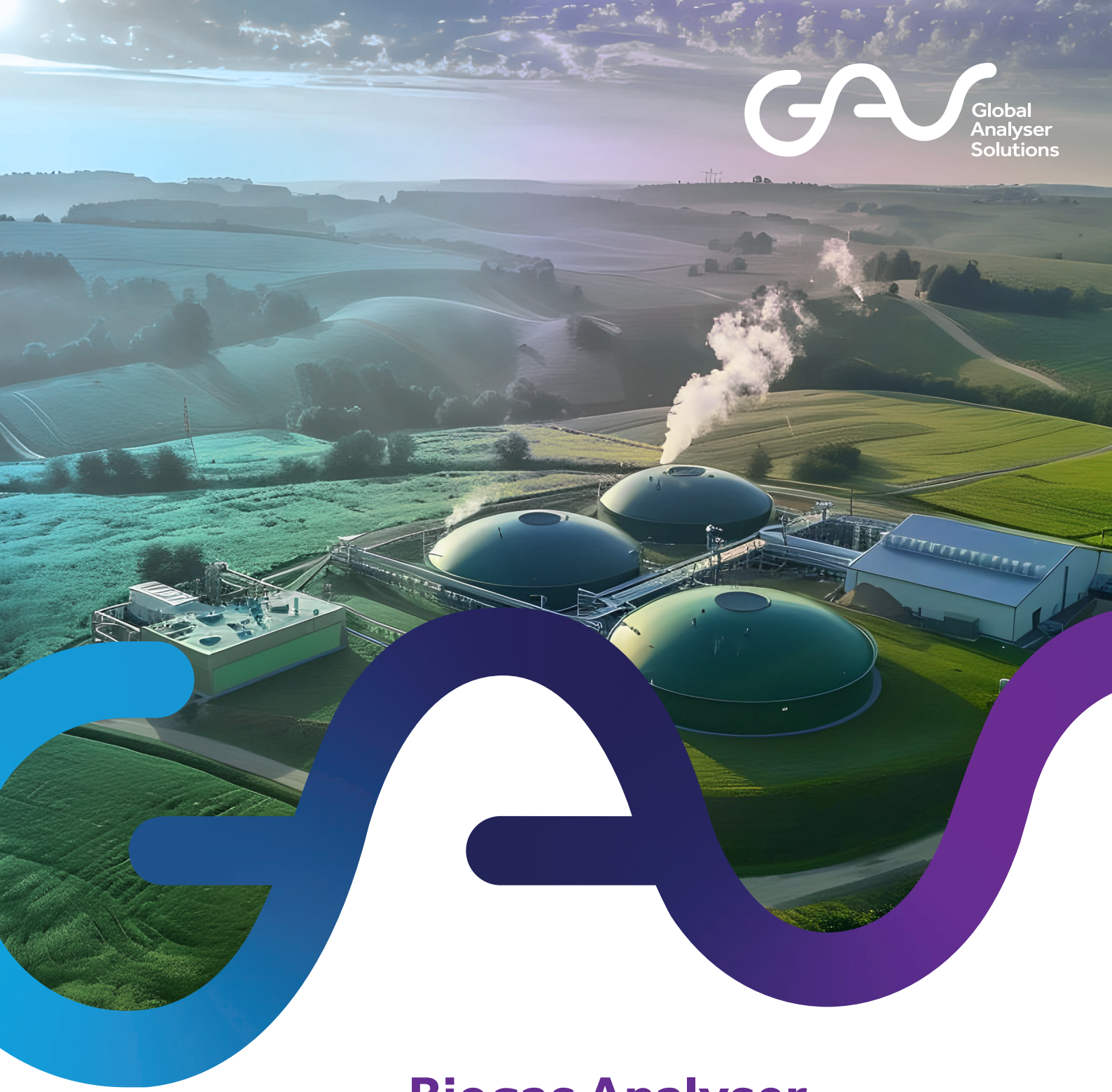

Global Analyser Solutions

Biogas Analyser

ER315

- For permanent gases, hydrocarbons and H_2S in biogas
- Robust
- Fast: runtime < 1 minute
- 19" form factor

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Biogas Analyser

The GAS Biogas Analyser complies with several international standards, including ASTM D1945, D1946, ISO 6974, 6975, 6976, and GPA 2261, 2177, 2186, and 2286.

Principle of operation

The Biogas Analyser based on the CompactGC[4.0], features two analytical channels:

Channel 1:
Analysis of hydrogen, oxygen, nitrogen, methane, and carbon monoxide, using helium or argon as the carrier gas.

Channel 2:
Analysis of carbon dioxide, C_2 isomers, and hydrogen sulphide, using helium as the carrier gas.

Both channels are equipped with a Thermal Conductivity Detector (TCD). Channel 1 includes a backflush option with a precolumn to prevent higher-boiling components from entering the analytical column.

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
- Runtime: < 2 minutes
- Limit of detection: < 5 ppm
- Optional: Calorific value calculation pack

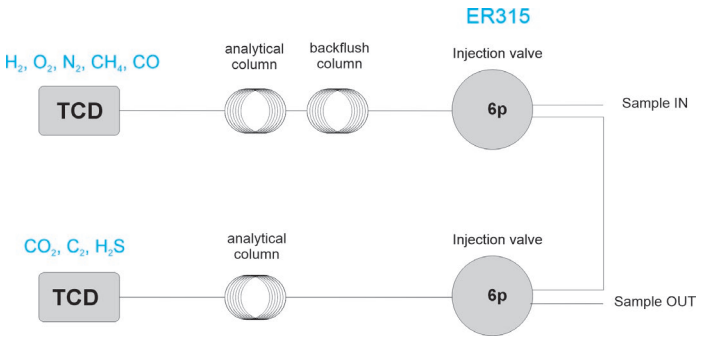

Figure 1 Diagram ER315 analyser

Results

Figure 2 shows the chromatogram of both channels, while figure 3 and 4 report the repeatability.

