Panametrics

Flow Meters
Product Guide

Measurements that matter.









Ensuring the integrity of your flare and flow measurements.

Panametrics offers a wide array of flow meters that improves plant safety, efficiency, and profitability through accurate and reliable flow measurement and flare management solutions that optimize flare operations and significantly reduces methane emissions for customers across the globe. Reliable and accurate, our products and services are backed by decades of industry experience and by knowledgeable experts.

We know that when it comes to flow measurement, accuracy and reliability are two of the critical factors when choosing a flow meter. Because we serve such a wide variety of industries, applications, technologies, and use cases, we've developed one of the strongest portfolios of flow meters on the market.



Industry applications

Panametrics' flow and flare solutions cover a wide range of industries and applications.

Key to industries

- Power
- Natural Gas
- Oil & Gas (Upstream & Downstream)
- Steel
- Chemical
- Pharmaceutical
- Food & Beverages
- Hydrogen
- Biogas
- Semiconductor
- Geothermal
- Water & Wastewater

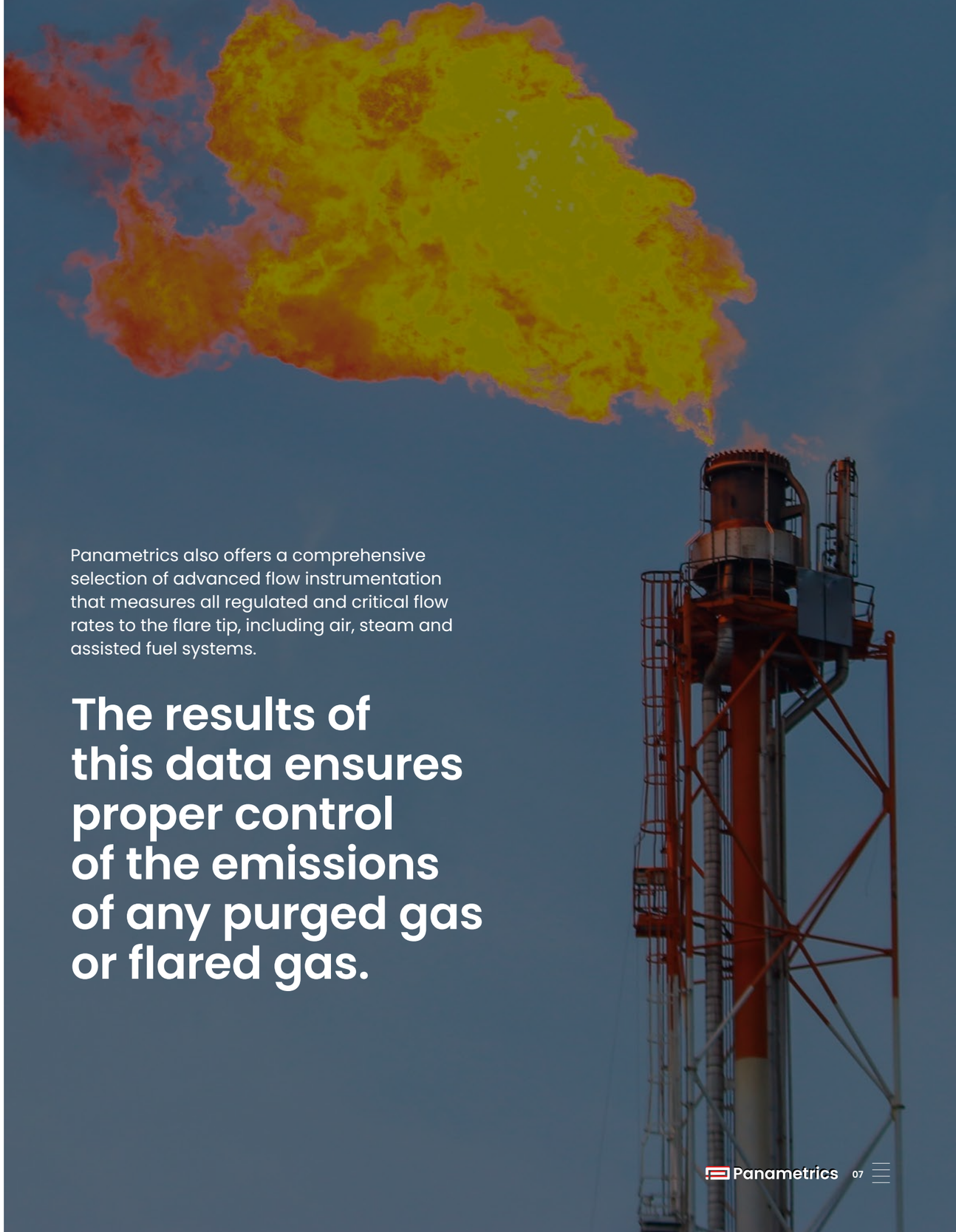
	Product type											
Flare	flare.IQ		✓									
	DigitalFlow GF868	✓	✓	✓	✓							
	DigitalFlow XGF1100	✓	✓	✓	✓							
Ultrasonic	**Portable**											
	TransPort PT900	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	TransPort PT878GC	✓	✓	✓	✓	✓	✓	✓		✓		✓
	Clamp-On											
	AquaTrans AT600	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
	AquaTrans AT620	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
	DigitalFlow DF868	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
	PanaFlow LC	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
	DigitalFlow GC868	✓	✓	✓	✓	✓		✓		✓		✓
	Process Inline											
	PanaFlow FLI		✓		✓							
	DigitalFlow GM868	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
	DigitalFlow XGM868i	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
	DigitalFlow GS868	✓	✓	✓	✓	✓	✓			✓	✓	✓
	DigitalFlow XGS868i	✓	✓	✓	✓	✓	✓			✓	✓	✓
	PanaFlow ZxG	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
	PanaFlow Z3	✓	✓	✓	✓			✓			✓	✓
	PanaFlow XMT1000	✓	✓	✓	✓						✓	✓
	PanaFlow HT	✓	✓	✓	✓							
	PanaFlow LZ	✓	✓	✓	✓							✓
	Custody Transfer											
	Sentinel LNG	✓	✓									
	Sentinel LCT8	✓	✓									
	Sentinel LCT4	✓	✓									
	Sentinel LCT	✓	✓									
Vortex	MV84	✓	✓	✓	✓							✓
	MV82	✓	✓	✓	✓							✓

