PRODUCT CATALOGUE

GAS GENERATORS AND LIQUID NITROGEN GENERATORS

- H_2
- N_2
- Air
- Comp
- LN_2

DELIVERING PURITY
ENSURING QUALITY

TECH LAB SERVICES

WHO WE ARE

Tech-Lab Services (TLS) is a German based company specialized in analytical, medical, and life science fields.

With over 20 years of expertise, we provide cutting-edge technologies and tailored solutions to meet the diverse needs of our clients. Our extensive network spans Western Europe, the Middle East, and Africa, ensuring reliable regional support and market-specific experience.

At TLS we combine technical excellence with a customer-centric approach, delivering high-quality solutions that enhance efficiency, precision, and innovation in laboratories and industries worldwide.

TECH LAB SERVICES

The values

Know-how

The passion we share

Customer satisfaction

Is our top priority

Innovation

Is part of our DNA

Quality

A commitment that continues

Design

Because performance is not enough

Security

More intelligent. More Secure.

WHAT WE DO

TLS offers a wide range of generators for different lab applications, which could be needed for LCMS-MS, GC, GC-MS, GC-FID, FT-IR, ICP-OES, ICP-MS, TOC and others.

Our gas generators (H2, N2, Zero Air) and Liquid Nitrogen generators deliver the highest purity by using a unique technology of PSA (Pressure Swing Absorption) to ensure the best quality for our clients.
We develop our own specialized products, such as hydrogen (H2) and nitrogen (N2) generators, air compressors, Zero Air as well as CO2 free air for different technologies.
We support laboratories from small-scale demands to full-scale integrated solutions.

With a strong commitment to quality, innovation, and customer satisfaction, TLS is your trusted partner for laboratory and industrial solutions.

WHY A GAS GENERATOR?

TLS gas generators offer a cost-effective and reliable solution to meet your laboratory's gas requirements. Traditional gas supply methods, such as pressurized cylinders, dewars, or bulk storage, come with various challenges, including high costs for transportation, refilling, rental, and storage, as well as potential safety risks. These factors can significantly impact your operational budget and overall efficiency.

By switching to a TLS gas generator, you eliminate the recurring expenses associated with traditional gas procurement. Our generators provide a continuous and on-demand gas supply while ensuring compliance with international safety and quality standards. Designed for laboratory environments, they enhance safety, convenience, and operational efficiency—making them the preferred choice for laboratories worldwide.

Additionally, with rising costs and frequent supply chain delays affecting traditional gas sources, investing in a TLS gas generator is a smarter long-term solution. Unlike cylinders and bulk storage, our generators minimize gas storage, deliver gas at the required pressure, and include integrated leak detection with an automatic shutdown feature for enhanced safety.

Upgrade your laboratory's gas supply with TLS and experience a seamless, efficient, and cost-saving alternative.

DON'T BUY YOUR GAS, **MAKE IT!**

Convenient

No cylinder changes

Purity

The gas purity is constant - no need to add extra gas filters

Economical

No gas contract administration, low and stable ongoing gas costs

Safety

Removes the risk of leaks, no need for long gas lines from cylinders

Efficient

Can be located either on the bench or on the floor next to your GC instrument

Green

No repeated gas deliveries, energy efficient

FUSION

Compact, Scalable Solutions for GC and GC-MS Instrumentation

Designed specifically for GC and GC-MS applications, the FUSION range represents the latest in TLS innovation. Offering both convenience and reliability, FUSION is a modular, stackable solution that integrates H2, N2, and Zero Air generation. For laboratories without an air supply network, an optional air compressor module can be added to ensure a clean and efficient gas supply for nitrogen and zero air generators.

What makes FUSION stand out is its flexibility. We provide the right model based on your required detection limits, whether you need standard or high-purity gas for your GC analysis. Additionally, FUSION enhances safety and efficiency compared to traditional gas sources like cylinders, making it a smart choice for modern laboratories.

H_2 FUSION HYDROGEN

For most gas chromatography (GC) detectors, standard-purity gas generators are adequate for supplying combustible gas to flame ionization detectors (FID). However, when it comes to carrier gas for GC and GC-MS applications, high-purity gas generators are strongly recommended to ensure optimal detection limits.

