

# PRODUCE ACCURATE, RELIABLE DATA AND ENSURE YOUR BEST PRODUCT QUALITY

The Measure of Confidence



## Agilent Refinery Gas Analyzers

Confidently and precisely analyzing refinery gases is challenging, because the source and composition of each gas varies considerably. To succeed, Refinery Gas Analyzers must quickly separate complex mixtures – from a broad range of samples found in refinery and petrochemical streams.

### Apply the latest GC technologies without disrupting your application workflow

Agilent Refinery Gas Analyzers are based on Agilent's 7890B GC system. Each is factory pre-configured and chemically tested to deliver the mission-critical results you need, *fast*, while saving you precious start-up time.

Choose from standard configurations for extended refinery gas, fast refinery gas, fixed gases, and flue gas – or customize a refinery gas analyzer (based on either the 7890B GC or the 490 Micro GC) to meet *your* specific requirements.



### Agilent Refinery Gas Analyzers reflect industry standards and our stringent quality control process. Each includes:

#### Factory

- System configuration and leak testing
- Instrument checkout performed
- Installation of appropriate column
- Factory-run chemical checkout using application checkout mix

#### Delivery

- Instrument manual and Application Note (or chromatogram) for running the method
- CD-ROM with method parameters and checkout data files for easy out-of-the-box operation
- Consumables included – no separate ordering required
- Consumables ID information for easy re-ordering

#### Installation

- Duplicate factory checkout with checkout sample onsite by factory-trained support engineer
- Optional application startup assistance



Agilent Technologies

# Standard and Custom Refinery Gas Analyzers

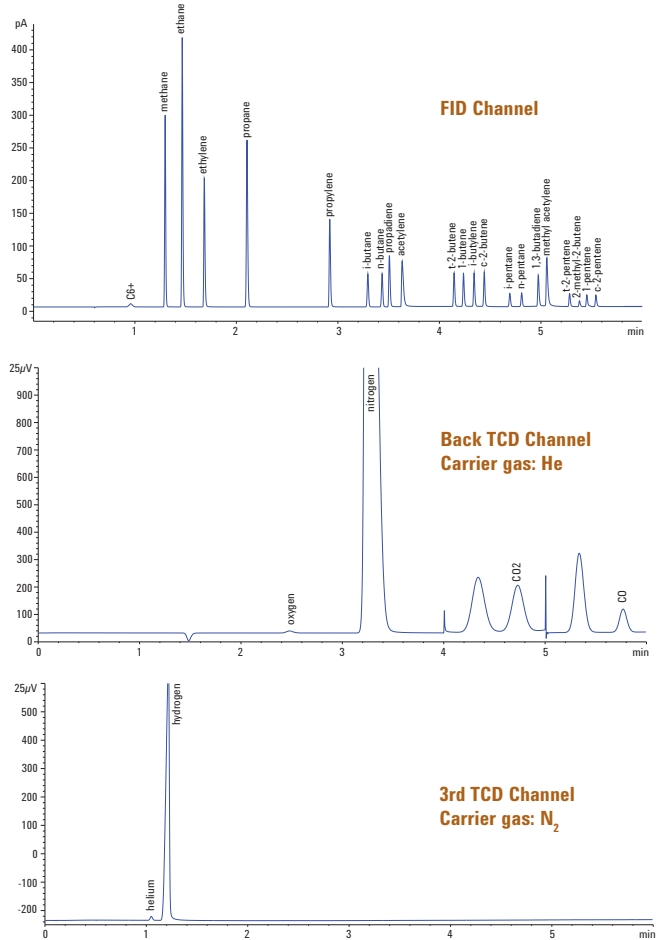
for generating data about operations, unit organization, and finished products

## 7890B Fast Refinery Gas Analyzer:

*Precisely analyze refinery gas in just six minutes*

Separating complex mixtures of hydrocarbons and permanent gases can be difficult on a single-channel GC. Agilent's 7890B Fast Refinery Gas Analyzer, however, is configured for simultaneous operation of *three parallel channels*, and conforms to ASTM D1946 and UOP 539 methods.

- **Single oven temperature program** reduces cost by eliminating the need for an additional column oven.
- **New easy-to-use Ultimate Union** improves chromatographic performance and peak shape using the principles of Capillary Flow Technology.
- **Third TCD channel** improves hydrogen detection and linearity.
- **Customized reporting** simplifies data review and processing. OpenLAB reporting provides calculations in mole %, weight % or volume %, and calculated heat content.
- **Optional integrated micro-gasifier** allows you to analyze liquified gases.



**Checkout sample run on 7890 Fast Refinery Gas Analyzer. Note that the third TCD channel allows use of nitrogen (or argon) carrier gas for linear response for hydrogen.**

## When every second matters – Micro GC Refinery Gas Analyzers

If you require maximum flexibility *and* speed, a portable multi-dimensional system based on Agilent's 490 Micro GC **can perform a total analysis in less than 180 seconds**. Each of its four channels includes a micro-machined injector, capillary column, and thermal conductivity detector (TCD) optimized for specific RGA analytes.

- **Ready-to-go configuration** with proven Micro GC hardware and software.
- **Small system volume** is ideal for sample streams with low component concentrations.
- **Optional integrated micro-gasifier** gives you the flexibility to analyze liquified gases.

In the lab or in the field, Micro GC Analyzers quickly deliver the information you need, whenever and wherever you need it.

