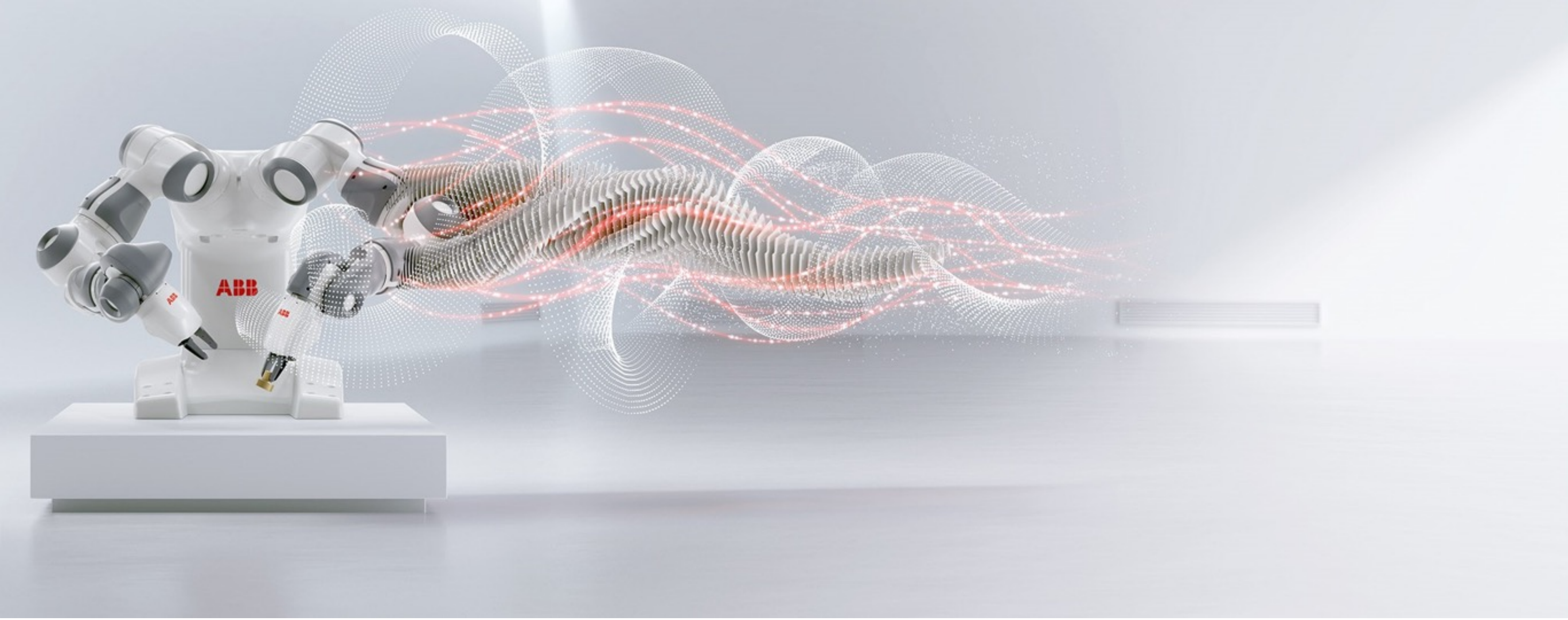


ABB

GENEVA
Eurosoil 2021

Envicontrol
environmental technologies

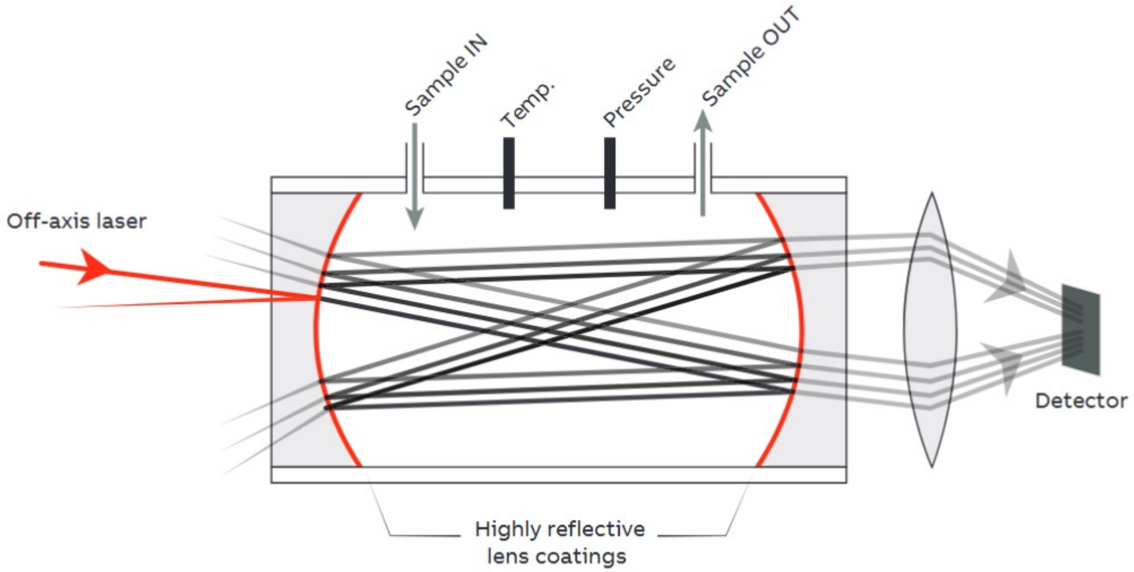
Envicontrol
environmental technologies

- Belgian company created in 1992
- Specialist measurement equipment
- Gases, Particulate Matter, Air, Water
- Industry and Research sector
- ISO 9001 since 2005
- Belgium, the Netherlands, France, Germany
- Support, Training, After-sales
- European repair center for ABB-LGR

