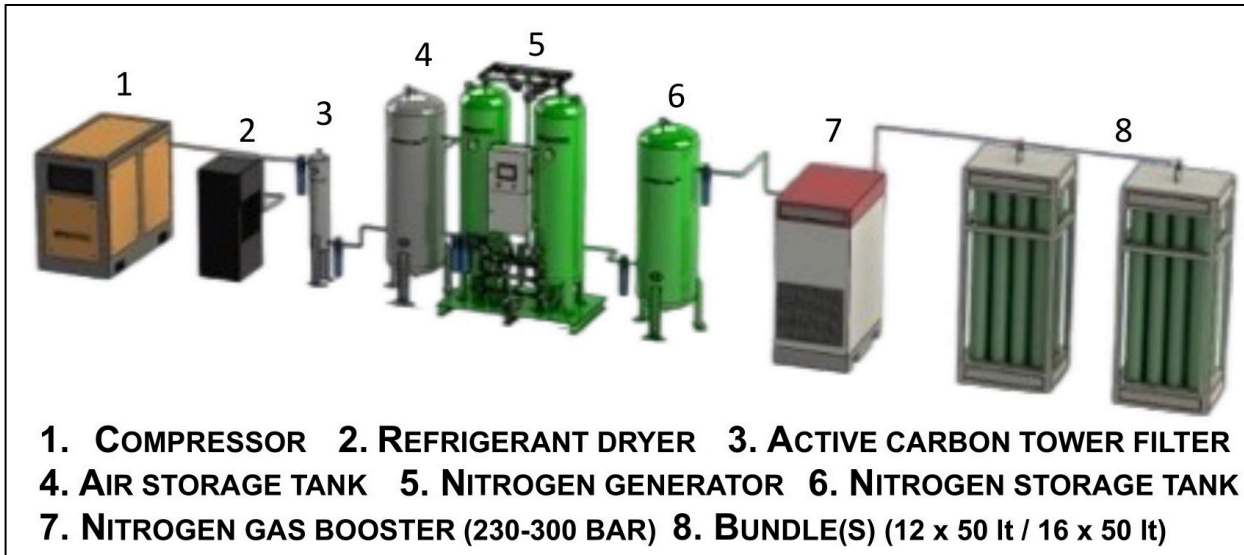


**NITROXTEC INDUSTRIAL** nitrogen generator offers operators the benefits of this advanced, but simple technology. The main advantages of Nitroxtec Industrial PSA systems are:

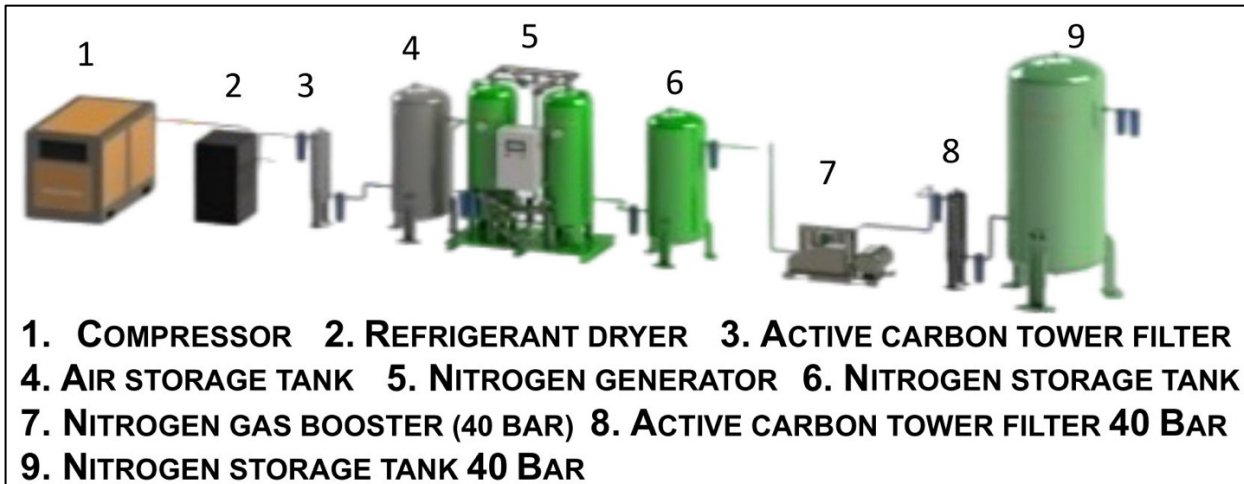
- 1.1.1 Compact Design
- 1.1.2 Low weight
- 1.1.3 Safe, reliable operation
- 1.1.4 Simple maintenance
- 1.1.5 Ease of use
- 1.1.6 Quick start

## 12 Product Features

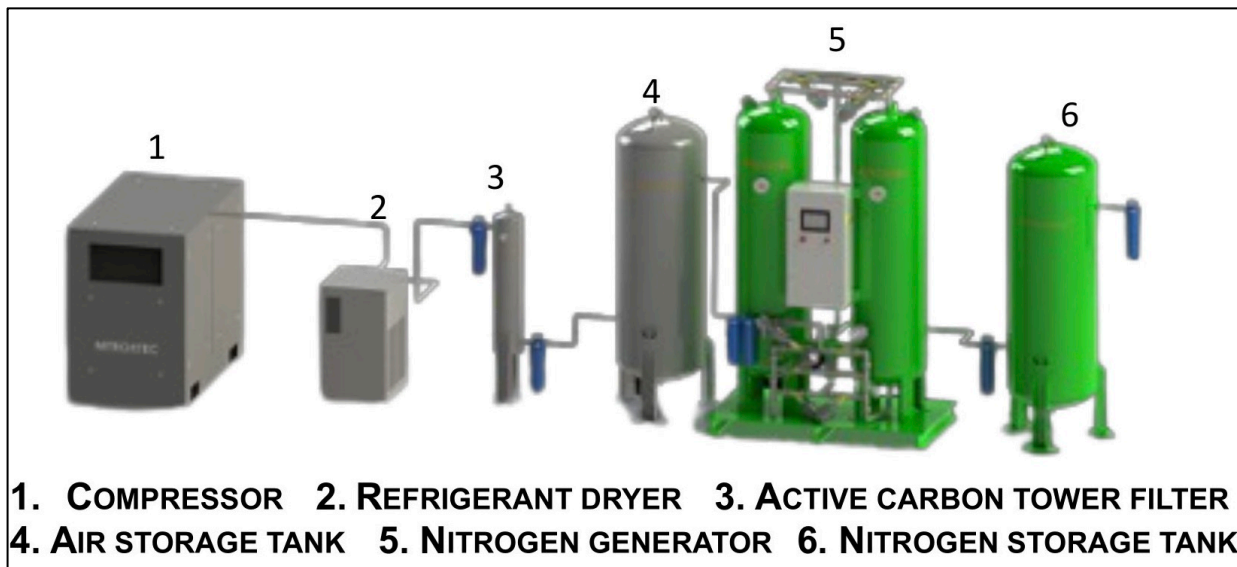
### 1.2.1 TYPICAL NITROGEN GENERATION SETS USED IN VARIOUS INDUSTRIES



**PICTURE 1: 230-300 BAR NITROGEN PRODUCTION SYSTEM**



**PICTURE 2: 40 BAR NITROGEN PRODUCTION SYSTEM**



**PICTURE 3: 6-8 BAR NITROGEN PRODUCTION SYSTEM**

### 1.2.2 NITROGEN GENERATION

This Nitroxtec Industrial nitrogen PSA generator is an on-site nitrogen generating machine. Integrated with your air compressor (\*), it processes atmospheric air under pressure and separates the nitrogen from other gases. The separation is accomplished with a molecular sieve that does not require replacement (when maintained and used according to this instruction manual). The nitrogen generator uses two beds of CMS to separate compressed air into a high-pressure nitrogen product stream and low-pressure oxygen enriched waste stream. Particulate and activated carbon filters are included to remove impurities from the feed air. Each nitrogen generator comes pre-tested and fine tuned to meet the customer specified nitrogen flow rate and purity.

