

**Robust  
Highest uptime: > 99%  
Low gas consumption  
Optional 4<sup>th</sup> analysis channel**



APPLICATION NOTE 205WA0813F

# Fast Refinery Gas Analyser

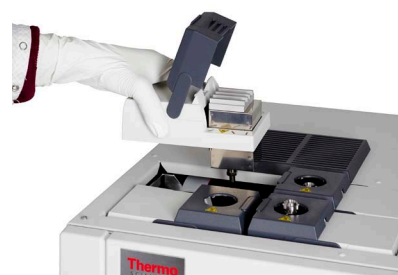
UOP 539  
DIN 51666  
ASTM D2163  
D2505

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. Our analysers are designed to meet many accepted standard methods (like GPA, ASTM, UOP, ISO, etc.) in the Oil and Gas industry. The efficient configurations are based on proven GC technology, resulting in robust instruments with an optimal return on investment.

The G-A-S Fast Refinery Gas Analyser offers accurate analysis of refinery gas streams and assures optimum control. The composition is reported in only 5 minutes. An optional 4<sup>th</sup> analysis channel is available for analysis of low sulfur, high purity or additional hydrocarbon composition, with a very cost effective analyser as a result!

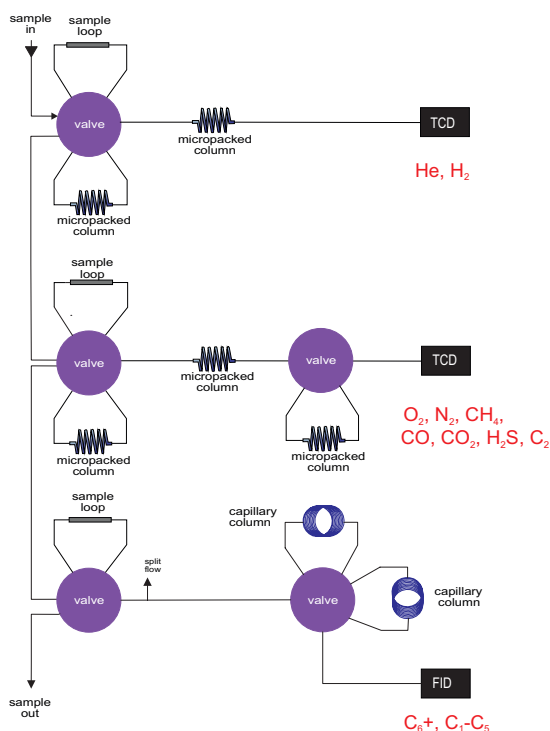


Fast RGA  
in only 5 min.



Flexible  
High uptime

InstantConnect detector technology offers  
high uptime and high flexibility



### Fast Refinery Gas Analyser - 5 minutes

The G-A-S Refinery Gas Analyser measures all components of interest in only 5 minutes (7 minutes in case of H<sub>2</sub>S). The 3 independent channels can also be used separately. Micropacked columns (on first 2 channels) are mounted in the highly accessible auxiliary oven, and offer low gas consumption. The 3<sup>rd</sup> channel uses plot columns, located in the GC column oven. Sulfinert tubing is used for optimal analysis of sulfur containing samples. Diaphragm valves and InstantConnect detector technology result in a robust and flexible instrument with >99% uptime.

