



## CAIRPOL Air Quality Monitoring Sensors



CairSens© housed in CairNet©

### APPLICATIONS:

- Odour monitoring on WWT plants
- Dynamic pollution mapping
- Ambient air pollution study
- Indoor air quality measurement
- Chronic exposure evaluation
- Individual health survey
- Boundary monitoring

### FEATURES

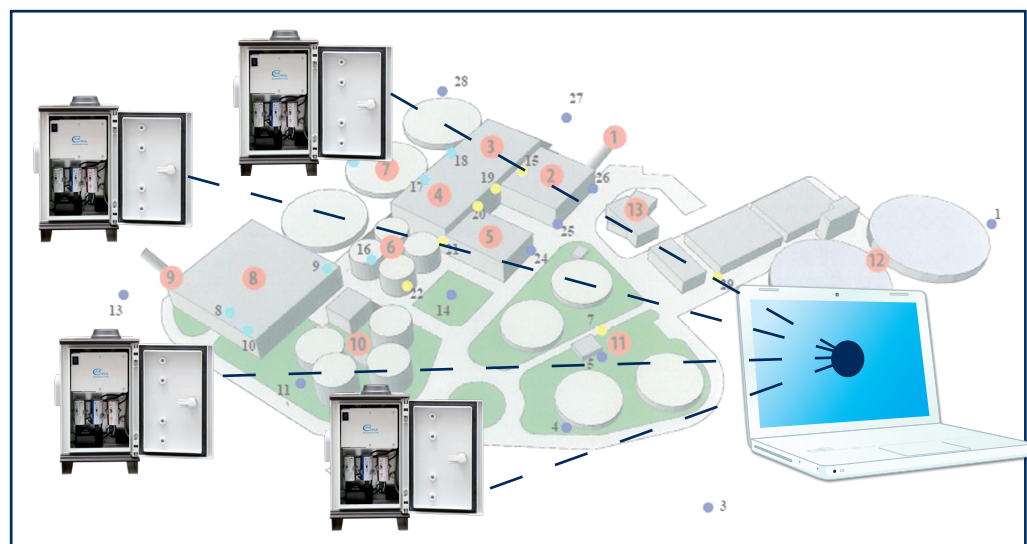
- Simple, reliable, cost effective
- Ppb detection levels
- No maintenance, no need for re-calibration
- Autonomous version (solar panel)
- Immediate operation
- Sensor life: 1 year

Taking into account the effects of increasing air pollution on human health, Cairpol allows new real-time measurement possibilities of pollutants (gas, odour or particulate) even at very low concentrations (ppb).

Cairpol patented technology is used in many industrial applications. One such application is wastewater monitoring, which previously was too costly with conventional monitoring systems.

Now with its compact, autonomous, easy to set up, sensitive and reliable sensors that can be used even in extreme conditions, the communication systems and ultra low power consumption, Cairpol systems can be networked to provide optimal coverage and measurement of air pollution over a vast area from a single computer.

**“Innovative real-time air quality monitoring system for odour monitoring”**



CairNet© and CairMap© software react quickly to optimise the process reducing pollution and controlling odours.

Gases analysed

$\text{NH}_3$

$\text{CH}_4\text{S}$

$\text{O}_3$

$\text{H}_2\text{S}$

$\text{CO}$

$\text{SO}_2$

$\text{PM}$

$\text{VOC}$

$\text{NO}_2$

## KEY BENEFITS

- Sensitivity levels of up to 50-100 times better than current sensors on the market and providing real-time measurement data at a fraction of the cost of reference method analysers
- Cairpol systems can be deployed quickly for fixed and portable measurement applications

Technical Specification

**Internal data logging capacity:** Up to 1 year, depending of the setting.

**Operating time:** 24 to 36 hours when fully charged for USB versions (daily recharge for optimal use)

**Power supply:** 5VDC /200 mA rechargeable by USB via PC or 220V/110V with 5V adaptor (solar panel option)

**Dimensions:** Diameter 32 mm, length 62mm

**Weight:** 55g

**Electric standards:** CEI/UL/CSA N°61010-1: 2008 / EN 61010-1:2001

**Output:** USB or UART (Analog signal on demand)

**Rating:** IP42 (IEC60529)

**Storage condition:** 5 to 20°C,10 to 90% RH, mbar 1013 ± 200 (psi 14,69 ± 2,90)

**Operating condition:** Depending of the sensor, in general -20°C to +45 °C,10 to 90% RH, mbar 1013 ± 200 (psi 14,69 ± 2,90)

Gases:	Ranges: (ppm)
O <sub>3</sub> / NO <sub>2</sub>	0 – 0.25
NO <sub>2</sub>	0 – 0.25
CO	0 –20
H <sub>2</sub> S / CH <sub>4</sub> S	0 –1 / 0 - 20 / 0 - 200
NH <sub>3</sub>	0 - 25
SO <sub>2</sub>	0 –1
nM VOC	0 –16 / 0 –2
PM1, PM2.5, PM10	0 –1 000 µg/m <sup>3</sup>



Measurement Principle

The amperometric sensor consists of three electrodes: the working electrode (anode), the counter electrode (cathode) and the reference electrode. The gas to be analysed is diffused through a permeable membrane towards the sensitive electrode. Depending of the gas, oxydation takes place at the anode, or reduction at the cathode. The electrical signal generated between the two electrodes is proportional to the concentration.



CairTub© with solar panel for boundary monitoring at a WWT plant

Main Options:

CairSens©:

- Ultra low power consumption: <12 mA for gases & <250 mA for PM
- No maintenance, no calibration for 1 Year
- 3 communication ports on-board

CairNet©: A new generation of Plug & Play mini-station

- Protective housing
- 4G/3G/GPRS
- Autonomous using solar panel - for online data acquisition.
- Measures up to 5 gaseous pollutants PLUS particulates (PM)
- Real-time measurement
- 1-minute data sampling
- No more hardware issues: all the data in the Cloud!
- Geo-location of measuring points on interactive map