

Robust AirTM



PSA NITROGEN PLANT





INTRODUCTION

Since its establishment in 2012, Robust Air has been a prominent supplier of air and gas solutions throughout India. Specializing in turnkey supply of Air and Gas equipment, we are committed to engineering excellence and customer satisfaction. Our expertise lies in designing and implementing on-site systems for the continuous supply of high-purity gases and compressed air.

At Robust Air, quality is our top priority. We meticulously select the finest quality components for our products, ensuring superior performance and reliability. Leveraging our manufacturing facilities in India, we offer cost-effective solutions without compromising on quality.

Trusted by reputed companies nationwide, Robust Air has earned a reputation for reliability and innovation in the industry. Our focus on customer satisfaction and our track record of delivering innovative solutions have contributed to our success.

Moving forward, we remain dedicated to innovation and excellence, continuously striving to meet the evolving needs of our customers. With our unwavering commitment to quality and customer satisfaction, Robust Air is poised to maintain its position as a leader in the air and gas solutions industry.

Robust AirTM

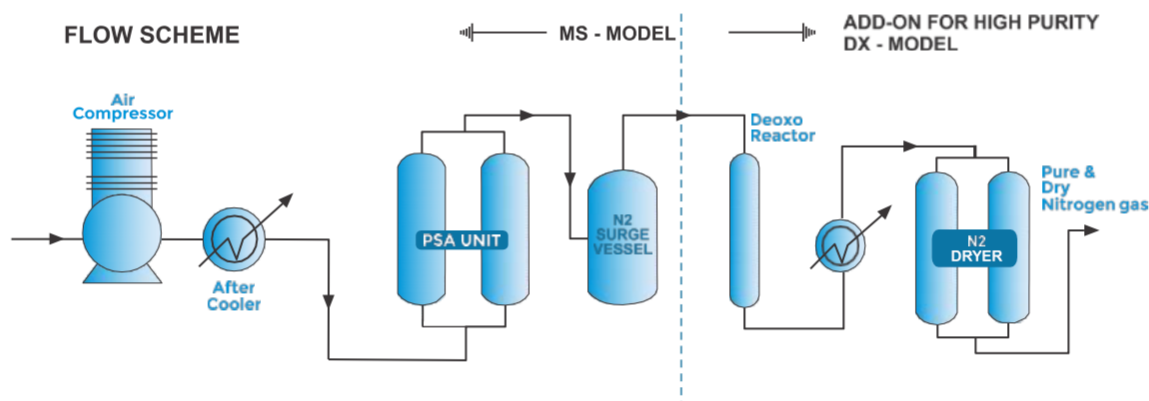
PSA NITROGEN GENERATORS

About Us..

Experience excellence with **Robust Air**, a distinguished name in the industry as a leading Manufacturer, Distributor, and Supplier of **PSA Based Nitrogen and Oxygen generation plants**.



Since our inception in 2008, we have established ourselves as a customer-centric organization, committed to meeting and exceeding the needs of every client. With our state-of-the-art in-house facility, we manufacture a diverse range of equipment including Columns, Heat Exchangers, Pressure Vessels, Reactors, and Tanks. Our products boast a user-friendly interface, ensuring hassle-free operation for operators. Designed with a skid-mounted structure, our equipment features a robust structural design, guaranteeing durability and reliability in every application. Choose Robust Air for unparalleled quality and performance in nitrogen and oxygen generation technology.



THE NITROGEN GENERATION PROCESS

Our nitrogen generators utilize advanced molecular sieves separation technology to produce nitrogen from ambient air. Specifically, carbon molecular sieves are employed for their exceptional ability to selectively absorb oxygen (O₂) and carbon dioxide (CO₂) from the air stream.

Within the nitrogen generator, two absorbers are filled with high-quality carbon molecular sieves. As compressed air passes through one absorber, nitrogen emerges as the desired product gas, while the other absorber undergoes simultaneous regeneration. This regeneration process involves depressurization to atmospheric pressure, ensuring continuous operation.

