Agilent Technologies

Media Backgrounder – perspective and detail for journalists:

Agilent 7890A Gas Chromatograph and 5975C Gas Chromatograph/Mass Spectrometer.

Reverse Compatibility and Breakthrough Capillary Flow Technology Improve Routine and Challenging Applications.

.The Agilent 7890A is the latest generation of the world's most popular GC. The company is also the global leader by a wide margin in GC/MS, and the 5975C brings new levels of sensitivity and performance to the marketplace.

7890A GC | 5975C GC/MS

"We listened closely to customers' needs and wants in designing this platform, and the result is a series of highly useful improvements throughout the instruments," said Shanya Kane, Agilent vice president and general manager of GC and Workflow Automation Systems. "It became clear that the most effective approach is to make improvements without changing the actual chromatographic run, and this means that users can immediately realize the new benefits without the disruption of revalidating methods."

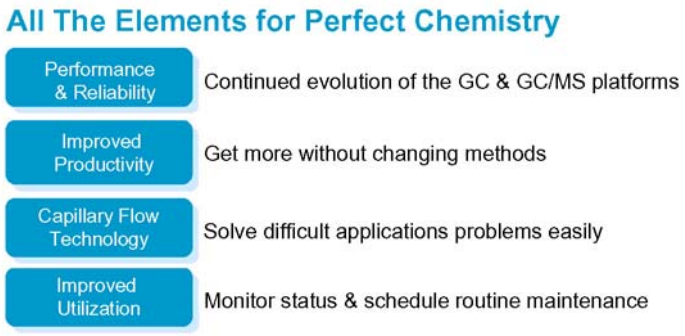
Test, Fix, Test

Over the last 40 years, HP and Agilent earned the reputation for building rugged, reliable GC and GC/MS platforms. This is directly attributable to founder David Packard's approach toward instrument design and manufacturing, and many insiders consider this part of the company's "DNA.":

> ***"Reliability cannot be achieved by adhering to detailed specifications. Reliability cannot be achieved by formula or by analysis. Some of these may help to some extent, but there is only one road to reliability. Build it, test it, and fix the things that go wrong. Repeat the process until the desired reliability is achieved. It is a feedback process and there is no other way."***
>
> **David Packard, 1972**.

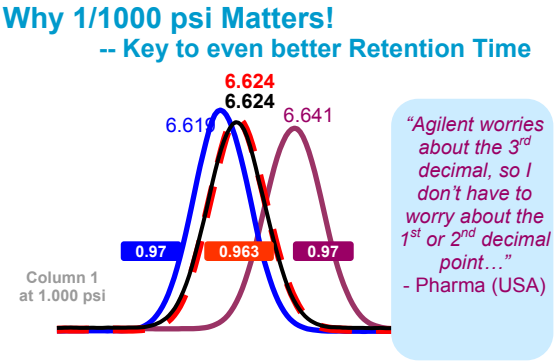
An estimated one out of four GC systems in operation worldwide is an Agilent or predecessor HP model, and these workhorse instruments have earned a reputation for reliable performance over lifespans that routinely exceed 15 years. In designing the new 7890A and 5975B platforms, Agilent sought to enhance this reputation with innovative engineering and manufacturing technology that also solves a number of application challenges.

In developing the new platforms, Agilent focused on the following four areas:



The Agilent 7890A GC.

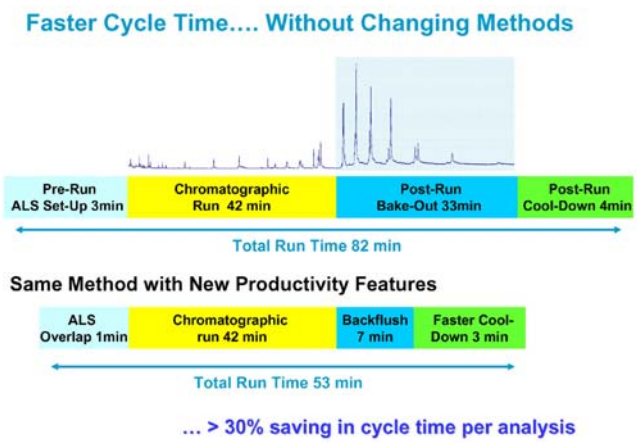
The Agilent 7890A features a 5th generation electronic pneumatics control (EPC) and digital electronics that set a new benchmark for retention time precision, while contributing to the platform's superior reliability. The 7890A is the first GC to regulate pressure to 0.001 psi. for the industry's most consistent retention times. Monolithic design also eliminates seams and o-rings for exceptional reliability



Additionally, Agilent has made the Turn Top split/splitless inlet standard equipment on the 7890 GC. This reduces the time required to replace the liner from approximately 15 minutes to less than a minute, and no tools are needed. This feature was an option on the previous model.

Agilent has also developed a variable speed oven fan which speeds oven temperature cycling to increase throughput. On instruments equipped with automated liquid samplers (ALS), the robotics are programmed to overlap part of the oven ramp, further increasing throughput.

When these productivity enhancements are combined with Agilent Capillary Flow Technology-enabled backflush, run times can be reduced on the order of 30% compared to previous configurations.



