

Comprehensive corrosion
solutions backed by over 115
years of fire sprinkler monitoring.

POTTER CORROSION SOLUTIONS

Comprehensive corrosion solutions backed by over 115 years of fire sprinkler monitoring.

Minimizing your liability for damage caused by leaking or broken fire sprinkler pipes requires diligent corrosion monitoring. You need a resource you can trust to protect all of the sprinkler systems you design or install.

With more than 115 years of sprinkler monitoring experience, Potter is **the** trusted source for corrosion monitoring and prevention. With our comprehensive suite of corrosion solutions, you can rest assured that whether you want to protect your investment in a fire sprinkler system, or need to find a more permanent solution to a corrosion problem, Potter has the most innovative and reliable products on the market to get the job done.

Contact us for more information or visit www.pottersignal.com/corrosion/videos for step-by-step tutorials on Potter Corrosion Solutions Products.

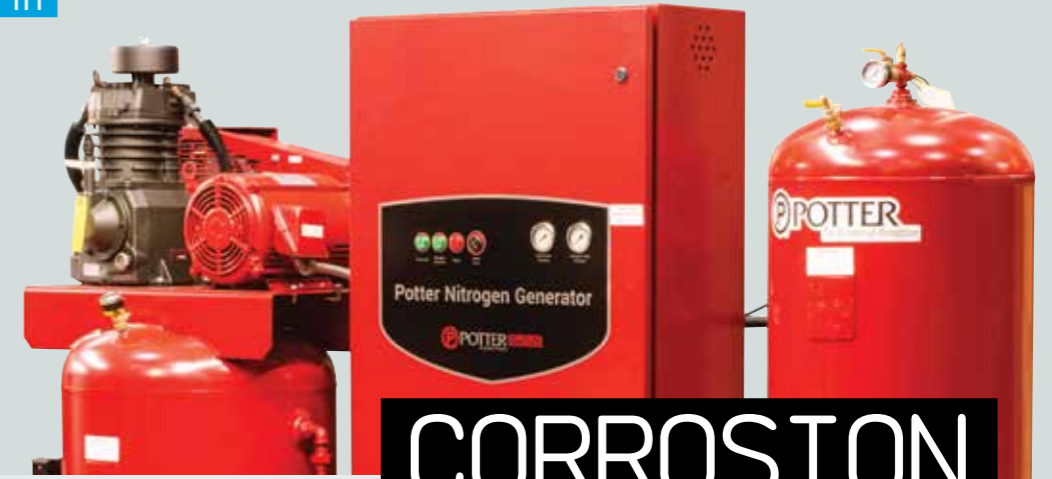
Address —
1609 Park 370 Place
St. Louis / MO / 63042

Telephone —
Customer Service / 800-325-3936
Technical Support / 866-956-1211

Email —
sales@pottersignal.com

Website —
www.pottersignal.com/corrosion

Potter: The Leader in
Fire Sprinkler
Corrosion Control



CORROSION IN SPRINKLER SYSTEMS

CORROSION IN SPRINKLER SYSTEMS

Corrosion (both oxygen and microbiologically influenced) is prevalent in fire sprinkler systems. Wet, dry, and pre-action fire sprinkler systems have seen an increase in corrosion since the late 1980s.

Several factors, such as thinner walled pipe, increased inspections and maintenance testing, and changes in fire sprinkler design have been responsible. Corrosion monitoring and mitigation is needed now more than ever before to forecast and eliminate such costly corrosion.

It may seem like replacing pipe is a simple and easy solution, but the costs of corrosion

are far greater in the long run. Replacement fire sprinkler systems can be 2 to 3 times more expensive than the initial install.

Other issues that can arise from corrosion in fire sprinkler systems:

- Temporary shutdowns
- Loss of property
- Loss of production
- Personal injury
- Total system replacements

How common is corrosion? A VdS study showed:

Wet Systems	Dry & Pre-Action Systems
<ul style="list-style-type: none">• In 25 years, 35% of fire sprinkler systems have significant corrosion issues	<ul style="list-style-type: none">• In only 12½ years, 73% of fire sprinkler systems have significant corrosion issues

CORROSION TESTING & MONITORING

Corrosion Testing

Corrosion in sprinkler systems comes in many forms. Knowing what you are up against allows you to proactively deal with issues. Potter has a full suite of corrosion testing options for every situation.