The process is completely regenerative which makes it reliable and virtually maintenance free. The delivery pressure can be set from 4 to 8.0 bar(g) to meet the needs of your operation.

(\*) It is important to note that it should be operated and maintained in accordance with the manuals received with the compressor. An improperly maintained compressor, refrigeration air dryer or filtration system could affect the operation of your nitrogen PSA generator. For use up to 24 hours a day, Nitroxtec recommends high quality screw compressors only.

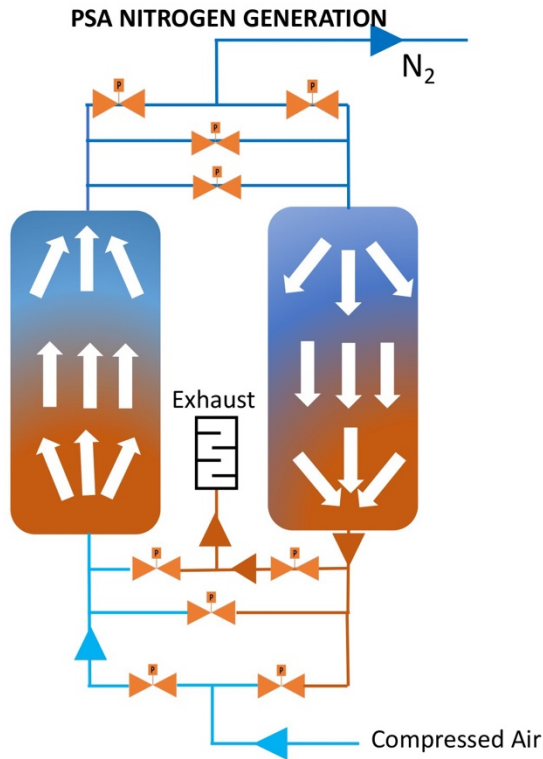
### 1.2.3 DESCRIPTION OF PSA NITROGEN GENERATORS

The Nitroxtec nitrogen generator is designed to operate compressed air at 6.0 – 10.0 bar(g) into its filter assembly. The supplied compressed inlet air must be filtered through an air-drying system consisting of water drain filter, refrigeration air dryer pre- and micro filtration units, all filtration units must be equipped with automatic drain valves for removing water and oil. The pre-filter and micro filter removes condensed water and oil, dirt, scale, etc., and the coalescing filter removes oil vapour (oil aerosols).

The normal process flow of air through the unit is shown in picture 4 below. After exiting the filter, the compressed air is regulated down to 6 – 7 bar(g).

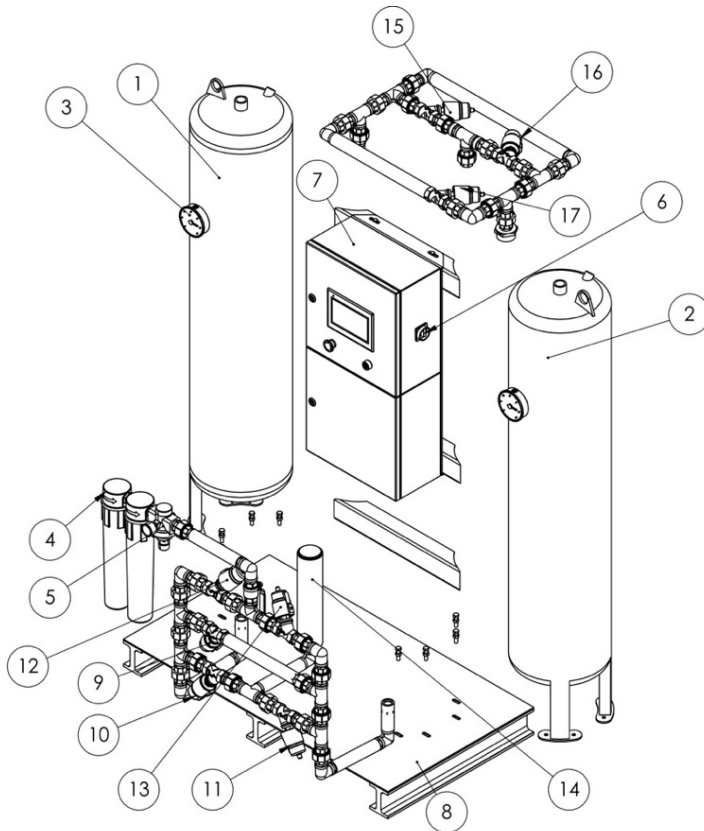
Molecular sieve has the unique property that it physically attracts or adsorbs oxygen from the air, leaving the nitrogen to pass through to the product tank, and can when saturated with oxygen be regenerated to clean sieve again by purging with nitrogen under lower pressure conditions.

The PSA generator unit consist of two absorber columns working in alternate operation, e.g. the processes always runs in antiphasis to one another in such way, that one absorber column with cleaned sieve delivers nitrogen, while the other absorber column regenerates saturated sieve. After a certain present period, the processes shifts, so that the first absorber column now regenerates saturated sieve, while the second is delivering nitrogen through a cleaned sieve. The nitrogen from the absorber column is stored in the product tank. After the product tank the pressure is regulated to 0 – 9 bar(g) depending upon the consumer's specific working pressure.



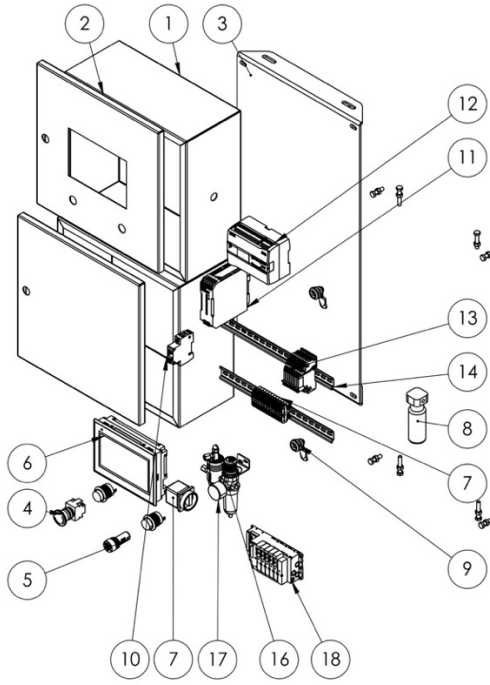
**PICTURE 4: NITROGEN GENERATION SCHEME**

### 1.2.4 PSA GENERATOR PARTS



PARÇA NUMARA ITEM NO	TANIM	DESCRIPTION
1	TANK A	TANK A
2	TANK B	TANK B
3	MANOMETRE	MANOMETER
4	GİRİŞ FİLTRESİ	AIR INLET FILTERS
5	REGÜLATOR	REGULATOR
6	OFF ON ANAHTAR	OFF ON SWITCH
7	KONTROL PANOSU	CONTROL PANEL
8	ŞAŞİ	CHASSIS
9	DENGELEME VALFİ	BALANCING VALVE
10	A TAHLİYE VALFİ	A DISCHARGE VALVE
11	B TAHLİYE VALFİ	B DISCHARGE VALVE
12	A GİRİŞ HAVA VALFİ	A INLET AIR VALVE
13	B GİRİŞ HAVA VALFİ	B INLET AIR VALVE
14	SUSTURCU	MUFFLER
15	A GAZ VALFİ	A GAS VALVE
16	B GAZ VALFİ	B GAS VALVE
17	DENGELEME VALFİ	BALANCING VALVE

