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Analytical Products and Solutions

Flare Measurement

Using Siemens Process Analytics to Ensure an Effective Flare Monitoring Strategy

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Federal, state and local environmental regulations require to monitor, speciate, and quantify waste gas flow to flares. Whether for refineries, gas processing, petrochemical or chemical plants, online measurement may be required to speciate constituents and determine the heat value or quantity of reactive volatile hydrocarbons and hydrogen sulfide (H₂S) or total sulfur emissions. On-line and automatic process gas chromatography provides this data continuously and with documented performance specification as part of an integrated measurement solution. Its track record of functionality over long periods of time ensures you are able to document and report accurate data to regulatory agencies.

Process Gas Chromatographs help you comply with federal and state regulations that target flare emissions and emission reductions, including:

- EPA 40CFR 60 subpart J addressing H₂S in fuel gas for refinery flares;
- EPA 40 CFR 60 subpart Ja targeting Total Sulfur in flare waste gas for refinery flares;
- Title 30TAC Chapter 115 of the Texas state TCEQ to monitor Highly Reactive Volatile Organic Compounds (HRVOC) and BTU in flare waste gas at petrochemical plants in Houston and vicinity,
- Rule 1118 of the South Coast Air Quality Monitoring District (SCAQMD) to quantify refineries total sulfur emission,

- EPA driven Consent Agreements with individual plants,
- EPA 40CFR63.670, the Refinery Sector Rule, targeting flare combustion efficiency and flare flame visibility

While regulatory measurements are mandatory, there are tangible economical benefits to using a MAXUM Process Gas Chromatograph as part of your compliance strategy. By characterizing and quantifying flare gas as required, also unknown product loss caused by leaks in pressure relief or shut-off valves can be identified and eliminated. Furthermore, characterizing flare gas and liquid recovery permits you to recycle these flows effectively. MAXUM enables you to improve community relations around plants by assisting to increase combustion efficiency, reduce flare visibility and reduce unburned chemicals emission. It is ideal for monitoring plant-operational changes and flare-recovery systems in tough industrial environments, including hazardous areas such as refineries, chemical and petrochemical plants. The measurement system automatically performs and reports daily, weekly and quarterly validation utilizing reference standards. Furthermore, utilizing smart sample system devices not only permits continuous monitoring of proper sample delivery, it also increases confidence in the measured values, and provides information in advance when maintenance is needed. The analyzer system management tool in turn continuously collects, aggregates and visualizes selected important performance indicators in order to indicate performance deviations early on, suggests maintenance, and therefore, increases data integrity and availability.

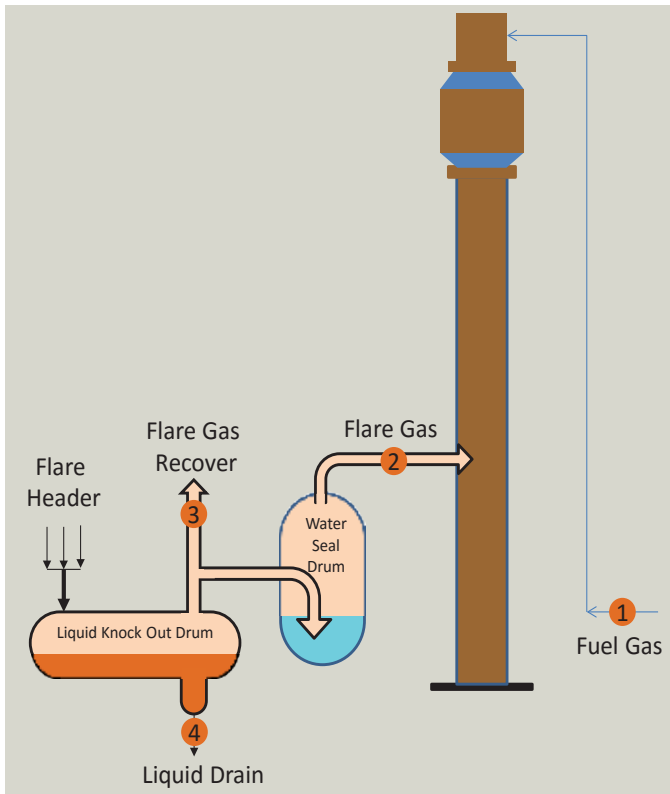


Figure 1: Flare gas monitoring points

Analytical measurement is essential for generating data to demonstrate compliance with regulatory requirements. Typical measurement points are:

1. H₂S and heat value in fuel gas.
2. Composition, Total Sulfur, Olefin content in Waste Gas to flare.

Siemens Flyer
March 2019

Published by
Siemens Industry, Inc.

1-800-964-4114
info.us@siemens.com

Process Automation
Process Industries and Drives
100 Technology Drive
Alpharetta, GA 30005

Subject to change without prior notice
Order No.: PIAFL-00063-0319
Printed in USA
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3. Composition of flare gas recovery.
4. Composition of condensate recovery.

The MAXUM measurement solution consists of:

- Sample extraction, with blowback.
- Sample transport line, depending on gas composition and measurement requirements heated from 60° C to 110° C.
- Heated pump to ensure short sample lag time.
- Sample preparation system with automatic multi-point validation and blowback capabilities, preferably with smartness to recognize changes and to minimize maintenance.
- Reference gas inlets for automatic single and three point validation
- On-line process gas chromatograph, validated for specific regulatory requirements
- Measurement system integration for complete turn-key measurement solution, based on an economical standard solution or tailored to your specific needs and preference.
- Calculations and data communication to distributed control system or historian.
- Analyzer System Management for continuous monitoring, validating and visualizing system performance to ensure highest data availability and validity.

With hundreds of analyzers on flares, the MAXUM process gas chromatograph provides a proven, reliable, maintainable, and repeatable turn-key analytical flare monitoring system for satisfying the most rigorously regulatory requirements. Furthermore, assisting with in depth training enables you to support your installed measurement systems with confidence. And by having the largest dedicated analytical support group we are able to provide from remote or on-site quick expert support to ensure your regulatory compliance.

For specific details of the various flare solutions, please contact us.

For more information, please contact:

Siemens Industry, Inc.
5980 West Sam Houston Parkway North
Suite 500
Houston, TX 77041
Phone: 713-939-7400
Email: ProcessAnalyticsSales.industry@siemens.com