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Analytical Products and Solutions

## 40 CFR 60, 63 and 75 Continuous Emissions Monitoring System (CEMS)

[usa.siemens.com/cems-40CFR](http://usa.siemens.com/cems-40CFR)



## Overview

The 40 CFR 60, 63 and 75 CEMS is a low cost emissions monitoring package designed to operate in a general purpose, environmentally-controlled shelter or cabinet. The targeted markets are Refining, Hydrocarbon Processing and Chemical Plants. The standard monitoring requirements are based on the US EPA 1990 Clean Air Act as detailed in 40 CFR-Part 60 and 63, as well as local and state requirements. Special options are available for Part 75 monitoring upon request. The basic system is designed to monitor predefined ranges of nitrogen oxides, carbon monoxide and oxygen in process boilers and furnaces. The key features of the system are low maintenance and high uptime at an economical price.

## Functional description

The system consists of two major components: the analysis rack and the sample probe box. The analysis rack contains Siemens analyzers, a Siemens system controller and a Sample Conditioning System. The probe box is mounted at the sample extraction point, usually on a stack or duct. The probe box is designed to extract and filter the hot wet sample from the stack or duct. The probe box also provides for calibration through the probe and blowback of probe filter. The filtered sample is then drawn to the analysis rack via a pump through a heated line for water removal by a chiller and predefined quantification by the analyzers. The system is designed to measure pre-defined ranges of nitrogen oxides, carbon monoxide and oxygen.

The Oxides of Nitrogen analyzer is a Siemens Noxmat 600 CLD. This analyzer utilizes the principle of chemiluminescence for analyzing NO and NO<sub>2</sub> concentrations in a gaseous sample. The following ranges are offered:

Nitrogen Oxide Ranges: 0-10 ppm  
0-20 ppm  
0-50 ppm  
0-100 ppm  
0-200 ppm  
0-500 ppm

The Oxygen/Carbon Monoxide Analyzer is a Siemens ULTRAMAT/OXYMAT 6E. The OXYMAT 6 gas analyzer is based on the paramagnetic alternating pressure methodology. The ULTRAMAT 6 operates according to the NDIR two-beam alternating light principle. The following ranges are offered:

Oxygen Range: 0-25%  
Carbon Monoxide Range: 0-100 ppm  
0-200 ppm  
0-500 ppm  
0-1000 ppm

## System Controller

The system controller is a Siemens S7 1200 PLC with Modbus TCP. It is used to control the day-to-day operation of the CEMS. It controls the daily automatic validation sequence and probe blow back sequence, and monitors the overall status of the system. The system controller is the primary interface for the system user.

## Probe and filter assembly

The standard probe is 3' long 316 SS suitable for up to 1000° C maximum. The filter assembly is a 270S heated filter assembly (general purpose), 4" 150# RF flange 316SS NEMA 4X fiberglass enclosure.

## Data Acquisition System (DAS)

The DAS is suitable for 40 CFR 60, 63 and 75 and includes: 1 PC, local rack mount and industrial type EMC station manager software for communications with a Siemens S7 1200 PLC.

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