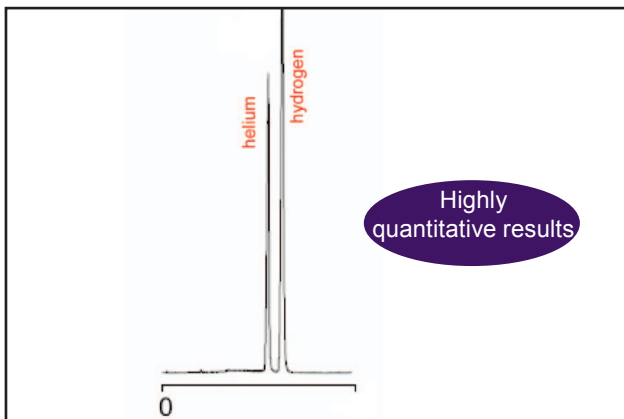


Robust  
Reliable

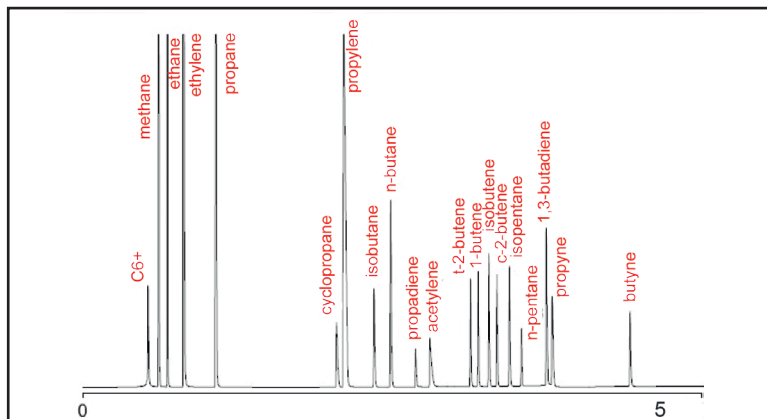
Diagram Fast RGA

Robust G-A-S diaphragm valve

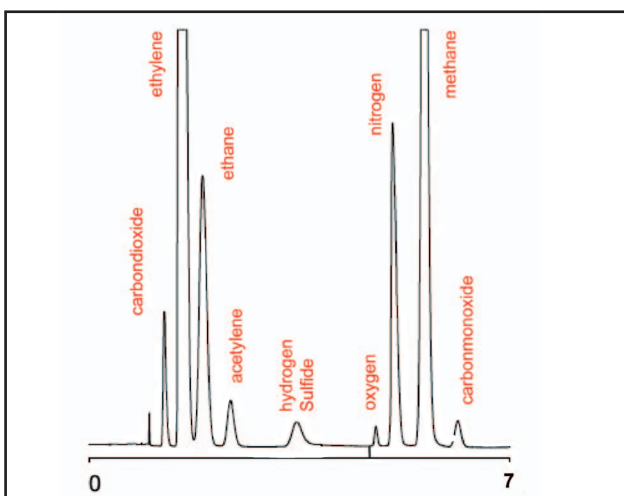
# Fast Refinery Gas Analyser



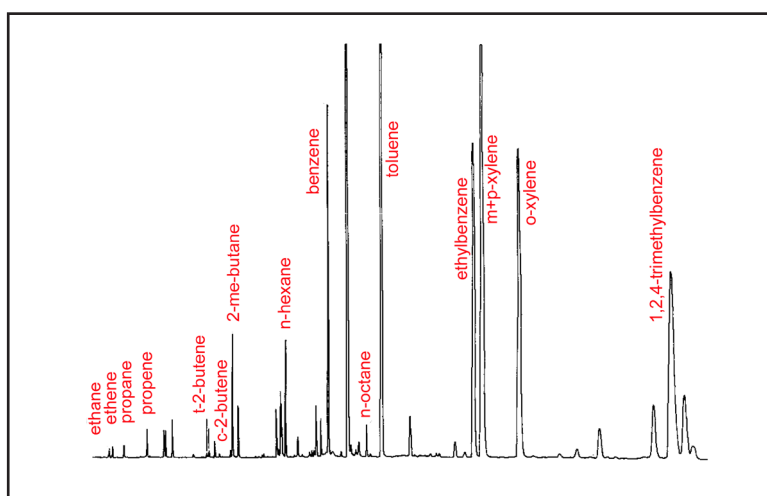
Channel 1: helium / hydrogen on TCD ( $N_2$  carrier gas)



Channel 3: C1-C6 hydrocarbons on FID (He or  $H_2$  carrier gas)



Channel 2: permanent gases on TCD (He carrier gas)



Extended HC analysis on FID (emission gas sample; He or  $H_2$  carrier gas)



Versatile instrument with large, highly accessible auxiliary oven and InstantConnect injector / detector modules

## Cost effective: 4th channel option

A 4<sup>th</sup> analysis channel is available in addition to the 3 standard RGA channels, with a very cost effective analyser as a result, since additional methods for sulfur, oxygenates, high purity or extended HC analysis are configured on the same instrument.

## Other options:

- Vaporiser facility for gaseous injection of LPG samples
- Pressure facility for liquid injection of LPG samples (requires LSV)
- Stop flow valve for highly quantitative results

Optional  
4<sup>th</sup> detector



Pressure facility for liquid LPG injection

# Specifications

Standard methods:	ASTM D2163, D1946, D2504, D2505, D2598, D3588, UOP 539, DIN 51666, IP 405, EN ISO 7941
Configuration:	Three channel instrument using 2 TCDs and 1 FID, based on Thermo Trace 1300 GC. Auxiliary valve/column oven for multi-dimensional separations, using micropacked and capillary columns. Injection: gas sampling valves with fixed sample loops.
Optional:	<ul style="list-style-type: none"><li>- 4<sup>th</sup> independent channel (with 4<sup>th</sup> detector) for additional analysis methods (sulfur, high purity, extended HC, LPG, etc.).</li><li>- Stop flow valve for gas injection at ambient pressure (high repeatability), or back-pressure regulator for injection at constant pressure.</li><li>- High temperature valves (up to 250 °C)</li><li>- Additional isothermal oven for permanent gas channels in case of high temperature auxiliary oven.</li><li>- Liquid sampling valve</li></ul>
Sample tubing:	Sulfinert® tubing for inert sample path (H <sub>2</sub> S analysis).
Analytes:	C <sub>1</sub> -C <sub>6</sub> hydrocarbons, C <sub>6</sub> +, He, H <sub>2</sub> , O <sub>2</sub> , N <sub>2</sub> , CH <sub>4</sub> , CO, CO <sub>2</sub> , H <sub>2</sub> S, C <sub>7</sub> , C <sub>8</sub> , C <sub>9</sub> , BTEX.
Application range:	Atmospheric overhead, Ethylene, FCC overhead, Fuel gas, Recycle gas, Desulfuriser gas, LPG, Propane, Butane, Butadiene, Propylene.
Sample requirements:	The sample must be offered to the analyser as a gas. Optional vaporiser facility available for LPG samples. Pressure facility available for liquid injection of LPG samples with LSV (liquid sampling valve) at HC channel.
Analysis Time:	5 minutes; including H <sub>2</sub> S: 7 minutes.
Minimum Detectability:	Better than 0.01% for all individual components.
Dynamic Range:	4 decades for all components on TCD; 7 decades on FID.
Repeatability:	Better than 1% RSD at 1% concentration level for all analytes specified, measured over at least 20 consecutive runs.
Data systems:	Chromeleon, ChromCard, OpenLab and EZChrom Elite/ChromQuest datasystems.
Calculations:	Customised calculation modules available for several parameters like density, calorific value, Wobbe index, etc.

Fast RGA

For more information:

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