

New FCI Mass Flow Meter Optimized for Wastewater Treatment Digester Gases-- Delivering High Accuracy At Lower Cost

**Municipal and Industrial Wastewater Treatment,
Digester Gas Powered Co-Gen Engines, Anaerobic Digester Systems**



San Marcos, CA— Plant engineers responsible for improving digester processes or utilizing the biogas as a fuel source will find the new Model ST51 Mass Flow Meter from Fluid Components International is designed as an application-specific solution to meet their unique needs. It is a full-featured meter with high accuracy electronics housed in a compact, explosion-proof transmitter that's easy-to-

install and requires virtually no maintenance.

Wastewater treatment digester gas flow measurement applications are challenging due to the wet, dirty and mixed composition nature of anaerobic digester biogas. This waste gas is a dangerous combination of primarily methane (CH₄) and carbon dioxide (CO₂), with smaller percentages of hydrogen sulfide (H₂S) and other gases. A corrosive environment results as entrained particulates in the gas flow condensate and then deposit themselves on the pipe wall and instruments in the pipe. The gas flow rate varies widely too—based on fluctuating plant process demands and seasonal variations in temperature and humidity.

FCI's new ST51 Flow Meter is designed specifically to measure digester gas, biogas and other methane composition biofuel gases as well as natural gas. Unlike most flow meter suppliers, FCI precision calibrates all ST51 flow meters in its NIST-traceable flow lab to match the gas composition of the user's digester system and under the specific flow conditions of the user's digester system, which results in an instrument that is matched precisely to the facility's actual operating environment.

The ST51 flow meter features a thermal mass flow element with flow accuracy to $\pm 1\%$ of reading over a broad flow range from 0.3 to 400 SFPS (0.08 to 122 MPS), and repeatability of ± 0.5 percent of reading. The flow element is available for use in line sizes from 2 to 24 inch (51 to 610 mm) diameters. It operates over a wide turndown range of 100:1, which is essential due to the variable gas flows in wastewater treatment.

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The new ST51's robust thermal mass flow sensing element features a no moving parts design, with no orifices to clog or foul, which makes it ideal for service in wet, dirty and explosive gas environments. It also includes built-in temperature compensation circuitry for accurate, repeatable measurement year-round as temperatures rise and fall seasonally. The flow element is constructed with a 316L stainless steel body and Hastelloy C-22 thermowell sensors to resist corrosion in digester gas pipelines.

The ST51 flow meter is also suitable for use in on-farm and fermentation systems, as well as landfill gas recovery, co-gen electric power, and coal mine and coal bed methane recovery. It operates from 0 to 250°F (-18 to 121°C) and withstands pressures up to 500 psig [34 bar (g)]. It is suitable for hazardous environments with approvals that include: FM, CSA/CRN, Class 1, Div 1, Groups B, C, D; Class 1, Div II, Groups A-D, ATEX Zone 1, II 2 G Ex d IIC T6 ...T3, II 2 D Ex tD A21 IP67 T90°C...T300°C.

For ease of use and applications flexibility, the ST51 flow meter is rich with outputs for user interfaces and information. Dual 4-20mA analog outputs are user assignable to flow rate and/or temperature, and there is a 0-1kHz pulse output for totalized flow. The transmitter's digital communications include an RS-232C port, and with units that have the digital display option there is a wireless IR link for PDA use.

The ST51's optional integral digital display features a two-line, 16-character LCD screen that is easy to read and can be rotated in 90-degree increments for optimum viewing and installation flexibility. The LCD screen's top line is assigned to flow rate, and the bottom line is user assignable for temperature readings or totalized flow.

For applications with difficult access or display readability, the ST51's flow transmitter is also available in a remote mount configuration that can be mounted up to 50 feet (15m) away from the flow element inserted the pipe. Both the remote mount and integral transmitters are housed in an aluminum enclosure that is NEMA 4X approved and meets IP67 requirements for water and dust ingress protection. Input power for the ST51 can be selected as either 18 to 36 Vdc or 85 to 265 Vac.

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