

MAXUM FLARE TOTAL SULFUR ANALYZER

# Meet regulations and reduce your total cost of ownership

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**SIEMENS**

The background of the advertisement is a photograph of an industrial refinery. Several tall, complex structures, likely distillation columns or flare stacks, are silhouetted against a bright, orange and yellow sunset sky. The structures are made of metal and feature various pipes, ladders, and platforms. The overall scene is industrial and dramatic due to the low-angle lighting.

**Meet regulations and reduce your total cost of ownership**

As environmental regulations for sulfur emissions become more stringent, companies are facing immense investment and development challenges. Siemens understands that customers are searching for economical solutions to meeting these objectives. The Maxum Flare Total Sulfur Analyzer, with the industry-proven Maxum Analyzer and Siemens service built in, helps you to meet regulatory requirements and lower your total cost of ownership.

**Regulation basis**

Rule 1118 of the California South Coast Air Quality Monitoring District requires, in part, the continuous monitoring of waste gas to flares. The objective is to determine the sulfur emission by quantifying the total sulfur in the waste gas stream and the higher heat value of the waste gas flow to the flare.

On June 24, 2008, the United States Environmental Protection Agency released a Standards of Performance for Petroleum Refineries, which includes two key provisions:

- The final amendments to the existing petroleum refineries New Source Performance Standards (NSPS) in 40 CFR part 60, subpart J
- New petroleum refineries NSPS in 40 CFR part 60, subpart Ja that affects refineries for which construction/reconstruction, or modification commenced after May 14, 2007

Facilities affected by these provisions must determine sulfur dioxide (SO<sub>2</sub>) emissions from their flares.

Based on the published regulations, discussions with government regulators, and input from the refineries required to implement these regulations, the Gas Chromatograph and Integration (GCI) division of Siemens Industry, Inc. has defined analytical systems for the online and automatic measurement of the fuel gas to flares.

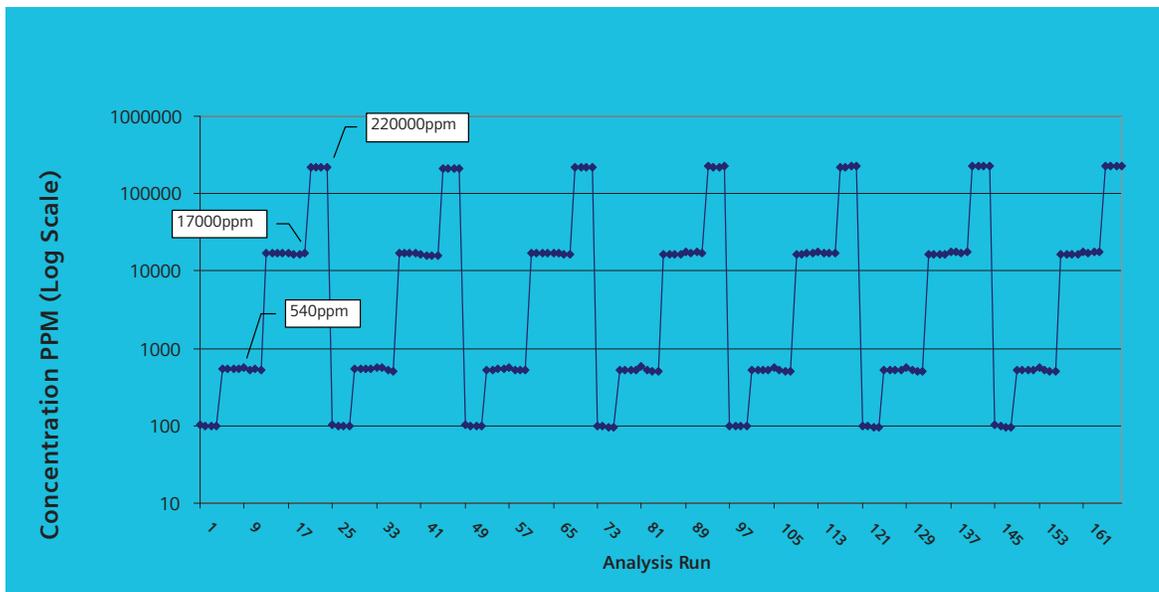
**Maxum flare total sulfur analyzer**

The Siemens Flare Total Sulfur Analyzer is built around a proven process gas chromatograph—the Maxum edition II. The analyzer uses a vapor sample valve to deliver the sample to the burner. A Flame Photometric Detector then measures the resulting SO<sub>2</sub>. The sample amount introduced to the burner is matched to the analyzer operational requirements.

