



## Gas Generators

No More Gas Cylinder to Be Replaced !

*The Safer You Feel,  
the More Reliable Data You Get*



# Hydrogen Generator

## Nothing is more worth than your safety.

YL Hydrogen Generators use the latest polymer electrolyte membrane (PEM) technology to produce high purity hydrogen. There are 2 types of hydrogen generators provided, which are NM-H<sub>2</sub> Plus series and PG-H<sub>2</sub> Plus series to be used in the proper application depending on the purity of hydrogen and the way of cartridge maintenance. The exclusive cascading option allows up to 32 units to be connected in series producing flow-rates of up to 32 L/min with NM-H<sub>2</sub> Plus series and 20 L/min with PG-H<sub>2</sub> Plus series.

Hydrogen is produced by using distilled or deionized water from hydrolysis, through a polymer membrane.

Electrolytic dissociation separates the water into its two main components: hydrogen ready for analytical use, and oxygen that is released into the air. No acid or no alkaline solutions are used in the hydrogen generation cycle.

## Benefits

- **IMPROVED CHROMATOGRAPHY RESULT**

Hydrogen as a carrier gas is faster and more sensitive than the more expensive helium. Run time can be saved of 25% to 35% without a decline in resolution.

- **SAFETY**

The very limited internal volume (less than 50 ml) allows safe use of the gas generators where the use of cylinders is risky or prohibited. The application of tested safety technologies stops the unit in the event of leaks or malfunctions.

- **SAVING**

Hydrogen gas generators avoid the need for expensive installation of gas pipelines from the cylinder storerooms to the labs, as well as the need to repeatedly change the bottles.

- **LONGER ANALYTICAL COLUMN LIFE**

The use of hydrogen as a carrier gas allows lower temperature elution, thus extends the life of the chromatography column.

- **LAB PRODUCTIVITY**

Continuous operation 24 hours a day allows maximum lab productivity, cutting dead time for gas bottle changeover and maintenance of the drying system.



## NM-H<sub>2</sub> Plus Series (Purity 99.99996 %)

The exclusive “No Maintenance” gas column cold dryer regeneration system eliminates all down time for maintenance that is typical of other systems on the market, assuring the best hydrogen purity at all times.



### ● NM-H<sub>2</sub> Plus Series Specifications

Model	NM-H <sub>2</sub> Plus-100	NM-H <sub>2</sub> Plus-160	NM-H <sub>2</sub> Plus-250	NM-H <sub>2</sub> Plus-300	NM-H <sub>2</sub> Plus-500	NM-H <sub>2</sub> Plus-600	NM-H <sub>2</sub> Plus-1000
Flow Rate(ml/min)	100	160	250	300	500	600	1000
Purity	99.99996 %						
Cascading	Up to 32 units						
Dryer	Cold Dual Dynamic Regeneration System						
Outlet Pressure	1~160 psig/0.1~11 barg						
Internal Volume	< 50 ml at max. pressure						
Display	Real time outlet pressure/ Water quality/ Auto-Diagnostics with alarms / Flowmeter						
Safety Sensor	Leak detector, Water level and quality sensor, Earthquake/ Shock sensor						
Water Quality	Deionized or Demineralized Water						
Application	<ul style="list-style-type: none"> <li>• Carrier gas for GC and GC-MS</li> <li>• Collisions on ICP-MS</li> <li>• Small fuel-cell cylinder refills</li> </ul>						

## PG-H<sub>2</sub> Plus Series (Purity 99.9996 %)

The static self-healing system eliminates dryer maintenance which allows for an increase in laboratory productivity. The deionizer bag is used for maintaining the high purity of deionized water for a long time and it's easy to change the bag.



