FOX APPLICATION GUIDE

Thermal Flow Meters and EPA Compliance

TYPICAL APPLICATIONS INCLUDE:

- Emission Reduction Systems
- Emissions Monitoring Systems
- Industrial Applications
- Environmental Monitoring Applications
- Oil & Gas Applications
- Biogas Applications
- Wastewater Applications

As more countries work toward net zero emissions, interpreting regulations for compliance is an important part of sourcing equipment and instrumentation used in emissions reporting.

EPA 40 CFR Part 98 Compliance

When it comes to regulations and compliance, parsing through all of the data can be time-consuming and difficult. A frequent question is raised to Fox Thermal about whether Fox Thermal gas mass flow meters can be used to provide measurement data for compliance with the EPA's Mandatory Greenhouse Gas Reporting Rule: 40 CFR, Part 98. After examination of the rule, Fox Thermal's interpretation leads us to the conclusion that Fox Thermal gas mass flow meters do comply with its requirements.

Flow Meter Type

Some subparts contain ASME or other calibration methods. Please observe that they pertain to specific types of meters (ie "Coriolis Mass Flowmeters" or "Vortex Flowmeters", etc). As of this date, there are no prescribed methods pertaining to thermal gas mass flow meters. According to the Federal Register, "alternatively, calibration procedures specified by the flow meter manufacturer may be used" (Federal Register / Vol. 75, No. 132 / Monday, July 12, 2010 / Rules and Regulations, p. 39766). For this reason, calibration "as specified by the manufacturer", which is permitted by the rule, applies to Fox Thermal gas mass flow meters.

Automatic Compensation for Temperature and Pressure

Fox Thermal gas mass flow meters automatically compensate for temperature and pressure. For this reason, they are not held to the same calibration methods which other meters that don't perform these functions are bound to. "Some gas flow meters and gas composition meters automatically compensate for temperature, pressure, and moisture content. The EPA revised the equations in 40 CFR, Part 98, subpart II so that facilities that use automatically compensated meters are not required to measure temperature, pressure and moisture content. Facilities that operate meters that are not automatically compensated must measure these parameters as specified in 40 CFR §98.354" (Federal Register / Vol. 75, No. 132 / Monday, July 12, 2010 / Rules and Regulations, p. 39746).

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ASTM - Thermal Gas Mass Flow Meters

In order to clarify the specific requirements stated in the rule for §98.354 and other subparts, we have included the Q&A section below with live links to the appropriate official documents. The following answer was taken from a section of the Federal Register to answer this question:

There is no ASTM or other method listed in paragraphs (h)(1) through (h)(8) of §98.354 that pertains to Thermal Gas Mass Flow Meters. Since they aren't listed, will the EPA accept Thermal Gas Mass Flow Meters for measuring volumetric flow rate of recovered biogas?

"For each anaerobic process…install, operate, maintain, and calibrate a gas flow meter capable of continuously measuring the volumetric flow rate of the recovered biogas using one of the methods specified in paragraphs(h)(1) through (h)(8) of this section or as specified by the manufacturer" (40 CFR, Part 98, Subpart II –Industrial Wastewater Treatment: §98.354)

Specification of Flow Meters - Accuracy Requirement

The following question and answer are also quoted from a Q&A document published by the EPA:

"Regarding the Monitoring and QA/QC requirements in section §98.344, we have annubars and/or v-cone flowmeters at many of our landfills. These are not specifically listed in this section—do they fall under the 'or as specified by the manufacturer' clause with respect to calibration? Or, are only the specific flow meters listed going to be allowed?

Annubar and/or v-cone flow meters (and any other type of flow meters) are allowed under the rule provided they meet the accuracy requirements for flow meters in section 98.3(i). Calibration would be done as specified by the manufacturer if none of the methods listed in section 98.344(c) are applicable."

Conclusion

The EPA's statements "(and any other type of flow meters)" and "or as specified by the manufacturer" applies to any meter that is not included in the list of methods, and, therefore, complies with the rule as long as it meets the accuracy requirement of 5%. In the case of §98.354, Thermal Gas Mass Flow Meters are not listed among the meters that require a certain calibration method. Since Fox Thermal gas ass flow meters meet the accuracy requirement of 5%, Fox Thermal gas mass flow meters are allowed as a measuring device to comply with 40 CFR, Part 98.

Model FT4A measures the mass flow rate of air and gases without the need for temperature or pressure compensation.
Accuracy - Air: ± 1% of reading ± 0.2% of full scale.
Accuracy - All other gases: ± 1.5% of reading ± 0.5% of full scale.

FOX® THERMAL

399 Reservation Road | Marina, CA 93933
Office: 831.384.4300 | Fax: 831.384.4312
foxthermal.com