1



Bac-Pak
Bacterium Test Kit
Stock # 1119172

- Easy do-it-yourself test
- Tests for the three most common MIC causing bacteria
- Water in vial changes to color of lid if bacteria present

2



WTK
Water Test Kit
Stock # 1117178

- Complete MIC Analysis through water sample
- Kit comes with prepaid return label (Domestic Only)
- Complies with NFPA 13, requiring MIC testing of the water supply

3



Sludge Kit
5-Year Deposit
Sludge Test Kit
Stock # 1119174

- Designed to conform to the requirements of NFPA 25 requiring testing for MIC if slime or tubercles are discovered during an internal inspection
- Kit comes with prepaid return label (Domestic Only)
- Can be used as an alternative to NFPA 25 requirement for a 5 year assessment of internal condition of piping

4



Pipe Test
Pipe Test Kit
Stock # 1119184

- Full analysis of section of sprinkler piping to find root cause of corrosion or failure
- MIC analysis of deposits on pipe
- Prepaid Shipping (Domestic Only)
- Laboratory analysis of pipe sample

Corrosion Monitoring

Knowing what is going on in your sprinkler system can prevent problems before they start. Potter's line of corrosion monitoring products let you see the corrosion activity going on inside your pipe to better help save your investment.

1



PCMS-RM
Potter Corrosion
Monitoring Station
Riser Mount
Stock # 1119172

- Installed on a fire sprinkler riser to monitor corrosion in the system
- Suitable for wet, dry, or pre-action systems
- Designed to simulate conditions within the fire sprinkler system
- Easily accessed for servicing and monitoring of test specimens without interruption to fire protection

2



PCMPK
Potter Corrosion
Monitoring
Probe Kit
Stock # 1117178

- Provides notification to the fire sprinkler administrator when there may be an excessive amount of corrosion taking place in the sprinkler piping
- Can be used to indicate when it is time to remove coupons from the monitoring station for analysis

WET SYSTEM CORROSION SOLUTIONS

Air Venting

A common misconception is that the piping array of a wet fire sprinkler system is completely full of water. However, research shows fire sprinkler systems can actually be up to 70% trapped air. If the trapped air in a wet fire sprinkler system is not properly eliminated, an environment for accelerated corrosion occurs, and the life expectancy of that fire sprinkler system decreases. This trapped air has caused so much damage, NFPA 13 now requires all sprinkler systems have a way to vent this corrosive oxygen out of the sprinkler system.

1



PAV
Automatic Air
Release
Stock # 1119720

- Provides automatic venting of trapped air in fire sprinkler systems
- Limits oxygen corrosion when placed at the high point(s) of the systems
- UL listed and FM approved
- Meets NFPA 13 Requirements!

2



PAAR-B
Automatic Air
Release with
Drip Pan
Stock # 1030001

- Provides automatic venting of trapped air in fire sprinkler systems
- Includes automatic shutoff with dry contact and collection pan
- Able to be electronically monitored
- Limits oxygen corrosion when placed at the high point(s) of the systems
- UL listed and FM approved, Patented
- Meets NFPA 13 Requirements!

Nitrogen for Wet Systems

Using nitrogen for corrosion control is a well established practice for dry and pre-action systems. We take the same approach with wet systems by purging oxygen and replacing it with nitrogen. This leads to similarly great results!

1



AquaN₂ Kit
Nitrogen Injection Manifold
Stock # 1119500

- Quickly removes oxygen from wet pipe systems, significantly reducing corrosion
- Ensures that all trapped gas pockets are 98%+ Nitrogen Gas
- Easy installation and maintenance
- Designed for fast Nitrogen fill, eliminating any necessary downtime of fire sprinkler system
- Includes both Nitrogen Injection Manifold and Quick X-haust Manifold

Auto-Test Flowswitch

Prevent fresh oxygenated water from entering your sprinkler system with Potter's automatic test flow switch.

