

LPS Product Guide



N2-GEN LPS™

LPS Series Nitrogen Generators





N2 GEN

LPS Series Nitrogen Generators

INTRODUCING THE N2-GEN LPS™
- *LAYUP PROTECTION SYSTEM*.
DESIGNED AND MANUFACTURED
BY SOUTH-TEK SYSTEMS,
THE LEADER IN NITROGEN
GENERATION TECHNOLOGY.

N2-GEN LPS™ - Nitrogen Generators

Introduction

Introducing the N2-GEN LPS™ - *Layup Protection System* for corrosion protection of inner walls of boiler tubes, condensers, and wetted parts within Power Plant Applications. Designed & Manufactured by South-Tek Systems, the leader in Nitrogen Generation Technology.

How it Works

Nitrogen has been utilized successfully for years and has been proven to protect against corrosion in these similar applications. Nitrogen, which makes up 79% of the air we breathe, is the perfect “green” solution for corrosion protection. Nitrogen is inert and by displacing the oxygen within the wetted parts with a low pressure slow flow Nitrogen purge, you ultimately inhibit the oxidation / corrosion process.

PSA Technology

South-Tek Systems utilizes Pressure Swing Adsorption (PSA) technology in the N2-GEN LPS™ - *Layup Protection System* in order to efficiently separate Nitrogen molecules from the air we breathe. Clean, dry, compressed air enters one of the two adsorption vessels, containing Carbon Molecular Sieve (CMS). Smaller oxygen and residual molecules (H₂, He, etc) are absorbed into the CMS, allowing the larger Nitrogen molecules to pass through into a storage tank for later process use. Upon saturation, the first adsorption vessel releases the oxygen while the second adsorption vessel starts the process again. Power Plant corrosion inhibiting applications generally require 99.6% N₂ purity, but higher purities can be obtained, consult the factory. PSA technology is more cost effective and energy efficient in Layup Protection Systems.

Cost Savings.

Our technology is utilized worldwide, allowing sites to produce Nitrogen at a fraction of the cost of liquid bulk tank suppliers. South-Tek's N2-GEN LPS™ is cost-effective to purchasing & maintaining either banks of N₂ cylinders or N₂ liquid bulk storage tanks. In most cases, a 50 to 90% cost savings.

Simple Installation.

The N2-GEN LPS™ comes pre-calibrated with purity certifications ensuring that systems are guaranteed to meet project specifications.

Nitrogen

Boiler Manufacturers have recommended 99.6% nitrogen purity for this corrosion inhibiting application, hence South-Tek has designed their LPS line to meet those specifications. Should a higher or lower N₂ purity be desired for your application, please consult the factory as South-Tek designs systems that can produce from 95% on up to 99.999% N₂ purity for numerous Industrial applications.

- Inert, clean, dry, non-flammable gas
- Absorbs more moisture than compressed air
- Has a true -40° to -70° F dew point
- Nitrogen, being an inert gas, displaces the oxygen within the wetted areas susceptible to corrosion during layups, hence Nitrogen does not support the corrosion reaction which would normally occur.



LPS-20 "Tank Mounted" Nitrogen Generator

- Handles up to **37,400 gallons** of wetted volume to be purged
- Fully automatic with pressure switch
- Pre-filters and pressure regulator
- Color touch screen HMI electronics package included
- 34.5"L x 32.5"W x 75"H & 800 lbs.

LPS-40 "Compact Skid" Nitrogen Generator

- Handles up to **74,805 gallons** of wetted volume to be purged
 - Fully automatic with pressure switch
 - Pre-filters and pressure regulator
- Color touch screen HMI electronics package included
 - 41"L x 34"W x 90"H & 960 lbs.



LPS-75 "Compact Skid" Nitrogen Generator

- Handles up to **149,610 gallons** of wetted volume to be purged
- Fully automatic with pressure switch
- Pre-filters and pressure regulator
- Color touch screen HMI electronics package included
- 41"L x 34"W x 90"H & 1,500 lbs.

LPS-125 "Skid" Nitrogen Generator

- Handles up to **224,416 gallons** of wetted volume to be purged
 - Fully automatic with pressure switch
 - Pre-filters and pressure regulator
- Color touch screen HMI electronics package included
 - 42"L x 42"W x 84"H & 2,250 lbs.



LPS-150 "Skid" Nitrogen Generator

- Handles up to **299,221 gallons** of wetted volume to be purged
- Fully automatic with pressure switch
- Pre-filters and pressure regulator
- Color touch screen HMI electronics package included
- 42"L x 42"W x 111"H & 2,600 lbs.



LPS-200 “Skid” Nitrogen Generator

- Handles up to **374,025 gallons** of wetted volume to be purged
 - Fully automatic with pressure switch
 - Pre-filters and pressure regulator
- Color touch screen HMI electronics package included
 - 42”L x 42”W x 117”H & 3,200 lbs.



