

Food Grade Nitrogen Generator Air Compressor 99.999% 5 Bar

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: OSP300-49
- 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

- Material: Mild Steel /stainless Steel
- Certificates: CE, ASME, BV, SGS, TUV, GOST, NB, NR, ISO9001
- Dew Point: -70°C
- Capacity: 100-1000Nm3/hr
- Purity: 99.99%-99.9999%
- Control Mode: PLC-Siemens S7-1200
- Pressure: 5-6 Bar
- Plug And Play: Yes
- Working Mode: Fully Automatic, 24 Hrs Non-stop
- Bottling System: Option
- Maintenance Nozzle: Included
- Package: Film/Wooden Case
- Nitrogen Booster: Option
- Air Compressor: Option

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Product Description

5000CFH 99.999% with 5 bar nitrogen generator used for Iron & steel industry with ASME & ISO certificates

Nitrogen production that is carried out using pressure swing adsorption (PSA) technology over a carbon molecular sieve (CMS) is considered to be a mature, cost-effective and highly efficient method to produce nitrogen to meet a wide range of purity and flow requirements.

Ongoing increases in efficiency in PSA-based nitrogen-generation facilities are being driven by enhanced CMS materials (Figure 1) and process improvements. This article provides an overview of the fundamentals of PSA-based nitrogen generation, while focusing specifically on innovative practices and improved CMS materials. Together, these advances contribute to continuous improvement in PSA system performance, giving chemical process industries (CPI) plant operators a proven way to produce a reliable and low-cost supply of high-purity dry nitrogen onsite.

FIGURE 1. Carbon molecular sieve (CMS) pellets, typically manufactured from coconut shells, provide the surface area and pore structure needed to separate oxygen and nitrogen from a compressed air inlet stream

Nitrogen — in both the gaseous and liquid state — is used in a wide range of applications in many industrial sectors. These include the production of foods and beverages, chemicals and pharmaceuticals; petroleum processing; the thermal treatment of metals; the manufacture of flat glass, semiconductors and electronics; and many more. Industrial facilities that require large volumes of nitrogen always look for efficient methods of onsite nitrogen production to meet all of the specifications related to purity, flow requirements, power consumption, footprint and portability

Nitrogen gas is produced by separating air into its primary component molecules (nitrogen and oxygen), using one of two methods: 1. Traditional cryogenic fractionation of air that has been liquefied; or 2. Separation of gaseous air using pressure swing adsorption (PSA) or membrane-based separation systems. If large volumes of nitrogen with extremely high purity (99.998%) are required, cryogenic fractionation of air remains the most efficient and economical technology option [2]. This is the oldest method of nitrogen production, and it has the ability to produce both gaseous and liquid nitrogen (for daily use and as a backup supply). Cryogenic fractionation of air is typically carried out in large-scale commercial plants that then deliver the produced nitrogen to users.

However, at many CPI facilities, enriched nitrogen is produced onsite using smaller-scale PSA separation or membrane-based separation systems. PSA systems operate on the principle of physical adsorption of the oxygen in air by carbon molecular sieve materials (such as those shown in Figure 1), leaving an enriched nitrogen stream as the product; the process is illustrated in Figure 2. Today's PSA systems can economically produce nitrogen from compressed air at a variety of volumes. For instance, today's systems can handle an inlet air stream of less than 5,000 to more than 60,000 std. ft³/h, reliably producing N₂ that meets purity requirements from 95 to 99.9995%

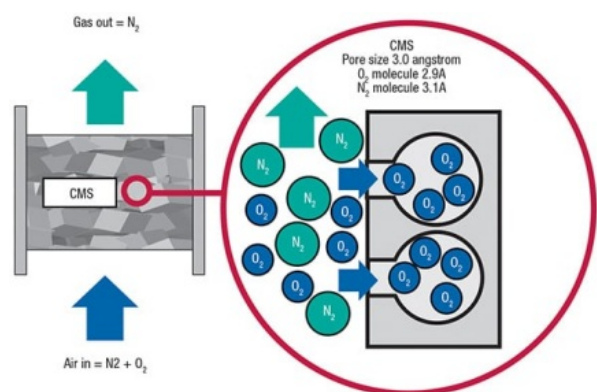


FIGURE 2. Within the CMS pellets, oxygen is preferentially adsorbed, allowing a nitrogen-rich product stream to be captured for use onsite

