

# Wastewater Gas Analyser - WGA020

RELIABLE N<sub>2</sub>O, CH<sub>4</sub> AND CO<sub>2</sub> EMISSIONS MONITORING AND  
O<sub>2</sub> CONTROL FOR WASTEWATER TREATMENT PLANTS



Because accuracy matters.  
For the right decisions.

## KEY FEATURES

### HIGH-PRECISION MEASUREMENTS

- **Real-time** monitoring of N<sub>2</sub>O, CH<sub>4</sub>, CO<sub>2</sub> and O<sub>2</sub> concentrations from aerated basins
- Automatic calculation of **net emission rates** using an internal total-flow sensor
- High **temporal resolution** for precise process and emission control
- Integrated regular **cross-sensitivity calibration** and **zero-drift correction**
- **Temperature-stabilised** instrument and sensor housing for minimal drift and high accuracy

### RELIABLE LONG-TERM OPERATION

- **Sample-air drying** protects sensor from humidity-related degradation
- Rugged, **weatherproof** enclosure (IP64) for permanent outdoor use
- Robust **stainless-steel** sampling hood

### EFFICIENT & SAFE

- **Gas-bottle-free operation** reduces costs and simplifies field deployment
- Low **annual maintenance** (sensor calibration, scrubber refill, hood cleaning)

### FLEXIBLE SAMPLING

- **Floating sampling hood** ensures stable gas collection even under **dynamic water surface** conditions

## OPTIONAL FEATURES

### TWO SAMPLING HOODS

- Quasi-simultaneous **dual-point monitoring** for data validation

### HEATED SAMPLING LINE OPTION

- Self-regulated heating preventing condensation during **cold-climate operation**

### USE OF VENTILATION AIR AS BACKGROUND REFERENCE

- Customised connection to pressurised air supply for **process-only emission** retrieval

