

The World Bank's Zero Routine Flaring by 2030 initiative was the first to unite governments and companies in the fight against flare gas. Now with over 30 governments and 40 oil companies endorsing the initiative, and many creating environmental policies of their own, we are closer than ever to ending routine flaring.

How do flaring regulations benefit you?

These initiatives not only help the environment, they also benefit the companies themselves in a number of ways.

Reduce costs & create revenue

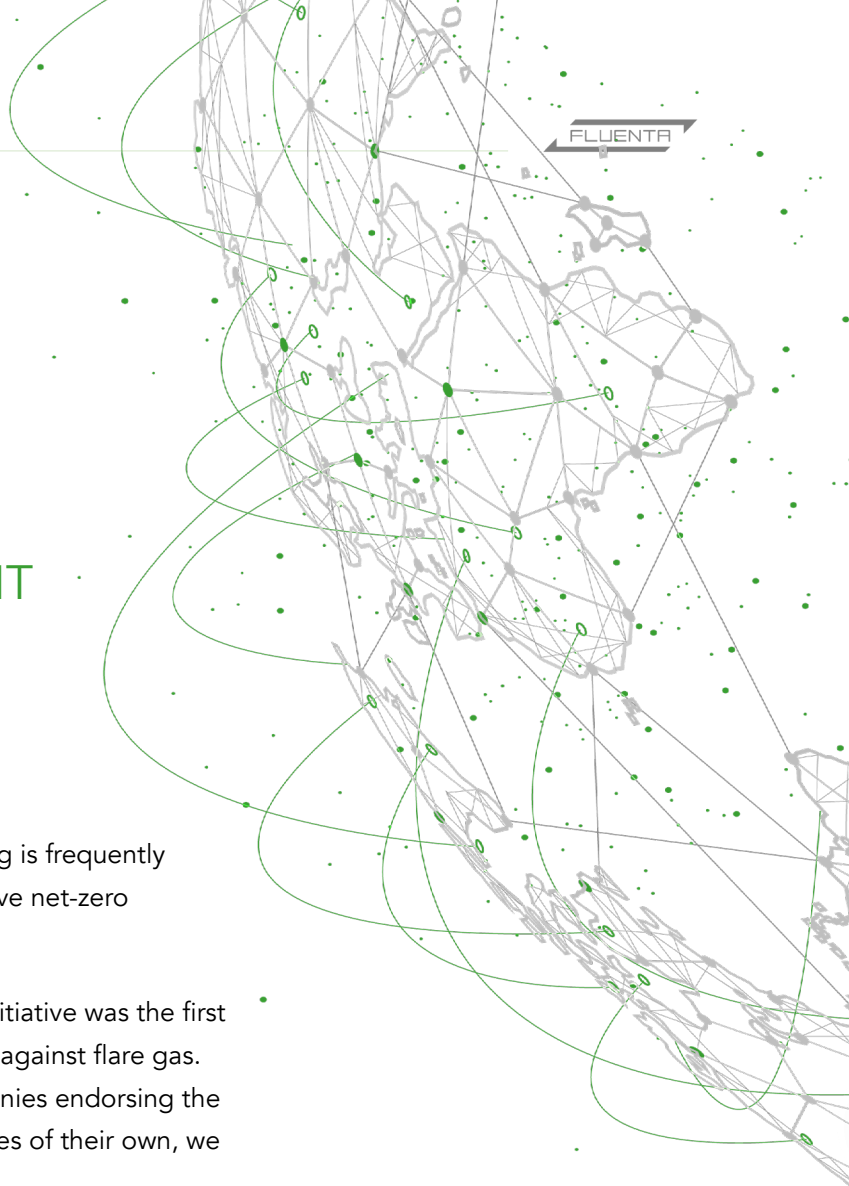
Associated gas that would usually be flared can be captured and used as feedstock, or even monetised by processing it into a saleable product such as LNG.

Positive perceptions

There is increasing pressure on the industry to take the necessary steps to reduce emissions. Endorsing an initiative, or having your own flare gas reduction policy communicates that you are actively working towards global net-zero targets.

