Natural gas is widely used as an energy source for heating, cooking, generating electricity and clean-burning combustible engines. This naturally occurring mixture consists primarily of methane; however, it can also include other hydrocarbons (C₁-C₁₂ chain length), along with small amounts of oxygen, nitrogen, carbon dioxide, hydrogen, helium, and sulfur compounds.

Before it can be transported or sold, natural gas must meet specifications for calorific value and purity. Upstream and downstream activities — including exploration, extraction, production, transportation and distribution — all demand an array of analytical testing for relevant hydrocarbons, permanent gases, and impurities.

**Start monitoring natural gas collection and processing immediately after installation**

Based on Agilent 7890B GC and 490 Micro GC systems, Agilent Natural Gas Analyzers are factory-configured and chemically tested to help you evaluate the composition of natural gas, natural gas liquids, and processing by-products. They also let you measure permanent gases and hydrocarbon content (C₁-C₅ with C₆⁺ as backflush), and perform extended analysis of hydrocarbons in natural gas to C₁₂⁺.

**Agilent Natural Gas Analyzers include innovative technology and reflect our stringent quality control process. Systems include:**

**Factory**
- Setup and leak testing
- Instrument checkout
- Installation of appropriate columns
- Factory-run checkout method using application checkout mix

**Delivery**
- Instrument manual for running the method
- CD-ROM with method parameters and checkout data files for easy out-of-the-box operation
- Application related consumables included — no separate ordering required
- Easy consumables re-ordering information

**Installation**
- Duplicate factory checkout with checkout sample — onsite by factory-trained support engineer
- Optional application startup assistance
Standard and Custom Natural Gas Analyzers

to monitor operations and finished products

7890B Extended Natural Gas Analyzer
Reliably quantify components and ascertain quality

The Agilent Extended Natural Gas Analyzer measures C₁-C₁₂ hydrocarbons — as well as permanent gases (oxygen, nitrogen, carbon dioxide, and carbon monoxide) — with features such as:
• Dual channel with TCD and FID detectors
• FID channel allows detection of C₃-C₁₂
• TCD channel with packed column for permanent gas analysis

Results are reported per GPA 2286.†

†Extended NGA analyzer does not calculate bridge components iC₅ and nC₅, although other analyzers with bridging calculations are available.

Micro GC Natural Gas Analyzer
Results you can count on when every second counts

In the lab or in the field, Agilent Micro GC Analyzers quickly deliver the data you need. Features include:
• Ready-to-go configuration with proven Micro GC hardware and software
• Iso-thermal technology that allows ultra-fast sequential operation
• Optional integrated micro-gasifier that allows you to analyze liquefied gases

What’s more, each channel is optimized for specific NGA analytes.

Micro GC NGA Chromatography
Note the excellent repeatability (RSD 0.5%)
## Summary of capabilities for Agilent NGA Analyzers

