



Product focus:  
**HG PRO M**

**R** Evolution  
in Gas Generators  
and Calibrators

# HG PRO M - HYDROGEN GENERATOR

What is HG PRO M?

Hydrogen generator that can generate high-purity hydrogen gas at flow rates of 4 L/min, 8 L/min, 16 L/min, and 20 L/min. The HG PRO M includes a new long life multilayer electrolytic cell with polymeric membrane (PEM) using ultra pure water. No acid or alkaline solutions are used.

What is a hydrogen gas generator?

A hydrogen generator is a system that produces on-demand hydrogen to supply analytical instruments. They are used in many laboratories for analytical purpose.

How does it work?

A gas generator produces hydrogen gas from deionized water. Economical, green and safe alternative to high pressure gas cylinders.



LNI have been manufacturing premium hydrogen generators for many labs throughout the world for more than 30 years offering a safer, greener, more convenient and cost effective alternative to cylinders.

# HG PRO M - UNIQUE FEATURES.

Precision and Consistency



HG PRO M provides a constant and precise flow of high-purity hydrogen gas to deliver constant and precise results.

High Purity



The HG PRO M series guarantee the highest purity levels, exceeding 99.99999%.

Energy-Efficiency



Incorporates advanced technology to minimize energy consumption. Achieves cost savings and contributes to a reduced environmental impact.

Compact and Space-Saving



Compact design allows for easy installation in tight spaces.

Easy Maintenance



Maintenance is simplified with user-friendly interfaces and remote monitoring capabilities, reducing downtime and service costs.

Safety Features



Built-in safety mechanisms, including automatic shutdown in case of malfunction or leaks

Reliability



Robust construction and high-quality components ensure long-term reliability and peace of mind.

# HG PRO M - APPLICATIONS.

## Chemical Vapor Deposition (CVD)

**HG PRO M LN models**

In the realm of CVD, the quality and precision of hydrogen gas play a pivotal role. HG PRO M optimizes CVD processes, ensuring that laboratories achieve unparalleled results in the production of high-quality thin films and coatings.

## Central Laboratory Supply

**HG PRO M models**

Laboratories of all types, from research facilities to educational institutions, can benefit from a reliable and centralized hydrogen supply. HG PRO M has been designed to be the primary source for experiments, analysis, and instrument calibration in central laboratory settings.

## Power storage

**HG PRO M models**

Hydrogen is gaining traction as an energy storage medium, and the HG PRO M series is an ideal solution for generating hydrogen for power storage applications. It ensures a steady and clean source of hydrogen to support grid-balancing and renewable energy integration.

## Chemical analysis

**HG PRO M models**

In the realm of chemical analysis, the role of high-purity hydrogen gas is fundamental, particularly in techniques such as gas chromatography and mass spectrometry. HG PRO M is designed to elevate the precision, purity, and efficiency of hydrogen gas supply for enhanced chemical analysis.

# HG PRO M - APPLICATIONS.

## Chemical Manufacturing

**HG PRO M models**

Hydrogen generators are used in chemical manufacturing processes to provide a reliable source of hydrogen gas for various reactions, such as hydrogenation and catalysis.

## Metallurgy

**HG PRO M models**

In metallurgical applications, hydrogen generators play a vital role in processes like annealing, sintering, and heat treatment of metals and alloys.

## Welding and Brazing

**HG PRO M models**

Hydrogen is often utilized as a shielding gas in welding and brazing operations to prevent oxidation and ensure high-quality welds. Hydrogen generators provide a convenient and safe source of this gas.

## Electronics Manufacturing

**HG PRO M models**

Hydrogen is employed in the electronics industry for the deposition of thin films and as a reducing agent in semiconductor fabrication. Hydrogen generators ensure a stable supply of high-purity gas required for these critical processes.

## Fuel Cells

**HG PRO M models**

Hydrogen generators are essential for fuel cell applications, where hydrogen is used as a clean and efficient energy source to power various vehicles and backup power systems.

# HG PRO M - APPLICATIONS.

## Power Plants

**HG PRO M models**

Hydrogen generators can be found in power plants where they provide hydrogen for cooling generators and turbines, enhancing the efficiency and safety of power generation.