Flare and Flow

Well-known for its high-technology in-line and clamp-on flow meters, Panametrics provides engineers and technicians with the tools designed to handle the toughest environments and most challenging applications.

In many industries, process control relies on knowing exactly how much fluid flows through the pipelines in order to optimize efficiency, maximize profit, and remain in regulatory compliance. In a most direct way, flow meters measure the flow rate, or quantity, of liquids, gases, and steam using a variety of technologies.





Panametrics also offers a comprehensive selection of advanced flow instrumentation that measures all regulated and critical flow rates to the flare tip, including air, steam and assisted fuel systems.

The results of this data ensures proper control of the emissions of any purged gas or flared gas.

Flare Management

Panametrics' flare.IQ technology provides real-time methane emission quantification and reporting with flaring in line with OGMP2.0 requirements. It significantly reduces methane slip emissions for assisted flares, minimizes costs from flaring operations, and improves transparency for flare operations. flare.IQ is a full-stream flare solution, covering assisted flares associated with downstream petrochemical and refinery flare operations, all the way to unassisted flares associated with upstream operations, that represent by far the biggest number of flares in the industry.

Benefits:

- 24/7/365 live emissions quantification
- Technology fit for purpose (ultrasonic meters) to be leveraged on the existing asset infrastructure
- In-situ measurement not prone to be influenced by weather conditions
- A quick hit in terms of actual monitoring and reporting
- Comply with OGMP level 4 for methane emissions reduction guidelines
- Control processes better than periodical checks
- Easy to deploy and install
- Field proven and independently tested



flare.IQ

Monitor, reduce and control your emissions with flare.IQ

Uses a proprietary model to monitor flare efficiency based on ultrasonic flowmeter outputs. For assisted flares, it helps optimizing the efficiency while reducing steam or air and fuel gas usage. Exists with a module that allows the flare meter to be validated on-line and in-process through remote communication with a plant's distributed control system. For unassisted flares it provides a real-time measurement for CE/DRE and emissions.

APPLICATIONS

Oil & Gas

- Upstream exploration and oil production
- Offshore and onshore
- Conventional and unconventional gas
- Midstream gas gathering and processing plants
- Downstream refineries
- Petrochemical plants
- LNG plants



FEATURES

- **Calculates 24/7/365 combustion efficiency, destruction and removal efficiency, CO_2, CO_2 equivalent, CO and VOC**
- **For un-assisted flares, it is a powerful system for real-time accurate reporting of CO_2eq emissions – rather then assuming 98% DRE**
- **For assisted flares, on top of the previous feature, it helps in optimizing the efficiency of the flare by calculating the set points of steam or air and fuel gas which leads to increase the efficiency and hence reduce the methane slip**
- **It can be used for digital verification of the flare meter by tracking the diagnostics and checking, on a pre-defined basis, the flare gas speed of sound**
- **It is compliant with OGMP 2.0 level 4**

Flare Flow Meters

Panametrics has offered ultrasonic flare flow meters to industry leaders as a better way to measure gas flare for over four decades. Our flare gas mass flow meters provide critical flow data and diagnostics reliably over a wide flow range (turn-down ratio) with excellent low-end resolution to help improve the efficiency of oil and gas production assets, pipelines, terminals, refineries and petrochemical plants.

Benefits:

- Our flare gas flow meters use a proprietary algorithm that determines the molecular weight and mass flow rate of the flare and sweep gas
- Our meters conserve energy and reduce product loss by identifying sources of leaks in the flare system
- Our flare flow meters adhere to local regulatory requirements both for reporting and proper control of the flare system



DigitalFlow GF868

Flare gas mass ultrasonic flowmeter

The DigitalFlow GF868 ultrasonic flowmeter uses the patented Correlation Transit-Time™ technique, and an accurate and patented method of calculating molecular weight. Add to these features the inherent advantages of ultrasonic flow measurement reliability with no routine maintenance, high accuracy, wide range ability, and the DigitalFlow GF868 flowmeter is the clear choice for flare gas applications.