N_2 FUSION NITROGEN

For the majority of GC detectors, a standard-purity generator is adequate for providing make-up gas. However, a high-purity generator is advised for delivering the carrier gas, especially in GC applications.

Air FUSION ZERO AIR

A zero air generator supplies hydrocarbon-free air to GC FID detectors. For more comprehensive removal of air impurities—including moisture, CO2, CO, NOx, SO2, and hydrocarbons—the use of a Total Zero Air Generator is recommended.

Comp FUSION AIR COMPRESSOR

The silent air compressor can be stacked with other FUSION generators, making it an ideal solution for users who do not have an internal air supply network to feed nitrogen and zero air generators.

Why FUSION Gas Generators are the complete solutions for GC & GC-MS labs?

High Purity Gas for Hydrogen, Nitrogen, Zero Air

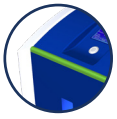
FUSION generators ensure constant gas purity (generators operate 24H/24, 7days/7) and better gas quality by avoiding the entry of any possible contaminants that remain when changing cylinders.

Compact and stackable system

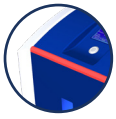
FUSION generators are stackable in design, thus minimizing the total footprint required for GC & GC-MS gas supply. They provide the flexibility to add or remove modules as your lab needs change over time.

LED light status indicator

FUSION generators show you its operating status via colors in order to work in complete safety.


RUNNING


STAND-BY


ALARM


OFF

Remote PC monitoring and diagnostic analysis via USB

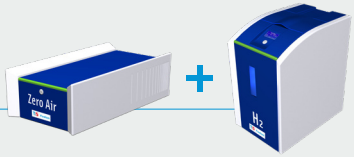
The remote connection allows you to examine internal parameters and system performance in real time without opening the device, making service maintenance faster and more precise. As a result, downtime and travel costs are reduced.

Modular Gas Solutions: Complete & Scalable Configurations

Our modular gas generators offer a complete and customizable solution for laboratories requiring multiple high-purity gases. Depending on the needs of your setup, you can configure the system as follows:

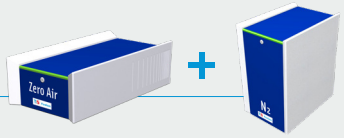
ZERO AIR + H2

(FID station)



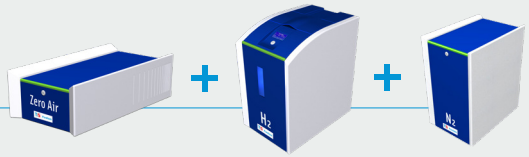
ZERO AIR + ZERO N2

(Air for FID and ZERO N2 for carrier gas and make up)



ZERO AIR + H2 + ZERO N2

(Air and H2 for FID and ZERO N2 for carrier gas and make up)



ZERO AIR + H2 + ZERO N2 + AIR COMPRESSOR

Total solution for detector and carrier (N2 or H2) with air compressor

Each unit is compact, modular, and designed to be easily integrated into existing lab environments, ensuring reliable gas delivery with a minimal footprint.

General Informations

H_2 FUSION HYDROGEN

	Description	Flow rate	Delivery Pressure	Purity
FUSION MF.H2	High Purity - Dynamic regeneration dryer	110 to 1500 cc/min	1 - 11 bar (14 - 160 psi)	> 99.99999% (O2 < 0.1 ppm, dew point H2O < -75°C (-103°F)
FUSION MD.H2	Standard Purity - Using a desiccant cartridge	110 to 600 cc/min	1 - 7 bar (14 - 101.5 psi)	> 99.9996% (O2 < 1 ppm, dew point H2O < -55°C (-67°F)
FUSION MB.H2	Standard Purity - Static membrane dryer	110 to 600 cc/min	1 - 11 bar (14 - 160 psi)	> 99.9996% (O2 < 1 ppm, dew point H2O < -30°C (-22°F)

N_2 FUSION NITROGEN

	Description	Flow rate	Pressure	Purity	Compressor
FUSION N2	High Purity	0.4 to 1 L/min 0.8 to 1.8 L/min	5.5 bar / 80 psi	> 99.9995% > 99.99%	Without
FUSION ZN2	High Purity HCs free	0.4 to 1 L/min 0.8 to 1.8 L/min	5.5 bar / 80 psi	> 99.9995% > 99.99% ; HCs < 0.05 ppm	Without