ABB

Technology and Main Environmental Applications

- Off-Axis Integrated Cavity Output Spectroscopy (OA-ICOS)
- Technology developed by Los Gatos Research in 2001
- Laser light trapped into a cavity
- Provide effective pathlength of several km
- Off-axis alignment of the beam leads to rugged optical system
- Measures complete absorption peak area
- Mirrors can be cleaned in the field in a few minutes
- Real-time determination of trace gas concentration
- Real-time determination of stable isotope abundance



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Envicontrol environmental technologies

Soil flux measurement

- Measurement of gas exchanges at the soil surface.
- Analyzers allow to perform real-time measurement
- Greenhouse gases released from different locations
- Gas exchanges for N_2O, CO_2, CH_4
- The main advantage is to perform direct in-situ analysis
- Measure the evolution of the concentration in the chamber
- Soil flux chambers (Eosense, LICA, LI-COR)
- Measurements can be also performed in a laboratory

The ABB LGR-ICOS Analyzers

Ultraportable Analyzer

Portable Analyzer

Rackmount Analyzer

Multiport Inlet Unit

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Envicontrol®
environmental technologies

The ABB LGR-ICOS Analyzers

Analyzers	Gas	Weight	Precision	Linear Measurement Ranges
GLA151-N2OCM	N_2O / CO / H_2O	23 kg	N_2O : 0.2 ppb CO : 0.2 ppb H_2O : 40 ppm	N_2O : Up to 4 ppm CO: Up to 4 ppm H_2O : Up to 30 000 ppm
GLA151-N2OM1	N_2O / CH_4 / H_2O	23 kg	N_2O : 0.2 ppb CH_4 : 0.6 ppb H_2O : 20 ppm	N_2O : Up to 4 ppm CH_4: Up to 100 ppm H_2O : Up to 30 000 ppm
GLA131-GGA	CO_2 / CH_4 / H_2O	6.1 kg	CO_2 : 0.12 ppm CH_4 : 0.3 ppb H_2O : 60 ppm	CO_2: Up to 20 000 ppm CH_4: Up to 10 000 ppm H_2O : Up to 30 000 ppm
GLA351-N2OCM	N_2O / CO / H_2O	68 kg	N_2O : 0.02 ppb CO : 0.03 ppb H_2O : 10 ppm	N_2O : Up to 4 ppm CO: Up to 4 ppm H_2O : Up to 30 000 ppm
GLA351-N2OM1	N_2O / CH_4 / H_2O	68 kg	N_2O : 0.05 ppb CH_4 : 0.2 ppb H_2O : 100 ppm	N_2O : Up to 4 ppm CH_4: Up to 100 ppm H_2O : Up to 30 000 ppm

Advantages of ABB Solution

Speed

Fastest measurement
Fast flow applications
Monitor at up to 20Hz

Easy to use

No consumables
No recalibration
No interruptions

Cheaper maintenance

Access to the components
Provide maintenance kits
Field maintenance possible

Technical support

European repair center
Access with TeamViewer
2-year factory warranty

Application Note – Environmental and Research

- Annual methane budgets of sheep grazing systems were regulated by grazing intensities in the temperate continental steppe: A two-year case study.
- Cross-Validation of a Mobile N_2O Flux Prototype (IPNOA) Using Micrometeorological and Chamber Methods.
- Developing a flow through chamber system for automated measurements of soil N_2O and CO_2 emissions.
- Methane fluxes and the functional groups of methanotrophs and methanogens in a young Arctic landscape on Disko Island, West Greenland.
- Nearing the cold-arid limits of microbial life in permafrost of an upper dry valley, Antarctica.
- Revisiting the partitioning of net ecosystem exchange of CO_2 into photosynthesis and respiration with simultaneous flux measurements of $^{13}CO_2$ and CO_2, soil respiration and a biophysical model, CANVEGP.
- Short-term drought response of N_2O and CO_2 emissions from mesic agricultural soils in the US Midwest.
- Validation and Application of Cavity-Enhanced, Near-Infrared Tunable Diode Laser Absorption Spectrometry for Measurements of Methane Carbon Isotopes at Ambient Concentrations.
- Non-growing season soil CO_2 efflux patterns in five land-use types in northern China.
- Measuring CO_2 and CH_4 with a portable gas analyzer: Closed-loop operation, optimization and assessment.