SOTEX

MADE IN HOLLAND

nitrogen generators

PURITY 95 - 99,9 % N_2

Nitromat Pro Basic

...keeps the pressure on!

A short introduction

- *We at SOTEX are experts in the area of nitrogen generators and compressed air systems. The nitrogen produced by our nitrogen generators may be used for all kinds of purposes, such as for tank blanketing or in production processes.*

- *Furthermore, SOTEX is a representative of several brands. Thanks to this collaborations, we are able to offer a wide range of products and solutions for any situation and anywhere in the world! Another major activity of our dynamic company is supplying complete compressed air systems.*

- *As of 2002, SOTEX has been active in the international markets and projects. We are also extremely successful in counselling and in supplying small-scale and large-scale projects in the industrial, horticultural and utility sectors and geothermal projects.*

- *SOTEX delivers most of its products through the installing companies. We provide consultancy agencies with the latest information, if desired accompanied by clear and simple explanations.*

- *SOTEX has its own service and maintenance department, which is available 24/7 for any malfunctions and/or technical support. We are also a VCA certified company (quality mark with regard to safety, health and the environment). Safe and responsible!*

Nitrogen is used in many situations to counteract the undesired reaction of oxygen. Nowadays you can easily and effectively produce your own nitrogen! With a SOTEX Nitromat Pro nitrogen generator you are always assured of pure nitrogen for your application. An intelligent and user-friendly Siemens PLC system controls the entire production and monitors the pressure in the nitrogen storage vessel. This way you can rely on optimal and reliable nitrogen production.

Nitrogen purity

Nitrogen is an inert gas, colorless and odorless and abundantly present in the air around us. The air we breathe consists globally of 78% nitrogen and 21% oxygen. Compressed air is no different. Compressed compressed air also contains a quantity of moisture and, when using oil-lubricated compressors, also a quantity of oil vapour. After removing oxygen, moisture and any oil vapor from the air, nitrogen remains. The SOTEX Nitromat Pro Basic nitrogen generators are supplied in all possible capacities and purities from 95% to 99.9%.

Of course, other purities are possible on request.

All SOTEX Nitromat Pro nitrogen generators are adjusted to the desired purity at our factory.

Nitrogen storage vessel

The pure nitrogen is stored in the nitrogen storage vessel. This is done under a pressure of 5 to 8 bar. The nitrogen is transported from this vessel to the application at requested times (the controller for this is not included as standard due to the many options).
The volume of the nitrogen storage vessel is an important part of the design of the installation because it determines the running time of the screw compressor. Screw compressors are designed for long-term use and must be sufficiently heated to prevent problems with condensation in oil and screw block. SOTEX supplies vertical steel drums with the system as standard. These vessels meet the certification according to CE pressure equipment guidelines PED 2014/68/EU, which is suitable for most projects.

For projects in North America SOTEX supplies the nitrogen storage vessels built in accordance with the ASME guidelines (incl. U-stamp) and for projects in Russia, Belarus and Kazakhstan with EAC approval (CU TR certificate). If necessary, we can also supply the vessels with SELO certification for the Chinese market.

Compressed air

It is necessary to supply the correct compressed air to the SOTEX Nitromat Pro nitrogen generator. In most cases, SOTEX supplies a complementary selected screw compressor, supplied on a suitable compressed air receiver, with the system. These comply with the CE pressure equipment directives PED 2014/68/EU and the EAC (CU TR) regulations (Russia, Belarus and Kazakhstan).
The screw compressors used in North American projects comply with ASME, UL and CSA guidelines. For more information about use and maintenance, please refer to the separately available extensive manuals.

Every SOTEX Nitromat Pro nitrogen generator is standard equipped with a sophisticated compressed air treatment consisting of a combination of cyclone filter, compressed air filters and a unique desiccant integrated in the PSA vessels (more about this on the next page).
The compressed air treatment is absolutely necessary to guarantee a long life of the PSA system and thus a high purity of nitrogen. It is precisely these compressed air filters that need to be maintained regularly.

SOTEX optionally offers a compressor with a built-in refrigeration dryer, which includes a more extensive compressed air treatment that guarantees an even longer life. In countries with high humidity or large daily temperature differences, this is recommended. For more information about use and maintenance, please refer to the separately available manuals.

