N2BLAST®

Corrosion Inhibiting Solutions

South-Tek Systems

For Dry and Pre-action Fire Protection Systems

fire protection TECHNOLOGIES

THE FACTS ON CORROSION

- Dry and pre-action systems are involved in 59% of fire losses caused by corrosion-related obstructions to sprinkler flow (FM Global)
- 73% of dry and pre-action systems inspected had significant corrosion issues after 12.5 years of normal use (VDS Study)
- Corrosion leads to property damage, ongoing pipe repair and replacement, decreased c-factor and sprinkler head blockage – potentially rendering the system inoperable in the event of a fire

Inhibiting

LONG-TERM EXPOSURE TESTING

- Long-term exposure tests are currently being conducted to compare the performance of black and galvanized steel sprinkler pipe in compressed air and nitrogen gas environments. The testing was started by South-Tek Systems and has been running continuously for more than a decade.
- The test environment is comprised of half-filled Schedule 10 black and galvanized steel sprinkler pipe sections, which are individually subjected to either compressed air, 95% nitrogen, or 98% nitrogen supervision.

CONCLUSIONS AFTER 3,000+ DAYS OF UNINTERRUPTED TESTING

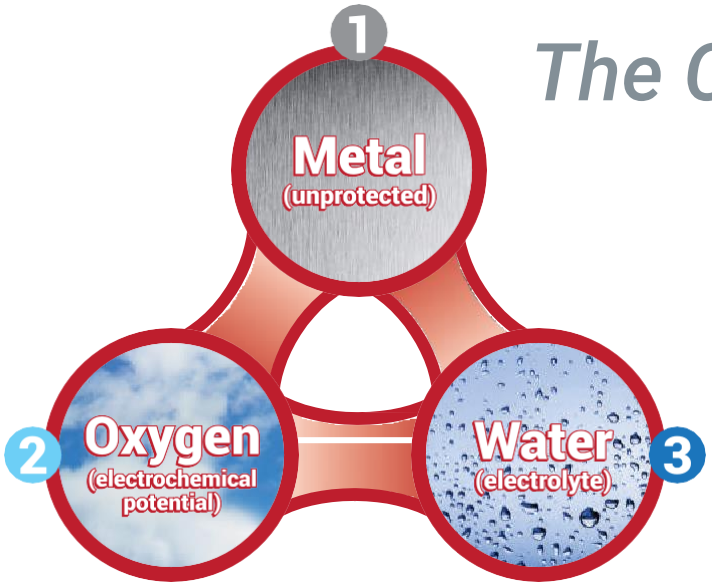
As a result of 98% nitrogen in lieu of compressed air supervision:

Black steel:

- *The service life of black steel pipe increases from 20 years to 63 years*

Galvanized Steel:

- *The service life of galvanized steel pipe increases from 10 years to 176 years*



The Corrosion Triangle

1 + 2 + 3 = Corrosion

1 UNPROTECTED METAL

- Results in a uniform wall-thinning corrosion mechanism in black steel
- Results in a localized pitting corrosion mechanism in galvanized steel

2 ELECTROCHEMICAL POTENTIAL

- There is an inexhaustible source of oxygen in compressed supervisory air

3 ELECTROLYTES

- Come from residual water and moisture left behind after hydro test

Nitrogen eliminates the Electrochemical Potential - Oxygen (2), therefore the equation is not complete and corrosion is inhibited.

Corrosion

N2BLAST®

Award Winning Corrosion Inhibiting System

Introducing the **N_2-Blast®** - *Corrosion Inhibiting System*, recipient of the NACE corrosion innovation of the year award. Designed and manufactured by South-Tek Systems, the world leader in nitrogen generation technology.

The **N_2-Blast®** generates and introduces 98%+ pure nitrogen into the dry or pre-action fire protection system. In doing so, oxygen, a key contributor to corrosion, is displaced from the piping through the *AutoPurge System®*.

The **N_2-Blast®** effectively inhibits electrochemical, galvanic and micro-biologically influenced corrosion (MIC), as well as freeze-ups and ice plugs.

