



LSE
MONITORS

N₂O MONITOR FOR NITROUS OXIDE IN AMBIENT AIR AND STACK

Nitrous oxide measurement from LSE Monitors: a new solution for NCGG monitoring!

Emission coming from nitrogen containing soils, farm animals and natural processes as well as from industrial activities leads to the increase of the greenhouse gas nitrous oxide worldwide.

Nitrous oxide has to be monitored as a greenhouse gas in many background stations. It also has to be monitored in stacks from industry. Agricultural sources need to be studied as well.

To abate the greenhouse gas effect emissions must be reduced. Monitoring is then needed to follow the effect of methods to reduce nitrous oxide concentrations.

LSE Monitors has developed a simple, low price, small and effective monitor based on a combination of a quantum cascade laser with photo acoustic technology to measure from ppm to mid ppb range, with a precision below 1 ppb in 10 min

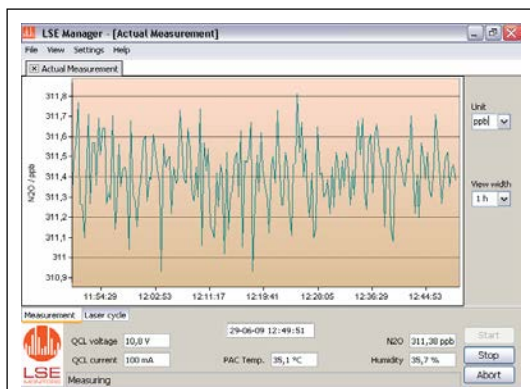


LSE monitor for the measurement of N₂O

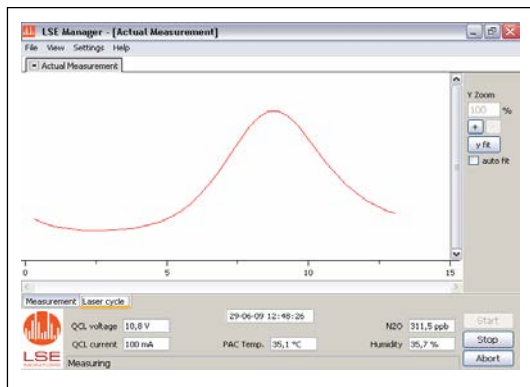
QCL PAS technique and LSE Monitors

Infrared light that can be absorbed by nitrous oxide molecules is produced by a quantum cascade laser. The laser light is led through a resonator cell that is continuously flushed with the sample. If N₂O is present the gas pressure increases as a result of absorption of the laser light. We modulate the laser at an acoustic frequency of 1600 Hz and the resulting pressure modulation can be measured by a microphone. The amplitude is proportional to the N₂O concentration. LSE Monitors is a joint venture between Sensor Sense BV in Nijmegen and Synspec BV in Groningen, combining knowledge of laser research, electronic design and analyser production.

Photo acoustic cell



LSE monitor software runs on WinXpe



QCL temperature scan for N₂O

PRELIMINARY TECH SPECS

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LASER EN PAS SPECS

N₂O (Nitrous oxide)
ANALYSER

WAVELENGTH SUITABLE FOR NITROUS OXIDE
PHOTOACOUSTIC FREQUENCY 1600 Hz
NO INTERFERENCE FROM OTHER COMPOUNDS
AT THIS WAVELENGTH

RANGE, PRECISION, CALIBRATION GAS

RANGE

DETECTION LIMIT AT 10 MIN , 1 PPB

PRECISION

RANGE UP TO 5 PPM, TUNEABLE TO 75 PPM
PRECISION AT 10 MIN 1 PPB

CALIBRATION

CALIBRATION TEST WITH NITROUS OXIDE,
MIN. 6 MONTHS, ADVISED 30 DAYS
AUTOCALIBRATION PROGRAMMABLE

TECHNICAL DATA

DIMENSIONS

19" rack, 3 Standard Height Units (12 cm)
depth 37,2 cm net, 15 kg

POWER DEMAND

230 Vac, 200 VA (110 Vac available)

ENVIRONMENTAL
CONDITIONS

TEMPERATURE 5 TO 35 °C
HUMIDITY 20 TO 95%

SAMPLE CONNECTIONS

SWAGELOCK 1/8"

