



## **EmiCo. *lite***

Monitoring Nitrous Oxide & Methane

Product Brochure

# EmiCo. lite | Monitoring Nitrous Oxide & Methane

## Overview

EmiCo lite is designed to meet new regulations on monitoring greenhouse gas emissions, providing operators with new insights into their treatment processes. It offers smart real-time monitoring of nitrous oxide (N<sub>2</sub>O) and methane (CH<sub>4</sub>) in the biological step of wastewater treatment plants. The cloud architecture enables fast and seamless implementation ensuring reliability, security and data integrity.

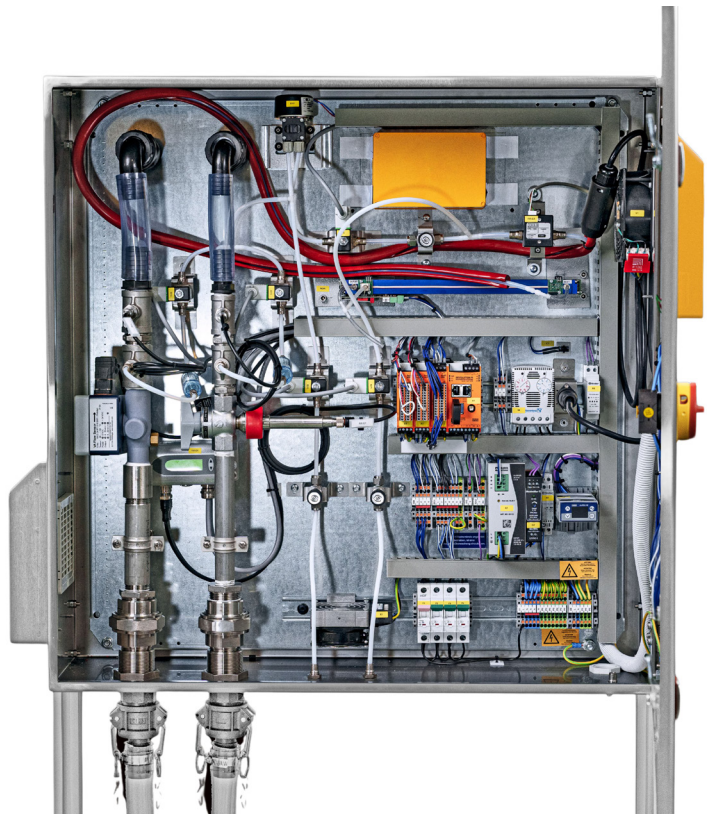
## What is EmiCo. lite?

The Emission Control (EmiCo) lite is a low-cost analyser specifically designed for operation in wastewater treatment plants, to monitor greenhouse gas emissions that stem from the biological step. The analyzer comes in a climate-controlled housing and can analyse probes from 2 measuring spots.

The probe lines are 10 meters long and enable measurements 20 meters apart. With its integrated eSIM, the data can be accessed online in real-time from any location.

EmiCo. lite consists of the following modules:

- » NDIR Analyzer
- » CPU with eSIM
- » 2 measuring hoods
- » Flow meter
- » O<sub>2</sub> Sensor
- » 20-meter probe line
- » Climate controlled housing
- » Gas delivery pump



## Application & Benefits



### What is EmiCo. lite used for?

The wastewater treatment industry is on its path to net-zero, decarbonizing its operations. Currently, nitrous oxide and methane are responsible for >70% of the total carbon footprint of a treatment plant. This can be avoided through improved process control by mitigating the formation of these emissions in the biological step. EmiCo lite provides the tools to do this, detecting direct emissions when they occur and providing the necessary insights to adapt control strategies.

### What are the benefits?

The benefits for wastewater utilities are:

- 1 Precise, real-time emission monitoring of  $N_2O$  &  $CH_4$
- 2 New insights for improved control strategies
- 3 Compliance with regulatory standards
- 4 Accurate reporting of direct emissions



## Technology

### How does the technology work?

The measurements from Emico lite are carried out using Non-Dispersive Infrared (NDIR) technology. Infrared light source emits light that passes through a sample of air in a measurement chamber. The specific wavelengths absorbed by the gases in the sample are then detected by an infrared detector. The amount of light absorbed at these specific wavelengths is measured, and this measurement is used to determine the concentration of the gases in the sample.

