

# Produce Accurate, Reliable Data and Ensure Your Best Product Quality

Agilent Refinery Gas Analyzers



# Apply the Latest GC Technologies Without Disrupting Your Application Workflow

Precisely analyzing refinery gases is challenging because the source and composition of each gas varies considerably. To succeed, analyzers must quickly separate complex mixtures—including a broad range of samples found in refinery and petrochemical streams.

## Confidently monitor and optimize catalytic and other processes with Agilent Refinery Gas Analyzers

Agilent Refinery Gas Analyzers (RGAs) are based on the Agilent 8890 GC system. Each is configured in the factory and chemically tested to deliver the results you need, fast, while saving you precious startup 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 8890 GC or the Agilent 990 Micro GC system, to meet your specific requirements.



Agilent 8890 GC system



Agilent 990 Micro GC system

## Agilent RGAs reflect industry standards and our stringent quality-control process

Each includes:

### Factory

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

### Delivery

- Instrument manual for running the method
- DVD with method parameters and checkout data files for easy operation from the start
- Consumables included—no separate ordering required
- Consumables information for easy reordering

### Installation

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



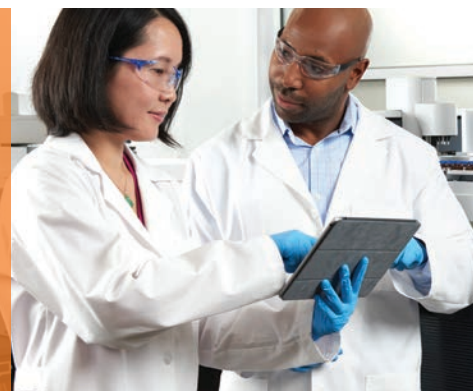
### Intelligent GC instruments that work as hard as you do

Agilent NGAs are part of a new breed of instrument that monitors system health, alerts you to potential issues, and helps you solve problems. That means you can plan your work—including maintenance—rather than react to unexpected downtime.

In addition, analyzers feature core microchannel-based electronic pneumatic control (EPC). Unique to Agilent, this design protects against gas contaminants—such as particulates, water, and oils—improving reliability and longevity.

Best of all, you can check on your lab anytime from anywhere. Mobile access features let you view setup information, troubleshoot problems, check for leaks, backflush columns, pause and start sample runs, and manage method development.

# Generate Reliable Data Quickly

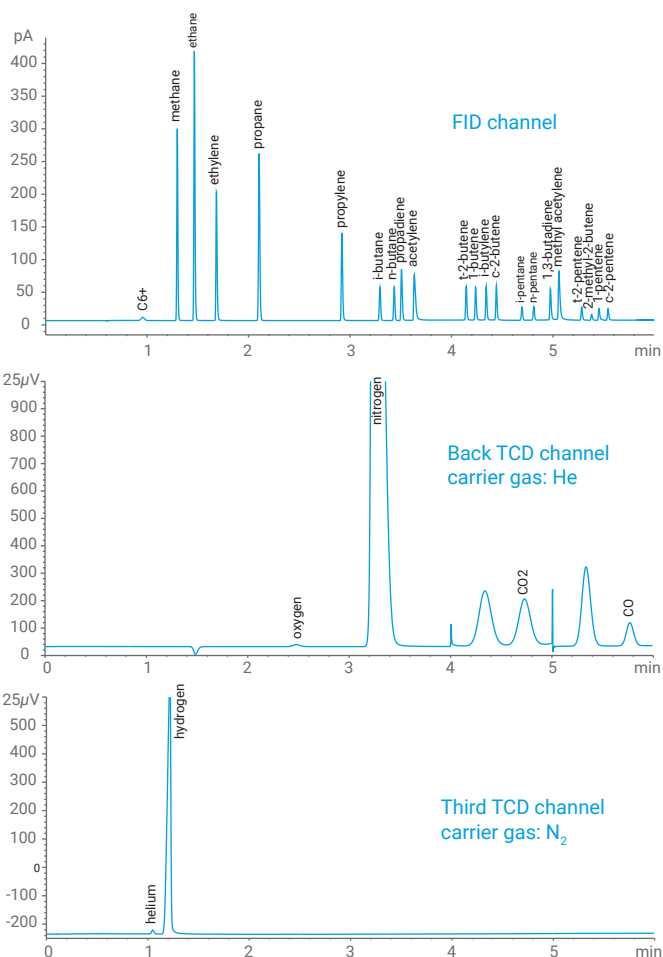


## Agilent 8890 Fast RGA

### Precisely analyze refinery gas in just six minutes

Separating complex mixtures of hydrocarbons and permanent gases can be difficult on a single-channel GC. The Agilent 8890 Fast Refinery Gas Analyzer is configured for simultaneous operation of three parallel channels and conforms to ASTM D1946 and UOP 539 methods.

