

INDUSTRY



CLAIND

GAS GENERATORS AND PURIFIERS



NITROGEN: THE IDEAL GAS FOR INDUSTRIAL APPLICATIONS

Nitrogen is a gas used increasingly in industrial applications. Tangible evidence and the construction of hundreds of plants confirm that on-site nitrogen self-production is a convenient solution for user safety, from both an economic and practical standpoint.

As we know, nitrogen is an inert gas, used to eliminate oxygen and other unwanted gases. It is therefore generally used in industrial applications to prevent oxidation in metals, inhibit bacteriological growth in food and pharmaceuticals, and minimise the risk of spontaneous combustion and explosions.

Claind has developed two ranges of generators specifically for nitrogen production: **FLO, PICO, MAXI** and **LASER CUT**.

These models were specially designed for use in the following industrial fields: **heat treatments and welding; chemical, pharmaceutical and petrochemical industries; plastic processing industries; electronic industries; food & beverage; industries specialised in laser cutting.**





SUPERIOR PERFORMANCE WITH GUARANTEED RESULTS

1 ADVANTAGES OF ON-SITE NITROGEN PRODUCTION compared to cylinders and liquid



SAFETY



AUTONOMY AND
PRODUCTION CONTINUITY



QUICK PAYBACK



LOW OPERATING COSTS



NO LOGISTICAL PROBLEMS AND
ELIMINATION OF ADMINISTRATIVE
ACTIVITIES RELATED TO
CONTINUOUS GAS SUPPLY

2 SPECIFIC ADVANTAGES OF CLAIND GENERATORS compared to those of competitors



EASE OF USE



RELIABILITY, LONG LIFE AND
LOW MAINTENANCE COSTS



A WIDE RANGE THAT
MEETS ALL CUSTOMER
REQUIREMENTS



PRODUCTION OF NITROGEN
PROPORTIONAL TO CONSUMPTION
THANKS TO THE STAND-BY MODE



DIGITAL CONTROL SYSTEM
THAT CAN BE INTERFACED
WITH COMPANY IT SYSTEMS
(E.G. **PLC** OR **SCADA**)



CONNECTION TO THE
IoT CLAIND4YOU PLATFORM
TO CONTROL THE DEVICE REMOTELY
AND COLLECT OPERATING DATA





SPECIFIC TECHNOLOGY TO PRODUCE NITROGEN

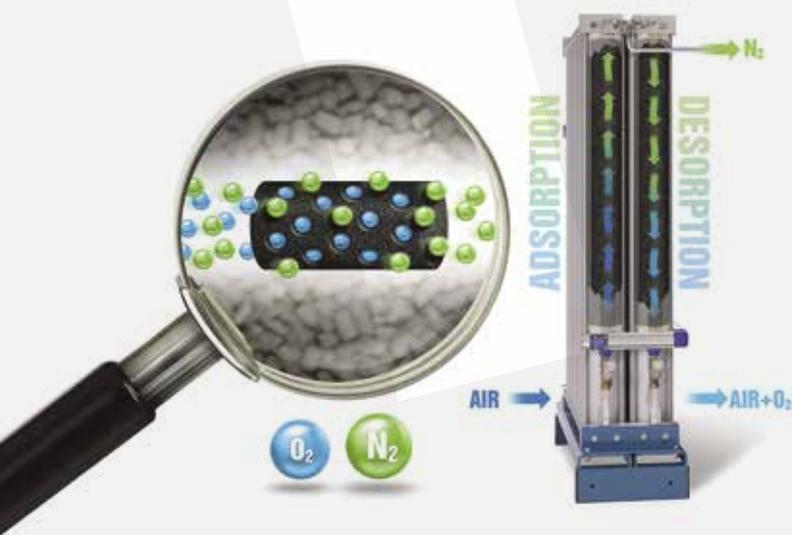
Claind's solutions for nitrogen self-production use **PSA (Pressure Swing Adsorption) technology.**

The PSA system consists of two beds of molecular CMS sieves (Carbon Molecular Sieve), which are alternatively pressurised and depressurised. Each bed can consist of one or more columns. The compressed air, which is pre-treated to eliminate dust and moisture, enters the base of the first active bed and flows through the CMS. Oxygen, carbon dioxide and other pollutants in the air are trapped, while nitrogen flows through the bed and exits from the head of the column towards a storage tank.

