

Thermal Flow Meters Optimize Waste-To-Energy Plant Boiler Intake Air Flow and Flue Gas Measurement

High Accuracy and Repeatability Under Demanding Operating Conditions

San Marcos, CA — Engineers challenged with designing or operating waste-to-energy incineration plants will find the ST80, ST100 and MT100 thermal mass flow meters from Fluid Components International (FCI) offer them accuracy, repeatability, ease of installation and low maintenance to enhance plant performance while driving costs down.

Waste incineration plants (WIP) applying waste-to-energy (WTE) technologies provide an economical and decreased waste footprint alternative to conventional organic waste disposal. WIPs convert their waste streams into electrical power by burning the waste to heat steam boilers, which in turn drive turbine electric power generators.

The WIP combustion process uses forced draft primary air and grate air, and in some systems secondary air, that all must be measured for efficient mixing and boiler control. All WIP systems require the measurement of the air mass flow rate to control the boiler properly and treat end-of-process hot flue gases.

FCI's ST80, ST100 and MT100 Series thermal mass flow meters are the ideal solutions to measuring WIP boiler system intake air and back-end flue gasses. In high-temperature, dirty plants with fly ash residue, these thermal flow meters excel with a rugged, no-moving parts design that is resistant to clogging and fouling over a long life.

FCI's compact thermal dispersion mass flow meters are direct mass flow instruments that do not require the addition of costly temperature or pressure sensors, or their added wire-runs and pipe penetrations. Their insertion-style configuration is the easiest, most cost-effective solution to install for the larger line sizes common in waste-to-energy incineration plants.

No matter the FCI flow meter model series, these thermal mass flow meters support WIP needs. Typical WIP requirements that FCI meters meet include pipe diameters that range in diameter or square/rectangle sizes from 8 inches to 98 inches [200 mm to 2500 mm], temperatures of 32 °F to 500 °F [0 °C to 260 °C] and pressures of 0.7 psig [0,05 bar (g)].

Model ST80 Series

The ST80 air/gas flow meter features a unique dual technology flow element that combines the



advantages of fast response with high accuracy over a broad flow range. The ST80 is suitable for use at temperatures up to 850 °F [454 °C]. It operates over a flow range of 0.25 SFPS to 1000 SFPS [0,07 NMPS to 305 NMPS]. Flow accuracy is $\pm 1.0\%$ reading, $\pm 0.5\%$ of full scale, with repeatability of $\pm 0.5\%$ reading.

Model ST100 Series

The ST100 is a thermal dispersion technology flow meter that combines the industry's most feature- and function- rich electronics with advanced flow sensors. The result is a truly state-of-the-science solution for industrial processes and plant applications.

In addition to the single-point Model ST100, the ST102A dual-point, averaging meter is an economical solution to achieve higher accuracy in larger pipe or duct sizes with non-repeatable or flat profile flow conditions. The ST100 Series meters operate over a flow range of 0.25 SFPS to 1000 SFPS [0,07 NMPS to 305 NMPS] with accuracy of $\pm 0.75\%$ reading, $\pm 0.5\%$ full scale, with repeatability of $\pm 0.5\%$ reading.

Model MT100 Series

The MT100 is an insertion type, multipoint (3-8 points) thermal flow meter specifically designed for difficult to measure big diameter pipes and large ducts, such as in industrial power generation combustion air intakes, stacks and flues. It operates at temperatures up to 850 °F [454 °C] over a flow range of 0.25 SFPS to 1000 SFPS [0,07 NMPS to 305 NMPS]. Up to eight flow sensors can be placed in the flow stream, either as individual tap points or as an array across a single mast. All sensors are averaged to produce accurate, repeatable flow measurement of $\pm 1.75\%$ of reading, $\pm 0.5\%$ of full scale with repeatability of $\pm 0.5\%$ reading.

All of these instruments are compatible with a client's control system, featuring multiple 4-20 mA, NAMUR NE43 compliant analog outputs, HART, Modbus, FOUNDATION Fieldbus, and/or PROFIBUS-PA and -DP. They are all available for powering via 24 Vdc or 115/230 Vac.

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.