Nitrogen generator

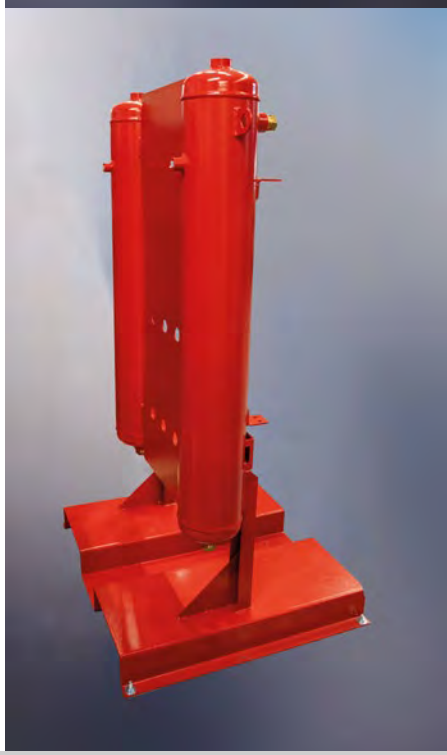
The SOTEX Nitromat Pro nitrogen generators are equipped with a PSA system, which stands for Pressure Swing Adsorption, the most reliable and extremely proven technique for removing oxygen from compressed air. For this purpose, two so-called PSA pressure vessels are included in the robust steel design, which are mainly filled with CMS material (Carbon Molecular Sieve - black granules); see the picture to the right of the blue drum. The CMS works like a molecular sieve; the oxygen molecules 'bind' to the CMS for a certain time while the nitrogen molecules are allowed to pass through.

Due to this previously mentioned time factor, there is the need for two vessels, if vessel A is generating then vessel B regenerates. That is, the vessel that's already saturated with oxygen molecules is made suitable for the next cycle by depressurizing the vessel. at the same time the absorbed oxygen molecules will be blown off. The switching of this process is done fully automatically by the SOTEX PLC control. Very important; a basic premise of the new design of the SOTEX Nitromat Pro nitrogen generators is that the PSA vessels are specially designed to withstand long-term pressure/alternating loads with more than 2,000,000 cycles which implies a guaranteed long life.

In addition, each SOTEX PSA pressure vessel is partly filled with a desiccant (white granules); see the picture to the right of the green drum. In principle, included in the design as extra security to protect the CMS against moisture. The most important condition is that the compressed air supplied is treated according to specifications.

The compressed air pressure feeding the SOTEX Nitromat Pro nitrogen generator should always be at least 6 bar. If this is not the case, the Nitromat Pro nitrogen generator will not start. If the start condition is met, the Nitromat Pro nitrogen generator will start if the pressure in the nitrogen storage vessel is lower than the set minimum pressure. The standard is 5 bar. When reaching 8 bar in the nitrogen storage vessel, the Nitromat Pro nitrogen generator will switch off.

The switch panel of the SOTEX Nitromat Pro nitrogen generator is equipped with a SIEMENS S7 PLC in combination with a multi-coloured 7" touchscreen LCD display. In the event of a possible malfunction, the display will indicate the malfunction and turn red. The switch panels are also completely developed and built in our own factory.



The SOTEX Nitromat Pro nitrogen generators are characterized, among other things, by a high operational reliability by using the very best materials, such as the very high-quality pressure sensor which provides the pressure measurement on the nitrogen storage vessel.

Every SOTEX Nitromat Pro nitrogen generator is equipped with an oil/water separator as standard.
In this separator the oil particles are absorbed by the active carbon present.

In this way, the water to be drained remains clean and can be connected to the sewerage system, making the installation environmentally friendly.

- Compact & modern design
- Plug en Play installation
- Incl. nitrogen storage tank
- Incl. “Eays-Commisioning"
- Advanced Siemens PLC
- Including screw compressor
- Ultimate clean air
- Extremely reliable
- Purity 99% N2
- Long lifespan
- Siemens 7" touch screen
- Very user friendly
- Incl. oil / water separator

Scope of delivery

The SOTEX Nitromat Pro nitrogen generator complies with the European Pressure Equipment Directives. In most situations SOTEX supplies a complementary compressor and nitrogen storage vessel, which means that it can be regarded as a complete system. The delivery of the complete system then consists of the following components:

- Nitrogen generator type Nitromat Pro;
  professionally built in a unique robust steel design:
  - central Siemens PLC control unit with multi-color 7 "Touch LCD display
  - cyclone filter with automatic condensate drain
  - compressed air filters with float drain
  - integrated steel PSA vessels (> 2,000,000 operations)
  - generously dimensioned pneumatic valve set
  - pneumatic nitrogen supply valve
  - pressure sensor 4-20 mA nitrogen production
  - pressure switch minimum compressed air pressure
  - oil / water separator

- Screw compressors on compressed air receiver;
  - including automatic condensate drain and electric connection cable.

