

High Purity Nitrogen Generator Plant For Heat Treatment

Our Product Introduction

Basic Information

- Place of Origin: SUZHOU, CHINA
- Brand Name: SUMAIRUI GAS
- Certification: ISO9001, CE, BV, SGS, TUV, ASME, GOST,NB,NR ETC
- Model Number: OSP
- Minimum Order Quantity: 1 set
- Price: Negotiable
- Packaging Details: Exporting wooden case /Film packing
- Delivery Time: 30-45 days
- Payment Terms: L/C, T/T, Western Union, MoneyGram
- Supply Ability: 100 sets/months



Product Specification

- Flow: 100-5000Nm³/hr
- Purity: 99.999%
- Dew Point: -80°C
- Pressure: 5-300 Bar
- Control Type: PLC Control
- Instrument: Included
- Mannometer: Included
- Oxygen Analyzer: Included
- Material: Mild Steel /stainless Steel
- Certificates: CE, ISO, ASME, GOST, KGS, NB Etc
- Medium: Clean N₂
- Display: HMI
- Alarming System: Included
- Flow Meter: Included
- Customized: Yes

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Product Description

ASEM & ISO9001 verified monoblock /integrated skid 99.999% nitrogen generator plant for heat treatment

What Is a PSA Nitrogen Generator?

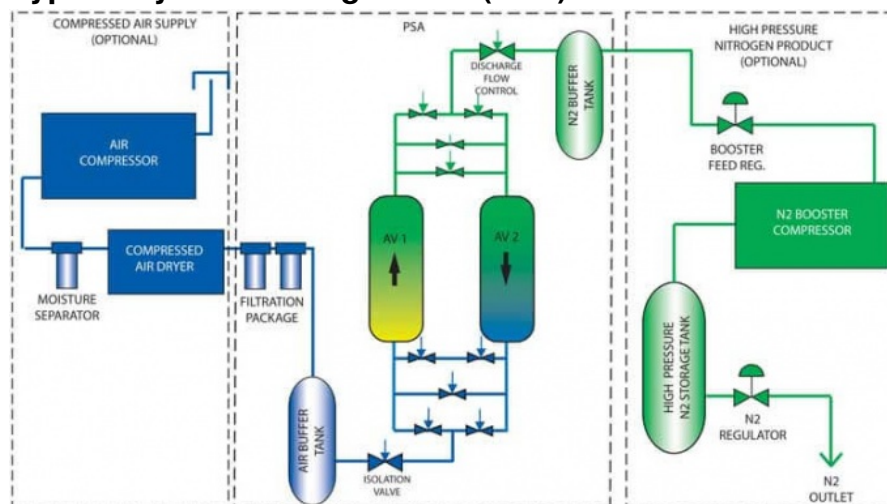
Pressure Swing Adsorption is a technology used for separating gas species from a mix of various gases under pressure, depending on the affinity of an adsorbent material and the species' molecular characteristics. This technology differs significantly from cryogenic-distillation gas separation techniques. Specific adsorptive materials, such as activated carbon or molecular sieves, are used as a trap, adsorbing the target gas species at a high pressure. Operating at near-ambient temperatures, the process swings to low pressure, desorbing the adsorbed material.

How Do Industrial PSA Nitrogen Generators Work?

For this process, pressure swing adsorption relies on the principle that under high pressure, gas tends to be attracted to solid surfaces. Higher pressures result in more gas being adsorbed. When pressure is reduced, adsorbed gas is then released (desorbed). Pressure Swing Adsorption processes are often used to separate gases from mixtures because different gases are attracted to different solid surfaces more/less strongly. For example, if air (gas mixture) passes under pressure through a particular vessel containing an adsorbent bed of CMS (which attracts O₂ more strongly than it does N₂), some or all of the oxygen will remain in the bed, and gas exiting the vessel will then be enriched in N₂. When the bed reaches its capacity's end to adsorb oxygen, it can regenerate by reducing pressure, consequently releasing adsorbed oxygen. It can then begin the cycle again and produce more high purity N₂ gas.

Using two (2) adsorbent vessels allows for near-continuous production of target gas. This technique also permits pressure equalization, which is where gas leaving a depressurized vessel is used to partially pressurize a second vessel. This common industrial practice leads to significant energy savings.

