

Internationally Approved  
EN 15267 Certified



Continuous Emissions Monitoring  
and Process Control

## Brick Plants

# Continuous Emissions Monitoring and Process Control Brick Plants

Process control and emissions monitoring in a brick plant can be a challenge due to the high concentrations of HF. The HF is generated in the process and gas phase HF can reach 50 mg/m<sup>3</sup> or higher. To use an extractive system in this environment will demand a lot of maintenance.

The OPSIS DOAS system is different and provides brick plants with an accurate analyser that will operate with a minimum of maintenance. The OPSIS DOAS system is based on a non-contact method using an optical measurement path that can operate across the duct.

The optical light is transported in an optical fibre to the analyser and one analyser can operate several paths.

A single OPSIS system can measure all relevant gas components such as NO<sub>x</sub>, SO<sub>2</sub>, CO, CO<sub>2</sub>, H<sub>2</sub>O, HCl, HF, and others.

## RETURN OF INVESTMENT

The cost of investing in an OPSIS system is small compared to the amount of money that is spent on maintaining extractive measuring systems.

Many brick plants will have to install monitoring systems to meet the environmental requirements. Using the OPSIS system for process control will optimize the scrubber and the reduction of scrubbing material will pay for the investment in a short period of time.

## TEST AND APPROVALS

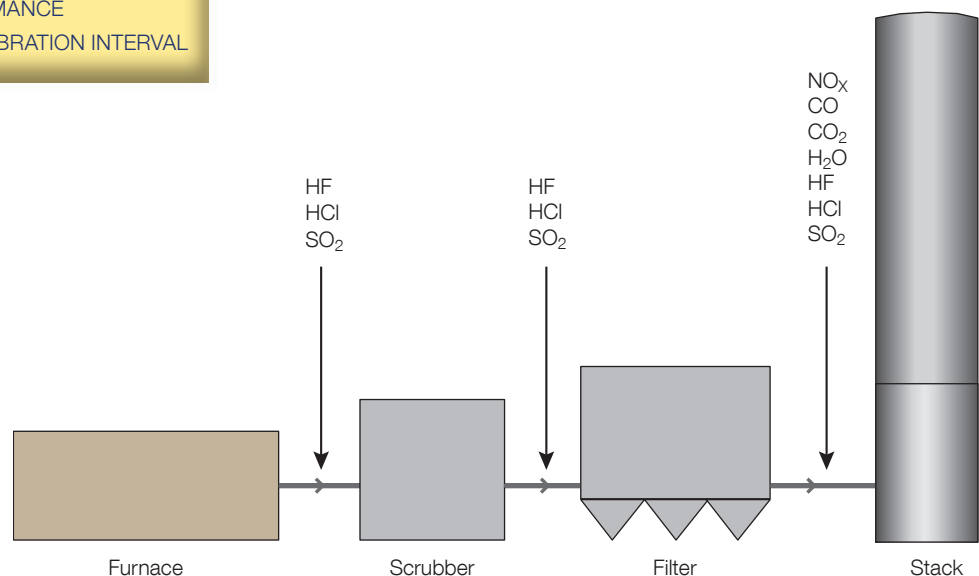
The OPSIS system has been tested and approved by a number of internationally recognized institutes and authorities. The system meets the European directive for power plants and is approved by German TÜV, British MCERTS and U.S. EPA. Full details are available on request.

## OPSIS PRODUCT PORTFOLIO

OPSIS has a full product portfolio for measurement of gases. It includes complete CEM systems according to the European waste directive, TDL systems for measuring NH<sub>3</sub> in NO<sub>x</sub> scrubbers, O<sub>2</sub> analysers, and Hg analysers.

For further information, please visit [www.opsis.se](http://www.opsis.se).

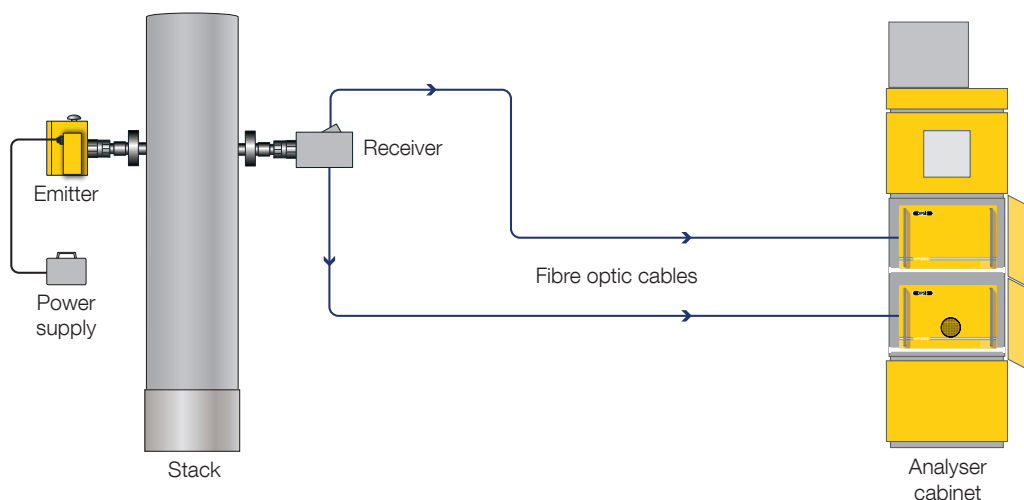
**QAL 1 CERTIFICATION:**  
BEST PERFORMANCE  
LONGEST CALIBRATION INTERVAL



An example of a brick plant including the measurement points of the OPSIS monitoring system

