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AVAILABLE IN 5 MODELS - Option with or without built in air compressor:

- > **MAESTRO-35 LCMS series:**
With max. Output of 35 L/min of N2 gas.
- > **MAESTRO-64 LCMS series:**
With max. Output of 64 L/min of N2 gas.
- > **MAESTRO-DF LCMS series:**
The dual flow, specifically designed for the Agilent 6400 & 6500: to meet the drying, sheath, nebulization and collision gas requirements. The generator provides two continuous streams of nitrogen from a single 'plug & play' unit.
- > **MAESTRO-15 LCMS OR MAESTRO-25 LCMS series:**
With max. Output of 15 or 25 L/min of N2 gas.
- > **MAESTRO-TF LCMS series:**
The triple flow, specifically designed to supply Curtain, Source & Exhaust gases with dry air and nitrogen for ABI SCIEX LCMS instruments.

FEATURES AND BENEFITS

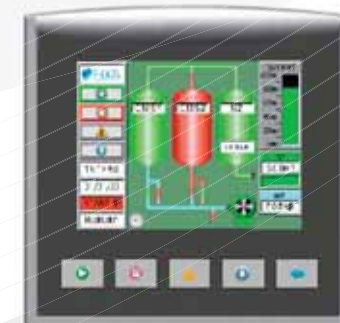
- > **Fully regenerative PSA technology;** reduce risk of gas contamination and phthalate free.
- > **HMI touch screen technology** to display the process in real time, inlet/outlet pressures.
- > **Integral oil free compressor in option:** fully secure supply.
- > Quiet thanks to the **Soundproofed compressor box and anti-vibration features.**
- > **Auto start.**
- > **Audible and Alarm display with help menu.**
- > **Visual maintenance indication.**
- > **Outlet flow indicator.**
- > **Trend graph for QA reporting.**
- > **Energy saving Mode:** Enables the compressor to switch off when nitrogen supply is not required.
- > **Remote access to screen using internet or GSM.**
- > **Fit with wheels.**

THE LC-MS ANALYZERS do not all share the same requirements in terms of type, flow rate, pressure and purity of the gases needed for their operation; That's why the MAESTRO LCMS series were created to meet the needs of all LC/MS analyses on the market.

MODELS		Outlet Flow rate	Outlet Pressure Bar g	Inlet Air pressure required	Inlet Air Flow rate required	Size
MAESTRO-35 LCMS	0	35 l/min N2	7	10	109 l/min	Size 3
	1	35 l/min N2	7	-	-	Size 3
MAESTRO-64 LCMS	0	64 l/min N2	7	10	115 l/min	Size 4
	1	64 l/min N2	7	-	-	Size 5
MAESTRO-DF LCMS	1	- 35 L/min N2 @ 99% for Drying, sheath/nebulisation gas - 200 ml/min N2 @ 99.999% for collision gas	7	-	-	Size 4
MAESTRO-TF LCMS	1	- 12 l/min N2 for curtain gas - 24 l/min dry air for source gas - 8 l/min dry air for exhaust gas	@ 5.5 @ 7.6 @ 4.2	-	-	Size 4
MAESTRO-15 LCMS	0	15 l/min	7	10	53 l/min	Size 3
	1	15 l/min	7	-	-	Size 3
MAESTRO-25 LCMS	0	25 l/min	7	10	68 l/min	Size 3
	1	25 l/min	7	-	-	Size 3

0	Without compressor
1	With compressor

ENCLOSURE SIZE	Height cm	Width cm	Depth cm	Weight Kg
SIZE 3	78	43	77	80
SIZE 4	78	43	88	150
SIZE 5	100	43	88	160