### ● PG-H<sub>2</sub> Plus Series Specifications

Model	PG-H <sub>2</sub> Plus-100	PG-H <sub>2</sub> Plus-160	PG-H <sub>2</sub> Plus-250	PG-H <sub>2</sub> Plus-300	PG-H <sub>2</sub> Plus-500	PG-H <sub>2</sub> Plus-600
Flow Rate(ml/min)	100	160	250	300	500	600
Purity	99.9996 %					
Cascading	Up to 32 units					
Outlet Pressure	1~160 psig/0.1~11 barg					
Internal Volume	< 50 ml at max. pressure					
Display	Real time outlet pressure/ Water quality/ Auto-Diagnostics with alarms / Flowmeter					
Safety Sensor	Leak detector, Water level and quality sensor, Earthquake/ Shock sensor					
Water Quality	Deionized or Demineralized Water					
Application	<ul style="list-style-type: none"> <li>• Fuel gas for GC - FID(Flame Ionization Detector) / FPD(Flame Photometric Detector)</li> <li>• Collisions on ICP-MS</li> <li>• Small fuel-cell cylinder refills</li> </ul>					

# Air Generator

## Make your analysis easier, simpler and more reliable.

YL Air Generators produce dry and hydrocarbon-free air ( $\text{NO}_x/\text{SO}_x$  free and  $\text{CO}_2$  free with GT series) by using air from oil free compressors, thus avoid the need to use conventional bottles that are often complex to change.

Operation of the generator requires low levels of air consumption and electrical power. This complete turnkey system is engineered with the highest quality components, is easy to install, and requires only minimal annual maintenance.

With this zero air, you can decrease the background noise level because it gives the baseline much better stability, considerably increasing detector sensitivity and ensuring precise analytical results.

## Benefits

### • BETTER DETECTOR PERFORMANCE

The reduction of hydrocarbons, including methane, and carbon monoxide to  $< 0.1$  ppm, ( $\text{NO}_x$  to  $< 1$  ppm with GT series) decreases the background noise level and gives the baseline much better stability, considerably increasing detector sensitivity and ensuring precise analytical results.

### • EASY INSTALLATION

Just connect a suitable oil free compressor (optional) to almost immediately have air at the right grade. To save bench space, the unit can be easily installed on the lab wall.

### • LAB SAFETY

No more bottles in the lab and expensive pipelines for air distribution.

### • SAVE MONEY

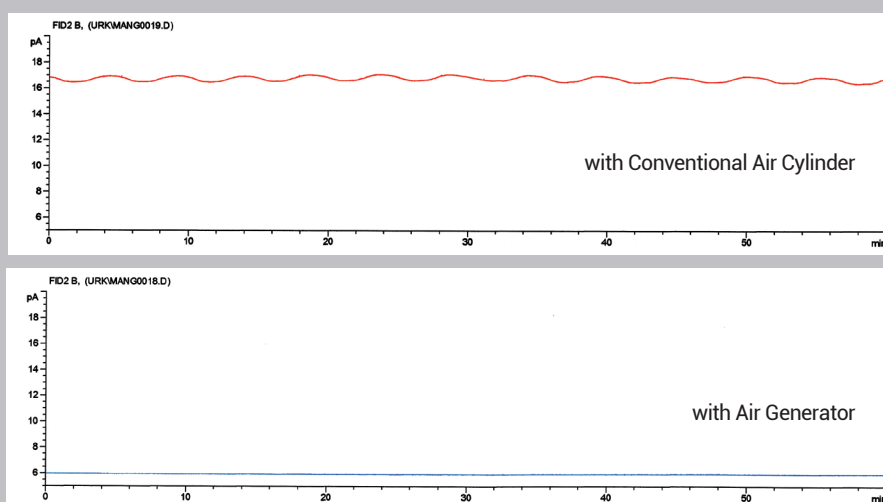
The unit only requires connection to a suitable oil free compressor and the mains: the investment can be paid back in less than a year.

### • IMPROVED LAB EFFICIENCY

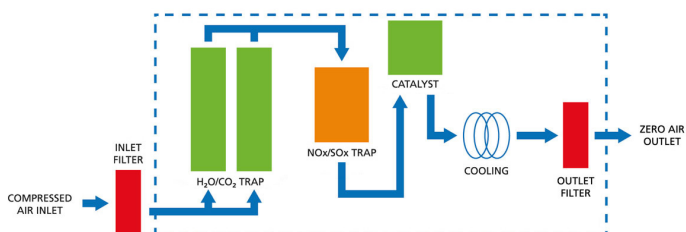
Continuous operation 24 hours a day cuts dead times for gas bottle changeover and avoids the need for tedious instrument recalibrations.

The following graph shows the difference of the FID signal changes with GC 1500 and without air generator.

