

## Thermal Mass Flow Meter Helps Reduce Cost of Plastics Recycling Technology

*Accurate, Reliable Direct Mass Flow Measurement of Mixed and Dirty Gases*

**San Marcos, CA** — Engineers responsible for the complex process of recycling used plastic discarded as garbage and then given new life will find the rugged, direct mass flow measuring [ST Series thermal flow meters](#) from [Fluid Components International \(FCI\)](#) helps them more accurately measure synthetic gas for economical co-gen plant operation.

According to environmental experts, there is a crisis in finding viable solutions to the recycling of the growing quantity of used plastics. A new process, known as thermal anaerobic technology (TAC), converts plastic waste into TACOIL and back into plastic suitable for food use (Plastic2Plastic) through a modular and scalable plant design that relies on FCI's ST100A Series thermal flow meters.

The TAC process heats the plastic feedstock without any oxygen until it melts. The polymers break down to form a rich saturated hydrocarbon vapor. These condensable gases are converted into hydrocarbon products by separating the vapor into raw diesel, light oil, and synthetic gas, while the non-condensable gases are collected separately as synthetic gas (syngas). The condensate product is sold to petrochemical industries to be converted back into virgin plastic. The syngas is blended with natural gas (for specific required calorific value) and used to operate the plant (energy generation).

Accurately measuring the syngas and the enriched natural gas is essential to operating the plant economically. FCI's direct mass flow measuring ST100A Series flow meters are ideal for accurate measurement in this type of dirty, mixed-gas component environment. They provide accurate measurement with precise NIST/ISO17025 traceable laboratory calibrations matched to actual user gas samples.

Featuring a no-moving parts thermal flow sensor design, the ST100A Series flow meter combines repeatable measurement with feature- and function-rich electronics. It offers direct gas mass flow measurement requiring no additional sensors or flow calculating devices. The instrument's no-moving parts design also virtually eliminates wear, breakage and maintenance.



The ST100A flow meter measures air/gas flow from 0.25 SFPS to 1000 SFPS [0.07 NMPS to 305 NMPS] with an accuracy of  $\pm 0.75$  percent of reading +0.5 percent of full scale. A wide variety of pressure ranges can be specified from 0 psig to 1000 psig [0 to 70 bar (g)], depending on the specific model selected to support the most demanding applications. When selecting the ST100A meter, users have multiple communication options. They can choose from: 4-20 mA analog, frequency/pulse, or certified digital bus communications such as HART, FOUNDATION Fieldbus, PROFIBUS PA or Modbus RS485. Should a production field or plant's communication needs change, a new replaceable card can be swapped out in the field.

Developed with a graphical, multivariable backlit LCD display, the ST100A meter brings new meaning to the term "process information." Its sophisticated readout continuously displays all process measurements and alarm status for easy on-site viewing by technicians, and it has the ability to query for service diagnostics.

The ST100A meter's electronics include a user selectable and programmable data logger. Readings are stored in a removable, internal micro-SD card. The micro-SD card has a 2 GB capacity capable of storing approximately 21 million readings. The recording time base is user selectable with a maximum rate of 1 reading per second. The logging feature is selectable via the front panel menu or via the serial port and configuration software tools.

The ST100A meter utilizes constant power thermal mass flow sensing technology that measures flow with 100:1 turndowns in ranges from 0.006 SCFM to 1850 SCFM [0.01 NCMH to 3140 NCMH]. The transmitter/electronics are integrally mounted with the flow body or can be remote mounted to 1000 feet [305m] away. The transmitter enclosure is NEMA4X/IP67 rated and available in painted aluminum or stainless steel.

ST100A meters are agency approved for hazardous environment installations, such as plastics recycling operations. FCI products undergo rigorous agency testing and obtain their approvals on the entire instrument, not just the enclosure. Approvals available for the SIL rated ST100 meter include: FM, FMc, ATEX, IECEX, EAC/TRCU, CPA, NEPSI, InMetro, and CE Approved.

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.