The Agilent 5975C GC/MS

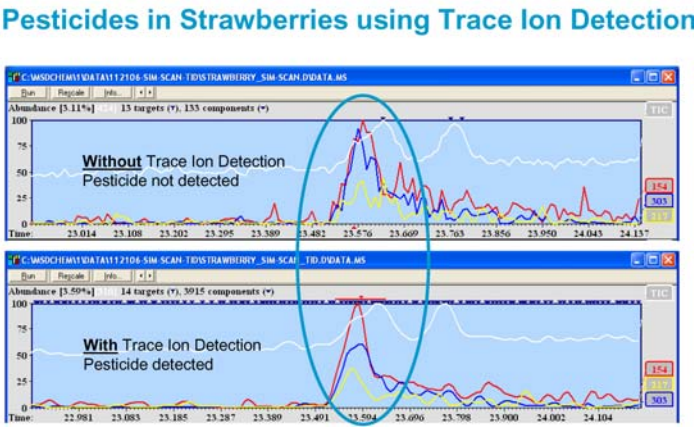
In addition to the benefits of the new Agilent 7890 GC, Agilent's new 5975C GC/MS offers a number of new features to enhance performance, ease-of-use and productivity.

- **Trace Ion Detection** is new data filtering software that: dramatically reduces baseline noise level, increases signal-to-noise level, improves peak shape, improves spectral fidelity, and improves library matching.

- **350^{0}C Ion Source** improves analysis of later eluting compounds and also optimizes runs of dirty samples. Only Agilent has a heated quadrupole, and an automated baking cycle for the entire analyzer which increases throughput.

- **Gain Normalization Autotune** allows users to automatically optimize operating conditions. This new feature also enhances results consistency from one instrument to another, making fair comparisons possible.

- **Enterprise Content Manager (ECM) Integration** enables management of data from multiple GC/MS instruments from a central repository. ECM is a web-based library that collects, organizes, indexes, stores, archives and shares any electronic file. ChemStation data can quickly and easily be stored and retrieved under completely controlled access, including 21 CFR part 11 – compliant procedures.



The Agilent 5975C performs full-scan and selected ion monitoring (SIM) analyses simultaneously, with software that automatically creates a SIM method from a scan method. The platform also permits the exchange of methods electronically across multiple, far-flung labs.

Agilent's Deconvolution Reporting Software (DRS) eliminates much of the delay and tedium from the review of GC/MS data. This software combines the Agilent MSD ChemStation software, the National Institute of Standards and Technology (NIST) Mass Spectral Search Program, with the NIST MS library and NISTS's Automated Mass Spectral Deconvolution and Identification Software. DRS easily and completely automates quantitation, spectral deconvolution and library searching in a single reporting package.

The standard ionization source performs both electron impact ionization and chemical ionization (CI). The design makes CI easy to perform, thanks to a dual gas inlet port, automated CI adjustment and CI autotune. The system contains a true hyperbolic quadrupole mass analyzer for maximum transmission and resolution. The proprietary quadrupole provides the industry's most stable mass axis for longer-lasting tune and calibration stability.

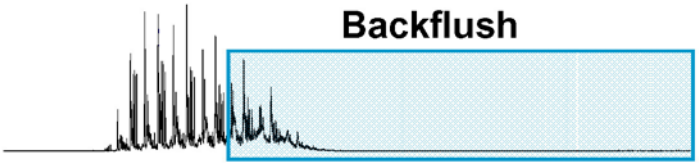
Agilent Capillary Flow Technology: A Breakthrough

Agilent engineers have achieved the long-sought-after goal of connecting, splitting and diverting capillary gas flows inside the GC oven, with the hardware remaining leak-free over a long lifetime of temperature cycling. Agilent Capillary Flow Technology enables a suite of desirable applications that were previously unreliable or unavailable. These include: backflush, heart-cutting, GC x GC, use of multiple detectors with a single column and, in the case of GC/MS, the ability to change the GC column without venting the MS.

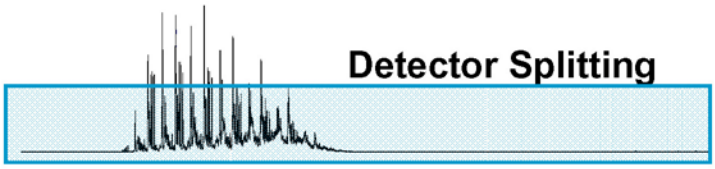
Agilent Capillary Flow Technology is based on a patented diffusion bonded manifold that features long, narrow channels for low dead volume. The manufacturing process delivers rock-solid reliability despite repeated thermal cycling, and the manifold's small mass lets it closely track oven temperature for excellent analytical performance. Connectors are equally rugged thanks to a new ferrule design that also minimizes tailing, thanks to its small but well-swept dead volume. Channels and connectors feature a deactivation coating for a highly-inert flowpath.

