OPSIS®

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Continuous Emissions Monitoring
and Process Control

Sulfur Recovery Units and Tail Gas Treatment Units

Atut Sp. z o.o.
ul. B. Prusa 8, 20-064 Lublin
tel./fax: 081 740 33 45
e-mail: info@atut.lublin.pl
www.atut.lublin.pl

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and Process Control

Sulfur Recovery Units and Tail Gas Treatment Units

Process control and emissions monitoring in a plant equipped with sulfur recovery units (SRUs) such as the Claus process and tail gas treatment units (TGTUs) can be a challenge due to poisonous and corrosive gases and high gas temperatures. Use of extractive gas monitoring systems in this environment, can require a lot of maintenance and is prone to system malfunctions.

The OPSIS DOAS systems are different. They provide sulfur recovery plants with accurate analysis with a minimum of maintenance. The OPSIS DOAS systems are based on non-contact monitoring methods using flowing gas and optical measurement paths that can operate across gas ducts or in separate gas loops.

One analyser can monitor several different types of gases. It can also monitor several optical paths, and thereby several monitoring positions. All in all, this gives a very cost effective, multi-gas and multi-point, low-maintenance gas monitoring solution. Configurations are available for meeting strict demands on equipment in explosive environments.

VERSATILE SYSTEMS

An OPSIS DOAS system can be configured to monitor concentrations of all relevant gases found in the SRU and TGTU processes, including both sulfuric compounds such as SO_2, H_2S, COS, and CS_2, and other related process gases such as NH_3, CO, CO_2, and CH_4. For emissions monitoring after a TGTU, compounds such as NO, NO_2, H_2O, and O_2 can also be monitored.

RETURN ON INVESTMENT

The cost of investing in an OPSIS system is small compared to the amount spent on maintaining old and complex extractive systems. The OPSIS systems have low cost of ownership based on their non-contact monitoring methods, few moving parts, long intervals between calibrations, ease of operation, and low energy consumption.

TESTS AND APPROVALS

The OPSIS systems have been tested and approved by a number of internationally recognized institutes and authorities, and they have been certified according to e.g. EN 15267 and EN 14181. The OPSIS systems meet requirements of for example U.S. EPA and China EPA.

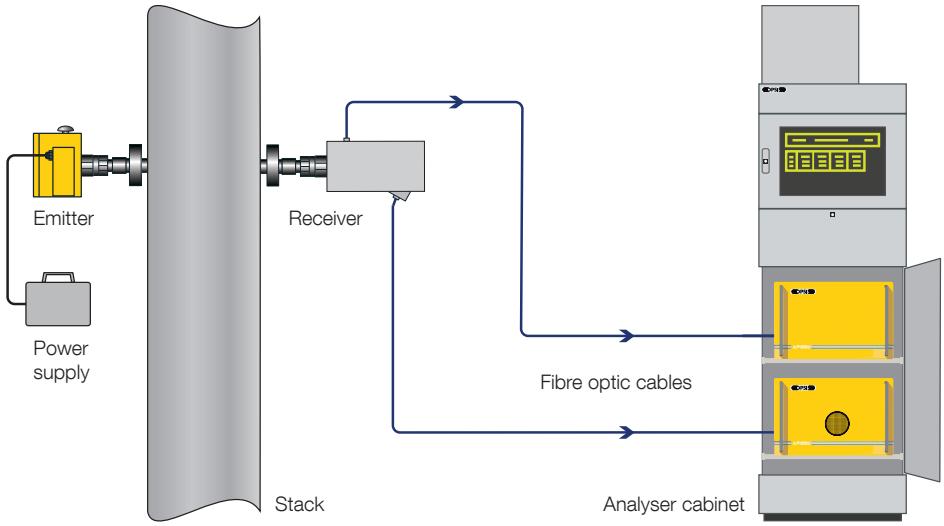
THE OPSIS PRODUCT PORTFOLIO

OPSIS has a full product portfolio for measurements of gases in a range of applications. We offer complete continuous emissions monitoring (CEM) systems, and process analysers for raw gas measurements. We also offer systems for a range of ambient air quality monitoring (AQM) applications.

