

# G4100 NO<sub>x</sub>/O<sub>2</sub> Analyzing System

Cost-Effective Emission Control

For Green Image & Fuel Efficiency



Perfecting Sensible Technology

The G4100 NO<sub>x</sub>/O<sub>2</sub> Analyzing System is a practical and direct in-situ gas analyzer that is used to monitor NO<sub>x</sub> and O<sub>2</sub> concentrations. The G4100 NO<sub>x</sub>/O<sub>2</sub> Analyzing System uses a new zirconia sensor technology, which provides a cost-effective solution to fulfill tightening emission regulations as well as to support the most effective operation for both diesel engines and boilers.



# Strengthen Your Green Credentials



G4100 NO<sub>x</sub>/O<sub>2</sub> Analyzer Board

## Monitoring NO<sub>x</sub> Emissions

Two factors drive the current development towards emission monitoring: Tightening environmental regulations from both regional and international authorities and the concern for showing environmental responsibility.

More stringent regulations have especially increased the need for NO<sub>x</sub> reduction. Various after-treatment technologies including selective catalytic reduction (SCR) and exhaust re-circulation (EGR) are used for NO<sub>x</sub> reduction. These systems require simple, reliable, and cost effective NO<sub>x</sub> monitoring solutions.

## G4100 NO<sub>x</sub>/O<sub>2</sub> Analyzing System

The G4100 NO<sub>x</sub>/O<sub>2</sub> Analyzing System is a practical and direct in-situ gas analyzer for monitoring of NO<sub>x</sub> and O<sub>2</sub> concentrations in emission gas. This system provides a cost-effective solution to help fulfilling tightening emission regulations as well as supporting the most effective operation for all types of combustions processes.

Continuously monitoring of NO<sub>x</sub> emissions can be used to

## Key Features

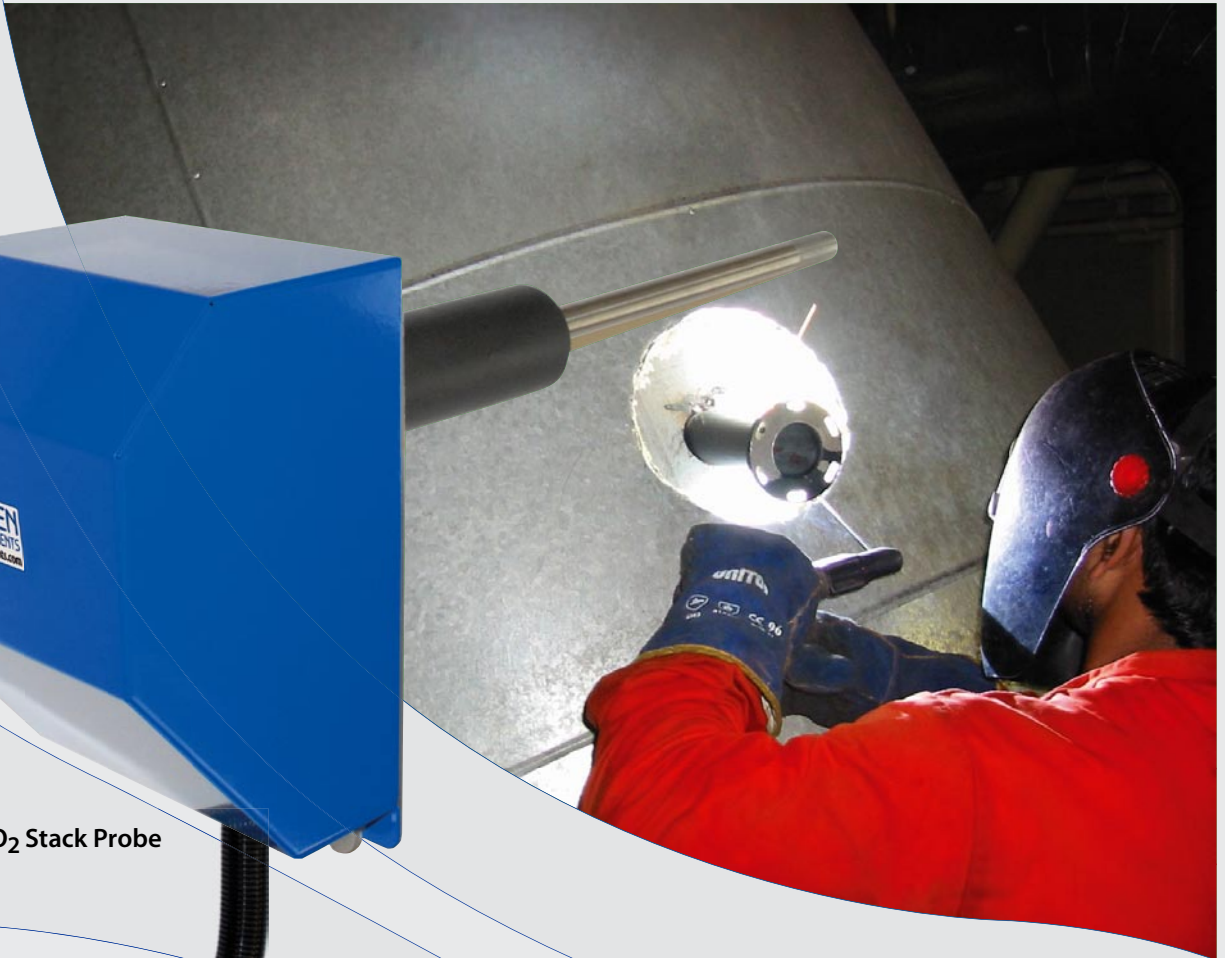
- Strengthens your green image
- Complies with tightening emission regulations
- Checks engine performance
- Provides data for SCR/combustion optimization
  
