Global Analyser Solutions

Carbon Capture, Utilisation & Storage gas analyser

EV400 | 415

- For assuring CO_2 purity
- Combined GC and FTIR methodology
- 19" rack size; small footprint,
- Fast results (< 3 minutes)
- Highly sensitive (LOD ppm-ppb range)

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Carbon Capture, Utilisation & Storage gas analyser

CCUS (Carbon Capture, Utilisation and Storage) is considered a critical technology for achieving significant reductions in CO_2 emissions, particularly in sectors that are difficult to decarbonise, such as heavy industry and fossil fuel-based power generation. It is also seen as an important component of strategies to achieve net-zero emissions and mitigate the impacts of climate change. Understanding and managing impurities in CO_2 is crucial for the efficiency, safety, cost-effectiveness, and environmental compliance of CCUS projects.

Principle of operation

Impurities in carbon dioxide are analysed by GC and FTIR combined methodology. Figure 1 shows the analytical channels used:

Channel 1 analyses hydrogen, argon, oxygen, nitrogen and hydrogen sulfide, using Pulsed Discharge Detector (PDD). Channel 2 measures hydrocarbons, amine and glycol, using FID detection.

Trace GC 1600 or CompactGC$^{4.0}$ with programmable oven can be used for these channels.

All remaining components, including water, ammonia and HCl are analysed using FTIR

Specifications

- GC1: Thermo Trace GC 1600 or CompactGC$^{4.0}$ with four diaphragm gas switching valves (rotary valves are optional), PDD and FID, 3 capillary columns
- MAX-IR FTIR
- Run time: 3 minutes, depending on analysed components
- Limits of detection: see figure 2 and 3

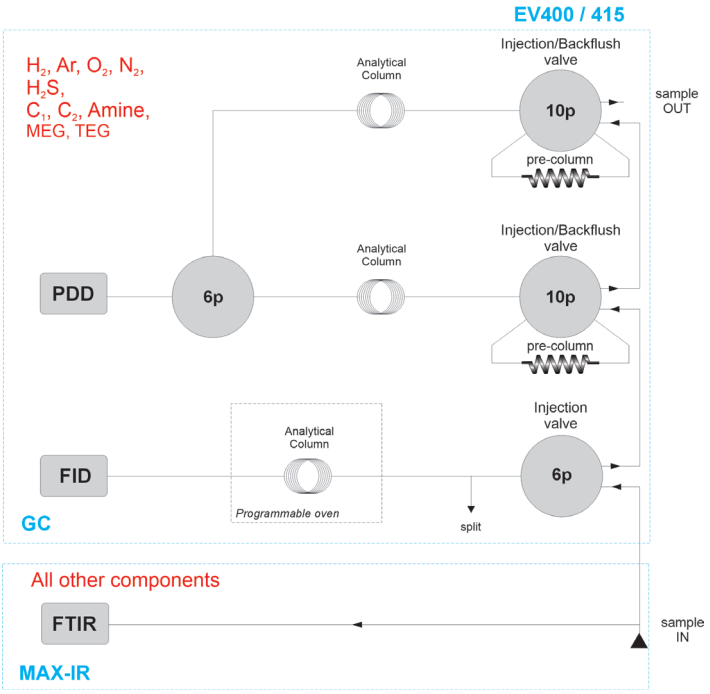

Figure 1 Diagram CCUS analyser

FTIR		
Gas	unit	LOD (3σ)
Acetaldehyde	ppm	0.002
Ammonia	ppm	0.01
Carbon dioxide	%	n/a
Carbon monoxide	ppm	0.07
Ethanol	ppm	0.05
Formaldehyde	ppm	0.09
Methane	ppm	n/a
Methanol	ppm	0.07
Nitric oxide	ppm	0.05
Nitrogen dioxide	ppm	0.003
Nitrous oxide	ppm	0.10
Water	ppm	0.41

Figure 2 Analysed components and LODs on FTIR

TraceGC 1600 or CompactGC$^{4.0}$			
Gas	unit	LOD (3*noise)	Detector
Hydrogen	%	< 0.1	PDD
Argon	ppm	< 10	PDD
Oxygen	ppm	< 10	PDD
Nitrogen	ppm	< 10	PDD
Methane	ppm	< 10	PDD
Hydrocarbons *	ppm	< 1 *	FID
Sulphur components	ppm	< 0.1	PDD
Amines *	ppm	< 1 *	FID
* Dependant on component			

Figure 3 Analysed components and LODs on GC

Ordering information EV40X - ABCDE | CCUS analyser based on Trace GC 1600 and MAX-IR FTIR
ER415 - ABCDE | CCUS analyser based on CompactGC$^{4.0}$ and MAX-IR FTIR

code X	0	1	2	3
GC model, power	1600, 230V	1610, 230V	1600, 115V	1610, 115V

For the selection of options ABCDE (e.g. valve type and passivation, pump and vacuum sampling, rotameter and sample connections, pressure and moisture sensors, hydrogen sensor for safety shut-off, power plug type and more), see the options table in the order guide.

About GAS

Global Analyser Solutions provides GC & GC-MS solutions for Energy, Refinery, Chemical and Environmental markets. Our analysers address a broad spectrum of measuring requirements with high precision and reliability. Please reach out for more information on our website. www.gassite.com