### Your Path to Net-Zero

### What can be measured?

EmiCo lite provides multi-parameter measurements in real-time from the exhaust gas collected under a 1 m<sup>2</sup> hood. The analyzer is calibrated to measure the following parameters, in relevant concentrations every 5 minutes:



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EmiCo. *lite*

- » **Nitrous oxide (N<sub>2</sub>O)**
- » **Methane (CH<sub>4</sub>)**
- » **Oxygen (O<sub>2</sub>)**
- » **Carbon dioxide (CO<sub>2</sub>)**

Additionally, flow rate and temperature values are measured to calculate:

- » **Emission rates**

## Unique Selling Proposition

### Why choose EmiCo. lite?

EmiCo lite is designed to be a comprehensive and user-friendly tool for wastewater treatment plants striving to meet and exceed environmental standards. The system is your gateway to advanced emission control, providing accurate monitoring of greenhouse gases and ensuring compliance with regulatory requirements.

- 1 Low-cost system providing important insights on emissions
- 2 Multiple parameters with one analyser ( $N_2O$ ,  $CH_4$ ,  $O_2$  &  $CO_2$ )
- 3 Monitor emission rates and not just concentrations
- 4 Fast implementation and low maintenance costs





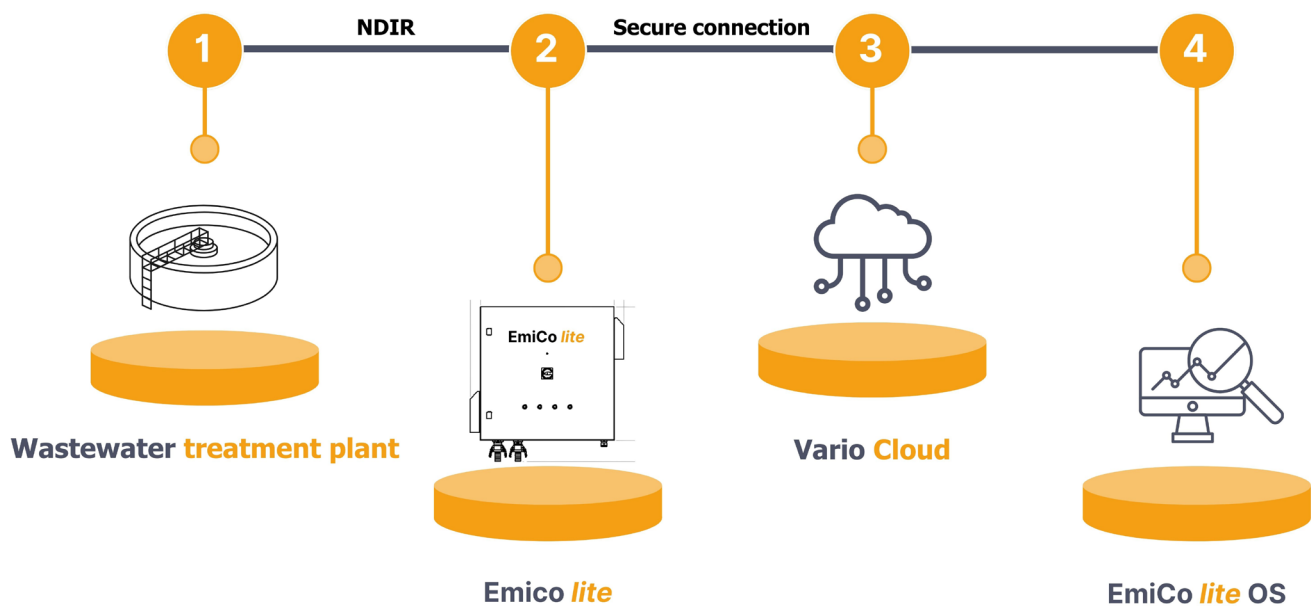
## Your path to effective monitoring

### Why cloud?

**Guaranteed Data Integrity:** Your data is always backed up, securely stored, and protected against any form of loss or corruption. Our algorithms inspect the data and verify that measurements are reliable.

