

# “Nitrogen out of thin air”

**Oil &  
Petrochemical  
Industry**

**Food  
Industry**

**Semiconductors**

**Pharmaceuticals**

**Heat Treating**

*PSA and Membrane  
Nitrogen Generators  
The Most Cost-Effective  
Source of On-Site Nitrogen*





NNI is a Parker Hannifin Filtration & Separation Company and is the largest independent manufacturer of both PSA and Membrane "built to spec" nitrogen generators, worldwide.

NNI has been Custom Designing and manufacturing PSA Nitrogen Gas Generating Systems for the on-site production of high purity nitrogen gas for over 20 years. N<sub>2</sub> flowrates from 200 to 60,000 SCFH and purities up to 99.99% are available. A Catalyst De-Oxo Module can be added to address applications requiring N<sub>2</sub> purities up to 99.9995%. Nitrogen product gas booster compressors are available for high pressure applications.

### Engineering Department

Computer generated system design  
AutoCAD2002 w/electronic files and hard copy capabilities. R&D Lab for new product development and process enhancements.

### A.S.M.E. Code Vessel Fabrication

A.S.M.E. Code Vessel Shop  
Both U1A and "R" stamps.  
Meets ASME Section VIII  
Division 1 Code Requirements.

### Handling Capabilities

6 ton bridge crane for vessel fabrication and load out of completed systems.  
(3) 1 ton cranes for piping and structural fabrication.

### Certified Welding Procedures

Certified Welders in processes of Mig, Tig and Stick. Qualifications available for inspection. Welding of vessels, structural skid base frames and attachments.

### Electrical / Instrumentation

NEMA/CSA Standards  
hazardous area classifications  
indoor and outdoor installation  
Onshore and offshore

### Code Piping Fabrication

Meets ANSI B31.3  
Hydrotest capabilities  
Pneumatic Testing



For more information visit our website at:  
[www.parker-nni.com](http://www.parker-nni.com)

## Custom Designed Units



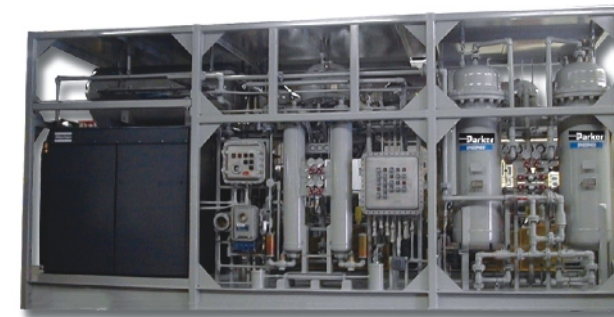
In addition to our standard product lines, mono-beds and dual-beds, NNI has many years of experience in the design and manufacturing of custom packaged PSA and membrane nitrogen generating systems. Large flowrates, exceeding that of the largest standard dual-bed model, can be available up to 125,000 SCFH.

Specific design features to accommodate hazardous environment installations, extreme weather conditions, redundancy considerations and unique application requirements are available. NNI's engineering and manufacturing staff has addressed and solved many challenging project requirements with the development of engineered design systems.

NNI has dedicated knowledgeable staff ready to lend their support to identify and overcome unique project challenges. Our custom designed systems can be found worldwide, providing dependable on-site, on-demand nitrogen gas production to a wide variety of industries.

### Custom Engineered for Offshore Installations

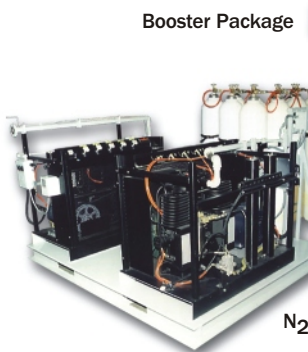
- Engineered and Designed by specification.
- Typically for the Oil and Gas Industry
- Turn-key packages including special lifting capabilities.



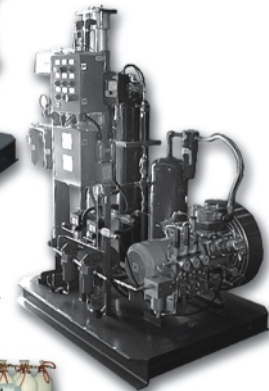
## Accessories



Utility Nitrogen System



Booster Package



### Booster Packages

NNI offers customized booster packages designed to specific customer requirements. Any specific product pressure requirement exceeding the standard NNI nitrogen output pressure can be met by the addition of a custom designed booster package.

### Catalyst De-Oxo Units

NNI catalyst de-oxo skids can be added to our PSA systems, reducing oxygen concentrations to 10 ppm or less and providing a nitrogen purity of 99.999%. This de-oxo catalyst unit is completely automatic and alarm setpoints and shutdown capabilities are supplied as standard features.

The addition of a NNI de-oxo catalyst module allows our PSA Nitrogen Gas Generating Systems to be utilized for a number of applications in industry calling for the use of high purity nitrogen, formerly only available by means of costly supplied liquid nitrogen.