DS-PSA LC/MS NITROGEN GENERATORS



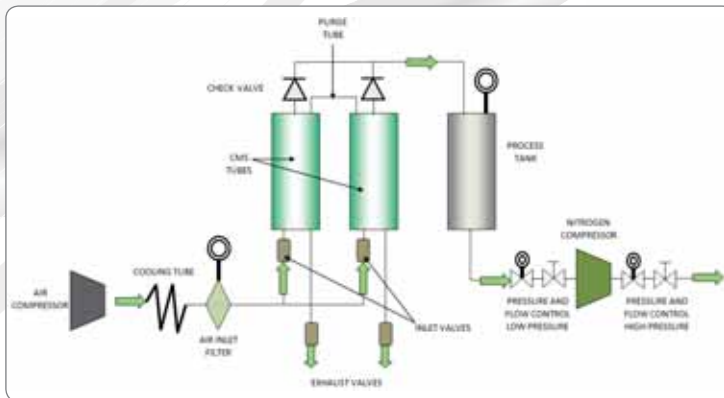
FOR INSTALLATIONS FAR AWAY FROM THE LAB WITHOUT ANY PRESSURE DROP

FEATURES AND BENEFITS

- > **Fully regenerative PSA technology:** reduce risk of gas contamination and phthalate free.
- > **High pressure nitrogen > 8 bar.**
- > **Integral oil free compressor:** fully secure supply.
- > **Quiet thanks to the Soundproofed compressor box and anti-vibration features.**
- > **Compressor over temperature alarm.**
- > **Auto start.**
- > **Audible and Alarm display with help menu.**
- > **Visual maintenance indication.**
- > **Energy saving Mode:** Enables the compressor to switch off when nitrogen supply is not required with the external N2 tank.
- > **Fit with wheels.**

THE NITROGEN GENERATOR uses pressure swing adsorption technology (PSA) combined with a pressure management in two steps to produce pure nitrogen gas with a high flow, pressure and purity.

This high 2 pressure allows installing the N2 generator far away from the lab without any pressure drop. The N2 generator includes in standard a pressure switch which can be adjusted on the display: by linking the N2 system to an external tank, the end user will reduce the cost of the service maintenance by nearly 50%, as the components will be less stress.



EURUS 20 LC-MS	Max. 20 L/min at 8 bar
EURUS 35 LC-MS	Max. 35 L/min at 8 bar
EURUS 40 LC-MS	Max. 40 L/min at 8 bar
Purity	> 99 %
Indicator lights	Power ON, System OK, System error
Hours run meter	yes
Max. ambient operating temperature	10 – 30°C
Integrated air compressor	Yes
Noise level	< 55 dB
Electrical requirements	230V / 1800 W
Connexion	¼ NPT
Weight (Kg)	110
Dimensions (H x W x D) cm	64 x 48 x 83

COMMON FEATURES

- > **Improve analytical instruments performance**
Production of a constant flow of gas improves the consistency of the analysis results and hence reproductability.
- > **Improve laboratory efficiency**
The relatively high gas volumes required by LCMS make cylinder supply inappropriate for such applications. A constant, uninterrupted gas supply eliminates interruptions of analyses to change cylinders.
- > **Improve economy**
Quick return on investment < 1 year. No gas cylinder rental bottles, no price inflation.
- > **Improve safety**
Nitrogen produced at low pressure and ambient temperature removes the hazards associated with high pressure cylinders and liquid Dewar's.



HIGH PRESSURE NITROGEN GENERATORS

FOR ASE DIONEX

APPLICATIONS : Accelerated Solvent Extraction devices.
 Pressurized Solvent Extraction devices working at high pressure level
 (ASE-200, ASE-300, ASE-350 from Dionex).

FEATURES AND BENEFITS

- > **Fully regenerative PSA technology;**
Reduce risk of gas contamination.
- > **High pressure nitrogen > 11 bar.**
- > **Two nitrogen outlet lines:**
 - One at 7 bar for pneumatic system (6 mm OD tubing).
 - One at 11 bar for the extraction cells .
- > **Integral oil free compressor:** fully secure supply.
- > **Quiet thanks to the Soundproofed compressor box.**
- > **Compressor over temperature alarm.**
- > **Auto start.**
- > **Audible and Alarm display with help menu.**
- > **Visual maintenance indication.**
- > **Energy saving Mode:** Enables the compressor to switch off when nitrogen supply is not required with the external N2 tank.
- > **Fit with wheels.**

This technique uses a bed of carbon molecular sieve (CMS) to selectively remove oxygen and other contaminants from atmospheric air.