APPLICATIONS

Power Plant
- Stack gas

Oil & Gas
- Flare gas
- Fuel gas
- Boil off gas
- Acid/sour gas
- Recycle gas
- Hydrogen gas

Steel Plant
- Coke gas and blast furnace gas
- Feed gas
- Stack gas

Chemical
- Flare gas



FEATURES

- **Measures all flare gases and can cope with a wide variation of gas composition with CO_2, H_2, N_2, CO, etc**
- **The widest turndown ratio with 4000:1 (from 0.03 to 120 m/s or 0.1 to 400 ft/s)**
- **Exists in 1- or 2-channel configuration**
- **Transducers with temperature capability from -180°C to 300°C**
- **NHV output (option)**
- **Many current outputs available (6 or more)**
- **Digital communication (HART, Modbus, FF, etc)**
- **Largest installed base in the industry**
- **Typical accuracy velocity ±0.75% to 2.5%, MW ±1.8% to 2%, NHV ±2% to 5%**

DigitalFlow XGF1100

Flare gas mass ultrasonic flowmeter

The XGF1100 ultrasonic flow meter uses the patented Correlation Transit-Time™ technique, digital signal processing, and an accurate method of calculating molecular weight. Adding to these features are the inherent advantages of ultrasonic flow measurement – reliability with no routine maintenance, high accuracy, fast response, and wide rangeability, the XGF1100 flow meter is the clear choice for flare gas applications.

APPLICATIONS

Power Plant
- Stack gas

Oil & Gas
- Flare gas
- Fuel gas
- Boil off gas
- Acid/sour gas
- Recycle gas
- Hydrogen gas

Steel Plant
- Coke gas and blast furnace gas
- Feed gas
- Stack gas

Chemical
- Flare gas



FEATURES

- Measures velocity, volumetric flow, mass flow and molecular weight (MW)
- Outputs Net Heating Value (NHV)
- Monitors Combustion Efficiency/ Destruction Removal Efficiency (CE/DRE)
- 4000 to 1 turndown ratio
- High velocity range up to 120 m/s (394 ft/s)
- Accurate low flow rate measurement down to 0.03 m/s (0.1 ft/s)
- Flexible up to 4 path configuration (1–4)
- Built-in basic Computational Fluid Dynamics (CFD) correction
- Compensates for compressibility
- Allows cross flow immunity in large pipes
- Field-proven installation techniques with easy serviceability
- Minimal maintenance due to no moving parts, no holes or tubes, and tolerance to dirty or wet conditions, no pressure drop



Portable Flow Meters

The portables battery powered line from Panametrics, a Baker Hughes business, offers both ultrasonic liquid and gas clamp-on flow meters: the TransPort PT878GC for gas; and the TransPort PT900 for liquid. These ultrasonic flow meters utilize ultrasound transit time to measure the velocity of a given fluid, and once it is multiplied by the cross-section of the pipe gives the volumetric flow – and are used in a wide variety of liquid and gas applications, from (waste) water and various liquids to natural gas and compressed air.

These meters are attached to the outside of the pipe to measure the flow within the pipe. Quick installation and meter readings with advanced diagnostics enable our users to continue their process without having to shut down. The meter's portability allows the device to move to numerous measurement locations, making it easy to spot-check the flow, verify the flow meter, or temporarily install the device and provide reports using its embedded data logger, without the need of a power supply.

Benefits:

- Installation within minutes without process interruptions
- Embedded diagnostics to ensure accurate and reliable measurements
- Ability to be installed on very small pipes (1/2") up to very large sizes (300") for liquid applications
- Permanent meter verification
- Pump or compressor performance check
- Cover all applications across all industries

TransPort PT900

Portable liquid clamp-on flow meter

It easily attaches to the outside of the pipe to measure flow within the pipe. Users have no need to cut into it which causes delays and downtime. The PT900 can also be used to spot-check other meters or deploy for temporary installations. It can provide energy measurement with optional temperature probes to monitor the energy efficient in campus energy and building management systems. Now featuring new single elbow flow profile correction factors to account for disturbed flow conditions occurring when straight run requirements cannot be fully achieved.

APPLICATIONS

Power Plant
- Boiler feed water
- Water
- Brine
- Campus energy: Water/glycol
- Penstock

Oil & Gas
- Water injection
- MeOH and other chemicals injection
- Water
- Sea water intake
- Water and cooling water
- Pure chemicals
- Refined chemicals

Steel Plant
- Tar
- Water

Pharmaceutical
- Ultrapure water
- Cleaning in place

Food & Beverages
- Ultrapure water
- Animal fat
- Liquid product flow: milk, juice

Hydrogen
- Demineralized water

Semiconductor
- Ultrapure water

Geothermal
- Brine Flow

Water & Wastewater
- Potable water
- Raw water
- Waste water
- Chemicals



FEATURES

- **Fluid types: All liquids**
- **Flow measurement patented Correlation Transit-Time™ mode**
- **Pipe sizes from 0.5" up to 300"**
- **Pipe wall thickness up to 3"**
- **Pipe material: All metals and most plastics including GRP/FRP pipes**
- **Accuracy ±1% of reading ±2% of reading**
- **Optional thickness gauge**

TransPort PT878GC

Portable gas clamp-on flow meter

The TransPort PT878GC flowmeter is a highly versatile, self-contained, portable gas clamp on transit-time flow meter with options and accessories to meet a variety of gas flow measurement needs. It easily attaches to the outside of the pipe to measure flow within the pipe. Users have no need to cut into it which causes delays and downtime. Its compact size, lightweight, rechargeable battery pack, and universal power supply charger make it the ideal go anywhere flowmeter.

APPLICATIONS

Power Plant
- Loading fuel tanks
- Compressed air
- Fuel to boiler/turbine

Oil & Gas
- Dehydration
- Landfill gas
- Gas lift
- Gas injection
- Gas compression
- Air
- Nitrogen

Steel Plant
- Air
- Oxygen
- Argon

Pharmaceutical
- Compressed air

Food & Beverages
- Compressed air

Semiconductor
- Air
- Nitrogen



FEATURES

- **No moving parts**
- **No pressure drop**
- **Flow measurement patented Correlation Transit-Time™ mode**
- **Standard volumetric flow calculation**
- **Small, lightweight and easy to use**
- **Large, backlit LCD display**
- **Rechargeable battery pack**
- **Logs over 100,000 flow data points**
- **Accuracy ±1% of reading ±2% of reading**
- **Optional thickness gauge**



Custody Transfer, Allocation and Leak Detection

Our Sentinel flow meters deliver custody transfer-level measurement, easy integration, rugged construction, and reliable performance – even in the unstable conditions of typical pipelines.