- An optional auxiliary oven adds flexibility without the need for a second GC.
- Easy-to-use Ultimate Union improves chromatographic performance and peak shape using capillary flow technology.
- Third thermal conductivity detector (TCD) channel improves hydrogen detection and linearity.
- Customized reporting simplifies data review and processing. OpenLab reporting provides calculations in mole, weight, or volume percentages, and calculated heat content.



Checkout sample run on an Agilent 8890 Fast RGA. The third TCD channel allows you to use nitrogen (or argon) carrier gas for linear response for hydrogen.

## Micro GC RGA

### When every second matters

Do you require maximum flexibility and speed? A portable multidimensional system based on the Agilent 990 Micro GC can perform a total analysis in less than 180 seconds. Each of its four channels includes a micromachined injector, a capillary column, and a TCD optimized for specific RGA analytes.

- Ready-to-go configuration includes proven 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 liquefied gases.

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

### Agilent Refinery Gas Analyzers Capabilities

| Analyzer                                   | Agilent 8890-Based Analyzers  |   |   |  |   |  | Micro GC Analyzer   |
|--|---|---|---|--|---|--|---|
|  | Fast RGA  | Fast RGA w/H <sub>2</sub> S   | Fast RGA w/H <sub>2</sub> S & O <sub>2</sub>  | High Capacity RGA with Large Valve Oven                                  | Fast RGA with Large Valve Oven and Micropacked Columns                        | RGA with Large Valve Oven and Hydrogen Carrier   | 990 Micro GC RGA  |
| Option number                              | G3545A #600   | G3545A #601   | G3545A #602   | G3545A #603  | G3545A #604   | G3545A #605  | G3588   |
| Channels                                   | 3   | 3   | 3   | 3  | 3   | 3  | 4   |
| Valves                                     | 5   | 5   | 5   | 4  | 4   | 3  | NA  |
| Detectors                                  | TCD/TCD/FID   | TCD/TCD/FID   | TCD/TCD/FID   | TCD/TCD/FID  | TCD/TCD/FID   | TCD/TCD/FID  | μTCDs (4)   |
| Columns                                    | 7 (PLOT and packed)   | 7 (PLOT and packed)   | 7 (PLOT, packed, and micropacked)   | 7 (PLOT and packed)  | 7 (PLOT and packed)   | 6 (capillary and packed)   | 4 (PLOT and WCOT)   |
| Analysis time                              | 6 min   | 13 min  | 7.5 min   | 17 min   | 9 min   | 7 min  | 150 sec   |
| Hydrocarbon range                          | C <sub>1</sub> -C <sub>5</sub> (C <sub>6</sub> and C <sub>7</sub> with extended time) (C <sub>6+</sub> backflushed) | C <sub>1</sub> -C <sub>5</sub> (C <sub>6</sub> and C <sub>7</sub> with extended time) (C <sub>6+</sub> backflushed) | C <sub>1</sub> -C <sub>5</sub> (C <sub>6+</sub> as backflush)                                 | C <sub>1</sub> -C <sub>5</sub> (C <sub>6+</sub> as backflush)            | C <sub>1</sub> -C <sub>5</sub> (C <sub>6+</sub> as backflush)                 | 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)                            |
| 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> *, N <sub>2</sub> , CO <sub>2</sub> , CO, H <sub>2</sub> S, COS**               | H <sub>2</sub> , He, O <sub>2</sub> , N <sub>2</sub> , CO <sub>2</sub> , CO, H <sub>2</sub> S | CO <sub>2</sub> , CO, O <sub>2</sub> , N <sub>2</sub> , H <sub>2</sub> S | CO <sub>2</sub> , CO, O <sub>2</sub> , N <sub>2</sub> , H <sub>2</sub> S, COS | H <sub>2</sub> , He, O <sub>2</sub> , N <sub>2</sub> , CO <sub>2</sub> , CO, H <sub>2</sub> S, COS | H <sub>2</sub> , O <sub>2</sub> , N <sub>2</sub> , CO <sub>2</sub> , CO, H <sub>2</sub> S, He |
| Minimum detection level (hydrocarbons)     | 100 ppm   | 100 ppm   | 100 ppm   | 100 ppm  | 100 ppm   | 100 ppm  | 0.5 ppm   |
| Minimum detection level (permanent gases)  | 100 ppm   | 100 ppm   | 100 ppm   | 100 ppm  | 100 ppm   | 100 ppm  | 2 ppm   |
| Minimum detection level (H <sub>2</sub> S) | NA  | 500 ppm (if no H <sub>2</sub> O present)  | 500 ppm   | 500 ppm  | 500 ppm   | 500 ppm  | 5 ppm   |
| Configured per                             | ASTM D1946, UOP 539   | ASTM D1946, UOP 539   | ASTM D1945, ASTM D1946, UOP 539   | ASTM D1945, ASTM D1946, UOP 539  | UOP 539   | UOP 539  | NA  |

\*Detected but not quantitated.

