Specifications

GC HARDWARE

Standard Methods: GPA 2261, 2177, 2186, 2286; ISO 6974; ASTM D1945 and D1946.

Configuration: 2 channel instrument based on Thermo TRACE 1300 GC.

Optional: Liquid sample valve, additional channel for helium/hydrogen, stop flow valve, back pressure regulator, stream selection valves.

Sample tubing: Sulfinert® tubing for inert sample path (H_2S analysis).

Application: Custom configured analyser for the analysis of gaseous and liquefied natural gas samples, containing hydro carbons, permanent gases and sulfur (H_2S).

Sample requirements: See our pre-installation guide for additional requirements.

Analysis Time: 9 minutes up to C_8; 20 minutes up to C_{20}.

Minimum detectability: Better than 0.01% for all individual components. H_2S: 0.05%.

Dynamic Range: Four decades for all components.

Accuracy: Dependant on external calibration and repeatability.

Repeatability: < 0.1 % RSD for CH_4. (See tabel on page 3).

SOFTWARE Chromeleon, ChromCard, OpenLab and EZChrom Elite/ChromQuest datasystems.

BTU calculation: Calculation of calorific value (sup. and inf.), mean molecular weight, compression factor, relative density, Wobbe index, and others.

For more information:

APPLICATION NOTE 202WA1012F

Natural Gas Analysers

GPA 2261, 2177, 2186, 2286
ISO 6974
ASTM D1945, D1946

G·A·S offers custom configured GC analysers for complex separations, data processing and reporting. We have over 35 years of experience in designing and building turnkey analysers for many application fields. We invite you to take advantage of our latest hardware, software and column technologies to accomplish the best possible results. Our analysers are designed to meet many accepted standard methods (like GPA, ASTM, UOP, ISO, etc) in the Oil and Gas industry. The efficient hardware configurations are based on proven GC technology, resulting in robust instruments with an optimal return on investment.

Accurate natural gas analysis is important for many companies, from large gas suppliers to small end users. Since normally large volumes of natural gas are involved, small differences in BTU value have a large effect on profits.

Many NGA configurations

Natural gas analysers are used in many different configurations, from single valve/detector instruments to complex multi-channel analysers. The optimal design depends on the number of components to be analysed, the required accuracy and the analysis time. Our analysers comply with standardised methods from GPA (2261, 2177, 2186, 2286), ISO (6974) and ASTM (D1945 and D1946) .

NGA 2A Extended

Configuration NGA 2A Extended is often used and covers many NGA application areas and standardised methods. It is a 2-channel configuration with TCD and FID detection. The TCD channel analyses CO_2, C_2, H_2S, (H_2), O_2, N_2 , CH_4 and CO. On the FID channel hydrocarbons from C_1 up to C_{20} and higher are analysed, including baseline separation of neo-pentane. See the chromatograms shown on the right page. The instrument is equipped with an independent heated valve oven on the right side of the instrument, with robust diaphragm valves inside which offer extended lifetime compared to rotary valves. Micro-packed columns (for TCD channel) are located in the valve oven, while a capillary column (for FID channel) is placed in the GC oven with temperature programming, allowing optimal settings for both channels.
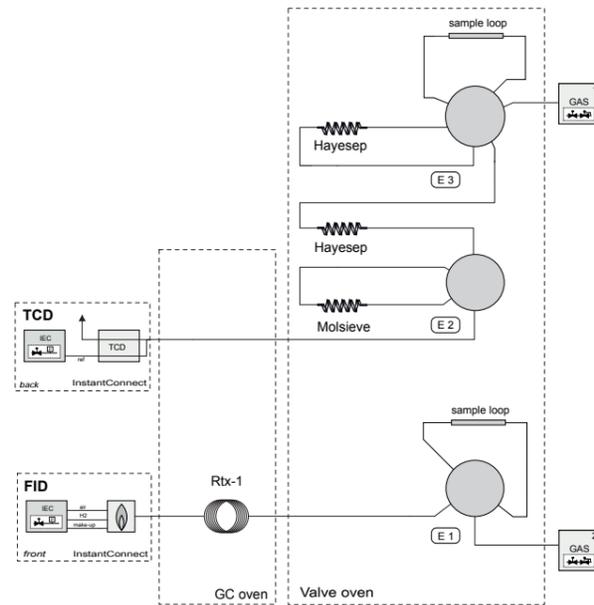

Diagram NGA2A extended

NGA 2A Extended analyser based on
Thermo GC TRACE 1310

Robust process diaphragm valve
for extended lifetime

InstantConnect Injector and
Detector technology

Results

DATA PROCESSING AND BTU REPORTING

The Natural Gas Analyser is available with Chromeleon, ChromCard, OpenLab and EZChrom Elite/ChromQuest datasystems, for comprehensive datahandling and instrument control. Dedicated calculation modules are available for calculation of calorific value and other parameters like Gross heating value, density and compression factor.
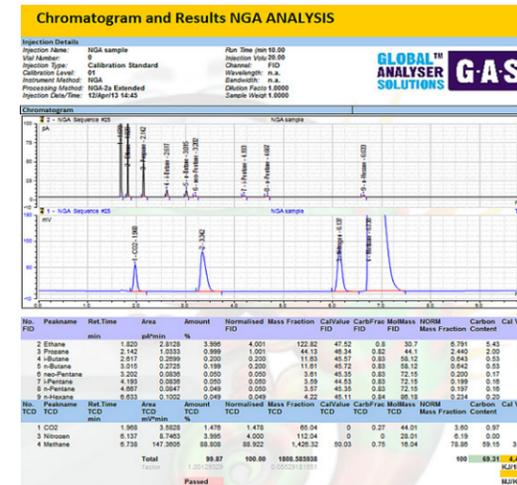

