




SIEMENS



Maxum Flare Total Sulfur Analyzer

Meet regulations and reduce  
your total cost of ownership.

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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.

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

## 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.

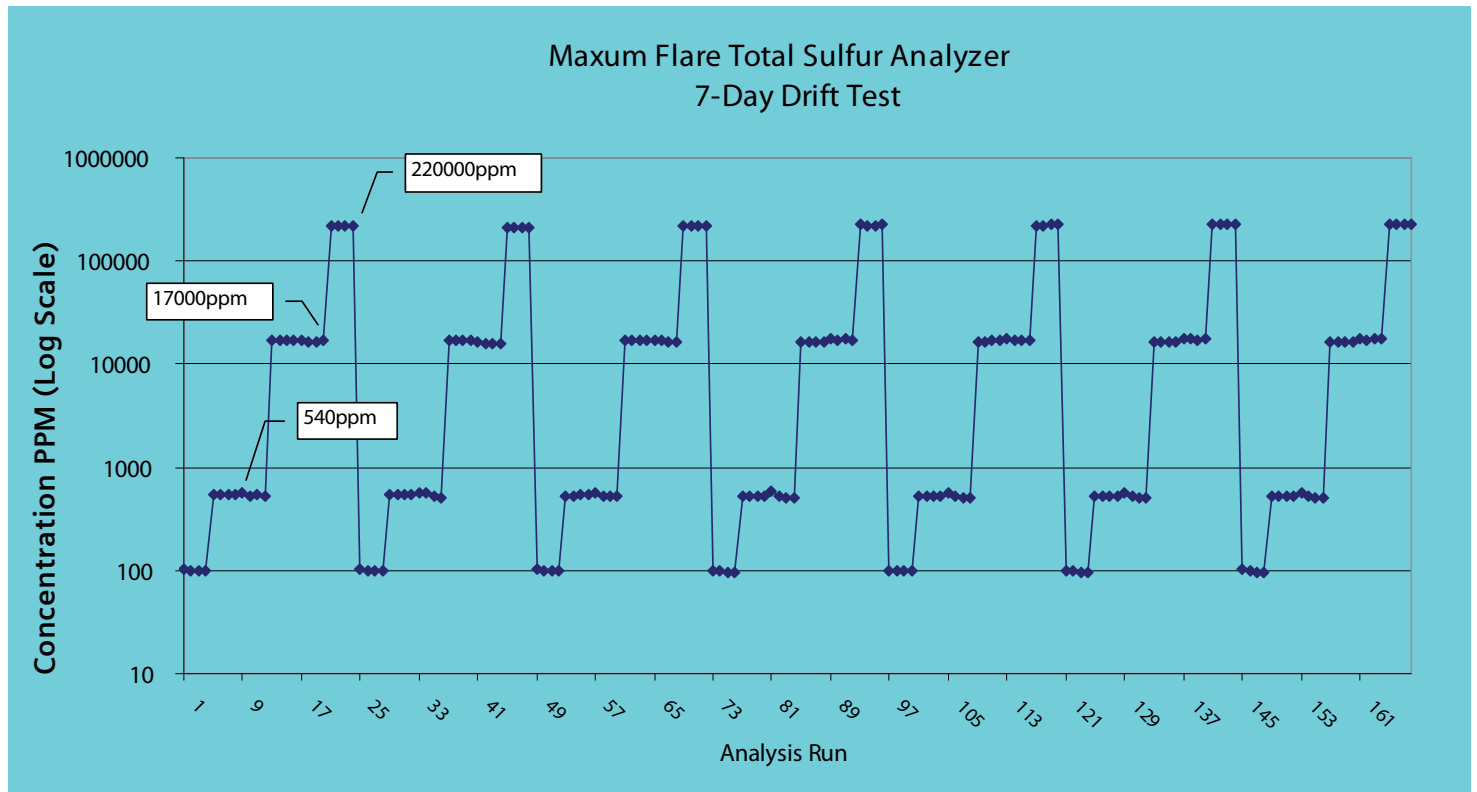
## Maxum Flare Total Sulfur Analyzer

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  $\text{SO}_2$  -> Simple chromatography to separate  $\text{SO}_2$  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  $\text{SO}_2$ . The unique, variable sample dilution scheme is based on a single sample valve and provides the separation of  $\text{SO}_2$  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.



