OPSIS®

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Ambient

Air Quality Monitoring

Monitoring in Traffic Tunnels

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Air Quality Monitoring

Monitoring in Traffic Tunnels

Car tunnels need ventilation in order to keep air pollution below the limits. When the pollution levels reaches a setpoint, the fans must be started and kept running until the pollution levels decrease.

A car tunnel of a few kilometres in length has fans that use megawatts of electrical energy when running at full speed.

In many tunnels, the level of NO_2 is the parameter that controls the ventilation. NO_2 is the pollution parameter that first will exceed the air quality standards. To monitor NO_2 inside a car tunnel is a challenge due to the difficult environment and need of accurate results around the setpoint. The same system can also be used for monitoring emissions in the ventilation stack.

LOW MAINTENANCE AND ACCURATE

Most systems installed need a lot of maintenance using indirect methods to monitor NO_2 and still not giving reliable results for controlling the ventilation. Other systems have detection limits and noise levels that are too high.

OPSIS DOAS system is different and provides the tunnel operator with an accurate analyser that will operate with a minimum of maintenance.

The OPSIS DOAS system is a non-contact method using an optical path. The optical light is transported in an optical fibre to the analyser and one analyser can operate several paths.

Besides the measurement of NO_2, additional gases such as NO, benzene and formaldehyde can be measured.

RETURN OF INVESTMENT

The cost of installing an OPSIS DOAS system to measure NO_2 and other gases in a car tunnel is small compared to the amount of money that can be saved by having better control of the ventilation. The cost of an OPSIS DOAS system is also small compared to the amount of money that are spent on maintaining old and inaccurate systems.

TEST AND APPROVALS

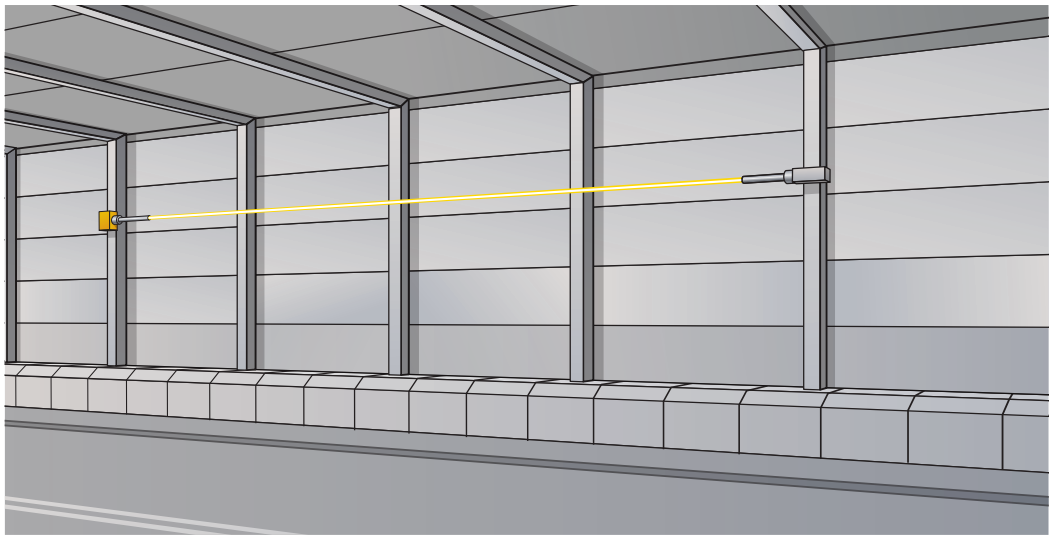
The OPSIS system has been tested and approved by a number of international, recognized institutes and authorities, for example TÜV and MCERTS.

The system is equivalent to designated method according to U.S. EPA and certified in Europe according to EN 15267.

