

Improving Return on Innovation in Gas Chromatography with the Agilent Intuvo 9000 GC System

A Q&A



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Gas chromatography (GC) labs have faced the same challenges for years. Unplanned downtime, time-intensive tasks, and user limitations all affect a lab's ability to deliver data quickly and accurately, which can hurt their bottom line. To learn more about improving returns with innovative gas chromatography systems such as the Agilent Intuvo 9000 GC System, *LCGC* spoke with Eric Denoyer, PhD, director of marketing for Agilent's GC and workflow automation products.

LCGC: The field of gas chromatography is quite mature. Why is Intuvo considered so innovative?

Denoyer: The Agilent Intuvo 9000 GC System compares to a typical GC system the way a smartphone compares to a traditional telephone. It has a fast direct-heating design, uses about half the power as does a traditional system, and takes up about half the bench space of a conventional air-bath oven GC instrument. New ferrule-free direct connections with plug-and-play flow path components eliminate a major source of maintenance and complexity; moreover, a unique disposable Guard Chip eliminates the need for cumbersome column trimming. These innovations save considerable time and make GC instrumentation so much easier to use.

LCGC: Innovation is often associated with disruption. Is this the case with Intuvo?

Denoyer: Absolutely not. In fact, although the Intuvo system improves efficiency in several ways it was designed to use previously developed, capillary GC applications. Consequently, an Intuvo System can be adopted in an existing lab with little or no disruption.

Economically speaking, investments in previously developed analytical methods are highly leveraged and the Intuvo system embodies some of the best capillary GC technologies developed over the years. For example, Intuvo continues to use the familiar time-proven fused silica capillary column, although it is wound in a more efficient and convenient planar format. It also leverages proven inlet and detector technologies. Therefore, the chromatographic behavior of, and analytical results from, an Intuvo system will look and feel very familiar to individuals comfortable with conventional air bath oven GC devices, thereby facilitating adoption and minimizing disruption.

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LCGC: How do Intuvo's innovations drive economic value for a lab?

Denoyer: At its heart, Intuvo is a capillary gas chromatograph, so it leverages previously developed methods and can be rapidly integrated into most labs, thus improving resource utilization and providing economic advantages. Maintenance and operation are also simpler and more intuitive with the Intuvo system, which saves time by freeing-up valuable resources for other tasks. Intuvo's smart interfaces can also monitor system status and accelerate troubleshooting and diagnostics. They can even alert an analyst when maintenance is required using a color touchscreen as an interactive guide for key maintenance procedures. Spending less time on maintenance and reducing potential errors that can lead to unplanned downtime leaves more time for running samples, which is a real economic value to a service lab.

In addition, since Intuvo's direct heating system can heat a capillary column as fast as 250 °C/min, while also having the capability to rapidly cool the column, inject-to-inject cycle times can be much quicker. This system results in more samples analyzed per unit time and immediately translates into economic value.

LCGC: What makes Intuvo so easy to use, and how does it translate into economic value?

Denoyer: With the Intuvo system, all the nuts and ferrules in the analytical flow path are replaced with simple click-and-run direct connections that easily form leak-free GC connections. Built-in automatic leak checking that ensures connections are made correctly increases lab uptime.

Another Intuvo feature noted previously is the unique disposable Guard Chip component that protects the column from undesirable high molecular weight contaminants. Guard Chips can be replaced much quicker and easier than trimming and reinstalling a traditional capillary column. In some situations, leaks aren't detected until sample batches are analyzed; rerunning these batches wastes time and money. Not having to trim the column not only saves time, but it also reduces the chance of leaks, which can take a lot of resources to troubleshoot and repair. The combination of increased uptime, decreased maintenance time, and less troubleshooting efforts increases productivity, avoids batch failures, and ensures that

the GC lab meets its deliverables and customer commitments. This improvement represents a tangible economic value to GC labs.

LCGC: Another big challenge many labs face is space constraints. How does the Intuvo system address this issue?

Denoyer: Space utilization is a challenge that many lab managers face. In many cases, labs must increase capacity within their existing lab space because they cannot extend their footprints due to a lack of required land, permits, or economic resources.

Using about half the footprint of a conventional GC system, the Intuvo system delivers higher productivity per square meter of lab space. In addition to space savings, the Intuvo system also saves money by using only about half the electric power of a traditional GC instrument thanks to its high-efficiency direct-heating system. This system also emits about half the heat energy of a conventional system, thus requiring much less expensive HVAC system support in the lab.

Running leaner and greener instruments helps lab managers contribute to corporate sustainability goals, which drives more than just economic value. Since some enterprises are now requiring a carbon footprint assessment before approving capital expenditure, green operation is very important to many lab managers.

LCGC: Not all labs are service labs that charge external customers for samples. Some are either QA/QC production or support labs. Can the Intuvo system drive productivity and economic value for these labs?

Denoyer: Everyone is interested in productivity gains. Even if a lab doesn't generate direct revenue, delivering results on time still has a direct financial impact. Reducing the business uncertainty associated with unplanned downtime and the corresponding negative financial impact of having to rerun samples is of great economic value to lab managers. By reducing and simplifying maintenance and helping to eliminate user mistakes, the Intuvo system can ultimately reduce unplanned downtime, which can drive a better overall business outcome.

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