### REMOTE DATA ACCESS

- Connection via LAN or LTE modem



**GAS-FREE  
OPERATION**



**LOW  
MAINTENANCE**

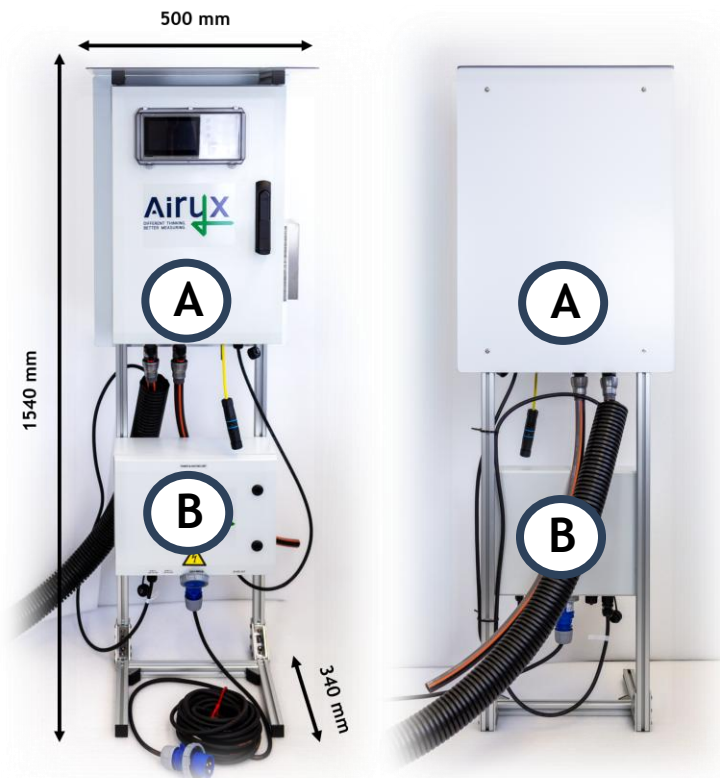


**LOW POWER  
CONSUMPTION**

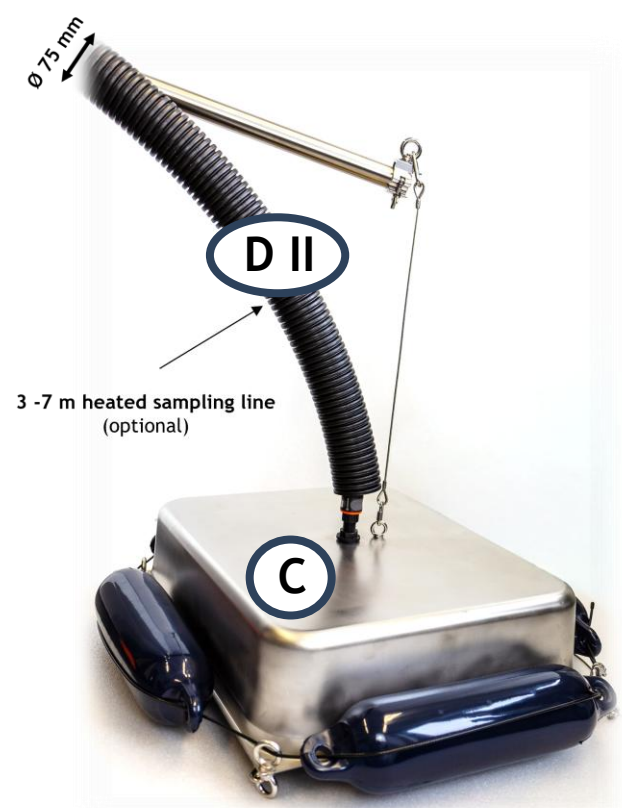
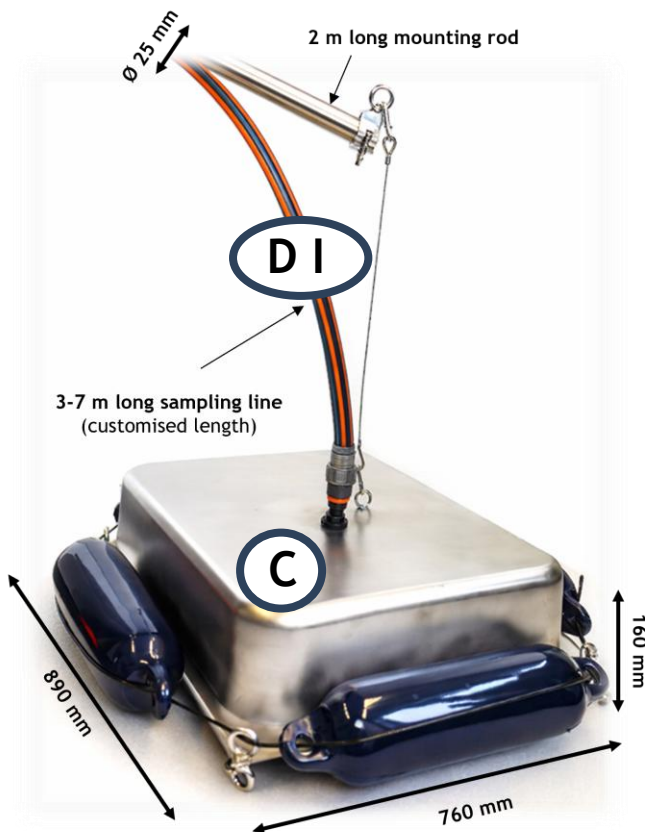
**Airyx technology patent pending:  
PCT/EP2024/087231**

# ROBUST AND HIGH-PRECISION MEASUREMENT SYSTEM FOR LONG-TERM MONITORING OF PROCESS RELATED GREENHOUSE GAS EMISSIONS OF WASTEWATER TREATMENT PLANTS

**DIMENSIONS**



- A** Instrument unit
- B** Power heating unit
- C** Sampling hood
- D I** Sampling line, standard
- D II** Sampling line with heating



## TECHNICAL DETAILS

<b>Measured gases</b>	N <sub>2</sub> O, CO <sub>2</sub> , CH <sub>4</sub> , O <sub>2</sub>
<b>Measurement principle</b>	Non-dispersive infrared (NDIR) for N <sub>2</sub> O, CO <sub>2</sub> , and CH <sub>4</sub> ; Electrochemical sensor for O <sub>2</sub> Automatised cross-interference correction and sample-air drying for maximum accuracy and sensor longevity
<b>Measured parameters</b>	Sample and background concentrations, sample flow, greenhouse gas net emissions fluxes, ambient temperature and pressure, system health parameters
<b>Operating temperature</b>	-10°C to + 40°C
<b>Operating Pressure</b>	800-1150 hPa ambient pressure
<b>Time resolution</b>	1 s internal, averaging to 60 s
<b>Enclosure</b>	Rugged and weatherproof design, IP64 rating
<b>Power Supply</b>	220 V AC
<b>Power consumption (analyser)</b>	80 W nominal, 120 W peak
<b>Power consumption (sampling line heating)</b>	0-156 W (temperature and heated length dependent), typical 80 W at 10°C with 5 m heated sampling line
<b>Dimensions</b>	Mounting rack: 1540 mm x 500 mm x 340 mm, Sampling hood: 890 mm x 760 mm x 240 mm
<b>Weight</b>	Mounting rack including instrument unit and power heating unit: ~35 kg, Sampling hood: ~ 8 kg, Equipment: ~ 5 kg
<b>User interface</b>	Touch display, web interface from connected PC or internet
<b>Data interfaces</b>	Ethernet, additional data storage on USB flash drive optional: remote VPN access via internal LTE-modem
<b>Data format</b>	Text format (UTF-8)
<b>Internal calibration</b>	Automatic cross-calibration for CO <sub>2</sub> -interference for quality-assurance
<b>External calibration</b>	Yearly manual calibration of sensors with external standard gas concentrations, provided initially and optionally in service contracts
<b>Sample flow (total)</b>	0-20 slm
<b>Sample flow (analysed)</b>	approx. 0.2 slm
<b>Sampling area</b>	approx. 0.3 m <sup>2</sup> , optional: 2 x 0.3 m <sup>2</sup>
<b>Sampling line</b>	Length: 3-7 m, typical 5 m Outer diameter: 25 mm or 75 mm (heated sampling line)

