

# *FAQ – N<sub>2</sub>-Blast*<sup>®</sup>

The N<sub>2</sub>-Blast<sup>®</sup> - Nitrogen Generation System produces Nitrogen on site to be used to maintain Supervisory Pressure within Dry and Pre-action Fire Protection Systems (FPS).

How exactly does the N<sub>2</sub>-Blast<sup>®</sup> - *Corrosion Inhibiting System* work?

View the questions below to find out!

## *How does the N<sub>2</sub>-Blast work?*

With the introduction of clean, dry, oil-free compressed air, the N<sub>2</sub>-Blast – Nitrogen Generation System effectively separates the Nitrogen molecules from within the air we breathe which consists of ~79% Nitrogen, 20.9% Oxygen and .01% Argon, Helium, Hydrogen, etc. Once separated, the Nitrogen is stored within a receiver tank at a low pressure, between 70 and 80 PSI. Then the Nitrogen is fed into an Air Maintenance Device(s) to maintain Supervisory Pressure within the FPS.

## *Who Manufactures the N<sub>2</sub>-Blast?*

South-Tek Systems manufactures the N<sub>2</sub>-Blast technology in Wilmington, North Carolina. Our sole focus is Nitrogen Generation and we have provided more than 8,000 Systems for small and Fortune 500 companies alike, spanning a multitude of different industries and applications. Our technology is used by one of the nation's largest snack food manufacturers to fill snack food bags with Nitrogen to better preserve its contents, the U.S. Military to purge optic lenses with Nitrogen, laboratories using Nitrogen for the in vitro fertilization process, automotive dealerships using Nitrogen to fill tires to preserve the rubber and maintain proper inflation, restaurants and bars to create the perfect blend of CO<sub>2</sub> and Nitrogen to push beer from the kegs to the faucets / taps- hence eliminating over-foaming, and power plants, which have been using our Nitrogen Generation Systems successfully for years to inhibit corrosion within boiler tubes during outages, a process very similar to inhibiting corrosion in sprinkler piping.

## *What is needed to generate Nitrogen?*

Either PSA (Pressure Swing Adsorption) or Membrane technology is used by the N<sub>2</sub>-Blast to efficiently separate the Nitrogen molecules from the air we breathe. The size of the N<sub>2</sub>-Blast and whether we utilize PSA or Membrane technology is dependent upon each individual job application. Before the separation process can begin, compressed air is required. Along with the N<sub>2</sub>-Blast, we provide (2) lines of air compressors that feed the N<sub>2</sub>-Blast with high pressure (between 125 – 150 PSI) of clean, dry, oil-free compressed air. The air compressors are sized not only to provide adequate compressed air to the N<sub>2</sub>-Blast, but to fill the largest Zone to pressure within 30 minutes (per NFPA 13 requirements).

*When does South-Tek utilize PSA versus Membrane Technology?*

We utilize Membrane Technology in our smaller N<sub>2</sub>-Blast systems because membrane technology has a simpler air flow design, is easier to service, and can be wall-mounted requiring less space within a Riser Room. Conversely, in larger Fire Protection Systems that require more Nitrogen to compensate for the “acceptable leak rate”, (per NFPA 13 / 25) we utilize PSA (Pressure Swing Adsorption) technology. This is because PSA technology is more efficient when generating greater quantities of Nitrogen. The “Air In” (i.e. the amount of air required from the air compressor) to “Nitrogen Out” ratio is significantly less than that of a larger Membrane system. This allows the customer to save money on the purchase and maintenance of the system, as well as on the energy costs associated with operating the air compressor.

*What different components are included with an N<sub>2</sub>-Blast System?*

There are six main components provided with each N<sub>2</sub>-Blast System. Along with the (1) N<sub>2</sub>-Blast - Nitrogen Generator, we package the (2) Patent Pending BlastOff – Leak Detection System, (3) Air Compressor, (4) Nitrogen Receiver Tank, (5) AutoPurge System, and the (6) Quick-Check - Nitrogen Purity Sensor.

