

Rugged ST100 Digester Gas Flow Meter Provides Accurate, Safe, and Compliant Measurement

Muni or Industrial Wastewater Treatment, Biogas, Landfill Gas and More



San Marcos, CA — Engineers and operators responsible for accurately measuring gas production from digester tanks at municipal or industrial wastewater treatment operations can depend on the rugged [ST100 Series Thermal Flow Meter](#) from [Fluid Components International \(FCI\)](#) to provide precision mass flow measurement.

Digester waste gas is a combination of methane (CH₄) and carbon dioxide (CO₂) with a small percentage of other trace gases. Its gas composition can vary with the process and temperature (e.g. seasonally), but a typical average is in the range of 65% (±5%) CH₄ and 35% (±5%) CO₂. Digester gas is also a wet/moist and dirty gas, typically containing entrained hydrogen sulfides, which condense and deposit on pipe walls and anything else in the pipe.

The accurate measurement of digester gas flow resulting from the wastewater treatment processes is important for process productivity and environmental regulations reporting. The measurement of gas production is proportional to the effectiveness and efficiency of the digester process itself. Then, if the gas is harvested for use as fuel in a CHP or cogen system, the amount of gas being sent to the engine(s) is a key control variable. Further, if any gas is released or flared, because both methane and carbon dioxide are known polluting greenhouse gases (GHG), local environmental regulations typically mandate reporting of the quantity of gases emitted or flared.

Two other factors that are key selection of a digester gas flow meter are installation safety and service access. Since CH₄ is a combustible, potentially explosive gas, instrumentation should carry agency approval certification for Div.1/Zone 1 HazEx installations. If the flow meter's installed location will be prior to gas drying/cleaning or without that altogether, then engineers must also considered measuring success in moist gases, plugging or fouling of orifices or moving parts due to H₂S deposits, and cost and ease of access for periodic cleaning to remove H₂S residue.

With its no moving parts and simple insertion-style design, and comprehensive, global HazEx approvals, the ST100 Flow Meter is an ideal solution for digester gas flow measurement.

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The ST100 Flow Meter, can be calibrated for the specific digester gas mix composition and processes temperature conditions in flow ranges from 0.25 SFPS to 1000 SFPS (0.07 NMPS to 305 NMPS) and with accuracy to ± 0.75 percent of reading, ± 0.5 percent of full scale. ST100's constant power thermal dispersion, mass flow technology, has proven superior in applications with moist, dirty gases. It can be installed in the pipe with a simple, retractable compression fitting or through a ball valve for easy access and which saves significant costs over spool-piece technologies that require installation of extra, extensive by-pass pipe networks for service access.

When selecting the ST100 meter, users have multiple options to communicate with DCS, PLC or SCADA, including 4-20 mA analog, frequency/pulse, or certified digital bus communications of HART, FOUNDATION Fieldbus, PROFIBUS PA or Modbus RS485. It's graphical, multivariable backlit LCD display, provides a sophisticated, continuous readout of all process measurements and alarm status for easy on-site viewing by technicians, and it has the ability to query for service diagnostics. Included are a USB port, set-up and configuration software, an onboard data logger capable of storing 80M readings, and a 3-point in-situ calibration check capability. The transmitter/electronics can be integrally mounted with the flow element or may be remote mounted to 1000 feet [305m] away.

The transmitter enclosure is NEMA4X/IP67 rated and available in painted aluminum or stainless steel. FCI's ST100 digester gas flow meter's HazEx agency approvals are on the entire instrument, not just the enclosure and include FM, FMc, ATEX, IECEx, EAC/TRCU, CPA, NEPSI, and Inmetro, and all are CE Approved.

Fluid Components International is a global company committed to meeting the needs of its customers through innovative solutions for the most challenging requirements for sensing, and measuring flow, pressure and temperature of gases.

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