

# UNISENSE ENVIRONMENT

Nitrous Oxide process sensor for online wastewater treatment optimization, low-cost greenhouse gas reduction, and reliable sustainability accounting



Measure N<sub>2</sub>O emissions in wastewater treatment

Minimize climate footprint by implementing new process strategies

Accurately report greenhouse gas emissions from N<sub>2</sub>O

Cost effective and robust sensor for 24/7 operation

Simple installation and low maintenance

The world's only sensor for direct and real-time measurement of dissolved nitrous oxide (N<sub>2</sub>O) in wastewater

## N<sub>2</sub>O Wastewater Sensor

### Detection limit:

Standard Range: 0.005 N<sub>2</sub>O-N mg/L

Medium Range: 0.03 N<sub>2</sub>O-N mg/L

High Range: 0.4 N<sub>2</sub>O-N mg/L

### Measuring range:

Standard Range: 0-1.5 N<sub>2</sub>O-N mg/L

Medium Range: 0-9 N<sub>2</sub>O-N mg/L

High Range: 0-110 N<sub>2</sub>O-N mg/L

### Calibration:

2-point calibration, every 2nd month

### Expected lifetime of sensor heads:

>6 months



## N<sub>2</sub>O Wastewater Controller

### Data outputs:

Digital: Modbus (serial or TCP)

Analogue: 4-20mA

Optional: PROFIBUS-DP

Optional: USB data-logging-software required

### Display:

TFT-touch screen controller

### Power supply:

AC 110 to 240 V +10/-15 %; 48 to 63 Hz, 55 VA



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## Why You Should Measure N<sub>2</sub>O Emissions

Nitrous oxide (N<sub>2</sub>O) is produced during wastewater treatment and released into the atmosphere through stripping by aeration. N<sub>2</sub>O is formed when process conditions for nitrogen conversion are not ideal.

With N<sub>2</sub>O's global warming potential 273 times higher than CO<sub>2</sub>, studies reveal it can comprise up to 90% of a wastewater plant's carbon footprint. Estimating solely through emission factors overlooks seasonal and site-specific variations, leading to uncertain sustainability reporting.

Real-time N<sub>2</sub>O measurement empowers operators to accurately assess direct emissions and optimize their processes for reduced environmental impact.

## How the N<sub>2</sub>O Wastewater System Works

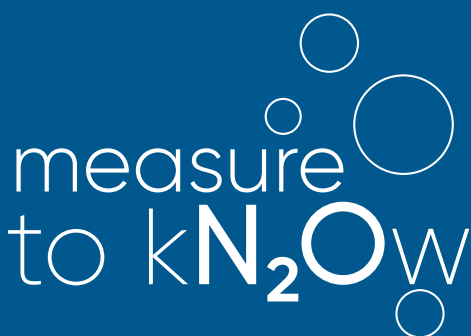
The N<sub>2</sub>O Wastewater System includes a controller and 1-2 sensors with cables of 5-100 meters length.

The sensor measures dissolved nitrous oxide (N<sub>2</sub>O) in real-time in wastewater, providing continuous online data to detect trends and correlations with other parameters. It allows for advanced process control strategies.

Installation is straightforward, with minimal maintenance – calibrate the sensor every two months and replace the sensor head twice a year.

Data is stored on the controller and can be transmitted to the treatment plant's control system for emission calculations.

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