

## Will a nitrogen gas generator be compatible with my sample concentrator?

# Q&A

The short answer is **yes, absolutely**. Many sample preparation techniques require the use of nitrogen gas, with the most common one being nitrogen blowdown evaporation. If you have experience working with a blowdown concentrator, you probably also have experience working with nitrogen cylinders and the complications that come with them.

Having to order, store, & exchange tanks, spending a fortune on delivery fees, and risking running out of N2 entirely, are all things you can solve by replacing your cylinders with a gas generator.

With a one-time purchase of a generator, your lab can have a reliable and consistent source of nitrogen, without the worry of running out or replacing your supply. Install your gas generator right next to your evaporator and never have to move it. Simply set it and forget it, unlike cylinders which require a high level of maintenance.



You can also feel good knowing you're being eco-friendly and eliminating as much waste as possible. Generators help reduce your carbon footprint by removing the need for tank exchanges, which require shipment to and from your lab. You're generating N2 from the air around you, so you never need a replacement.

Organomination's **NITRO-GEN generator** was specifically designed for use with sample concentrators. Its compact design allows it to sit directly on the benchtop next to your evaporator, if desired. Only requiring a source of compressed air to run, the NITRO-GEN is a fraction of the cost of similar generators on the market, and can produce up to 99% purity with a flow rate of 0-20 LPM (enough to dry up to 48 samples at once).

## How can I generate nitrogen gas for my evaporator without access to a compressor or compressed air source?



Laboratories that do not have access to an air compressor or compressed air source can still generate nitrogen gas on-demand for sample preparation applications. A generator with a built-in air compressor offers an all-in-one solution for nitrogen production. When switching from compressed gas cylinders to a nitrogen generator, a reliable plug-and-play system will provide the greatest cost savings and improvement in efficiency. Organomation's **NITRO-GEN+** is a well-suited, all-in-one gas generation solution for sample prep applications up to 100 samples.

### INTEGRATED COMPRESSORS

The integrated air compressors eliminate the stress of sourcing a compatible compressor yourself, allowing it to operate seamlessly & independently upon arrival at your lab.

### EFFICIENT

The constant, uninterrupted gas supply eliminates workflow delays caused by exchanging cylinders mid-run. The NITRO-GEN+ has flow rates up to 35 L/min with a purity up to 99%.

### SAFE

Nitrogen produced at low pressure and ambient temperature eliminates the hazards of working with high pressure gas cylinders, while also extending the life of the compressors.

### AFFORDABLE & LOW MAINTENANCE

As the NITRO-GEN+ eliminates fees associated with nitrogen cylinder purchases such as tank rental, transportation, and environmental charges, it's also designed to keep maintenance costs low. The compressors require minimal maintenance, lasting upwards of 18 months, while the filters last for 4,000 running hours.



## How much money can I save by generating my own nitrogen?

# Q&A

Although seen as the popular and “traditional” nitrogen generation solution by many, the process of purchasing N2 tanks is quite pricey, especially for those consuming gas on a weekly or daily basis. Let’s take a look at how much a hypothetical laboratory could be spending on tanks per year.

***\*\* This example uses estimated pricing. Your actual costs may vary. \*\****

A typical nitrogen tank costs ~\$50. It’s also common for vendors to charge a monthly rental fee which is often another \$20 each month, per individual cylinder.

Now, let’s say that this lab requires 30 L/min of nitrogen for 4 hours a day, 5 days a week. That equals 36,000 liters of N2 per week, or about 5 cylinders. Over the course of a year, that’s nearly 2 million liters and over 250 nitrogen cylinders. The lab would be spending over \$18,000 in N2 tanks alone, not even including delivery costs.

Acquiring a generator and producing your own nitrogen is a sure way to cut back on these extensive costs. Our affordable NITRO-GEN model is a fraction of the cost of similar generators

on the market at less than \$8,000, meaning **the payback period for our hypothetical lab would be less than 6 months.**



Maybe your lab has a much lower nitrogen consumption rate at just 1 cylinder per week. Your break-even point on the NITRO-GEN would still only be 2 to 3 years. Plus, you’ll be freeing up more of your time by eliminating the need to arrange tank deliveries or exchanges.

Use our [NITRO-GEN payback calculator](#) to find your lab’s break-even point.

## Nitrogen Generator Aids in Environmental Pollutant Tracing

The McKenzie Environmental Engineering Research Group at Temple University focuses on how pollutants move through natural and engineered systems in order to implement treatment strategies. Currently, they are focused on assessing and treating poly- and perfluoroalkyl (PFAS) substances.