1



VSR-AT
Auto-test waterflow alarm
switch
Stock # 1119500

- Performs functional test without discharging water
- Reduces corrosion by eliminating the introduction of fresh water and air
- Conserves water and eliminates environmental concerns from sprinkler system discharge

POTTER NITROGEN GENERATORS

Nitrogen Generation

The easiest and most effective way to prevent corrosion in dry pipe systems is to eliminate the oxygen and replace it with nitrogen. Studies show that nitrogen can extend the life of a dry pipe system up to **5.3 times!**

Potter's Nitrogen Generator Systems provide a low cost, reliable, and efficient method of producing up to 99% pure nitrogen on-site at the point of usage. The Potter Nitrogen Generator is specifically designed for use in fire protection sprinkler systems to slow the oxygen corrosion process by filling system piping with clean, dry, nitrogen. The Potter Nitrogen Generator is a pre-engineered, turn-key system ready to connect to a new or existing system including everything needed to operate at peak efficiency.

Integrated Systems

Potter's line of Integrated Nitrogen Systems is designed specifically for smaller dry and pre-action fire sprinkler systems. When space is a premium, these units easily fit where others can't. Just pipe directly from the nitrogen outlet to the air maintenance device to start protecting the system from corrosion.

All Integrated Systems Include:

- Complete skid mounted unit – easy plug and play installation
- Premium nitrogen membrane
- UL 508A listed industrial control panel
- Requires only one power connection
- Built-in Programmable Logic Controller for leak detection and air bypass alarm systems
- Includes all filters, relief valves, automatic drains and gauges
- Form C dry contacts for Building Management System (BMS) notification



NGP-300D

- Integrated 3/4 HP oil-less air compressor needed for NFPA 13 required 30 minutes fill for 300 gallon system at 40 PSI
- Handles up to 500 gallons of total sprinkler system capacity*
- 20 gallon air tank and 20 gallon nitrogen tank
- Fits through standard 32" door

NGP-500D

- Integrated 1 HP oil-less air compressor needed for NFPA 13 required 30 minutes fill for 500 gallon system at 40 PSI
- Handles up to 1200 gallons of total sprinkler system capacity*
- 20 gallon air tank and 30 gallon nitrogen tank
- Fits through standard 32" door

NGP-1000D

- Integrated 2 HP oil-less air compressor needed for NFPA 13 required 30 minutes fill for 1000 gallon system at 40 PSI
- Available in three different membrane packages: M1 (1,200 gallon capacity*), M2 (3,000 gallon capacity*) and M3 (5,000 gallon capacity*)
- 30 gallon air tank and 30 gallon nitrogen tank

*Based on NFPA 13 allowable leak rates for a new single sprinkler system. Existing systems with larger leak rates may vary. Please consult Potter for unit selection.

Modular Systems

Potter's Nitrogen Generators are the world class leader in providing dependable nitrogen to dry and pre-action sprinkler systems. Our fully modular line of products allows us to design flexible units for multiple large dry and pre-action systems. Each modular system comes with three skids: air tank and compressor, nitrogen cabinet, and nitrogen storage tank.



NGP-2200D

- 7.5 HP lubricated air compressor needed for NFPA 13 required 30 minute fill for 2,200 gallon system at 40 PSI
- Available in four different membrane packages: M2 (3,000 gallon capacity*), M3 (5,000 gallon capacity*) M4 (9,500 gallon capacity*) and M5 (16,000 gallon capacity*)
- Premium nitrogen membrane
- UL 508A listed industrial control panel
- Built-in Programmable Logic Controller for leak detection and air bypass alarm systems
- Form C dry contacts for Building Management System (BMS) notification
- 80 gallon air tank and 30 or 80 gallon nitrogen tank (depending on membrane selection)
- Includes all filters, relief valves, automatic drains and gauges

Nitrogen Accessories

In order to combat corrosion in dry and pre-action systems, it is important that dry 98%+ pure nitrogen is delivered throughout the entire sprinkler system. The Potter IntelliPurge® Nitrogen Purge Valve (INS-PV) offers the latest in Nitrogen Purging technology by consistently monitoring and controlling the purging process. The INS-PV is equipped with a long lasting nitrogen sensor that allows end of the line monitoring for each fire sprinkler system. Utilizing a custom control module, the INS-PV is able to detect when the system has reached the correct nitrogen level. This limits the run time on the nitrogen generator compressor, while ensuring the proper levels of corrosion control.

