

FOOD & BEVERAGE



CLAIND

GAS GENERATORS AND PURIFIERS





## E941 FOOD NITROGEN GENERATORS: OUR KNOW-HOW AT YOUR SERVICE

Since 1979, Claind has been meeting the demands of companies operating in the food industry, which need to use nitrogen generators for packaging food in a protective atmosphere and for storing liquid foods.

**Claind's line of FOOD nitrogen generators** has been specifically designed for preserving perishable products and guarantees the quality of E941 food nitrogen in compliance with current regulations.

Nitrogen prolongs the shelf life of products and retains the organoleptic properties of food, preserving its freshness and making it more appealing in terms of colour, shape and composition.





## 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 FOOD NITROGEN

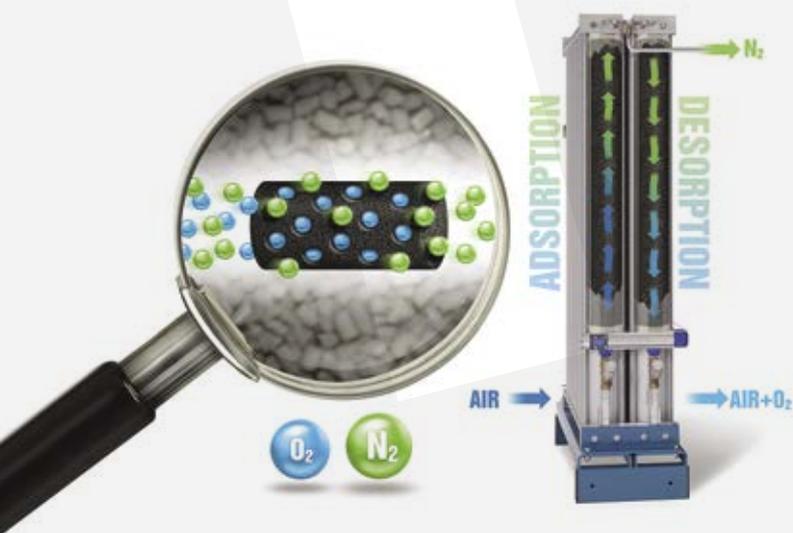
Claind's solutions for nitrogen self-production use **PSA (Pressure Swing Adsorption) technology.**

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





## DESIGNED TO SUPPORT YOUR WORK

The Claind food nitrogen generators are incorporated into our customers' production processes and have been designed for the following **Food & Beverage** applications:

-  DAIRY PRODUCTS AND DERIVATIVES (CHEESES)
-  MEATS AND COLD CUTS
-  PASTA  
(FRESH PASTA AND BAKED GOODS)
-  FRUIT AND VEGETABLES  
(FRESH-CUT PRODUCTS)
-  COFFEE
-  FRUIT JUICES
-  DRINKS
-  OIL
-  WINE
-  WATER
-  DRIED FOODS





## PACKAGING IN A PROTECTIVE AND MODIFIED ATMOSPHERE

**This packaging technique consists in replacing the air that is in contact with the food inside the packaging with the most appropriate nitrogen mixture to prolong the product's shelf life.** By shelf life we mean the period of time during which a product maintains its sensory characteristics (colour, smell, taste, etc.). These properties are of paramount importance for the simple fact that the consumer's acceptance or rejection of the product depends on them. Moreover, it is worth highlighting that, through the use of nitrogen, various treatments can be eliminated with chemical or physical stabilisers, thus improving the final quality of the packaged food. Nitrogen also performs a filling function to prevent the packaging from collapsing on the product. In this way, the following advantages can be obtained:

- FRESH PRODUCTS THAT RETAIN THEIR ORGANOLEPTIC CHARACTERISTICS,
- LONGER SHELF LIFE AND, AS A RESULT, INCREASED PRODUCT MARKETABILITY,
- REDUCED PRODUCT LOSSES DUE TO WASTE OR RETURNS,
- HIGHER QUALITY AND FOOD SAFETY LEVELS.