FID signal without and with Zero Air Generator GC 1500



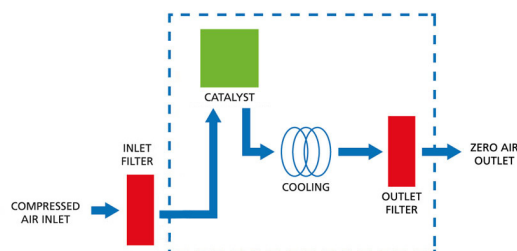
## Ultra Pure Air Generator – GT Series



### GT Series Specifications

MODELS	GT1500	GT3000	GT6000	GT15000	GT30000
Flow Rate (l/min)	1.5	3	6	15	30
HC & CO out	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm
CO <sub>2</sub> out	< 5 ppm	< 5 ppm	< 5 ppm	< 5 ppm	< 5 ppm
NO <sub>x</sub> , SO <sub>x</sub> out	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm
Max CO in	50 ppm	50 ppm	50 ppm	50 ppm	50 ppm
Max HC in	100 ppm	100 ppm	100 ppm	100 ppm	100 ppm
Max temp. in	40 °C	40 °C	40 °C	40 °C	40 °C
Pressure in	4.5~10 bar	4.5~10 bar	4.5~10 bar	4.5~10 bar	4.5~10 bar
Pressure drop	< 1 bar	< 1 bar	< 1 bar	< 1 bar	< 1 bar
In/out connections	1/4~1/8	1/4~1/8	1/4~1/8	1/4~1/8	1/4~1/8
Weight (kg)	9	9	25	25	25
Power	110~120V 60 Hz / 220~240V 50 Hz				
Dimensions (mm)	410H X 550W X 250D			470H X 630W X 310D	
Working temp.	Amb. +15 °C				
Applications	GC-FID/NPD/FPD/PFPD, THA(Total Hydrocarbon Analyzer), TOC(Total Organic Carbon), DSC(Differential Scanning Calorimeter)				

## Pure Air Generator – GC Series



### GC Series Specifications

MODELS	GC1500	GC3000	GC6000	GC15000	GC30000
Flow Rate (l/min)	1.5	3	6	15	30
HC & CO out	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm
Max CO in	50 ppm	50 ppm	50 ppm	50 ppm	50 ppm
Max HC in	100 ppm	100 ppm	100 ppm	100 ppm	100 ppm
Max temp. in	40 °C	40 °C	40 °C	40 °C	40 °C
Pressure in	4.5~10 bar	4.5~10 bar	4.5~10 bar	4.5~10 bar	4.5~10 bar
Pressure drop	< 1 bar	< 1 bar	< 1 bar	< 1 bar	< 1 bar
In/out connections	1/4~1/8	1/4~1/8	1/4~1/8	1/4~1/8	1/4~1/8
Weight (kg)	5	9	12	22	22
Power	110~120V 60 Hz / 220~240V 50 Hz				
Dimensions (mm)	410H X 550W X 230D				
Working temp.	Amb. +15 °C				
Applications	GC-FID/NPD/FPD/PFPD, THA(Total Hydrocarbon Analyzer), TOC(Total Organic Carbon), DSC(Differential Scanning Calorimeter)				

# Hybrid Gas Generator

Hydrogen + Zero Air - All in One Generator for GC

## FID Tower Plus

The FID Tower Plus hydrogen and air generator uses the latest technology in PEM(Polymer Electrolyte Membrane) for the production of pure hydrogen. Its vertical design allows positioning in over the laboratory bench so it requires only small space near your GC, optimizing the space you need.

Generator is equipped with an automatic loading of de-ionized water from a smart internal system tanks that give to the customer a 7L of water autonomy, it means that with a FID standard flow, the FID Tower Plus can provide up to 7000L of H<sub>2</sub> before the user refills it. Moreover, the practical system of internal deionizing cartridge replacement greatly simplifies the only maintenance recommended.



### • FID Tower NM/PG Plus Series

Model	H <sub>2</sub> Flow Rate (ml/min)	H <sub>2</sub> Purity	Zero Air	Dimension (mm)
FID Tower NM Plus	100/160/250/300/500/600/1000	99.99996 %	HC & CO out ＜0.1 ppm	140 W x 490 H x 580 D
FID Tower PG Plus	100/160/250/300/500/600	99.9996 %		
Application	• GC FID / NPD / TCD / FPD • Reagent gas for ELCD(Electrolytic Conductivity Detector) / HALL			

# High Purity Nitrogen Generator

Experience the improved efficiency in your lab.