1



NGP-SPV

Self-Purging Valve Kit
Stock # 1119784

- Displaces corrosive oxygen from the system
- Ensures high purity nitrogen is equally distributed throughout the system
- Delivers up to 99% nitrogen throughout all branch lines

2



INS-PV

IntelliPurge® Nitrogen Purge Valve
Stock # 1119478

- Consistent Nitrogen Level Monitoring – Local Display
- Intelligent Control – Stops purging as soon as the system is protected
- BMS connectivity and notification
- Advanced IntelliDry Purging Method – Designed for freezer applications, where moisture is not an option
- Simple Installation – Attached to our Potter Purge Valve, no wall mounting or bracing required
- Power Required: 24V AC/DC
- NEMA 2 Enclosure
- Optional IntelliPurge® Remote Annunciator (INS-RA) allows convenient control of multiple INS-PV units
- Delivers up to 99% nitrogen throughout all branch lines

3



INS-RA

IntelliPurge® Remote Annunciator for INS-PV
Stock # 1119476

- Up to 27 INS-PV purge valves can be networked together to allow for remote control
- Records history of all purging events, nitrogen samples, and faults for all networked INS-PV units
- 24V DC

Metal, water, and oxygen:
A recipe for corrosion.



∨ A RECIPE FOR CORROSION

METAL WATER OXYGEN

Because fire sprinkler systems are comprised of metal, water, and oxygen they are the perfect environment for corrosion. If corrosion mitigation is not practiced, the metal pipes will degrade, deteriorate, and eventually fail.

Oxygen related corrosion is by far the most prevalent, accounting for up to 90% of all corrosion failures.

Unsure if your systems are experiencing corrosion?
Chances are they already have.

WHAT IS CORROSION?





MICROBIOLOGICALLY
INFLUENCED CORROSION

MIC CORROSION

Microbiologically Influenced Corrosion (MIC) has recently been discovered as a contributing factor in the corrosion of wet, dry, and preaction fire sprinkler systems.

Symptoms of MIC were long considered to be "normal" for fire sprinkler systems. However, we now know that pinhole leaks, rotten egg smelling water, black water, and tubercles are warning signs and can be mitigated.

Bacteria can increase the effects of general corrosion in fire sprinkler systems and is found in approximately 10 to 30% of corrosion failures. This is called Microbiologically Influenced Corrosion (MIC).

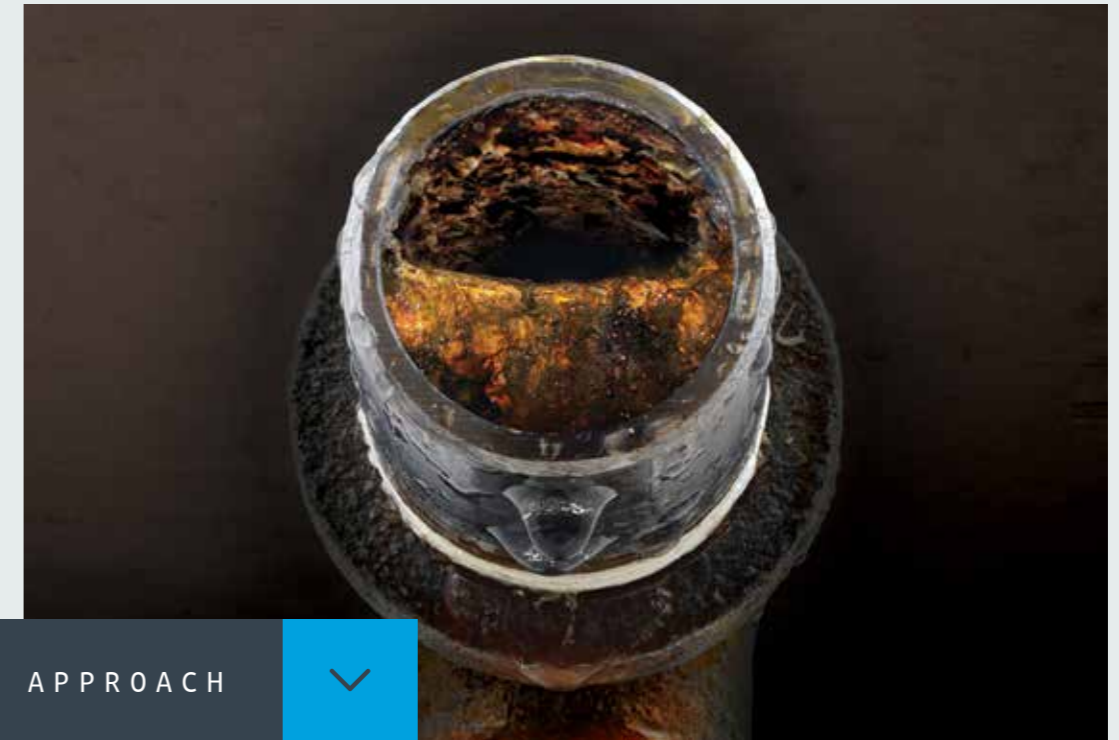
MIC is a type of corrosion that is initiated by microbiological life forms (bacteria) and often occurs in fire sprinkler systems. Certain species of bacterium aid in the creation of corrosion cells and thus the propagation of the corrosion process.