- Nitrogen storage tank;
  - complete with required accessories, including pressure gauge and spring-loaded safety valve.

Environment

In order to produce the nitrogen, compressed air treated by the compressed air filters is used. These filters are included in every SOTEX Nitromat nitrogen generator. After all, the compressed air must be clean and dry for the benefit of the nitrogen producing system. The residual product of this filtering is mainly condensed water, which also contains dust and oil particles and is therefore harmful to the environment. However, SOTEX has always been mindful of the environment. Therefore, this condensate is drained using an oil/water separator (always included with the nitrogen expansion system). In this separator, the oil is absorbed by the presence of activated carbon. This activated carbon must be replaced periodically. Consequently, the water that is drained remains clean and can be drained into the sewage system.

Optioneel

The SOTEX Nitromat Pro nitrogen generators can optionally be expanded with:

- Compressor with integrated refrigeration air dryer

This option is a significant upgrade of the compressed air treatment, which significantly improves the reliability and service life of the nitrogen generator. We particularly recommend this option in countries with a climate where there is high humidity or where the temperature differences (or may be) very large on a daily basis.

- SOTEX continuous electronic nitrogen purity measurement

If desired, the SOTEX Nitromat nitrogen generator can be equipped with a sensor incorporated into the control panel, which continuously monitors the quality of the nitrogen from the nitrogen storage tank. The measured purity is shown as a percentage on the display of the control panel.

SOTEX network functionality / COM modules (IXON router)

The SIEMENS PLC control is ideal for further network functionalities. By placing a IXON router you can choose, for example, a Modbus TCP network extension or to use as a remote acces. For more information, consult SOTEX.

SOTEX wooden crate packaging according to ISPM 15 regulations

Optionally, SOTEX can deliver the installation to be delivered in a robust crate packaging. As standard, SOTEX delivers its installation properly packed on a pallet. Especially for your export projects, there is the possibility to supply the various components in custom-made wooden crates. The wood used absolutely comes from the most responsible suppliers and meets the ISPM-15 HT certification and therefore meets all international export requirements in the field of wooden packaging.

This pressure switch protects the nitrogen generator against an undesired low pressure.
Below this is a connection point for clean and dry compressed air, which can be used for external, small compressed air consumers after compliance with SOTEX.

Quality and reliability

The SOTEX Nitromat Pro nitrogen generators are characterized by quality and reliability. All systems undergo an extensive final test before delivery; the compressor is extensively tested to achieve capacity and final pressure. Also, the capacity of the nitrogen generator adjusted and checked using a digital flow meter. Naturally, the nitrogen purity is adjusted and measured with a calibrated residual oxygen meter.
Nevertheless, a defect or malfunction can of course always occur. It is very important that you can count on adequate service at that time. SOTEX considers service and accessibility very important. Our 24-hour service department is always at your service with advice and assistance. Malfunctions or defects are resolved quickly and professionally by our own technicians. So also at night, on weekends and during holidays. This is a matter of course for us, extremely important and pleasant for you!

Maintenance

In addition to the service, SOTEX also provides the necessary maintenance. Of course, contract maintenance is highly recommended, but you can also contact SOTEX for a necessary maintenance service without a contract.
The operating hours are usually decisive for the intervals, but the practical situation is also considered, such as external influences such as air pollution, ambient temperature, etc., but the number of start and stop moments also play an important role. The contractual maintenance is certainly not limited to the Dutch border but takes place in many countries in the world. Inquire about the possibilities!

SOTEX provides service and maintenance to nitrogen generators, expansion tanks, compressors and compressed air installations.

Our service technicians are in possession of a VCA certificate and SOTEX as a company is also VCA* certified.

With the SOTEX Nitromat nitrogen generators you can make your own nitrogen! No more fussing with nitrogen bottles or expensive subscriptions and the tricky filling of liquid nitrogen tanks. SOTEX offers good advice in advance for each application and is happy to provide you with a thorough and competitive proposal.