The McKenzie Group concentrates down PFAS sample extracts prior to their mass spec analysis - a process completed by Organomination's N-EVAP nitrogen evaporator. Instead of purchasing or renting nitrogen tanks to supply the evaporator, the lab invested in the NITRO-GEN benchtop gas generator.

**“ We have had a NITRO-GEN since 2019, which we are using with a 24 position N-EVAP, and this is still going strong. We purchased another NITRO-GEN and N-EVAP system to expand our capacity and are excited about the newer model functionality to select the output purity. ”**

- Erica McKenzie, Ph.D.

The complete plug-and-play solution simplifies the nitrogen generation process, leaving the lab more time to meet their sample throughput requirements - something that's more important than ever as their demand continues to grow.



## Which nitrogen generator technology is right for me?

# Q&A

There are two common types of N<sub>2</sub> generators, differentiated by the way they separate nitrogen molecules from the air: membrane based generators and PSA generators.



### MEMBRANE-BASED

This type of generator contains a series of narrow, semi-permeable fibers located in a porous membrane. As compressed air is passed through, some gas molecules such as oxygen, carbon dioxide and water vapor are able to permeate the fibers quite easily and are vented off, while nitrogen molecules pass through much slower. This results in a high-purity stream (95-99% purity) from the membrane outlet.

Our NITRO-GEN is a popular membrane-based generator for sample preparation, producing up to 20 L/min at up to 99% purity.

### PSA (PRESSURE SWING ADSORPTION)

PSA generators work by using two columns of tightly packed material called Carbon Molecular Sieve (CMS). Compressed air will pass through one CMS column, which will adsorb all oxygen, water vapor and other molecules, while allowing nitrogen to pass through and be stored in an accumulation tank. Once one sieve becomes saturated, compressed air will be diverted to the second CMS column, allowing the first one to depressurize, releasing all adsorbed impurities through an outlet. This process repeats, leaving behind N<sub>2</sub> gas with a 98-99.999% purity.

Our NITRO-GEN+ is an affordable PSA generation solution used for sample prep and LC-MS analysis, producing up to 35 L/min at up to 99% purity.



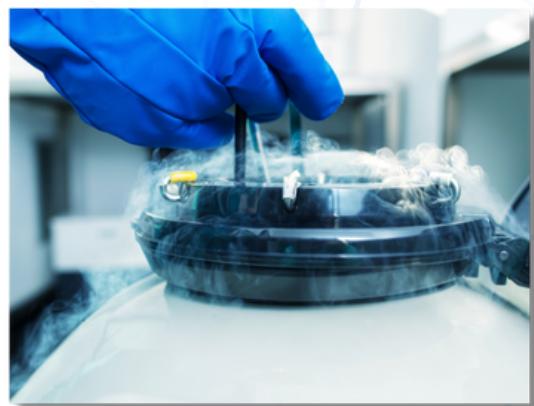
## Will a nitrogen generator actually reduce my carbon footprint?



Now that you're familiar with the financial and convenience benefits of nitrogen generators, let's get into the environmental benefits. Utilizing a gas generator **is in fact** a great way reduce your laboratory's carbon footprint. There are a few different factors to this, so let's go through them.

### LESS TRANSPORTATION

Whether you're ordering new tanks or just getting an exchange, this requires the manufacturer to travel to and from your lab from the distillation plant. Depending on the distance, this can add up to a lot of travelling, especially when done multiple times per month. When integrating a N2 generator into your workflow, you'll completely eliminate all unnecessary travel and emissions.



### REDUCED ELECTRICITY

According to a study by the European Industrial Gases Association (EIGA) comparing different air separation methods, producing 99.9% pure nitrogen with a laboratory generator uses 30% less electricity than fractional distillation plants, and up to 70% less when producing 98% purity. Unlike generators, commercial plants typically use a cryogenic distillation process for producing large amounts of nitrogen to fill tanks. Not only does the process require an absurd amount of energy, it also pumps large amounts of CO2 in the atmosphere contributing to the greenhouse gas crisis.

### NO MORE PRODUCT WASTE

A common complaint of nitrogen tanks is that they can leak overtime, leading to a lot of wasted nitrogen. Since laboratory generators produce nitrogen on-demand, you're only generating the exact amount you need without any waste. On top of that, the actual cylinders have a finite lifespan. Since they are not able to be recycled, they're often thrown in the landfill where they'll remain for hundreds of years. Each generator being utilized contributes to a cleaner environment.