Collected data shows no indication that MIC is restricted to a particular geographical area, as MIC was evident in components sampled from different regions in North America and abroad.

There is also no evidence that MIC is restricted to certain types of pipes or sprinkler components. MIC was prevalent in corrosion cases involving both black steel and

galvanized pipe, in varying pipe schedules, and even in copper piping. It has also been found in sprinkler heads, flexible steel hose, and other sprinkler components.

There are several theories as to why there has been an increase in Microbiologically Influenced Corrosion (MIC) in fire sprinkler systems. One such theory states that as the popularity of lower schedule piping has increased, so has the speed with which MIC can harm a pipe system. The National Fire Protection Association (NFPA) is addressing the MIC problem with changes in NFPA 13 & 25.



OUR APPROACH

Corrosion, though often hidden, does not have to go unnoticed. With proper testing, treatment, and monitoring, corrosion can be mitigated.

Testing / Forms of corrosion including MIC and oxygen corrosion threaten the functionality of fire sprinkler systems. While these systems are built to last, deterioration remains inevitable. Recent studies have shown that, if not properly maintained, corrosion causes a steady decline in fire sprinkler system performance. Testing for corrosion symptoms will extend the life of a fire sprinkler system.

Treatment / Potter takes a proactive approach to corrosion treatment. We understand the need to protect and extend the life of an investment and we meet those demands with industry leading technology. Depending on the system type (wet or dry), Potter has a variety of options available to alleviate corrosion no matter the budget.

Monitoring / Prevention is the least expensive form of maintenance when it comes to protecting a fire sprinkler system. At Potter, we understand this and offer a wide variety of cost-effective, proven solutions to monitor an investment. From monitoring the fire sprinkler riser with the Potter Corrosion Monitoring Station (PCMS-RM), to the Potter Corrosion Monitoring Probe (PCMPK) tied directly to the building fire alarm panel alerting you of corrosion with a supervisory or trouble signal, Potter will protect your fire sprinkler system every step of the way.

NFPA 25, 2014

NFPA 25, 2014

NFPA 13, 2016

14.2.1

14.2.1.3

24.1.5.1

An assessment of the internal condition of piping shall be conducted...

...on a frequency determined by 14.2.1.1 or 14.2.1.2 for the purpose of inspecting for the presence of foreign organic and inorganic material.

It also allows for alternative examination methods such as A.14.2.1 "A laboratory analysis of water samples obtained from the fire protection system, combined with collecting and inspecting solid material from fire protection system water discharged from a main drain, and an inspector's test connection, can provide an indication of the presence of corrosion, MIC, and/or foreign materials."

Potter's Solution:

5 Year Deposit / Sludge Test Kit



Tubercules or slime, if found, shall be tested...

...for indications of microbiologically influenced corrosion (MIC).

Potter's Solution:

5 Year Deposit / Sludge Test Kit



Water supplies and environmental conditions shall be evaluated...

for the existence of microbes and conditions that contribute to Microbiologically Influenced Corrosion (MIC).

Potter's Solution:

Potter Water Test Kit (WTK)



In recent years, studies have shown that corrosion causes a steady decline in a fire sprinkler system if not properly maintained.

