The composition of refinery gas differs by source, making its analysis a challenge. Your success requires that Refinery Gas Analyzers reproducibly measure hydrogen, permanent gases, hydrocarbons, and sulfur in refinery and petrochemical streams.

**Quickly implement methods and develop workflows**

Agilent’s Large Valve Oven (LVO) Refinery Gas Analyzers accommodate the multiple valves and columns required for Refinery Gas Analysis. Prior to delivery, our team configures and chemically tests each system. After installation, your team focuses on producing data of value to your operation.

Advantages of the new LVO RGA systems include:

- **Open architecture** which provides easy access to installed components
- **Stable, isothermal temperature control** that produces simultaneous, reproducible analysis of hydrogen sulfide (H₂S) and oxygen (O₂)

**Agilent LVO Refinery Gas Analyzers reflect innovative technology and our stringent quality control process.**

**Factory**

- System setup and checkout
- Analyzer configuration chemical test of the application

**Delivery**

- CD-ROM with operator’s manual, method parameters, and checkout data files for easy out-of-the-box operation
- Application-related consumables with re-ordering information

**Installation**

- On-site verification of method performance by factory-certified support engineer
- Optional application startup assistance
Fast and High-Capacity Refinery Gas Analyzers with Large Valve Oven:
Generating data about operations, unit organization, and finished products

Fast Refinery Gas Analyzer with Large Valve Oven

Precisely analyze refinery gas in just eight minutes

Separating complex mixtures of hydrocarbons and permanent gases can be difficult on a single-channel GC. The Agilent 7890B Fast Refinery Gas Analyzer with LVO, however, is configured for simultaneous analysis using three parallel channels.

Its external valve oven ensures stable isothermal control of valves and temperature-sensitive columns to produce reliable, reproducible data critical to your operation. What’s more, the analyzer’s fast cycle time (less than nine minutes) produces composition data – hydrogen, permanent gases, and hydrocarbons (C₆+ with backflush) – quickly.

Due to the increasing costs and potential uncertainty with the supply of helium, Agilent has created a configuration of this Refinery Gas Analyzer that uses nitrogen and hydrogen for its carrier gases. This system not only reduces raw material costs of the carrier gas, but also reduces the risk of system downtime with more certain assurance of supply of carrier gas material.

Fast refinery gas analysis with LVO chromatography

<table>
<thead>
<tr>
<th>Compound</th>
<th>Concentration</th>
<th>RT</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>C₆+</td>
<td>0.06</td>
<td>0.027</td>
<td>0.28</td>
</tr>
<tr>
<td>Methane (FID)</td>
<td>4.99</td>
<td>0.006</td>
<td>0.14</td>
</tr>
<tr>
<td>Ethane (FID)</td>
<td>4</td>
<td>0.011</td>
<td>0.15</td>
</tr>
<tr>
<td>n-butane</td>
<td>0.3</td>
<td>0.045</td>
<td>0.15</td>
</tr>
<tr>
<td>t-2-butane</td>
<td>0.3</td>
<td>0.059</td>
<td>0.17</td>
</tr>
<tr>
<td>1-butane</td>
<td>0.3</td>
<td>0.059</td>
<td>0.21</td>
</tr>
<tr>
<td>n-pentane</td>
<td>0.1</td>
<td>0.038</td>
<td>0.20</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>12.1</td>
<td>0.036</td>
<td>0.15</td>
</tr>
<tr>
<td>Oxygen</td>
<td>2.98</td>
<td>0.026</td>
<td>0.64</td>
</tr>
<tr>
<td>Nitrogen balance</td>
<td>0.022</td>
<td></td>
<td>0.18</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>1.52</td>
<td>0.035</td>
<td>0.15</td>
</tr>
<tr>
<td>Carbon Dioxide</td>
<td>2.01</td>
<td>0.086</td>
<td>0.15</td>
</tr>
<tr>
<td>Methane (TCD)</td>
<td>4.99</td>
<td>0.031</td>
<td>0.16</td>
</tr>
<tr>
<td>Ethane (TCD)</td>
<td>4</td>
<td>0.09</td>
<td>0.16</td>
</tr>
<tr>
<td>Hydrogen Sulfide</td>
<td>0.5</td>
<td>0.215</td>
<td>4.80</td>
</tr>
</tbody>
</table>

Fast refinery gas analytical performance % RSD for RT and Area

1. Carbon dioxide
2. Ethane
3. Hydrogen sulfide
4. Oxygen
5. Methane
6. Carbon monoxide

The simultaneous analysis of hydrogen, permanent gases and hydrocarbons in a single injection.

Analysis of permanent gases in less than 9 minutes
To review our full line of analyzers, visit agilent.com/chem/refining
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 7890B 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 actively participate 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.

High-quality columns and supplies from the world GC leader

Agilent-engineered GC columns and supplies deliver what your analysts 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 multi-vendor operation, Agilent service professionals can help solve problems quickly and increase your uptime, so 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.

Ordering information:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Analyzer Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>G3445B#532</td>
<td>Fast RGA LVO with Micro-packed columns with Helium carrier gas</td>
</tr>
<tr>
<td>G3445B#531</td>
<td>High-capacity RGA LVO with Standard 1/8” packed columns</td>
</tr>
<tr>
<td>G3445B#533</td>
<td>Fast RGA LVO with Micro-packed columns with H2 and N2 carrier gases</td>
</tr>
</tbody>
</table>

Put your lab on the productivity fast track.

Contact your local Agilent Representative or Agilent Authorized Distributor at agilent.com/chem/contactus

Or call 800-227-9770 (in the U.S. or Canada)

Visit agilent.com/chem/refining for a description of available Analyzers and Application Kits