Air FUSION ZERO AIR

	Description	Flow rate	Polluant	Pressure outlet
FUSION ZA	HCs free	1.0 to 30 L/min	Total HCs/CO outlet < 0.05 ppm	6.5 bar (94 psi)
FUSION ZA.TOTAL	HCs, CO2 and NO free	1.0 to 30 L/min	Total HCs/CO outlet < 0.05 ppm CO2, NOx, SO2 < 0.05 ppm	6.5 bar (94 psi)

Comp FUSION AIR COMPRESSOR

	Description	Flow rate	Outlet air Dew Point	Pressure outlet
FUSION AIR COMPRESSOR	Clean and Dry Air	26 L/min	- 20°C (- 4°F)	8 bar (116 psi)

ULTRA PURE N2

High Purity Nitrogen generators for GC, TOC, FT-IR, ICP, ELSD & CD

For analytical applications such as Gas Chromatography (GC), Total Organic Carbon (TOC), FT-IR, Inductively Coupled Plasma (ICP), and Differential Scanning Calorimetry (DSC), ultra-high purity gas is essential to guarantee accurate, stable, and reproducible results. These instruments require an exceptionally clean gas supply to prevent baseline noise, contamination, or damage to sensitive components.

Our ULTRA PURE N2 gas generator delivers nitrogen with a purity level of 99.9995%, making it ideal for these demanding applications. Its high level of purity ensures optimal performance and protection of your equipment.

For even more critical applications—especially those highly sensitive to hydrocarbon traces—the ULTRA PURE N2 version provides the same 99.9995% nitrogen purity, but with hydrocarbon levels reduced to below 0.05 ppm.

For CAD (Charged Aerosol Detection) and ELSD (Evaporative Light Scattering Detection) applications, where 99.5% purity is sufficient, our TELESTO generator offers a reliable and efficient nitrogen solution tailored to these needs.

Lastly, for circular dichroism applications, the ZEPHYR generator is specifically designed to provide the appropriate gas purity and flow stability required by these highly sensitive optical instruments.

General Informations on the nitrogen generator

	Applications	Flow rate	Pressure	Purity	Compressor
ULTRA PURE N2	GC, TOC, FT-IR, ICP & DSC	1 to 5 L/min	6 bar / 87 psi	99.9995%	With / Without
ULTRA PURE ZN2	GC	1 to 5 L/min	6 bar / 87 psi	99.9995% ; HCs < 0.05 ppm	With / Without
CAD ULTRA PURE	CAD & ELSD	4 to 15 L/min	6 bar / 87 psi	99.5%	With / Without
CD ULTRA PURE	Circular Dichroism	Up to 20 L/min	6 bar / 87 psi	Up to 99,999%	With / Without

ULTRA PURE N2A

High Purity Nitrogen/Air generators for GC-FID

For GC-FID applications, we offer a compact all-in-one solution that delivers both essential gases: nitrogen and zero air, in a single system designed for performance, simplicity, and efficiency.

Our ULTRA PURE N2A generator produces high-purity nitrogen and clean, hydrocarbon-free air, ideal for FID combustion and make-up gas needs. It ensures a stable and continuous gas supply without the hassle of gas cylinders.

For even more sensitive applications, the ULTRA PURE ZN2A version includes advanced hydrocarbon removal technology, reducing THC levels to below 0.05 ppm. This is particularly important for applications requiring ultra-clean air to maintain low background noise and high analytical accuracy.

Both systems are silent, and easy to install—making them the perfect plug-and-play solution for GC-FID users looking to save space, reduce costs, and maximize reliability in their lab setup.

General Informations on the combined nitrogen/air generator

	Description	Flow rate	N2/Air Pressure	Purity
ULTRA PURE N2A	High Purity	N2: 1 & 3 L/min Air: 1.5 & 3 L/min	6 bar (87 psi)	N2: > 99.9995% Air: HCs < 0.1 ppm ; Air Dew point < -55°C (-67°F)
ULTRA PURE ZN2A	High Purity HCs Free	N2: 1 to 3 L/min Air: 1.5 to 5 L/min	6 bar (87 psi)	N2: > 99.9995% ; HCs < 0.05 ppm Air: HCs < 0.1 ppm; Air Dew point < -55°C (-67°F)

PURE N2 & PURE N2A

Nitrogen & Nitrogen/Air generators for LC-MS(MS)

The PURE N2 and the PURE N2A generators offers a **high-quality**, self-contained nitrogen supply ideal for demanding LC-MS/MS systems and other critical laboratory applications where consistency and dependability are essential.

