

Ensure Reliable, Continuous NOx Emissions Monitoring with a Laser-Based Analyzer Solution

Background

Nitrogen Oxide (NOx) measurement is an indicator of process quality and plays a significant role in continuous emissions monitoring applications and compliance with environmental regulations. As a major pollutant, NOx emissions require increasingly strict, continuous measurement reporting with high sensitivity and accuracy. There is a growing need for reliable measurements with a low cost of ownership.

What's your challenge?

Operators are continually aiming to improve efficiency of operation and meet increasingly strict regulatory compliance guidelines.

Traditional technologies for NOx measurement require high levels of consumables and complex sample treatment. Operators are challenged to find robust measurement solutions that offer high performance with minimal maintenance and calibration requirements.

Often with a large installed base of aging analyzers, operators need technology compatible with existing plant infrastructure.

What's your opportunity?

Rosemount's hybrid Quantum Cascade Laser (QCL) and Tunable Diode Laser (TDL) technology has been optimized to the specific wavelengths required to target NOx emissions measurement. As an upgrade to existing technologies or end of life replacement, Rosemount™ analyzers can be easily integrated into existing infrastructure, offering superior performance and reliability. In addition, plug and play technology and minimal service needs reduces analyzer downtime and enhances plant efficiency.

What if you could...

- Reduce need for consumables?
- Reduce maintenance requirements?
- Decrease frequency of calibration?
- Increase analyzer availability for your operation?



QCL Benefits for Combustion Flue Gas Monitoring

- High-sensitivity and high-accuracy monitoring to ensure operators meet regulatory requirements
- Direct and independent measurement of NO and NO₂ using fundamental principles of direct absorption spectroscopy
- No need for NOx convertors or ozone generators as part of sample pre-treatment
- Reduced complexity results in higher reliability and analyzer availability through minimized maintenance
- Real-time reporting provides critical insight into process performance, enabling operators to monitor plant operation and realize true savings
- Inherently stable spectroscopic technique means outstanding reliability and stability
- Patented laser chirp technique enables detection of individual gas species, free from cross interference effects of other gas stream components
- Fast, easy installation, commissioning and upgrades thanks to rugged, modular design and solid-state components
- Compatible with existing plant infrastructure to minimize disruption or additional expense when replacing legacy analyzers
- Multi-component and simultaneous component analysis within a single analyzer reduces the need for multiple analyzers

Recommended Technology

Rosemount™ CT4400 Continuous Gas Analyzer

- Standardized spectroscopic solutions available to meet NOx measurement needs
- Additional gases CO, CO₂, O₂ and SO₂ available upon request (dependent on selected configuration)
- Standard 19" rack enclosure. Available as a half-rack (illustrated) and full 19" rack option depending on measurements required
- Extractive, cold/dry solution



Measurement Specifications ¹				
Analyzer Option	NO performance ²		NO ₂ performance	
	Range (ppmv)	LOD (ppmv)	Range (ppmv)	LOD (ppmv)
CT4400-S1B2X	0–1000	0.8	0–300	0.4
CT4400-S1C2X	0–400	0.3	0–120	0.15

(1) Repeatability ±1% of reading or the Limit of Detection (LOD), whichever is greater.
 (2) Extended NO ranges available on request.

Features & Benefits

Features	Benefits
Direct measurement of NO and NO ₂	Specific MIR wavelengths used to monitor NO and NO ₂ concentrations directly with no need for gas conversion. Wavelengths used are tailored specifically to remove cross interference effects of gases such as CO ₂ .
Simple field service and upgrades	Simplify installation, commissioning and any required maintenance with intuitive user interface. Easy integration into existing infrastructure.
Reliable operation	Improve uptime with embedded ARM processor and rugged design.
Low ownership cost	Reduce the need for calibration and associated costly consumables.
Standardized configuration options	Tiered model and performance options to meet individual customer requirements.

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