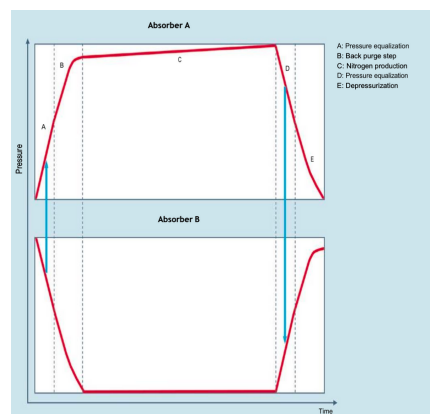
Known as **"pressure swing adsorption" (PSA)**, this cyclic procedure guarantees a reliable and uninterrupted supply of high-purity nitrogen gas for various industrial applications.

NITROGEN PURITY OPTIONS

Our nitrogen generators offer a wide range of purity options to suit diverse industrial requirements. With the capability to produce nitrogen gas ranging from 95% to 99.999% purity, our systems ensure optimal performance across various applications.

For basic nitrogen needs, our standard PSA units deliver nitrogen with a purity of 99.5%. For applications demanding higher purity levels, we offer models equipped with purification units to achieve exceptionally high-purity nitrogen.

Explore our range of models to find the ideal solution for your specific nitrogen purity requirements.



NGMS MODEL

Our simplest model offers a cost-effective solution for producing commercial-grade nitrogen with purity levels of up to 99.99%. By adjusting the quantity of carbon molecular sieves, this model can achieve higher purities of up to 99.999% for specific applications. While higher purity levels entail increased investment and operating costs, this model remains an economical choice, particularly recommended for applications requiring purity up to 99.99%. Common uses include purging and blanketing nitrogen gas requirements in various industrial processes.

NGDX MODEL

Tailored for metallurgical applications, this model is designed to produce oxygen-free nitrogen gas suitable for heat treatment furnaces. With oxygen levels below 1 ppm and hydrogen content ranging from 0.5% to 1%, it fulfills the stringent requirements of heat treatment processes. The residual oxygen is reacted with hydrogen over a bed of Pd catalyst, followed by gas drying to achieve the desired purity levels. Additionally, this model finds applications in chemical and electronic industries where high-purity nitrogen gas is essential for various processes.

NGC-DX MODEL

For applications demanding ultra-pure gas devoid of oxygen and hydrogen, the "MS-Model" Nitrogen Generator can be enhanced with a Nitrogen Purification Module featuring Copper Deoxo Catalyst. Transformed into the "Copper-DX" model, this system caters to industries such as synthetic fiber manufacturing, optical cables, and electronics. The addition of the catalyst ensures nitrogen purity of 99.9999% alongside exceptional dryness, meeting the stringent requirements of sensitive processes. While the production cost of nitrogen is higher with this model, its unparalleled purity and dryness make it indispensable for critical applications.

MODELS

Gas Composition	NGMS	NGMS - H	NGDX	NGC - DX
Oxygen	0.1 to 5 %	1 ppm to 500 ppm	1 ppm to 3 ppm (max)	1 ppm
Hydrogen	Nil	Nil	0.5 % or more	Nil
Nitrogen	95 - 99.9%	99.95 - 99.9999%	Balance	99.9999%
Dew Point	- 40 °C to - 80 °C	- 40 °C to - 80 °C	- 40 °C to - 80 °C	- 40 °C to - 80 °C
Applications	As inert gas in Chemical industries Food/Packaging Furnaces Pharmaceutical industries, for fire control in coal mines.	As inert gas in Chemical industries, Pharmaceutical industries, Heat Treatment Electronics and Synthetic Fiber Industries	As inert gas in Chemical & Metallurgical Industries In applications where Oxygen impurity is not acceptable	As inert gas in Electronics, Synthetic Fiber Hi-tech industries where one needs Ultra-high purity Nitrogen
N2 Capacity	1 to 250M3/hr.	1 to 250M3/hr.	1 to 250M3/hr.	1 to 250M3/hr.

