



Fox Flow Meter Features:

- Non-resetting totalizer meets air quality management equipment requirements
- A variety of analog and digital output signals to easily interface with emissions management system
- No pressure or temperature compensation requirements
- Broad measurement range (100 to 1 typical) including very low velocity flow



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THERMAL FLOW METERS IMPROVE BIOGAS AND DIGESTER GAS MONITORING

Biogas is produced when organic matter, such as sewage, manure or vegetable matter, decomposes in the absence of oxygen. This may take place in a landfill site or in an anaerobic digester to produce biogas. The biogas mixture is typically 70% methane and 30% carbon dioxide.

Methane is a powerful greenhouse gas that remains in the atmosphere for approximately 9-15 years, is more than 20 times more effective at trapping heat in the atmosphere than carbon dioxide, and is of growing environmental concern.

Methane is also a primary constituent of natural gas and an important energy source. As a result, efforts to utilize methane emissions can provide significant energy, economic and environmental benefits.

Landfills are the largest human-related source of methane in the U.S., accounting for 34% of all methane emissions. Thermal mass flow meters and flow switches are widely used in many landfill, wastewater and sewage treatment applications, including:

- Digester gas flow monitoring
- Flocculant/sludge control
- Oxygen/ozone flow monitoring
- Chlorine gas flow monitoring
- Sample flow and gas chromatography

Methane is also produced during the anaerobic decomposition of organic material in livestock manure management systems. Liquid manure management systems, such as lagoons and holding tanks, can produce significant amounts of methane. Many large swine and dairy operations are turning manure into a valuable resource by substituting biogas for natural gas or propane as fuel for boilers and electrical generators. Farmers are also capturing methane from anaerobic digesters and monetizing the resulting carbon credits through greenhouse gas emissions allowance trading systems.

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THERMAL FLOW METERS IMPROVE BIOGAS AND DIGESTER GAS MONITORING (CONTINUED)

Case Study: RCM Digesters Specify FOX Thermal Flow Meters

RCM Digesters, leaders in livestock anaerobic digester systems, utilize proprietary technology to manage waste, put manure methane to productive use, and help clients earn greenhouse gas reduction credits. RCM Digesters uses FOX thermal flow meters to measure methane that is captured by the biodigester and then used to fuel boilers and generator engines. RCM originally utilized traditional DP metering technology, but found that method unsuitable for the varying flow rates and corrosive gases associated with biogas applications. The FOX meters' stainless steel sensor and wide measurement range provide a simple solution to those problems.

Variations in flow rate caused by seasonal climate changes and the gas spikes that occur after feeding the digester are not a challenge for FOX thermal flow meters. Their exceptional low flow sensitivity and ability to directly measure mass flow make them ideal for fuel flow measurement over a wide range of temperatures, pressures and flow rates. Furthermore, the instrument's no-moving-parts design and all welded stainless steel construction make them suitable for harsh or corrosive applications.

FOX flow meters are also used to monitor flare gas from the digester. Measuring all combusted methane, including the excess gas that is flared, is an important element of the certification process needed to document, verify, register and monetize reductions in greenhouse gas emissions through tradeable carbon credits. RCM Digester Earns Greenhouse Gas Reduction Dollars (make hyperlink to <http://www.rcmdigesters.com>)

FOX Flow Meter Features:

- Broad measurement range (100 to 1 typical) including very low velocity flow
- Direct mass measurement – no pressure or temperature compensation requirements
- All-welded stainless steel sensor and no-moving-parts design is suitable for dirty and corrosive applications
- A variety of analog and digital outputs for easy interface with combustion control and emissions management systems
- Built-in totalizer facilitates documentation and certification procedures required for monetizing carbon credits