This system ensures 24/7 nitrogen delivery with up to **99.5% purity**, and is supported by a straightforward, fixed annual maintenance schedule.

LC-MS manufacturers like Agilent, Sciex, Shimadzu, Thermofisher, etc., and their customers use our PURE N2 PSA generator. Most of them found the results were significantly improved while the purity remained constant for years. This is the benefit of working with a manufacturer who believes in R&D and improvements!

Two Technologies

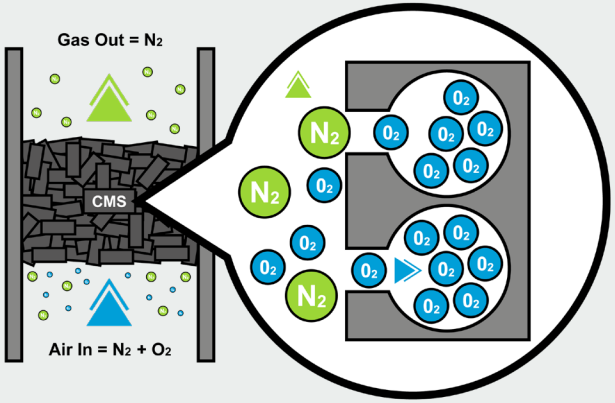
Depending on the purity and sensitivity as per market requirements and different laboratory applications, two technologies are available to generate nitrogen: **PSA**[1] (Pressure swing Adsorption) or **Membrane**[2].

Reliable and Robust PSA technology

Nitrogen gas generators using PSA rely on Carbon Molecular Sieve (CMS) to produce high-purity Nitrogen from compressed air.

CMS adsorbs smaller molecules like Oxygen and moisture, while Nitrogen passes through unadsorbed. This process is used in our liquid Nitrogen generators to produce high-purity Nitrogen gas efficiently.

The process has two stages: adsorption, where O2, H2O, and CO2 are captured by CMS while Nitrogen is collected, and regeneration, where pressure is released to vent the captured molecules, resetting the CMS for the next cycle.

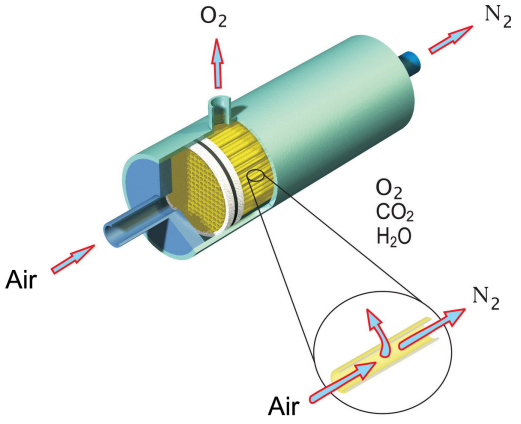


Membrane technology

Membrane gas generators separate gases based on their rate of diffusion through a bundle of hollow polymer fibres. Lighter gases like oxygen and water vapour pass through the membrane faster than nitrogen, which is retained and collected.

This technology is compact, quiet, and energy-efficient, making it ideal for applications requiring moderate nitrogen purity (up to ~99%). However, the nitrogen quality depends directly on the purity and pressure stability of the incoming compressed air.

Clean, dry, and stable air is essential to ensure consistent performance.



Nitrogen & Nitrogen/Air generators for LC-MS(MS)

The most advanced LC-MS PURE gas generator on the market

Intelligent Color Touch Screen

All the parameters are accessible using an intelligent and intuitive touch screen. Start/stop the unit, check the outlet gas flow as well as its pressure, check running hours and service hours, schedule the production during the week.

Remote PC monitoring and diagnostic analysis via USB

The remote connection allows you to check internal parameters and system performance in real time without opening the device. The goal is to quickly diagnose critical points to make service maintenance faster and more precise. As a result, downtime and travel costs are reduced, this has proven to come as a very useful tool during the COVID phase.