Lead the way

Be an innovator within the industry and lead the way in environmental and flare gas policy, including accurate and reliable measurement to understand flare gas volumes.



THE FLUENTA FGM 160 FLARE GAS METER

The FGM 160 is an advanced flare gas meter that uses ultrasonic technology and enhanced signal combinations to measure flare gas accurately and reliably.

Increased Accuracy & Stability with Enhanced Signal Combinations

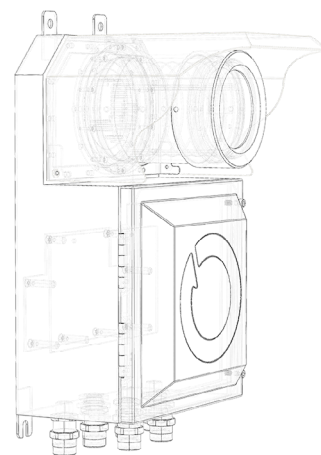
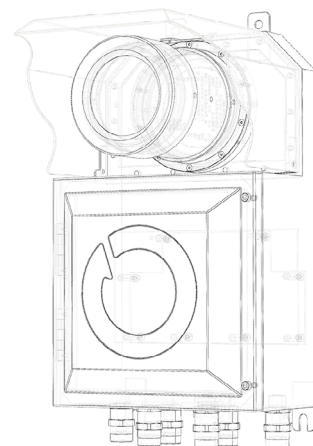
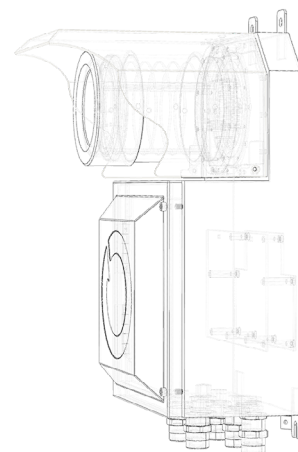
The FGM 160 flare gas meter uses a combination of two signal types, a variable "chirp" signal, and a continuous sine wave signal. The combination of these signals enhances the accuracy and stability of the meter readings, preventing signal loss at high and low velocities.

The accuracy and uncertainty obtained by using this unique signal processing technology has been verified by CEESI and VSL. Achieving excellent performance in a broad spectrum of flare gas applications.

Limited Pipe Length?

Enhanced measurement stability prevents signal loss at low and high velocities and reduces the required pipe length to 15 diameters, saving installation costs for additional pipework and precious space.

For installations with less than 15 diameters pipe length, or otherwise complicated pipe networks, Fluenta can implement CFD analysis to find a suitable solution.



