Corrosion Inhibiting Solutions

For Dry and Pre-action Fire Protection Systems
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

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. **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

1 + 2 + 3 = Corrosion

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

Introducing the N₂-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 N₂-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 N₂-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 N₂-Blast® - Corrosion Inhibiting System is comprised of the following:

- N₂-Blast® - Nitrogen Generator
- Nitrogen Receiver/Buffer Tank
- Air Compressor and Refrigerant Dryer
- Patented AutoPurge System®
- Quick-Check® Purity Manifold or Portable N₂ 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

\( \text{N}_2\)-Blast\textsuperscript{®} - FPS-500
- For up to 500 gal. of total sprinkler pipe capacity
- UL 508A listed Industrial Control Panel
- Dual-Bed PSA technology
- BlastOff\textsuperscript{™} I - Leak Detection System
- BlastOff\textsuperscript{™} II - Air Bypass Alarm
- Features an integrated air compressor (not intended for quick-fill operation)
- Optional upgraded STS-NF-QF-2 air compressor available for quick-fill operation (635 gal. @ 40 PSI)
- 28 gal. \( \text{N}_2 \) receiver tank

Specifications
- Minimum nitrogen purity 98%
- Electrical 110 VAC, 4.3 AMPS
- Dimensions 29.5" H x 12.68" W x 10.06" D

\( \text{N}_2\)-Blast\textsuperscript{®} - FPS-900
- For up to 900 gal. of total sprinkler pipe capacity
- UL 508A listed Industrial Control Panel
- Dual-Bed PSA technology
- BlastOff\textsuperscript{™} I - Leak Detection System
- BlastOff\textsuperscript{™} II - Air Bypass Alarm
- Features an integrated air compressor (not intended for quick-fill operation)
- Optional upgraded STS-NF-QF-2 air compressor available for quick-fill operation (635 gal. @ 40 PSI)
- 28 gal. \( \text{N}_2 \) receiver tank

Specifications
- Minimum nitrogen purity 98%
- Electrical 110 VAC, 4.3 AMPS
- Dimensions 29.5" H x 12.68" W x 10.06" D

Reference pages 9 and 11 for detailed specifications
DUAL-BED PSA NITROGEN GENERATORS

N₂-Blast® - FPS-1650
- For up to 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 STS-NF-QF-2 air compressor available for quick-fill operation (635 gal. @ 40 PSI)
- Integrated N₂ receiver tank
- 3.5” Color Touchscreen with SMART-Trak technology

Specifications:
- Minimum nitrogen purity 98%
- Electrical 110 VAC, 7.1 AMPS
- Dimensions 67.5” H x 26” W x 18” D

N₂-Blast® - FPS-3250
- For up to 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 N₂ receiver tank
- 3.5” Color Touchscreen with SMART-Trak technology

Specifications:
- Minimum nitrogen purity 98%
- Electrical 110 VAC, 7.1 AMPS
- Dimensions 67.5” H x 26” W x 18” D

Reference pages 9 and 11 for detailed specifications
DUAL-BED PSA
NITROGEN GENERATORS

N₂-Blast® - FPS-5000
- For up to 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 N₂ receiver tank
- 3.5” Color Touchscreen with SMART-Trak technology

Specifications:
- Minimum nitrogen purity 98%
- Electrical 110 VAC, 7.1 AMPS
- Dimensions 67.5” H x 26” W x 18” D

N₂-Blast® - FPS-10000
- For up to 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 N₂ receiver tank
- 3.5” Color Touchscreen with SMART-Trak technology

Specifications:
- Minimum nitrogen purity 98%
- Electrical 110 VAC, 5 AMPS
- Dimensions 77” H x 29” W x 26” D

Reference pages 9 and 11 for detailed specifications
DUAL-BED PSA NITROGEN GENERATORS

N₂-Blast® - FPS-16500
- For up to 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 N₂ receiver tank
- 3.5” Color Touchscreen with SMART-Trak technology

Specifications:
- Minimum nitrogen purity 98%
- Electrical 110 VAC, 5 AMPS
- Dimensions 77” H x 29” W x 26” D

N₂-Blast® - FPS-22500
- For up to 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 N₂ receiver tank
- 3.5” Color Touchscreen with SMART-Trak technology

Specifications:
- Minimum nitrogen purity 98%
- Electrical 110 VAC, 5 AMPS
- Dimensions 77” H x 29” W x 26” D

Reference pages 9 and 11 for detailed specifications
## NITROGEN GENERATOR SPECIFICATIONS:

<table>
<thead>
<tr>
<th></th>
<th>FPS-500</th>
<th>FPS-900</th>
<th>FPS-1650</th>
<th>FPS-3250</th>
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<th>FPS-10000</th>
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<td>(Gallons)</td>
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<td>Integrated²</td>
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<td>5-CS, 7-CS, 7HD-CS, 10-CS</td>
<td>5-CS, 7-CS, 7HD-CS, 10-CS</td>
<td>7-CS, 7HD-CS, 10-CS</td>
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<td>1 Year²</td>
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<td>1 Year²</td>
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</table>

¹The 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.).

