LaserGas™
neo monitors as

LaserGas™ II Monitors - *Diode Laser Spectroscopy for Precision Gas Measurements*

A FAMILY OF LASER-BASED GAS MONITORS
USING TUNEABLE DIODE LASER TECHNOLOGY

LaserGas™ II

LaserGas II from NEO Monitors AS is an innovative family of laser-based gas monitors using tuneable diode laser (TDLAS) technology. Unlike conventional UV or IR spectrographic instruments, NEO Monitors' instruments employ the measurement principle known as 'single line spectroscopy', which eliminates cross interference from other gases and enables very low concentrations of gas to be detected. Introduced to the market in 1995 and employed in more than 1000 NEO gas monitors worldwide, TDLAS is a well-proven and reliable technology for demanding industrial applications.

Features

Designed for continuous monitoring, LaserGas II models offer high sensitivity with detection limits in the ppb and low ppm ranges. Fast response times of down to one second are possible depending on the specific application. The range includes models for measuring O_2, HCl, HF, NH_3, CO, CO_2, H_2O, H_2S, HCN, NO, N_2O, CH_4 and other hydrocarbons, as well as for measuring two different gases or a gas and temperature simultaneously using a single laser. Gas detection is unaffected by dust and smoke or fog and rain and measurements down to <1% transmission are possible.

LaserGas II monitors are very compact and robust instruments suitable for outdoor use. The transmitter and receiver units include all necessary electronics (no additional control unit required) and are protection classified to IP66.
As an important new feature LaserGas II includes an Ethernet connector to enable communication via a local area network or the Internet.

Laser Gas II monitors are fully configured to customers needs and tuned to the specific process, to ensure optimum performance and zero cross interference from other gases present.

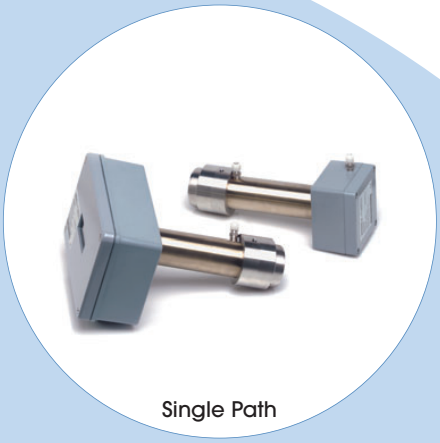
Measuring principle

With LaserGas II monitors, a single gas absorption line with no interference is chosen in the near IR spectral range. A single-mode diode laser operating at room temperature scans the single absorption line. A detector located opposite the laser detects the light absorption caused by the target gas molecules, after which the gas concentration is calculated. No compensation is required for the presence of other gases. Automatic correction for temperature and pressure variations is included.

Maintenance and calibration

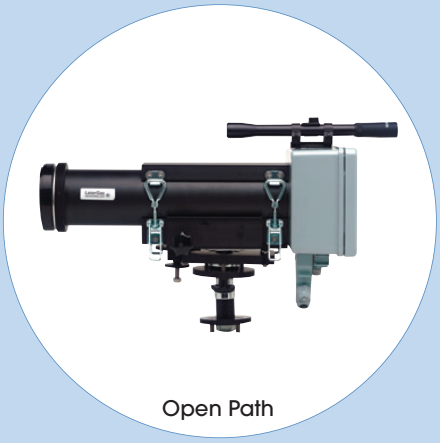
The easy installation and operation together with a minimum of routine maintenance contribute to the instruments low cost of ownership. Moreover, LaserGas II monitors incorporate fault diagnostics providing warning messages if maintenance should be required. Due to the modular hardware design most maintenance can be done on site by replacement of modules, thereby increasing the availability of the instrument.

There are no moving parts and no consumables are required. Calibration intervals are typically 6-12 months and zero drift is negligible.



Single Path

Dual Path



Open Path

Multipass

Configurations

The following instrument configurations are available in the LaserGas II product line:

- **Single Path monitor**
- **Dual Path monitor**
- **Open Path monitor**
- **Multipass monitor**

Single Path and Dual Path monitors are mainly used for in-situ measurements with path lengths in the range 0.5 - 15 m (pipes, stacks, ducts). These models operate over the range 2-3 bar maximum pressure and temperatures up to 500°C, but it is possible to operate at up to 20 bar and 1500°C with some gases. The Dual Path monitor includes the additional feature of automatic zero and span check.

The Open Path monitor is suitable for long distance monitoring in ambient air, monitoring of production halls, gas fencing or leak detection. Measurement lengths of up to 500 m are possible.

The extractive Multipass monitor allows a gas sample to be removed from the process and analysed offline. Based on multiple reflections in the analysis cell, this instrument combines 11 m measurement path with a very compact design and is suitable for trace measurements of for example H_2O, O_2 or H_2S.

Please refer to the product data sheets for more information on the different instrument configurations.

Available gases

O_2	**H_2S**	**Dual gas**
HCl	**HCN**	**$NH_3 + H_2O$**
HF	**NO**	**$HF + H_2O$**
NH_3	**N_2O**	**$HCl + H_2O$**
CO	**CH_4**	**$CO + CO_2$**
CO_2	**C_2H_2**	**O_2 + temp.**
H_2O		

** other gases available on request.*

Applications

LaserGas monitors are used for continuous emission monitoring and process control across a wide range of industrial applications e.g. in steel, aluminium and other non-ferrous metal, chemical, petroleum and cement production, power generation and waste incineration. Typical examples are:

- Emission control systems for scrubber and abatement plants.
- Combustion control systems for boilers and waste incinerators.
- Slippage control in deNOx plants.
- Safety systems in chemical plants.
- Monitoring of production halls.
- Gas fencing, leak detection.
- Trace measurements in pure gases.

Company

NEO Monitors AS is a subsidiary of Norsk Elektro Optikk AS (NEO), which has been formed in 2003 to take over the manufacture, marketing and service of the laser-based gas and dust monitors using TDLAS that were formerly supplied by NEO. NEO is one of Norway's principal research companies in the electro-optics field, working with industrial partners and with research institutes on national and international projects.

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a subsidiary of Norsk Elektro Optikk AS

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