OPSIS PRODUCT PORTFOLIO

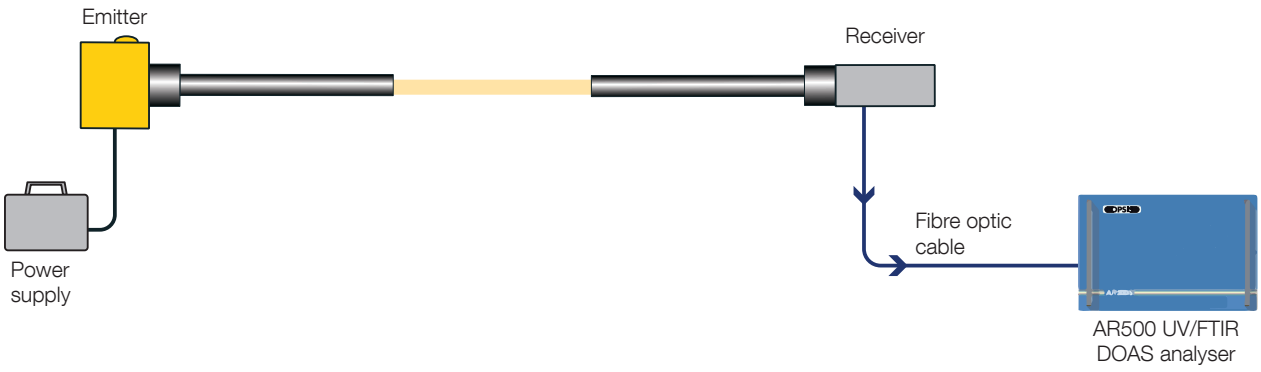
OPSIS has a full product portfolio for measurements of parameters, gas emissions as well as visibility, airflow and temperature, in car tunnels. The total solution also includes highly skilled service and support.

For further information, please visit www.opsis.se.



The OPSIS DOAS system provides the tunnel operator with an accurate analyser that will operate with a minimum of maintenance.

SYSTEM OVERVIEW



The OPSIS long-path air quality monitoring system brings new standards of accuracy and data quality to environmental monitoring. Every minute, several thousand cubic metres of air interact with the light between the light source – the emitter – and the receiver. When captured by the receiver, this light contains information on gases in the air it has penetrated.

PERFORMANCE DATA

(typical data which may vary depending on application)

Compound	Max. measurement range	Lowest measurement range according to EN 15267	Min. detectable quantities (measurement time 1 min.)
AR500 UV DOAS Series Analyser (100 m path)			
NO[1]	0–10000 µg/m³	0–200 µg/m³[3]	3 µg/m³
NO_2	0–10000 µg/m³	0–400 µg/m³	2 µg/m³
SO_2	0–5000 µg/m³	0–700 µg/m³	1 µg/m³
NH_3	0–1000 µg/m³	0–100 µg/m³[3]	3 µg/m³
Benzene	0–1000 µg/m³	0–10 µg/m³	5 µg/m³
Toluene	0–1000 µg/m³	0–100 µg/m³[3]	5 µg/m³
Xylene	0–1000 µg/m³	0–100 µg/m³[3]	5 µg/m³
Formaldehyde	0–1000 µg/m³	0–100 µg/m³[3]	5 µg/m³
AR500 UV DOAS Series Analyser (20 m path)			
NO[1]	0–10000 µg/m³	0–200 µg/m³[3]	20 µg/m³
NO_2	0–10000 µg/m³	0–400 µg/m³	10 µg/m³
SO_2	0–5000 µg/m³	0–700 µg/m³	1 µg/m³
NH_3	0–1000 µg/m³	0–200 µg/m³[3]	20 µg/m³
Benzene	0–1000 µg/m³	0–100 µg/m³[3]	20 µg/m³
Toluene	0–1000 µg/m³	0–200 µg/m³[3]	20 µg/m³
Xylene	0–1000 µg/m³	0–200 µg/m³[3]	20 µg/m³
Formaldehyde	0–1000 µg/m³	0–100 µg/m³[3]	20 µg/m³
AR550 FTIR DOAS Analyser (20 m path)			
CO	0–100 g/m³[2]	0–10 mg/m³[3]	0.3 mg/m³
CO_2	0–100 g/m³[2]	0–1 g/m³[3]	0.1 g/m³
H_2O	0–100 g/m³[2]	0–1 g/m³[3]	0.1 g/m³

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.

[1] Recommended monitoring path length: 5 to 25 m (ER 060T set) and 25 to 150 m (ER 110T set).
[2] Based on 200 m path. Recommended monitoring path length: 100 to 200 m.
[3] Lowest measurement range.
- Max. length of fibre optic cable: please refer to product sheet P9.

FACTORY TESTED SYSTEMS
WITH DELIVERY ON TIME.

Monitoring in Traffic Tunnels by OPSIS

True monitoring of NO_2 with high accuracy

Operates with a minimum of maintenance

Cost-effective, open-path technology

Gas calibration only once per year

Low energy consumption

Internationally approved

Thousands of systems installed worldwide

Serviced by highly skilled service network

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

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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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