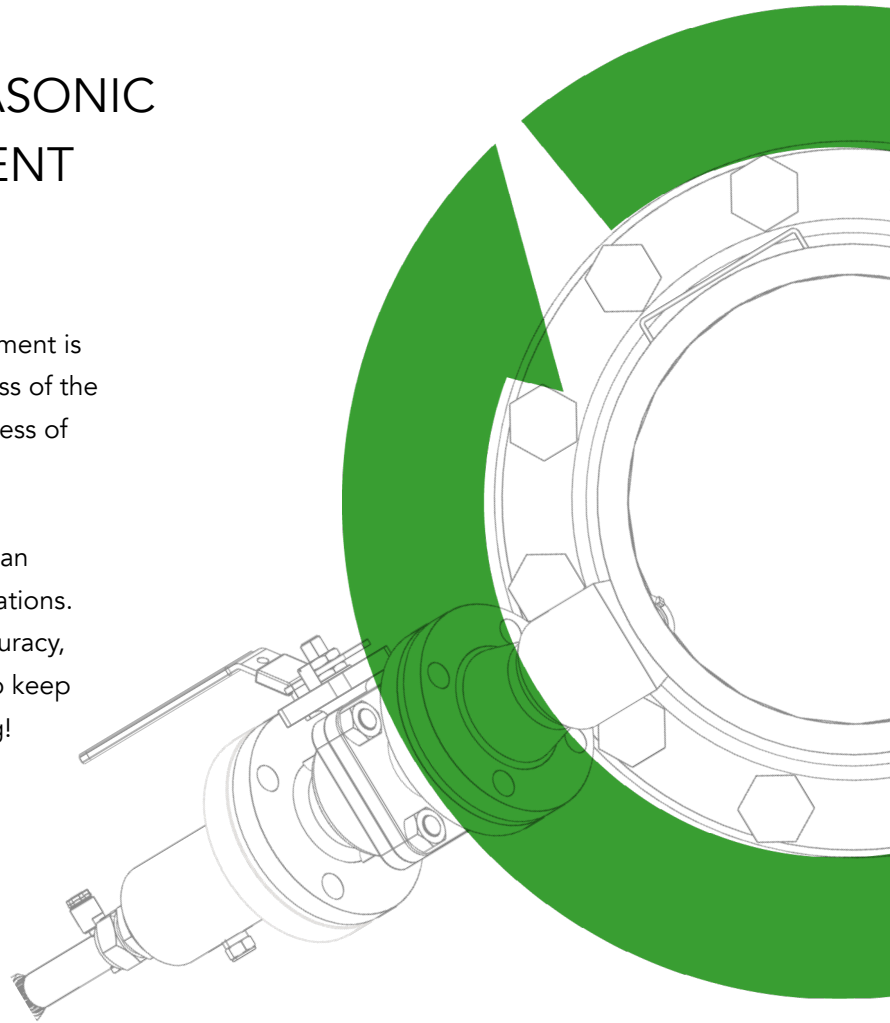
WE'RE FLUENT IN ULTRASONIC FLARE GAS MEASUREMENT

Why Use Ultrasonic Measurement?

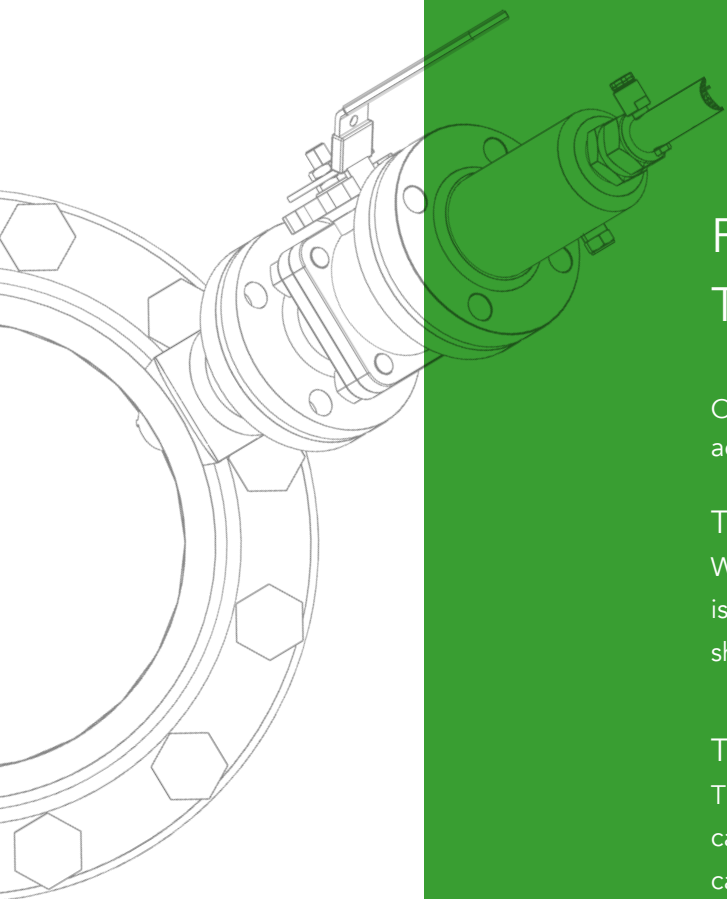
Unlike other technologies, ultrasonic measurement is less impacted by the composition or cleanliness of the gas flow. It delivers good repeatability regardless of turndown ratio or temperature ranges.

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 - that are coming!