Agilent offers a number of Capillary Flow Technology configuration options for general and specialized needs:

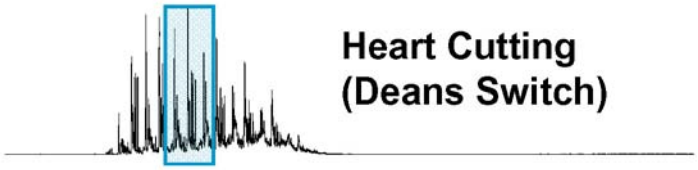
- **Backflush.** Eliminates post-run peaks and bakeout to dramatically increase throughput while eliminating sample carryover. Backflush also reduces column usage and maintenance requirements.



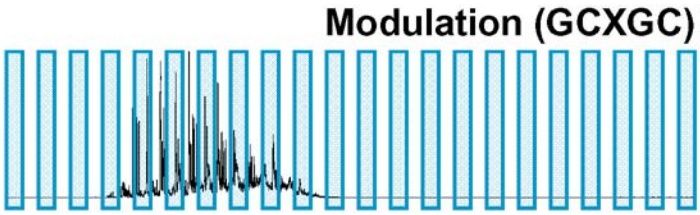
- **Split.** Send all peaks to as many as three detectors simultaneously to obtain specific information from each run and find peaks of interest in unknowns.



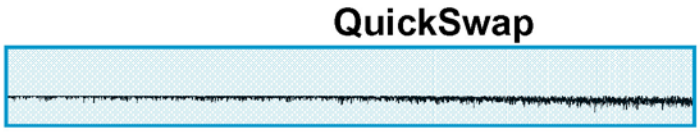
- **Heart cutting.** Divert a peak of interest to a second GC column to find trace levels in a complex matrix.



- **GC x GC.** Modulate the flow to analyze all peaks with a second GC column to obtain maximum information with each run of complex samples. Agilent Capillary Flow Technology accomplishes this without the plumbing and expense of cryogenic cooling.



- **Quickswap.** Change out the GC column in a GC/MS without venting the MS detector, saving as much as two hours per procedure.



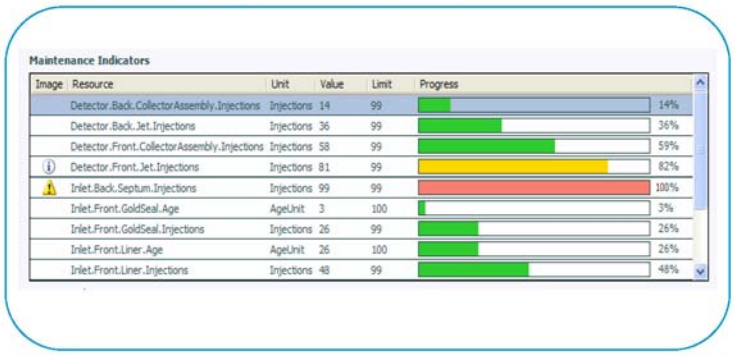
Predictive Maintenance

Agilent also chose Pittcon 2007 launch to introduce Agilent Monitoring and Diagnostic Software, a real-time automatic system that notifies users before problems can occur. A single instrument version is bundled with the Agilent 6890 GC, and multi-instrument licenses are also available for lab-wide monitoring.

Designed for laboratories that maintain their own instruments, Agilent Monitoring and Diagnostic Software enables basic technicians to perform most maintenance and repair procedures before components fail or drift out of specification. It can also save money by eliminating premature replacement of wear parts.

The software monitors the usage of a list of key components and displays how much life they have left, both numerically and graphically – progress bars that change from green to yellow to red to provide system status at a glance. Users define the parameters that trigger advisories. Users also define where the advisories appear, from a simple toolbar notification through sending them to a printer, sending an email or text messaging a cell phone.

Lab Monitor & Diagnostics- check injections & hours of use



... heading off problems before they happen

Components are monitored by appropriate units, for example the inlet septum by number of injection cycles. Users can also define maintenance requirements by actual chromatographic performance. Users can set limits on factors such as peak shape, peak height, retention time or area under the peak.

Advisories contain the name of the part to be changed, the part number to save the user the task of looking it up and, with a single click of the mouse, provides the appropriate steps from the manual and a video clip showing the procedure. Now it doesn't take a scientist or an engineer to perform most maintenance procedures.

"Whether customers maintain their own instruments or completely outsource the maintenance function, Agilent offers a full spectrum of support to help customers cost-effectively maximize uptime," Kane said. "Agilent Monitoring and Diagnostic Software helps self-maintainers optimize their programs. We also offer Cooperative support which provides customer teams with access to Agilent experts, service engineer-level training, streamlined "push for help" automated assistance, expedited parts access and other benefits. The next level is Intelligent Repair: full-service on-site instrument repair enhanced with powerful features to increase instrument uptime and problem resolution, all backed by the Agilent Service Guarantee. The highest level is Intelligent Connections, which adds comprehensive preventive maintenance, instrument qualification and an exclusive Asset Report."

Agilent Media Contacts

John Watson
Worldwide Press Relations Manager
+1 408 553 7205
j_watson@agilent.com

Monty Benefiel
GC/MS Marketing Manager
+1 408 553 7494
monty_benefiel@agilent.com

Mike Feeney
GC Product Marketing Manager
michael_feeney@agilent.com
+1 302 633 8250