ABOUT SOUTH-TEK SYSTEMS

The South-Tek Systems team is dually focused on customer support and a technical, in-depth understanding of applications such as inhibiting corrosion in dry and pre-action fire protection systems - ensuring the ultimate user experience. Because of this dedication, South-Tek has become one of the largest manufacturers of nitrogen generation equipment with over 10,000 systems installed in the United States and abroad. Those installations range from the small start-up research laboratory or local industrial equipment shop to a full listing of Fortune 50 Industrial plant sites, many of which have chosen us as their worldwide standard for nitrogen generation.

With a commitment to ongoing research and development, we've created patented technologies that maximize the longevity and efficiency of our nitrogen generators. Not only do we provide the best user experience, but we're the most innovative manufacturer of nitrogen generation technology in the world.

The Technology

As the only provider of dual-bed pressure swing adsorption (PSA) nitrogen separation technology to the Fire Protection Industry, South-Tek's nitrogen generators yield an efficient 2:1 air to nitrogen ratio versus the 3:1 ratio of competing membrane systems. Requiring less feed air to generate the same amount of nitrogen and allowing the feed air compressor to run at a lower pressure and temperature than it would in a membrane system ultimately maximizes the life of the feed air compressor and other integral components. PSA technology is also longer lasting—to the tune of 20+ years. In a PSA system, CMS material is utilized to extract oxygen from the air under pressure and capture nitrogen. Its proven to provide 98%+ purity for longer as it does not break down nearly as quickly as the hollow fibers do within a membrane.

The N_2-Blast® - *Corrosion Inhibiting System* is comprised of the following:

- N_2-Blast® - Nitrogen Generator
- Nitrogen Receiver/Buffer Tank
- Air Compressor and Refrigerant Dryer
- Patented *AutoPurge System®*
- Quick-Check® Purity Manifold or Portable N_2 Purity Sensor
- Touchscreen PLC with SMART-Trak HMI
- Integral BlastOff® Series Alarms:
  - BlastOff I – Leak Detection System
  - BlastOff II – Air Bypass Alarm
  - BlastOff III – Early Warning System
  - BlastOff IV – Onboard Purity Alarm

Supported by our in-house engineering staff and optional onsite start-up/commissioning service by a certified South-Tek Technician.

DUAL-BED PSA NITROGEN GENERATORS

N_2-Blast® - FPS-500

- For up to 1,892 litres (500 gal.) of total sprinkler pipe capacity
- UL 508A listed Industrial Control Panel
- Dual-Bed PSA technology
- BlastOff™ I - *Leak Detection System*
- BlastOff™ II - *Air Bypass Alarm*
- Features an integrated air compressor (not intended for quick-fill operation)
- Optional upgraded K17-15L air compressor available for quick-fill operation (2,967 li tres (800 gal). @ 276 kPa)
- 106 litres (28 gal.) N_2 receiver tank

Specifications

Minimum nitrogen purity	98%
Electrical	240 VAC, 2.2 AMPS
Dimensions cm	74.9 H x 32.2 W x 25.5 D

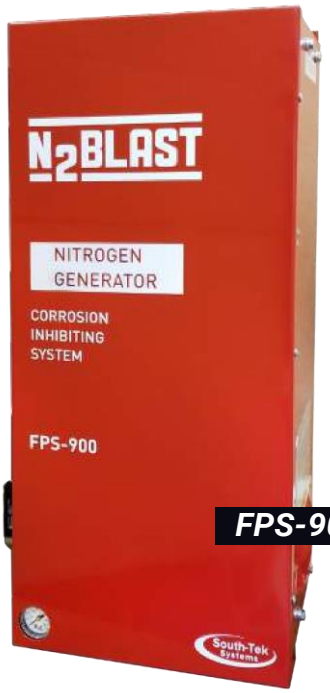
FPS-500

N_2-Blast® - FPS-900

- For up to 3407 litres (900 gal.)of total sprinkler pipe capacity
- UL 508A listed Industrial Control Panel
- Dual-Bed PSA technology
- BlastOff™ I- *Leak Detection System*
- BlastOff™ II - *Air Bypass Alarm*
- Features an integrated air compressor (not intended for quick-fill operation)
- Optional upgraded K17-15L compressor available for quick-fill operation (2,967 litres(800 gal.) @ 276 kPa)
- 106 litres (28 gal.) N_2 receiver tank