Soundproofed compressor box

The generator compressor is soundproofed, ensuring a minimum level of noise and vibrations. The generator can therefore be installed as close as possible to your analytical instrument.

Energy Saving Technology (EST)

Our generator has Energy Saving Technology (EST) which allows the compressor to stop according to the gas demand. There is therefore a reduction in energy consumption and an increase in the performance/longevity of the compressor.

Data events logging over 30 days

All generator events are stored on a SD card for 30 days to back up your data.

General Informations on the nitrogen generator

Available with or without compressor

	Description	Flow rate	Pressure	Purity
PURE N2	N2 PSA	15 to 70 L/min	8 bar / 116 psi	> 99%
PURE N2 M	N2 Membrane	35 L/min	8 bar / 116 psi	97% - 99.5%
PURE N2 DP.TH	Thermo - Double N2 Purities	35 & 70 L/min 100 & 200 ml/min	7 bar / 101 psi 6 bar / 87 psi	> 99% > 99.999%
PURE N2 DP.WA	Waters - Double N2 Purities	35 & 70 L/min 400 & 800 ml/min	7 bar / 101 psi	> 99% > 99.999%
PURE N2 DP.AG	Agilent - Double N2 Purities	35 & 70 L/min 400 & 800 ml/min	3 bar / 43 psi	> 99% > 99.999%

General Informations on the nitrogen/air generator

Available with or without compressor

	Description	Flow rate	N2/Air Pressure	Purity
PURE N2A M 3G.SC	Sciex	N2: 12 & 18 L/min Dry air source gas: 24 & 26 L/min Dry air exhaust gas: 8 & 25 L/min	5.5 bar (80 psi) 7.6 bar (110 psi) 4.1 bar (61 psi)	N2: > 99% Air: HCs < 0.1 ppm ; Air Dew point -20°C (-4°F)
PURE N2A 3G.SC	Sciex	N2: 12 & 18 L/min Dry air source gas: 24 & 26 L/min Dry air exhaust gas: 8 & 25 L/min		
PURE N2A 2G.SH	Shimadzu	Air/N2 combined: Up to 25 L/min N2: Up to 27 L/min Air: 29 L/min	6.9 bar (100 psi)	N2: > 98% Air Dew point: -20°C (-4°F)
PURE N2A 2G.PE	Perkin Elmer	N2: 15 L/min Air: 34 & 68 L/min	7 bar (101 psi)	N2: > 99% Air: HCs < 0.1 ppm ; Air Dew point -20°C (-4°F)
PURE N2A 2G.BR	Bruker	N2: 32 L/min Air: 50 L/min	5.5 bar (80 psi)	N2: > 99% Air Dew point: -20°C (-4°F)

PURE AIR

Air generators for GC, TOC & FT-IR

If your laboratory needs high air quality, TLS offers the widest range of zero air, ultra zero air and CO2-free air generators for applications such as GC, TOC and FT-IR analysis. We can offer these generators with or without compressor.

The differents Air Purification Technology available

Zero Air: Uses high-temperature platinum catalyst that oxidizes hydrocarbons and carbon monoxide to < 0.05 ppm. (Option*)
Ultra Zero Air: Uses alumina bed adsorption technology (PSA) to remove moisture and a palladium catalyst that oxidizes hydrocarbons and carbon monoxide to < 0.05 ppm. (Option*)
TOC: Uses high-temperature platinum catalyst which, through oxidation, removes hydrocarbons and carbon monoxide to < 0.05 ppm. CO2 and moisture are removed via a CO2-free air dryer, producing a clean, dry, high-purity TOC gas stream.
CO2 Removal: The gas generator is designed to take pre-filtered compressed air at 8 bar from the existing laboratory supply or via the built-in oil-free compressor. The pre-filtered air enters an air dryer to remove CO2 and moisture, producing a clean, dry, CO2-free air stream.

*Option: The generator allows in addition to remove other polluants such as NOx and SO2. The NOx is reduced with a Purafil filter and the other components are removed with an activated carbon filter.