However, the capital and operating costs of a PSA system are directly correlated with the purity of the nitrogen produced, and these costs climb rapidly once nitrogen with purity greater than 99.5% is required. In some cases, it can be cost-effective to produce higher-purity nitrogen by first producing 99.5%-purity nitrogen using a PSA system, and then using a palladium or copper unit to remove residual levels of oxygen in the nitrogen product. Such systems can bring down residual oxygen to 1–3 ppm.

SELECTING THE RIGHT SYSTEM

When selecting the most appropriate nitrogen-production process, several parameters should be considered. Purity and capacity are the most important factors that can affect the choice of production methodology, and hence, have a direct impact on the unit cost of the nitrogen produced. The use of a PSA nitrogen-generation system, which can be designed to meet all types and patterns of nitrogen flow — steady, periodic and erratic — has grown in popularity during the last several decades, thanks to the simplicity, performance, flexibility, reliability and relatively low capital and operating costs of this production route. However, the optimal nitrogen-production rate using a PSA system based on CMS pellets is around 3,000 Nm³/h of N₂ produced (>95% purity). Within that range, PSA is a more economical option than O₂/N₂-separation by air liquefaction and cryogenic separation, or by membrane-based separation. The principles of PSA-based nitrogen-generation technology using CMS and several important aspects of process engineering knowhow are discussed below.

CARBON MOLECULAR SIEVES

CMS is part of a special class of activated carbons that have non-crystalline (amorphous) structure with a relatively narrow pore-size distribution. This material provides molecular separations based on the rate of adsorption of nitrogen, rather than the differences in adsorption capacity between oxygen and nitrogen. Figure 2 shows the inner structure of a CMS material that is appropriate for the separation (removal) of O₂ molecules from N₂ molecules in the compressed-air inlet, to yield an enriched nitrogen stream (Note: Carbon molecular sieves are selective for oxygen, while zeolite molecular sieves are selective for nitrogen).

Benefits compared to previous models

Higher quality materials

Lower energy consumption
Shorter lead time
Longer N2 generator lifetime

How did we do it

Simplification – 80% less parts used in our production process
Automation – state-of-the-art welding and bending robots
Modular isolation – two standard size PSA pressure vessels for all capacities

Service and maintenance

A smaller power consumption requires a smaller compressor. As a result, you will not only save on energy but also on running/service costs of the compressor. Furthermore, the stainless-steel valves have a longer lifetime than brass.

Item	Nitrogen purity (Nm3/hr)							Dimensions	Weight
	95%	99%	99.5%	99.9%	99.99%	99.995%	99.999%	(L*W*H) mm	KG
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

Benefits of nitrogen system :

The Benefits of an Onsite Nitrogen Generating System

Cost Savings

Factors like market cost and delivery location will impact what you spend if you have nitrogen delivered to your facility. When you shift to onsite nitrogen generation, you can significantly reduce these costs no matter where you are located. In fact, you can see a return on investment in a little as nine to 24 months.

Increase Safety for Employees

Since your primary concern is your employee safety, onsite nitrogen generation significantly reduces the risk of worker injury. Handling nitrogen cylinders, tank leaks and exposure to liquid nitrogen through delivery and unloading is 100% eliminated, thus creating a safe and reliable system.

Reduce Impact on Environment

By having your own nitrogen generating system you reduce your environmental impact as you no longer need to use heavy transport trucks to deliver and replenish your tanks. You also increase efficiency and improve your reputation in the industry as a company that is environmentally conscious.

Efficient Time Savings

Industrial users who set up onsite nitrogen generation save time on critical operations that use nitrogen. One of the biggest losses for industrial users each year is operational downtime caused by logistical issues with transporting nitrogen from vendor locations. With an onsite nitrogen generating system, you have a 24-hour supply of high-purity gas to run your processes.



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