Specifications

Minimum nitrogen purity	98%
Electrical	240 VAC, 2.2 AMPS
Dimensions cm	74.9 H x 32.2 W x 25.5 D



FPS-900

Reference pages 9 and 11 for detailed specifications

DUAL-BED PSA NITROGEN GENERATORS

FPS-1650

N_2-Blast® - FPS-1650

- For up to 6,246 litres (1,650 gal.) of total sprinkler pipe capacity
- UL 508A listed Industrial Control Panel
- Dual-Bed PSA technology
- BlastOff™ I - *Leak Detection System*
- BlastOff™ II - *Auto Air Bypass Alarm*
- Optional BlastOff™ III - *Early Warning System*
- Optional BlastOff™ IV - *Onboard Purity Alarm*
- Features an integrated air compressor (not intended for quick-fill operation)
- Optional upgraded K17-15L air compressor available for quick-fill operation (2,967 litres (800 gal.) @ 276 kPa)
- Integrated N_2 receiver tank
- 3.5” Color Touchscreen with SMART-Trak technology

Specifications:

Minimum nitrogen purity	98%
Electrical	240 VAC, 3.6 AMPS
Dimensions cm	171.4 H x 66 W x 45.7 D

FPS-3250

N_2-Blast® - FPS-3250

- For up to 12,302 litres (3,250 gal.) of total sprinkler pipe capacity
- UL 508A listed Industrial Control Panel
- Dual-Bed PSA technology
- BlastOff™ I - *Leak Detection System*
- BlastOff™ II - *Auto Air Bypass Alarm*
- Optional BlastOff™ III - *Early Warning System*
- Optional BlastOff™ IV - *Onboard Purity Alarm*
- Requires separate feed air compressor
- Integrated Air Dryer and N_2 receiver tank
- 3.5” Color Touchscreen with SMART-Trak technology

Specifications:

Minimum nitrogen purity	98%
Electrical	240 VAC, 3.6 AMPS
Dimensions cm	171.4 H x 66 W x 45.7 D

Reference pages 9 and 11 for detailed specifications

DUAL-BED PSA NITROGEN GENERATORS

N_2-Blast® - FPS-5000

- For up to 18,927 litres (5,000 gal.) of total sprinkler pipe capacity
- UL 508A listed Industrial Control Panel
- Dual-Bed PSA technology
- BlastOff™ I - *Leak Detection System*
- BlastOff™ II - *Auto Air Bypass Alarm*
- Optional BlastOff™ III - *Early Warning System*
- Optional BlastOff™ IV - *Onboard Purity Alarm*
- Requires separate feed air compressor
- Integrated Air Dryer and N_2 receiver tank
- 3.5” Color Touchscreen with SMART-Trak technology

Specifications:

Minimum nitrogen purity	98%
Electrical	240 VAC, 3.6 AMPS
Dimensions cm	171.4 H x 66 W x 45.7 D

FPS-5000

N_2-Blast® - FPS-10000

- For up to 37,854 litres (10,000 gal.) of total sprinkler pipe capacity
- UL 508A listed Industrial Control Panel
- Dual-Bed PSA technology
- BlastOff™ I - *Leak Detection System*
- BlastOff™ II - *Auto Air Bypass Alarm*
- Optional BlastOff™ III - *Early Warning System*
- Optional BlastOff™ IV - *Onboard Purity Alarm*
- Requires separate feed air compressor
- Integrated Air Dryer and N_2 receiver tank
- 3.5” Color Touchscreen with SMART-Trak technology

Specifications:

Minimum nitrogen purity	98%
Electrical	240 VAC, 2.5 AMPS
Dimensions cm	195.6 H x 73.7 W x 66 D

FPS-10000

Reference pages 9 and 11 for detailed specifications

DUAL-BED PSA NITROGEN GENERATORS

N_2-Blast® - FPS-16500

| For up to 62,459 litres (16,500 gal.) of total sprinkler pipe capacity
| UL 508A listed Industrial Control Panel
| Dual-Bed PSA technology
| BlastOff™ I - *Leak Detection System*
| BlastOff™ II - *Auto Air Bypass Alarm*
| Optional BlastOff™ III - *Early Warning System*
| Optional BlastOff™ IV - *Onboard Purity Alarm*
| Requires separate feed air compressor
| Integrated Air Dryer and N_2 receiver tank
| 3.5” Color Touchscreen with SMART-Trak technology

Specifications:

Minimum nitrogen purity	98%
Electrical	240 VAC, 2.5 AMPS
Dimensions cm	195.6 H x 73.7 W x 66 D

FPS-16500

N_2-Blast® - FPS-22500

| For up to 85,172 litres (22,500 gal.) of total sprinkler pipe capacity
| UL 508A listed Industrial Control Panel
| Dual-Bed PSA technology
| BlastOff™ I - *Leak Detection System*
| BlastOff™ II - *Auto Air Bypass Alarm*
| Optional BlastOff™ III - *Early Warning System*
| Optional BlastOff™ IV - *Onboard Purity Alarm*
| Requires separate feed air compressor
| Integrated Air Dryer and N_2 receiver tank
| 3.5” Color Touchscreen with SMART-Trak technology

Specifications:

Minimum nitrogen purity	98%
Electrical	240 VAC, 2.5 AMPS
Dimensions cm	195.6 H x 73.7 W x 66 D

FPS-22500

Reference pages 9 and 11 for detailed specifications

NITROGEN GENERATOR SPECIFICATIONS:

	FPS-500	FPS-900	FPS-1650	FPS-3250	FPS-5000	FPS-10000	FPS-16500	FPS-22500
Maximum FPS Capacity (Gallons)	500	900	1,650	3,250	5,000	10,000	16,500	22,500
Maximum FPS Capacity (Litres)	1,892	3,407	6,246	12,302	18,927	37,854	62,459	85,172
Dimensions cm (H x W x D)	76x46x25.4	76x46x25.4	173x66x46	173x66x46	173x66x46	196x74x66	196x74x66	196x74x66
Weight (lbs.) Weight (kg)	84 38	84 38	223 101	243 110	303 137	870 395	1,020 463	1,070 485
Mount	Wall	Wall	Floor	Floor	Floor	Floor	Floor	Floor
Electrical Specs	110-220V AC 50-60Hz 1 phase	110-220V AC 50-60Hz 1 phase	110-220V AC 50-60Hz 1 phase	110-220V AC 50-60Hz 1 phase	110-220V AC 50-60Hz 1 phase	110-220V AC 50-60Hz 1 phase	110-220V AC 50-60Hz 1 phase	110-220V AC 50-60Hz 1 phase
Amperage	2..2	2.2	3.6	3.6	3.6	2.5	2.5	2.5
Compressed Air SCFM Required	Integrated[1]	Integrated[1]	Integrated[1]	4.0	5.0	13.0	17.0	21.5
Air Compressor Min. Working Pressure	Integrated[1]	Integrated[1]	Integrated[1]	862 kPa	862 kPa	862 kPa	862 kPa	862 kPa
Compatible Air Compressor Packages	Integrated[1]	Integrated[1]	Integrated[1]	K17/15L, K25/21, K30, K50	K17/15L, K25/21, K30, K50	K25/21, K30, K50	K25/21, K30, K50	K30, K50
N_2 Receiver Tank Size (H x DIA.)	15"x50"	15"x50"	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated
Maintenance	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Lead Time ex USA	1-2 Weeks	1-2 Weeks	1-2 Weeks	1-2 Weeks	1-2 Weeks	1-2 Weeks	1-2 Weeks	1-2 Weeks
Warranty	1 Year[2]	1 Year[2]	1 Year[2]	1 Year[2]	1 Year[2]	1 Year[2]	1 Year[2]	1 Year[2]

[1]The FPS-500 & FPS-900 systems are complete with integrated air compressors. A separate air compressor can be provided by South-Tek or a pre-existing air compressor can be utilized to fill largest zone to pressure within 30 minutes (per NFPA 13 req.).