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

### Need a custom analyzer?

We can help you meet your most challenging demands with specialized technologies that significantly reduce your time from system arrival to final validation. With preconfigured hardware and method-specific separation tools, your analysts can focus on calibration and validation per your lab SOPs.



# A Complete GC Workflow That Supports Your Business Goals



For more than 50 years, Agilent has led the way with cutting-edge GC and GC/MS instruments, consumables, software, and services. 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.

## Don't miss a thing in your GC analysis with the Agilent Inert Flow Path

Ensure the inertness of flow path surfaces, and allow analytes to safely pass from injector to detector. The Agilent Inert Flow Path can decrease analyte adsorption for lower limits of detection and better signal-to-noise response, resulting in better trace level analysis.

## When authenticity counts, choose genuine replacement parts for Agilent detectors

There are many benefits to using genuine Agilent replacement parts, including the minimization of background interference, low signal counts, and response changes. This means you can maintain reliable performance and maximum uptime. And every genuine replacement part is covered by a 90-day warranty from the date of shipment and your Agilent service agreement for added peace-of-mind.



### Newly designed FID jets for easy installation and secure results

Our improved FID jet design increases ease of use by eliminating the possibility of installation damage and providing universal compatibility with both packed and capillary columns. The widened tail diameter simplifies installation without causing damage to the column head, and the etched rings around the jet head provide quick identification. Even more, the shortened jet tail is universally compatible—reducing your part number count from 12 to 4.



### Gas Clean filter for enhanced gas quality

Deliver high-quality gas with the Agilent Gas Clean purification system, preventing column damage, sensitivity loss, and instrument downtime. Replacing the filters when they have reached absorption capacity ensures maximum protection of your GC columns and analytical hardware—a must for high-temperature analysis and longer column lifetime.



### Gold seals for accurate sample transfer

Enhance your system's inertness with Agilent Certified Gold Seals. They form a leak-free seal with the bottom of the inlet body and column ferrule to minimize sample contamination and loss. Additional benefits include improved signal-to-noise ratio, decreased column bleed, and the extension of column life.

## Ordering Information

| Description   | Part Number |
|---|-------------|
| FID jet, universal fit, 0.011-inch id, 0 rings: Optimal sensitivity for standard GC/FID analysis  | 5200-0176   |
| FID jet, universal fit, 0.018-inch id, 1 ring: For high-temperature applications; allows buildup of column bleed while providing an opening | 5200-0177   |
| FID jet, universal fit, 0.030-inch id, 2 rings: For specific high-temperature methods (such as simulated distillation) only                 | 5200-0178   |
| Gas Clean kit for 8890 and 8860 GC  | CP179880    |
| Replacement Gas Clean filter carrier gas  | CP17973     |
| GC inlet seal, gold plated with washer, 10/pk   | 5190-2209   |
| GC inlet seal, gold plated with washer, Ultra Inert, 10/pk  | 5190-6145   |

## Flexible service and support options keep your lab up and running

From asset management to applications support to laboratory analytics, Agilent can help you improve operational efficiency.



### Agilent University

Flexible, cost-effective training options help you boost efficiency and minimize downtime. Choose the training format that suits you best—including in person, virtual, and online.



### Agilent CrossLab

Extend uptime, produce reliable data, stay compliant, and have predictable service costs. We'll also equip your team with the knowledge and skills they need to drive your lab's success.



### Agilent CrossLab Smart Alerts

Get immediate notification when an instrument goes down, and why. Smart Alerts also gives you timely maintenance recommendations and helps you order your favorite consumables.

## Capture, analyze, and share data



OpenLab CDS is a chromatography data system that combines productivity, usability, and data integrity. With a single user interface, you can control your Agilent LC, GC, single quadrupole LC/MS, and GC/MS, as well as other vendors' instruments in the lab, to streamline training and support.

Built-in tools provide time-saving steps in the analysis, interpretation, and reporting workflows while technical controls ensure work quality, effective records management, and enhanced data security. OpenLab CDS is ideal for analytical labs that need the highest level of data integrity.

Learn more about how Agilent GC solutions can optimize your workflow. [www.agilent.com/chem/gc](http://www.agilent.com/chem/gc)

## Agilent CrossLab: Supporting Your Success

CrossLab is an Agilent capability that integrates services and consumables to support workflow success, improve productivity, and enhance operational efficiency. In every interaction, we strive to provide insight that help you achieve your goals. We offer a wide range of products and services—from method optimization and training to full-lab relocations and operations analytics—to help you manage your instruments and your lab for best performance.

Learn more about CrossLab at [www.agilent.com/crosslab](http://www.agilent.com/crosslab)



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U.S. and Canada

1-800-227-9770

[agilent\\_inquiries@agilent.com](mailto:agilent_inquiries@agilent.com)

Europe

[info\\_agilent@agilent.com](mailto:info_agilent@agilent.com)

Asia Pacific

[inquiry\\_lsca@agilent.com](mailto:inquiry_lsca@agilent.com)

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