The applications are particularly diverse, some examples:

Food packaging
The nitrogen is used in this area to replace or expel the air, which considerably reduces the risk of decay. The lower the concentration of oxygen, the smaller the risk of oxidation. In fruit juices vitamins are better preserved, in wine production nitrogen is used in storage, production and also in the bottling plant. This means the wine needs fewer additives, which preserves the colour, aroma, acidity and final taste very well.

Electronics industry
Oxidation also has to be avoided here. The nitrogen expels the oxygen-rich air during the lead-free soldering of printed circuit boards and other electronic components.

Gas & oil industry
Nitrogen is used as ‘blanketing’. A nitrogen blanket in storage tanks. Nitrogen is also used to purge pipework, reactors and compressor systems. This reduces the risks of fire and/or explosions.

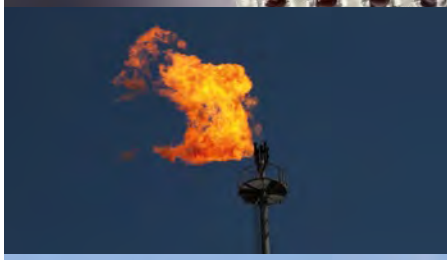
Fruit sector
The production of fruit is heavily dependent on the seasons. Yet there are ways of extending the shelf-life of fresh fruit for months using smart storage systems. In addition to cooling these storage areas, the oxygen level is also dramatically reduced by nitrogen generators.

Pharmacy & laboratories
Nitrogen is used in many analytical methods. Highly pure nitrogen is also used as a carrier gas in various instruments.

Cargo ships
In the shipping industry, nitrogen is used in the kinds of applications mentioned above. These include the protected transportation of foodstuffs and/or the reduction of fire and explosion risks.

Fire prevention
A fire requires flammable material as well as an ignition source and, of course, oxygen. If the oxygen percentage is adjusted (lowered), it is no longer possible for a fire to break out.

Energy and horticulture sectors
In the energy and horticulture sectors, nitrogen is often used as a form of 'blanketing'. Applied on large warm water storage tanks. This means that a nitrogen blanket is inflated and used above the heating water in these tanks. The nitrogen blanket above the water has a purity of 99% and prevents oxygen from acting on the heating water. It also prevents corrosion of the steel tank wall.



Transport and waste management sector
Within these sectors, nitrogen is used for the protected transport of products that are sensitive to the effects of oxygen and/or for reducing the risks of fire and explosion. For example, tankers are held continuously in a nitrogen atmosphere during and after filling or emptying, and waste containers with suspicious contents are first rendered inert by means of injecting them with nitrogen.

Other industries
There are many more applications we can mention. In the metal industry, nitrogen is used in many heat treatment processes for metals, for the laser cutting of stainless steel, so that there is no discolouration, carbonising, etc. In general for the prevention of oxidation. Similarly in injection moulding processes. Here, the nitrogen is an auxiliary gas, once again used to prevent the oxidation of the plastic. In particular, this delivers a better surface result. Finally, we should mention the use of nitrogen for the treatment of water, for the raising expansion vessels to pre-pressure, and also in car, lorry and tractor tyres.

The compressed air filters of the SOTEX Nitromat Pro nitrogen generators are very effective and reliable. The discharge of the condensate to be collected goes to the oil/water separator, incorporated in every Nitromat Pro nitrogen generator.

SOTEX Nitromat Pro

** = special connection voltage optionally possible. For this purpose, a transformer box is supplied separately with the Nitromat Pro nitrogen generator. This transformer box makes it possible to electrically connect the Nitromat Pro nitrogen generator to the following electrical connection voltages: 3x 208 Volt 60 Hz, 3x 440 Volt 60 Hz, 3x480 Volt 60 Hz and 3x 575 Volt 60 Hz. If the desired connection voltage is not listed here, ask for the possibilities.*