[2]Per South-Tek Systems' Terms & Conditions. Extended warranties available.

FEED AIR COMPRESSORS

Model K17/15L

| 278.7 L/Min (9.8 CFM) @ 1000 kPa Free Air delivery to AS4673
| 1000 kPa (145 PSI) maximum cut out pressure
| Twin cylinder compressor pump
| 3hp 2.25kw (15 amp) 240V electric motor
| 100 litre air receiver (to AS1210)

Model K25/21

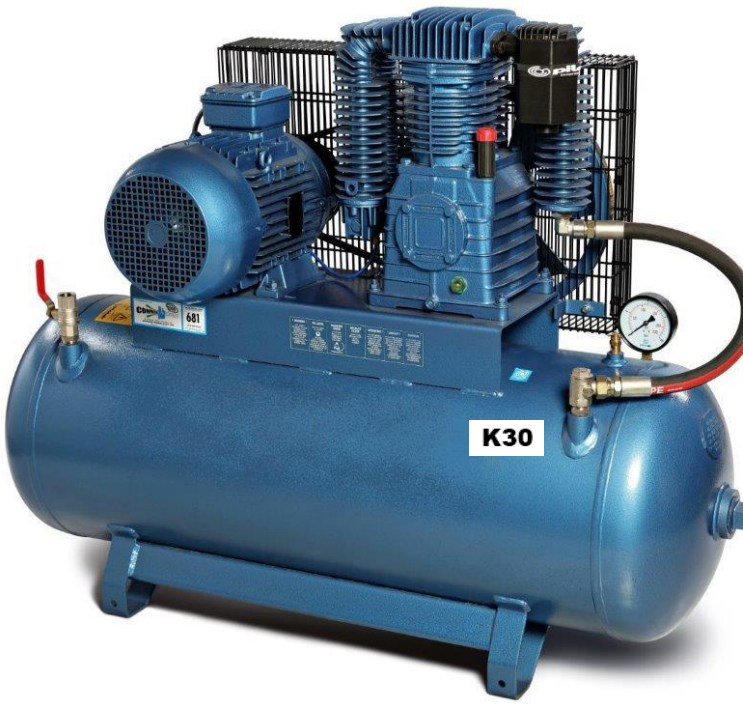
| 454 L/Min (16 CFM) @ 1000 kPa Free Air delivery to AS4673
| 1100 kPa (145 PSI) maximum cut out pressure
| Twin cylinder, two stage compressor pump
| 5.3hp 4kw (15 amp) 415V three phase electric motor
| 150 litre air receiver (to AS1210)

Model K30

| 681 L/Min (24.1 CFM) @ 1000 kPa Free Air delivery to AS4673
| 1100 kPa (145 PSI) maximum cut out pressure
| Twin cylinder, two stage compressor pump
| 7.4hp 5.5kw (15 amp) 415V three phase electric motor
| 200 litre air receiver (to AS1210)

Model K50

| 888 L/Min (31.3 CFM) @ 1000 kPa Free Air delivery to AS4673
| 1100 kPa (145 PSI) maximum cut out pressure
| Twin cylinder, two stage compressor pump
| 10hp 7.5 kw (15 amp) 415V three phase electric motor
| 268 litre air receiver (to AS1210)



