OPSIS®

opsis.se

Continuous Emissions Monitoring
and Process Control

Direct NO_X Measurement

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

Continuous Emissions Monitoring
and Process Control

Direct NO_X Measurement

The total emission of NO_X is a parameter that can limit the total power output from a power station. NO_X limits are set according to European and local requirements and must not be exceeded.

When a power plant increases power output, NO_X emissions will increase, and when the NO_X emission reaches the limit, no additional power increase can be made.

NO_X is the sum of two gases, NO and NO_2. In many cases the measurement of NO_X is calculated by measuring the NO content and adding a calculated NO_2 value based on 5% of the NO value. For example, if the NO value is measured at 475 ppm, the NO_2 value can be calculated at 5% of this making 499 ppm in total. Historically this has been the accepted method for NO_2 determination, as accurate analysis of NO_2 at the typical levels produced has not been easy.

The OPSIS UV DOAS system is different, and provides power plants with an accurate and fully certified analyser for NO_2 determination.

Measurements of NO_2 values taken from many different power plants around the world show that real NO_2 values are typically less than 1% of the emitted NO_X figure. By measuring the real NO_2 level, and adding it to the NO level at the correct amount, it is possible to run the power station nearer to the NO_X limit with the assurance that limits will not be breeched.

With the example given, direct measurement of NO_2 gives a value of 5 ppm. To stay under the same 500 ppm level, the plant can now be run to an NO limit of 494 ppm.

Assuming that NO production is linear with power output, this would equate to an increase in power output to 4%.

RETURN OF INVESTMENT

The cost of an OPSIS UV DOAS system to measure NO_2 is small compared to the amount of money that can be made by producing more power. The payback time for this investment can often be measured in weeks or months.

ADDITIONAL BENEFIT

All of your power plant's existing CEMS measurements can be done with the same system as the NO_2 measurement, so if you already have a CEM system, the OPSIS system can provide a redundant back up or replacement system.

TEST AND APPROVALS

OPSIS systems have been tested and approved by a number of internationally recognised institutes and authorities. The system meets European Directive 2001/80/EC (LCPD) and is approved by German TÜV, British MCERTS, and U.S. EPA. Full details are available on request.

OPSIS PRODUCT PORTFOLIO

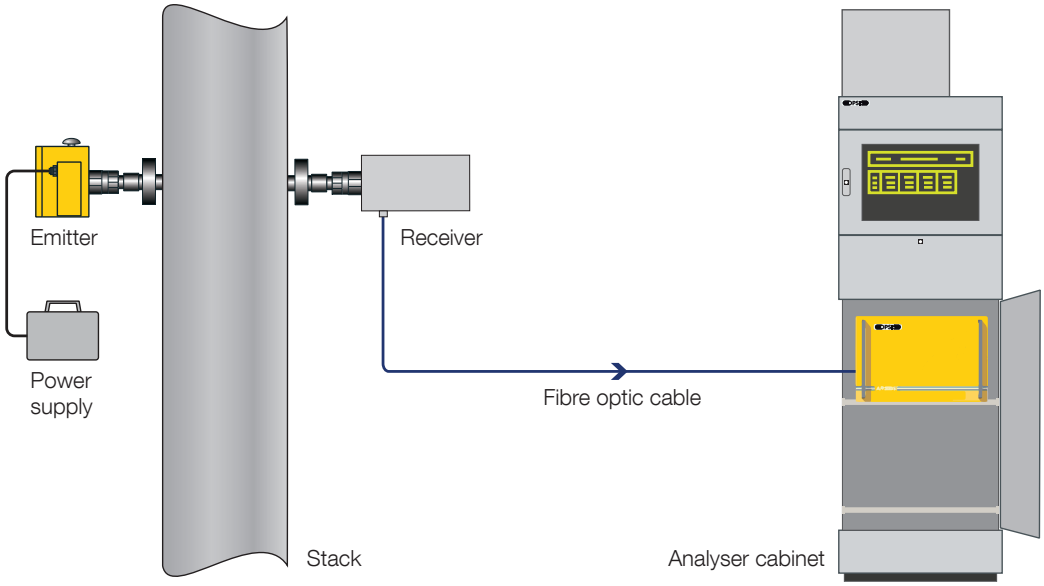
OPSIS has a full product portfolio of analysers for monitoring gases in power plants, including complete CEM systems, TDL systems for measuring NH_3 in NO_X scrubbers, O_2 analysers, and Hg analysers.

For further information, please visit www.opsis.se

QAL 1 CERTIFICATION:
BEST PERFORMANCE
LONGEST CALIBRATION INTERVAL

SYSTEM OVERVIEW

The measurement is made by a cross-stack optical sensor. The OPSIS monitoring system is designed for measuring low levels of NO_2 with high accuracy.



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/IR DOAS Analyser Models AR600 / AR602Z / AR602Z/Hg / AR602Z/N / AR602Z/NHg / AR620			
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
H_2O	0–100% Vol.	0–30% Vol.	0.1% Vol.

[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 × m.

- Recommended monitoring path length: 1 to 5 m.
- After wet scrubbers or when the particulate concentration is high, the monitoring path length may have to be reduced.
- Max. length of fibre optic cable: please refer to product sheet P9.

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.

FACTORY TESTED SYSTEMS
WITH DELIVERY ON TIME.

Continuous Emissions Monitoring and Process Control by OPSIS

Increase power production by accurate NO_2 monitoring

No sampling required, non-contact measurement system

Best performance according to QAL 1 certification

Longest calibration interval according to QAL 1 certification

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
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