### Utility Nitrogen Systems

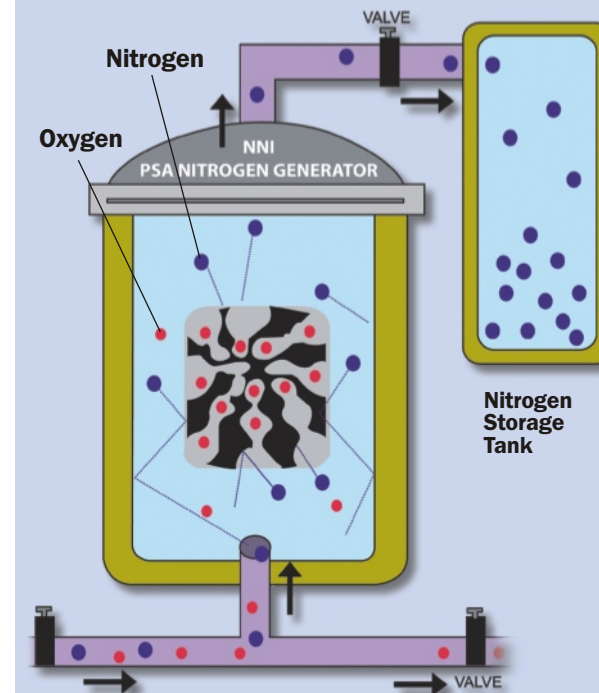
- Portability / Transportable
- Dependable Membrane Technology
- Low Maintenance Cost
- Standard membrane unit with cylinder filling capabilities
- Utilizes Existing Plant Air

N<sub>2</sub> Booster Cylinder Filling Option

## How It Works

### NNI PSA Nitrogen Generator

NNI's nitrogen gas generators separate nitrogen from air, utilizing pressure swing adsorption technology. Air consists of 21% O<sub>2</sub> and 78% N<sub>2</sub>. The gas separation process described here preferentially adsorbs O<sub>2</sub> over N<sub>2</sub> using carbon molecular sieve (CMS) enabling the N<sub>2</sub> to pass through as a product gas at pressure.

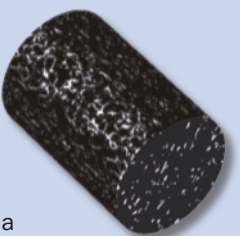


**Adsorption**  
Compressed air entering the PSA Nitrogen Generator

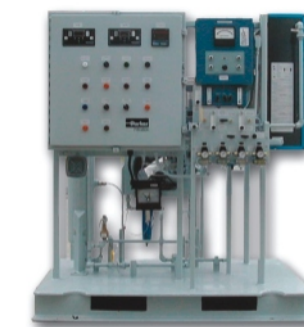
**Desorption**  
O<sub>2</sub> is released from the PSA Nitrogen Generator

### The PSA Module

Utilizes NNI's proprietary state-of-the-art pressure swing adsorption (PSA) technology. Both one and two bed units are specially charged with carbon molecular sieve (CMS). A solid state programmable controller simply operates the process valves on a cyclic basis, with built-in logic for automatic stop/start. NNI production and purity remain constant, regardless of the customer peak usage demands, by utilizing an automatic flow control valve. A continuous monitoring oxygen (O<sub>2</sub>) analyzer, with alarms and shutdown, is standard equipment.



Carbon Molecular Sieve



Catalyst De-Oxo Unit



Feed Air Compressor



Membrane Nitrogen Generator

### Parker/NNI

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# Filtration Group Technical Sales & Service Locations

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Fax: (978) 374-8093

500 Glaspie Street  
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Phone: (248) 628-6400  
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4030 Benson Ave  
Baltimore, MD 21227  
Phone: (410) 636-7200  
Fax: (410) 636-7206

## Hydraulic Filter Division

16810 Fulton County Road #2  
Metamora, OH 43540  
Phone: (419) 644-4311  
Fax: (419) 644-6205

1273 N. Church Road  
Moorestown, NJ 08057  
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Fax: (856) 866-9112

## Process Filtration Division

6640 Intech Boulevard  
Indianapolis, IN 46278  
Phone: (317) 275-8300  
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Tell City, IN  
Phone: (812) 547-2371

## Racor Division

3400 Finch Road  
P.O. Box 3208  
Modesto, CA 95353  
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Henryetta, OK 74437  
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Beaufort, SC 29902  
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## Filter Division Europe

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# Parker Worldwide Sales Offices

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Australia.....	+61 2 634 7777
Austria.....	+43 2622 23501 5
Belgium.....	+32 2 762 1800
Brazil.....	+55 11 847 1222
Canada.....	1-800-272-7537
Central & South America/Caribbean.....	1-305-470-8800
China.....	+86 21 6445 9339
Chile.....	+562 623-1216
Czech Republic.....	+42 613 41701
Denmark.....	+45 43 541133
Finland.....	+358 3 54 100
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Hungary.....	+36 1 25 22 539
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Italy.....	+39 2 451921
Japan.....	+81 45 861 3811
Korea.....	+82 2 561 0414
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Spain.....	+34 1 6757300
Sweden.....	+46 8 760 2960
Taiwan.....	+886 2 8787 3780
Thailand.....	+662 693 3304
United Arab Emirates.....	+971 2 788587
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Venezuela.....	+58 2 238 5422

Note: The (+) sign in front of the country code indicates that you may need to dial an additional prefix.

## Parker Hannifin Corporation

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