

PSA TECHNOLOGY
Nitrogen Generators
Oxygen Generators

Advanced Systems in Gas Separation

Custom Engineering



sysadvance[®]



Company Info

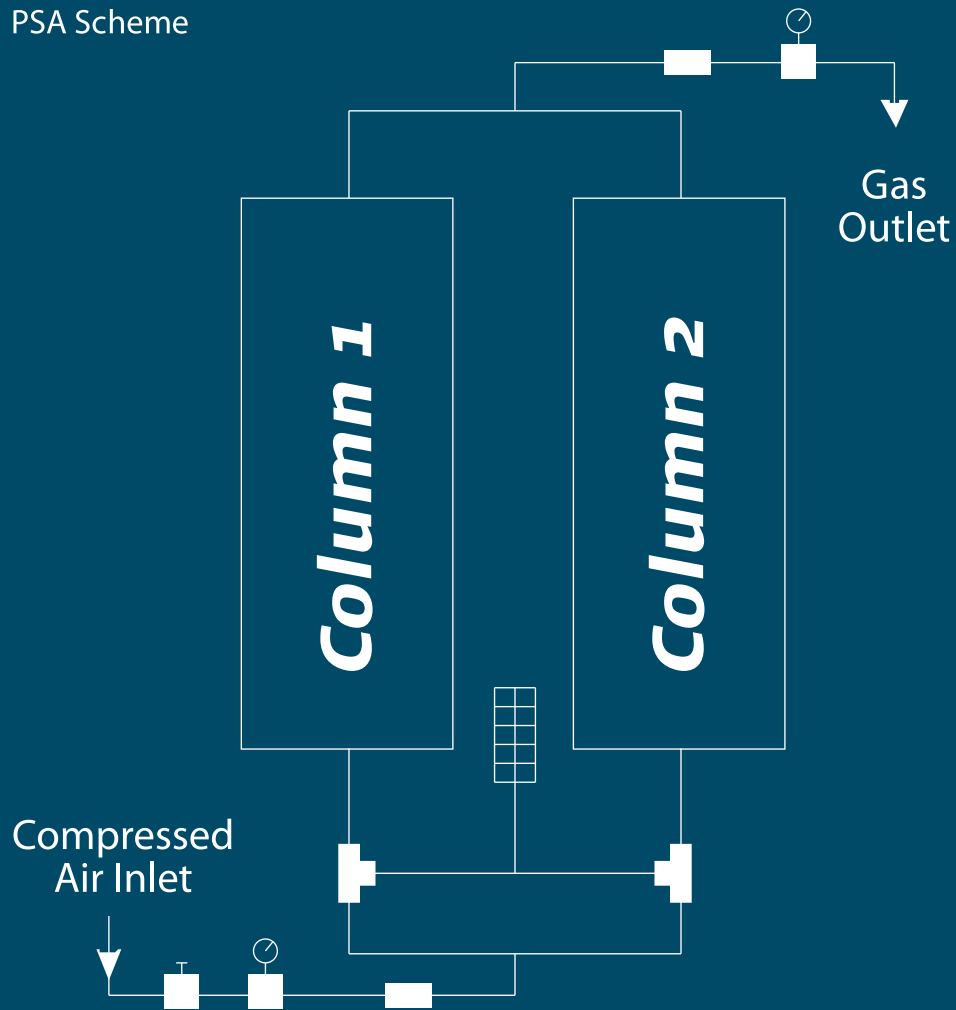
With strong scientific links and cooperation with University Laboratories, with 20 years experience in gas separation technologies, we strive to deliver high-added value products solutions in the industrial and medical fields.

In the industrial field, SYSADVANCE provides state of the art solutions in Nitrogen and Oxygen on-site generation units as well as Ozone and Hydrogen. In the medical field, our company is active in the areas of O₂ medical generators and breathing air as well as anesthesia gas recovery.

The quality of our Human Resources, specialized in gas separation technologies such as PSA and membrane, are paramount to the success of the projects we are involved, in particular the custom engineered solutions designed for large customers and on-demand R&D.