## 1.2.5 PLC PARTS



Parça numarası ITEM NO	Tanım	DESCRIPTION
1	Pano	PANEL
2	Pano Kapağı	PANEL DOOR
3	Akt Montaj Plakası	ASSEMBLY PLATE
4	Acil Düşme	EMERGENCY STOP
5	Alarm Sinyal	ALARM SIGNAL
6	PLC HMI	PLC HMI
7	OFF-ON	OFF-ON
8	O2 gaz sensörü	O2 gas sensor
9	Pano anahtarı	PANEL KEY
10	sigorta	FUSE
11	Güç kaynağı	POWER SUPPLY
12	PLC	PLC
13	Röleler	RELAY
14	Ray	RAIL TERMINAL
15	Oksijen sensörü	OXYGEN SENSOR GAS
16	Gaz basın sensörü	PRESSURE SENSOR GAS
17	Gaz regilatör Filtre	REGULATOR FILTER GAS
18	Valf Blok	BLOCK VALVE

## 1.2.6 CMS AMOUNTS AND BSP CONNECTIONS

CMS AMOUNTS OF NITROGEN GENERATOR		AIR INLET CONNECTION	NITROGEN OUTLET CONNECTION
MODEL	CMS SLUHP100	BSP FEMALE	BSP FEMALE
	AMOUNT KG	INCH	INCH
Nitrotech 01	21,6	½	½
Nitrotech 02	43,2	½	½
Nitrotech 03	64,8	½	½
Nitrotech 04	86,4	½	½
Nitrotech 05	108	½	½
Nitrotech 06	151	¾	¾
Nitrotech 07	201	¾	¾
Nitrotech 08	252	1	1
Nitrotech 09	295	1	1
Nitrotech 10	345	1	1
Nitrotech 11	396	1 ½	1 ½
Nitrotech 12	504	1 ½	1 ½
Nitrotech 13	648	1 ½	1 ½
Nitrotech 14	850	2	2
Nitrotech 15	907	2	2
Nitrotech 16	1245	2	2
Nitrotech 17	1440	2	2
Nitrotech 18	1656	3	3
Nitrotech 19	1944	3	3
Nitrotech 20	2232	3	3
Nitrotech 21	2592	3	3
Nitrotech 22	2952	3	3
Nitrotech 23	3384	3	3

## 1.3 Safety Information

The following section outlines the basic safety considerations regarding use of your nitrogen generator. Please refer to the technical references for additional information.

Read carefully and act accordingly before installing, operating or repairing the unit.

- The operator must employ safe working practices and rules when operating the nitrogen generator.
- The owner is responsible for maintaining the unit in a safe operating condition.
- Always use approved parts when performing maintenance and repairs. Make sure that replacement parts meet or exceed the pressure requirements.
- Only authorized, trained and competent individuals must perform installation, operation, maintenance and repair.
- Completely depressurize the generator, tanks, and lines prior to performing any mechanical work, including changing the filters. The nitrogen must be vented to the outside or to a large, well-ventilated room to avoid suffocation due to lack of oxygen.
- Safety glasses should be worn if the cabinet door is open while the machine is operating.
- **Never allow high-pressure gas to exhaust from an unsecured hose. An unsecured hose may exhibit a whipping action, which can cause serious injury. If a hose should burst during use, immediately close all isolation valves.**
- **Never disable or bypass any safety relief valves on the air receiver or product tanks.**
- **Always make certain that the nitrogen generator is unplugged prior to performing any electrical work.**

## 1.4 Warranty

This equipment is sold by Nitroxtec Industrial under the warranties set forth in the following paragraphs. Such warranties are extended only with respect to the purchase of this equipment directly from Nitroxtec Industrial or its authorized agent as new merchandise and are extended to the first buyer thereof other than the purpose of resale.

For a period of two years from the date of original delivery to buyer or to buyer's order, this equipment, is warranted to be free from functional defects in materials and workmanship and to conform to the description of this equipment contained in this manual and any accompanying labels and/or inserts, provided that this equipment is properly operated under the conditions of normal use and that regular and periodic maintenance and service is performed or replacements are made in accordance with the instructions provided. Expendable parts of this equipment are similarly warranted to be free from functional defects in materials and workmanship and to conform to the description of this equipment contained in this manual and any accompanying labels and/or inserts. The foregoing warranties shall not apply if the equipment has been repaired other than by Nitroxtec Industrial, or if this equipment has not been operated and maintained in accordance with written instructions provided by Nitroxtec Industrial, or has been altered by anyone other than Nitroxtec Industrial, or if the equipment has been subject to abuse, misuse, negligence or accident.

Nitroxtec Industrial's sole and exclusive obligation and the buyer's sole and exclusive remedy under the above warranties is limited to repairing or replacing, free of charge, at Nitroxtec Industrial's sole discretion, the equipment or part which is telephonically reported to be a problem to the local Nitroxtec Industrial branch location, and which if so advised, is returned with a written statement of the observed deficiency, not later than seven days after the expiration of the applicable warranty, to the Nitroxtec Industrial during normal business hours, transportation charges prepaid, and which, upon examination, is found to comply with the above warranties.

Return trip transportation charges for the equipment or part shall be paid by the buyer.

**NITROXTEC SHALL NOT BE OTHERWISE LIABLE FOR ANY DAMAGES INCLUDING BUT NOT LIMITED TO INCIDENTAL DAMAGES, CONSEQUENTIAL DAMAGES, OR SPECIAL DAMAGES, WHETHER SUCH DAMAGES RESULT FROM NEGLIGENCE, BREACH OF WARRANTY OR OTHERWISE.**

**THERE ARE NO EXPRESS OR IMPLIED WARRANTIES WHICH EXTEND BEYOND THE WARRANTIES HEREIN ABOVE SET FORTH. NITROXTEC MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE EQUIPMENT OR PARTS THEREOF.**

**ACCEPTANCE OF THE EQUIPMENT BY THE FINAL BUYER INDICATES THE FINAL BUYER'S ACCEPTANCE OF ALL WARRANTIES AND LIMITATIONS SET FORTH ABOVE**

## **USER RESPONSIBILITY**

This equipment will perform in conformity with the description thereof contained in this manual and accompanying labels and/or inserts when installed, operated, maintained and repaired in accordance with the instructions provided. This equipment must be checked periodically, with the frequency of such inspections depending upon the scope of use. Damaged, worn or contaminated equipment should not be used. Parts that are broken, missing, plainly worn, distorted or contaminated should be replaced immediately. Should such repair or replacement become necessary, Nitroxtec Industrial recommends that a telephonic or written request for service advice be made to the Nitroxtec Industrial or to the nearest Nitroxtec Industrial Branch location.

This equipment or any of its parts should not be altered without the prior written approval of Nitroxtec Industrial. The user of this equipment shall have the sole responsibility for any malfunction, which results from improper use, faulty maintenance, damage, improper repair or alteration by anyone other than Nitroxtec Industrial products or a service facility designated by Nitroxtec Industrial. Further, the ultimate user of the equipment is responsible for the training and safe operation of the equipment by personnel in his/her employ.

The nitrogen generator, excluding air supply system, is warranted against defects in materials and workmanship, under normal use and operation, as applicable on the warranty listed below. All compressors and dryers are covered by the original equipment manufacturer's warranty.

These warranties shall be null, void, inoperative, and not binding upon Nitroxtec Industrial if a defect or malfunction occurs in the product or any part thereof from any feed air malfunction, or improper filter element maintenance, or repair, attempted repair, adjustment or servicing by anyone other than an authorized representative of Nitroxtec Industrial or external causes. Said warranty shall extend and apply to the nitrogen generator only while said system is owned and used exclusively by the original purchaser.