# SYSTEM OVERVIEW

An OPSIS system layout for process control and emissions monitoring in a brick plant



## PERFORMANCE DATA

(typical data which may vary depending on application)

Compound	Max. measurement range (1 m path) <sup>(1)</sup>	Lowest measurement range according to EN 15267	Min. detectable quantities (monitoring path 1 m, measurement time 30 sec.)
<b>UV/IR DOAS Analyser Models AR600 / AR602Z / AR602Z/Hg / AR602Z/N / AR602Z/NH<sub>3</sub> / AR620</b>			
NO <sup>(2)</sup>	0–2000 mg/m <sup>3</sup>	0–150 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
NO <sub>2</sub>	0–100% Vol.	0–20 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
SO <sub>2</sub>	0–100% Vol.	0–75 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
NH <sub>3</sub> <sup>(3)</sup>	0–1000 mg/m <sup>3</sup>	0–10 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
Hg <sup>0</sup>	0–1000 µg/m <sup>3</sup>	0–45 µg/m <sup>3</sup>	0.5 µg/m <sup>3</sup>
THg	0–1000 µg/m <sup>3</sup>	0–45 µg/m <sup>3</sup>	0.5 µg/m <sup>3</sup>
H <sub>2</sub> O	0–100% Vol.	0–30% Vol.	0.1% Vol.
HCl	0–10000 mg/m <sup>3</sup>	0–1000 mg/m <sup>3(6)</sup>	10 mg/m <sup>3(4)</sup>
HF	0–1000 mg/m <sup>3</sup>	0–100 mg/m <sup>3(6)</sup>	5 mg/m <sup>3</sup>
CO <sub>2</sub>	0–100% Vol.	0–30% Vol. <sup>(6)</sup>	0.5% Vol.
Benzene	0–1000 mg/m <sup>3</sup>	0–20 mg/m <sup>3(6)</sup>	1 mg/m <sup>3</sup>
Formaldehyde	0–1000 mg/m <sup>3</sup>	0–20 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>
<b>FTIR DOAS Analyser Models AR650 / AR650/N</b>			
HCl	0–100% Vol.	0–15 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
CO	0–100% Vol.	0–75 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>
H <sub>2</sub> O	0–100% Vol.	0–30% Vol.	0.1% Vol.
HF	0–100% Vol.	0–1.5 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
NH <sub>3</sub>	0–100% Vol.	0–100 mg/m <sup>3(6)</sup>	2 mg/m <sup>3</sup>
N <sub>2</sub> O	0–100% Vol.	0–500 mg/m <sup>3</sup>	5 mg/m <sup>3(5)</sup>
CH <sub>4</sub>	0–100% Vol.	0–20 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
CO <sub>2</sub>	0–100% Vol.	0–20% Vol.	0.1% Vol.
<b>LD500 Laser Diode Gas Analyser</b>			
HCl	0–100% Vol.	0–15 mg/m <sup>3(6)</sup>	0.5 mg/m <sup>3</sup>
CO	0–100% Vol.	0–5% Vol. <sup>(6)</sup>	0.1% Vol.
H <sub>2</sub> O	0–100% Vol.	0–30% Vol. <sup>(6)</sup>	0.1% Vol.
HF	0–100% Vol.	0–1.5 mg/m <sup>3(6)</sup>	0.05 mg/m <sup>3</sup>
NH <sub>3</sub>	0–100% Vol.	0–10 mg/m <sup>3(6)</sup>	0.5 mg/m <sup>3</sup>
CO <sub>2</sub>	0–100% Vol.	0–30% Vol. <sup>(6)</sup>	0.1% Vol.
O <sub>2</sub>	0–21% Vol.	0–20% Vol. <sup>(6)</sup>	0.1% Vol.
CH <sub>4</sub>	0–10000 mg/m <sup>3</sup>	0–20 mg/m <sup>3(6)</sup>	1 mg/m <sup>3</sup>

### Accuracy

Better than 2% of measured value or equal to the detection limit (whichever is greater).

### Span drift

Less than 2% per year.  
Please, refer to QAL1 documents.

### Zero drift

Less than 2% of measurement range per year.  
Please, refer to QAL1 documents.

### Linearity error

Less than 1% of measurement range.

<sup>(1)</sup> 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.

<sup>(2)</sup> Maximum SO<sub>2</sub> concentration 5 g/m<sup>3</sup> × m.

<sup>(3)</sup> Maximum SO<sub>2</sub> concentration 500 mg/m<sup>3</sup> × m.

<sup>(4)</sup> Monitoring path 5 m, measurement time 30 seconds.

<sup>(5)</sup> Detection limit of 1 mg/m<sup>3</sup> is optional with hardware upgrade.

<sup>(6)</sup> Lowest measurement range.

- Recommended monitoring path length: 1 to 5 m.
- After wet scrubbers or when particulate concentration averaged over 1 m is higher than 5 g/m<sup>3</sup>, the monitoring path length may have to be reduced.
- Max. length of fibre optic cable: please refer to product sheets P9 and P16.

# Continuous Emissions Monitoring and Process Control by OPSIS

No sampling required, non-contact measurement system  
Operates with a minimum of maintenance  
Best performance according to QAL 1 certification  
Longest calibration interval according to QAL 1 certification  
Automatic QAL 3 check as option  
Low energy consumption  
Gas calibration only once per year  
Internationally approved  
Thousands of systems installed worldwide  
Serviced by highly skilled service network

## UK & Ireland Distributor



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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 other industrial application sheets are available. Specifications subject to change without notice.

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