## This table summarizes the capabilities of five popular RGA Analyzers in Agilent's extensive portfolio

Characteristics	Agilent 7890B GC based Analyzers				Agilent 490 Micro GC based Custom Analyzers
	Fast RGA (G3445#521)	Fast RGA w/Sulfur (G3445#522)	Extended RGA (G3445#523)	Dual Oven Fast RGA (G3445#529)	490 Micro GC RGA
No. of Channels	3	3	2	3	4
Analysis time (min.)	6 min.	13 min.	26 min.	7.5 min.	150 sec.
Hydrocarbon range	C <sub>1</sub> - C <sub>5</sub> (C <sub>6</sub> & C <sub>7</sub> with extended time) (C <sub>6</sub> + backflushed)	C <sub>1</sub> - C <sub>5</sub> (C <sub>6</sub> & C <sub>7</sub> with extended time) (C <sub>6</sub> + backflushed)	C <sub>1</sub> - C <sub>12</sub>	C <sub>1</sub> - C <sub>5</sub> (C <sub>6</sub> + as backflush)	C <sub>1</sub> - C <sub>6</sub> (C <sub>7</sub> with extended time)
Repeatability	<1%	<1%	<1%	<1%	< 1%
Permanent gases	He, H <sub>2</sub> , O <sub>2</sub> , N <sub>2</sub> , CO <sub>2</sub> , CO	H <sub>2</sub> , He, O <sub>2</sub> <sup>*</sup> , N <sub>2</sub> , CO <sub>2</sub> , CO, H <sub>2</sub> S, COS <sup>**</sup>	H <sub>2</sub> , O <sub>2</sub> , N <sub>2</sub> , CO <sub>2</sub> , CO	H <sub>2</sub> , He, O <sub>2</sub> , N <sub>2</sub> , CO, CO <sub>2</sub> , H <sub>2</sub> S	H <sub>2</sub> , O <sub>2</sub> , N <sub>2</sub> , CO <sub>2</sub> , CO, H <sub>2</sub> S
Linear bench space required	68 cm (26.8 in.)	68 cm (26.8 in.)	68 cm (26.8 in.)	68 cm (26.8 in.)	15 cm (6 in.)
Handles He plus full range H <sub>2</sub> concentrations	Yes	Yes	Full range H <sub>2</sub>	Yes	Full range H <sub>2</sub> He (with Ar Carrier)
Minimum component detection level hydrocarbons	0.01%	0.01%	0.01%	0.01%	0.001%
Minimum component detection level permanent gases	0.01%	0.01%	0.01%	0.01%	0.001%
Minimum component detection level H <sub>2</sub> S	n/a	0.05% (if no H <sub>2</sub> O present)	n/a	500 ppm	0.005% (5 PPM)
Detectors	TCD/TCD/FID	TCD/TCD/FID	TCD/FID	TCD/TCD /FID	u-TCDs (4)
No. of valves	5	5	4	5	n/a
No. of columns (type)	7 (PLOT & packed)	7 (PLOT & packed)	5 (PLOT & packed)	7 (PLOT, packed & micropacked)	4 (PLOT & WCOT)
<b>Suitability</b>					
Configured per	ASTM D1946 UOP 539	ASTM D1946 UOP 539	ASTM D1946 UOP 539	ASTM D1945, ASTM D1946, UPO 539	n/a

\*Detected but not quantitated.

\*\*Not shown on chromatogram. Elutes after H<sub>2</sub>S.

### Agilent can configure a custom solution to meet your specific analytical requirements.

We can help you meet your most challenging demands with specialized technologies. Our solutions significantly reduce your time from system arrival to final validation. With pre-configured hardware and method-specific separation tools, your analysts can focus on calibration and validation per your laboratory's SOPs.

To review our full line of Agilent Analyzers, visit [www.agilent.com/chem/appkits](http://www.agilent.com/chem/appkits)

## Agilent has the technology and experience to support your lab with fully customized solutions

Over the past four decades, Agilent has taken an active role in developing methods and applications – many of which have evolved into global standards for energy/fuels analysis.

Our 7890 GC, for example, is the world's most widely used GC system. It features accurate temperature controls and precise injection systems – plus enhanced Electronic Pneumatic Control (EPC) for the best retention times.

In addition, Agilent experts continue to be actively involved in ASTM – the world's most trusted source for standards development. We have applied this deep regulatory understanding toward developing methods for our Refinery Gas Analyzers.

### **Beyond the box: A full portfolio of customized products, advice, and support**

#### **High-quality columns and supplies from the world GC leader**

Agilent-engineered GC columns and supplies deliver what your refinery gas applications demand – including:

- Long-term reliability and robustness
- Trouble-free instrument operation
- Faster analysis *without* loss of resolution

#### **Local, on-site assistance**

No matter where you are on the energy/fuels supply chain, Agilent can help you increase production efficiency... reduce scrap and rework... and enhance product quality.

**Best-in-class service and support:** Whether you need support for a single instrument or a large scale multi-vendor operation, Agilent service professionals can help you solve problems quickly and increase your uptime – so that you can focus on what *you* do best.

**Custom GC and GC/MS configurations:** Let Agilent customize a standard GC or a GC/MS Analyzer with specialized columns, valves, tubing inlets, and other add-ons – including an extensive line of consumables and column modules.



# GO.

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on the fast track**

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or Agilent Authorized Distributor at  
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Visit **[www.agilent.com/chem/appkits](http://www.agilent.com/chem/appkits)**  
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Application Kits

#### **Ordering information:**

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