PGA specifications:

Standardised method: ASTM D1946, D2504, D2505 (permanent gases)
UOP 603 (CO/CO2 analyser)

Configuration: 1 channel instrument with gas injection and TCD detection

Optional:
- FID detector for improved sensitivity for hydrocarbons
- Methaniser-FID option for low ppm/ppb CO-CO_2 detection
- Addtional channel for H_2, using second TCD and Ar or N_2 for carrier gas
- Additional channel for hydrocarbons up to C_8, C_{12} or C_{20}, depending on used capillary column; FID detection
- Additional channel for low ppm / ppb Sulfur detection
- Sample stop flow valve for accurate results
- Selector valve for multiple stream analysis

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

Application: Custom configured analyser for the analysis of gaseous samples containing permanent gases. The instrument is factory tuned for the specific application intended

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

Analysis Time: < 10 minutes

Minimum detectability: 50 ppm or better (TCD) depending on sample loop volume and separation

Dynamic Range: Four decades for all components

Accuracy: Better than 1 % RSD

For more information:

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G·A·S is an INTERSCIENCE company

G·A·S is the preferred solution partner of Thermo SCIENTIFIC

GLOBAL™ ANALYSER SOLUTIONS G·A·S

APPLICATION NOTE 203WA1301A

Permanent Gas Analyser
CO - CO_2 Analyser

ASTM D1946,
D2504,
D2505
UOP 603

Global Analyser Solutions 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 achieve the best possible results. Our analysers are designed to meet many accepted standard methods (like ASTM, UOP, ISO, etc) in the Oil and Gas industry. The efficient hardware configurations are based on proven GC technology, resulting in rigid instruments with an optimal return on investment.
The Permanent Gas Analyser (PGA) is the customised solution for analysing permanent gases, hydrocarbons and sulfur components in several gas matrices.

Picture 1. PGA based on GC 1310 with valve oven

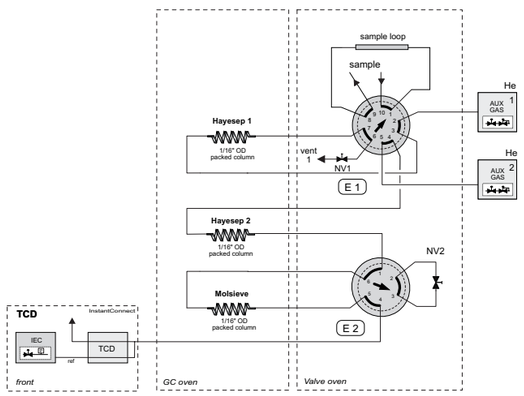


Diagram 1: Permanent Gas Analyser (PGA) schematic diagram

Permanent Gas Analyser

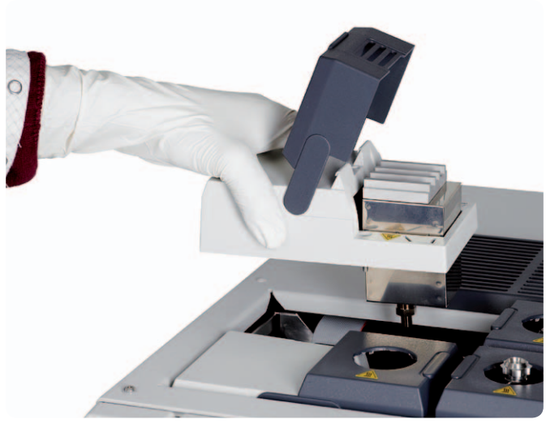
The G·A·S Permanent GAS Analyser (PGA) is based on Thermo Trace 1300/1310 GC with unique InstantConnect injector and detector module technology. The user can exchange modules in minutes, for high uptime and low maintenance costs.

Analysed Components

Diagram 1 shows the PGA principle: **H_2, O_2, N_2, CH_4** and **CO** are analysed on Molsieve column, while **CO_2, Ethylene, Ethane, Acetylene** and **H_2S** are analysed on column Hayesep 2. **COS** can be analysed as well. Column Hayep 1 backflushes C_3+ components to vent.

High Quality Valve Oven

The PGA is equipped with a high quality valve oven with temperature range from 40 to 250◦C.



Picture 2. InstantConnect TCD technology

Robust diaphragm valves inside

The PGA uses robust diaphragm valves with internal purge. These valves offer 5 times longer lifetime, reducing maintenance cost in that way.

G.A.S diaphragm valve

H_2 analysis

The PGA uses Helium for carrier gas; Hydrogen is therefore detected with reduced sensitivity and linearity. An optional second channel is available with N_2 or Ar carrier gas for optimal H_2 analysis.

Hydrocarbon analysis

An optional channel with FID detection is available for extended hydrocarbon analysis up to C_8, C_{20} or higher, depending on required separation. The columns for permanent gas analysis are mounted in the valve oven in that case, allowing an optimal temperature program for hydrocarbon analysis using the GC column oven.

Sulfur component analysis

The standard PGA configuration offers H_2S detection with TCD detection level (COS can be included). An additional channel with FPD or PFPD detection is offered for low ppm/ppb Sulfur analysis. Contact us for more information.

Low ppm CO / CO_2 analyser - UOP 603

Adding parallel Methaniser/FID detection allows low ppm analysis of CO and CO_2 in combination with the other permanent gases. In case of analysis of ppm CO, CH_4 and CO_2 only, the TCD from diagram 1 is replaced by methaniser/FID.

Multistream analyser / stop flow sampling

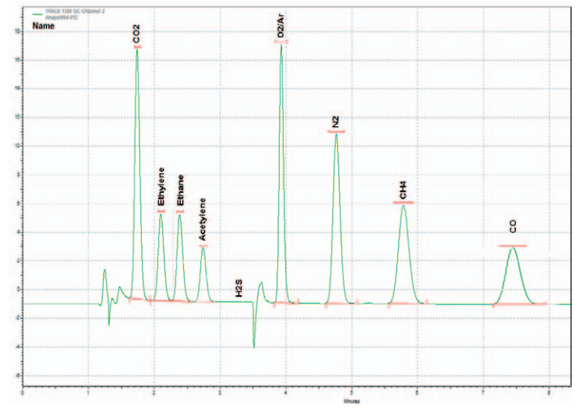
For analysing multiple streams (from 4 up to 16), a multi-stream selector valve is offered, allowing unattended sampling. Other options are stop flow sampling for high quantitative results or vacuum sampling in case of low sample pressure or low sample volume available.

Chromatography Data Systems

Powerful, easy to use data systems offer a high level of automation and reporting . The PGA is available with Chromeleon, ChromCard, OpenLab, or ChromQuest.

PGA on CompactGC

For fast analysis of permanent gases in only 60 seconds, the CompactGC is the right choice. Robust diaphragm valves are used in a compact 19" industrial standard enclosure.



Chromatogram 1: Permanent gases with TCD detection

	CO2 Area	O2/Ar Area	N2 Area	CH4 Area
	940359	828079	884555	779277
	939330	828601	885834	775493
	935071	827641	881940	772190
	941345	831751	886659	778352
	936345	829598	882438	776315
	933830	827408	884447	772634
Min:	933830	827408	881940	772190
Max:	941345	831751	886659	779277
Mean:	937713	828846	884312	775710
Std Dev:	3057	1623	1846	2897
%RSD:	0.33	0.20	0.21	0.37

Table 1: Excellent RSDs (at 1% concentration levels)

Picture 3. PGA based on CompactGC

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