²Per South-Tek Systems’ Terms & Conditions. Extended warranties available.

www.southteksystems.com
FEED AIR COMPRESSORS

Model STS NF-C-2-J
- 2hp piston, oil lubricated with aftercooler
- 17 gal. accumulator tank with pneumatic auto drain
- Added filtration package to ensure clean, dry, oil free air
- Compressed air flow output of 7.6 SCFM at 125 PSI
- Fills up to 900 gallons within 30 minutes (0-40 PSI)

Model STS NF-C-5-CS
- 5hp piston, oil lubricated, 60 gal. accumulator tank
- Aftercooler, magnetic starter, low oil monitor
- Vibration isolator pads
- Pneumatic auto-drain off of the air receiver tank
- Compressed air flow output of 20 SCFM at 125 PSI
- Fills up to 1,650 gallons within 30 minutes (0-40 PSI)

Model STS NF-C-7-CS
- 7.5hp piston, oil lubricated, 80 gal. accumulator tank
- Aftercooler, magnetic starter, low oil monitor
- Vibration isolator pads
- Pneumatic auto-drain off of the air receiver tank
- Compressed air flow output of 25 SCFM at 125 PSI
- Fills up to 2,100 gallons within 30 minutes (0-40 PSI)

Model STS NF-C-7HD-CS
- 7.5hp piston, oil lubricated, 80 gal. accumulator tank
- Aftercooler, magnetic starter, low oil monitor
- Vibration isolator pads
- Pneumatic auto-drain off of the air receiver tank
- Compressed air flow output of 32.1 SCFM at 125 PSI
- Fills up to 2,650 gallons within 30 minutes (0-40 PSI)

Model STS NF-C-10-CS
- 10hp piston, oil lubricated, 80 gal. accumulator tank
- Aftercooler, magnetic starter, low oil monitor
- Vibration isolator pads
- Pneumatic auto-drain off of the air receiver tank
- Compressed air flow output of 36.9 SCFM at 125 PSI
- Fills up to 3,000 gallons within 30 minutes (0-40 PSI)

Model STS NF-QF-2
- To be utilized only for the sprinkler pipe quick-fill operation. Not intended to be used as a constant means of maintaining supervisory pressure.
- 2hp piston, oil-less
- Compressed air flow output of 8 SCFM at 40 PSI
- Fills up to 635 gallons within 30 minutes (0-40 PSI)
## FEED AIR COMPRESSOR SPECIFICATIONS

<table>
<thead>
<tr>
<th></th>
<th>STS NF-QF-2</th>
<th>STS NF-C-2-J</th>
<th>STS NF-C-5-CS</th>
<th>STS NF-C-7-CS</th>
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<td>2 hp</td>
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<td>125 PSI</td>
<td>125 PSI</td>
<td>125 PSI</td>
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<td>2,100 Gallons</td>
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<td><strong>Air Compressor Dimensions</strong> (W&quot; x L&quot; x H&quot;)</td>
<td>12 x 18 x 15</td>
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</table>

¹ Per Manufacturer’s Terms & Conditions.
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 N₂-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.

N₂-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 N₂ level within the zone until the nitrogen purity specification is met).
**N₂-Blast® - AutoPurge System®**
- Patented, calibrated orifice custom tunes to each individual riser based on its total capacity (gallons), minimizing runtime of N₂-Blast® on PLC
- Purges FPS piping to ensure entire system is blanketeted 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

**Quick-Check® - Sampling Port**
- Provides additional location to check nitrogen purity concentration within sprinkler piping
- Offers peace of mind that nitrogen is fully blanketeted 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

**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

**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: 115V/60Hz/1Ph/8 AMPS
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 and control system operation from touchscreen or mobile app.

Check filter element status and schedule replacement.

Monitor current N₂ pressure and leakage trends in realtime.

System functionality is easily monitored in operations animations.

Monitor and analyze 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 Generators¹**

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.

**STS-NF-C-2-J Series Air Compressor Packages²**

The STS-NF-C-2-J 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.

**STS-NF-C-5/7/7HD/10-CS Series Air Compressor Packages²**

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 Packages²**

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.

¹Per South-Tek Systems’ Terms and Conditions
²Per 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)

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<th>Zone #</th>
<th>Dry/Preaction (circle)</th>
<th>Supervisory Pressure</th>
<th>Capacity (gallons)</th>
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Required Accessories
N₂-Blast® – AutoPurge System (one required per zone):  #_____

Optional Accessories/Services (Leak Detection System & Air Bypass Alarm Standard)
BlastOff™ III – Early Warning System (one per N₂-Blast®):  #_____
BlastOff™ IV – Onboard Purity Alarm (one per N₂-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): ______________________

Distributor Information
Contact: _____________________________________________________________
Company: _____________________________________________________________
Phone/Email: ___________________________________________________________

Please email to South-Tek Systems at commercialsales@southteksystems.com