



Internationally Approved
EN 15267 Certified

A Cost-effective Solution for
Continuous Emissions Monitoring

System 400

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System 400 is a cost-effective, high-performance monitoring package, designed for power plants and waste to energy plants. The measurements are based on the FTIR (Fourier Transform Infrared Spectroscopy) and/or DOAS technique (Differential Optical Absorption Spectroscopy), allowing continuous monitoring of several compounds. System 400 is available in the following configurations, as standard:

- 400BASIC: Basic system calibrated for sulfur dioxide (SO_2), nitric monoxide (NO), and nitrogen dioxide (NO_2).
- 400EXT: Extended system calibrated for sulfur dioxide (SO_2), nitric monoxide (NO), nitrogen dioxide (NO_2), carbon monoxide (CO), and water vapour (H_2O).
- 400WASTE: Extended system for waste to energy plants, calibrated for sulfur dioxide (SO_2), nitric monoxide (NO), nitrogen dioxide (NO_2), carbon monoxide (CO), hydrogen chloride (HCl), and water vapour (H_2O).

Fast response, reliability and multi-analytical capabilities are some major benefits of the OPSIS system. It requires a minimum of maintenance and operates unattended for long periods.

Each measurement result includes not only information on concentration but also on standard deviation and light level. Altogether, this provides the



In each path, light is projected from an emitter to a receiver. It is then transmitted to the OPSIS analyser via a fibre optic cable.

possibility of comprehensive and thorough analysis and evaluation of the data.

TRUE MONITORING

With an OPSIS System 400 you will achieve true monitoring of the different components. The System 400 is not affected by contaminated sample lines, NO_2 converters and condensation etc., known problems which affect the data quality from extractive monitoring systems.

SUPPLIER WITH A GLOBAL VIEW

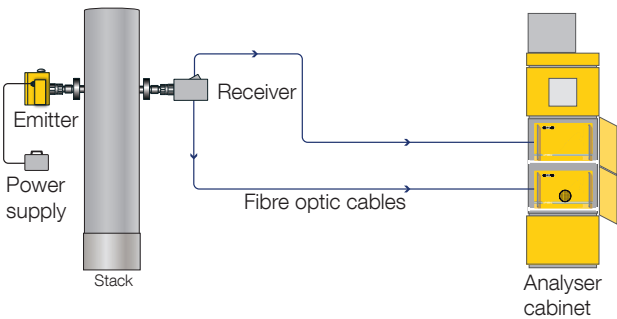
OPSIS is specialized in the development, manufacture and marketing of high-quality systems for continuous emissions monitoring. The importance of finding user-defined solutions to measurement problems is always being emphasized. More than a thousand OPSIS systems are in operation around the world today.



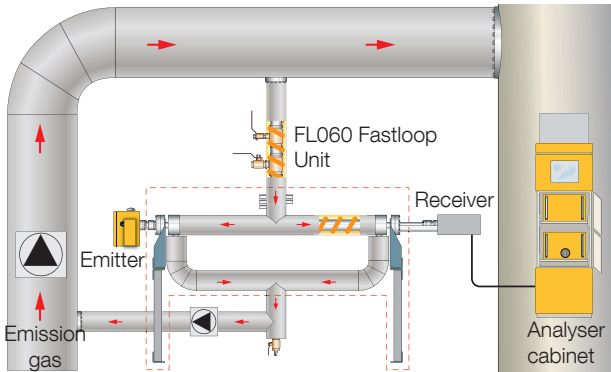
The OPSIS System 400 is an efficient system for monitoring emissions from power plants.

SYSTEM OVERVIEW

Two system layouts of the System 400



A System 400 EXT/System 400 WASTE setup with two analysers



A System 400 EXT/System 400 WASTE setup with two analysers and fastloop (optional)

PERFORMANCE DATA

(typical data which may vary depending on application)

Compound	Max. measurement range (1 m path) ⁽¹⁾	Lowest measurement range according to EN 15267	Min. detectable quantities (monitoring path 1 m, measurement time 30 sec.)	Accuracy Better than 2% of measured value or equal to the detection limit (whichever is greater).
System 400 Basic				Span drift Less than 2% per year. Please, refer to QAL1 documents.
NO ⁽²⁾	0—2000 mg/m ³	0—150 mg/m ³	1 mg/m ³	
NO ₂	0—2000 mg/m ³	0—20 mg/m ³	0.5 mg/m ³	
SO ₂	0—5000 mg/m ³	0—80 mg/m ³	0.5 mg/m ³	
System 400 Ext				Zero drift Less than 2% of measurement range per year. Please, refer to QAL1 documents.
CO	0—10000 mg/m ³	0—75 mg/m ³	3 mg/m ³	
H ₂ O	0—100% Vol.	0—30% Vol.	0.1% Vol.	
NO ⁽²⁾	0—2000 mg/m ³	0—150 mg/m ³	1 mg/m ³	Linearity error Less than 1% of measurement range.
NO ₂	0—2000 mg/m ³	0—20 mg/m ³	0.5 mg/m ³	
SO ₂	0—5000 mg/m ³	0—80 mg/m ³	0.5 mg/m ³	
System 400 Waste				
CO	0—10000 mg/m ³	0—75 mg/m ³	3 mg/m ³	
CO ₂ *	0—100% Vol.	0—10% Vol.	0.1% Vol.	
H ₂ O	0—100% Vol.	0—30% Vol.	0.1% Vol.	
HCl	0—5000 mg/m ³	0—15 mg/m ³	0.5 mg/m ³	
HF*	0—1000 mg/m ³	0—5 mg/m ³	0.2 mg/m ³	
N ₂ O*	0—10000 mg/m ³	0—100 mg/m ³	2 mg/m ³	
NH ₃ *	0—1000 mg/m ³	0—10 mg/m ³	0.5 mg/m ³	
NO ⁽²⁾	0—2000 mg/m ³	0—150 mg/m ³	1 mg/m ³	
NO ₂	0—2000 mg/m ³	0—20 mg/m ³	0.5 mg/m ³	
SO ₂	0—5000 mg/m ³	0—80 mg/m ³	0.5 mg/m ³	

* Optional

⁽¹⁾ This data refers to a light path of 1 m. For longer paths the maximum range is proportionally smaller. Products are available to create shorter paths in very wide stacks.

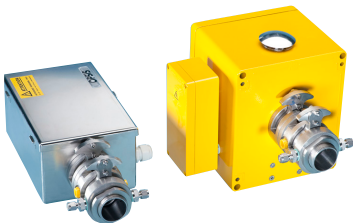
⁽²⁾ Maximum SO₂ concentration: 5 g/m³ × m.

• Recommended monitoring path length: 1 to 5 m.

• After wet scrubbers or when particulate concentration averaged over 1 m is higher than 5 g/m³, the monitoring path length may have to be reduced.

SYSTEM 400 PACKAGE (STANDARD)

AR600/AR650 Analyser including analyser software
ER060/ER062 Emitter and receiver set
PS150 Power supply unit
OF060R Optical fibre cable (10 m)



The emitter and receiver set creates the monitoring path.



The OPSIS analyser, including analyser software

Continuous Emissions Monitoring with System 400

One system for all components
Best performance according to QAL 1 certification
Longest calibration interval according to QAL 1 certification
No sampling required, non-contact measurement system
Operates with a minimum of maintenance
Low energy consumption
Gas calibration only once per year
Internationally approved
Thousands of systems installed worldwide
Serviced by highly skilled service network

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Please contact your OPSIS supplier to discuss your particular system requirements, including the compounds you wish to monitor. Separate product and application sheets are available. Specifications subject to change without notice.

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