The bed alternates between purification and regeneration modes to ensure continuous nitrogen production.

The pure N2 collected is then boosted by a second compressor (stage 2) from 3 barg to 11.0 barg, which is the outlet pressure specification.



The nitrogen generator, model **EURUS HIGH PRESSURE**, the only one on the market working up to 11 bar.

The device complete with integrated compressors, software and two diverse outputs providing the nitrogen flow with variable pressure (modified by the user), will allow the user to easily manage the ASE extraction systems without having to resort to frequent and annoying replacement of gas cylinders (air and nitrogen) and giving substantial savings.

EURUS-20-HP	Flow rate Max. 20 L/min, purity > 99.5% Two pressure outlets : 7 bar for pneumatic, 11 bar for extractions cell
Indicator lights	Power ON, System OK, System error
Hours run meter	Yes
Max. ambient operating temperature	10 – 30°C
Integrated air compressor	Yes
Noise level	< 55 dB
Electrical requirements	230V / 1800 W
Connexion	¼ NPT and 1/8 Swagelock
Weight (Kg)	112
Dimensions (H x W x D) cm	64 x 48 x 83

MP-AES NITROGEN/AIR GENERATORS



FOR MP-AES APPLICATIONS

THIS DUAL FLOW GENERATOR has been specifically designed to meet the nitrogen and dry air needs to supply a Microwave Plasma Atomic Emission Spectrometer (MP-AES) of the Agilent range. Nitrogen is produced by pressure swing adsorption (PSA) to remove O₂, CO₂ and water from compressed air and purified air is produced by using an activated alumina column. The generator provides two continuous streams of Nitrogen and Dry air from a single 'Plug and Play' unit. The model is available with and integral oil free air compressor, and is extremely quiet in operation. The Generator is controlled using the latest in HMI touch screen technology to display the process in real time, inlet/outlet pressures.



Ambient Temp range	5-35°C (41-95°F)
Maximum air Inlet Pressure	8.5 barg
Nitrogen Outlet Pressure	See above table
Electrical Supply	220 VAC / 1 ph / 50-60 Hz - 110 VAC / 1 ph / 50-60 Hz
Outlet connections	G 1/4" (BSP) Female



STANDARD FEATURES

- > Complete 'Plug and Play' system specifically designed for the Agilent MP-AES.
- > **CONFIGURATION FOR ORGANICS ANALYSIS**
N₂: 25 L/min at 65 psi, purity > 99.5%.
Air: 36.5 L/min at 87 psi separate in 3 ways for POP, EGCM and monochromator gas.
- > **CONFIGURATION FOR DETERMINATION OF SULFUR**
N₂: 25 L/min at 65 psi, purity > 99.5%.
Air: 36.5 L/min at 87 psi separate in 2 ways for POP and EGCM optic purge.
N₂: 10L/min @99.95% at 65 psi to supply monochromator gas.
- > With/without integral oil free air compressor with noise reduction technology.
- > Auto start.
- > Alarm display with help menu.
- > Audible alarm sounder.
- > Outlet flow indicator.
- > Trend graphs for QA reporting.
- > Energy saving Mode.

MODELS	Flow rate				Purity		Outlet Pressure	Integral air compressor	Size H x W x D cm	Weight (Kg)
	MP-AES Gas N ₂	POP gas AIR	EGCM Gas AIR	Monochromator Purge gas	N ₂	AIR				
THYSTER-8/0-DF	25 l/min	25 l/min	1.5 l/min	Air 10 l/min	> 99.5%	Clean and dry	7 bar	No	78 x 43 x 88	110
THYSTER-8/1-DF	25 l/min	25 l/min	1.5 l/min	Air 10 l/min	> 99.5%	Clean and dry	7 bar	Yes	100 x 43 x 88	160
THYSTER-8/0	N/A	N/A	N/A	N ₂ 10 l/min	> 99.95%	N/A	7 bar	No	78 x 43 x 77	65
THYSTER-8/1	N/A	N/A	N/A	N ₂ 10 l/min	> 99.95%	N/A	7 bar	Yes	78 x 43 x 77	80