*I already have an air compressor; can I use it for this application?*

It is critical that clean, dry, oil-free air is provided to the N<sub>2</sub>-Blast in order to effectively separate Nitrogen molecules from the air and ensure longevity of the system. The existing air compressor can be considered, but unless shop air with adequate filtration and dryer package is available, it is not recommended to use a pre-existing air compressor to provide feed air to the N<sub>2</sub>-Blast.

*Will the N<sub>2</sub>-Blast fill the largest Zone to pressure within 30 minutes?*

South-Tek Systems manufactures many different sized Nitrogen Generators for a multitude of different applications. Therefore, the N<sub>2</sub>-Blast can be designed in any size. Typically the “Air In” to “Nitrogen Out” ratio on our smaller N<sub>2</sub>-Blast systems (i.e. Membrane Technology) is roughly 3:1. On our larger PSA Nitrogen Generators the ratio is roughly 2:1. Accordingly, if an N<sub>2</sub>-Blast - Nitrogen Generator is sized to fill the largest Zone to pressure within 30 minutes per NFPA 13, a much larger Nitrogen Generator and a significantly larger air compressor is required. In the interest of cost, most customers size the air compressor to fulfill the 30 minute requirement and have the Nitrogen Generator provide supervisory pressure as needed.

*How long will it take to displace the Oxygen from within all piping?*

With the use of our *AutoPurge System*, Oxygen will be displaced with 98% (the minimum corrosion inhibiting Nitrogen purity level) or greater Nitrogen purity content within a timeframe of two to three weeks. Typically, the process will be on the shorter end of the spectrum on a FPS with minimal branch lines and on the higher end of the spectrum if there are a significant amount of branch lines.

### *Will Nitrogen reach all my branch lines, even the remote ones?*

South-Tek's Patent Pending *AutoPurge System* provides a low volume, constant purge of Nitrogen into the FPS. Through Computational Fluid Dynamics (CFD) modeling, it has been proven to be the most effective way to displace oxygen and ensure that high purity Nitrogen reaches all branches within the FPS. This device also assists in "drying" out residual water left behind from a hydro test.

### *Can one size N<sub>2</sub>-Blast fit all Fire Protection Systems?*

If there were absolutely no leaks within the FPS (and the air compressor was compensating for the 30 minute fill requirement), then one size N<sub>2</sub>-Blast would be sufficient. However, being that there are many fittings (i.e. seals, couplings, gaskets, ball valves, etc.) within each FPS, there is always some degree of leaks. The NFPA accepts that there will even be leaks within a new FPS. That "acceptable leak rate" is based on a pressure loss over 24 hours on new FPS and 3 hours on existing systems. This being the case, the N<sub>2</sub>-Blast must compensate for the "acceptable leak rate" on a new system along with the "acceptable leak rate" on an existing system. In doing so, South-Tek provides different sized N<sub>2</sub>-Blast Systems based on the gallons of capacity within a FPS. The more capacity within the FPS, the more Nitrogen is required to compensate for the "acceptable leak rate."

### *How does Nitrogen Inhibit Corrosion?*

The N<sub>2</sub>-Blast produces 98% or greater Nitrogen purity and introduces it to the FPS through the Air Maintenance Device. In doing so Oxygen and Moisture is displaced through the *AutoPurge System* from within the sprinkler piping. Without the electrolyte, the Corrosion Triangle (see Corrosion Triangle) is not complete and bacteria (Anaerobic and/or Aerobic) are inhibited.

