Wasson-ECE refinery gas analyzers are an integral part of any refinery or petrochemical lab. These analyzers provide valuable information regarding plant operations, unit optimization, and quality control and often carry the heaviest sample loads because of the critical information they provide.

The refinery gas family of applications is designed to provide a flexible approach to meet your analytical requirements. As a premier channel partner of Agilent Technologies, Wasson-ECE extends the capabilities of the 7890A GC to meet three key requirements of refinery gas analysis: reliability, efficiency, and precision.
Introduction

Multi-dimensional Valves:

Valves allow for a custom analysis of complex sample streams.

Capillary Columns:

Capillary columns have a higher number of theoretical plates than packed columns and when coupled with multi-dimensional valves offer a powerful solution to the most complex analyses.

Agilent 7890A Interface:

Our solutions are built around the newest Agilent GC. This allows for easy integration into your lab or process.

Application Highlights

Flame Ionization Detector

A flame ionization detector (FID) is used to detect the C\textsubscript{1} through C\textsubscript{7} paraffins and olefins to a lower detection limit of 20 ppm.

Thermal Conductivity Detectors

A thermal conductivity detector (TCD) is used to detect hydrogen in a nitrogen carrier to a lower detection limit (LDL) of 100 ppm.

A second TCD is used to detect the other permanent gases in a He carrier to an LDL of 200 ppm.

Electronic Pressure Control

Electronic pressure control (EPC) allows for an analysis of C\textsubscript{1} through C\textsubscript{7} olefins and benzene with a run time of less than 15 minutes. EPC pressure programming provides a fast analysis for higher sample throughput.
Optional Configurations

- Liquefied Petroleum Gas (LPG) - Allows liquid sample valves to be pressurized for liquid samples.
- Trace CO and CO₂ by methanizer
- High temperature injection for heavy fractions
- Analysis of percent level water
- Configuration utilizing dual thermal conductivity and a mass selective detector for maximum flexibility.

The 383D FID Channel

The FID detects C₁ through C₇ paraffins and olefins to a lower detection limit of 20 ppm.

The 383D TCD Channel

Dual TCDs detect hydrogen, carbon dioxide, ethane, ethylene, acetylene, hydrogen sulfide, oxygen/argon composite, nitrogen, and methane.

The TCD signals are summed to provide a single chromatogram.

The 383D refinery gas analyzer allows for a detailed analysis of feed stocks through the use of multiple detectors. This solution can be extended to include the analysis of sulfur components and heavier hydrocarbons.

Analysis Time = 15 minutes
The 583D refinery gas analyzer allows for a rapid analysis of feed stocks. This configuration allows the flexibility of a longer analysis if higher resolution is required.

The 583D TCD Channels

Dual TCDs detect hydrogen, carbon dioxide, argon/oxygen composite, nitrogen, methane, and carbon monoxide.

The TCD signals are summed to provide a single chromatogram.
### Optional Configurations

**783D**

The 783D extends the capability of the 383D or 583D applications by adding an extra capillary column in series with the FID. This feature allows the system to perform an additional method for analysis of heavier hydrocarbon fractions and BTEX.

<table>
<thead>
<tr>
<th>Benefits of Options on 383D or 583D</th>
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<tbody>
<tr>
<td><strong>783D</strong></td>
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<tr>
<td>Extends the capability of the 383D or 583D</td>
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<td>More economical than buying an additional instrument</td>
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<td>The ultimate in refinery gas flexibility</td>
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**SCD Option**

The SCD option adds the ability to measure trace sulfurs. Using an Agilent Sulfur Chemiluminescence Detector (SCD), the system can be modified to perform simultaneous refinery gas and trace sulfur analysis.

<table>
<thead>
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<th>SCD Option</th>
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<tr>
<td>Sulfur detection down to 10 ppb</td>
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<tr>
<td>Can be configured in compliance with ASTM D5504 or ASTM D5623</td>
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<tr>
<td>Inert fused silica coating used on all sample wetted components</td>
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<tr>
<td>Independent subsystem allows simultaneous sulfur analysis</td>
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</table>
Wasson-ECE Instrumentation

Engineered Solutions, Guaranteed Results.

Wasson-ECE Instrumentation specializes in configuring and modifying new or existing gas chromatographs exclusively from Agilent Technologies to become guaranteed, turn-key analytical systems. Our customers describe their objectives and their samples: analytes, concentration ranges, phases, temperature, throughput, and any special needs. From this dialog we configure a task specific instrument. We add extra ovens, valves, plumbing, flow control, columns, electronics, and software to yield a complete solution. This saves our clients valuable time and delivers instruments that are state-of-the-art and ready for use upon installation.

The complete analytical method is developed, tested, and documented utilizing our experience working with numerous companies with similar needs and goals. The resulting chromatograms and reports are inspected by our application chemists and you, to ensure system performance and design quality. Our field engineers then install each system and provide training. After installation, and throughout the life of the chromatograph, our support chemists are ready to help. We can assist with application details, questions, training, calibration, maintenance, and on-site service. Wasson-ECE brings experience and efficiency to your project, giving you confidence in the quality of your results.
Please contact us for more information

Engineered Solutions, Guaranteed Results.