

Media backgrounder

# Intelligent Gas Chromatography (GC) Systems

8890, 8860, and Intuvo 9000 GC Systems

The new 8890, 8860, and improved Intuvo GC Systems set a new standard in intelligent GC analysis for the environmental, and chemicals and energy markets

## Key Technological Features

- **Onboard dual core processors and embedded sensors** enable a smart connected GC which is more self-aware and able to perform self-diagnosis to help pre-empt failures, all to reduce unplanned downtime and increase productivity. With the 8890 users can perform advanced automated (autonomous) troubleshooting.
- **Glass capacitive touchscreen interface** provides responsiveness like a phone or tablet. With the 8890 touch-screen, a wide range of functionality is available including editing of methods and sequences and performing maintenance routines.
- **Capillary Flow Technology (CFT)** provides unique instrument capabilities, such as multi-dimension gas chromatography (GC X GC/Deans Switch), comprehensive two-dimension gas chromatography (GC x GC) with flow modulation, and backflush at the beginning, middle, or end of an analytical column.
- **Large Valve Oven (LVO)** allows for the combination of multiple methods, configured on one GC, optimizing workflows. Factory built and tested on-site analyzer configurations for rapid implementation of proven methods.

## NEW Agilent 8890 GC System

### Overview

The Agilent 8890 GC System is an intelligent Gas Chromatographer, allowing remote connectivity and autonomous monitoring to maximize laboratory productivity, addressing the needs of over half of lab managers to increase productivity and throughput. In doing so, the 8890 continues Agilent's industry-leading legacy to ensure reliability and performance.

### Key Uses

- Wide range of GC applications, from routine to advanced R&D analyses
- High throughput applications for environmental, food and forensics analyses requiring high sensitivity
- Energy and Chemical applications from routine to highly complex valved configurations
- Analysis of residual solvents in pharmaceuticals requiring high throughput and sensitivity



## Key Technological Features

- **Onboard dual core processors and embedded sensors** enable a smart connected GC which is more self-aware and able to perform self-diagnosis to help pre-empt failures, all to reduce unplanned downtime and increase productivity. With 8860, the user initiates troubleshooting such as leak checking.
- **Glass capacitive touchscreen interface** provides responsiveness like a phone or tablet. The 8860 touch-screen standard functionality includes screens for configuration, setpoints and signal plot to show that the run is going as planned.
- **Electronic Pneumatics Regulation (EPR)** provides simple manual operation with high precision, digital display of pressure/flow and ease of use. Actual pressure and flow data can then be recorded as additional signals with Agilent OpenLab CDS software.
- **Optional DA Express Data Analysis Software** is suited to users who do not require significant data processing or compliant software functionality. Data analysis is simplified, making it easy to perform integration, reporting and calibration functions.
- **Up to three Detectors and three Valves** enables routine applications for the energy and chemical laboratory.

## NEW Agilent 8860 GC System

### Overview

The Agilent 8860 GC System sets a new standard for a wide range of routine GC analyses, all the while retaining the optimal testing standards of the Agilent 8890 GC System. Based on the core platform designs of the 7890 GC, the world's most widely used GC system, the 8860 elevates routine GC analysis to new levels of performance, reliability, and cost effectiveness.

### Key Uses

- Energy and chemical QA/QC core routine analyses for process control and finished products
- Analysis of contaminants (e.g. pesticides) in environmental and food samples requiring standard sensitivity and standard throughput/productivity
- Analysis of residual solvents in pharmaceuticals requiring standard sensitivity and standard throughput/productivity



## Key Technological Features

- **Direct Conductive Heating** allows users to program the temperature for the entire flow path and analytical column. Direct heating uses less than half the power of a conventional air bath oven, takes about half the laboratory bench footprint, and can be heated and cooled much faster, improving throughput.
- **Click and Run Connections** eliminate cumbersome ferrules used in conventional gas chromatographs. Instead, advanced direct face seal connections are made with an audible and tactile 'click', telling the user a correct connection was made. Unplanned downtime and associated business disruption, so often encountered from leaks arising from incorrectly fitted ferrules, is eliminated.
- **Disposable Guard Chip and Trim-free Column** greatly enhances productivity, while removing much of the art from GC operation. Intuvo is designed with a simple, disposable Guard Chip which serves as a pre-column retention gap. The Guard Chip traps unwanted material from depositing on, and damaging, the head of the column. The need to trim columns is eliminated altogether.