Typical System Configuration (PFD)



System Specification

Sumairui Gas offers completely turn-key system designs, including all components, elements, and design drawings. Our engineering teams will work directly with you to design and install systems to your exact specifications. Our full-service team is ready to answer any questions you may have 24/7.

Technology

How Does a Pressure Swing Adsorption System Work?

Nitrogen PSA Generator Systems send air over a bed of adsorbent material, which bonds with O₂ and leaves a rich stream of nitrogen gas to exit.

Adsorption separation is achieved by the following steps:

FEED AIR COMPRESSION & CONDITIONING

The ambient inlet air is compressed, dried by an air dryer, filtered, all before entering the process vessels.

PRESSURIZATION & ADSORPTION

The pre-treated filtered air is then directed into a CMS-filled vessel, where oxygen is adsorbed preferentially into the CMS pores. This permits concentrated nitrogen, with adjustable purity as low as 50 ppm O₂, to stay in the gas stream until it flows out of the vessel. The separation process interrupts the inlet flow (before the full adsorption capacity of the CMS is reached) and finally switches over to the other adsorber vessel.

DESORPTION

The O₂-Saturated CMS is then regenerated by means of pressure reduction, below the previous adsorption step. It achieves this by using a pressure release system where exhaust/waste gas stream is carefully vented from the vessel, typically through a diffuser/silencer, then back into the safe surrounding atmosphere. Regenerated CMS is now refreshed and can be used again for generating nitrogen.

ALTERNATING VESSELS/SWING

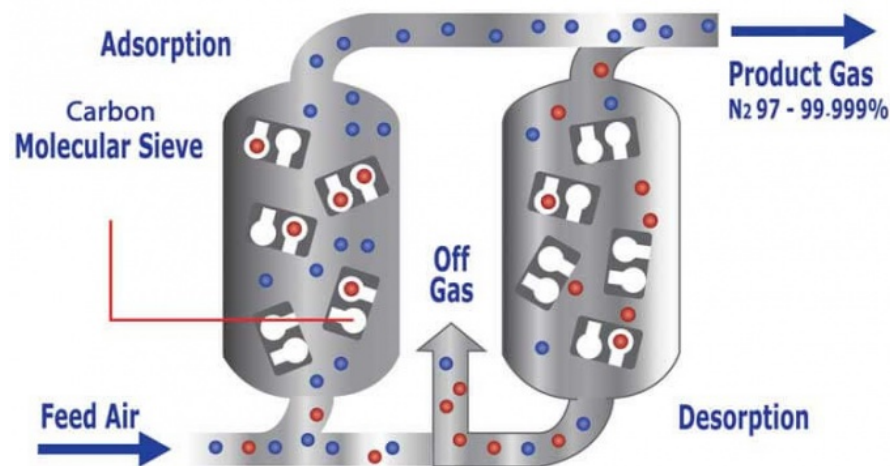
Desorption and Adsorption should take place at equal time intervals, alternately. This way, the constant generation of nitrogen is achieved by using two (2) adsorbers. As one is adsorbing, the second is in regeneration mode. Constant switching back and forth results in a controlled and continuous flow of nitrogen.

NITROGEN RECEIVER

Continuous nitrogen product flow & purity is maintained by a connected product buffer vessel which stores the N2 output. This is designed for a pressure up to 150 psig (10 bar) and Nitrogen purity up to 99.9995%.

NITROGEN PRODUCT

The resulting product is a constant stream of high purity, on-site produced Nitrogen, and costs significantly below the standard price of liquid/bottled gases.



The Benefits of an Onsite Nitrogen Generating System

Features include:

Dualbed and Monobed design

Complete package with pre-filtration and buffer tank

Safe and reliable

Produce 95 - 99.999% pure nitrogen continuously

Dewpoints to -70°C

Final stage sterile air filter is USDA / FSIS accepted for use in federally inspected meat and poultry plants. In full compliance with FDA and GFSI requirements