When you spec a Sentinel flow meter, you can rest easy knowing you're getting the high-accuracy measurements and insights you need to operate cost-effectively and free from false alarms.

Benefits:

- Deliver high-accuracy measurements – even in the unstable conditions typical of pipelines
- Low maintenance
- No pressure drop = reduce flashing risk
- No interruption to operations after installation thanks to transducers online removability
- Long term stability and drift free characteristics
- Deliver high-accuracy measurements



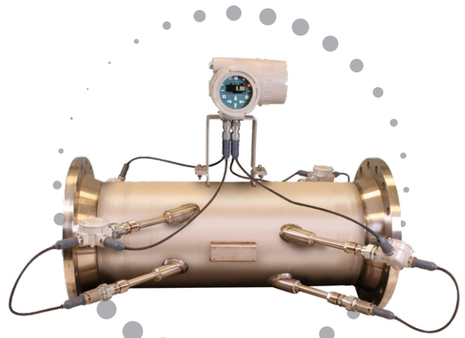
Sentinel LNG

High accuracy ultrasonic custody transfer liquid flow meter for cryogenic application

4-path high accuracy liquid meter with no moving parts, a robust path configuration, and bundled waveguide technology, the signals can enter the process while protecting the transducers from cryogenic temperatures.

APPLICATIONS

Oil & Gas
- LNG
- Leak detection
- Allocation metering
- Fiscal and custody transfer measurement



FEATURES

- **Improved performance, reduced maintenance and dynamic flow measurement for cryogenic liquids**
- **Fully welded construction with no moving parts**
- **Ultrasonic transducers protected from cryogenic temperatures using Bundle Waveguide™ Technology and field replaceable without the need for recalibration**
- **Full bore design, zero pressure drop**
- **High accuracy to overcome limitations of tank level gauging**
- **Robust Path Configuration™ through extensive use of CFD (Computational Fluid Dynamics)**
- **Accuracy ±0.25% of reading viscosity independent**

Panametrics

Sentinel LCT8

High accuracy ultrasonic custody transfer liquid flow meter

8-path liquid meter uniquely designed to meet the strict requirements for custody transfer of hydrocarbons. Its robust path configuration provides trouble-free operation that will not drift, even when the liquid product changes in the line.

APPLICATIONS

Power Plant
- Feed oil

Oil & Gas
- Leak detection
- Allocation metering
- Fiscal and custody transfer measurement





FEATURES

- **No drifting or required periodic calibration**
- **Field replaceable transducers without the need for recalibration**
- **Optimized path configuration**
- **No pressure drop**
- **No restriction in the pipe**
- **No moving parts and no filters or strainers**
- **Optionally built-in flow computer for API MPMS 11.1 corrections for temperature, pressure and density**
- **Accuracy (linearity) ±0.12% of reading viscosity independent**

Sentinel LCT4

High accuracy ultrasonic custody transfer liquid flow meter

4-path liquid meter designed specifically for high accuracy measurement of crude oil, other liquid refined hydrocarbon products, and other non-hydrocarbon liquids, it delivers extremely reliable and repeatable results and meets the strict performance requirements of OIML R117-1.

APPLICATIONS

Power Plant
- Diesel fuel
- Loading fuel tanks
- Fuel to boiler/turbine

Oil & Gas
- Leak detection
- Allocation metering
- Fiscal and custody transfer measurement
- Water and cooling water



FEATURES

- **No drifting or required periodic calibration**
- **Field replaceable transducers without the need for recalibration**
- **Optimized path configuration**
- **No pressure drop**
- **No restriction in the pipe**
- **No moving parts and no filters or strainers**
- **Optionally built-in flow computer for API MPMS 11.1 corrections for temperature, pressure and density**
- **Accuracy ±0.15% of reading viscosity independent**

Sentinel LCT

High accuracy ultrasonic custody transfer liquid flow meter

4-path liquid meter designed specifically for the custody transfer measurement of crude oil and other liquid refined products.

APPLICATIONS

Power Plant

- Feed oil

Oil & Gas

- Leak detection
- Allocation metering
- Fiscal and custody transfer measurement
- Oil after separation
- Water and cooling water
- High end process application: Paraxylene production



FEATURES

- **No drifting or required periodic calibration**
- **Field replaceable transducers without the need for recalibration**
- **Optimized path configuration**
- **No pressure drop**
- **No restriction in the pipe**
- **Fully welded construction with no moving parts and no filters or strainers**
- **Optionally built-in flow computer for API MPMS 11.1 corrections for temperature, pressure and density**
- **Accuracy ±0.15% of reading viscosity independent**

Process Flow Meters

Ultrasonic Inline

Panametrics is a leader in flare gas, steam and liquid metering applications. Our portfolio offers both inline and clamp-on flow meters capable of delivering flow measurement insights directly to your plant or for remote monitoring. Our in-line flow meters are well suited for permanent installations where accurate, dependable and reliable flow measurements are required.

Our broad portfolio of in-line flow meters and readily available expertise enables you to optimize your processes and meet your environmental and performance goals.

