

Improving monitoring
of carbon capture,
utilisation and
storage facilities

LIBRA™ $\delta^{13}\text{C}\text{O}_2$
Extractive
Gas Analyser

Why MIRICO

At MIRICO, we have put together a world-class team of scientists who are focused on delivering the most reliable technology for gas measurements across multiple industries. MIRICO's technology provides new capabilities, enabling a wider range of measurements in challenging environments.

Introducing the unique Laser Dispersion Spectroscopy (LDS)

At the heart of all MIRICO products is a revolutionary new technology - Laser Dispersion Spectroscopy (LDS) developed by the dedicated scientists at MIRICO.

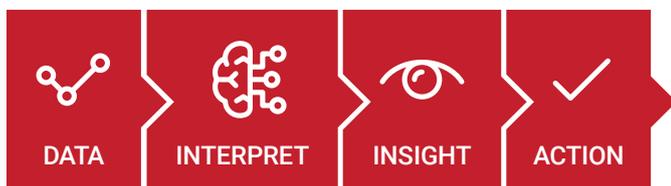
The technology provides real-time monitoring of gas composition, operating specifically in the mid infra-red spectral region and enables the collection and interpretation of gas concentration data in almost all application settings.

This data enables you to gain insights based on accurate continuous reporting, even in challenging gas matrices, corrosive or other foreign gas species.

This new level of intelligence enables carbon capture, utilisation and storage (CCUS) operators to optimise their CCUS processes and reduce the environmental impact from their operations.

Advantages of Laser Dispersion Spectroscopy

- High resolution covering a wide dynamic range of gas concentration
- Reliably works with almost all gas matrices
- High sensitivity with long term stability



What sets MIRICO's LDS system apart?

The patented LDS technology delivers highly sensitive, reliable gas analysis even in the presence of corrosive gasses. Together with the wide dynamic range, highly linear performance is achieved avoiding signal saturation when large concentration spikes occur.

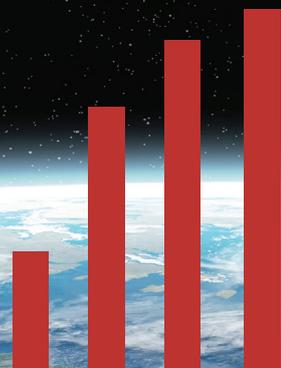
LDS delivers reliable measurements with long term stability even in challenging gas mixtures containing interfering gas species.

Advantages of LIBRA™ range

- Designed for rugged industrial use
- Dedicated gas sensitivity providing real-time data
- Easily installed with autonomous operation and remote management



MID
INFRA
RED
INSTRUMENTATION
COMPANY



Improved insight from real-time measurement

Case Study: Monitoring $\delta^{13}\text{CO}_2$ isotope variation at a geothermal carbon capture and storage plant

MIRICO measured the $\delta^{13}\text{CO}_2$ isotopic variation in CO_2 gas at a thermal extraction well which was using the Carbfix process to mineralise carbon dioxide from the atmosphere. The gas samples extracted from the well had high levels of hydrogen sulfide and hydrogen, 30% and 10% respectively.



Figure 1: LIBRA™ gas analyser measuring $\delta^{13}\text{CO}_2$ isotope variation

Key outputs:

- Real-time continuous isotopic ratio measurements in a highly corrosive gas mixture
- A stable measurement of $\pm 1\%$ was achieved over 6 days when the gas sampling system was stable
- Provided valuable insight into the impact of fractionation in the well gas sampling system with isotopic variations of up to 20% observed during refreshing of the sample chamber

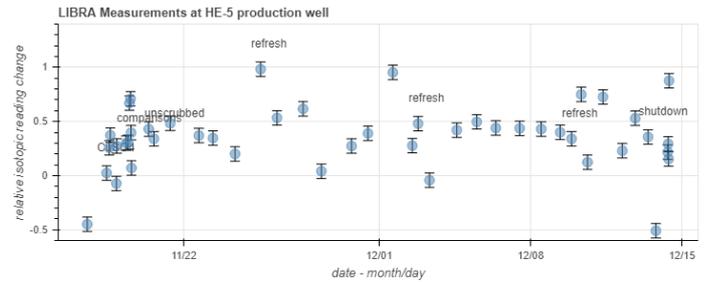


Figure 2: Change in $\delta^{13}\text{CO}_2$ isotope value during a 4 week measurement

Rugged system with flexible configurations for different applications

By working with MIRICO's experts you can design the optimal solution for your particular needs.

Solutions available for:

- Carbon capture, utilisation and storage
- Environmental research
- Breath analysis
- Volcanic gas analysis



Transformational Gas Measurement



If you are looking to improve your understanding of carbon capture, utilisation and storage, **MIRICO** is offering free consultations to help you design the optimal set-up.



Transformational Gas Measurement

Contact Us

Call +44 (0)1235 612 400 or book a session with one of our specialists at www.mirico.com



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