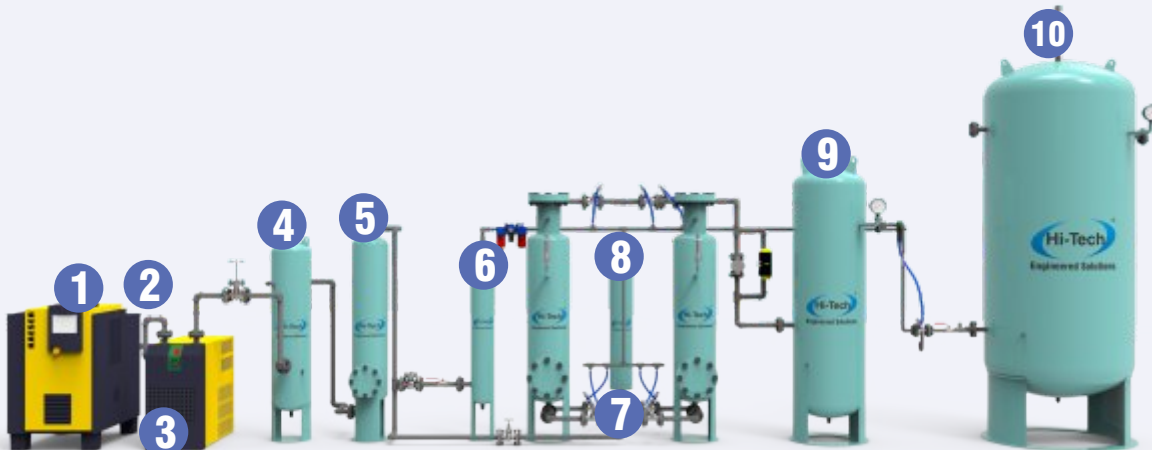




Nitrogen (N ₂)	Info
Molar Mass	28.01 g/mol
Density	0.81 kg/dm ³
Covalent Radius	71 pm
Number of Electrons	14
Vapor Pressure-	126 mbar
Melting Point	63.20 K
Boiling Point	77.30 K

Courtesy- HELPE, Maroussi



Typical Process Flow Diagram for Nitrogen Generator

Nomenclature

- 1 Air Compressor
- 2 Pre Filter
- 3 Air Drier
- 4 Air Storage
- 5 Oil Absorber
- 6 Pneumatic Air Tank
- 7 Nitrogen Generator
- 8 Vent Silencer
- 9 Buffer Tank
- 10 Storage tank

THE EXPERIENCE

Hi-Tech Engineered Solutions, one of world's leader in Installing and Manufacturing of Turn key based PSA (Pressure Swing Absorption) Technology's Plants, also offers Custom Engineered PSA Nitrogen Systems that are designed to Specific Requirements of Installation with capacities Ranging from 3Sm³/hr to 500 Sm³/hr.

Hi-Tech's high-efficiency, rugged 2-bed PSA nitrogen process design offers extremely low energy consumption, on-stream efficiency of 99% V/V, easy operation, and long-term Plant life of 15 years or more under standard results.

THE PROCESS

Production of gas with aid of adsorption technology is based on capability of porous adsorption agents to bind gas individual constituents of gas mixture is adsorbed to differing degrees on very large surfaces of the adsorbent agents. This effect is used within PSA Columns to continuously separate out one part.

Zeolites are used as adsorption agents when producing Nitrogen from air by adsorptive means they adsorb Oxygen, Argon, water vapor and Carbon dioxide to a much higher degree than Nitrogen this means that final flow comprising essentially only of pure Nitrogen gas

THE SCOPE OF SUPPLY

The Plant mainly comprises of following

- ✓ Air Compressor
- ✓ Air Drier with Pre-Filters
- ✓ Absorber vessels with Pre-Piped Skid
- ✓ Specially Selected adsorbent material
- ✓ Nitrogen Storage Tank
- ✓ Touchscreen Control system
- ✓ Nitrogen product analyzer
- ✓ Interconnecting pipelines

Optional-

- ✓ Gas Booster up-to 220 Bars G
- ✓ Nitrogen Filling Ramp
- ✓ Backup System
- ✓ Remote Control System