NITROGEN GENERATORS

TYPE	RESIDUAL PERCENTAGE O^2	CAPACITY @ 9,5 BAR	DIMENSIONS B x D x H	WEIGHT	MAX. POWER PROTECTION	MAX. WORKING-PRESSURE	CONNECTION VOLTAGE 50/60 HZ	NECESSARY COMPR. AIR @ 10 BAR	RECOMMENDED COMPRESSOR
		Nm³/hr	mm	kg	Amp	Bar	Volt	m³/hr	
Nitromat Pro Basic 2	5,0	3,9	850 x 750 x 1700	152	16	8	1x 230 *	9,9	AC G2
	3,0	3,0						8,86	AC G2
	1,0	2,0						7,80	AC G2
	0,5	1,0						5,57	AC G2
	0,1	-						-	-
Nitromat Pro Basic 4	5,0	7,6	855 x 750 x 1700	173				16,1	AC G2
	3,0	6,6						15,2	AC G2
	1,0	4,0						13,1	AC G2
	0,5	3,3						11,4	AC G2
	0,1	1,7						9,5	AC G2
Nitromat Pro Basic 7	5,0	13,0	900 x 750 x 1700	200				28,6	AC G4
	3,0	10,8						27,6	AC G4
	1,0	7,2						19,9	AC G3
	0,5	5,2						17,2	AC G3
	0,1	2,7						13,8	AC G2
Nitromat Pro Basic 11	5,0	18,2	900 x 750 x 1700	253				38,0	AC G5
	3,0	14,8						37,1	AC G5
	1,0	11,0						28,1	AC G4
	0,5	8,8						27,9	AC G4
	0,1	5,3						26,1	AC G4
Nitromat Pro Basic 17	5,0	24,8	980 x 750 x 1800	329				53,7	AC G7
	3,0	22,0						51,8	AC G7
	1,0	16,4						45,2	AC G5
	0,5	14,8						41,4	AC G5
	0,1	9,9						39,3	AC G5
Nitromat Pro Basic 20	5,0	26,5	980 x 750 x 2000	371				57,8	AC G7
	3,0	24,5						55,2	AC G7
	1,0	20,2						49,9	AC G7
	0,5	17,9						46,3	AC G5
	0,1	9,8						44,8	AC G5
Nitromat Pro Basic 26	5,0	43,6	1200 x 760 x 2100	608				83,6	AC G11L
	3,0	37,9						81,4	AC G11L
	1,0	26,8						65,1	AC G7L
	0,5	23,5						62,2	AC G7L
	0,1	17,5						59,4	AC G7L

| design pressure 11 bar(g) | design temperature 20 °Centigrade | max. working pressure in N_2 storage vessel 8 bar(g) | CE approval | CU TR / EAC approval | conforming to UL / CSA |

Condensation is formed during the production of compressed air. Most condensation is collected in the compressed air receiver which is located under the screw compressor. The compressors supplied by SOTEX are user-friendly and therefore equipped with a fully automatic electronic drain that drains the condensate to the oil/water separator.

For standard maintenance, SOTEX supplies carefully composed maintenance packages with original parts.
Each package is provided with clear maintenance instructions. For more information, please contact our service department.

COMPRESSORS

WEIGHT	AIR RECEIVER CONTENT	ELECTRICAL CONNECTION	CAPACITY (FAD)	DIMENSIONS LxBxH	MOTOR			COMPRESSOR TYPE
kg	l	Volt	m³/hr	mm	kW			
								10 BAR - 50 HZ
170	200	3X 400	17,6	1.430 x 665 x 1.260	2,2	CE PED 2014/68/EU EAC / CU-TR	**Standard** with Sotex nitrogen expansion system	ATLAS COPCO G2-10 type Nitro incl. automatic condensate drain
			22,0		3,0			ATLAS COPCO G3-10 type Nitro incl. automatic condensate drain
			31,0		4,0			ATLAS COPCO G4-10 type Nitro incl. automatic condensate drain
			46,8		5,5			ATLAS COPCO G5-10 type Nitro incl. automatic condensate drain
214			63,7		7,5			ATLAS COPCO G7-10 type Nitro incl. automatic condensate drain
245	270		64,9	1533 x 590 x 1332	7,5			ATLAS COPCO G7-10 L type Nitro incl. automatic condensate drain
257			86,5		11,0			ATLAS COPCO G11-10 L type Nitro incl. automatic condensate drain
276			104,8		15,0			ATLAS COPCO G15-10 L type Nitro incl. automatic condensate drain
								10 BAR - 50 Hz - INCL. GEÏNTEGREERDE KOELDROGER *
200	200	3x 400 50 Hz	17,6	1.430 x 665 x 1.260	2,2	CE PED 2014/68/EU EAC / CU-TR	**Optional** with Sotex nitrogen expansion system	ATLAS COPCO G2-10 **FF** type Nitro incl. automatic condensate drain
			22,0		3,0			ATLAS COPCO G3-10 **FF** type Nitro incl. automatic condensate drain
			31,0		4,0			ATLAS COPCO G4-10 **FF** type Nitro incl. automatic condensate drain
			46,8		5,5			ATLAS COPCO G5-10 **FF** type Nitro incl. automatic condensate drain
264			63,7		7,5			ATLAS COPCO G7-10 **FF** type Nitro incl. automatic condensate drain
314	270		64,9	1533 x 590 x 1332	7,5			ATLAS COPCO G7-10 L **FF** type Nitro incl. automatic condensate drain
326			86,5		11			ATLAS COPCO G11-10 L **FF** type Nitro incl. automatic condensate drain
338			104,8		15			ATLAS COPCO G15-10 L **FF** type Nitro incl. automatic condensate drain