## IMPROVED

# Agilent Intuvo 9000 GC System

## Overview

The Agilent Intuvo 9000 GC System offers ultra-fast gas chromatography throughput while simplifying your laboratory workflow. Innovative click-and-run connections eliminate column maintenance and enable columns to be changed in less than a minute.

Faster cycle times through ballistic direct heating ensures reproducible chromatography and allows for higher throughput in the laboratory. As with the 8890 and 8860, Intuvo also incorporates built-in intelligence that reduces operational and maintenance costs through its self-guided diagnostic troubleshooting and early maintenance feedback.

## Key Uses

- Energy and chemical R&D and routine analyses requiring the highest ease-of-use
- Environmental, food and forensics analyses requiring the highest productivity and throughput and highest ease-of-use
- Analysis for residual solvents in pharmaceuticals requiring highest throughput/productivity and highest ease-of-use



# Common Features of the 8890, 8860 and Intuvo 9000 GC Systems

- **Blank Run and Detector Evaluation**

Blank run evaluation identifies problems such as baseline excursions, unexpected peaks, and elevated baselines. If such a problem occurs, the user can select how to proceed with choices such as warn and continue, pause, or abort. Detector evaluation provides evaluation of detector checkout samples, providing a written summary in diagnostics.

- **Remote Connectivity Interface**

The browser interface provides remote connectivity to allow lab personnel to monitor the GC system, check system logs and perform diagnostic tests, from anywhere. This means that lab personnel are no longer limited to needing to be onsite, physically, to monitor their GC experiments.

- **Step by step Guided Maintenance**

Provides users with step-by-step maintenance instructions for common maintenance procedures. As a result, training time for operators is reduced, and time is freed up to perform the most sophisticated analyses.

- **System Health Alert System**

The system autonomously monitors the health of the device and alerts the user of potential issues, before it affects performance, reducing unscheduled down time. Unscheduled down-time is a challenge for around 67% of lab managers, so this will truly revolutionize the way labs perform GC.

- **6th Generation Electronic Pneumatic Control (EPC)**

6th generation microchannel-based EPC architecture provides a significant industry improvement in reliability and longevity against gas contaminants, water and oils, which reduces downtime due to maintenance and increases the lifespan of the system compared with historical models. The EPC also allows flexibility within the lab by reducing the amount of helium required through use of a Helium

Conservation Module, Hydrogen Sensors and Alternate Carrier Gas Solutions; this reduces the need for the purchasing of additional consumables by the lab.

- **Advanced User Interface**

The touchscreen gives a visual interpretation on the configuration of the system, easy check on instrument status, all within the framework of One Agilent look and feel.

- **Retention Time Locking (RTL)**

RTL, available with most Agilent OpenLab CDS software, provides the ability to precisely match chromatographic retention times in any GC system to those in another Agilent GC system with the same method and column. This allows for further workflow optimization and enables the comparison of different experiments, through a connected laboratory.

- **Sulphur or Nitrogen Chemiluminescence Detector**

Provides low parts per billion detection allowing laboratories to perform the most sophisticated experiments possible. The new system is also powered to perform equi-molar response quantitation for sulphur and nitrogen contaminants without quenching from the matrix.

- **Auto-ranging FID**

Improves sensitivity of GC devices, allowing quantitative analysis from parts per billion to parts per thousand in a single injection. It also provides a wide and dynamic response range, enhancing accuracy and minimizing sample prep requirements for samples that contain very high or very low compound concentrations.

- **Single Filament TCD**

TCD removes the need for a separate reference gas, does not require manual potentiometer adjustment, and provides a stable baseline with a minimal amount of signal drift, all streamlining the workflow.



## What is GC ?

Gas Chromatography is an analytical technique that separates mixtures into their individual components to be identified and quantified. In GC, a moving gas (the mobile phase) carries the sample across a stationary separation medium within the GC column (stationary phase). Volatile and semi-volatile components travel across the stationary phase while being pushed by the mobile phase. Sample components separate according to their differing affinity to the stationary phase as heat is applied. GC (as opposed to liquid chromatography) is well suited for samples that can be vaporized below 400-450°C.