### *How much space does the N<sub>2</sub>-Blast require?*

With the exception of our two largest N<sub>2</sub>-Blast Systems, most are wall mountable. The wall mountable units range in size from either 32"H x 16"W x 11"D or 42"H x 14"W x 10"D. The larger units, which are floor-mounted, measure 60"H x 26"W x 24"D. In addition to the Nitrogen Generator, the wall-mounted units require a 28 gallon Nitrogen Receiver Tank (14"Dia x 47"H) and the floor-mounted units require an 80 gallon Receiver Tank (20"Dia x 63"H)

### *Does the N<sub>2</sub>-Blast or Nitrogen Receiver Tank need to be placed within the Riser Room?*

Both the N<sub>2</sub>-Blast and Nitrogen Receiver Tank can be located anywhere within the building (maintained in a dry climate, where temperatures range from 40°F to 100°F), as long as piping can be run between those components to the Riser Room (note: the length of the piping run will determine the inner diameter of the piping required). Also, many buildings have multiple Riser Rooms. In these situations, typically a single N<sub>2</sub>-Blast System is installed and Nitrogen is then piped from one location to each Riser Room, saving cost.

*When installing the N<sub>2</sub>-Blast, what material of pipe can be used?*

Typically, the most cost-effective piping to use is black steel, however, copper, galvanized piping or braided stainless steel hosing also can be used.

*Is the N<sub>2</sub>-Blast or Nitrogen dangerous?*

The N<sub>2</sub>-Blast System poses no threat to the integrity of a Fire Protection System or the environment within the building. The system generates Nitrogen on demand at low pressure (80 PSI) as opposed to high pressure Nitrogen cylinders that store Nitrogen at 2,400+ PSI. High pressure cylinders are heavy, must be handled with extreme care and chained up at all times. Because the N<sub>2</sub>-Blast generates Nitrogen on demand, not only will you never have to worry about running out of Nitrogen again, but will no longer have to change out or maintain high pressure cylinders. Plus, unlike the Nitrogen stored within older high pressure cylinders, Nitrogen generated from the N<sub>2</sub>-Blast is very clean and pure. In fact, the Nitrogen is separated from the air you breathe. Nitrogen is an inert gas that is non-flammable and non-explosive.

*Can the N<sub>2</sub>-Blast be easily installed into a pre-existing building?*

We have designed the N<sub>2</sub>-Blast to be a “plug and play” system. Whether you are installing the system into a new or pre-existing building, the N<sub>2</sub>-Blast is designed to easily integrate into any Riser Room. Installation is simple and includes running piping from the air compressor to the N<sub>2</sub>-Blast, then piping from the N<sub>2</sub>-Blast to the nitrogen receiver tank. Finally, piping is run from the nitrogen receiver tank to the air maintenance device(s).

*What are the power requirements for the N<sub>2</sub>-Blast?*

Each N<sub>2</sub>-Blast Nitrogen Generator requires 120V/60Hz/1ph power. The power required for the air compressor varies depending upon what electrical is available on site (note: this information must be provided when ordering the system). The air compressors are available in 208/230/460V, 50/60Hz, Single or Three Phase.

*Can I protect the N<sub>2</sub>-Blast from excessive runtime due to leaks in the FPS?*

Leaks can develop within a Fire Protection System (FPS) that are often not a result of corrosion. They may stem from a faulty ball valve, coupling, etc. and will cause the air compressor to run more frequently to maintain supervisory pressure. As with any mechanical piece of equipment there are only so many hours of run time (mean time in-between failure) before the equipment will need to be repaired or replaced. Unless the air compressor can't keep up with the leak rate, the Supervisory Low Air Alarm will not be activated. In many cases, once the alarm signals it is too late and the air compressor has catastrophically failed, long before expected. Being that there is more expense associated with a Nitrogen Generation System, it is absolutely critical to be notified of leaks within the FPS that are causing the system to run more than necessary. Because of this, South-Tek Systems has developed the Patent Pending BlastOff™ - *Leak Detection System* provided exclusively with the N<sub>2</sub>-Blast. This system is integrated into the N<sub>2</sub>-Blast cabinet and will cut down on unnecessary run time, proven to significantly extend the life of the asset.

### Can the BlastOff™ be tied into the Building Monitoring System?

The BlastOff™ - *Leak Detection System* has both an internal audible alarm as well as a dry contact to be wired to the Building Monitoring System. This will send an alarm signal to the building monitoring system if the N<sub>2</sub>-Blast® detects significant leaks downstream of the air maintenance device. This Patent Pending technology ensures that the Fire Protection System is within the NFPA 13 & 25 “acceptable leak rate” plus gives you confidence that you’ll get the maximum life out of your asset, the N<sub>2</sub>-Blast® - *Nitrogen Generation System*.