Nitrogen Pressure and Hydrogen Requirement

Our standard Nitrogen Generator operates at 5 bar(g) pressure, automatically set by a feed air pressure of 6 bar(g) to the PSA unit. By utilizing higher air pressures, up to 13 bar(g), Nitrogen can be produced at 11 bar(g) pressure. For even higher pressure requirements, a Nitrogen booster compressor can be integrated after the Gas Generator.

In high-purity Nitrogen Generators, a Deoxo Unit removes oxygen by reacting with hydrogen. Hydrogen can be sourced from cylinders or through a captive Hydrogen Generator based on the Ammonia Cracking process. For smaller capacity Generators, hydrogen cylinders are cost-effective, while larger capacity systems benefit from the efficiency of an Ammonia Cracking Unit.

Nitrogen Storage Tank

To meet fluctuating Nitrogen demands, we provide an Intermediate Nitrogen storage tank after the Gas Generator. This tank receives Nitrogen continuously and supplies it to your processes on demand. Typically, a 1/2-hour capacity tank suffices, but larger storage requirements can be accommodated by adding a Nitrogen Booster Compressor to maintain higher pressure in a smaller tank. Automatic pressure switches ensure seamless operation, with the Gas Generator restarting production as needed to keep your operations running smoothly.

ADVANTAGES OF NITROGEN GENERATORS

- **Quick Startup:** Our nitrogen gas generators boast a swift start-up time of just 5 minutes, ensuring minimal downtime and maximum productivity.
- **Controlled Supply:** Maintain complete control over your nitrogen gas supply, allowing for on-demand access whenever you need it.
- **Easy Installation:** Our skid-mounted units are designed for easy installation at your site, streamlining the setup process and saving you valuable time and effort.
- **Cost-Effective:** Enjoy cost savings with nitrogen production costs ranging from Rs. 3 – 5 per cubic meter, offering an economical solution for your gas supply needs.
- **High Reliability:** Count on our generators for uninterrupted operation and exceptional reliability, allowing you to run your unit unattended with confidence.
- **Long-lasting Performance:** Benefit from the extended lifespan of our carbon molecular sieves, which can last up to 10 years, ensuring consistent performance over time.

N₂ Cylinders VS N₂ Generator

- **Cost Comparison:** Cylinder nitrogen costs Rs. 20/- per cubic meter, whereas our nitrogen generator offers production costs of only Rs. 3 - 5/- per cubic meter, ensuring significant cost savings.
- **Safety Concerns:** Handling and transferring gas cylinders pose cumbersome tasks and high-pressure risks, which are alleviated with our nitrogen generator's safe and efficient operation.
- **Dependency Reduction:** Eliminate reliance on the availability of nitrogen cylinders by generating nitrogen in-house whenever needed, ensuring uninterrupted supply round the clock.
- **Consistent Purity:** Experience steady and reliable nitrogen purity with our generator, avoiding variations often encountered with cylinder-supplied nitrogen.

THANK YOU

At ROBUST AIR, a proud brand of K.B. Polytech Pvt. Ltd., we are dedicated to engineering excellence and customer satisfaction. As leading manufacturers, suppliers, and dealers, we specialize in providing premium quality products and comprehensive solutions for all your compressed air needs. From our industry-renowned Compressed Air Aluminium Piping to advanced Desiccants/Heatless Dryers, PSA Nitrogen/Oxygen Plants, and Reciprocating Compressors, each product embodies our commitment to innovation and quality. Additionally, our offerings include Air Receivers, Line Filters, PU Fittings, and Auto Drain Valves, meticulously designed to integrate seamlessly into your operations. Backed by a skilled team and a dedication to exceeding expectations, ROBUST AIR is poised to optimize system performance, enhance productivity, and improve operational efficiency. Experience the ROBUST AIR difference today and elevate your compressed air solutions to new heights of excellence.

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