**Instant Support:** Real-time, remote troubleshooting and updates by our dedicated support team. Faster resolution of issues and seamless system updates, minimizing downtime, without the need for onsite interventions.

**Rapid Deployment:** Implementation is swift and straightforward, bypassing the complex setup required for traditional systems. EmiCo lite only requires a power supply, and delivers data to your cloud account, without the need for costly LAN infrastructure



### Calibration & Maintenance

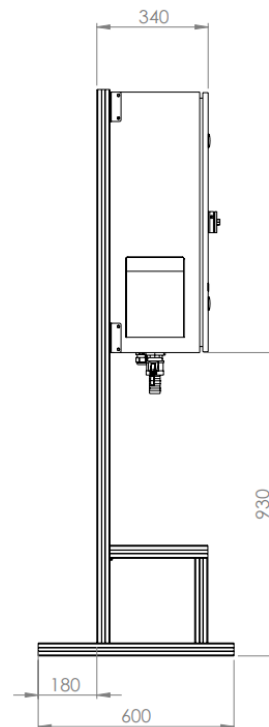
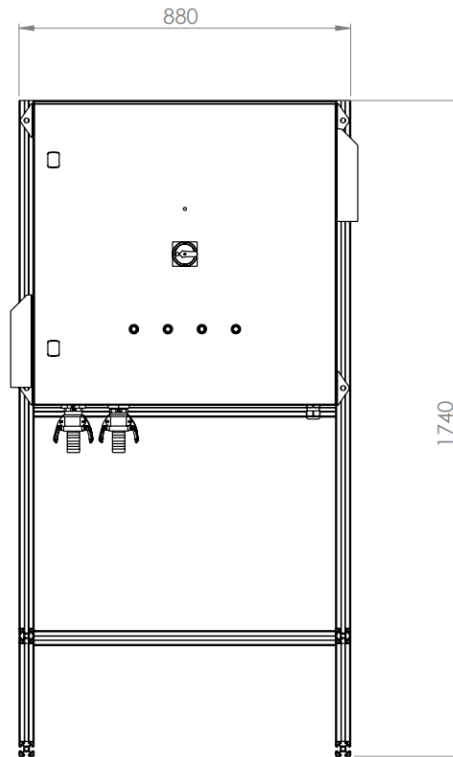
**Zero Point:** To provide precise measurements, EmiCo lite determines the 0 point of components. On a weekly basis the system performs an automatic zero-point calibration with pure nitrogen. For this reason, a nitrogen bottle needs to be connected to the system when longer measuring campaigns are planned.

**6 Months:** To avoid drifts, the EmiCo system requires a bi-annual calibration. The calibration is performed by connecting gas bottles with predetermined  $N_2O$ ,  $CH_4$  and  $CO_2$  concentrations to the system.