After a set time, the saturated active bed is depressurised so that it can be regenerated, while the cycle resumes symmetrically on the second bed.

In order to constantly provide our customers with high-quality solutions and innovation, we have further improved PSA technology by designing and registering the exclusive international **FAST PURITY®** patent, which ensures:

-  MAXIMUM NITROGEN PURITY JUST A FEW MINUTES AFTER IGNITION,
-  INCREASED LIFE SPAN FOR THE GENERATOR,
-  LOWER MECHANICAL STRESS,
-  HIGHER YIELD,
-  REDUCED AIR AND ELECTRICITY CONSUMPTION.





A FEW SIGNIFICANT BUSINESS CASES



METALLURGY, HEAT TREATMENTS AND WELDING

Heat treatment for metals is a process that involves conferring certain properties to metals (such as copper, aluminium, carbon and stainless steels): heat treatment cycles are carried out inside furnaces in controlled atmospheres. Metal sensitivity to oxygen greatly increases with high temperatures, e.g. in quenching, cementation, annealing or nitriding processes. A similar situation happens in metal welding. Nitrogen, as an inert gas, performs the task of inhibiting oxidation and optimising the quality of the process.



CHEMICAL AND PHARMACEUTICAL

The use of nitrogen in the chemical sector is vast and ranges from basic chemistry to pharmaceuticals, to producing paints, powders, glues and adhesives. In these sectors, it is used for:

- INERTING STORAGE AND PROCESS TANKS,
- PNEUMATIC CONVEYING OF LIQUID PRODUCTS,
- INERTING IN PRODUCTION AND MANUFACTURING PROCESSES,
- PACKAGING IN A PROTECTED ATMOSPHERE.



PETROCHEMICAL, OIL & GAS

Nitrogen is used in this sector to make systems safe from fire and explosions, particularly in the applications of:



- INERTING FUEL CONTAINERS,
- OIL AND NATURAL GAS EXTRACTION,
- MAINTENANCE OF OIL AND GAS PIPELINES.



PLASTICS

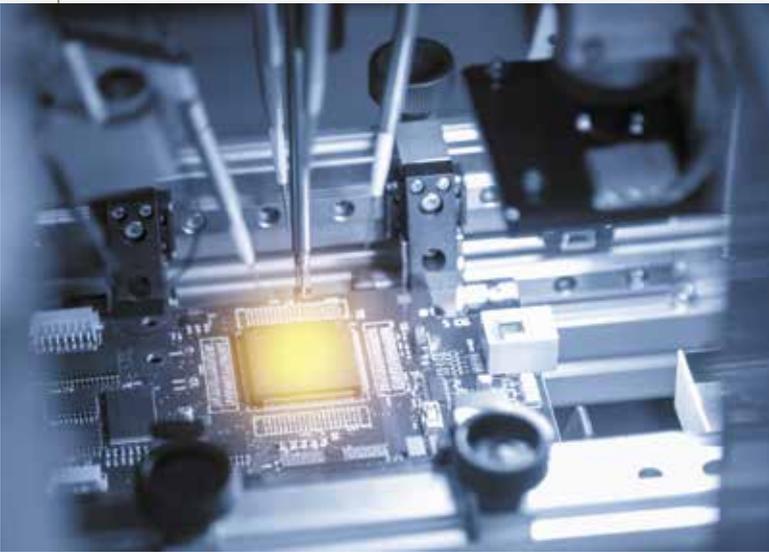
Nitrogen is used even in moulding plastics as an assist gas: plastic product manufacture requires a pressurised gas that does not react with the material and averts mechanical stress, ensuring greater rigidity, less distortion and an optimal shape structure.





ELECTRONICS

In wave and selective soldering machines or in reflow ovens, the alloys used in producing electronic boards are subject to oxidation; using nitrogen as an inert gas during soldering prevents this process and ensures better product quality.



FOOD & BEVERAGE

Nitrogen must reach the EU qualification of “food additive E941” in the food industry.