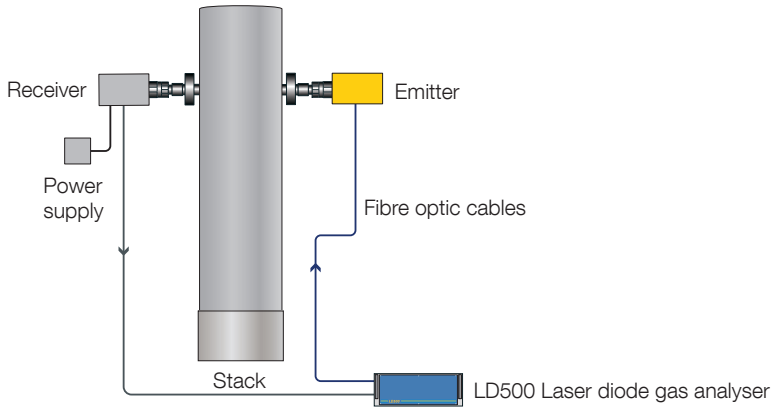
For further information, please visit www.opsis.se.

SYSTEM OVERVIEWS

An OPSIS combined UV and FTIR DOAS gas analyser system.



An OPSIS LD500 gas analyser system



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.)
UV and UV/IR DOAS Analyser Models AR600 / AR602Z / AR602Z/Hg / AR602Z/N / AR602Z/NHg / AR620			
CO_2	0–100% Vol.	0–30% Vol.	0.5% Vol.
CS_2	0–1000 mg/m³	0–100 mg/m³[5]	5 mg/m³
H_2O	0–100% Vol.	0–30% Vol.	0.1% Vol.
NO[2]	0–2000 mg/m³	0–150 mg/m³	0.5 mg/m³
NO_2	0–100% Vol.	0–20 mg/m³	0.5 mg/m³
SO_2	0–100% Vol.	0–75 mg/m³	0.5 mg/m³
NH_3[3]	0–1000 mg/m³	0–10 mg/m³	0.5 mg/m³
FTIR DOAS Analyser Models AR650 / AR650/N / AR650/NHF			
CO	0–100% Vol.	0–75 mg/m³	2 mg/m³
CO_2	0–100% Vol.	0–20% Vol.	0.1% Vol.
COS	0–10 000 mg/m³	0–1000 mg/m³	0–20 mg/m³
CH_4	0–100% Vol.	0–20 mg/m³	0.5 mg/m³
H_2O	0–100% Vol.	0–30% Vol.	0.1% Vol.
NH_3	0–100% Vol.	0–100 mg/m³[5]	2 mg/m³
LD500 Laser Diode Gas Analyser			
CO	0–100% Vol.	0–5% Vol.[5]	0.1% Vol.
CO_2	0–100% Vol.	0–30% Vol.[5]	0.1% Vol.
CH_4	0–100% Vol.	0–20 mg/m³[5]	0.5 mg/m³
H_2O	0–100% Vol.	0–30% Vol.	0.1% Vol.
H_2S	0–100% Vol.	0–10 000 mg/m³[6]	500 mg/m³
NH_3	0–100% Vol.	0–10 mg/m³[5]	0.5 mg/m³
O_2	0–21% Vol.	0–20% Vol.[5]	0.1% Vol.
Temperature	0–1400°C	—	5°C

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

Span drift
Less than 2% per year. Refer to QAL1 documents.

Zero drift
Less than 2% of measurement range per year. Refer to QAL1 documents.

Linearity error
Less than 1% of measurement range.

[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 SO_2 concentration: 5 g/m³ x m.
[3] Maximum SO_2 concentration: 500 mg/m³ x m.
[4] Detection limit of 1 mg/m³ is optional with hardware upgrade.
[5] Lowest measurement range.
[6] Monitoring path 5 m, measurement time 30 sec.

- 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.
- Max. length of fibre optic cable: please refer to product sheet P9 and P16.

FACTORY TESTED SYSTEMS
WITH DELIVERY ON TIME.

Continuous Emissions Monitoring and Process Control by OPSIS

Can be installed in explosive areas

Combines the benefits of UV DOAS, UV/IR DOAS, FTIR DOAS, and TDL technology

Best performance according to QAL1 certification

Longest calibration interval according to QAL1 certification

Automatic QAL3 check as option

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

OPSIS AB
Box 244, SE-244 02 Furulund, Sweden
+46 46 72 25 00 • info@opsis.se • www.opsis.se

Atut Sp. z o.o.
ul. B. Prusa 8, 20-064 Lublin
tel./fax: 081 740 33 45
e-mail: info@atut.lublin.pl
www.atut.lublin.pl