

Accurate Landfill Biogas Flow Measurement With Reliable ST98 Air/Gas Flow Meter

Supports Co-Gen Electric Power Systems at Municipal Landfill Operations



San Marcos, CA — Process engineers in search of a reliable method of accurately measuring dirty landfill gases for co-generation electric power or for flare gas system reporting will find the rugged [ST98 Air/Gas Flow Meter](#) from [Fluid Components International](#) (FCI) measures biogases accurately with virtually no maintenance over a long life to provide a lowest lifecycle cost instrumentation solution.

Landfill biomethane gas for waste-to-energy electric power systems is extracted from the landfill with multiple wellhead taps and collected via a network of pipes leading to a common header pipe. This main pipe collects enough gas to fuel and drive turbines that in turn produce clean electric power. Not all landfill gas is suitable for electric power, and this gas is often flared off subject to the greenhouse gas reporting requirements of the U.S. Environmental Protection Agency (EPA) and other international agencies depending on the location of the landfill.

Landfill gas flow is measured at several points in the system to provide landfill operators with critical information for optimal gas production, control, safety and reporting. Landfill gas is primarily a mixture of methane (CH₄), carbon dioxide (CO₂), hydrogen sulfide (H₂S) and traces of oxygen (O₂), nitrogen (N₂), other gases and water. While a typical landfill gas mix could be 50%-55% methane and 45%-40% CO₂, but actual compositions can vary widely depending on the location, refuse types and age.

The ST98 Flow Meter with its thermal mass sensor provides direct mass flow measurement without the need for additional temperature or pressure sensors or density calculating devices. The meter's insertion style configuration makes it simple to install in existing piping without cutting the pipe or welding, offering minimal interruption to plant operations.

With its rugged no-moving parts sensor design, the ST98 meter is suitable for service in biogas and natural gas, as well as numerous other process gases, hydrocarbon mixed or dirty gases and plant compressed air and HVAC systems. The ST98 meter is operating today in landfill biogas and biomass processing operations worldwide, as well as other

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industries such as chemical, electronics, food/beverage, oil/gas, pharmaceutical, pulp/paper, steel, wastewater treatment and more.

Accurate over a wide flow range, the ST98 meter is also highly dependable. The insertion style ST98 meter's flow range is from 0.75 to 600 SFPS [0.21 to 172 NPS] in air at standard conditions of 70°F [21.2°C] and 14.7 psia [0°C and 1013,25 bar (a)], typical for most gases. Accuracy is $\pm 1\%$ of reading, plus $\pm 0.5\%$ of full scale. Exceptionally consistent too, the ST98 meter offers repeatability to $\pm 0.5\%$ of reading.

Designed for demanding environments, the rugged ST98's thermal mass flow sensing element is constructed with two all-welded 316L stainless steel thermowells, which protect two matched platinum precision resistance temperature detectors (RTDs). One RTD is heated relative to the reference RTD, and the temperature difference between the two is proportional to the process gas mass flow rate.

The ST98 meter's transmitter converts the differential temperature signal to a standard 4-20 mA output signal. The meter's transmitter with its RS232C communications port is housed in either a NEMA Type 4 or Type 4X (IP66) enclosure that is explosion-proof and can be integrally mounted to the flow element or remotely mounted up to 500 feet away. In addition, an LCD display screen indicating flow rate, temperature and totalized flow is available as an option.

With no moving piece construction, the ST98 Flow Meter is unaffected by plant vibration, and there's nothing to foul or break when placed near heavy equipment such as reciprocating engines. With its highly stable flow sensor, there is virtually no maintenance or re-calibration required, making it a lowest total cost flow measurement solution over its long service life.

The highly safe and reliable ST98 Flow Meter includes a broad range of agency approvals: FM, ATEX, IEC, CSA, CRN, GOST/RTN, NEPSI, CPA, PED, CE Mark (system approvals). It also complies with the Canadian Electrical code's requirements for ANSI / ISA 12.27.01-2011 as a single seal device.

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 the flow and level of air, gases and liquids.

Contact: FCI: 1755 La Costa Meadows Dr, San Marcos, CA 92078
Web: www.fluidcomponents.com Tel: 800-854-1993 Tel: 760-744-6950 Fax: 760-736-6250
Email: FCImarcom@fluidcomponents.com