## Oil and Gas Industry

**HG PRO M models**

In the oil and gas sector, hydrogen generators are used for hydrocracking, hydrotreating, and sulfur removal processes, helping to improve the quality of petroleum products.

## Semiconductor Manufacturing

**HG PRO M models**

The semiconductor industry relies on ultra-high-purity hydrogen for the production of silicon wafers and other electronic components. Hydrogen generators ensure a consistent supply of this critical gas.

## Glass Production

**HG PRO M models**

Hydrogen is used in the glass industry to produce high-quality, defect-free glass products. Hydrogen generators help maintain the required atmosphere during glass melting and forming.

## Pharmaceuticals

**HG PRO M models**

Hydrogen generators are utilized in pharmaceutical manufacturing for hydrogenation reactions, enabling the synthesis of various pharmaceutical compounds.

## Aerospace and Aviation

**HG PRO M models**

Hydrogen generators are employed in aerospace and aviation for various applications, including rocket propulsion and fueling.

# HYDROGEN...

Hydrogen and GC / GCMS.

Hydrogen is considered as the best alternative for GC and GC/MS. It has better performance (better chromatographic resolution and speed of analysis) compared to other gases such as Argon or Nitrogen.

Ready to convert?

Practitioners looking to switch to Hydrogen can obtain numerous guides and software packages to facilitate the process and speed up the transition.

Cylinders or gas generators?

Two main sources of Hydrogen are available: high pressure gas cylinders or gas generators.

Today the benefits of using hydrogen for GC and GC / MS applications are supported by on-site hydrogen generators. H<sub>2</sub> can be generated anywhere with water electrolysis and on-demand.



# H2 GAS GENERATORS ARE SAFE.

Safety in a lab is paramount and on-site hydrogen generation is much safer than gas cylinders storage.

On-demand production of gas.

No risk of leaks.

On-board CPU to check.



For greater safety with Hydrogen as a carrier gas, LNI supplies on request hydrogen sensors.

A hydrogen generator produces on-demand hydrogen at a controlled level and at low pressure. It does not store any hydrogen inside itself.

No storage, no leaks. In the unlikely event of a leak, only a very small quantity of hydrogen is released without any explosion risks.

LNI H2 gas generators have on-board CPU that automatically check for internal leaks and constantly control the operating parameters to guarantee full safety.



# H2 GAS GENERATORS ARE CONVENIENT.

Gas cylinders (H2 or He) may seem to be cheaper but when comparing the yearly expenses with the one of a hydrogen generator, gas generators clearly appear to be more convenient than gas cylinders.

