



## THERMAL GAS MASS FLOW METERS AND EPA 40 CFR PART 98 COMPLIANCE

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Recently, the question was raised as to whether a Fox Thermal Gas Mass Flow Meter 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, our interpretation leads us to the conclusion that Fox Thermal Gas Mass Flow Meters do comply with its requirements.

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.

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).

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)

As further proof of the validity of the evidence above, we have taken the following question and answer directly 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."

As you can see, 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 Mass 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.