### **1.5 Warnings !**



**Nitroxtec nitrogen generator system is intended for use in industrial applications only.**



**Upon receiving your Nitroxtec nitrogen generator system, inspect the unit thoroughly for signs of damage. Any signs of damage, either external or internal, should be noted on the delivery receipt, and also reported immediately to both the freight company and Nitroxtec Industrial.**

**Please contact Nitroxtec Industrial Tel:+90 212 544 42 61**




**The owner of the Nitroxtec nitrogen generator system is responsible of keeping all the equipment in safe working order. Parts and units must be replaced if they are no longer in safe working condition. Installation of equipment and assembling to other equipment must be done in compliance with current local regulations and directions.**





**The operator of the Nitroxtec nitrogen generator system must always use safe working methods in compliance with current local safety regulations and directions. In case of difference between directions in the manual and local regulations the strictest must be followed.**





**Use only hoses and pipes of correct size and suitable for operating pressure and fluid. Never use hoses which are frayed, damaged or worn. Always use the correct type and size of connections. Make sure hoses are depressurized before disconnecting.**


 Lifting lugs on columns, if present, are only for handling of the columns if they are detached from the PSA generator unit. The PSA generator unit is not to be lifted by the lifting lugs on columns or by the pipes. The PSA generator must be lifted by the skid, with a suitable lifting device operated by a certified or trained operator. Anchor all parts to the concrete floor by means of anchor bolts or like.


 Exhaust gas from the nitrogen PSA generator can contain more than 30% oxygen and be oxidizing. Exhaust gas must be led by piping or ducts out of the room to outdoor atmospheric air. Failure to do this may cause serious damage, injury or death. The room where the generator is located must always be well ventilated.


 Always vent nitrogen to outdoor atmospheric air. Failure to do this may cause serious injury or death due to suffocation. The room where the PSA generator is located must always be well ventilated. Avoid inhalation of gases. In case of nitrogen blow out, make sure the room is sufficient ventilated (before entering). Use self-contained breathing apparatus if necessary.


 Make sure that your back-up/emergency nitrogen supply is installed with a nitrogen pressure regulator. Check valves must be fitted at both nitrogen delivery outlet from product tank and backup nitrogen outlet.

 The oxygen zirconium module and especially the heater block can get very hot. Touching these parts may cause burns. The module can still be very hot even after the module has been turned off. Always wait for at least 30 minutes before touching the module. If present the probe module is placed in the lower control cabinet.

 Do not attempt to open the inspection hatch or similar unless the unit cycle pressure gauge reads zero and the rubber hose from the filter elements is disconnected to release pressure. The PSA generator columns can contain hazardous substances. Handle only with proper protective clothing, gloves and eyewear and according to local environment and work environment regulations. In general mechanical and piping installation and servicing is to be performed by trained or authorized personnel only.












 Tanks must be depressurized and purged thorough with air to remove all nitrogen before service or inspection. Always vent nitrogen to outdoor atmospheric air. Sources of nitrogen must be positively blinded or disconnected before service or inspection. Never rely on a closed valve. Tank atmosphere must be analysed for safe oxygen content before inspection.

 For safety, installation and operating etc. of compressor, air dryer unit or other auxiliary equipment refer to the concerned manuals of the equipment.

 Improper behaviour as a result of inadequate qualification and knowledge can lead to substantial injury to person and property. Therefore don't allow any activities to be performed by other than appropriately qualified personnel

 Pressurized gases are contained within the generator and the receiver and product tanks. High-pressure gases are dangerous and may cause injury or death if handled or used inappropriately.

 If any statement or specification within this booklet, especially with regard to safety, does not agree with legislation or standard industry practices, the more demanding shall apply.

-  Carefully attach lifting devices and any rigging to ensure that piping and valves are not damaged.
-  Use of piping sizes smaller than the recommended size will significantly decrease system performance.
-  Use only materials with compatible pressure rating on components on the product pipe lines.
-  Shut off the main air supply valve and depressurize the generator before repairing any leaks.
-  During the start up sequence, check for leaks in all pipe fittings and valves. Remember, even a small leak on the product nitrogen piping can severely reduce production capacity!
-  When the nitrogen generator is turned on for the first time or after a prolonged shut down period, it is likely that the product receiver is full of air. Product purity can be increased by purging the product receiver to safe area / outside the building for approximately 15 minutes before using the product.
-  If the generator or any part of the system has been opened to the atmosphere, the system must be purged of any residual air.
-  The generator will remain pressurized after shut down. Before performing any maintenance or opening any piping systems, always depressurize the system. Failure to do so may result in injuries.
-  Do not try to remove filter bowls unless both the Air Supply gauge and the Process Pressure gauge clearly read zero psig.
-  A plugged drain system will cause water and oil to carry over into the adsorber, which will cause permanent damage to the adsorbent. Such damage is not covered by the manufacturer's warranty. Use of filters other than those specified by NITROXTEC INDUSTRIAL could result in damages not covered
-  Action in case of danger and accident:
  - Store first-aid box and fire extinguishers close-at-hand
  - Familiarise personnel with the inside emergency plan
  - Emergency stop has to be activated
  - Take first-aid measures in accordance with the inside emergency plan

## 1.6 Service Return Policy

### General Service

A unit which is not functioning in a normal manner should be removed from service until such time that repairs or replacement can be made. Upon completion of repair, full testing should be performed to assure the user that the regulator has been returned to its original operating parameters. **Nitroxtec Industrial** offers a repair service to its customers for all products that **Nitroxtec Industrial** sells. To arrange for repair service, call +90 212 544 42 61 and ask for the Warranty Administrator. **NO PRODUCT WILL BE RECEIVED BY NITROXTEC WITHOUT INDICATION OF GAS SERVICE AND WITHOUT PROPER RETURN MATERIAL AUTHORIZATION PROVIDED BY THE WARRANTY ADMINISTRATOR. (All repairs must be made by Nitroxtec Industrial or an assigned and approved facility to maintain any warranties or guarantees).**

If the unit is under an applicable warranty, return the unit to **Nitroxtec Industrial** for repair or replacement. To arrange for warranty service, call +90 212 544 42 61 and ask for the Warranty Administrator.

**NO PRODUCT WILL BE RECEIVED BY NITROXTEC INDUSTRIAL WITHOUT INDICATION OF GAS SERVICE AND WITHOUT PROPER RETURN MATERIAL AUTHORIZATION PROVIDED BY THE WARRANTY ADMINISTRATOR.**

The user is expected to periodically inspect the product for leaks, loose or worn parts, broken or non-functioning components and to address those situations immediately. If the user would require verbal assistance in ascertaining the potential of a problem with any Nitroxtec Industrial's product, contact the local Nitroxtec Industrial branch for assistance or your Nitroxtec Industrial sales representative.

The **NITROXTEC INDUSTRIAL** warranty includes the following:

## **2 UNPACKING AND INSPECTION**

The **nitrogen generator** is shipped in a single crate, including the accessory kit. If you ordered optional air receiver or product receiver tanks, these would be shipped in a separate crate. The contents of the crate(s) should be inspected upon delivery to assure that no damage has taken place during transit. Save the carton and wrapping, as it may be necessary to return the generator in event of shipping damage. If any components are found to be damaged, the carrier should be notified immediately. The individual pieces should be checked against the packing list. If any discrepancy is found, contact your local distributor or NITROXTEC INDUSTRIAL at +90 212 544 42 61 / info@nitroxtec.com. Please include the model number and the serial number with all correspondence.

## **3 SITE AND UTILITY REQUIREMENTS**

The following requirements must be met to enable the nitrogen generator to perform at its rated capacity. Deviation from these requirements may result in poor performance, injury to persons or machinery, and voiding of warranty.