## STORAGE OF LIQUID FOODS

**In order to protect liquid foods, nitrogen is used to neutralise storage tanks, for bottling and in all phases of transfer and handling of liquid products to evacuate dissolved oxygen.** Inerting consists in replacing the air that is in contact with food with gaseous nitrogen so that the product can be preserved for longer. In fact, when in contact with air, liquid foods develop a series of oxidative reactions that change their chemical composition and radically change their colour, smell and taste. Nitrogen, instead, maintains an inert atmosphere inside the tank that allows food, thus protected, to retain its qualitative and organoleptic characteristics. The same principle also applies to bottling, where nitrogen is used during the final phase of liquid treatment for bottle washing (pre-evacuation), for actual bottling and before capping for the inerting of head space.





## SOME INTERESTING BUSINESS CASE



### COFFEE

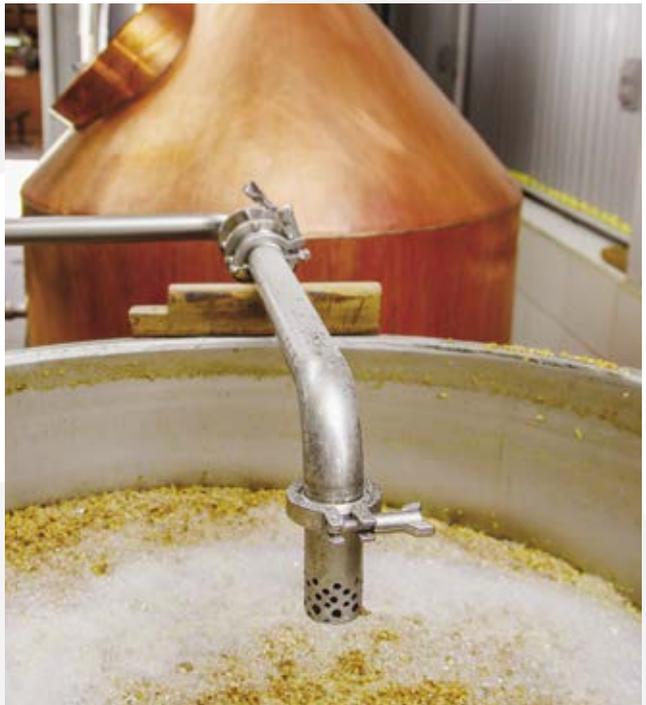
In the coffee packaging process, nitrogen is used for capsule and pod inerting and in dressing operations.



### WINE

In the wine production process, nitrogen is used in many phases with the aim of avoiding contact with oxygen. In fact, wine is subject to oxidative phenomena that cause irreversible alterations such as the deterioration of taste and colour. As for red wines, nitrogen is used for: homogenisation, transferring from one cistern to another, and the forming of musts during fermentation, storage and bottling. In white wines, instead, it is used in the following phases: pressing, filtration, tank or drum inerting, clarification, barrel filling and bottling.





## BEER

If fermented beer comes into contact with air, this can affect the beer, altering its characteristics and, consequently, reducing its storage time. For this reason, beer is subjected to protection and preservation processes with gases such as nitrogen, carbon dioxide or, better still, with a mixture of the two. The use of mixtures is necessary mainly in two phases: for filling barrels and retail pouring.





