

EN 15267 Certified  
U.S. EPA Approved  
China EPA Approved



Ambient  
Air Quality Monitoring

# Fence-line Monitoring of Fugitive Emissions

# Ambient Air Quality Monitoring Fence-line Monitoring of Fugitive Emissions

Monitoring of fugitive emissions can be difficult. A large area of industrial activities generates emissions to the air. Thousands of small emission sources of different chemical compounds contribute.

The emissions sources are unknown both to its location and the emission strength. To use one single measurement point for this application will not give a correct picture of the emissions.

The OPSIS open-path technology is different and provides the user with a measurement system that will cover a large area with a single measurement system.

The OPSIS open-path technology uses a beam of light to detect the concentration of the gases. The light beam can be placed around the industrial site thus covering fugitive emissions at all wind directions.

The OPSIS open-path system uses both UV DOAS, FTIR, and TDL to detect a large number of different chemical compounds and a single analyser can detect more than one optical path.

## RETURN ON INVESTMENT

The cost of maintaining an OPSIS open-path system is small compared to conventional point monitors.

Long time intervals between calibration, stable and reliable measurement results and coverage of a large area, contributes to make the investment successful.



## TEST AND APPROVALS

The OPSIS system has been tested and approved by a number of international, recognized institutes and authorities, for example TÜV and MCERTS.

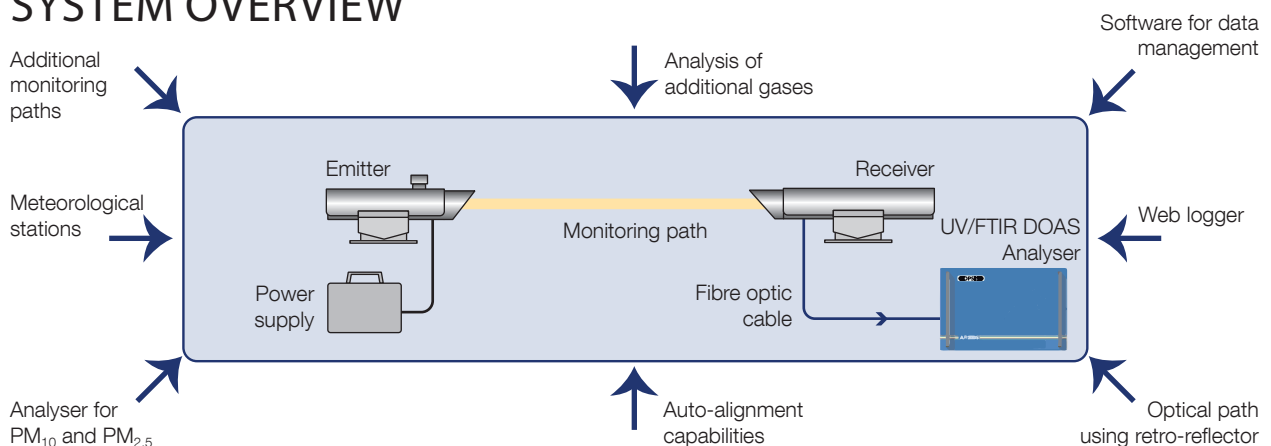
The system meets and exceeds the requirements of U.S. EPA and EN 15267.

## THE OPSIS PRODUCT PORTFOLIO

OPIS product portfolio includes monitoring systems for gases based on open-path technology using DOAS, FTIR and TDL, measurement of PM<sub>10</sub> and PM<sub>2.5</sub> using beta attenuation, and environmental emissions inventory and modelling using OPSIS Enviman Software. Data logging systems and data presentation from OPSIS run on the internet as well as in dedicated computers.

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

## SYSTEM OVERVIEW



## PERFORMANCE DATA

(typical data which may vary depending on application)