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Extended Natural Gas Analyzer</th>
<th>Conventional Natural Gas Analyzer</th>
<th>Full Range Hydrogen Natural Gas Analyzer</th>
<th>Sour Natural Gas Analyzer</th>
<th>Natural Gas Analyzer A by Micro GC</th>
<th>Natural Gas Analyzer A Extended by Micro GC</th>
<th>Natural Gas Analyzer B by Micro GC</th>
<th>Natural Gas Analyzer B Extended by Micro GC</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Channels</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Analysis time</td>
<td>20 min</td>
<td>18 min</td>
<td>20 min</td>
<td>25 min</td>
<td>100 s until C&lt;sub&gt;7&lt;/sub&gt;</td>
<td>400 s until C&lt;sub&gt;9&lt;/sub&gt;</td>
<td>75 s until C&lt;sub&gt;9&lt;/sub&gt;</td>
<td>75 s until C&lt;sub&gt;9&lt;/sub&gt;</td>
</tr>
<tr>
<td>Hydrocarbon range</td>
<td>C&lt;sub&gt;1&lt;/sub&gt; - C&lt;sub&gt;12&lt;/sub&gt;</td>
<td>C&lt;sub&gt;1&lt;/sub&gt; - C&lt;sub&gt;5&lt;/sub&gt;, C&lt;sub&gt;6+&lt;/sub&gt; as backflush</td>
<td>C&lt;sub&gt;1&lt;/sub&gt; - C&lt;sub&gt;9&lt;/sub&gt; as backflush</td>
<td>C&lt;sub&gt;1&lt;/sub&gt; - C&lt;sub&gt;9&lt;/sub&gt; as backflush</td>
<td>C&lt;sub&gt;1&lt;/sub&gt; - C&lt;sub&gt;5&lt;/sub&gt; as backflush</td>
<td>C&lt;sub&gt;1&lt;/sub&gt; - C&lt;sub&gt;9&lt;/sub&gt; as backflush</td>
<td>C&lt;sub&gt;1&lt;/sub&gt; - C&lt;sub&gt;9&lt;/sub&gt; as backflush</td>
<td>C&lt;sub&gt;1&lt;/sub&gt; - C&lt;sub&gt;9&lt;/sub&gt; as backflush</td>
</tr>
<tr>
<td>Repeatability</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;0.5%</td>
<td>&lt;0.5%</td>
<td>&lt;0.5%</td>
<td>&lt;0.5%</td>
</tr>
<tr>
<td>Permanent gases</td>
<td>Oxygen, Nitrogen, CO&lt;sub&gt;2&lt;/sub&gt;</td>
<td>Oxygen, Nitrogen, CO&lt;sub&gt;2&lt;/sub&gt;</td>
<td>Hydrogen, Helium, Oxygen, Nitrogen, CO&lt;sub&gt;2&lt;/sub&gt;</td>
<td>Oxygen, Nitrogen, CO&lt;sub&gt;2&lt;/sub&gt;, Hydrogen Sulfide</td>
<td>CO&lt;sub&gt;2&lt;/sub&gt;, Air</td>
<td>CO&lt;sub&gt;2&lt;/sub&gt;, Air, Hydrogen Sulfide</td>
<td>CO&lt;sub&gt;2&lt;/sub&gt;, Air, Hydrogen Sulfide</td>
<td>CO&lt;sub&gt;2&lt;/sub&gt;, Air, Hydrogen Sulfide</td>
</tr>
<tr>
<td>Linear bench space required</td>
<td>59 cm (23 in)</td>
<td>59 cm (23 in)</td>
<td>59 cm (23 in)</td>
<td>59 cm (23 in)</td>
<td>15 cm (6 in)</td>
<td>15 cm (6 in)</td>
<td>15 cm (6 in)</td>
<td>15 cm (6 in)</td>
</tr>
<tr>
<td>Handles He plus full range of H&lt;sub&gt;2&lt;/sub&gt; concentrations</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes*</td>
</tr>
<tr>
<td>Minimum component detection level (hydrocarbons)</td>
<td>10 ppm for C&lt;sub&gt;1&lt;/sub&gt; - C&lt;sub&gt;12&lt;/sub&gt;</td>
<td>0.01%</td>
<td>0.01%</td>
<td>0.01%</td>
<td>1-10 ppm</td>
<td>1-10 ppm</td>
<td>1-10 ppm</td>
<td>1-10 ppm</td>
</tr>
<tr>
<td>Minimum component detection level (permanent gases)</td>
<td>50 ppm</td>
<td>0.01%</td>
<td>0.01%</td>
<td>0.01%</td>
<td>1-10 ppm</td>
<td>1-10 ppm</td>
<td>1-10 ppm</td>
<td>1-10 ppm</td>
</tr>
<tr>
<td>Minimum component detection level (H&lt;sub&gt;2&lt;/sub&gt;S)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>500 ppm</td>
<td>N/A</td>
<td>N/A</td>
<td>10 ppm</td>
</tr>
<tr>
<td>Detectors</td>
<td>TCD/FID</td>
<td>TCD</td>
<td>TCD/TCD</td>
<td>TCD</td>
<td>µ-TCD (2)</td>
<td>µ-TCDs (3)</td>
<td>µ-TCD (2)</td>
<td>µ-TCDs (3)</td>
</tr>
<tr>
<td>No. of valves</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>No. of columns (type)</td>
<td>4 (PLOT and packed)</td>
<td>4 (packed)</td>
<td>6 (packed)</td>
<td>4 (packed)</td>
<td>2 (WCOT and PLOT)</td>
<td>3 (WCOT and PLOT)</td>
<td>2 (WCOT and PLOT)</td>
<td>3 (WCOT and PLOT)</td>
</tr>
<tr>
<td>Suitability</td>
<td>Results per GPA 2286, but calculation without bridge components iC&lt;sub&gt;5&lt;/sub&gt; and iC&lt;sub&gt;6&lt;/sub&gt;</td>
<td>ASTM D1945, GPA 2261 (H&lt;sub&gt;2&lt;/sub&gt; and He are not included)</td>
<td>ASTM D1945, GPA 2261</td>
<td>ASTM D1945, GPA 2261</td>
<td>ASTM D3588-98, GPA 2172, ISO 697, GOST</td>
<td>ASTM D3588-98, GPA 2172, ISO 697, GOST</td>
<td>ASTM D3588-98, GPA 2172, ISO 697, GOST</td>
<td>ASTM D3588-98, GPA 2172, ISO 697, GOST</td>
</tr>
</tbody>
</table>

*Requires argon carrier gas on MoSieve 5Å channel.

### Additional standard analyzers:
- Liquefied Natural Gas
- Conventional Natural Gas (large valve oven, with the flexibility to add another channel in the main GC oven)
- Sulfurs in Natural Gas

### Fully customized Analyzers for your unique requirements

Let Agilent help you meet your most challenging demands with specialized technologies that significantly reduce your time from system arrival to final validation. With pre-configured hardware and method-specific separation tools, your analysts can spend more time on calibration and validation per your laboratory’s SOPs.

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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
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best retention times. Likewise, our 490 Micro GC is the industry leader
for mud logging applications. Its ability to provide results in as little as
30 seconds allows geophysicists and petroleum engineers to make fast,
accurate decisions about process optimization.

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 Natural Gas Analyzers.

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Full Range Hydrogen Natural Gas Analyzer (G3445B#543)
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Natural Gas Analyzer A by Micro GC (G3582A#120)
Extended Natural Gas Analyzer A by Micro GC (G3582A#121)
Natural Gas Analyzer B by Micro GC (G3582A#122)
Extended Natural Gas Analyzer B by Micro GC (G3582A#123)

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