### **3.1 Air Supply**

Air supplied to the generator must be between 30 °C and / 0.5 °C, with a water dew point of / 3°C or below. Air at temperatures higher or lower than this may cause damage not covered by warranty. Likewise, moisture content higher than that specified may damage the adsorbent material and void the warranty. Air pressure, air receiver and nitrogen receiver vessels must be compatible with the generator. Use of a correctly sized refrigerant dryer will ensure that air meets specified standards.

The performance of our PSA type nitrogen generators is based on minimum / 4,5 barg operating pressure. Operation at higher or lower pressure will result in a nitrogen production above or below design. Air consumption for each nitrogen generator depends on nitrogen product purity and flow rate. Please consult Nitroxtec Industrial for details.

### **3.2 Additional Piping and Hoses**

The air supply piping components must be capable of supplying the required amount of feed air at the required pressure measured at the generator inlet connection.

### **3.3 Electrical Supply**

Power supply must be 110 V or 220 V / 1 ph / 50 - 60 Hz as labeled on the unit. Power consumption is less than 0,2 kW.

## 34 Site Specifications

Select a non-hazardous area indoors for installation which remains above 0,5 °C and below 30 °C. Adequate space should be provided around the generator for access and routine maintenance. Ensure that there is enough space for the air receiver and product receiver skid next to the unit.

The exhaust piping from the nitrogen generator may be vented outside, but any additional piping used should be the same size as the exhaust piping supplied with the generator or larger depending on the length of the pipe. Exhaust piping should not have any restrictions or valves, and should be as short as possible.

## 4 SYSTEM ASSEMBLY

This section provides a step-by-step procedure for easy assembly of the nitrogen generator with optional air supply system and tanks.

1. Position the nitrogen generator in an area as described in Section 3.4. Lift the nitrogen generator carefully to avoid damaging piping or control system.
2. Carefully lift the air receiver and nitrogen receiver (if supplied) and position next to the nitrogen generator skid. The tanks should be located as close as possible to the unit.
3. Install the air compressor and refrigerant dryer (if supplied) in accordance with the manufacturer's instructions. Attach air supply connections to the nitrogen generator. Install suitable piping or hoses from the compressor to the dryer, from the dryer to the air receiver, and from the air receiver to the nitrogen generator. The connections may be "hard plumbed" by the user, if desired.
4. Install relief valve on the air receiver and nitrogen receiver.
5. Check all fittings for leaks using a leak detecting solution.
6. A qualified electrician should install all electrical connections and the electrical power supply. Plug in the nitrogen generator into an approved outlet of the correct voltage and frequency. Connect the optional compressor(s) and dryer to an appropriate power supply (according to the requirements stated on the motor name plate).

## 5 SYSTEM OVERVIEW

### 51 Controls and Instrumentation Overview

This section describes the function of each control on the PSA nitrogen generator. The location and purpose of all instrumentation is also listed. An electro-mechanical timer located inside the control enclosure automatically controls your nitrogen generator. Do not attempt to alter the timer; any changes made will void the performance specifications.

Controls for supporting equipment, such as the compressor and dryer, are not included in this section. Please consult the original manufacturer's instructions, located in the appendices, for further information.

#### 5.1.1 Main Power Switch

This switch supplies power to the nitrogen generator. The green "Power Light" is lit when the switch is "ON". The "Main Power" switch is located on the front of the control panel.

The "Main Power" switch allows the operator to disconnect power from the generator. PSA cycling will stop immediately whenever the switch is turned "OFF". Nitrogen

production will stop; airflow from optional air receiver must be stopped manually using the isolation valve. The isolation valve must be opened and the switch must be returned to the “ON” position before the unit can be restarted.

### **5.1.2 Power Light**

This green indicator is lit when the “Main Power” switch is “ON”. This light uses a 110 or 220 volt bulb.

### **5.1.3 Pressure Switch**

The nitrogen product pressure switch controls the on and off pressure range of the Nitrogen Generator. The pressure switch is installed in the nitrogen product line inside the cabinet.

The pressure switch can be set to turn the unit off and on at desired product pressure levels. The factory settings call for the generator to switch “OFF” when product pressure exceeds and to switch “ON” when product pressure falls about. The setting may vary with different models and applications.

### **5.1.4 Standby Light**

This amber indicator is lit when the nitrogen product receiver pressure is above the high set point of the pressure switch. This light uses a 110 or 220 volt bulb.

### **5.1.5 Air Supply Pressure Gauge**

This gauge monitors the feed air pressure. The inlet air pressure gauge is located on the optional air supply receiver.

### **5.1.6 Peak Pressure Gauge**

This gauge monitors the pressure changes in the adsorber beds throughout the cycle. The “Peak Pressure” gauge is located on the front of the control panel.

The pressure variations throughout the cycle should be recorded for one complete cycle.

### **5.1.7 Tank Pressure Gauge**

The “Tank Pressure” gauge monitors the pressure of the nitrogen product. The gauge is located on the front of the control panel.

### **5.1.8 Inlet Air Pressure Regulator**

The regulator allows the operator to adjust the pressure of the feed air to the pressure range desired. The inlet air pressure regulator is located inside the cabinet.

The regulator is set at the factory but may require minor adjustment in the field. Note that the output pressure of the compressor limits the maximum pressure.

### **5.1.9 Product Regulator**

The regulator sets the delivery pressure of the nitrogen product. The regulator is located on the optional product receiver tank. Please refer to Section 1.2 for safety information regarding high-pressure nitrogen.

### **5.1.10 Oxygen Analyzer (Sensor)**

The oxygen analyzer receives a small sample flow from the product receiver tank to continuously monitor the product nitrogen purity. Most of the oxygen analyzers are equipped with alarms that will be activated when the oxygen content gets too high. The oxygen analyzer display is located on the front of the control panel. The sensor is installed inside the panel. The sample must be connected to the located at the side of the control panel. It should be supplied from the product receiver tank through tubing.

## 52 Control Timer

An electro mechanical cam timer automatically controls the nitrogen generator. The cams are adjusted to the optimum time settings at factory. Do not attempt to change the time settings since this will affect the system performance and void the performance specifications.

## 6 GENERATOR OPERATION

This section describes the procedure for starting, running, and stopping the nitrogen generator. The operator should notify personnel in the area that the generator will be started and make sure the start-up will not interfere with any other operations.

### 6.1 Start-Up

This section describes the necessary steps of both the initial start-up and a normal routine start-up. If this is the first time the unit has been started, follow the Initial Startup procedure.



