

Rugged ST80 Digester Gas Flow Meter Provides Accurate, Safe, & 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 [ST80 Series Thermal Flow Meter](#) from [Fluid Components International \(FCI\)](#) to provide precision mass flow measurement.

The composition of digester waste gas is a mixture of methane (CH₄) and carbon dioxide (CO₂) with a small percentage of other trace gases. This 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.

Accurately measuring digester gas flows 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. Furthermore, 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.

Other factors that are important in the 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 ST80 Flow Meter is an ideal solution for digester gas flow measurement. The ST80 meter is a high performance, rugged thermal dispersion technology air/gas flow meter that

combines ultra-reliable, feature-rich electronics, and FCI innovations such as Adaptive Sensing



Technology™ (AST™) with the industry's most extensive selection of application-matched flow sensors, including FCI's wet gas flow element, to provide a truly superior solution for moisture-rich digester gas applications. The ST80 meter further combines these features with a robust, rugged transmitter enclosure and industry's broadest selection of process connections to provide longest service life and ease-of-installation in the user installation's pipe or duct.

The ST80s insertion style configuration for wastewater digester gas is a single-point meter for pipe diameters greater than 2 inches (51 mm). It operates over a wide flow range: 0.25 to 1000 SFPS (0,07 to 305 NMPS). Flow accuracy is $\pm 1.0\%$ of reading, 0.5% full scale, and repeatability is $\pm 0.5\%$ of reading. It operates over a broad turndown ratio that is normally factory set and is field adjustable from 2:1 to 100:1 within the calibrated flow range.

The ST80 meter's transmitter's outputs are a match to user DCS, PLC, SCADA, recorder, or alarm system. Whether the application's output needs are traditional 4-20 mA analog or advanced digital bus communications such as HART, Foundation Fieldbus, PROFIBUS PA, PROFIBUS DP, or Modbus, the ST80 meter has it covered. Then for local display, the ST80's graphical, backlit LCD is unmatched in showing what's happening in the pipe. Flow rate, totalized flow, and temperature are continuously displayed in both a digital and bar graph presentation, while alarms and/or diagnostic messages will display as needed to alert operators.

The transmitter enclosure is NEMA4X/IP67 rated and available in painted aluminum or stainless steel. FCI's ST80 digester gas flow meter's HazEx agency approvals are on the entire instrument, not just the enclosure and its full pedigree of approvals includes: ATEX, CE, CPA, CRN, FMc, FM, Foundation Fieldbus, HART, EAC/TR CU, EMSA EQM-EX, IECEx, NEPSI, PROFIBUS, SIL (IEC 61508), UKCA, UKEX.

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.