

Heavy-Duty Flow Meter Resists Corrosive Biogas in Co-Gen Green Power Environments

*Accurate, Gas Flow Measurement With Full Safety Approvals Requires
Virtually No Maintenance Over A Long Life For Low Life Cycle Costs*

San Marcos, CA — No matter whether it's municipal wastewater treatment plant biogas or landfill disposal site waste-to-energy incinerators or agricultural waste, the rugged and reliable [ST51A Biogas Flow Meter](#) from [Fluid Components International \(FCI\)](#) combines superior measurement accuracy with high reliability and dependability in corrosive gases.

Organic waste such as food or meat processing plants, fermentation systems for dairy products or wineries and breweries, as well as on-farm manure, and sewage treatment plants, is often digested under anaerobic conditions in reactor tanks. The output is valuable biogas, which is measured with flow meters to support green co-gen energy systems or for disposal by flaring.

Organic waste creates a potent mixture of combustible methane (CH₄), carbon dioxide (CO₂), water and trace levels of corrosive hydrogen sulfide (H₂S), gas is problematic for many flow measuring technologies. The combustible properties of CH₄ gas require HazEx safety approvals. In addition the corrosive, sticky nature of the H₂S particles affects the performance and can clog many flow sensors, leading to frequent, labor-intensive cleanings.

With its rugged, no-moving parts thermal dispersion gas mass flow sensor, the ST51A Biogas Flow Meter is designed specifically for dirty, potentially hazardous biogas processes. It provides system operators with highly accurate and repeatable mass flow measurement to facilitate system control, log gas production data and provide mandated safety and environmental reporting information.

The ST51 Flow Meter from FCI is designed to survive these corrosive biogas processes. It comes standard with rugged 316 stainless steel body construction and Hastelloy-C22 thermal sensors. It features a no-moving parts, non-clogging design which eliminates the need for constant cleaning under wet, dirty biogas conditions. The ST51A meter carries the CE mark, and is available with Div.1/Zone 1 Ex agency approvals of FM, FMc, ATEX and IECEx.

Additionally, it has been independently verified to meet [International Electrotechnical Commission's \(IEC\) standard IEC 61508](#) for Safety Integrity Level (SIL-1) rating. With all these pedigrees and verifications, FCI is further able to extend a full 2-year warranty to all customers.



This meter's advanced electronics are housed in a durable NEMA 4X, IP67 dust/water ingress protected all-metal (aluminum or 316L stainless steel) enclosure with dual conduit ports in either NPT or M20 threading. The transmitter can be integrally mounted with the flow element (probe) or can be remote mounted for installation flexibility. The instrument comes standard with dual 4-20 mA, NAMUR NE43 compliant outputs and a 500 Hz pulse output.

The ST51A meter adds digital bus communications via the HART, Version 7, Fieldcomm certified protocol, or Modbus RS485 (in accordance with EIA/TIA-485 standard). This meter provides plant staff with digital data on flow rate and temperature parameters, the instrument's health, fault diagnostics and asset management info. It also features the capability to make configuration changes in the field if needed.

This insertion-style flow meter is available in multiple probe lengths for installation into pipe diameters from 2.5 to 24 inches (63 to 610 mm). It is easily connected into the pipe via a 1/2 inch or 3/4 inch NPT compression fitting. Its insertion style design requires only a simple, single point tap into the process piping that requires minimal technician time.

The ST51A Flow Meter utilizes constant power thermal dispersion mass flow technology, which employs a slightly heated sensor that provides a subtle drying effect on condensating moisture to make it highly effective (accurate) in moist biogas applications. Built-in temperature compensation circuitry provides correct readings under variable climate conditions—cold winters and hot summers.

The ST51A Flow Meter operates over a wide measurement range of 0.3 to 400 SFPS (0,08 to 122 MPS) with 100:1 turndown. The instrument's standard accuracy is $\pm 2\%$ reading, $\pm 0.5\%$ full scale, with an optional configuration to provide higher accuracy to $\pm 1\%$ reading, $\pm 0.5\%$ full scale.

FCI solves flow and level measurement applications with advanced thermal dispersion technologies. With 50+ years' experience and the largest installed base of thermal flow meters, flow switches and level switches, count on FCI to know your application and have the solutions.