Benefits:

- Accurate flow measurements of various process fluids
- Delivers digital insights directly to your plant
- Provides reliable measurements with embedded diagnostics
- Can address very challenging and demanding applications from premium alloys, high pressure and/or high temperature, etc



PanaFlow FLI

Ultrasonic flowmeter for gas

PanaFlow FLI is a robust and reliable ultrasonic flow measurement system for monitoring wide ranging gas flow in challenging conditions. PanaFlow FLI is available in either a flowcell (spoolpiece) or nozzle only design providing flexibility to your existing or new flow requirements.

APPLICATIONS

Oil & Gas
- Flare gas
- Fuel gas
- Vent gas
- Waste gas
- Shale gas
- Natural gas
- Biogas
- Coal-seam gas
- Steam

Chemical
- Flare gas



FEATURES

- **Trusted ultrasonic technology with no drifting measurements or need for periodic calibration requirements**
- **No restriction in the pipe to generate a pressure loss**
- **Wide rangeability from 0-100m/s (328 ft/s) monitoring during all process scenarios**
- **Robust and field proven legacy Panametrics titanium gas transducers; other materials available based on stream composition**
- **New compact insertion mechanism for 24hr/7day continuous operation and access to transducer**
- **Advanced diagnostics to understand and track the health and stability of the process**

DigitalFlow GM868 and XGM868i

Gas flowmeter

The flow meter includes wide-range transducers to measure any gas. This accurate ultrasonic meter ensures reliable gas flow that requires little or no maintenance.

APPLICATIONS

Oil & Gas
- Fuel gas
- Associated gas
- Dehydration
- Landfill gas
- Boil off gas
- Wet gas
- Acid/sour gas
- Recycle gas
- Hydrogen gas
- Quench gas
- Gas after separation
- Allocation metering
- Flare gas
- Air
- Gas lift
- Gas injection
- Gas compression
- Natural gas
- Acid/sour gas
- Hydrogen gas
- Gas compression

Steel Plant
- Coke gas and blast furnace gas
- Feed gas
- Stack gas
- Air
- Nitrogen

Hydrogen
- Pure and blended hydrogen
- Power gen for air, nitrogen



FEATURES

- **Full-featured flowmeter package using a transmitter type electronics**
- **Transducer removable under line pressure (depending on meter set-up)**
- **No moving parts**
- **No pressure drop**
- **Wide rangeability with up to 1500 to 1 turndown ratio (application and transducer dependent)**
- **Non-obstructive flow measurement**
- **Tolerance to dirty streams**
- **Low maintenance**
- **Suitable for high temperatures**
- **Two-path measurement available for better accuracy**
- **Binary gas mixture content determination (optional)**
- **Accuracy ±1% of reading ±2% of reading**

DigitalFlow GS868 and XGS868i

Steam ultrasonic flowmeter

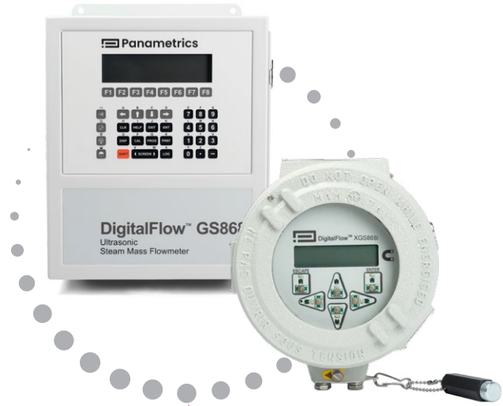
Both the GS868 and XGS868i are designed to measure the mass flow rate of saturated or superheated steam. It offers a unique combination of no pressure drop, wide rangeability, ease of installation, low maintenance and high accuracy in a full-feature flowmeter package. The XGS868i offers a rugged transducer, weatherproofing, and is approved for use in hazardous environments. It offers the same performances as the GS868 in a more cost-effective set up with only fewer I/Os possibilities.

APPLICATIONS

Oil & Gas
- Saturated steam and superheated steam
- Process steam

Steel Plant
- Saturated steam

Geothermal
- Steam flow
- Power for saturated
- Superheated steam measurement



FEATURES

- **Full-featured flowmeter package using a transmitter type electronics**
- **Built-in steam tables for mass flow calculation**
- **Transducer removable under line pressure (depending on meter set-up)**
- **No moving parts**
- **No pressure drop**
- **Wide rangeability with up to 1500 to 1 turndown ratio (application and transducer dependent)**
- **Non-obstructive flow measurement**
- **Tolerance to dirty streams**
- **Low maintenance**
- **Suitable for high temperatures**
- **Two-path measurement available for better accuracy**
- **Accuracy ±1% of reading ±2% of reading**

PanaFlow Z1G and PanaFlow Z2G

Gas ultrasonic flow meter systems

High-performance, affordable solutions for a variety of gas flow applications. The PanaFlow Z1G provides a one-path configuration gas flow meter, while the PanaFlow Z2G is a two-path gas flow meter. Both offer a broad range that is accurate and reliable, and available in robust, sleek designs.

