

Get Smart on Greenhouse Flare Gas Flow Measurement and Service

Metering for Compliance to EPA 40 CFR Mandatory
Reporting of Greenhouse Gases; Final Rule



Mandatory Reporting of Greenhouse Gases (GHGs): Final Rule

The Consolidated Appropriations Act (FY2008), signed on December 26, 2007, authorized the EPA to develop and enact a final rule, not later than 18 months after the date of the Act, to require mandatory reporting of greenhouse gas emissions above appropriate thresholds in all sectors of the economy of the United States. The final rule applies to fossil fuel suppliers, industrial gas suppliers, and direct greenhouse gas emitters.

The rule requires reporting of annual emissions primarily of carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and others. It also includes provisions to ensure the accuracy of emissions data through monitoring, recordkeeping and verification requirements.

In general, the rule requires direct measurement of emissions from certain units that already are required to report data using CEMS under other programs (e.g., ARP, NSPS, NESHAP, and State Implementation Plans). In some cases, this may require upgrading existing CEMS that currently monitor criteria pollutants to also monitor CO₂ **or add a volumetric flow meter.**

The data collected by the rule will be used in analyzing and developing a range of potential CAA GHG policies, programs and actions that facilities could take to reduce emissions. Facilities must begin collecting data on January 1, 2010. The first annual GHG report is due on March 31, 2011, for GHGs emitted.



The requirements for flare gas

For flare gas, the industries affected and requirements are found in two Subparts of the rule 40CFR Part 98 for Stationary Sources:

X. Petrochemical production

This source category consists of all processes that produce acrylonitrile, carbon black, ethylene, ethylene dichloride, ethylene oxide, or methanol (with certain exceptions).

Process emissions also include CO₂, CH₄ and N₂O emissions generated by combustion of off-gas from the process in stationary combustion units **and flares**. For some of the GHG emission calculation and monitoring options, Subpart X references procedures in 40 CFR Part 98, Subpart Y, for calculating emissions from flares specified in section 98.253.

Y. Petroleum refineries

A petroleum refinery is any facility engaged in producing gasoline, gasoline blending stocks, naphtha, kerosene, distillate fuel oils, residual fuel oils, lubricants, or asphalt (bitumen) through distillation of petroleum or through redistillation, cracking, or reforming of unfinished petroleum derivatives.



Under 40 CFR Part 98, Subpart Y, petroleum refineries must calculate CO₂, CH₄ and N₂O emissions from flares using the **gas flow rate** (either measured with a continuous flow meter or calculated using engineering calculations) and, either weekly measured carbon content of the flare gas, or weekly measured heat content of the flare gas and use an emission factor.

Requirements for flare gas flow measurement in petrochemical production and petroleum refineries

From section 98.253, "Calculating GHG Emissions"

For the flow monitor on the flare, you use the measured flow rates when the meter is operational and the **flow rate is within the calibrated range** of the measurement device to calculate the flare gas flow. (If you do not have a flow meter on the flare and for periods when the meter is not operational or the flow rate is outside the range of the meter, you must use engineering calculations, company records, or similar estimates of volumetric flare gas flow.)

From section 98.254, "Monitoring and QA/QC Requirements"

For flare or sour gas flow meters, **operate and maintain the flow meter** using any of the following methods: a method published by a consensus-based standards organization (e.g., ASTM, API, etc.) or follow the **procedures specified by the flow meter manufacturer**.

Flow meters must have a rated accuracy of **+/- 5 percent** or lower.



GF868 flare meter technology puts you in compliance

The DigitalFlow™ GF868 flare gas flow meter meets the specified accuracy rating and is designed for flare gas applications—for new installations or retrofits. It measures velocity, volume and mass flow rate, and provides average molecular weight of hydrocarbon gases. The GF868 has one or two channels of measurement to allow for two paths on one pipe or even two pipes with the same meter.

The GF868 offers distinct advantages over other methods of flare gas flow measurement and solves a variety of difficult problems, such as pulsating pressure, unsteady flow rates, and varying gas composition and temperature. Measurement to very highest or very lowest flow rates is done over pipe sizes from four to 120 inches.

The GF868 also capitalizes on the inherent advantages of ultrasonic flow measurement—reliability, low maintenance, high accuracy, fast response and wide rangeability.



Our experience in flare gas metering

A world leader in measurement solutions, GE's flow pedigree spans 45 years with the Panametrics line of flow products. For flare gas, the GF868 has been proven as a superior performer in this typically harsh environment. We have flare installations at hundreds of locations throughout Texas, Louisiana and California, and thousands more at other refineries and petrochemical plants across the globe.

Along with the GF868, other GE flow meters can help you with additional flow measurements required for GHG monitoring.

Our products also come with the peace of mind that a GE guarantee brings. We stand behind our products to ensure that you get the quality you expect.

We're at your service

Complying with the GHG regulation takes more than an accurate flow meter. We have the procedures, based on API 14.10, as required. From evaluating site data for recommendation on an installation to field commissioning a new meter or inspecting and certifying existing installations, our applications engineering and field services teams have the expertise and regulatory knowledge to guide you.

The image displays four overlapping GE procedure sheets, each featuring the GE logo and a title box. The sheets are:

- Flare Gas Flowmeter New Application Evaluation Procedure** (APPLICATION ENGINEERING PROCEDURE)
- Flare Gas Flowmeter Commissioning Procedure** (FIELD SERVICE PROCEDURE)
- Re-evaluation of Existing Flare Gas Flowmeter Installation Procedure** (APPLICATION ENGINEERING PROCEDURE)
- Flare Gas Flowmeter Periodic Field Verification & Acceptance Test** (FIELD SERVICE PROCEDURE)

Each sheet includes a revision table (REV) and a signature table (SIGN). The 'Periodic Field Verification & Acceptance Test' sheet also contains two data tables:

REVISION HISTORY			
REV	DESCRIPTION	AUTHOR	DATE
A	Initial release of document	A. Sharma	May 2010
B	Revised for updates	A. Sharma	May 2010

APPROVAL SIGNATURE BLOCK			
NAME	TITLE	SIGNATURE	DATE

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