LPS-225 “Skid” Nitrogen Generator

- Handles up to **449,450 gallons** of wetted volume to be purged
 - Fully automatic with pressure switch
 - Pre-filters and pressure regulator
- Color touch screen HMI electronics package included
 - 42”L x 42”W x 128”H & 3,900 lbs.

N2-GEN LPS™ Sizing

- LPS systems are based off of maximum wetted volume to be purged over a 24 hour period. If purge rates need to be increased or decreased for your application, please consult the factory.

“Compact Skid” Nitrogen Generators

- Nitrogen Generators for flow rates up to 2,686 SCFH
- Nitrogen purities are based off of industry standards of 99.6%, higher purities are available, consult factory

“Skid” Nitrogen Generators

- Nitrogen Generators for flow rates from 296 SCFH to unlimited capacities
- Nitrogen purities are based off of industry standards of 99.6%, higher purities are available, consult factory

Electrical Requirements

- All Nitrogen Generators: 120V/60Hz/1Phase, 8 AMP

Nitrogen Storage Tank

- LPS Nitrogen Generators come standard with low pressure Nitrogen Storage Tank
- Nitrogen receiver tank size is dependent upon volume of Nitrogen produced
- N2 GEN-LPS20, 80 Gallon Tank (Integrated)
- N2 GEN-LPS40, 240 Gallon Tank (30”D x 92”H & 670 lbs.)
- N2 GEN-LPS75, 240 Gallon Tank (30”D x 92”H & 670 lbs.)
- N2 GEN-LPS125, 400 Gallon Tank (36”D x 101”H & 881 lbs.)
- N2 GEN-LPS150, 500 Gallon Tank (36”D x 124”H & 1,050 lbs.)
- N2 GEN-LPS200, 500 Gallon Tank (36”D x 124”H & 1,050 lbs.)
- N2 GEN-LPS225, 660 Gallon Tank (42”D x 125”H & 1,180 lbs.)



“Skid” Installation

N2-GEN LPS™ ENGINEERING SPECIFICATIONS

PSA - Standard Performance / Operating Condition	
Input Air Pressure	90 - 145 PSIG
Output N2 Tank Pressure	50 - 110 PSIG (must have 40 PSIG Delta min b/w input air and N2 storage)
Input Air Flow	TBD - per design
Output N2 Flow	TBD - per design
N2 Purity Range	95% - 99.999%
Operating Temperature	20-32.2°C (68-90°F)
PSA - Electrical	
- Standard -	
Supply Voltage	100-220VAC
Universal Power Supply Internal	24Vdc
Phase	1
Hz	50/60
Amperage	8amp fused
Watts	100W (max)
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- Optionals -	
Disconnect Box	NEMA1, NEMA 3R, NEMA4, NEMA4X
E-stop	
Standard US 3-prong power cord	
External Toggle switch	
PSA - System Design	
- Instruments -	
Controller - PLC/HMI	Unitronics 3.5" color - Integrated PLC/HMI (std) Allen Bradley PLC with PanelView C300 (optional) Mitsubishi PLC with GOT1000 (optional)
- Operating Temps / Rel Humidity	0-40°C (32-104°F) / 10%-95% (non-condensing)
- Communication	24 VDC Purity Alarm (std), dry contact (optional) Analog output - Tank pressure (0-10V), Tank Purity (0-10V) Ethernet with remote access and Modbus addressing (optional)
- Data Logging	micro SD card with .CSV file saving (optional)
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- Optional Instruments -	
O2 Sensors (% Type)	Electronics Integrated into HMI/PLC
- External Fuel Cell Type	Weak Acid based – Galvanic Sensor
- Operating Temp / Rel Humidity	5-40°C (41-104°F) / 5%-95% (non-condensing)
- Range / Accuracy / Life Expectancy	0-99.5% / +/-0.2% / 24 months
- Outputs Available	Integrated within HMI/PLC - Analog Output 0-10V

N2-GEN LPS™ ENGINEERING SPECIFICATIONS

PSA - System Design

O2 Analyzer (Trace PPM)	Self-contained unit with interface, integrated into PLC/HMI
- Certifications	CE Mark
- Fuel Cell Type	Mini Zirconia Sensor
- Operating Temps / Rel. Humidity	5-40°C (41-104°F) / 5%-95% (non-condensing)
- Range / Accuracy / Lift Expectancy	0-1000ppm / +/-5ppm / 24 months
- Purity Alarms	(2) Form C relay configurable
- Analog Outputs (0-1000ppm)	Integrated within HMI/PLC - Analog Output 0-10V
- Sample Port	1/4" NPT Port or 1/4" OD Push to Connect

