Global Analyser Solutions

Electrolyser gas analyser

- Analysing O_2 in bulk H_2 and H_2 in bulk O_2
- Robust analyser
- Fast: runtime < 1 minute
- Small 19" footprint

Get ready for ***tomorrow's analytics***

Find out more on **www.gassite.com**

ER215v1

Electrolyser Gas Analyser

An electrolyser utilises electricity to split water into hydrogen and oxygen. Through electrolysis, hydrogen and oxygen gases are generated; hydrogen plays an important role in the energy transition, and oxygen can be captured for industrial and medical use.

Principle of operation

Figure 1 shows a two-channel gas analyser for measuring ppm to % levels of hydrogen in oxygen and oxygen in hydrogen.
Both channels use a Thermal Conductivity Detector (TCD). Helium or hydrogen serve as carrier gas for oxygen analysis, while nitrogen or argon is used for hydrogen analysis. Backflush columns prevent water from entering the analytical columns and affecting separation.
The analyser can have separate or combined inlets for anode and cathode gases. Nitrogen can also be measured, with optional configurations for argon or water analysis.

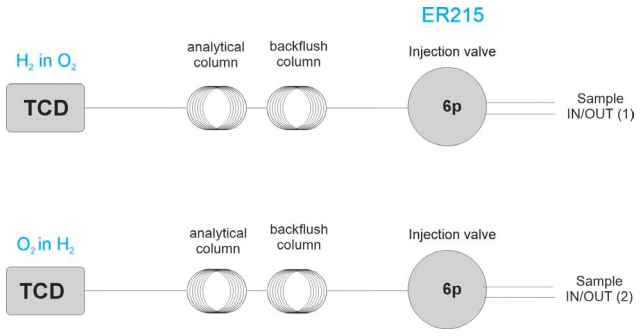

Figure 1 Electrolyser gas analyser

Instrument configuration

- GAS CompactGC$^{4.0}$ with dual TCD
- Four capillary columns
- Heated valve oven with two 6-port diaphragm valves (rotary valves optional)
- Chromeleon CDS data system
- Separate or combined sample inlets for both channels
- Runtime: < 1 minute
- Limit of detection: < 5 ppm

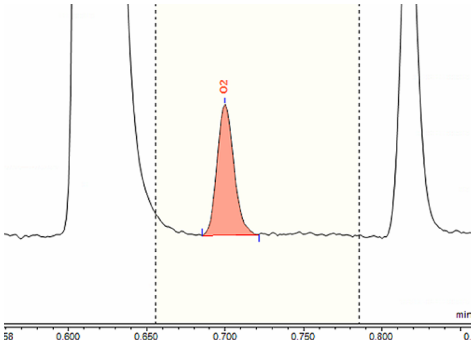

Figure 2 235 ppm O_2 in H_2

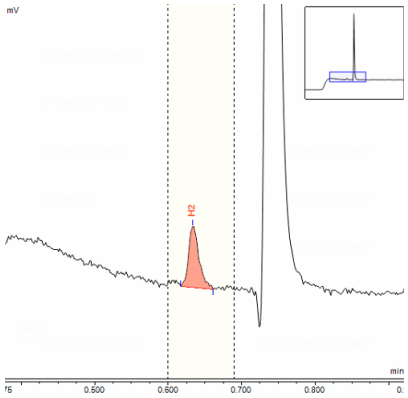

Figure 3 Low ppm H_2 in O_2

Limit of detection

The analyser provides low ppm limits of detection using thermal conductivity detectors. When lower levels need to be analysed, the Pulsed Discharge Detector (PDD) is available, offering down to ppb level detection. When concentration levels vary from ppb to %, both TCD and PDD are offered.

24/7 operation

The instrument is designed for continuous 24/7 operation. Robust diaphragm valves are used for high uptime and low operational costs. The use of backflush columns is important in achieving continuous unattended operation.

Repeatability

A	B	C	D	E
Inj. No.	Injection Name Selected Peak:	Type	Ret.Time min TCD_Ch2 H2	Amount % TCD_Ch2 H2
34	*TM2 rep*	*Unknown*	*0.635*	*1.0024*
35	TM2 rep	Unknown	0.635	0.9979
36	TM2 rep	Unknown	0.635	0.9992
37	TM2 rep	Unknown	0.633	1.0020
38	TM2 rep	Unknown	0.633	1.0055
39	TM2 rep	Unknown	0.633	1.0073
40	TM2 rep	Unknown	0.635	1.0013
41	TM2 rep	Unknown	0.635	0.9974
42	TM2 rep	Unknown	0.633	1.0033
43	TM2 rep	Unknown	0.633	1.0084
44	TM2 rep	Unknown	0.633	1.0082
Maximum			0.635	1.0084
Average			0.634	1.0030
Minimum			0.633	0.9974
Standard Deviation			0.001	0.0040
Relative Standard Deviation			0.11%	0.40%

Figure 4 Repeatability of analysis of hydrogen in oxygen

Ordering information ER215 - ABCDE

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

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