In this field, nitrogen is used for packaging perishables in a protected atmosphere, prolonging their shelf life, maintaining the organoleptic properties of the food unaltered, preserving its freshness and guaranteeing better presentability in terms of colour, shape and composition.

When it comes to liquid foods (e.g. in the wine field), nitrogen is used in different stages of the production process, such as transferring, storage, decanting and bottling.



LASER CUTTING

Nitrogen is also used in sheet metal processing as a laser cutting assist gas: nitrogen's inert properties and flow pressure guarantee a shiny edge and allow the removal of any burrs to obtain a quality cutting profile.





OUR RANGE OF GENERATORS DESIGNED TO FULFILL ALL YOUR NEEDS

FLO, PICO and MAXI SERIES

The nitrogen generators of the **FLO**, **PICO** and **MAXI** series consist of a large number of models, whose nitrogen flow rates differ according to the required purity.

MODEL	OUTGOING NITROGEN FLOW RATE* (NM ³ /H) ACCORDING TO PURITY							DIMENSIONS			WEIGHT [kg]	
	99.999%	99.99%	99.90%	99.50%	99.00%	98.00%	97.00%	H	D	W		
	10 ppm **	100 ppm **	1000 ppm **	0,5% **	1% **	2% **	3% **	[cm]	[cm]	[cm]		
N2 FLO 1	0.2	0,4	0.9	1.5	2	2.4	2.8	118	80	40	92	
N2 FLO 2	0.5	0,8	1.8	2.9	3.6	4.6	5.3				113	
N2 FLO 3	0.7	1,2	2.6	4.3	5.3	6.7	7.8				134	
N2 FLO 4	1	1,7	3.7	5.8	7.2	9.1	10.6				155	
N2 PICO 3	1.5	2,5	5.4	8.6	10.4	13.8	16.1	138	130	40	230	
N2 PICO 4	2	3,3	6.9	11.5	15	18.4	20.7				270	
N2 PICO 5	2.3	4	9.2	14.4	18.4	23	26.5				310	
N2 PICO 6	3.5	5	10.4	17.3	21.9	27.6	31,1				350	
N2 MAXI 1	6.2	9	18.7	31.1	39.1	49.7	55.9	211	122	41	750	
N2 MAXI 2	12.4	18	37.4	62.1	78.7	98.9	111.3				78	1400
N2 MAXI 3	18.6	27	56.1	93.2	117.9	149	166.8				120	2000
N2 MAXI 4	24.8	36	74.8	124.2	-	-	-				160	2650

* The hourly flow rates refer to nominal inlet air conditions: pressure of 8.5 bar (123.3 psi), CMS temperature of 20°C (68°F).

** Nitrogen purity expressed in oxygen content.





INSTRUMENTAL FEATURES:

- PURITY ANALYSER AND PRESSURE REGULATOR:**
FITTED AS STANDARD TO ALLOW REAL-TIME MONITORING OF THE PURITY OF THE NITROGEN SUPPLIED.
- DIGITAL CONTROL SYSTEM:**
THAT CAN BE INTERFACED WITH COMPANY IT SYSTEMS (E.G. **PLC OR SCADA**).
- SINGLE NITROGEN STORAGE TANK:**
FOR THE OPERATION AND STORAGE OF THE NITROGEN PRODUCED, AVOIDING THE BUFFER TANK.
- ENERGY SAVING MODE:**
IF THE NITROGEN USED IS LESS THAN THE AMOUNT PRODUCED, THE GENERATOR AUTOMATICALLY GOES INTO STAND-BY MODE, THUS ALLOWING ENERGY SAVINGS.
- E941 FOOD PURITY:**
OPTION OF DIFFERENT CALIBRATIONS IN ORDER TO MEET SPECIFIC CUSTOMER NEEDS.
- CONTINUOUS MONITORING OF COMPRESSED AIR QUALITY:**
A HUMIDITY AND OIL PARTICLE ANALYSER MOUNTED ON THE SUCTION LINE PREVENTS IMPURITIES FROM PASSING THROUGH, WHICH COULD COMPROMISE THE OPERATION OF THE GENERATOR AND THE QUALITY OF THE GAS PRODUCED.