FEED AIR COMPRESSOR SPECIFICATIONS

	K17/15L	K25/21	K30	K50
Horsepower	3 hp	5.3 hp	7.4 hp	10 hp
SCFM at 1000kPa	9.8	16.0	24.1	31.3
Min. Working Pressure	862 kPa	862 kPa	862 kPa	862 kPa
Zone Capacity Filled within 30 Min. (276 kPa)	800 Gallons 2,967 Litres	1,300 Gallons 4,840 Litres	1,900 Gallons 7,200 Litres	2,500 Gallons 9,500 Litres
Air Compressor Dimensions L **x** W **x** H mm	1100x490x920	1320x480x950	1410x580x1050	1540x560x1160
Air Compressor Weight	90 kg.	170 kg.	190 kg.	220 kg.
Air Compressor Electric (Single Phase)	240V 2.2kw	N/A	N/A	N/A
Air Compressor Electric (Three Phase)	N/A	415V 4.0kw	415V 5.5kw	415V 7.5kw
Warranty	1 Year[1]	1 Year[1]	1 Years[1]	1 Years[1]

[1]Per Manufacturer's Terms & Conditions.

FPS ACCESSORIES

FACP Integration Options

South-Tek Systems developed the patented BlastOff® series of alarms to proactively ensure the longevity of not only the FPS, but the nitrogen generation system itself. If there is a significant leak downstream or equipment malfunction that causes the N_2-Blast® to run for nine (9) consecutive hours, the BlastOff® I - *Leak Detection System* will alarm so that the issue can be diagnosed proactively. The BlastOff® II - *Air Bypass Alarm* safeguards against an install error or a technician inadvertently leaving the nitrogen generator offline. The BlastOff® III – *Early Warning System* alarms if there is an issue with the equipment and/or pinpoints the location of a significant leak upstream, within, or downstream of the nitrogen generator. The BlastOff® IV - *Onboard Purity Alarm* monitors the purity of the nitrogen going into the fire protection system.

N_2-Blast® - *AutoPurge System®*

High purity nitrogen must be equally distributed throughout the entire FPS piping system in order to effectively inhibit corrosion. The patented *AutoPurge System®* provides a low volume, constant purge of nitrogen throughout each FPS system. The rate in which gas is purged from the FPS is within NFPA guidelines and allows breathing to occur within the sprinkler piping. The *AutoPurge System®* also provides a point in which the nitrogen purity concentration can be monitored downstream of the nitrogen generator. Computational Fluid Dynamics (CFD) modeling proves that this is the most effective way to ensure that high purity nitrogen reaches all branches of the fire protection system. Install one *AutoPurge System®* per zone at an area in which water will not collect.

Quick-Check® - Purity Manifolds

The Quick-Check® - *Purity Manifold* allows you to remotely monitor the nitrogen purity within each zone of the fire protection system. Each *AutoPurge System®* can be connected to the *Purity Manifold* with 1/4" plenum-rated tubing (provided by South-Tek). The *Purity Manifold* monitors nitrogen purity within each zone during a "sampling phase", once per day. At the end of the sampling phase, the *Purity Manifold* stores the achieved nitrogen purity into memory and displays the results on its screen. If the zone's purity meets specification, the *AutoPurge System®* will remain closed (not purging) until the next sampling phase. If purity does not meet specification, the *AutoPurge System®* will remain in the "open" position and continue its purge until the next sampling phase (nitrogen generator increases the N_2 level within the zone until the nitrogen purity specification is met).

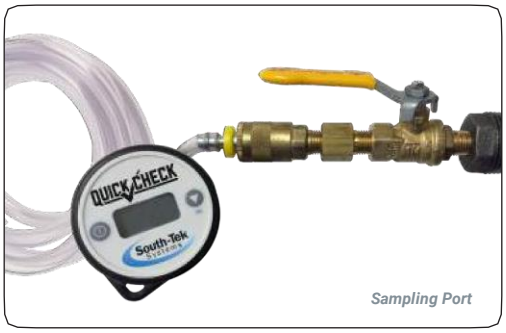
N_2-Blast® - *AutoPurge System®*

| Patented, calibrated orifice custom tunes to each individual riser based on its total capacity (gallons), minimizing runtime of N_2-Blast® on PLC
| Purges FPS piping to ensure entire system is blanketed with 98%+ nitrogen purity
| Mounts horizontally on a section of the FPS piping
| Locate APS at a remote, accessible location on FPS, in an area where water will not collect
| No electrical required