PSA towers require no maintenance

Model of OSP120-A High purity PSA nitrogen generator

Item	Nitrogen purity (Nm ³ /hr)							Dimensions	Weight
	95%	99%	99.5%	99.9%	99.99%	99.995%	99.999%	(L*W*H) mm	
OSP5	21	13	11	8	5	4.2	3	1100*600*1700	300
OSP10	38	29	25	15	10	7.5	6.1	1200*650*1800	350
OSP20	80	56	52	32	20	16	14	1600*1000*2200	450
OSP40	160	116	105.2	67.2	40	34	28	1800*1000*2200	600
OSP60	252	174	157.8	100.8	60	51	45	1900*1200*2200	750
OSP80	339.2	232	211	132	80	70	62	2000*1200*2400	980
OSP100	420	290	263	168	100	90	78	2100*1600*2500	1300
OSP150	630	435	394.5	252	150	135	120	2500*1800*2600	1600
OSP200	848	580	526	336	200	180	160	2800*1900*2850	2200
OSP250	1060	725	657.5	420	250	225	200	3100*2000*3200	2600
OSP300	1270	870	780	500	300	260	240	3900*2600*3400	3850
OSP400	1696	1160	1052	672	400	360	320	4500*3250*3600	5000
OSP500	2120	1450	1300	840	500	450	400	4900*3600*3800	6500
OSP600	2540	1740	1578	1000	600	540	480	5300*3600*3900	7800

OSP800	3390	2320	2100	1340	800	720	640	5600*3900*4100	10200
OSP1000	4240	2900	2630	1680	1000	900	800	5800*4000*4500	11800

Design reference :

Compressed air inlet pressure 7.5 bar(g)/108 psi(g)
 Air quality 1.4.1 according to ISO 8573-1:2010
 Nitrogen outlet pressure 6 bar(g)/87psi(g)
 Nitrogen quality 1.2.1 according to ISO 8573-1:2010.
 Designed working temperature max 50 °C
 Dew point at Nitrogen outlet - 40 °C

Notes:

OSP nitrogen generator max working pressure 10 bar(g)/145psi(g)
 Following request of PSA on-site nitrogen generator will be customized :
 Working pressure > 10 bar(g)/145 psi(g)
 Dew point < - 50 °C
 Plug and play
 Movable/containerized
 Other special requirements as per site conditions

Nitrogen Generator Applications

Here are the five most popular nitrogen generator applications in the industrial industry.

Food Packaging

Modified Atmosphere Packaging (MAP) with nitrogen and nitrogen-CO2 gas mixes are often used in the food packaging industry to preserve perishable items by preventing spoilage, ensuring freshness, maintaining flavour, and extending the product shelf life. Onsite nitrogen generation is highly beneficial in the food packaging industry to maintain a quality product. Food packagers can save hundreds of thousands of dollars by having an onsite system installed.

Beverage Storage, Transport, and Dispensing

Like the food industry, the beverage industry can also improve from having onsite nitrogen generating systems. These systems make it more efficient to transport beverages to end users such as juice packagers, vintners, breweries, and other manufacturers of beverage dispensing systems.

Laser Cutting

The success of a laser cutter depends on a lean and efficient shop, which is why it is highly beneficial to generate your own nitrogen onsite. If you are currently purchasing high-pressure cylinder gas, you can achieve incredible cost savings by switching to a local system. Bulk liquid nitrogen systems for laser cutting typically have purge losses of up to 20% of the gas you are purchasing. An onsite nitrogen generator will eliminate these costly purge losses.

Electronics Manufacturing and Soldering

Many solder applications require high-purity nitrogen to reduce dross on solder spots and reduce surface tension. High-purity nitrogen allows solder to cleanly breakaway from the solder site. Having an onsite nitrogen generating system is the most cost-effective way to meet your nitrogen requirements.

Fuel and Chemical Tank Inerting

The ideal inert gas for blanketing or purging fuel and chemical tanks is nitrogen. Having an onsite nitrogen system will reduce your costs and allow you to have a 24/7 nitrogen supply to meet your requirements.

Nitrogen Generator Services from SUMAIRUI GAS

Onsite nitrogen generators are extremely efficient and cost-effective for various industrial applications. By installing an onsite system, all you need to focus on is maintenance, while your investment pays for itself over time. We offer the following nitrogen generator services:

Maintenance Services

For help with installation, our team offers around-the-clock service support. If you require maintenance for your existing system, we will ensure that your nitrogen generator is running in great condition, so you can get back to your operations. For nearly three decades we have been helping our clients significantly reduce their industrial nitrogen and oxygen costs by utilizing leading-edge technologies such as onsite nitrogen and oxygen generating systems. We displace the requirement of having to purchase the gas. Instead, we sell our business clients the technology and equipment they need to make their own gas on site.



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