Calorific value calculation report

NGA OPTIONS

- Liquid sample valve for gas liquids.
- Additional channel with carrier gas argon or nitrogen for more accurate helium and hydrogen analysis.
- Stop flow valve or back pressure regulator to control the pressure in the sample loop (precise and repeatable sample volume).
- Stream selection valve for analysing different samples and
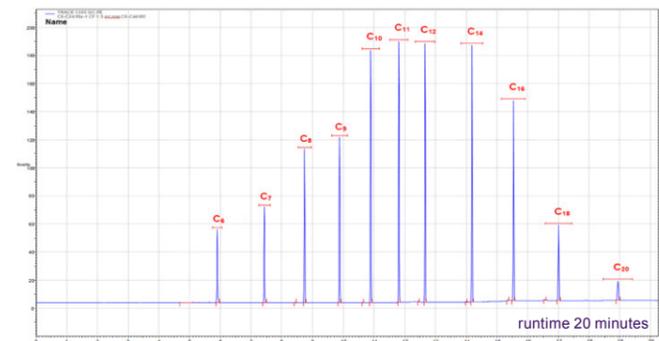
OTHER CONFIGURATIONS

- NGA3: single detector instrument (TCD) for analysing CO_2, H_2S, (H_2), O_2, N_2 , CO, C_1-C_5 and C_6+.

- CompactGC: Robust NGA on a small footprint with 2 minutes runtime.
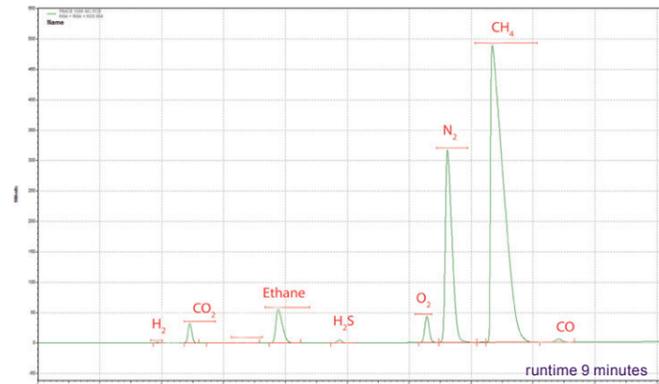
chromatogram TCD channel
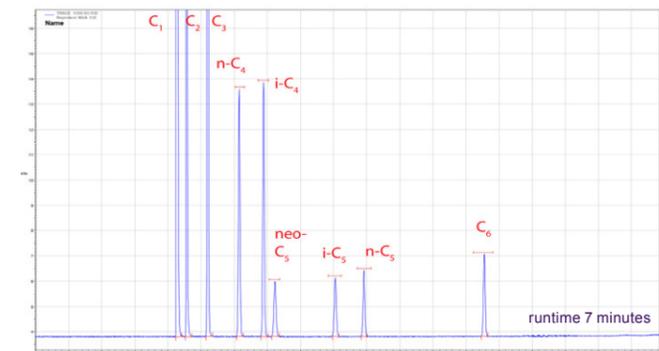
chromatogram FID channel, C_1- C_6

chromatogram FID channel, up to C_{20}

TRACE 1300 GC-TCD Sample ID	CO2 Area	Ethane Area	Nitrogen Area	Methane Area
Reprotest NGA 111	2226454	5898353	5345064	90507939
Reprotest NGA 112	2217993	5902994	5346925	90445635
Reprotest NGA 113	2215965	5903676	5346602	90526422
Reprotest NGA 114	2227435	5904121	5345091	90517862
Reprotest NGA 115	2213580	5897482	5346060	90501697
Reprotest NGA 116	2217296	5901460	5349411	90488306
Reprotest NGA 117	2222737	5903879	5349656	90549145
Reprotest NGA 118	2219658	5908502	5350448	90595649
Reprotest NGA 119	2223410	5902305	5351921	90504111
Reprotest NGA 120	2217703	5904050	5353904	90638117
Reprotest NGA 121	2225062	5898589	5345321	90599110
Reprotest NGA 122	2219024	5902849	5351045	90574361
Reprotest NGA 123	2224970	5902603	5350286	90568154
Reprotest NGA 124	2226904	5901536	5349733	90598430
Reprotest NGA 125	2225668	5904325	5345351	90531033
Reprotest NGA 126	2232354	5907475	5351045	90639410
Reprotest NGA 127	2224065	5903110	5350234	90640979
Reprotest NGA 128	2219309	5904037	5352404	90670039
Reprotest NGA 129	2216183	5913463	5352165	90560228
Reprotest NGA 130	2221801	5909808	5346745	90588078
Min:	2213580	5897482	5345064	90445635
Max:	2232354	5913463	5353904	90670039
Mean:	2221734	5903696	5348926	90562235
Std Dev:	4782	3839	2770	59659
%RSD:	0.22	0.07	0.05	0.07

accurate quantitative results