APS Model 2

Quick-Check® - *Sampling Port*

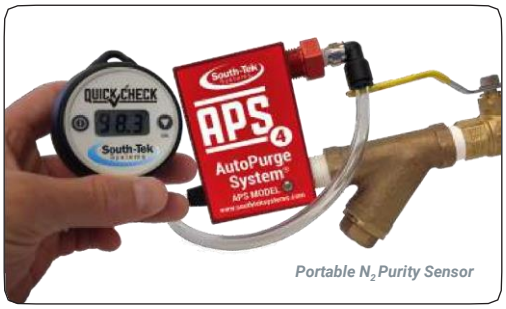
| Provides additional location to check nitrogen purity concentration within sprinkler piping
| Offers peace of mind that nitrogen is fully blanketed throughout FPS
| One or multiple *Sampling Ports* can be installed on any zone which already has an *AutoPurge System®*
| Mount horizontally on a vertical section of FPS piping
| No electric required



Sampling Port

Quick-Check® - *Portable Nitrogen Purity Sensor*

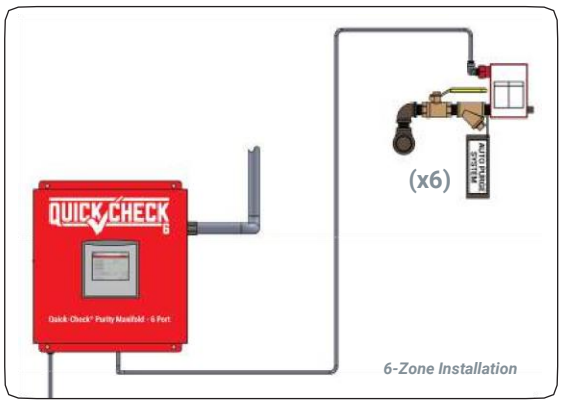
| Battery operated, hand-held nitrogen analyzer verifies that desired nitrogen purity is achieved within all zones
| Attaches to quick connection on *AutoPurge System®* or *Sampling Port*



Portable N_2 Purity Sensor

Quick-Check® - *Purity Manifolds*

| Samples nitrogen purity content in all zones
| Standard models: 1, 6, 10 and 20-zone (custom models available upon request)
| Deactivates each *AutoPurge System®* as the nitrogen purity set point is achieved
| Ethernet communication module included for remote access
| Wall mount and complete with PLC and modules
| Analog 0-10V, 4-20mA signal to BMS as purity is achieved
| Electrical: 240V/50Hz/1Ph/2.5 AMPS



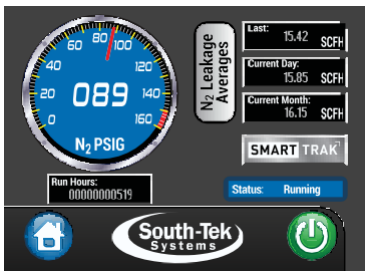
6-Zone Installation

10-Zone Model

SMART-Trak™

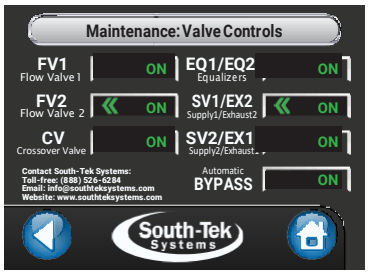
OUR POWERFUL NEW SOFTWARE/USER INTERFACE OFFERING UNPRECENDENTED CONTROL AND TESTING CAPABILITIES FOR THE END USER

South-Tek's exclusive SMART-Trak™ technology allows you to remotely monitor the nitrogen generator from any mobile device. View information such as the trending FPS leak rate, equipment runtime, time in air bypass mode, current system status, and maintenance reminders all through the SMART-Trak™ mobile application.