7

2
5**N₂**Nitrogen
14.00674

HIGH PURITY NITROGEN GENERATORS

INCLUDING ZERO N₂ AND COMBINED N₂/AIR

BENEFITS

- > **Proven durability PSA technology**
Best in class life expectancy, no need for secondary purification.
- > **Increased laboratory efficiency with a constant and guaranteed flow of instrument grade nitrogen:**
Improved Instrument stability and greater reproductibility of results.
- > **Improved safety**
Nitrogen produced at low pressure and ambient temperature removes the need for high pressure cylinders or liquid Dewar's.
- > **Simple installation**
 - Only one set up operation required for reliable service over time.
 - Installation on or below a laboratory bench top, saving space in the laboratory.
- > **Economy**
 - Quick return on investment.
 - No gas cylinder rental bottles, no price inflation.



The technology used to produce a continuous flow of **HIGH PURITY N₂** is pressure swing adsorption (PSA). This technology uses a combination of molecular sieves to selectively eliminate O₂ and other contaminants in the ambient air.

The CMS column(s) alternate between the purification and regeneration modes to ensure continuous N₂ production. The gas generator is designed to take pre-filtered compressed air at 7 or 8, 5 barg depending on model from the existing laboratory. This flow of filtered compressed air then passes through the CMS column which is in purification mode supply or via the integrated oil free compressor. At this point, the O₂, CO₂, humidity and hydrocarbons are eliminated from the compressed air, producing a flow of clean and dry high purity nitrogen.

For **ZERO NITROGEN**, a heated catalyst oxidizes additional hydrocarbons from the N₂ gas flow providing zero grade N₂ with a remaining hydrocarbon content of < 0.05 ppm.

For the **COMBINED N₂/ AIR GENERATORS**, we use pressure swing adsorption technology (PSA) to produce pure nitrogen gas and an additional bed of activated alumina for air purification.

Generator is controlled using the latest in HMI touch screen technology to display the process in real time, inlet/outlet pressures and oxygen level (optional).



TECHNICAL FEATURES

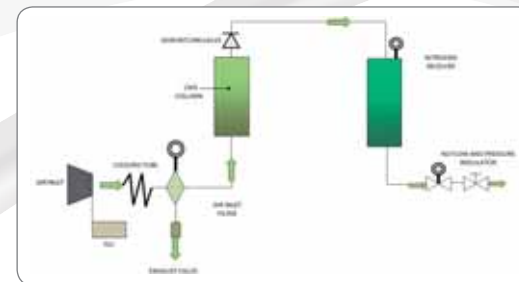
- > **N₂ flow:** 1L/min to 50 L/min.
- > **O₂ purity:** 3% to 5 ppm.
- > **On line purity monitoring capability with the O₂ sensor.**
- > **Catalyst module capability:** hydrocarbons level < 0.05 ppm.
- > **Available with or without built-in-air compressor.**
- > **Quiet thanks to the Soundproofed compressor box and anti-vibration features.**
- > **Auto start.**
- > **Audible and Alarm display with help menu.**
- > **Visual maintenance indication.**
- > **Outlet flow indicator.**
- > **Trend graph for QA reporting.**
- > **Energy saving Mode:** Enables the compressor to switch off when nitrogen supply is not required.
- > **Remote access to screen using internet or GSM.**
- > **Fit with wheels.**



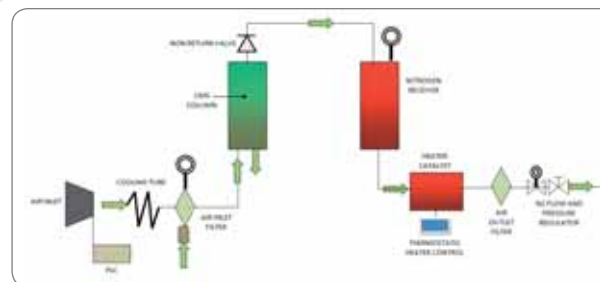
APPLICATIONS : GC-CARRIER GAS / GC-FID, NPD, ECD, AED / NMR / DICHROISM CIRCULAR / ELSD / CORONA / ICP / COT / SAMPLE EVAPORATION / XRD