APPLICATIONS

Oil & Gas
- Fuel gas
- Flare gas
- Associated gas
- Gas after separation
- Dehydration
- Landfill gas
- Coal seam gas
- Wet gas
- Gas compression
- Air
- Nitrogen
- Recycle gas
- Quench gas
- Hydrogen blending

Steel Plant
- Feed gas
- Air
- Oxygen
- Natural gas

Hydrogen
- Hydrogen blending

Biogas/Biofuels
- Biogas with methane content determination



FEATURES

- **No drifting, no periodic calibration required**
- **No pressure drop**
- **No restriction in the pipe**
- **No filters or strainers**
- **No moving parts**
- **Explosion-proof transducer design**
- **Bi-directional measurement**
- **Binary gas mixture content determination (optional)**
- **Accuracy ±1% of reading ±1.5% of reading**

PanaFlow Z3

Three-path liquid ultrasonic flow meter

Designed specifically for dependable, accurate, and repeatable flow measurement of process liquids with a very tight accuracy down to +/- 0.25% of reading under reference conditions.

APPLICATIONS

Power Plant
- Water/glycol

Oil & Gas
- Condensate (HC)
- Produced water
- Water injection
- Allocation metering
- Leak detection
- Oil
- Blending lines
- Water after separation
- Water
- LPG and other light HC
- Fuel oil
- Water and cooling water

Steel Plant
- Water
- Tar

Hydrogen
- Demineralized water

Water & Wastewater
- Potable water
- Raw water
- Waste water
- Chemicals



FEATURES

- **No drifting, no periodic calibration required**
- **No pressure drop**
- **No restriction in the pipe**
- **No filters or strainers**
- **Bi-directional measurement**
- **No moving parts**
- **Field replaceable transducers**
- **All cast design**
- **Explosion-proof transducer design**
- **All modern communication protocols (HART, Modbus, FF FISCO)**
- **Accuracy ±0.25% of reading**
- **SIL rated (optional)**

PanaFlow LZ

Ultrasonic flow meter system for liquid applications

Offered as a one- or two-path wetted, ultrasonic flow meter that brings all of the advantages of ultrasonic technology at a very affordable value.

APPLICATIONS

Power Plant
- Boiler feed water
- Water/glycol (facility mgt/ campus energy)

Oil & Gas
- Condensate (HC)
- Produced water
- Water injection
- Leak detection
- Allocation metering
- Oil
- LPG and other light HC
- Fuel oil
- Blending Lines
- Oil after separation
- Water after separation
- Water and cooling water
- Quench oil

Steel Plant
- Tar
- Water

Water & Wastewater
- Potable water
- Raw water
- Waste water
- Chemicals



FEATURES

- **One or two-channel**
- **No drifting, no periodic calibration required**
- **No pressure drop**
- **No restriction in the pipe**
- **No filters or strainers**
- **Bi-directional measurement**
- **No moving parts**
- **Field replaceable transducers**
- **Explosion-proof transducer design**
- **All modern communication protocols (HART, Modbus, FF FISCO)**
- **Suitability for a wide range of pipe sizes and materials**
- **Accuracy ±0.5% of reading**
- **SIL certification (option)**
- **Flow measurement in extremely high and low temperature conditions from 73K to 873K applications**

PanaFlow HT SIL

Reliable extreme temperature liquid ultrasonic flow meter

Ideal for harsh applications, such as delayed coker units, fluidic catalytic cracking, vacuum distillation, crackers, hydrotreaters, visbreakers, crude oil, and LNG. It is rated for hazardous areas and extreme processes with temperatures from -200°C to 600°C.

APPLICATIONS

Power Plant
- Boiler feed water

Oil & Gas
- Heavy residue
- Liquid sulfur
- Slurry oil
- Hydrocarbon liquid
- Chemicals
- Safety critical liquid flow



FEATURES

- **One or two-channel, in single double, triple or quadruple set up**
- **No drifting, no periodic calibration required**
- **No pressure drop**
- **No restriction in the pipe**
- **No filters or strainers**
- **Bi-directional measurement**
- **No moving parts**
- **Field replaceable transducers**
- **Explosion-proof transducer design**
- **All modern communication protocols (HART, Modbus, FF FISCO)**
- **Suitability for a wide range of pipe sizes and materials.**
- **Accuracy ±0.5% of reading**
- **Flow measurement in extremely high and low temperature conditions from 73K to 873K applications**
- **SIL certification**

PanaFlow XMT1000 SIL

Ultrasonic flow transmitter for liquids

Certified for hazardous installations, such as petrochemical and chemical processing, and supports up to three paths for more accurate measurement.

APPLICATIONS

Power Plant
- Boiler feed water
- Water
- Brine

Oil & Gas
- Oil after separation
- Water after separation
- Condensate (HC)
- Produced water
- Water injection
- Sea water intake
- Oil
- LNG
- LPG and other light HC
- Heavy residue
- Liquid sulfur
- Fuel oil
- Water
- Leak detection
- Allocation metering
- Water and cooling water
- Quench oil
- Blending lines



FEATURES

- **One, two or three-channel operation**
- **No drifting, no periodic calibration required**
- **No pressure drop**
- **No restriction in the pipe**
- **No filters or strainers**
- **Bi-directional measurement**
- **No moving parts**
- **Field replaceable transducers**
- **All cast design**
- **Explosion-proof transducer design**
- **All modern communication protocols (HART, Modbus, FF FISCO)**
- **Suitability for a wide range of pipe sizes and materials.**
- **Accuracy ±0.3% of reading**
- **SIL certification**

Ultrasonic Clamp-On Flow Meters

Panametrics, offers a comprehensive clamp-on portfolio consisting of AquaTrans, DigitalFlow, and PanaFlow models. They all exhibit common benefits such as: no moving part, nothing to wear and tear over time, no pressure drop being contactless with the process fluid.