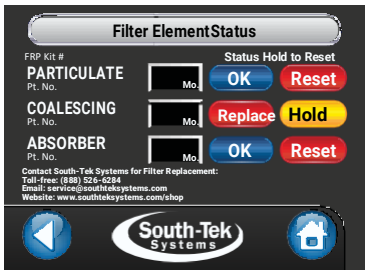


Monitor current N_2 pressure and leakage trends in realtime.

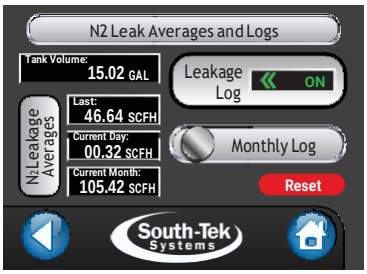
System functionality is easily monitored in operations animations.



Monitor and control system operation from touchscreen or mobile app.



Check filter element status and schedule replacement.



Monitor and analize daily, weekly, and monthly leakage rates.

...Plus much more!

South-Tek Systems
Warranties

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

N2-Blast® Nitrogen Generators[1]

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 one (1) year from the date of shipment to the purchaser or within 1,000 hours of runtime, whichever comes first (per South-Tek Systems' Terms & Conditions). The South-Tek Systems warranty only applies to products manufactured by South-Tek Systems.

K17/15L Series Air Compressor Packages[2]

The K17/15L Series Air Compressor Packages are warranted for one (1) year from date of purchase.
The manufacturer will repair, without charge, any defects due to faulty materials or workmanship.
This warranty does not apply to accessories or damage caused where repairs have been made or attempted by others.

K25/21, K30, K30SB-268, K50 Series Air Compressor Packages[2]

All component parts on these compressors installed by the manufacturer are warranted to be free of defects, workmanship and material for a period of one year. Transportation charges are the responsibility of the purchaser. The purchaser must use the manufacturer's synthetic reciprocating compressor oil in the compressor for the duration of the compressor warranty. There are no express warranties except other than those contained in this limited warranty statement. Covered in the one-year period of the warranty are defective parts due to defects in the original part only. The compressor warranty is void in the case of abuse, lack of proper service, incorrect application, incorrect installation, and neglect. Standard compressor warranty covers defective parts and labor for the one-year period. Contact South-Tek for details on an optional 6-year Industrial reciprocating pump only warranty.

RD Series Air Dryer Packages[2]

The RD Series Air Dryer Packages have a one (1) year warranty against defects in materials or workmanship under normal use and service, from the date of installation or eighteen (18) months from the date of shipment by the manufacturer or a manufacturer's distributor, whichever may occur first. Heat Exchangers are warranted for five (5) years.

[1]Per Fire Protection Technologies Terms and Conditions
[2]Per the Manufacturer's Terms and Conditions

Nitrogen Generation System Project Questionnaire

Contractor Information

Contact:_____ Company:_____

City, State: _____ Phone: _____

Email: _____

Fire Protection System Specifications

Project Name: _____

Type of Facility:_____ FM Required? Y / N (circle one)

Zone #	Dry/Preaction (circle)	Supervisory Pressure	Capacity (gallons)
1	D / PA		
2	D / PA		
3	D / PA		
4	D / PA		
5	D / PA		
6	D / PA		
7	D / PA		
8	D / PA		
9	D / PA		
10	D / PA		

Required Accessories

N_2-Blast® – *AutoPurge System* (one required per zone): #_____

Optional Accessories/Services *(Leak Detection System & Air Bypass Alarm Standard)*

BlastOff™ III – *Early Warning System* (one per N_2-Blast®): #_____

BlastOff™ IV – *Onboard Purity Alarm* (one per N_2-Blast®): #_____

Quick-Check® -*Purity Manifold (input quantity per model)*:

1 Zone:_____ 6 Zone:_____ 10 Zone:_____ 20 Zone: _____

Manufacturer Startup Required? Y / N Project Location (required): _____