- In-situ and direct monitoring
- Highly reliable true wet measurement of NO<sub>x</sub> and O<sub>2</sub> in flue gas
- No sample lines, sample system, or converters
- Plug'n'play — easy installation and integration
- Easy operation with LCD touch screen
- Automatic back flushing and purging of the probe
- Analog outputs and data transmission via Ethernet
- Low total cost of ownership
  
- Worldwide customer support via service partners



# Plug'N'Play = Low Cost of Ownership



G4100 NO<sub>x</sub>/O<sub>2</sub> Stack Probe



control various after-treatment technologies by using the real time NO<sub>x</sub> data that is generated by the G4100 NO<sub>x</sub>/O<sub>2</sub> Analyzing System.

The G4100 NO<sub>x</sub>/O<sub>2</sub> Analyzing System is also designed to meet the challenging requirements for monitoring the inlets and outlets of selective catalytic reduction systems (SCR) on all types of combustion sources.

The G4100 provides real time measurements of NO<sub>x</sub> in ppm and O<sub>2</sub> in % and it is designed to withstand a rugged environment. It can be used both for marine and land based applications.

## Easy Zirconia Technology

The G4100 uses a zirconium oxide (ZrO<sub>2</sub>) sensor with multiple diffusion cells specifically for NO<sub>x</sub> measurement. This sensor is small and robust and can be installed directly on the stack without special protection. This technology allows real-time measurement of NO<sub>x</sub>/O<sub>2</sub> on wet basis at high temperatures. It avoids sampling systems, coolers and converters with all their disadvantages.

The simple plug'n'play design makes it easy and cost-effective to install, operate, and maintain the analyzing system. The G4100 NO<sub>x</sub>/O<sub>2</sub> Analyzing System consists of an ejector probe that is connected to the analyzer board.

## Easy Reporting with G49xx

As an optional extension to the G4100, Green Instruments offers you the G49xx Visualization & Reporting Family which is a modular system that provides tailor made solutions. The requirements for emissions reporting and data system integration are different from application to application.

The following main modules are available:

**G4900 Recording & Visualization System:** Data logging and recording capacity for the G4100.

**G4901 Reporting System:** relevant for approval by flag state and/or class.

Data from the G1000 Smoke Density Monitor can easily be integrated into the G49xx Family.

# Specifications - G4100

Lloyd's  
Register

TYPE  
APPROVAL

## Analyzer

Measurement range	NO <sub>x</sub> : 0 to 1500 ppm (F.S.) - O <sub>2</sub> : 0 to 21% (F.S.)
Repeatability	Better than 1.0% of F.S. for both NO <sub>x</sub> and O <sub>2</sub>
Accuracy	Better than 2.0% of F.S. for both NO <sub>x</sub> and O <sub>2</sub>
Response time	90% of F.S. in less than 30 sec.
Power supply	100...230 V AC, 50...60 Hz or 24 V DC. Consumption max. 40 VA
Ambient temperature	0°C to 55°C
Interface	Touch screen 71 × 39 mm with trend graph display
Analog output signal	2 x 4...20 mA range selectable (for NO <sub>x</sub> and O <sub>2</sub> ). Load output (max.): 20 mA/ 600 Ω / 24 VDC
System interface	Analog 4...20 mA (optional: Ethernet)
Relays	4 relays, volt free, 5A 24 VDC/VAC
Analyzer casing	Aluminum casing IP67

## Analyzer board with connections

Dimensions / Weight	H×W×D: 600×590×150 (wall mounted) / approx. 10 kg (without umbilical cord)
Test gas inlet	Max. 2 bar - 1/8" BSP connection
Span NO <sub>x</sub> Gas	Known concentration of NO <sub>x</sub> in N <sub>2</sub> in the range of 50...1500 ppm with 0.0% O <sub>2</sub>
Air supply reduction regulator	Incl. 25µm filter - max. 8 bar - 1/8" BSP connection
Zero NO <sub>x</sub> Gas – Air supply	Instrument air with 0 ppm NO <sub>x</sub> and 20.9% O <sub>2</sub> . Quality according to ISO 8573-1.4.4.4. Consumption up to 5 l/min

## Ejector Probe

Sensor technology	Heated zirconia type sensor
Sample temperature	0°C to 500°C
Probe length/socket	Insert length: app. 250-300 mm - for duct diameters 290-2800 mm
Calibration air flow	App. 2 l/min
Ejector air flow at 1 bar	App. 2 l/min ≈ Vacuum 80 mm H <sub>2</sub> O - adjustable if more suction is needed
Dimensions / Weight	H×W×D: 285×180×600 mm / approx. 5 kg (without umbilical cord)
Umbilical cord	3.0 m length in 28 mm nylon conduit

## Optional Equipment

G4900 Recording & Visualization System	Test gas bottle case with span NO <sub>x</sub> gas bottle and regulator
G4901 Reporting System	Ambient air sensor module
G4902 Extended Visualization & Reporting System	GPS module

Specifications subject to changes without notice



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