MODELS	Nitrogen Outlet Flow rate–L/min vs Oxygen Concentration						Outlet Pressure Bar g	Inlet Air pressure required barg	Dimensions W x H x D cm	Weight Kg	
	1	2	3	4	5	6					
	5 ppm	100 ppm	0.1%	0.5%	1.0%	2.0%					
ALIZE-1	0	1.0	-	-	-	-	5.5	7	34 x 71 x 48	30	
	1	1.0	-	-	-	-	5.5	-	34 x 71 x 69	45	
ALIZE-3	0	3.0	4.0	-	-	-	5.5	7	43 x 78 x 77	80	
	1	3.0	4.0	-	-	-	5.5	-	43 x 78 x 77	88	
ALIZE-4 SC	0	-	-	3.0	4.0	-	5.5	7	34 x 71 x 48	30	
	1	-	-	3.0	4.0	-	5.5	-	34 x 71 x 69	45	
ALIZE-4 DC	0	-	-	-	6.0	-	5.5	7	34 x 71 x 48	30	
	1	-	-	-	6.0	-	5.5	-	34 x 71 x 69	45	
ALIZE-5	0	-	4.0	6.0	8.0	10.0	5.5	7	43 x 78 x 77	80	
	1	-	4.0	6.0	8.0	10.0	5.5	-	43 x 78 x 77	96	
ALIZE-6	0	5	8	15	30	35	40	5.5	7	43 x 78 x 77	80
	1	5	8	15	30	35	40	5.5	-	43 x 78 x 77	96
ALIZE-7	0	-	-	10.0	15	20	25	5.5	7	43 x 78 x 77	80
	1	-	-	10.0	15	20	25	5.5	-	43 x 78 x 77	96
Z-ALIZE-1	0	1.0	-	-	-	-	5	7	34 x 71 x 48	30	
	1	1.0	-	-	-	-	5	-	34 x 71 x 69	45	
Z-ALIZE-3	0	3.0	4.0	-	-	-	5	7	43 x 78 x 77	80	
	1	3.0	4.0	-	-	-	5	-	43 x 78 x 77	96	
ALLIA-1	N2 / AIR	0	1.0	-	-	-	-	5.5	7	34 x 71 x 69	45
		1.5 (HCs < 0,1ppm & water dewpoint< -55°C)	5.5	7							
ALLIA-1	N2 / AIR	1	1.0	-	-	-	-	5.5	-	43 x 78 x 77	80
		1.5 (HCs < 0,1ppm & water dewpoint< -55°C)	5.5	-							
ALLIA-3	N2 / AIR	0	3.0	4.0	-	-	-	5.5	7	34 x 71 x 69	45
		3.0 (HCs < 0,1ppm & water dewpoint< -55°C)	5.5	7							
ALLIA-3	N2 / AIR	1	3.0	4.0	-	-	-	5.5	-	43 x 78 x 77	80
		3.0 (HCs < 0,1ppm & water dewpoint< -55°C)	5.5	-							
Z ALLIA-1	N2 / AIR	0	1.0	-	-	-	-	5.5	7	34 x 71 x 69	45
		1.5 (HCs < 0,1ppm & water dewpoint< -55°C)	5.5	7							
Z ALLIA-1	N2 / AIR	1	1.0	-	-	-	-	5.5	-	43 x 78 x 77	80
		1.5 (HCs < 0,1ppm & water dewpoint< -55°C)	5.5	-							
Z ALLIA-3	N2 / AIR	0	3.0	4.0	-	-	-	5.5	7	34 x 71 x 69	80
		3.0 (HCs < 0,1ppm & water dewpoint< -55°C)	5.5	7							
Z ALLIA-3	N2 / AIR	1	3.0	4.0	-	-	-	5.5	-	43 x 78 x 77	96
		3.0 (HCs < 0,1ppm & water dewpoint< -55°C)	5.5	-							

