Dirty, Wet Landfill Gas Meets Its Match in the Rugged ST100 Series Thermal Flow Meter

Accurate Measurement and Repeatability Under Haz Ex Conditions

San Marcos, CA — Engineers and technicians encountering accuracy problems in measuring wet dirty gases in solid waste landfill operations with larger line sizes will find the ST100 Series thermal flow meter from Fluid Components International (FCI) provides accurate measurement of landfill gas flow for flaring or co-gen energy production.

Landfills operations create a mixture of methane and carbon dioxide gases with traces of nitrogen, oxygen and other gases. The gases are extracted from multiple wellheads on the site and collected through a network of pipes to a common header pipe. Typical systems also involve blowers, pumps, knock-out pots and a flare or oxidizer. The collected “greenhouse gas” can be disposed of by flaring or recovered to fuel an electric power co-generation engine.

The measurement of landfill gas flow throughout the system provides information on the amount of gas being extracted for environmental reporting and for carbon credit programs. Accurate flow measurement requires performance under challenging conditions such as: wet and/or dirty gas, mixed composition gases, potentially explosive environments, wide variations in flow rates, seasonal swings in gas and ambient temperatures, and in large line sizes.

Flow meters that perform accurately with repeatability and safely under these conditions must meet a number of other requirements.Their design must be multi-function, providing flow rate, totalized flow data and temperature outputs.They have to be calibrated for methane with mixed gases, require temperature compensation, have no moving parts or orifices that clog or foul, be available with single tap insertion designs and adjust automatically to wide turndowns over a wide flow range including extremely low flow sensitivity.In addition, they must be agency approved for use in Division 2 [Zone 2] and often Division 1 [Zone 1] hazardous environments

FCI’s ST100 flow meters feature thermal dispersion mass flow sensors designed with constant power technology, which compensates for the variable temperatures commonly found in wet gas that lead to poor measurement.They are calibrated to specific wet gas mixtures in FCI’s NIST-approved calibration laboratory, and the ST100 meter is available with both built-in pressure sensing and multiple calibration groups for accuracy under difficult wet gas conditions.

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Constant power type thermal mass flow sensors are designed with platinum reference temperature detectors (RTDs).These advanced sensors detect process temperature changes in real time and automatically calculate the corresponding change in the wet gas flow rate.They are free of lag effects because they are inherently multi-variable, providing both the flow and temperature data necessary for accurate measurement.In addition, rain and moisture shields prevent liquid droplets from contacting the sensors and causing incorrect flow readings.

The insertion style ST100 flow meter is ideal for wet gas measurement in larger line sizes with standard adjustable insertion lengths from 1 inch [25 mm] up to 60 inches [1,524 mm].It sets an industry benchmark in process and plant air/gas flow measurement, offering the most feature-rich and function-rich electronics available for versatility and installed value.

Whether the need is for 4-20 mA analog, frequency/pulse, alarm relays or digital bus communications such as HART, PROFIBUS or Modbus, the ST100 flow meter is the perfect data communication solution in wet gas measurement. Should a plant's needs change over time or an upgrade be desirable, the ST100 meter adapts as necessary with a plug-in card replacement that can be changed out by plant technicians in the field.

The ST100 flow meter's unique graphical, multivariable, backlit LCD display/readout brings new meaning to the term "process information" for local viewing of wet gas flow data. It provides the industry's most comprehensive information with continuous display of all process measurements and alarm statuses, and the ability to interrogate for service diagnostics.

The ST100 can be calibrated to measure virtually any wet gas composition, mixed gases, dirty gases and specialty gases.The basic insertion style air/gas flow meter features a thermal flow sensing element that measures flow from 0.25 SFPS to 1000 SFPS [0.07 NMPS to 305 NMPS] with accuracy of ±0.75 percent of reading, ±0.5 percent of full scale.

The rugged ST100 meters are suitable for service up to 850 ºF [454 ºC] and are available with integral or remote electronics (up to 1000 feet [300 meters]). They are agency approved for hazardous environments, including the entire instrument, the transmitter and the NEMA 4X/IP67 rated enclosure. In addition to SIL-1, approvals include ATEX, IECEx, FM and FMc.

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.

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