PSA Scheme



PSA Systems Advantages

Pressure Swing Adsorption

Economy - reduction in 90% of the Nitrogen / Oxygen costs

Comfort - elimination of the logistic and administrative operations

Continuous availability - elimination of orders and deliveries

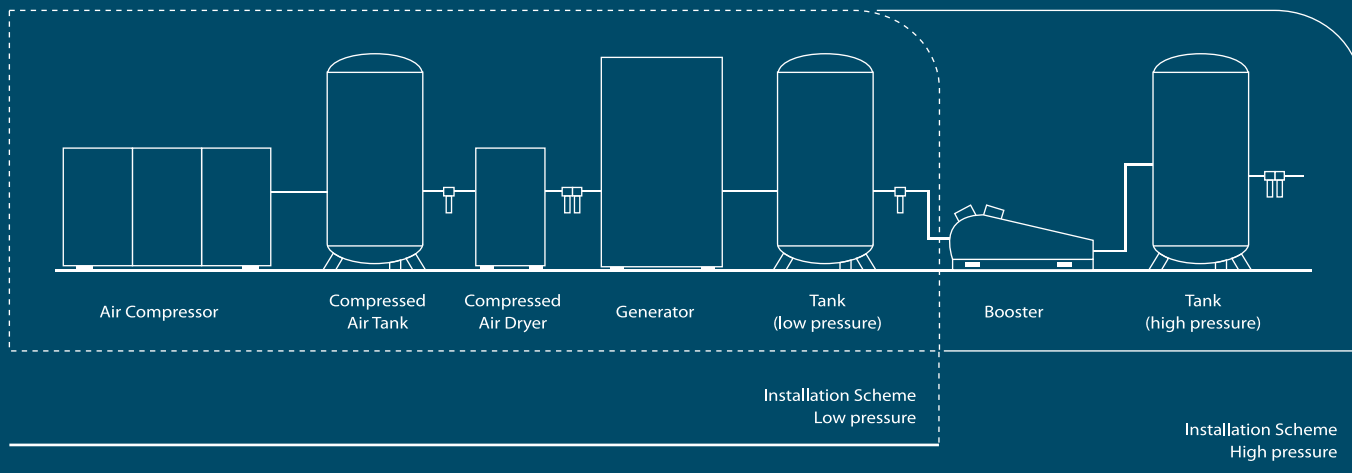
Modularity / Scalability - your installation grows with you

Robustness, reliability and durability

Reduced maintenance

Security

Ready-to-use Engineering Solutions



N₂ Generators

NITROGEN

series

N₂ Generators - **NITROGEN** Series

Description

NITROGEN - A line of robust, reliable and modular Nitrogen generators, based on Pressure Swing Adsorption (PSA) technology using state of the art Carbon Molecular Sieves adsorbents.

SYSADVANCE generators produce high purity Nitrogen from compressed air, allowing continuous availability at a very competitive cost, compared to alternative supply with cylinders or cryogenic tank.

NITROGEN eliminates all disadvantages associated to purchase and operation costs of high-pressure cylinder systems or cryogenic tanks, enabling a permanent source of Nitrogen, with minimum energy consumption and maintenance requirements.

NITROGEN is designed to be easily installed in any indoor facility, requiring only a compressed air line and a power connection.

With purities up to 99.999% of N₂, NITROGEN can be connected to an external buffer allowing a backup or a delay of production/consumption according to the needs of each application.

The modular philosophy of SYSADVANCE NITROGEN generators allows the installation of multiple parallel units.

Optionals

- Dedicated Air Compressor
- Pressure booster for pressure up to 40 bar
- Food Pack filter kit

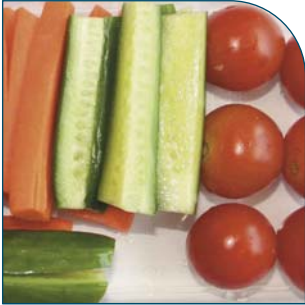
Advantages

- Reduction of Nitrogen costs up to 95%
- Independence from external gas suppliers and from fluctuation of the nitrogen market prices
- Suppression of logistic operations like handling of cylinders or liquid nitrogen supplier management
- Modular, flexible and low maintenance units

Features

- Nitrogen pressure up to 9 bar
- LCD display
- Oxygen Zirconium analyzer
- GSM / LAN monitoring

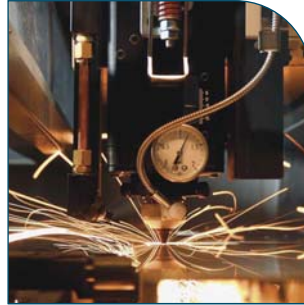
APPLICATIONS



NITROGEN ON MAP

The most common technique to control the oxygen level in contact with packed food is the use of Nitrogen as a blanketing gas, which allows for the following advantages:

- Eliminates product oxidation
- Eliminates unwanted consequences from bacteria and fungi exposure
- Eliminates unwanted consequences from insect exposure
- Increases the product shelf life
- Reduces faulty products return
- Allows product expedition to distant markets



NITROGEN IN METAL WORKS

Metallurgic industry uses Nitrogen as an inert gas for operation and production in the following applications:

- Blanketing
- Heat Treatment
- Aluminum Extrusion
- Aluminum Foundry

Nitrogen in gas state is used in a wide range of industries and applications. Its main use is to act as an inert agent, suppressing Oxygen and other unwanted gases in process and storage containers.



NITROGEN IN PHARMACEUTICALS

The active pharmaceutical ingredients (API) and the pharmaceutical industries use Nitrogen most commonly as an inert gas for the conditioning, transport and storage of pharmaceutical products.