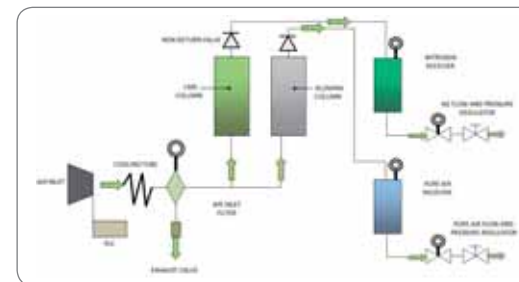
NITROGEN GENERATORS



ZERO NITROGEN GENERATORS



COMBINED NITROGEN AND AIR GENERATORS



0	Without compressor	1	Purity : 5ppm	E	240 V / 50 HZ
1	With compressor	2	Purity : 100 ppm	W	110 V / 60 HZ
ALIZE	0	6	E	Selected product code	



MEMBRANE NITROGEN GENERATORS

APPLICATIONS : LCMS / SOLVENT EVAPORATION / ELSD DETECTORS / CORONA DETECTORS

FEATURES AND BENEFITS

- > **Flow rates:**
8, 40, 80, 120 L/min.
- > **N2 / DRY AIR flow rates available for ABI SIEX LCMS.**
- > **Nitrogen purity:** > 99%.
N2 dewpoint < -40°C.
- > **Wall mounted installation.**
Save space in the lab.
- > **No need of power connection.**
- > **Low maintenance.**
Only to replace the filters once per year.
- > **Include a N2 tank to stop automatically the unit when N2 is not required.**

THE PRODUCTION OF NITROGEN BY MEMBRANE TECHNOLOGY

is based on the selective permeation principle: the air circulates in a device which contains a membrane: oxygen, water vapor and CO2 which are fast gases, diffuse through this membrane and then are eliminated.

As for the Nitrogen molecule which presents a speed of slower distribution, stay within and are delivered as product gas.

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.

Combined Nitrogen/dry Air available: to meet the requirements in terms of flow, purity and pressure on ABI LC-MS applications.

COMBINED N2/AIR FOR ABI LC-MS SYSTEMS

Specifications	STREAM-TF
N2 for curtain gas	12 l/min N2 @ 5.5 bar
Dry Air for source gas	24 l/min @ 7.6 bar
Dry Air for exhaust gas	8 l/min @ 4.2 bar
Residual particulates	< 0.01 µ
Dewpoint at operating pressure	-40°C
Maximum operating temperature	10°C -35°C
Electrical specification	none
Inlet/outlet connections	¼ G
Weight (Kg)	26 kg

SPECIFICATIONS	Flow rate (Max.)	N2 Outlet pressure	Air flow rate Required @ 8 bar	Pressure loss	Air inlet pressure Min/max	Particles	N2 dewpoint at operating pressure	Maximum operating temperature	Electrical specification	Inlet/outlet connections	Weight
STREAM-8	8 L/min >99%	7 bar	28 l/min	< 0.8 bar (10 psig)	5-13 bar	< 0.01 micron	-40 °C	10°C - 35°C	none	1/4G	15 Kg
STREAM -40	40 L/min >99%		140 l/min								22 Kg
STREAM-80	80 L/min >99%		280 l/min								26 Kg
STREAM-120	120 L/min >99%		420 l/min								30 Kg

NITROGEN GENERATORS

FOR HIGHER FLOWRATES

SERIE MAXIMUS LITE / MAXIMUS

MD Scientific

MD Scientific is authorized distributor in Denmark
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APPLICATIONS : NMR / DICHOISM CIRCULAR / SAMPLE EVAPORATION / MULTIPLE LCMS / A COMPLETE LAB