N2 Receiver Tank

Manufacturer	Manchester (std)
Size (gal)	TBD
Style	Vertical
Certifications	ASME Section VIII Div 1, (std) U Stamped, CRN (std) PED, BV (optional)
Material / Paint	Carbon Steel with Powder Coated Paint
Input	TBD - 1/4 - 3" NPT Brass Ball Valve, SS (optional)
Output	TBD - 1/4 - 3" NPT Brass Ball Valve, SS (optional)
Tank System Pressure Gauge	1/4" NPT - 2" Bottom Mount 0 - 160 PSIG
Safety Relief Valve	1/4" NPT , Brass 150 PSIG Rated
Flow Controller	Optional, Sized accordingly to process
Pressure Regulator	Optional, Sized accordingly to process
Additional Purging System	Optional, Sized accordingly to process
Drain	1/4" NPT Brass Ball Valve (std), 1/4"-1/2" NPT Auto-Drain (optional)

Note:

1. Custom N2 Receiver Tank / (w/ fittings) available for customized quote
2. All unused ports are plugged. Fittings may / may not be shipped loose.

N2-GEN LPS™ PRODUCT SPECIFICATIONS

	N2 GEN-LPS20	N2 GEN-LPS40	N2 GEN-LPS75	N2 GEN-LPS125	N2 GEN-LPS150	N2 GEN-LPS200	N2 GEN-LPS225
Maximum Wetted Volume to be Purged* (Gallons/cu ft)	37,400/ 5,000	74,805/ 10,000	149,610/ 20,000	224,416/ 30,000	299,221/ 40,000	374,025/ 50,000	449,450/ 60,000
Dimensions (L x W x H)	35"x33"x75"	41"x34"x90"	41"x34"x90"	42"x42"x84"	42"x42"x111"	42"x42"x117"	42"x42"x128"
Weight	800 lbs.	960 lbs.	1,500 lbs.	2,250 lbs.	2,600 lbs.	3,200 lbs.	3,900 lbs.
Series	Tank Mounted	Compact Skid	Compact Skid	Skid	Skid	Skid	Skid
O2 Analyzer	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Electrical	120V/60Hz/ 1Phase	120V/60Hz/ 1Phase	120V/60Hz/ 1Phase	120V/60Hz/ 1Phase	120V/60Hz/ 1Phase	120V/60Hz/ 1Phase	120V/60Hz/ 1Phase
Compressed Air SCFM	11	23	42	71	84	113	128
N₂ Receiver Tank Size	80 Gallons	240 Gallons	240 Gallons	400 Gallons	500 Gallons	500 Gallons	660 Gallons
Maintenance	Annual (Filter Kits)	Annual (Filter Kits)	Annual (Filter Kits)	Annual (Filter Kits)	Annual (Filter Kits)	Annual (Filter Kits)	Annual (Filter Kits)
Warranty	2 Years ¹	2 Years ¹	2 Years ¹	2 Years ¹	2 Years ¹	2 Years ¹	2 Years ¹

South-Tek's N2-GEN LPS™ is cost-effective to purchasing & maintaining either banks of N2 cylinders or N2 liquid bulk storage tanks. In most cases, a 50 to 90% cost savings.

^{*}Designed with N2 Flow Rate to provide a full purge cycle within 24 hours. If desired purge cycle is to be less or greater, consult the factory.

¹Per South-Tek Systems Terms & Conditions.

HIGHLIGHTS

WE DESIGN BEST-IN-CLASS, DEPENDABLE NITROGEN GENERATORS. IT ONLY SEEMS RIGHT TO OFFER A WARRANTY TO MATCH.



“Cabinet” Installation

WARRANTY

N2-GEN LPS™

South-Tek Systems warrants to the purchaser that all Nitrogen generators and other products manufactured by South-Tek Systems shall be free of defects in material and workmanship for a period of two (2) years from the date of shipment to the purchaser (per South-Tek Systems' Terms & Conditions). The South-Tek Systems warranty only applies to products manufactured by South-Tek Systems.

ACCESSORIES

OUTDOOR PACKAGE

A variety of options are available depending on installation location including NEMA1, NEMA 3R, NEMA4, and NEMA4X with either a disconnect box or an E-stop. Other features, such as the rain shield above, are also available. These outdoor packages protect the electronics controller on the Nitrogen Generator from severe weather, allowing for a longer period of use.

ELECTRONICS CONTROLLER

Systems come standard with Unitronics PLC and 3.5" color HMI. Other controller options are available such as the Allen Bradley PLC with PanelView C300 and Mitsubishi PLC with GOT1000. The data logging of each controller consists of a micro SD card with .CSV file saving.

ACCESSORIES

O2 ANALYZER

The option of an O2 Analyzer is available with any purchase of a Nitrogen Generator. It is a self-contained unit, with an interface, integrated into the PLC. The system design consists of a mini zirconia sensor, purity alarms, a sample port, and analog outputs from 0 ppm up to 1000 ppm.

DAS / PURITY CERTIFICATION

Unique to South-Tek Systems, DAS / Purity Certifications are provided with each of our systems before shipped to guarantee that our Nitrogen Generators meet or exceed product specifications. Implementing a Nitrogen Generator into your process will provide savings up to 90% in Nitrogen costs over current supplier.

