

# FOX APPLICATION GUIDE

## Thermal Flow Meters for Biogas Monitoring

### TYPICAL APPLICATIONS INCLUDE:

- Biogas from Digesters
  - Agricultural Digesters
  - Anaerobic Digesters
  - Livestock Manure Digesters
  - Wastewater Digesters
- Landfill Gas
- Flaring Gas

### Monitoring Biogas to Turn Emissions into Fuel or Carbon Credits

Thermal mass flow meters are widely used to monitor gases from anaerobic digesters, landfill, and agricultural/livestock digesters. The instrument's wide turndown provides an accurate measurement of the fuel gas produced, and a built-in totalizing function facilitates environmental auditing procedures of greenhouse gas emissions for Title 40 CFR Part 98 Subpart JJ.

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. When the biogas mixture varies, Fox Thermal has developed Gas-SelectX®, a field-programmable gas selection feature, so that the gas composition settings can be changed regularly.

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 are widely used in many landfill, wastewater and sewage treatment applications, including:

- Digester gas flow monitoring
- Oxygen/ozone flow monitoring
- Chlorine gas flow monitoring
- Sample flow for gas chromatography



Biogas is most often a mixture of methane and carbon dioxide, but the composition may vary.



The recapture of biogas is becoming more popular as more countries work toward a net zero emissions future.

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. In order to participate in such programs, accurate reports of gas flow must be made. Fox Thermal Flow Meters provide direct measurement of mass flow rate while reducing maintenance costs through its no-moving parts design.



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Model FT1 offers the Gas-SelectX® feature. Gas-SelectX® allows the user to set the gas composition in the meter - perfect for Biogas applications.