

Green Up Your Plant With These Tips

The new Green Energy Applications guide from [Fluid Components](#) [1] profiles nine green energy and pollution reduction applications, while simultaneously providing solutions for obtaining accurate and reliable gas flow measurements within them. Each detailed on its own page with a helpful illustration, profiled applications include:

- Wastewater treatment digestion/digesters.
- On-farm digestion/digesters.
- Landfill gas measurement and recovery.
- Biomass fermentation/fermentation systems.
- Ethanol production/refining.
- Coal mine methane recovery.
- Biomass gasification.
- Flare gas applications/systems.
- Flue gas monitoring.

Drawing on 40-plus years of expertise in gas flow measurement, Fluid Components' free 12-page educational guide is highlighted with critical factors that process and plant engineers must consider to achieve optimal flowmeter performance, thus minimizing maintenance and lengthening service life.

Ethanol Production & Refining

To optimize ethanol process productivity, thermal mass flowmeters are intended to accurately measure fuel gas, air flows and waste gases in small to large lines, which are operating with variable temperatures and flow rates. The company outlines ethanol production as a distillation process that relies on boilers, and believes that boiler efficiency may be optimized by controlling their air-to-fuel ratios using flowmeters. This process, in addition to producing ethanol, generates waste gases with volatile organic compounds (VOCs), which can also be monitored by flowmeters.

Coal Mine Methane

Thermal mass flowmeters in coal mine methane recovery systems measure extracted gas, support efficient operation of co-gen engines or methane oxidizer systems, and provide data for incentive credits. The company explains that the recovery and utilization of methane gas from coal mining may be able to create an energy resource and reduce a major source of greenhouse gases. According to the company, the three major sources of coal mine methane are the drainage-type of degasification systems (both pre-mine and gob), ventilation air, and abandoned or closed mines.

On-Farm Digesters & Biogas Systems

Thermal mass flowmeters are designed to ensure on-farm biogas production efficiency in on-farm digestion applications. Fluid Components' guide posits that

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decomposing fecal waste can be harvested to produce biogas, which can be used as a fuel gas. The company insists that rather than emit dangerous methane and other greenhouse gases into the environment, farmers can capture the gas to power plant operations and/or export power to the public power grid.

Landfill Gas Measurement

Moreover, thermal mass flowmeters can accurately measure landfill gas flows (which consist of a mixture of methane and carbon dioxide, plus other trace gases) for environmental reporting to regulatory agencies and electric energy co-generation. Landfill gas is converted to electricity, which is then exported and sold to the public power grid.

Biomass Fermentation & Recovery

Mass flowmeters can further measure the biogas (a byproduct of organic waste from fruit and vegetable peelings, or meat preparation in the food/beverage industry) from biomass fermentation and recovery operations. It is a mix of methane, carbon dioxide, water and trace amounts of hydrogen sulfide. The crop, food or ag waste is digested under anaerobic conditions, using biogas as fuel for heating or as power for an electricity-generating engine, in a reactor tank or fermentation tower, according to the company.

Anaerobic Digesters

Additionally, thermal mass flowmeters can measure the digester gas produced in the anaerobic digesters used in municipal wastewater treatment plants. The company thinks the digester gas is a dangerous combination of methane and carbon dioxide with smaller percentages of hydrogen sulfide and other gases. Fluid Components posits that the gas flow varies widely, too, based on fluctuating plant demands and seasonal variations in temperature and humidity.

Fluid Components' Technology

The company says its thermal dispersion gas flowmeters (which have been used in energy production, pollution monitoring and environmental management for decades) incorporate direct mass flow measuring technology that's well-suited to provide flow rate and totalized flow data for:

- Process control.
- Regulatory compliance.
- Carbon trading.
- Greenhouse gas reduction incentives and credits.

With the power to withstand the most harsh, wet, dirty and hot industrial environments, according to the company, its thermal mass flowmeters can be applied in any gas or mixed-composition gases. Available in 0.25-inch (6-mm) to much larger line sizes, the flowmeters measure flow rate over a wide range, feature up to a 1,000:1 turndown, and offer accuracy over a long life, with virtually no maintenance to eliminate field time and the re-engineering of critical plant processes, according to the company.

Source URL (retrieved on 10/26/2014 - 1:17am):

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Links:

[1] <http://www.fluidcomponents.com/GreenEnergy>