

Nitrogen Applications



Nitrogen Supply Options and Considerations

Nitrogen gas is colorless, odorless, tasteless, non-toxic and a poor conductor of heat and electricity. It comprises about 78% of normal air and is slightly lighter than air at standard atmospheric pressure and temperature.

Liquid nitrogen is produced commercially from fractional distillation of liquefied air. Gaseous Nitrogen is produced by vaporizing liquid nitrogen or through separation of air utilizing either PSA (Pressure Swing Adsorption) or membrane technologies.

Gaseous Nitrogen is used in a multitude of Industries as an inert gas for blanketing, purging, pressurizing or shielding hazardous mediums from unwanted chemical reactions. Its inert qualities are also used to prevent oxidation in applications such as the heat treating of metals and the packaging of food products.

Choosing the appropriate nitrogen supply mode typically relies on:

- Purity of the nitrogen required for the application.
- Quantity or volume of gas required.
- Flow Rate (cubic feet per minute or hour)
- Pressure required in the plant or point of use.

Careful consideration should be given to these factors as they impact the overall cost of the nitrogen system. Depending on which supply mode is utilized nitrogen can be supplied at the point of use or through a plant distribution system.

Cost considerations are often misunderstood when it comes to nitrogen supply. Capital expenditure verses ongoing operational expenses. In today's economy it is necessary to understand what your costs are. Many companies rely on gas cylinders or bulk liquid installations for their nitrogen gas source. These supply modes constitute an on-going array of expenses which are sometimes not recognized. To start, consider the costs associated with the ordering process, then there are cylinder and tank rental fees, delivery and handling fees, fuel surcharges, the cost of the product itself, which may

be of a much higher purity than needed, and then of course unused or wasted product which has already been paid for.

When purchasing from an Industrial Gas Company there is always the issue of long term multiyear contracts, along with gas price increases, the need for supply management to ensure you don't run out of product and the problems associated with the truck traffic in your plant.

On-site generation systems have none of these issues. Systems are designed to meet your gas application needs; purity, flow, pressure everything designed for your requirements and site conditions, you own the equipment and use only what you need.

Compared to cylinders or bulk liquid installations, our nitrogen generators offer the purity and flow rate that is right for your application while giving you the flexibility and cost saving that you need to stay competitive in today's market.

SUPPLY MODES

Industrial Gas or Vender Supplied

- High Pressure Gas Cylinders & Cylinder Banks
- Cryogenic Liquid Supply in Dewars or Bulk Tanks
- Onsite Cryogenic Plants

Customer Owned and Operated

- Membrane Systems
- PSA (Pressure Swing Adsorption) Generators
- Inert Gas Generators (burning of air)

SUPPLY CONSIDERATIONS

- Safety
- Purity
- Volume or Flow Rate
- Pressure
- Cost
- Site Conditions (Indoor, Outdoor, Altitude, Temperature)

Nitrogen Supply Options and Considerations

Supply Mode	Gas Purity	Logistics	Typical Delivery Volume or Flow Rate	Operational / Reliability
Cryogenic Liquid Dewar's & Bulk Tanks	99.995%+	Produced at Air Separation plant and transported to customer site	Dewar's (200 liters/4,500 scf) Bulk Tanks - (500 -11,000 gallons) (46,550 scf - 1,024,000 scf)	Bulk liquid transport truck traffic. Limited to supply on hand.
High Pressure Cylinders & Cylinder Banks	99.995%+	Produced at Air Separation plant, filled from cryogenic liquid at cylinder filling plant and transported to customer site	244 - 300 scf per cylinder	Truck and forklift traffic with handling and safety issues. Limited to supply on hand.
PSA	97% - 99.999%	Produced at point of use or customer site	84 - 380,000 scfh	Requires scheduled preventative maintenance, spare parts inventory. Nitrogen limited to storage during power failure.
Membrane	95% - 99.9%	Produced at point of use or customer site	25 - 187,000 scfh	No moving parts, minimal preventative maintenance and spare parts inventory. Nitrogen limited to storage during power failure.

Why pay for nitrogen when you can make your own?

Why pay an Industrial Gas company to supply your nitrogen requirements when you can generate your own gas with a Generon Nitrogen Generating System allowing you to eliminate:

- Eliminate high cost purchased gases
- Eliminate delivery & fuel sur-charges
- Eliminate rental and handling charges
- Eliminate evaporation losses
- Eliminate long term contracts
- Eliminate truck and forklift traffic in your plant

Lower your operating cost with a Generon Nitrogen Generating System.

Let our technical experts assist you in determining the optimal supply solution for your companies oxygen needs. Model datasheets are available on request.

On-Site Supply Technologies

Generon IGS utilizes either membrane or PSA technologies to provide our customers with the best technical solution at the lowest possible cost. Generon IGS is in the unique position to be able to supply competing air separation technologies, covering all processes and plant sizes for non-cryogenic gas separation to fulfill any customer requirement.

Our Nitrogen Generating Systems, installed in every corner of the world, testify to the more than two decades of experience behind our group.

From our simplest and smallest cabinet models to our highly specialized engineered systems, our engineering teams and manufacturing specialist ensure the highest quality design and product efficiencies available on the market today.

Generon IGS

16250 Tomball Parkway
Houston, Texas 77086
(713) 937-5200

E-Mail: igssales@igs-global.com
Internet: www.igs-global.com