### What Preventative Maintenance is associated with the N<sub>2</sub>-Blast?

Preventative Maintenance for the N<sub>2</sub>-Blast consists of three filter kits to be changed out annually. All three take less than five minutes to replace. Not only is this fast and simple, but by changing the filters on schedule you will significantly increase the life of the N<sub>2</sub>-Blast system. Note: quarterly maintenance is suggested for checking Nitrogen purity, oil levels within the air compressor, and the purge rate of each *AutoPurge System* (contact South-Tek Systems for the N<sub>2</sub>-Blast PM Schedule).

### What is the general life expectancy of the N<sub>2</sub>-Blast?

The N<sub>2</sub>-Blast will provide high purity Nitrogen for 8 - 15+ years provided that Preventative Maintenance is done as recommended by South-Tek Systems. The cleaner the “Air In” (i.e. the feed air going into the N<sub>2</sub>-Blast - Nitrogen Generator), the longer the life expectancy is of the N<sub>2</sub>-Blast.

### What do I do once the N<sub>2</sub>-Blast has reached the end of its useful life?

South-Tek offers an RMA program where any item can be shipped back and refurbished to “like new” condition. The second option is for a certified South-Tek Systems technician to travel out and refurbish the system on site. The costs to refurbish the N<sub>2</sub>-Blast are typically only 40% or less of the initial cost of the system. Once refurbished, the N<sub>2</sub>-Blast will be up and running for another 8 – 15+ years.

### Who installs an N<sub>2</sub>-Blast?

Typically, Fire Sprinkler Contractors will install the N<sub>2</sub>-Blast System. We have designed the N<sub>2</sub>-Blast to easily integrate and install into new or pre-existing structures. If requested, South-Tek can be available for system installation supervision and/or start-up assistance.

### Is South-Tek required for a N<sub>2</sub>-Blast Start-Up?

We have designed the N<sub>2</sub>-Blast to be a “plug and play” system which easily integrates into the Riser Room. There are not many differences between installing an air compressor and the N<sub>2</sub>-Blast – Nitrogen Generation System. Although we do offer startup assistance with each project, we are typically asked to attend less than 20% of them. However, should there be any questions during installation or startup, a South-Tek Systems technician is available 24 hours a day to answer questions.

### *How can I obtain Pricing for a N<sub>2</sub>-Blast?*

South-Tek Systems works through Distributors to provide the market with the N<sub>2</sub>-Blast – Nitrogen Generation System. Contact us to be connected with a Distributor in your area.

### *Why should I purchase a South-Tek Systems product?*

The N<sub>2</sub>-Blast<sup>®</sup> technology was designed so that the Building Owner, Property Manager, and the FPS Contractor/Installer can easily understand its installation, operation, and maintenance requirements. The installation procedure has been made simple with detailed, straight forward installation guides, thus requiring very little expertise over and beyond basic FPS installation understanding. Furthermore, South-Tek Systems can provide any level of installation guidance, and/or site assistance as needed by the Building Owner, Property Manager and/or FPS Sprinkler Contractor.

South-Tek Systems Customer Service is available 24 hours a day to answer any questions you may have. We have more than 8,000 systems successfully installed and operating. Our focus is purely on Nitrogen Generators and our technology is tried, tested, and proven to last. We are the source of both the design and manufacturing; hence if you need to discuss the finer points about our technology, the installation, service, a non-standard design, etc., we will provide the right answer and direction. We understand the importance of your time and resources, which is why we strive to provide the most cost-effective solutions. We're proud to offer the best warranty program, fully staffed Engineering and Service Departments, and round the clock "live" (not answering service) product support on the market.

We understand that the success of our company depends on providing reliable products and support to our customers. We look forward to introducing you to South-Tek's way of business and our team who will help to ensure a successful installation.