Compound	Max. measurement range <sup>(1)</sup> (500 m path) <sup>(2)</sup>	Min. detectable quantities (monitoring path 500 m, measurement time 1 min.)
<b>AR500/AR520 UV/IR DOAS Series Analyser</b>		
NO <sub>2</sub>	0-2000 µg/m <sup>3</sup>	1 µg/m <sup>3</sup>
SO <sub>2</sub>	0-5000 µg/m <sup>3</sup>	1 µg/m <sup>3</sup>
O <sub>3</sub>	0-1000 µg/m <sup>3</sup>	2 µg/m <sup>3</sup>
NO	0-2000 µg/m <sup>3(3)</sup>	2 µg/m <sup>3</sup>
NH <sub>3</sub>	0-500 µg/m <sup>3</sup>	2 µg/m <sup>3</sup>
NO <sub>3</sub>	0-500 µg/m <sup>3</sup>	0.1 µg/m <sup>3</sup>
HNO <sub>2</sub>	0-2000 µg/m <sup>3</sup>	1 µg/m <sup>3</sup>
HF	0-2000 µg/m <sup>3</sup>	20 µg/m <sup>3</sup>
Hg	0-2000 ng/m <sup>3</sup>	20 ng/m <sup>3</sup>
H <sub>2</sub> O	0-100 g/m <sup>3</sup>	0.2 g/m <sup>3</sup>
Styrene	0-2000 µg/m <sup>3</sup>	5 µg/m <sup>3</sup>
CS <sub>2</sub>	0-2000 µg/m <sup>3</sup>	20 µg/m <sup>3</sup>
Cl <sub>2</sub> <sup>(4)</sup>	0-10000 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>
Formaldehyde	0-2000 µg/m <sup>3</sup>	2 µg/m <sup>3</sup>
Acetaldehyde	0-2000 µg/m <sup>3</sup>	20 µg/m <sup>3</sup>
Phenol	0-2000 µg/m <sup>3</sup>	1 µg/m <sup>3</sup>
Benzene	0-2000 µg/m <sup>3</sup>	1 µg/m <sup>3</sup>
Toluene	0-2000 µg/m <sup>3</sup>	1 µg/m <sup>3</sup>
p-, m-Xylene	0-2000 µg/m <sup>3</sup>	1 µg/m <sup>3</sup>
o-Xylene	0-2000 µg/m <sup>3</sup>	3 µg/m <sup>3</sup>
o-, m-, p-Cresol	0-2000 µg/m <sup>3</sup>	5 µg/m <sup>3</sup>
C <sub>6</sub> H <sub>5</sub> Cl	0-2000 µg/m <sup>3</sup>	5 µg/m <sup>3</sup>
C <sub>6</sub> H <sub>4</sub> Cl <sub>2</sub>	0-2000 µg/m <sup>3</sup>	5 µg/m <sup>3</sup>
ClO <sub>2</sub>	0-2000 µg/m <sup>3</sup>	1 µg/m <sup>3</sup>
Cresol	0-2000 µg/m <sup>3</sup>	5 µg/m <sup>3</sup>
COCl <sub>2</sub>	0-2000 µg/m <sup>3</sup>	5 µg/m <sup>3</sup>
Ethylbenzene	0-2000 µg/m <sup>3</sup>	5 µg/m <sup>3</sup>
Acrylonitrile	0-2000 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>
1,2,3-Trimethylbenzene	0-2000 µg/m <sup>3</sup>	5 µg/m <sup>3</sup>
1,2,4-Trimethylbenzene	0-2000 µg/m <sup>3</sup>	5 µg/m <sup>3</sup>
1,3,5-Trimethylbenzene	0-2000 µg/m <sup>3</sup>	5 µg/m <sup>3</sup>
CO <sub>2</sub>	0-100 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>
CH <sub>4</sub>	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
<b>AR550 FTIR DOAS Series Analyser<sup>(3)</sup></b>		
Acetic acid	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Acetone	0-1000 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
Acetyl chloride	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Acetylene	0-1000 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
Allyl alcohol	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Benzaldehyde	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
1,3-Butadiene	0-1000 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
Butane	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
n-Butyl alcohol	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
CO	0-1000 mg/m <sup>3</sup>	1000 µg/m <sup>3</sup>
CO <sub>2</sub>	0-100 g/m <sup>3</sup>	1 mg/m <sup>3</sup>
CH <sub>2</sub> S	0-1000 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>
Carbonyl fluoride	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Cyanogen	0-1000 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
Dimethyl amine	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Dimethyl ether	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Dimethyl sulfate	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Ethane	0-1000 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
Ethanol	0-1000 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
Ethyl acetate	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Ethylene	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Heptane	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Hexane	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
HBr	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
HCl	0-1000 mg/m <sup>3</sup>	20 µg/m <sup>3</sup>
HCN	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
HF	0-1000 mg/m <sup>3</sup>	1 µg/m <sup>3</sup>
Isobutanol	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Methane	0-1000 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
Methanol	0-1000 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
Methylamine	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Nitrobenzene	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
NH <sub>3</sub>	0-1000 mg/m <sup>3</sup>	20 µg/m <sup>3</sup>
Propane	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Pyridine	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Silane	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Vinyl acetate	0-1000 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
<b>LD500 Laser Diode Gas Analyser</b>		
CO	0-1000 mg/m <sup>3</sup>	100 µg/m <sup>3</sup>
CO <sub>2</sub>	0-100 g/m <sup>3</sup>	1 mg/m <sup>3</sup>
NH <sub>3</sub>	0-1000 mg/m <sup>3</sup>	20 µg/m <sup>3</sup>
HCl	0-1000 mg/m <sup>3</sup>	20 µg/m <sup>3</sup>
HF	0-1000 mg/m <sup>3</sup>	1 µg/m <sup>3</sup>
Methane	0-1000 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
H <sub>2</sub> O	0-100% Vol.	0.1% Vol.

### Accuracy

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

### Span drift

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

### Zero drift

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

### Linearity error

Better than 1% of measurement range.

<sup>(1)</sup> Higher measurement ranges are possible depending on application and compound.

<sup>(2)</sup> Recommended monitoring path length: 300 to 800 m.

<sup>(3)</sup> Based on 200 m path. Recommended monitoring path length: 100 to 200 m.

<sup>(4)</sup> May require automatic zero function, consult OPSIS.

- Additional gaseous compounds can be measured.
- Max. length of fibre optic cable: please refer to product sheet P9 and P16.

# Ambient Air Quality Monitoring by OPSIS

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Early warning system

Can be installed in explosive areas

One analyser for all gases

Cost-effective, open-path technology

High availability

Representative path-integrated data

Direct monitoring of NO<sub>2</sub>

Gas calibration only once per year

Low energy consumption

Operates with a minimum of maintenance

Approved by MCERTS, TÜV, U.S. EPA, and Chinese EPA

## UK & Ireland Distributor



Kingfisher Business Park, London Road, Stroud, Gloucestershire, GL5 2BY, UK

Tel: +44 (0) 1453 733200

[sales@et.co.uk](mailto:sales@et.co.uk)

[www.et.co.uk](http://www.et.co.uk)