

FCI ST80 Thermal Flow Meter Optimized For Biogas Applications

*Biogas, Biogas Fueled Co-Gen Engines, On-Farm and Fermentation Biogas Systems,
Landfill Methane Recovery, Municipal and Industrial Wastewater Treatment Digesters*

San Marcos, CA — Owners, operators and system designers of biogas production and recovery systems will want to explore the innovative [ST80 Series](#) thermal flow meter from [Fluid Components International \(FCI\)](#).

These users will find the new Model ST80 flow meter provides optimal performance and the necessary features required for accuracy and repeatability in demanding biogas flow measurement applications. The ST80 is an easy to install, safe biogas flow meter that delivers a truly best cost solution.

In anaerobic digester produced biogas, for example, gas flow measurement can be challenged by the dirty, wet nature of this gas. Biogases are also a potentially explosive, mixed composition gas comprised primarily of methane (CH₄) and carbon dioxide (CO₂), with traces of hydrogen sulfide (H₂S) and other gases that require stringent safety approvals to protect people, equipment and plants.

Furthermore, the residuals and particulates in the biogas, along with the H₂S component, is a corrosive condensate that deposits itself on the pipe wall and instruments in the pipe, which can clog or foul orifice, vortex shedding, PD, turbine and most other technology sensors. The flow of rates of biogas varies widely too—based on fluctuating plant process demands and seasonal variations in temperature and humidity, requiring low flow sensitivity and wide turndowns.

Thermal mass flow meters using constant power technique, such as the ST80 Series, with their robust, open and cleanable, no-moving parts sensor design provide an ideal biogas application solution in this demanding environment. Furthermore, their international approvals for Div.1/Zone 1, on the entire instrument, ensure safe installation in hazardous biogas processing areas.

The measurement principle of thermal mass flow meters involves heat transfer caused by gas flow. Any moisture or condensate in the gas stream that intermittently contacts the sensors, however, can cause a sudden, momentary change in the heat transfer rate that can result in spiking or fluctuating readings.

Standard thermal flow meters using the constant temperature ΔT (CT) measuring technique are particularly reactive to moisture droplets, while constant power (CP) technique thermal meters, because of their slightly heated sensor that elevates the dew point, are less so.



The ST80 Series flow meter features FCI's Adaptive Sensor Technology™ (AST™), which is an innovative, patented hybrid sensor drive. This measuring technique combines, for the first time, both of the industry's highly proven constant power (CP) and constant temperature (CT) thermal dispersion sensing technologies in the same instrument.

Complementing this new measurement drive technique are a choice of four different flow sensor element designs to further ensure best installed performance, including FCI's new wet gas solution. The Wet Gas MASter™ sensor developed for the ST80 Series optimizes the sensor head design and installation to prevent condensation droplets, or rain, from contacting the sensors.

The ST80 Series flow meters are suitable for pipe diameters from 1 inch to 99 inches [25 mm to 2500 mm] and air/gas temperatures up to 850 °F [454 °C]. They feature accuracy of ±1% of reading, ±0.5% of full scale and repeatability of ±0.5% of reading with flow rates as low as 0.25 SFPS up to 1000 SFPS [0.07 NMPS to 305 NMPS] and 100:1 turndown.

This meter's outputs and user interface choices are extensive to interface with virtually any control system and/or set-up or configuration devices. Standard outputs include dual, NAMUR NE43 compliant 4-20 mA analog outputs, HART (version 7), Modbus 485 and a USB port. FOUNDATION Fieldbus or PROFIBUS PA or DP can be optionally added. The optional backlit LCD display provides digital and bar graph readouts of the flow rate and temperature, totalized flow, alarms, diagnostics feedback and even a user-defined label/tag field.

The ST80 Series transmitter enclosure is NEMA 4X/IP67 rated, selectable for NPT or metric conduit port threading and is available in both aluminum and stainless steel and may be remotely located up to 1000 feet [305 m] apart from the flow element. The instrument also carries an independent, third-party evaluated SIL compliance.

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.