7/1/2021

**USER MENU**

6:18:34 AM

MAIN PAGE

SETTINGS PAGE

MANUAL PAGE

MAINTENANCE PAGE

CALIBRATION PAGE

CYCLE PAGE

SENSOR SELECTION PAGE

REMOTE START/STOP OFF

F1

F2

F3

F4

F5

F6

F7

F8

7/1/2021

**CALIBRATION**

6:18:07 AM

PURITY MAX	0.100 %
PURITY MIN	0.000 %

FLOWMETER MIN.	0.000 L/d
FLOWMETER MAX.	100.000 L/d

GAS PRESSURE MIN.	0.000 bar
GAS PRESSURE MAX.	16.000 bar

DEWPOINT MIN.	20.000 C
DEWPOINT MAX.	-80.000 C

Menu

Main Page

F1

F2

F3

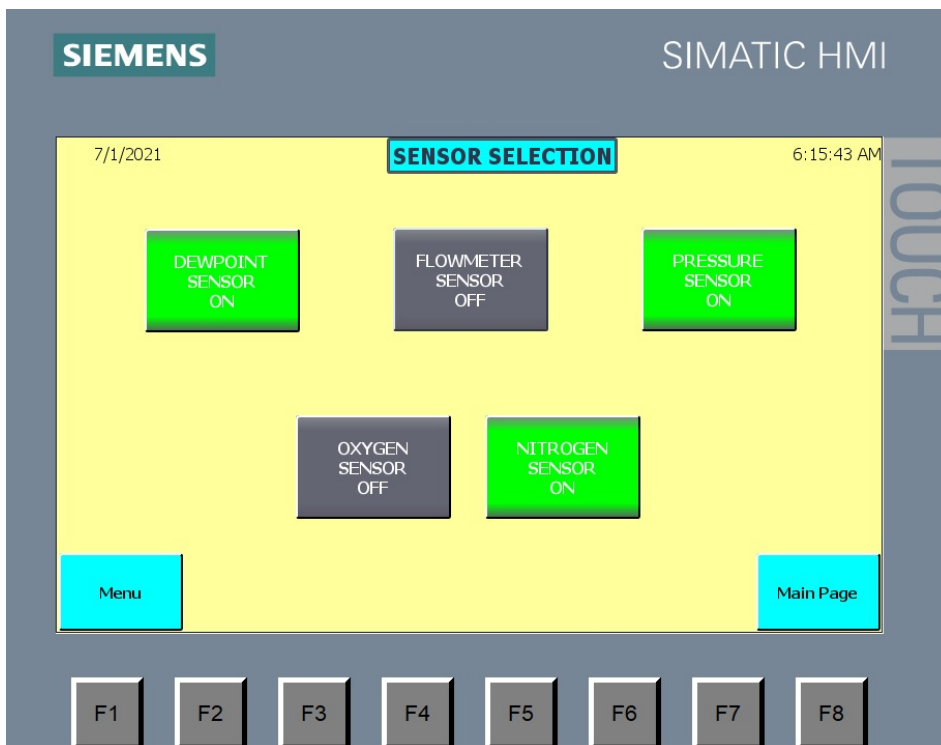
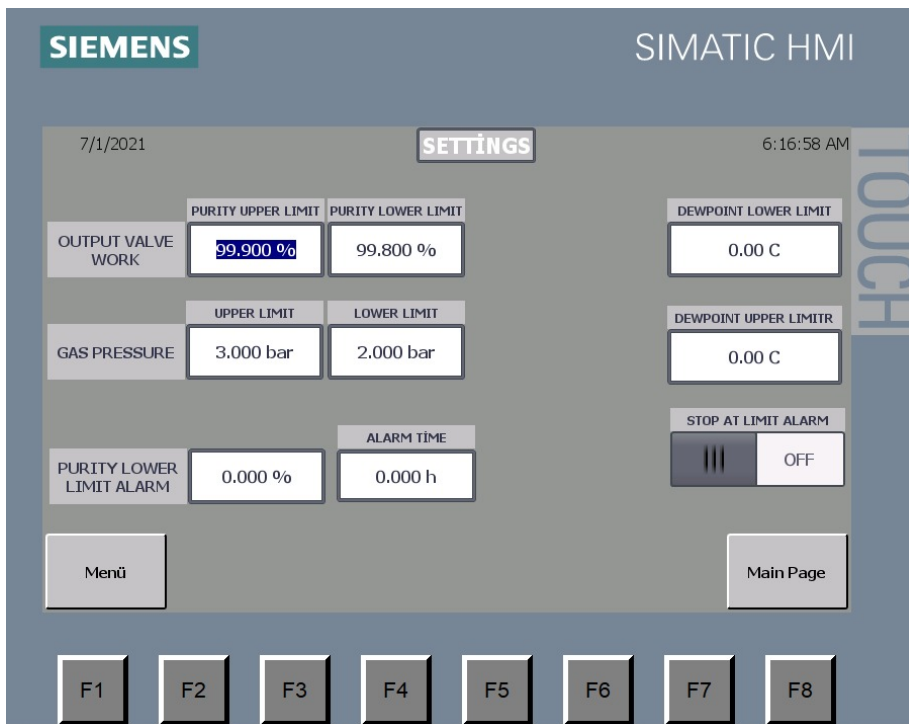
F4

F5

F6

F7

F8



7/1/2021

**ALARMS**

6:19:27 AM

No.	Time	Date	Text
-----	------	------	------

Menu Alarm History Alarm Reset Main Page

F1 F2 F3 F4 F5 F6 F7 F8

TOUCH

7/1/2021

**MANUAL**

6:19:03 AM

A GAS GENERATION VALVE	A FILLING VALVE	B FILLING VALVE	BALANCING VALVE
OFF	OFF	OFF	OFF
B GAS GENERATION VALVE	A EVACUATION VALVE	B EVACUATION VALVE	ALARM OUTPUT
OFF	OFF	OFF	OFF
	OUTPUT VALVE		
Menu	OFF		Main Page

F1 F2 F3 F4 F5 F6 F7 F8

TOUCH

7/1/2021

MAINTENANCE TIME

6:17:22 AM

	SET	ACTUAL	
1.GROUP TIME	3500 h	3500 h	RESET
2.GROUP TIME	7000 h	7000 h	RESET
3.GROUP TIME	10500 h	10469 h	RESET
SENSOR CALIBRATION	20000 h	19970 h	RESET
	TOTAL	DELETED	
WORK TIME	6 h	3500 h	RESET

Menu

Main Page

- F1
- F2
- F3
- F4
- F5
- F6
- F7
- F8

TOUCH

7/1/2021

WORK CYCLE

6:17:47 AM

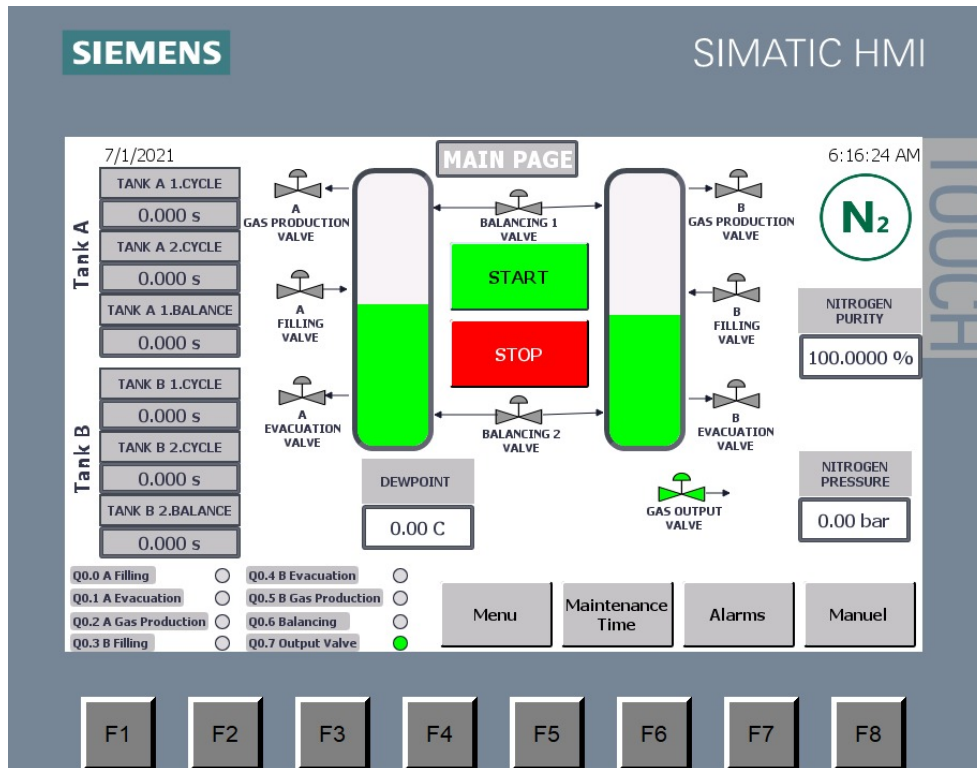
	1.CYCLE	2.CYCLE	1.BALANCE	1.CYCLE	2.CYCLE	2.BALANCE
WORK TIME	40.000 s	0.000 s	3.000 s	40.000 s	0.000 s	3.000 s
WAIT TIME	1.000 s	1.000 s	1.000 s	1.000 s	1.000 s	1.000 s
A FILLING VALVE	ON	OFF	OFF	OFF	OFF	OFF
A EVACUATION VALVE	OFF	OFF	OFF	ON	OFF	OFF
A GAS GENERATION VALVE	ON	OFF	OFF	OFF	OFF	OFF
B FILLING VALVE	OFF	OFF	OFF	ON	OFF	OFF
B EVACUATION VALVE	ON	OFF	OFF	OFF	OFF	OFF
B GAS GENERATION VALVE	OFF	OFF	OFF	ON	OFF	OFF
BALANCING VALVE	OFF	OFF	ON	OFF	OFF	ON
OUTPUT CONTROL VALVE				NO		