	Description	Flow rate	Polluant	Pressure outlet
GC				
PURE AIR UZA	H2O, HCs free	1.5 to 50 L/min	Total HCs/CO outlet < 0.05 ppm dew point H2O < -50°C (-58°F)	6 bar (87 psi)
PURE AIR UZA.TOTAL	H2O, CO2, NO, HCs free	1.5 to 50 L/min	Total HCs/CO/NOx/SO2 outlet < 0.05 ppm Total CO2 outlet < 5 ppm dew point H2O < -50°C (-58°F)	6 bar (87 psi)
TOC				
PURE AIR TOC	H2O, CO2, HCs free	1.5 to 6 L/min	Total HCs/CO outlet < 0.05 ppm Total CO2 outlet < 1 ppm dew point H2O < -70°C (-94°F)	6 bar (87 psi)
FT-IR				
PURE AIR CO2.FREE	H2O, CO2 free	1 to 30 L/min	CO2 outlet < 1 ppm dew point H2O < -70°C (-94°F)	6 bar (87 psi)

TORNADO

High-flow, high purity N2 solution for labs

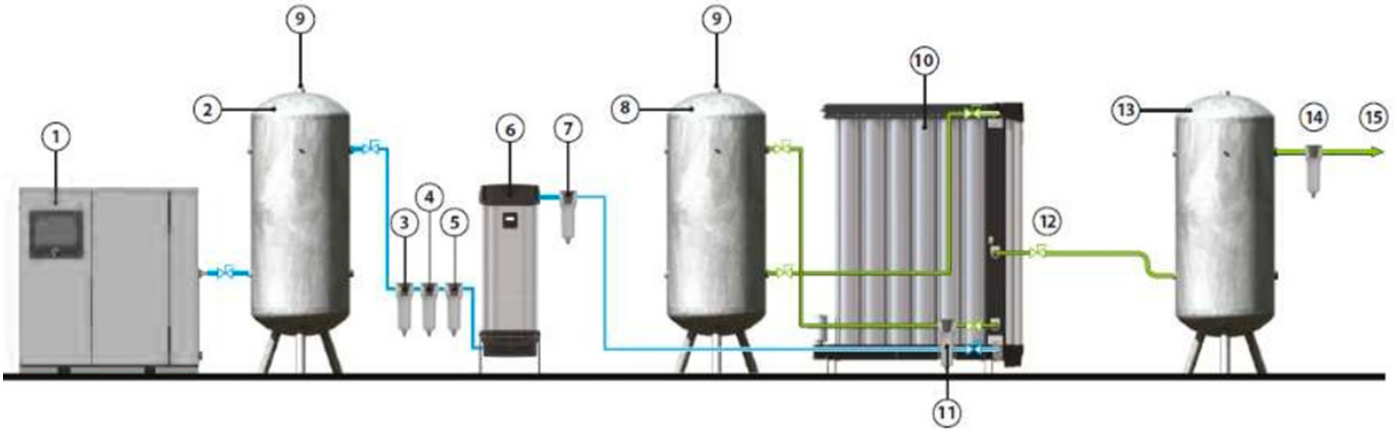
The TORNADO is a flexible, modular nitrogen generation system designed for on-site installation. It delivers a reliable and uninterrupted nitrogen supply across a wide range of flow rates and purities—up to 99.9995%—making it ideal for supporting multiple laboratory applications, including LC-MS, gloveboxes, fume hoods, sample evaporation systems, and more.

The TORNADO provides a complete nitrogen solution tailored to the needs of research and analytical labs. Based on PSA (Pressure Swing Adsorption) technology, each system is available in various pre-configured models, with different nitrogen flow capacities, and purity levels determined during design to suit the specific application.

General Informations

	Description	Flow rate	Pressure	Purity	Compressor
TORNADO LITE	High N2 Flow	Up to 255 NL/min	6 bar / 87 psi	97 to 99,999%	Without
TORNADO ULTRA	High N2 Flow	Up to 148 NM3/H	6 bar / 87 psI	97 to 99,999%	Without

Typical Installation



1 Air Compressor - 2 Humid air vessel - 3 Centrifugal separator - 4 Pre-filter - 5 Oil removal filter - 6 Adsorption dryer - 7 Particle filter - 8 Nitrogen regulation vessel - 9 Safety valve - 10 Nitrogen generator - 11 Particle filter - 12 Nitrogen outlet - 13 Nitrogen buffer vessel - 14 Particle filter - 15 Nitrogen outlet to application