The inertization (blanketing) is a common process in the pharmaceutical industry, where it is used to improve product quality, reducing water vapor, oxygen content and avoiding unwanted reactions. It is also used to increase safety by means of inhibiting combustion or preventing fire and explosions.



NITROGEN IN WINEMAKING

Nowadays there are several techniques, applied worldwide, to control the level of Oxygen in contact with wine. The most widespread technique consists in the application of Nitrogen for Oxygen removal on some stages of the wine production process, such as:

- Production blanketing of the fermentation barrels
- Wetness - Pneumatic displacement (pumping)
- Tube cleaning by Nitrogen blow
- Mixture inside the barrels by Nitrogen bubbling (sparging)
- Blanketing of the storage barrels top
- Blanketing of the bottle in the filling line by blow

APPLICATIONS



MARINE AND OFF-SHORE

Nitrogen has a wide of applications in Marine ans Off-Shore. It can be used in activities such as, multiple blanketing and pressure displacement. Nitrogen applications points are in:

- LPG tankers
- Chemical tankers
- Oil tankers



NITROGEN IN TYRE INFLATION

Nitrogen tyre inflation allows for the elimination of two tire enemies: Oxygen and water vapor.

The main advantages are:

- Increased Pressure Stability
- Higher Fuel Economy
- Reduced Tyre Oxidation
- Safer Driving
- Longer Tyre Life



PERFORMANCE

MODEL	95%		99%		99,9%		99,999%		Weight (kg)	Dimensions w x l x h (cm)
	N ₂ Flow (Nm ³ /h)	Air Consumption (Nm ³ /h)	N ₂ Flow (Nm ³ /h)	Air Consumption (Nm ³ /h)	N ₂ Flow (Nm ³ /h)	Air Consumption (Nm ³ /h)	N ₂ Flow (Nm ³ /h)	Air Consumption (Nm ³ /h)		
NITROGEN 2	0,42	1,63	0,46	1,32	0,24	0,92	0,07	0,56	40	65 x 25 x 80
NITROGEN 5	2,08	4,08	1,14	3,30	0,60	2,30	0,18	1,39	45	65 x 25 x 80
NITROGEN 10	4,4	8,71	2,4	7,04	1,29	4,90	0,4	2,96	56	65 x 25 x 80
NITROGEN 15	6,7	13,07	3,7	10,56	1,9	7,36	0,6	4,45	56	65 x 25 x 80
NITROGEN 30	15,6	27,30	8,8	21,90	4,4	14,01	1,1	8,73	500	100 x 40 x 140
NITROGEN 50	26,0	45,50	14,6	36,49	7,3	23,35	1,9	14,55	500	75 x 96 x 182
NITROGEN 90	54,0	100,40	21,1	63,40	11,1	44,31	3,4	29,87	650	75 x 185 x 182
NITROGEN 120	76,2	146,32	29,3	91,48	16,0	66,95	5,1	42,13	800	75 x 185 x 182
NITROGEN 150	96,2	184,70	40,6	126,85	23,0	96,46	7,8	65,89	800	75 x 185 x 182
NITROGEN 250*	113,8	199,12	64,1	159,70	32,0	102,20	7,1	50,99	850	160 x 100 x 250
NITROGEN 325*	156,55	274	88,15	219,74	44,05	140,62	9,75	70,16	900	180 x 100 x 250
NITROGEN 400*	199,3	348,83	112,2	279,77	56,1	179,03	12,4	89,33	900	180 x 100 x 250
NITROGEN 600*	299,0	523,25	168,3	419,66	84,1	268,55	18,6	134,00	1100	200 x 100 x 250
NITROGEN 800*	355,6	622,25	200,2	499,06	100,0	319,36	22,1	159,35	1400	200 x 100 x 270
NITROGEN 1000*	460,9	806,59	259,5	646,90	129,6	413,97	28,7	206,28	1600	200 x 140 x 270
NITROGEN 1200*	553,1	967,91	311,4	776,28	155,5	496,76	34,4	247,87	2000	200 x 140 x 300
NITROGEN 1500*	691,4	1209,9	389,3	970,4	194,4	621	43,1	309,4	6000	306 x 243 x 483
NITROGEN 2000*	921,8	1613,2	519,0	1293,8	259,2	827,9	57,4	412,6	8700	340 x 260 x 490
NITROGEN 2500*	1152,3	2016,5	648,8	1617,3	324,0	1034,9	71,8	515,7	11200	370 x 275 x 493

Higher capacities available on request

* Certified Marine Versions - DNV, LR, BV - available

O₂ Generators

OXYGEN

series



O₂ Generators - **OXYGEN** Series

Description

OXYGEN - A line of robust, reliable and modular Oxygen generators based on Pressure Swing Adsorption (PSA) technology using state of the art Zeolite Molecular Sieves adsorbents.