Technical Specifications for the Fluenta FGM 160 Flare Gas Meter



Functional Characteristics	
Measurement Parameters	Standard and actual volume flow, gas velocity, mass flow, totalized standard volume flow, totalized mass flow, molecular weight, standard and actual density, pressure, temperature, speed of sound
Certification	
Certification	IECEX, ATEX, NRTL (CSA), TR-CU, INMETRO
Field Computer	Ex de [ia] IIC T6, Tamb: -40 °C to +60 °C (Zone 1), IP66
Input & Output	
Supply Voltage	24 VDC (20 - 32 VDC)
Input Signal	Ultrasonic transducers
	Temperature and pressure: analog 4-20mA or digital HART or MODBUS
Output signal	6 x analog 4-20 mA outputs, HART output, Pulse / frequency signal, RS422 / RS485, 2- or 4- wire, Modbus Protocol RTU



FLUENTA'S TFS TRANSDUCER RANGE

Our transducers are used with our FGM 160 meter to offer accurate measurement in a range of conditions.

TFS

With a temperature range of -70 to +145°C, this transducer is suitable for most standard flaring applications in both on-shore and off-shore installations.

TFS-HT

The TFS-HT is a transducer suited to higher temperatures, capable of measurement at up to +180°C. This transducer can be deployed across a wide range of flare applications and is particularly suited to chemical processing and refining applications.

TFS-55

High concentrations of methane and carbon dioxide have historically been challenging areas for ultrasonic gas sensors. The TFS-55 offers measurement across a good range of temperatures, as well as difficult gas compositions, such as high CO₂ and CH₄.

“ Our TFS transducers have been deployed in hundreds of installations and offer operators the reassurance of accurate and reliable measurement ”

Stuart Tyers, Group CTO, Fluenta

Technical Specifications for the Fluenta TFS Transducer Range

	TFS	TFS-HT	TFS-55
Functional Characteristics			
Transducer Type	Ultrasonic / Time-of-flight / Wetted non-intrusive as standard		
Velocity Range	0.1 ft/s - 400 ft/s (0.03 m/s - 120 m/s)		
Turn Down Ratio	4000:1		
Uncertainty ₁	Up to 0.75%		
Resolution	0.0008 m/s (0.003 ft/s)		
Available Material	SS316 / Titanium as Standard (other materials available)		
Operating Conditions			
Pipe Sizes	6" to 72" as standard (application dependent) ₂		
Configurations	Dual-Path available	Dual-Path available	Dual-Path and Bias-90 available
Gas Composition Limits			Suitable for high levels of CO ₂ and CH ₄
Operating Temperatures	-70°C to +145°C (-94°F to +293°F)	-70°C to +180°C (-94°F to +356°F)	-70°C to +145°C (-94°F to +293°F)
Design Temperatures	-110 °C to +120 °C (-166°F to +248°F)	-110°C to +200°C (-166°F to +392°F)	-110 °C to +120 °C (-166°F to +248°F)
Operating Pressure	0.8 barA to 10 barA (11.6 psiA to 145 psiA)		
Design Pressure	20 barA (290 psiA)		
Ex Certification			
Awarding Bodies	IECEX, ATEX, NRTL (CSA), TR-CU, INMETRO		
Details	Ex ia IIC T4-T6 (Zone 0), IP66		

Please note specifications are subject to change

¹ For optimal accuracy, we recommend a multi-point calibration at an accredited flow calibration facility

² Solutions may be possible outside this range

WE'RE FLUENT IN SIMPLE SOLUTIONS FOR COMPLEX INSTALLATIONS

Flare gas measurement; for over 30 years, it's all we've done. And because it's our sole focus, our dedication to innovation and precision is unrivalled. With our expert team, we can find a simple solution to your measurement challenge.