## N<sub>2</sub> Tower Plus (High Purity N<sub>2</sub>)

N<sub>2</sub> TOWER Plus produces high purity N<sub>2</sub> for all major applications in analytical laboratories.

Nitrogen generators eliminate the typical problems associated with the handling of high pressure gas tanks while reducing the cost for high purity nitrogen at the same time.

The N<sub>2</sub> TOWER Plus generators use air from an external compressor and remove the oxygen to less than 10ppm (hydrocarbons to <0.1ppm is optional). The guaranteed flow rates of pure nitrogen are 500ml/min, 750ml/min, 1300ml/min or 4000ml/min depending on the generator module.



### • N<sub>2</sub> Tower Plus Series

Model	N <sub>2</sub> Flow Rate (ml/min)	N <sub>2</sub> Purity	Application	Dimension (mm)
HP N <sub>2</sub> Tower 500	500	99.999 %	Carrier gas for GC	140 W x 490 H x 630 D
HP N <sub>2</sub> Tower 750	750	99.995 %		
HP N <sub>2</sub> Tower 1300	1300	99.99 %	ICP/ELSD/Incubators/ TGA(Thermogravimetric Analyzer)/DSC	
HP N <sub>2</sub> Tower 4000	4000	99%		

# Nitrogen Generator

It meets the requirement of both purity and flow rate.

## Whisper N<sub>2</sub> Series

The Whisper nitrogen generator has been developed to meet specific requirements in terms of flow, purity and pressure in LCMS applications. It can also be used for the evaporation of solvents in samples being analyzed. The simple high efficiency membrane technology allows the separation of nitrogen from the other components of the compressed air inlet. The low pressure drop, just one bar, allows the unit to be connected to an existing dry and oil-free compressed air source in the lab.



Whisper N<sub>2</sub> series

Mini Whisper N<sub>2</sub>

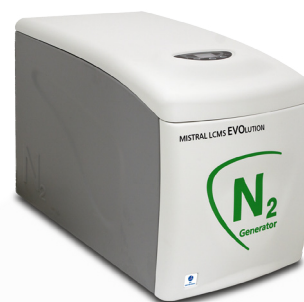
## Mistral Evolution N<sub>2</sub> Series

The Mistral-Evolution nitrogen generator including a built-in oil-free air compressor is optimized to generate nitrogen of constant purity and hence improve the performance of the analytical instrument - which will result in an overall productivity improvement of the laboratory.

Using the PSA (Pressure Swing Adsorption) technology that removes oxygen, carbon dioxide and water from compressed air, the resulting stream pure nitrogen is ideal for laboratory applications like LCMS techniques and other inert gas applications.

There will be no extra cost anymore for gas supply, transportation, storage and handling. The pure nitrogen is produced locally at low pressure and at ambient temperature which is a very much appreciated advantage over high pressure gas cylinders or liquid nitrogen.

The low noise of the instrument allows the installation near the LCMS or next door up to 30m apart.



Mistral Evo N<sub>2</sub> Series

### ● N<sub>2</sub> Generator Specifications

Brand	Mistral Evolution N <sub>2</sub>		Whisper N <sub>2</sub>					
Compressor	Built-in Compressor		External Compressor					
Production Technology	PSA (Pressure Swing Adsorption)		Membrane					
Produced Gas	N <sub>2</sub>		Hybrid (N <sub>2</sub> + Dry Air)			N <sub>2</sub>		
N <sub>2</sub> Flow Rate (l/min)	10 or 25	35 or 40	10 (Mini)	10 or 120	40 or 80	10 (Mini)	40 or 80	120
Dry Air Flow Rate (l/min)	-		35			-		
N <sub>2</sub> Purity	99.5 %	99 %	98 %		99.5 %	98 %	99.5 %	98 %
Application	ELSD LC/MS	LC/MS	LC/MS with the requirement of dry air			ELSD LC/MS	LC/MS	






YL products are endorsed by Korean PPS (Public Procurement Service) in recognition of their excellent technologies and the product quality.



*Gas Generators*



**YL INSTRUMENT CO., LTD.**

The iDEA makes iDEAL!  KOREA MADE

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