Atlas Copco G FF Nitro

NITROGEN STORAGE VESSELS

WEIGHT	DIMENSIONS				MAX. PRESSURE	CONTENTS			VESSEL TYPE
kg	diameter x height in mm				bar	liter			
120	Ø	600	x	2060	11,0	500	Standard choice; European approval. Delivery including accessory set.	CE PED 98/4040	SBV11-500
167	Ø	790	x	2160		900			SBV11-900
196	Ø	790	x	2345	11,5	1000		CE PED 2014/68/EU [opt. SELO]	SBV11-1000
397	Ø	1000	x	2805		2000			SBV11-2000
542	Ø	1200	x	2965		3000			SBV11-3000
729	Ø	1450	x	3070		4000			SBV11-4000
855	Ø	1450	x	3570		5000			SBV11-5000
982	Ø	1450	x	4070		6000			SBV11-6000
1326	Ø	1650	x	4135		8000			SBV11-8000
1657	Ø	1650	x	5135		10000			SBV11-10000
140	Ø	600	X	2060	11,0	500	For projects in Canada en U.S.A. Delivery including accessory set.	ASME incl. U-stamp	SBV11-500 ASME
186	Ø	790	X	2160		900			SBV11-900 ASME
223	Ø	790	X	2345	11,5	1000			SBV11-1000 ASME
415	Ø	1000	X	2805		2000			SBV11-2000 ASME
570	Ø	1200	X	2965		3000			SBV11-3000 ASME
756	Ø	1450	X	3070		4000			SBV11-4000 ASME
880	Ø	1450	X	3570		5000			SBV11-5000 ASME
1015	Ø	1450	X	4070		6000			SBV11-6000 ASME
1487	Ø	1650	X	4135		8000			SBV11-8000 ASME
1748	Ø	1650	X	5134		10000			SBV11-10000 ASME
130	Ø	600	X	2060	11,0	500	For projects in Russia, Belarus and Kazakhstan. Delivery including accessory set.	CU TR certificate (EAC)	SBV11-500 EAC
181	Ø	790	X	2160		900			SBV11-900 EAC
210	Ø	790	X	2345	11,5	1000			SBV11-1000 EAC
419	Ø	1000	X	2805		2000			SBV11-2000 EAC
564	Ø	1200	X	2965		3000			SBV11-3000 EAC
758	Ø	1450	X	3070		4000			SBV11-4000 EAC
892	Ø	1450	X	3570		5000			SBV11-5000 EAC
1024	Ø	1450	X	4070		6000			SBV11-6000 EAC
1374	Ø	1650	X	4135		8000			SBV11-8000 EAC
1681	Ø	1650	X	5134		10000			SBV11-10000 EAC

optionally the vessels are also available with a SELO certificate for the Chinese market. Data equal to CE vessels.

The corresponding appendages are supplied with each nitrogen storage vessel.

This includes a pressure gauge, caps, valves and pressure relief valve.

Nitrogen is used in many situations to counteract the undesired reaction of oxygen. SOTEX offers the possibility to produce nitrogen yourself! With a SOTEX Nitromat Pro nitrogen generator you are always assured of pure nitrogen for your application. An intelligent and user-friendly Siemens PLC control system controls the entire production and monitors the pressure in the nitrogen storage vessel. So you can rely on optimal and reliable nitrogen production.

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Models and specifications mentioned in this catalog are subject to change without notice.