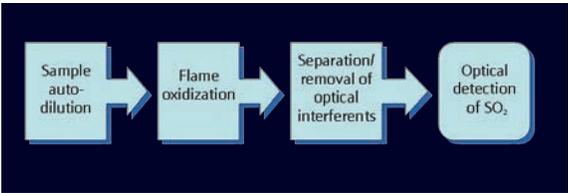
To achieve a specific sample dilution, the carrier flow that pushes the sample into the burner is adjusted for each range. The measuring range is determined and automatically controlled using software. This process results in the following [SO<sub>2</sub>] measuring ranges:

- Low 10 ppm - 500 ppm
- Mid 450 ppm - 2%
- High 1.5% - 50%

The response time for local calibration (i.e. introducing the calibration sample at the sample conditioning system) is a maximum of two cycles. The cycle time to results is 4 minutes. Extensive field beta evaluation and installed analyzer systems have proven efficacy, including linearity, stability, and repeatability.



**The methodology used by the Maxum Flare Total Sulfur Analyzer is simple and fundamental:**



**Technology basis and description**

The Maxum Analyzer relies on a fundamental method: Sample dilution -> Oxidation (via FID burn) to SO<sub>2</sub> -> Simple chromatography to separate SO<sub>2</sub> from any possible interferences -> Detection with FPD (i.e. optically).

The Siemens Total Sulfur Flare uses the industry-proven Maxum Analyzer. Spare parts, training, service, and support are identical to the Maxum Analyzer as well.

A single Maxum Analyzer, photomultiplier tube (PMT), and power supply make up the entire Total Sulfur Flare span requirement (10 ppm - 50%) for reading SO<sub>2</sub>. The unique, variable sample dilution scheme is based on a single sample valve and provides the separation of SO<sub>2</sub> from all possible optical interferences and signal quenching before the detector. The Maxum Analyzer requires no purge gas to meet Class I Div 2, and is Div 1 and ATEX Zone 1 certified with purge.

**Total cost of ownership**

Siemens reduces your total cost of ownership (TCO) by addressing the utility and maintenance costs of long-term monitoring. We optimize our designs for multiple stream sample conditioning systems. We ensure that they efficiently use analyzer utilities (air and power) while delivering outstanding analyzer measurement density per footprint.

We further reduce your TCO by improving such critical areas as system installation, project execution, project costing, single-point responsibility, and factory acceptance test inspection. As with other regulatory measurements, Maxum reliability performance easily satisfies the 95% uptime requirement (18 days per year of allowable downtime, cumulative).

Additionally, we optimize TCO by deploying well-designed sample conditioning systems, stable applications with proven analyzers, and proven hardware. We minimize significant analytical hardware or application adjustments by controlling analysis drift, relying on automated calibration and

validation when appropriate, using monitoring parameters to predict failure, and including standardized GC separation systems for quick and easy maintenance.

**Turnkey from a single solution provider**

Turnkey packages are becoming the standard for environmental monitoring, as the same application is frequently required in different plant sectors and taking this approach can reduce overhead on implementation and support. Furthermore, turnkey systems help to minimize the risk of technical problems associated with regulation monitoring.

Siemens uses its wealth of experience to offer standardized packages that are designed with a turnkey application in mind. Our range of applications cover a variety of industrial sectors, which allows you to configure and order complete solutions while sharply reducing delivery time. We offer a wide array of System Integration solutions and have vast experience designing standard and custom sample conditioning systems for environmental monitoring. Detailed drawings are provided to customers as well.



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