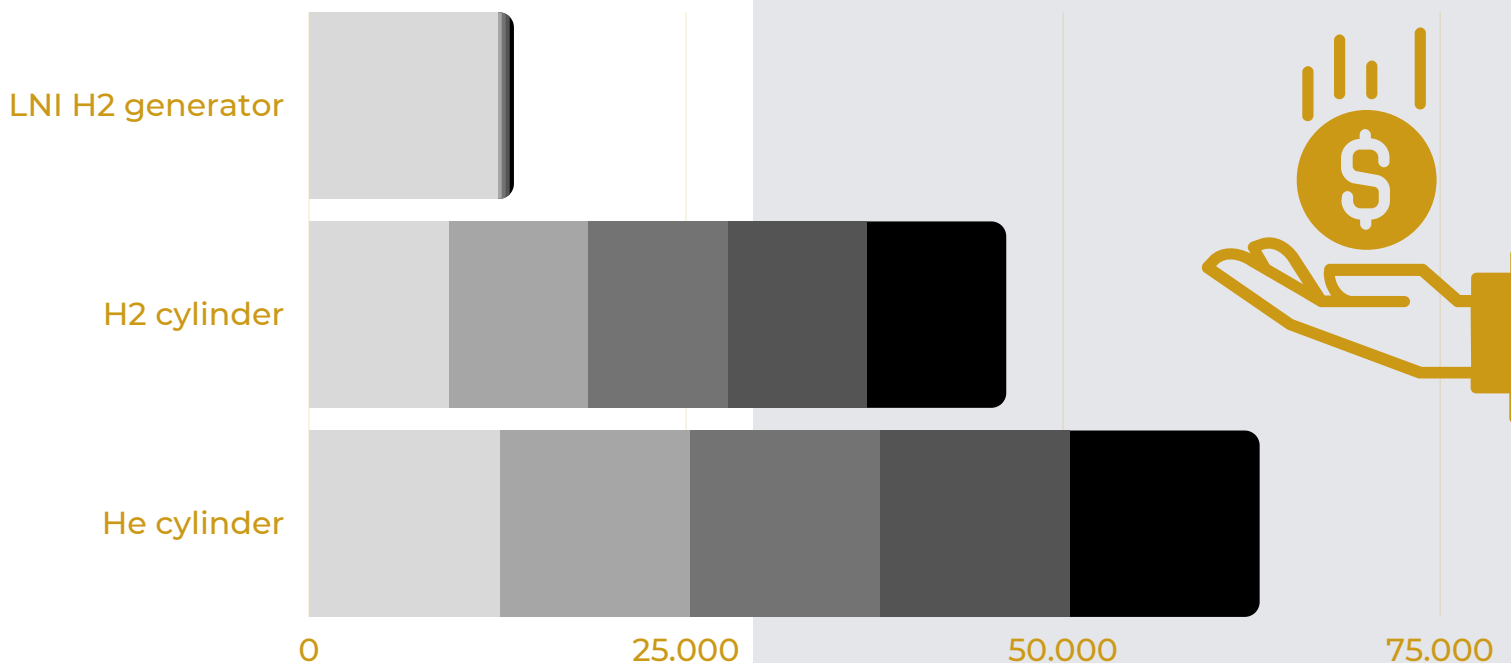


A gas generator from LNI has a higher longevity when compared to competing systems.

Let's compare considering :

- 5 years time
- Helium cylinder cost 250€ each
- Hydrogen cylinder cost 180€ each
- cylinder rental and delivery 20€ per cylinder per month
- A hydrogen generator 1100cc/min cost 12500€ each
- 4 cylinders consumption/ month

ROI appears clearly from year 2. A H2 generator is an investment , it has a higher cost at the purchase but results cheaper at the end of the second year already.



# H2 GAS GENERATORS ARE GREEN.

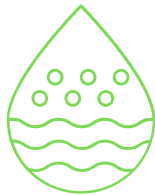
On-site gas generators are definitely a green choice.

Carbon footprint.



LNI gas generators have the smallest carbon footprint in the market. One generator replaces thousands of hazardous gas cylinders and their deliveries.

Resources.



On-site hydrogen generation uses renewable resources: air and water.

Energy-savings features.



Our products are energy-efficient. They utilize technology with energy savings features that can reduce up to 30% of energy consumption when comparing to other gas generators.

Green technology.



The remote diagnostics capability on our products helps us to support our customers quickly while avoiding travel, whenever possible, and the environmental impact it imposes on our planet.



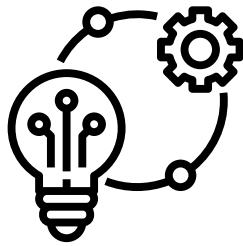
You can save up to 30% of energy costs with a LNI gas generator.

# LNI H2 GAS GENERATORS.

LNI premium hydrogen gas generators have been developed for laboratories and especially for gas chromatography (GC) and gas chromatography-mass spectrometry (GC-MS) applications: Fuel Gas, Carrier gas, Combustion Gas, Make-up gas and others.

LNI combines expertise and innovation to provide reliability and sustainability for your analytical lab.

The best technology.



**LNI Swissgas hydrogen generators have very unique innovative features when compared to others.**

The most powerful.



LNI gas generators are equipped with patented, cutting edge technology, which meet the GC requirements for all major instrument OEMs. Equipped with Proton Exchange Membrane (PEM) technology.

LNI H2 generators are the smallest and most powerful in the market with flow-rates from 100 ml/min to 20 L/min and pressure up to 16 bars with very high purity.

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