OUR RANGE OF GENERATORS IS 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										DIMENSION			WEIGHT
	99.999% 10 ppm **		99.99% 100 ppm **		99.90% 1000 ppm **		99.50% 0,5% **		99.00% 1% **		H	D	W	
	Nm <sup>3</sup> /h	scfh	Nm <sup>3</sup> /h	scfh	Nm <sup>3</sup> /h	scfh	Nm <sup>3</sup> /h	scfh	Nm <sup>3</sup> /h	scfh	[cm]			[kg]
N2 FLO 1	0.2	7.1	0.4	14.1	0.9	31.8	1.5	53.0	2	70.6	118	80	40	92
N2 FLO 2	0.5	17.7	0.8	28.2	1.8	63.6	2.9	102.4	3.6	127.1				113
N2 FLO 3	0.7	24.7	1.2	42.4	2.6	91.8	4.3	151.8	5.3	187.1				134
N2 FLO 4	1	35.3	1.7	60.0	3.7	130.6	5.8	204.8	7.2	254.2				155
N2 PICO 3	1.5	53.0	2.5	88.3	5.4	190.7	8.6	303.7	10.4	367.2	138	130	40	230
N2 PICO 4	2	70.6	3.3	116.5	6.9	243.6	11.5	406.1	15	529.7				270
N2 PICO 5	2.3	81.2	4	141.2	9.2	324.9	14.4	508.5	18.4	649.7				310
N2 PICO 6	3.5	123.6	5	176.6	10.4	367.2	17.3	610.9	21.9	773.3				350
N2 MAXI 1	6.2	218.9	9	317.8	18.7	660.3	31.1	1098.2	39.1	1380.6	211	122	41	750
N2 MAXI 2	12.4	437.9	18	635.6	37.4	1320.6	62.1	2192.8	78.7	2779.0			78	1400
N2 MAXI 3	18.6	656.8	27	953.4	56.1	1980.9	93.2	3291.0	117.9	4163.1			120	2000
N2 MAXI 4	24.8	875.7	36	1271.2	74.8	2641.2	124.2	4385.6	--	--			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.



## TIVANO

**Tivano is a nitrogen generator created for pouring wine, beer and other retail beverages:** it is fully autonomous thanks to its oil-free compressor, which is fitted as standard. Tivano is installed on the wall and delivers nitrogen or other nitrogen and CO2 mixtures, thanks to the mixers at the output, which are available in various versions (**TIVANO 1, 2, 3 MIX**).

Furthermore, Tivano is also ideal for feeding small plants for food packaging in a protective atmosphere.

The basic version can supply 3.5 NL/min of nitrogen at a pressure of 7 bar at a purity greater than 99.5% (0.5% oxygen content), but specific calibrations with higher purities are available on request. The nitrogen generated is stored in a storage tank (normally 50 or 100 litres), which is directly connected to the generator.



**PSA TECHNOLOGY** (PRESSURE SWING ADSORPTION)

**FULLY INDEPENDENT**

THANKS TO ITS INTERNAL OIL-FREE COMPRESSOR

**“SMART” CONTROL SYSTEM,**

CAPABLE OF PRODUCING NITROGEN ONLY WHEN NECESSARY, THE GENERATOR GOES INTO STAND-BY AUTOMATICALLY WHEN THERE IS NO NITROGEN CONSUMPTION

**PURITY:**

FOOD QUALITY E941

**NITROGEN OUTPUT PRESSURE:**

N<sub>2</sub> UP TO 7 BAR (101.5 PSI)

MIX CO<sub>2</sub>/N<sub>2</sub> UP TO 3.6 BAR (52,2 PSI)

**MAXIMUM CAPACITY:**

3.5 NL/MIN (7.4 SCFH)

AVAILABLE TIVANO MODELS AND MIXTURES:

MODELS	OUTLET N2 (0-7 BAR)	OUTLET MIX 1 % CO <sub>2</sub> /N2 (0-3,6 BAR)	OUTLET MIX 2 % CO <sub>2</sub> /N2 (0-3,6 BAR)	OUTLET MIX 3 % CO <sub>2</sub> /N2 (0-3,6 BAR)
TIVANO basic	✓	-	-	-
TIVANO 1 MIX	✓	30/70	-	-
	✓	40/60	-	-
	✓	50/50	-	-
TIVANO 2 MIX	✓	40/60	30/70	-
	✓	50/50	40/60	-
	✓	50/50	30/70	-
TIVANO 3 MIX	✓	50/50	40/60	30/70
DIMENSIONS: H: 95 cm - W: 44 cm - D: 25 cm			WEIGHT: 43 kg	

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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