## Customer Service

Siemens offers field-proven approaches for process instrumentation and analytics support from a single source, providing you with development continuity and a high level of security. We recognize that plants must function reliably at all times. Efficient and effective process instrumentation and analytics are an indispensable prerequisite for this, but you also need to be certain of fast and competent service from your supplier.

Siemens is a global company that reacts locally. Our specialists are available whether you require consulting or quick delivery and installation of new devices. Our online support system provides a 24 hour/365 days free technical hot line with a response time of less than 30 minutes.

Our services include:

- 25+ field service technicians across the US
- Remote support via www for fast troubleshooting assistance
- Maintenance service and support contracts
- Training on-site or at our central location
- 24 hours/365 days spare parts delivery
- Installation, testing and commissioning
- Comprehensive global after-sales service

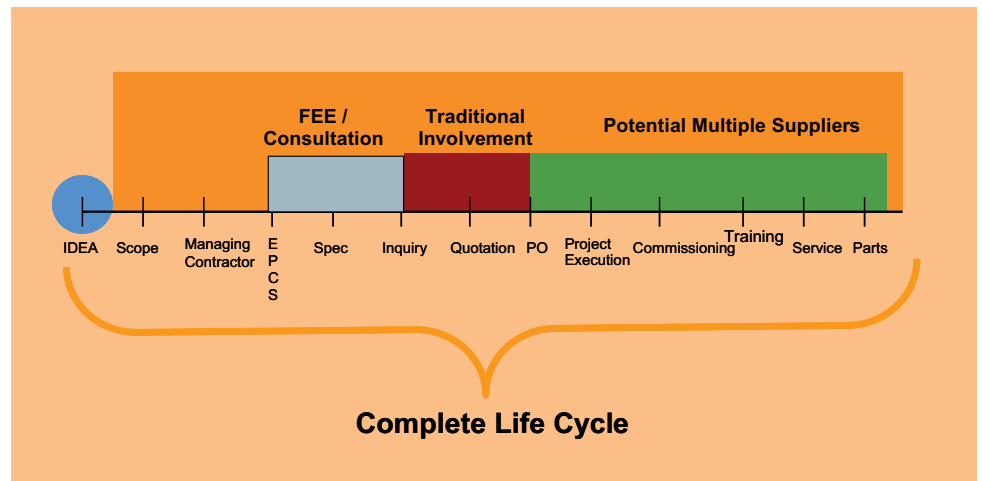
## Front End Engineering Design (FEED)

The Siemens FEED program reduces project cost and schedule times by:

- Optimizing system configuration for specific site requirements
- Completing definition and specification of monitoring system requirements to eliminate delays
- Assuring advantages of duplicate design for all similar systems
- Ensuring timely delivery of information that is required for submittal of test and quality-assurance plans
- Defining complete installation requirements up front
- From FEES to FEED to Solution, customers choose when to proceed
- Assessment, best measurement solution, predictable schedule, predictable budget

For an optimum, cost effective and functional analyzer system solution, one should involve the analyzer vendor with their comprehensive analyzer and system knowledge expertise early on and consider life-cycle cost such as utilities, maintenance and simplicity when deciding technology, system solution and life-cycle support.

This diagram depicts how the Siemens FEED approach compares to traditional approaches between the vendor and customer interaction.



### For more information, please contact:

Siemens Industry, Inc.  
7101 Hollister Road  
Houston, TX 77040  
713-939-3755  
saasales.industry@siemens.com

Siemens Industry, Inc.  
Industry Automation Division  
3333 Old Milton Parkway  
Alpharetta, GA 30005  
1-800-241-4453  
info.us@siemens.com

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