Unrivalled measurement capabilities with our range of transducers

- TFS
- TFS-55
- TFS-HT
- FlarePhase™ Cryo
- FlarePhase™ 250
- FlarePhase™ 350

Flexible, optimised solutions

- Computational fluid dynamics for detailed installation analysis
- Total system uncertainty calculations

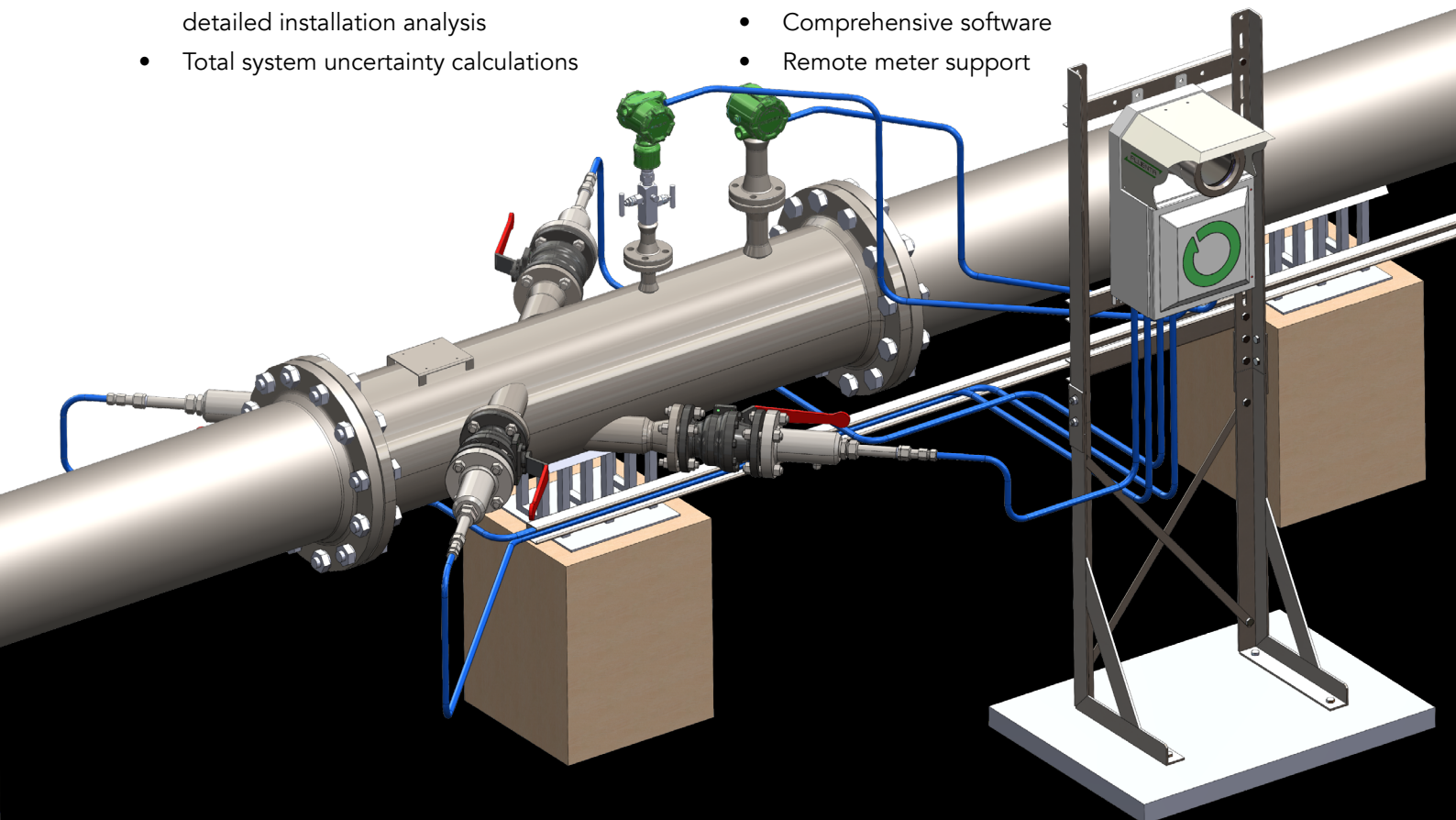
Optional configurations

All our transducers are available in a number of configurations to optimise your installation:

- Single-path - for standard measurement
- Dual-path - for reduced uncertainty
- Bias 90 - for space limitations & retrofits

Ongoing customer support

- In-house service engineers
- Comprehensive software
- Remote meter support



WE'RE FLUENT. WE'RE FLUENTA.

With over 3,000 installs across 6 continents, Fluenta has the experience to help you more accurately measure flare gas, to make better business decisions and meet the most stringent regulations.

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