Ultrasonic clamp-on flow meters measure fluid flow in many applications. By using sound waves to determine the transit time of a gas or liquid, ultrasonic flow meters can accurately monitor any changes in flow. Ultrasonic flow meters offer additional benefits such as no moving parts, thus reducing failure occurrences and extending the life of the flow meter, plus the ability to simply clamp the flow meter to the outside of a pipe, so there is no need to shut down production, install an inline meter, calibrate it, and restart. With our ultrasonic clamp-on flow meters you can choose where to measure, without having to disrupt production at all.

Benefits:

- Easy to install without process shutdown
- Accurate and versatile for a variety of industries, fluids, and pipe thicknesses
- The meters maintain a reading of +- 1 to 2% and are contamination-free
- Reliable measurement thanks to its diagnostics

AquaTrans AT600

Liquid flow ultrasonic transmitter

The AquaTrans AT600 liquid clamp on flow ultrasonic transmitter combines state-of-the-art flow measurement capability with a cost-effective transmitter package that can be installed right at the process measurement point. It's designed specifically for Water & Wastewater applications in full pipes and can be used in safe areas.

APPLICATIONS

Power Plant
- Boiler feed water
- Water
- Brine
- Combined cycle
- Boiler water blow down
- Water from dam
- Campus energy: Water/glycol

Oil & Gas
- Water injection
- MeoH and other chemicals injection
- Water
- Sea water intake
- Water and cooling water

Steel Plant
- Tar
- Water
- Blast furnace water Cooling

Pharmaceutical
- Ultrapure water
- Cleaning in place

Food & Beverages
- Ultrapure water
- Animal fat
- Liquid product flow: milk, juice

Hydrogen
- Demineralized water

Semiconductor
- Ultrapure water

Geothermal
- Brine
- Cooling water

Water & Wastewater
- Potable water
- Raw water
- Waste water
- Chemicals



FEATURES

- **Economical non-intrusive flow measurement**
- **Extremely simple setup and installation**
- **Suitable for a wide range of pipe sizes and materials**
- **Suitable for lined pipes**
- **Velocity, volumetric, and totalized flow outputs**
- **HART and Modbus communication optional**
- **Permanent solid couplant available**
- **Accuracy ±1% of reading ±2% of reading**

AquaTrans™ AT620

Ultrasonic two-channel flowmeter for liquids

The new AT620 is a next-generation clamp-on ultrasonic flowmeter designed for applications requiring greater flexibility, redundancy, and measurement confidence. Building on the proven performance of the AT600 platform, the AT620 introduces architecture that allows a single transmitter to support two independent measurement paths, either across two separate pipes or one pipe with two channels.
This innovative configuration reduces hardware footprint and installation cost while expanding diagnostic capability and application coverage.

APPLICATIONS

Power Plant
- Boiler feed water
- Water
- Brine
- Campus energy: Water/glycol
- Combined cycle
- Boiler water blow down
- Water from dam

Oil & Gas
- Water injection
- MeoH and other chemicals injection
- Water
- Sea water intake
- Water and cooling water

Steel Plant
- Tar
- Water
- Blast furnace water cooling
- Oxygen furnace
- Continuous casting

Pharmaceutical
- Ultrapure water
- CIP

Food & Beverages
- Ultrapure water Animal fat
- Liquid product flow: milk, juice

Hydrogen
- Demineralized water

Semiconductor
- Ultrapure water

Geothermal
- Brine
- Cooling water

Water & Wastewater
- Potable water
- Raw water
- Waste water
- Chemicals



FEATURES

- **Non-intrusive clamp-on flow measurement**
- **Dual-channel configuration for one or two pipes**
- **Suitable for a wide range of pipe sizes and materials**
- **Velocity, volumetric, and totalized flow outputs**
- **HART® and Modbus RS485 communications**
- **Permanent solid couplant available**
- **Patented Correlation Transit-Time™ technology**
- **Accuracy ±1% of reading / ±2% of reading**

DigitalFlow DF868

Full-featured, fixed-installation liquid flowmeter

Designed to meet all your flow metering and energy measurement needs. Its patented Correlation Transit-Time™ digital signal processing provides drift-free measurements in ultraclean and most 'dirty' liquids with its optional energy feature, it can deliver an all-in-one solution for energy metering.

APPLICATIONS

Power Plant
- Boiler feed water
- Brine
- Campus energy: Water/glycol Hot water Chilled water

Oil & Gas
- Oil after separation
- Water after separation
- Condensate (HC)
- Produced water
- Water injection
- Sea water intake
- Water
- Leak detection
- Oil
- LNG
- MeoH and other chemicals injection
- Water and cooling water
- LPG and other light HC
- Blending Lines

Steel Plant
- Water
- Tar

Pharmaceutical
- Ultrapure water

Food & Beverages
- Ultrapure water
- Animal fat

Semiconductor
- Ultrapure water

Water & Wastewater
- Potable water
- Raw water
- Waste water
- Chemicals



FEATURES

- **Non-intrusive flow measurement**
- **Hazardous (classified) location certifications**
- **Simple set-up and installation**
- **Suitable for wide range of pipe sizes and materials**
- **Two-channel/two-path version available**
- **Accuracy ±1% of reading ±2% of reading**
- **Energy option with temperature supply and return and calculation algorithm**

PanaFlow LC

Permanent clamp-on ultrasonic flow meter

PanaFlow LC uses the XMT1000 electronics with a fast response time (3 Hz), in 1, 2 or 3 path configuration, a wide range of transducer models and frequency and a user friendly human machine interface (Panaview Plus). It comes with its clamping fixture and selectable cable configuration and length. Suitable for all Newtonian liquids. SIL certification available as an option.