F-DGSI also offers comprehensive range of Maximus lite and Maximus nitrogen generators. They offer to you a unique, innovative solution to nitrogen gas supply. A reliable, secure source of nitrogen can be produced from your existing compressed air supply, eliminating the need for liquid nitrogen or high pressure gas cylinders. Conceived for a continuous operation, the **MAXIMUS LITE OR MAXIMUS** nitrogen generator can produce flow rates from a few liters per minutes to over NL/min at purities in oxygen content residual from 10 ppm to 3%. The high N2 flows are ideally suited for use as the basis of centralised laboratory nitrogen supply systems capable of supplying multiple instruments and applications. System modularity allows the capacity of the system to be easily increased as laboratory operations expand. The generator is controlled using the latest in HMI touch screen technology to display the process, pressures, inlet air dewpoint and oxygen levels with continuous monitoring complete with alarms.



BENEFITS AND SAVINGS

- > **Economy saving**
 - Quick return on investment < 1 year.
 - After installation, the generator requires minimal attention and Maintenance.
- > **Reliability and safety of use**
 - Nitrogen produced at low pressure and ambient temperature removes the hazards associated with high pressure cylinders and liquid Dewar's.
 - Nitrogen available on request 24H per day ensuring the walk of the process in a regular and uninterrupted way.
- > **Compact design and flexible modular option**
 - The system demands less floor space.
 - The modular concept means the generators can be multi banked if required (Master/Slave configuration). Evolutionary System adapting as your business grows and gas requirements change.
- > **Quick and easy maintenance:** access from front.
- > **Automatic economy mode:** enables to go in standby when NO nitrogen is requested.
- > **Specification based at 7 barg air inlet air pressure @ 20°C-25°C ambient temperature.**

NITROGEN OUTLET FLOW RATE NL/MIN VS OXYGEN CONCENTRATION

MODELS	10ppm	100ppm	0.1%	0.5%	1.0%	2.0%	3.0%	H x W x D	Weight Kg
MNG102L	10.0	20.0	30.0	45.0	50.0	70.0	85.0	115 x 40 x 58	150
MNG104L	20.0	40.0	60.0	90.0	100.0	140.0	170.0	115 x 40 x 58	180
MNG106L	30.0	60.0	90.0	135.0	150.0	210.0	255.0	115 x 40 x 76	230
AIR/N2 RATIO	10.8	5.9	3.6	3.4	2.8	2.6	2.4	2.2	2.1

NITROGEN FLOW RATE M3/HR VS PURITY (OXYGEN CONCENTRATION)

MODELS	10ppm	50ppm	100ppm	500ppm	0,10%	0,5%	1,0%	2,0%	3,0%	4,0%	5,0%	H x W x D	Weight Kg
MNG104	2,0	3,8	5,5	8,6	9,0	14,1	17,8	22,0	25,8	29,0	32,2	1870x595 x550	230
MNG106	3,0	5,8	8,5	13,0	13,5	21,2	26,6	32,8	38,7	43,5	48,3	1870 x 595 x 780	350
MNG108	4,0	7,8	11,0	17,3	18,0	28,3	35,5	43,8	51,6	58,0	64,4	1870 x 595 x 910	445
MNG110	5,0	9,6	14,0	21,6	22,5	35,5	44,4	54,7	64,5	72,5	80,4	1870x 59 x 1040	538
MNG112	6,0	11,5	16,5	26,0	26,8	42,4	53,5	65,7	77,4	87,1	96,5	1870 x595 x1170	632
MNG116	8,0	14,5	21,0	32,8	34,0	53,7	67,5	83,2	98,1	110,3	122,3	1870x 595x 1480	820
MNG120	10,0	17,5	25,3	39,7	41,2	65,0	81,7	100,7	118,7	133,5	148,0	1870x595x1740	955
AIR/N2 RATIO	10.8	8	5.9	3.6	3.4	2.8	2.6	2.4	2.2	2.1	2		

For different Inlet air pressure,
a correction factor needs to be apply to find the new N2 flow.

Air inlet pressure in barg	7.5	8	8.5	9	9.5
Correction factor	1.14	1.21	1.29	1.36	1.43