SYSADVANCE generators produce high purity Oxygen from compressed air, allowing continuous availability at a very competitive cost, compared to alternative supply with cylinders or cryogenic tank.

OXYGEN eliminates all disadvantages associated to purchase and operation costs of high-pressure cylinder systems or cryogenic tanks, enabling a permanent source of Oxygen, with minimum energy consumption and maintenance requirements.

OXYGEN is designed to be easily installed in any indoor facility, requiring only a compressed air line and a power connection.

With purities up to 95% of O₂, OXYGEN can be connected to an external buffer allowing a backup or a delay of production/consumption according to the needs of each application.

The modular philosophy of SYSADVANCE OXYGEN generators allows the installation of multiple parallel units.

Optionals

- Dedicated Air Compressor
- Pressure booster for pressure up to 300 bar
- Food Pack filter kit

Advantages

- Safe delivery and independence from external gas suppliers and from fluctuation of the oxygen market price
- Suppression of logistic operations like handling of cylinders or liquid Oxygen and supplier management
- Modular, flexible and low maintenance units
- Don't waste more money with Oxygen

Features

- Nitrogen pressure up to 5 bar
- LCD display
- Oxygen Zirconium analyzer
- GSM / LAN monitoring

Oxygen in gas state is used in a wide range of industries and applications, such as:



HOSPITALS

Oxygen is one of the most basic drugs that exist. In many acute illnesses such as acute respiratory infections, asthma, fetal asphyxia and shock the availability of an oxygen supply can save a patient's life.

LABORATORIES

OXY-FUEL TECHNOLOGY

Oxy-fuel welding and oxy-fuel cutting are processes that use fuel gases and oxygen to weld and cut metals, respectively. Pure oxygen, instead of air, is used to increase the flame temperature to allow localized melting of the work piece material in a room environment.

FISH FARMING

Farms are able to increase stocking densities. The fish are also healthier and have better taste when raised in an oxygen rich environment.

OZONE

Used as Air Cleaners, ozone generators are fed with oxygen.

WASTEWATER TREATMENT

Wastewater Treatment has six stages. In the third stage, called *Removal of Biodegradable Organics*, is a biochemical process for treating sewage and industrial wastewater that uses oxygen and microorganisms to biologically oxidize pollutants.



PERFORMANCE

MODEL	85%		90%		95%		Weight (kg)	Dimensions w x l x h (cm)	Inlet Air Pressure (barg)	Outlet N2 Pressure (barg)
	O ₂ Flow (Nm ³ /h)	Air Consumption (Nm ³ /h)	O ₂ Flow (Nm ³ /h)	Air Consumption (Nm ³ /h)	O ₂ Flow (Nm ³ /h)	Air Consumption (Nm ³ /h)				
OXYGEN 2	0,25	5,0	0,2	4,0	0,1	2,0	30	75 x 35 x 80	8	0 to 5
OXYGEN 5	0,5	10,0	0,4	8,0	0,2	4,0	40	75 x 35 x 80	8	0 to 5
OXYGEN 10	1,0	20,0	0,8	16,0	0,4	8,0	60	90 x 35 x 90	8	0 to 5
OXYGEN 15	1,5	22,5	1,2	18,0	0,6	9,0	80	90 x 35 x 110	8	0 to 5
OXYGEN 25	2,5	37,5	2,0	30,0	1,0	15,0	120	90 x 40 x 110	8	0 to 5
OXYGEN 35	4,0	32,0	3,6	36,0	2,8	30,8	500	75 x 96 x 182	8	0 to 5
OXYGEN 70	8,0	64,0	7,2	72,0	6,1	67,1	750	75 x 96 x 182	8	0 to 5
OXYGEN 90	10,7	85,6	9,6	96,0	8,2	90,2	850	75 x 185 x 182	8	0 to 5
OXYGEN 110	12,4	99,2	11,2	112,0	9,5	104,5	950	75 x 185 x 182	8	0 to 5
OXYGEN 200	22,0	176,0	20,0	200,0	17,0	187,0	1000	200 x 100 x 250	8	0 to 5
OXYGEN 300	33,0	262,0	30,0	300,0	25,5	280,5	1100	200 x 100 x 250	8	0 to 5
OXYGEN 450	49,0	392,0	45,0	450,0	38,0	418,0	1400	200 x 140 x 270	8	0 to 5
OXYGEN 500	55,0	440,0	50,0	500,0	42,5	467,5	1600	200 x 140 x 320	8	0 to 5



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SYSADVANCE is an engineering company, that manufactures equipments for gas separation and supplies integrated solutions for gases and compressed air. With qualified technical personnel and a strong connection to R&D laboratories, is present in several continents, with equipments installed in diverse industries and sectors of activity.

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