## MEASUREMENT RANGES AND LIMIT OF DETECTION

Gas	Measurement range	Limit of detection ( $3\sigma$ )	Emission rate sensitivity ( $\sigma$ )*
N <sub>2</sub> O	0-1000 ppm	0.5 ppm	0.3 mg/m <sup>2</sup> /h
CO <sub>2</sub>	0-10 Vol. %	40 ppm	24 mg/m <sup>2</sup> /h
CH <sub>4</sub>	0-1000 ppm	5 ppm	1.1 mg/m <sup>2</sup> /h
O <sub>2</sub>	0-100 Vol. %	Absolute: 0.1 Vol. % or Relative: 0.5 % of reading	n/a

\*Refers to a flux of 1 m<sup>3</sup>/h/m<sup>2</sup>

## DATA EXAMPLE

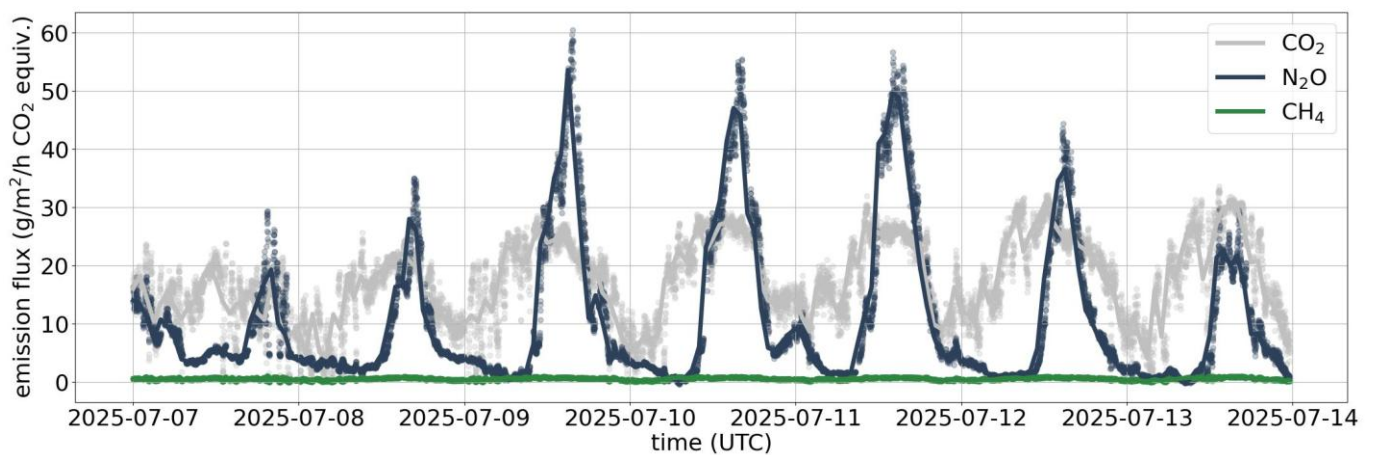


Figure 1: Example field measurement of N<sub>2</sub>O (blue), CO<sub>2</sub> (grey) and CH<sub>4</sub> (green) emissions with respect to their greenhouse gas potential. Daily peaks are clearly visible for CO<sub>2</sub> and N<sub>2</sub>O. The largest climate relevant emissions result from N<sub>2</sub>O due to its extremely strong global warming potential.



Airyx main webpage  
[www.airyx.de](http://www.airyx.de)



Airyx WGA product webpage  
<https://airyx.de/wastewater-gas-analyser>



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