**Maintenance:** It is recommended that the system is serviced within 24 months.

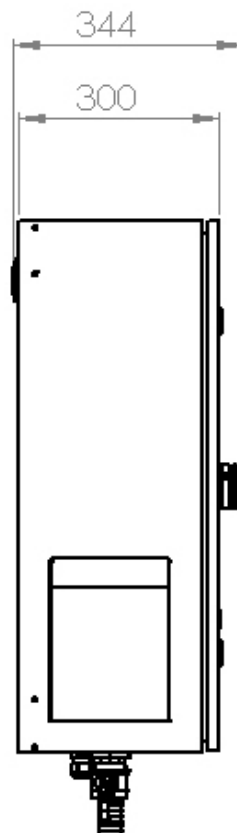
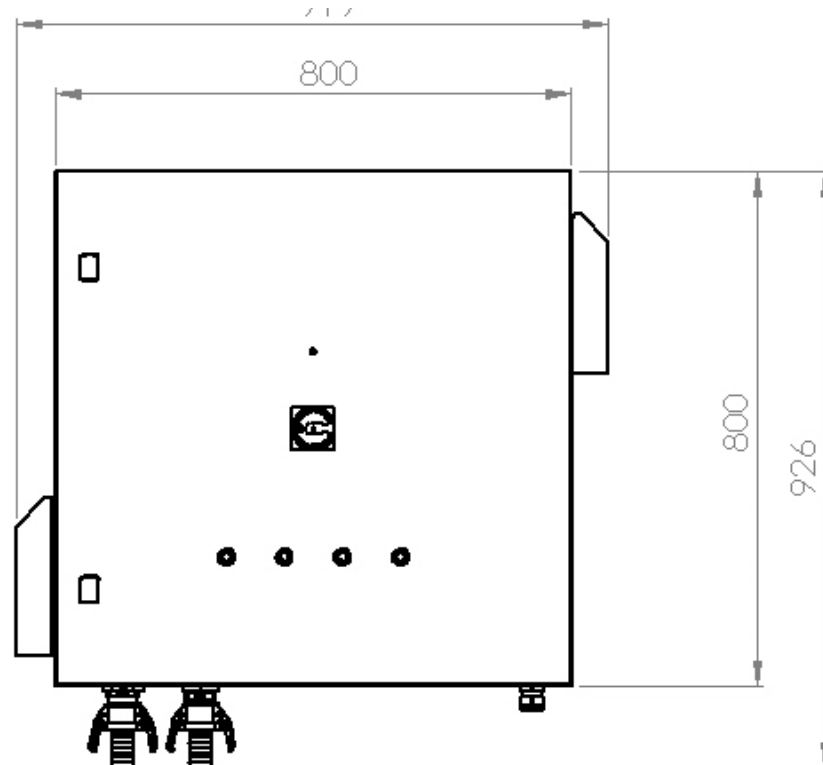
## Technical Representations

### EmiCo. lite with mount



## Technical Representations

### EmiCo. lite without mount





## Technical Specifications

<b>Specifications</b>	
<b>Hardware Specifications - Analyzer</b>	
Dimensions	800 x 800 x 300 mm
Weight	~30 kg
IP protection class	IP67
Ambient temperature	-20 bis +40 °C
Storage temperature	-20 bis +60 °C
Power supply	100-240 VAC / 50 - 60 Hz
Max. Measuring Points	2
Power connection	Fixed connection 230V/16A
Digital connection	1x Ethernet RJ45/1x 5G-Cloudbased
<b>Hardware Specifications - Hood</b>	
<b>1. Gas collecting hood</b>	
Material	Plastic (UV-resistant)
Dimensions	Ø 1175mm x H 457mm
Weight	~13Kg
<b>2. Accessories gas collecting hood</b>	
Retaining rod	Aluminium 35x2,0
Wall mount	Stainless Steel 1.4571
Fastening hood	4 x ropes per Hood
Probe line	2 x hose (NS=32mm) (L=10m)
<b>Measurement Technology</b>	
Technology	NDIR
Sample	Gas
<b>Measuring Range</b>	
N <sub>2</sub> O	0 - 1000 ppm
CH <sub>4</sub>	0 - 1000 ppm
CO <sub>2</sub>	2...4 Vol.-%
O <sub>2</sub>	0...25 Vol.-%
<b>Detection Limit</b>	
N <sub>2</sub> O	<15
CH <sub>4</sub>	<20
CO <sub>2</sub>	<20



# Über Variolytics

Variolytics ist ein Anbieter von Umweltanalytik und KI-Software mit Sitz in Stuttgart, Deutschland. Die Mission von Variolytics besteht darin, mit unseren Technologien ein Katalysator für Veränderungen zu sein. Mit unserem EmiCo System unterstützen wir Kläranlagen bei der Dekarbonisierung ihres Betriebes.

Das Unternehmen wurde 2020 als Spin-off der Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung in Deutschland gegründet. Zu den namhaften Investoren von Variolytics gehören der High-Tech Gründerfonds und der Fraunhofer Technologie-Transfer Fonds. Seit 2023 wird Variolytics auch vom EIC Fond, für Unternehmen mit bahnbrechenden Innovationen unterstützt.



## Gefördert durch

European  
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für Umwelt, Naturschutz, nukleare Sicherheit  
und Verbraucherschutz



# VARIOLYTICS

Making the invisible visible.

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