APPLICATIONS

Oil & Gas
- Oil after separation
- Water after separation
- Condensate (HC)
- Produced water
- Water injection
- MeoH and other chemicals injection
- Sea water intake
- Water
- Leak detection
- LNG
- Sea water intake
- Water and cooling water
- Oil
- LPG and other light HC
- Blending Lines
- Heavy residue
- Liquid sulfur
- Fuel oil
- Quench oil

Steel Plant
- Water
- Tar

Pharmaceutical
- Ultrapure water

Food & Beverages
- Ultrapure water
- Animal fat

- **Semiconductor**
- Ultrapure water

- **Water & Wastewater**
- Potable water
- Raw water
- Waste water
- Chemicals



FEATURES

- **Wide selection of transducers suitable for many applications**
- **Hazardous area certification**
- **Improved accuracy and repeatability through enhanced**
- **Signal processing**
- **HART and Foundation Fieldbus FISCO compliant digital protocols**
- **Wider flow range for handling more diverse flow measurements**
- **Velocity, volumetric, mass, and totalizer flow rate measurements**
- **Based on legacy Panametrics technology for reliable flow measurements**
- **Accuracy ±1% of reading ±2% of reading**

DigitalFlow GC868

The DigitalFlow GC868 clamp-on gas flowmeter is a complete ultrasonic flow metering system

The DigitalFlow GC868 flowmeter can be used to measure the flow of any gas. It is especially useful for metering erosive, corrosive, toxic, high-purity or sterile gases, or in any application where penetrating the pipe wall is undesirable.

APPLICATIONS

Power Plant
- Compressed air

Oil & Gas
- Dehydration
- Landfill gas
- Gas lift
- Gas injection
- Gas compression
- Air

Steel Plant
- Air
- Argon
- Oxygen

Pharmaceutical
- Compressed air

Food & Beverages
- Compressed air

Hydrogen
- Demineralized water

Semiconductor
- Nitrogen
- Oxygen
- Air



FEATURES

- **Clamp-on unobstructed installation**
- **Two-channel/two-path version available**
- **No moving parts**
- **No pressure drop**
- **Sound speed output**
- **Simple installation**
- **Standard volumetric flow calculation**
- **Suitable for a wide range of temperatures and pressures**
- **Accuracy ±1% of reading ±2% of reading**

Vortex Flow Meters

Our PanaFlow vortex meter offers a multi-variable design that contains velocity with RTD temperature sensors and a solid-state pressure transducer for measuring mass flow rate of steam, gases and liquids. The accuracy of these meters enables velocity, temperature and pressure to be measured at the same location.

Benefits:

- Reliable and accurate
- Saturated and superheated steam mass flow calculation with pressure and temperature inputs
- Easy installation
- Low maintenance costs
- Wide flow range and a low pressure drop
- Available as an insertion model



PanaFlow MV84

In-line multi-variable vortex flow meter

In-line multi-variable flow meters for volume, mass, temperature and pressure. PanaFlow MV84's multi-variable design consists of a vortex shedding velocity sensor, an RTD temperature sensor and a solid-state pressure transducer that measures the mass flow rate of steam, gases and liquids. Pressure and temperature sensors are optional.

APPLICATIONS

Power Plant
- Saturated and superheated steam
- Air
- Nitrogen
- Oxygen
- Water

Oil & Gas
- Saturated and superheated steam
- Air
- Nitrogen
- Oxygen
- Water

Steel Plant
- Saturated and superheated steam
- Air
- Nitrogen
- Oxygen
- Water



FEATURES

- **Built-in flow computer for measuring volumetric flow, temperature, pressure, density, energy, and mass flow using a single meter**
- **No need to recalibrate**
- **Advanced design and digital signal processing for vibration isolation**
- **Cost effective, accurate and reliable**
- **Energy management through accurate measurement of both temperature and mass flow simultaneously**
- **Remote monitoring and integration to DCS using HART, Modbus, and BACnet communication protocols**
- **Accuracy ±1% of reading ±2% of reading**

Panametrics

PanaFlow MV82

Insertion multi-variable mass vortex flowmeter

PanaFlow MV82's multi-variable design consists of a vortex shedding velocity sensor, an RTD temperature sensor and a solid state pressure transducer that measures the mass flow rate of steam, gases and liquids through an insertion point. This insertion vortex meter installs in either existing lines with a packing gland or compression fitting design or for new installations.

APPLICATIONS

Power Plant
- HT/MT/LT steam

Oil & Gas
- HT/MT/LT steam

Steel Plant
- Blast furnace
- Oxygen furnace
- Continuous casting



FEATURES

- **Built-in flow computer for measuring volumetric flow, temperature, pressure, density, energy, and mass flow using a single meter**
- **Insertion flow meter with online retraction capability (option)**
- **No need to recalibrate**
- **Advanced design and digital signal processing for vibration isolation**
- **Cost effective, accurate and reliable**
- **Energy management through accurate measurement of both temperature and mass flow simultaneously**
- **Remote monitoring and integration to DCS using HART, Modbus, and BACnet communication protocols**

Panametrics, provides solutions in the toughest applications and environments for moisture, oxygen, liquid and gas flow measurement. Experts in flare management, Panametrics technology also reduces flare emissions and optimizes performance.

With a reach that extends across the globe, Panametrics' critical measurement solutions and flare emissions management are enabling customers to drive efficiency and achieve carbon reduction targets across critical industries including: Oil & Gas; Energy; Healthcare; Water & Wastewater; Chemical Processing; Food & Beverage and many others.

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