LASER CUT SERIES

The **LASER CUT** series is a family of nitrogen generators designed for all applications that employ nitrogen at medium and high pressure, particularly in laser cutting sheet metal. These sophisticated generators, which produce high purity nitrogen, have a powerful built-in compressor that enables reaching working pressures up to 200 bar.

Furthermore, innovative electronics enable synergy between the various components and as a result greater efficiency in the generation process. **LASER CUT** thus provides a systemic approach to gas needs, ensuring:

- ALWAYS HAVING THE CORRECT NITROGEN FLOW AND PRESSURE AVAILABLE TO THE NOZZLE, EVEN WHEN CUTTING HIGH THICKNESSES,
- BEING ABLE TO SERVE MULTIPLE CUTTING MACHINES SIMULTANEOUSLY WITHOUT THE RISK OF PRODUCTION INTERRUPTIONS,
- BEING ABLE TO INSTALL THE GENERATOR SYSTEM IN ANY POSITION WITHIN THE PRODUCTION AREA.

The nitrogen produced is free from oil and impurities, fully ensuring operation for machines intended for laser cutting.

FEATURES:

- **HIGH “CONTROLLED” PURITY UP TO 99.999%:**
AN OXYGEN ANALYSER INSTALLED ON THE MACHINE ENSURES THE PURITY OF THE GAS PRODUCED AT ANY TIME.
- **COMPLETE INTEGRATED SYSTEM:**
LASER CUT DOES NOT REQUIRE EXTERNAL COMPRESSORS, WHICH ARE EXTREMELY BULKY AND NOT VERY RELIABLE.
- **EFFICIENCY:**
EXTREMELY LOW ELECTRICAL ABSORPTION.
- **TESTED** AGAINST TOP LASER CUTTING MACHINE BRANDS.
- **COMPLIANT WITH CE STANDARDS** (INCLUDING PED).
- **ADJUSTABLE PRESSURE** AVAILABLE UP TO 300 BAR.
- **160 Nm³ RACK OF CYLINDER STORAGE SYSTEMS.**
- **REMOTE CONNECTION OPTION**
FOR OPERATION MONITORING.



AVAILABLE MODELS:

MODELS	FLOW RATES*			
	HOURLY (NM ³)	DAILY (NM ³)	MONTHLY	
			(NM ³)	RACK OF CYLINDERS
LASER CUT 225-1	9	216	4.300	30
LASER CUT 225-2	18	432	8.600	60
LASER CUT 450-3	27	648	12.900	90
LASER CUT 450-4	33	792	16.000	110

* Flow rate at N2 purity 100 ppm refer to nominal inlet air conditions: pressure of 8.5 bar (123.3 psi), CMS temperature of 20°C (68°F).

COMPLETE SOLUTION AND ACCESSORIES
TURNKEY SYSTEMS

Claind supplies turnkey systems consisting of: nitrogen generator, compressor, compressed air and nitrogen storage tanks and, if necessary, filters.

On request, these systems can be mounted on skids.





ALL OUR SERVICES TO ALWAYS OFFER YOU OUR VERY BEST

In addition to our product range, we also offer many services, including:



PRE-SALE

- ASSISTANCE IN CHOOSING THE MODEL
- PAYBACK CALCULATION
- TECHNICAL AND COMMERCIAL INSPECTIONS



CUSTOMER CARE

- SPARE PARTS AND CONSUMABLES
- IDENTIFYING AND SOLVING ANOMALIES



TECHNICAL SUPPORT

- INSTALLATION
- MAINTENANCE (PREVENTIVE AND SCHEDULED)
- REPAIRS



ADDITIONAL SERVICES

- CONSUMPTION TRACKING SERVICE
- IQ/OQ CERTIFICATIONS
- GAS ANALYSIS AND CERTIFICATION SERVICE FOR FOOD USE



IoT CLAIND4YOU PLATFORM

- REMOTE CONTROL FROM PC OR SMARTPHONE
- REAL-TIME MONITORING OF OPERATING PARAMETERS AND ANALYSIS OF HISTORICAL DATA
- ALARMS AND NOTIFICATION OF MAINTENANCE NEEDS



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