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TOUCH



### 6.1.1 Initial Start-Up

1. Verify that power supply is 110 V or 220 V / 1 ph / 50 - 60 Hz as labeled on the unit.
2. Turn on the compressed air supply. Follow air compressor manufacturer's start-up instructions (see your manufacturer's manual). Check that air pressure is in the range of 90-175 psig / 6.2 – 12.1 barg [620-1210 kPa]. Open the air supply valve.
3. Turn the Main Power switch to the “OFF” position.
4. Plug the power cord into a properly fused and grounded electrical outlet of the correct voltage as marked on the unit.
5. Turn Main Power switch to “ON”. Then push start icon on the touchscreen
6. Observe pressure gauges for one or more cycles. There should be pressure at the “Peak Pressure” gauge. (Product pressure will vary with certain models.)
7. Nitrogen will start to flow to the product tank.
8. When nitrogen gas reaches target pressure the system switches to stand by position. When nitrogen gas pressure drops to the lowest limit then the nitrogen generator automatically restarts.

### 6.1.2 Normal Start-Up

Follow this procedure to start the generator for normal operation. If this is the first time the unit has been started, follow the Initial Startup procedure.

1. Open the air isolation valve.
2. Turn on the Main Power switch. Push start button on the touchscreen
3. Open any shut off valves in the product nitrogen line to the user's piping system. Allow the system purity to rise before using product.

## 62 Shutdown

This section describes how to perform both an emergency shutdown and a normal shutdown.

### 6.2.1 Emergency Shutdown

In case of an emergency, simply **turn the Main Power Switch to OFF**. This will stop all generator functions immediately. Nitrogen supply can be shut off manually closing the nitrogen product ball valve located on the optional product receiver tank.

### 6.2.2 Normal Shutdown

This procedure allows the generator to be restarted more quickly than execution of an emergency or abnormal shutdown procedure would.

1. Turn the Main Power switch to "OFF". There is no need to close the nitrogen product ball valve.

## 7 MAINTENANCE

**NITROXTEC INDUSTRIAL** generators will provide many years of trouble-free operation if the recommended maintenance is performed thoroughly and regularly. In addition to the procedures given below, the customer must also perform all maintenance recommended by the manufacturers of the component items employed in the **NITROXTEC INDUSTRIAL** generators. Note that where any component manufacturer specifications are different from those of **NITROXTEC INDUSTRIAL**, the more demanding schedule should be adopted.

### 7.1 Nitrogen Generator

The nitrogen generator is a rugged unit and requires only minimal maintenance. Failure to follow the maintenance schedule may result in damage to the unit and voiding the warranty.

#### Every day:

1. Check for air and product leaks.
2. Check instrument air pressure.
3. Visually check control panel.
4. Record nitrogen concentration and flow rate; operating or ambient temperature, feed air pressure, product tank pressure, and sieve bed pressures throughout one cycle.
5. Verify that the automatic filter drain is working properly.
6. Manually operate air receiver drains.

#### Every month:

1. Clean filter bowls.
2. Calibrate optional oxygen analyzer as per attached manufacturer's instructions.

#### Three months:

1. Change Particulate pre filter element.
2. Operate safety valves.
3. Operate manual valves.
4. Check for leaks and repair if necessary.

**Six months:**

1. Change Coalescing filter element

**Annually:**

1. Install valve repair kits on flow control valve and equalizer valves.
2. Disassemble and inspect all air-operated valves; install repair kits if required.
3. Test all air pilot valves.
4. Check for air and product leaks.
5. Change activated carbon tower and/or activated carbon filter element upstream of the adsorber vessels. The steel activated carbon towers should be returned to **Nitroxtec Industrial** for refill. We recommend keeping a filled, spare tower in stock to reduce downtime during replacement.
6. Check O<sub>2</sub> analyzer sensor for proper operation as per manufacturer's instructions and order replacement.

**Three years:**

Install repair kits in all pneumatically operated valves.

**72 Filter Removal Procedure**

Clean filter elements are vital to good system performance. The filters remove particulates as well as liquid water and oil. The prefilter removes particles down to 5 microns in size. It should be changed every 3 months.

The coalescing filter removes particles down to 0,01 microns in size. The life of the coalescing filter is dependent on how well the prefilter performs its job; it will last for 6 months when the prefilter is regularly maintained.

The activated carbon tower and/or activated carbon filter element removes oil vapor down to about 0,003 ppm. The life of the activated carbon tower and/or activated carbon filter element is dependent on the oil content in the feed air. An activated carbon tower will typically last for 12 months when the upstream filters are regularly maintained.

- 7.2.1 Disconnect the tubes from the bottom of the bowls.
- 7.2.2 To remove the bowls, push the bowl latch down and rotate the bowl while pulling down.
- 7.2.3 Inspect the bowls. If the drain system is working properly, the bowls should be empty.
- 7.2.4 Replace any filter element that looks damaged or excessively dirty
- 7.2.5 Wash the bowls in soapy water and rinse thoroughly.
- 7.2.6 Reconnect the drain tubes. Make sure the bowl latches are securely locked in place. Be careful to avoid cutting o-rings
- 7.2.7 Remove activated carbon tower and replace with new activated carbon.
- 7.2.8 Slowly open the air inlet valve to pressurize the bowls. Examine for leaks and tighten if needed.

**8 TROUBLE SHOOTING**

This section enables the operator to determine the cause of operation problems and suggests remedies for the problems. If there are several likely causes, investigate the simpler solutions first. Regardless of the type of malfunction, a person who is thoroughly familiar with the system performs the troubleshooting best. If further assistance is required, contact your local distributor or **NITROXTEC INDUSTRIAL**.