Standard Nitrogen Generator

GENERAL STANDARD FEATURES

- ✓ Meets Worldwide Manufacturing Standards
- ✓ Critical process parameters monitored and recorded every 500 milliseconds.
- ✓ Dependable Highest Reliability with Energy Efficiency
- ✓ Compact design with Easy and Simple controls
- ✓ Pre-piped systems for Easy and simple installation
- ✓ Automatic operation-one touch start up and shut down
- ✓ Containerized Shipments right from factory.
- ✓ Ready to use upon delivery
- ✓ Touchscreen Control Panel
- ✓ Easy to maintain with Continuously monitored Purity & Flow
- ✓ Optional Cylinder filling Ramp with Emergency Disaster Recovery
- ✓ On-site start-up assistance by Hi-Tech's Engineered Solutions technicians anywhere in the world.

ADVANTAGES

- 1 Economics**
Cost saving in the range of 40-70% over liquid supply Systems and up-to 80% for Cryogenic Plant.
- 2 Highest Reliability**
The PSA system provides highest reliability the control system allows for the production of nitrogen gas at the specified flow & purity within short time of demand using a simple push button. this on / off operating capability is not available from cryogenic plants.
- 3 Easy Partial Load Operation**
The plant is automatically adjusted to the actual product flow requirement and operates in an energy saving partial load mode.
- 4 Energy Efficiency**
Lower energy consumption than cryogenic units.
- 5 Fully Automatic Operation**
PLC based control system controls the purity and the flow by automatically adjusting the cycle time of the PSA system.
- 6 Remote control**
A Profinet or LAN port is provided for the communication with complete Plant DCS with a optional Modem Board for Remote Control.



Atlas Copco Make Screw Compressor



Process Skid



Kaeser Make Screw Compressor



Nitrogen Generator with Cylinder Filling

A Full Line of Nitrogen Generators Available

Our Generators Provides from 3 to 500Nm³/hr of Nitrogen. Use the following Table to determine which model is most suitable to your application.

Model	Percentage Nitrogen Purity at 70 PSIG (Max Working pressures up-to 3200 PSIG)											
	95	97	98	99	99.5	99.9	99.95	99.99	99.995	99.999	99.9995	99.9999
N3	5.00	4.00	3.50	3.00	2.49	1.67	1.38	0.78	0.62	0.44	0.39	0.27
N7	14.00	11.00	9.00	7.00	6.40	4.30	3.54	2.00	1.61	1.12	1.00	0.70
N16	27.00	24.00	20.00	16.00	13.51	9.08	7.47	4.22	3.39	2.36	2.11	1.49
N25	40.00	35.00	30.00	25.00	20.62	13.86	11.41	6.44	5.17	3.61	3.22	2.27
N35	60.00	50.00	45.00	35.00	32.00	21.50	17.70	10.00	8.03	5.60	5.00	3.52
N55	90.00	80.00	70.00	55.00	45.51	30.58	25.17	14.22	11.42	7.96	7.11	5.01
N75	135.00	120.00	100.00	75.00	63.00	45.00	39.00	19.80	17.70	13.00	10.80	7.86
N130	225.00	200.00	160.00	130.00	101.24	72.31	62.67	31.82	28.44	20.89	17.36	12.63
N180	315.00	270.00	230.00	180.00	121.96	90.96	77.49	43.79	39.07	31.96	30.19	21.31
N280	450.00	400.00	330.00	280.00	197.15	147.03	125.27	70.79	63.15	51.67	48.80	34.45
N400	675.00	575.00	450.00	400.00	267.43	199.45	169.93	96.02	85.67	70.09	66.20	46.73
N500	900.00	770.00	650.00	500.00	343.40	256.10	218.20	123.30	110.00	90.00	85.00	60.00

Capacity Stated in Sm³/hr, Conversion rates for nitrogen- 1 Sm³ = 0.92 Nm³, 1 Nm³ = 1.25 Kg
 Optional Gas Nitrogen to Liquid Nitrogen Liquefier.
 VPSA Based Systems also available, Custom Built Models also available
 Note- Specifications are subject to change without prior notice.

WORLDWIDE LOCATION

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YOUR LOCAL CONTACT