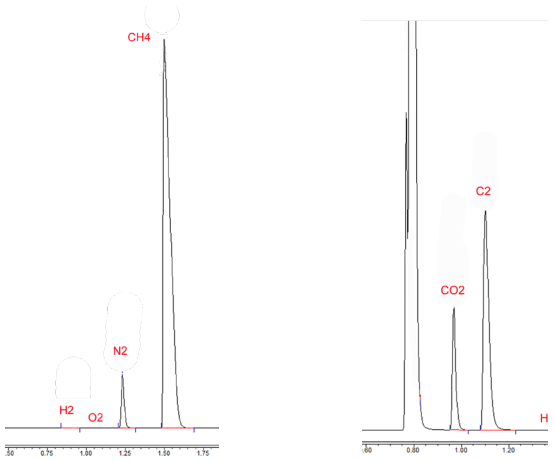

Figure 2 Chromatograms channel 1 & 2

Inj. No.	Injection Name / Selected Peak:	Ret.Time min TCD_Ch_3 H2	O2	N2	CH4	Area mV*min TCD_Ch_3 H2	O2	N2	CH4
96	tm1 inclu ssr0 for 6 sec	0.820	0.963	1.253	1.559	0.00673	0.05408	0.05680	0.04997
97	tm1 inclu ssr0 for 6 sec	0.820	0.963	1.253	1.559	0.00674	0.05413	0.05689	0.04994
98	tm1 inclu ssr0 for 6 sec	0.820	0.963	1.253	1.559	0.00674	0.05411	0.05682	0.04996
99	tm1 inclu ssr0 for 6 sec	0.820	0.963	1.253	1.559	0.00672	0.05414	0.05689	0.04999
100	tm1 inclu ssr0 for 6 sec	0.821	0.963	1.254	1.559	0.00671	0.05409	0.05681	0.05003
101	tm1 inclu ssr0 for 6 sec	0.820	0.963	1.253	1.559	0.00673	0.05412	0.05685	0.05000
102	tm1 inclu ssr0 for 6 sec	0.820	0.963	1.253	1.559	0.00674	0.05410	0.05684	0.04998
103	tm1 inclu ssr0 for 6 sec	0.820	0.963	1.253	1.559	0.00674	0.05416	0.05683	0.04995
104	tm1 inclu ssr0 for 6 sec	0.821	0.963	1.254	1.559	0.00672	0.05406	0.05683	0.05000
105	*tm1 inclu ssr0 for 6 sec*	*0.821*	*0.963*	*1.254*	*1.559*	*0.00673*	*0.05410*	*0.05686*	*0.05001*
Maximum		0.821	0.963	1.254	1.559	0.00674	0.05416	0.05689	0.05003
Average		**0.820**	**0.963**	**1.254**	**1.559**	**0.00673**	**0.05411**	**0.05684**	**0.04998**
Minimum		0.820	0.963	1.253	1.559	0.00671	0.05406	0.05680	0.04994
Standard Deviation		0.000	0.000	0.000	0.000	0.00001	0.00003	0.00003	0.00003
Relative Standard Deviation		**0.04%**	**0.03%**	**0.03%**	**0.02%**	**0.15%**	**0.05%**	**0.05%**	**0.06%**

Figure 3 Repeatability channel 1

Inj. No.	Injection Name / Selected Peak:	Ret.Time min TCD_Ch_2 CO2	C2=	C2-	Area mV*min TCD_Ch_2 CO2	C2=	C2-
187	tm1 new inj valve after bake	1.002	1.070	1.144	0.02064	0.02128	0.02271
188	tm1 new inj valve after bake	1.001	1.069	1.143	0.02066	0.02128	0.02272
189	tm1 new inj valve after bake	1.002	1.070	1.144	0.02065	0.02129	0.02272
190	tm1 new inj valve after bake	1.001	1.069	1.143	0.02066	0.02128	0.02270
191	*tm1 new inj valve after bake*	*1.001*	*1.069*	*1.143*	*0.02067*	*0.02129*	*0.02271*
192	tm1 new inj valve after bake	1.001	1.069	1.143	0.02065	0.02127	0.02269
193	tm1 new inj valve after bake	1.001	1.069	1.143	0.02067	0.02128	0.02270
194	tm1 new inj valve after bake	1.001	1.069	1.143	0.02066	0.02127	0.02270
195	tm1 new inj valve after bake	1.001	1.069	1.143	0.02066	0.02130	0.02270
196	tm1 new inj valve after bake	1.001	1.069	1.143	0.02066	0.02130	0.02273
Maximum		1.002	1.070	1.144	0.02067	0.02130	0.02273
Average		**1.001**	**1.069**	**1.143**	**0.02066**	**0.02128**	**0.02271**
Minimum		1.001	1.069	1.143	0.02064	0.02127	0.02269
Standard Deviation		0.001	0.001	0.000	0.00001	0.00001	0.00001
Relative Standard Deviation		**0.05%**	**0.05%**	**0.02%**	**0.04%**	**0.05%**	**0.05%**

Figure 4 Repeatability channel 2

Ordering information ER315 - ABCDE

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