<b>Symptom</b>	<b>Probable Cause</b>	<b>Corrective Action</b>
Nitrogen generator Not cycling	Low voltage or low amperage	Check electrical source
	Circuit breaker tripped	Reset circuit breaker
	Fuse blown	Replace fuses located inside control enclosure.
	Main power is OFF	Turn Nitrogen generator power switch ON.
	Low operator air pressure	Increase air regulator pressure
Nitrogen generator runs continuously; Amber light OFF	Defective wiring	Check wiring connections
	N <sub>2</sub> pressure switch set too high	Reduce standby pressure
	Defective N <sub>2</sub> pressureswitch	Replace switch
	Excessive product usage	Reduce product consumption
	Product line leak	Repair leak
	Cycle pressure too low	Increase air regulator pressure
	Defective wiring	Check wiring connections
<b>symptom</b>	<b>Probable Cause</b>	<b>Corrective Action</b>
Low product flow	Feed air flowrate is too low	Adjust air supply pressure and flow
	Low product purity	Product flow too high
	O <sub>2</sub> analyzer malfunction	Check operation and calibration
	Feed pressure too low	Increase operating pressure or flow
	Switching valve not opening / closing	Dirty or defective valve; clean or replace
		No pilot signal; check pilot valve using manual override; replace coil or pilot valve
		Tubing plugged or pinched; replace tubing
	Check-valves leak	Rebuild or replace check

	Muffler plugged	valves Clean muffler
	Oil or water in unit	Contact <b>Nitroxtec Industrial</b>
Filter drains remains open	Drain valve dirty	Clean valve
Filter drain does not open	Drain valve plugged	Clean valve
	Low operator air pressure	Increase regulator pressure
	Tubing plugged or	Replace tubing

## 9 CERTIFICATION



### ATTESTATION OF CONFORMITY

Certificate No.: CR-AOC-TUVNORD-23/0031-R00

<b>Name and address of bearer / manufacturer:</b>	NITROXTEC ENDÜSTRİYEL MAKİNA BASINÇLI HAVA ve GAZ ÖLÇÜMLERİ SAN. TİC. LTD. ŞTİ.  Topçular Mah. Ferhatpaşa Cad. Üretmen İş Merkezi C Blok No: 6/275 Eyüpsultan, İstanbul – TÜRKİYE
This certificate belongs to the following product. This certificate is to confirm that the tested samples meet the requirements of EN ISO 12100, EN 60204-1, EN 61000-6-3, EN IEC 61000-6-1. This certificate of conformity is given upon the request of the company according to EN ISO 12100, EN 60204-1, EN 61000-6-3, EN IEC 61000-6-1 standards.	
<b>Inspected according to:</b>	[2006/42/EC ] EN ISO 12100:2010, EN 60204-1:2018 [2014/30/EU ] EN 61000-6-3:2007+A1:2011+AC:2012 EN IEC 61000-6-1:2019
<b>Description of product:</b>	PSA Nitrogen Genaratör
<b>Model &amp; Type:</b>	■ NITROTECH 01 – 27 ■ NITROPLACE 01 – 27
<b>Inspection date or period:</b>	20.04.2023
<b>Report number:</b>	LVD-887-01, LVD-887-02, EMC-887-01
<b>Place of manufacture:</b>	Topçular Mah. Ferhatpaşa Cad. Üretmen İş Merkezi C Blok No: 6/275 Eyüpsultan, İstanbul – TÜRKİYE
<b>Inspected by:</b>	Besim BOZDAŞ
<b>Explanation:</b>	Other EU directives and standards, if any, related to the product have not been taken into account. These issues are the responsibility of the manufacturer.
<b>Istanbul , Issue Date : 20.04.2023</b> <b>This certificate is valid between 20.04.2023 to 19.04.2024</b>	Certifier for Product of TÜV NORD Turkey Teknik Kontrol ve Belgelendirme A.Ş.  <b>Mr. Oguzcan ALTUĞ</b>

TÜV NORD Turkey Teknik Kontrol ve Belgelendirme A.Ş.  
 Şehit Mehmet Fatih Ongül Sokak, No:5 Kat:4  
 OdaK Plaza, Kozyatağı, 34742 İstanbul-  
 TÜRKİYE

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 e-mail tuv-nord@tuv-turkey.com

F-854 R04 (Rev.23/09/22) ENG



# CERTIFICATE

## NİTROXTEC ENDÜSTRİYEL MAKİNA BASINÇLI HAVA VE GAZ ÇÖZÜMLERİ SANAYİ TİCARET LİMİTED ŞİRKETİ

TOPÇULAR MAH. FERHATPAŞA CAD. ÜRETİM İŞ MERKEZİ C BLOK NO:6  
İÇ KAPI NO:275 EYÜPSULTAN / İSTANBUL / TÜRKİYE

*Has been assessed and found to Comply with the Requirements of:  
Denetlenmiş ve aşağıdaki standardın gerekliliklerine uygunluğu görülmüştür:*

### ISO 9001:2015

*The Quality Management System is applicable to:  
Kalite Yönetim Sistemi:*

MANUFACTURE OF GAS GENERATORS, WATER GAS GENERATORS, ACETYLENE  
GAS GENERATORS

GAZ JENERATÖRLERİ, SU GAZI JENERATÖRLERİ, ASETİLEN GAZI  
JENERATÖRLERİ İMALATI

Certificate Number: QMS-0102319  
Belge Numarası: QMS-0102319

Initial Certification Date: 25.11.2021  
İlk Belgelendirme Tarihi: 25.11.2021

Certification Period: 3 Years  
Belgelendirme Periyodu: 3 Yıl

Certificate Validity Date: 24.11.2023  
Belge Geçerlilik Tarihi: 24.11.2023



*QMS*

IQR Sertifikasyon Onayı



ACCREDITED  
Management Systems  
Certification Body  
MSCB-135

IQR ULUSLARARASI BELGELENDİRME HİZMETLERİ LTD.ŞTİ.  
Beşevler Mah. Kocayunus Sk. No:3 Arslan Han Plaza K:2 Nilüfer / BURSA  
Tel.: +90.224.266 00 16 Faks: +90.224.249 41 13 www.iqrcert.com e-posta: info@iqrcert.com

# CERTIFICATE

## Attestation of Conformity

**Name and Address of Certificate Holder:**

NITROXTEC ENDÜSTRİYEL MAKİNA BASINÇLI HAVA ve  
GAZ ÖLÇÜMLERİ SANAYİ TİCARET LİMİTED ŞİRKETİ  
Topçular Mah. Ferhatpaşa Cad. Üretmen İş Merkezi C  
Blok No: 6/275 Eyüpsultan, İstanbul-Türkiye

**Certificate Number:**

SE-887-01-051121

**Date of Issue:**

05.11.2022

**Name and Address of Manufacturer:**

NITROXTEC ENDÜSTRİYEL MAKİNA BASINÇLI HAVA ve  
GAZ ÖLÇÜMLERİ SANAYİ TİCARET LİMİTED ŞİRKETİ  
Topçular Mah. Ferhatpaşa Cad. Üretmen İş Merkezi C  
Blok No: 6/275 Eyüpsultan, İstanbul-Türkiye

**Expiration Date:**

05.11.2023

**Test Report Number:**

LVD-887-01

LVD-887-02

EMC-887-01

**Brand:**

**NITROXTEC**  
INDUSTRIAL AIR & GAS SOLUTIONS

**Product Name:**

PSA AZOT JENERATÖRÜ, PSA NITROGEN GENERATOR

**Test Required:**

EN ISO 12100:2010

EN 60204-1:2018

EN 61000-6-3:2007+A1:2011+AC:2012

EN IEC 61000-6-1:2019

**Product Model:**

See Annex I

The product meets the technical requirement of the above standards as mentioned in the reference test reports and hence fulfils the technical requirements of the following directives

### 2006/42/EC Machinery Directive 2014/30/EU Electromagnetic Compatibility Directive

This certificate is only valid for the equipment and configuration described, in conjunction with the test data detailed above reference test reports and with compliance with the above requested applicable legal requirements for the product.

The CE Mark as shown alongside can be used, under the responsibility of the manufacturer or the importer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.



SIGNATURE



CGS TEST HİZMETLERİ TEKNİK KONTROL VE BELGELENDİRME ANONİM ŞİRKETİ  
Kayışdağı Mahallesi Gülçin Sk. No: 2/2 Ataşehir İstanbul/TÜRKİYE  
www.cgstestmerkezi.com

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SERTİFİKA-CERTIFICATE-ZERTIFIKAT-CERTIFICATO-CERVIDETEL'CTBO

