

# Continuous Emissions Monitoring [OMA-300-CEM]

Applied Analytics Application Note No. DS-001D — Revised 6 July 2017



## Application Summary

Available Analytes:  $\text{SO}_2$   $\text{NO}_x$   $\text{CO}$   $\text{CO}_2$   $\text{O}_2$   $\text{H}_2\text{S}$   $\text{Cl}_2$   $\text{COS}$   $\text{CS}_2$   $\text{CH}_4$   $\text{N}_2\text{O}$

Detector: OMA-300 Process Analyzer (using UV-Vis dispersive absorbance spectrophotometer, MicroSpec modules)

Process Stream: Flue gas

## Introduction

Modern industrial plants are typically required by law to measure and report the quantities of certain chemicals that they release to the atmosphere. As environmental regulations become increasingly stringent and ubiquitous, more plants worldwide will need adequate process analysis to guarantee compliance.

Government agencies such as the EPA and EEA have rigid criteria for Continuous Emissions Monitoring (CEM) systems. Stipulations include the mandatory monitoring of emissions of  $\text{SO}_2$ ,  $\text{NO}_x$  (generic term for  $\text{NO}$  and  $\text{NO}_2$ ),  $\text{CO}$ ,  $\text{CO}_2$ , and  $\text{O}_2$ , as well as strictly regulated reporting of the concentrations thereof. While reducing emissions is a pressing environmental issue, it typically poses no direct financial benefit for the plant yet requires purchasing and servicing expensive equipment. Clearly, an ideal CEM system provides reliable compliance at minimal cost.

The OMA platform is ideal for CEM applications because of the modularity: you can choose which measurements you will need, and Applied Analytics builds the OMA system to those needs. The system integrates complementary measurement technologies within a single turnkey system.

## OMA Benefits

- » Integrates multiple optical detection technologies, matching each CEM analyte to its optimal measurement method
- » Rugged, solid state build with no moving parts — modern design for low maintenance
- » Unifies complete system under a single interface — auto zero all detectors at once
- » True  $\text{NO}_x$  value: sums separate measurements of  $\text{NO}$  and  $\text{NO}_2$
- » Optional close-coupled installation for best response time
- » Automated data logging on industrial SSD
- » Optional remote access

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The specifications below represent performance/build of the OMA-300 Process Analyzer in a typical CEM application.

For technical details about the OMA-300 Process Analyzer, see the data sheet:

[http://aai.solutions/documents/AA\\_DS001A\\_OMA300.pdf](http://aai.solutions/documents/AA_DS001A_OMA300.pdf)

All performance specifications are subject to the assumption that the sample conditioning system and unit installation are approved by Applied Analytics. For any other arrangement, please inquire directly with Sales.

Subject to modifications. Specified product characteristics and technical data do not serve as guarantee declarations.

Application Data			
Measurement Technology			
SO <sub>2</sub> , NO <sub>x</sub>	Dispersive UV-Vis absorbance spectrophotometry		
CO, CO <sub>2</sub>	Non-dispersive infrared photometer		
O <sub>2</sub>	Paramagnetic Oxygen Analyzer		
Performance Specifications			
Analyte	Example Range*	Accuracy	Repeatability
SO <sub>2</sub>	0 - 1,000 ppm	±1% of measurement	±1.0%
NO <sub>x</sub> (sum of NO + NO <sub>2</sub> )	0 - 1,000 ppm	±1% of measurement	±1.0%
CO	0 - 500 ppm	±1% of measurement	±1.0%
CO <sub>2</sub>	0 - 20%	±1% of measurement	±1.0%
O <sub>2</sub>	0 - 25%	±1% of measurement	±1.0%
*Custom measurement ranges available.			
Response Time	1-5 seconds		

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## Further Reading

Subject	Location
OMA-300 Process Analyzer Data sheet	<a href="http://aai.solutions/documents/AA_DS001A_OMA300.pdf">http://aai.solutions/documents/AA_DS001A_OMA300.pdf</a>
OMA-300-CEM Brochure	<a href="http://aai.solutions/documents/OMACEM.pdf">http://aai.solutions/documents/OMACEM.pdf</a>
Advantage of Collateral Data Technical Note	<a href="http://aai.solutions/documents/AA_TN-202_CollateralData.pdf">http://aai.solutions/documents/AA_TN-202_CollateralData.pdf</a>
Multi-Component Analysis Technical Note	<a href="http://aai.solutions/documents/AA_TN-203_MultiComponentAnalysis.pdf">http://aai.solutions/documents/AA_TN-203_MultiComponentAnalysis.pdf</a>



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### Headquarters

Applied Analytics, Inc.  
Burlington, MA | [sales@aai.solutions](mailto:sales@aai.solutions)

### Asia Pacific Sales

Applied Analytics Asia Pte. Ltd.  
Singapore | [sales@appliedanalytics.com.sg](mailto:sales@appliedanalytics.com.sg)

### India Sales

Applied Analytics (India) Pte. Ltd.  
Mumbai, India | [sales@appliedanalytics.in](mailto:sales@appliedanalytics.in)

### North America Sales

Applied Analytics North America, Ltd.  
Houston, TX | [sales@appliedanalytics.us](mailto:sales@appliedanalytics.us)

### Middle East Sales

Applied Analytics Oil & Gas Operations, L.L.C.  
Abu Dhabi, UAE | [sales@appliedanalytics.ae](mailto:sales@appliedanalytics.ae)

### Europe Sales

Applied Analytics Europe, AG  
Genève, Switzerland | [sales@appliedanalytics.eu](mailto:sales@appliedanalytics.eu)

### Brazil Sales

Applied Analytics do Brasil  
Rio de Janeiro, Brazil | [vendas@aadbl.com.br](mailto:vendas@aadbl.com.br)

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