

Making the Switch to Gas Generators

How Rising Costs and Supply Shortages have Laboratories Switching to Gas Generators

In gas chromatography (GC) analysis, the use of proper high-purity gases is critical to the speed and accuracy of analysis. Laboratories worldwide are taking control of their gas supply with onsite gas generation as a safe and economical way to stabilize gas costs while improving the speed of analysis. LCGC recently sat down with Rod Wilson, Product Manager of Parker Hannifin's Analytical Gas Business, to discuss the advantages of Parker gas generators.



Rod Wilson

Analytical Gas Systems Product Manager
Parker Hannifin

LCGC: Why would someone in a lab elect to use an onsite gas generator instead of bottled gas?

ROD WILSON: In simple terms, the drivers behind this often come down to safety, cost, convenience, or purity. Gas generators provide a continuous and reliable supply of gas, therefore eliminating the need for frequent cylinder changes. They also offer cost savings over time and reduce logistical challenges associated with cylinder management. With that, I am referring to the administration, the planning, the rental contracts, and even late deliveries or interrupted supplies. Gas generators also free up space while providing gas on demand. This provides lab users with control over the gas flow rates.

LCGC: Does using a gas generator pose any safety risks?

WILSON: From all aspects, Parker's lab gas generators are the safest option available today. Gas cylinders contain an extremely high volume of gas stored at high pressure. If you released the contents of that cylinder rapidly into a lab, it would present a major explosion risk. In comparison, a hydrogen generator does not have any stored hydrogen and produces no more than 500 cc/minute, so you can easily see the benefits there. Secondly, cylinders are heavy. They can weigh up to 130 pounds or 60kg, so nearly the weight of a small person. Changing and handling can create physical challenges for many users, whereas gas generators will sit on a lab bench next to the GC and not require that level of movement.

Parker hydrogen generators also include automatic shutdown controls. For example, if a system detects demands for over pressure or overflow, which might be symptomatic of a leak downstream, the generator will shut down. All Parker hydrogen generators have visual and audible alarms, and when these sensors are activated, these generators automatically power off. The same visual and audio cues also apply to routine maintenance, or if it requires water, then an alarm or an alert would show up. The bottom line is the generator will let the user know when it requires attention.

LCGC: Parker recently introduced a new line of hydrogen and zero air gas generators. What advantages do these new products have over those Parker has offered in the past?

WILSON: Before embarking on this project, we conducted blueprinting, which involved listening to the voice of customer. We went out into the market and accumulated customer views on Parker products, competitive products, and on what they wanted to see in the future. Rather than decide what we think the market needs, we listened to customer feedback, and learned that our

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technology is reliable. We are not trying to reinvent the wheel, but simply fine tune our products, and make sure our components supply has dual sourcing to reduce lead times and improve service levels going forward. The result of this research is ChromGas™, which is our next generation of GC solutions. These generators are smaller, modular, stackable, space saving, and have a large user-friendly touchscreen on the front of the generator that is quite easy to navigate.

If a customer wishes, they can monitor their generator remotely to view real-time performance. That can be useful if an alarm is triggered, and a customer wants to know what is going on and what the fault code is. It allows them to communicate with the service company as well, so that when a technician arrives on site to repair the generator, they know exactly the nature of the problem and which spare parts to bring. The technology that we are using has been tried, tested, and proven to be best-in-class for many years now. Our customers are getting the best of both worlds with Parker's ChromGas™ gas generators.

LCGC: What is zero air and why would someone choose a Parker Zero Air gas generator?

WILSON: Zero air is air with the hydrocarbons removed. It is an unsung hero in terms of GC and flame ionization (FID) detection. I have come across labs where breathing air or CO₂ free air is used, or even compressed air is being used for FID detection and they just do not work. It is critical that hydrocarbons are removed to ensure optimal detection limits, but also improve the life of the flame detectors. While Zero Air generators are basic, simply incorporating a heated catalyst and some filtration, make them a fundamental part of accurate analysis.

LCGC: Can you tell us a bit about what is next in terms of ChromGas?

WILSON: ChromGas™ is an ongoing new product development project. We wanted to launch our FID station—so the hydrogen fuel and zero air ahead of the full ChromGas™ stack—which includes the hydrogen gas for carrier, ultra-high purity nitrogen, and a separate air compressor unit. Parker is recognized as having the highest purity hydrogen gas generator in the market. I am referring to our PEM-PD, which uses a palladium purifier and offers purities up to 99.99999%. Palladium is quite an expensive product, so testing is now underway to deliver the next generation of gas generators that will deliver the highest purity hydrogen at the right price point. Going forward, the plan is to launch the ChromGas™ product line in stages.

Our current series of generators will continue to be available for some time to ensure there are no gaps in our gas chromatography solutions portfolio. We are also running, in parallel with ChromGas™, our new liquid chromatography mass spectrometry (LC-MS) next generation project, which is a new series of generators that will meet the needs of the evolving demands of LC-MS instruments as well.

For us, it is less about educating customers on the benefits of choosing a gas generator over cylinders, and more so about those who have used generators before but are looking for improvements or helping them to reduce or eliminate frustrations they might have encountered in the past.

LCGC: How do you see the gas generation industry changing over the next 10 years?

WILSON: Parker was a pioneer in this field through sub-brands, popularly known as Balston and domnick hunter, which were acquired by Parker Hannifin at the turn of the millennium. Gas generators have been featured in labs for around 30 years now, so people are familiar with them. For us, it is less about educating customers on the benefits of choosing a gas generator over cylinders, and more so about those who have used generators before but are looking for improvements or helping them to reduce or eliminate frustrations they might have encountered in the past.

I see generators becoming smaller, quieter, more energy efficient, more dependable, easier to maintain, and requiring less service. What we found in the blueprinting interviews is that there seems to be a division in the market between the availability of information and simplicity. Some customers want real-time data sent to their phones and others want a generator with a simple on-off switch. To me, this points towards basic models of generators with optional features installed as necessary to meet the specific needs of the customer.

LCGC: What sets Parker apart in this field and how will Parker be part of this change?

WILSON: Parker Hannifin sets the highest of standards in terms of performance, safety, and quality assurance. Parker has been around for over a century, and every Parker product goes through rigorous testing and accreditation before hitting the market. This industry trusts Parker to deliver a reliable product. We enjoy a truly global presence, and are also listed as a Fortune 250 organization, so we are a big player in quite a niche market. Parker will continue to grow to meet the changing demands for the market through innovation and new product development. Exciting times are ahead.