Symptoms of corrosion include pinhole leaks, smelly water, black water and tubercles (mounds on pipe wall).

These symptoms have long been considered normal for fire sprinkler systems. Unfortunately, these "normal" conditions cost the industry millions of dollars annually. There are many other signs of corrosion; however most will generally involve a closer look at the system.

Potter offers several very simple, non-invasive methods in which to test your system and provide **answers to 3 very important questions:**

- 1 Do you have corrosion in your system?
- 2 What type of corrosion do you have in your system?
- 3 How should you handle any corrosion you may have in your system?



DRY SYSTEM CORROSION SOLUTIONS

AN INERT SOLUTION

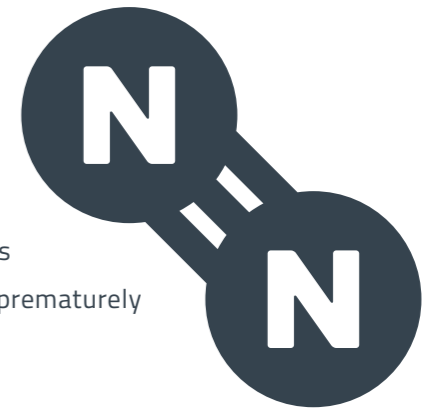


Corrosion flourishes in dry and pre-action systems because air compressors supply unlimited oxygen and water.

Trapped water from hydrostatic testing, combined with this humid air creates a perfect habitat for corrosion. It's easy to see why dry and pre-action systems are failing prematurely and costing significant maintenance expenses.

The solution?

[Nitrogen: An Inert Gas](#)



OUR RESEARCH

HOW DOES NITROGEN WORK?



Earth's atmosphere—the air we breathe—is composed of 78% nitrogen and 21% oxygen.

While oxygen is great for people, it is unfortunately very reactive with metals. When oxygen reacts with metals, such as steel pipe, the process is called oxidation. This oxidation of metal is what leads to the orange/red corrosion (rust) you see in fire sprinkler pipes.

Nitrogen, on the other hand, is a stable element. It is an inert gas. That means it does not react with metals. Thus, no oxidation or rust occurs! The key to this is removing that 21% oxygen from inside the fire sprinkler piping and replacing it with pure nitrogen.

No oxygen, no problems



Even though air contains the problem (oxygen), it also contains the solution (nitrogen). Nitrogen is the perfect substitute for oxygen. It is inert, globally available, and in an inexhaustible supply.

Nitrogen Generators take the air around us and separate out the oxygen. Up to 99% pure nitrogen is then pumped into the sprinkler system to disperse the oxygenated air.

No water, no problems



While oxygen is a chief contributor to corrosion, so is water. A nitrogen generator offers the added benefit of injecting dry nitrogen into the system. The nitrogen delivered to the system has an amazingly low dew point of -58 degree F. Talk about drying power!

Since corrosion requires all three ingredients (water, oxygen and metal), removing both the water and the oxygen has a two-fold effect.

Potter has extensively tested nitrogen for corrosion control in dry and pre-action systems. Years of laboratory experience and real life application have concluded that nitrogen can extend the life of sprinkler systems up to:

5.3X!

What About Galvanized Pipe?

Unfortunately after extensive testing and real life application, the corrosion resistance of galvanized pipe in the fire protection market does not offer additional corrosion benefits. Black steel with nitrogen produces superior results.

For more information on the research visit: www.pottersignal.com/nitrogen/research

FM Recommended!

"Fill dry pipe or preaction systems with nitrogen as supervisory gas (e.g., use on-site nitrogen generator) to mitigate galvanized steel pipe corrosion."

— FM Global Research Technical Report, "Corrosion and Corrosion Mitigation in Fire Protection Systems"

20 Month Pipe Test



20 Month Pipe Test with Air

20 Month Pipe Test with 98% Nitrogen

All Potter Nitrogen Generators are made and manufactured in the United States.

PRINCIPLES OF OPERATION

Potter's Nitrogen Generator Systems provide a low cost, reliable, and efficient method of producing up to 99% pure nitrogen on-site at the point of usage. No need for changing bottles! The Potter Nitrogen Generator is specifically designed for use in Fire Protection Sprinkler systems to slow the oxygen

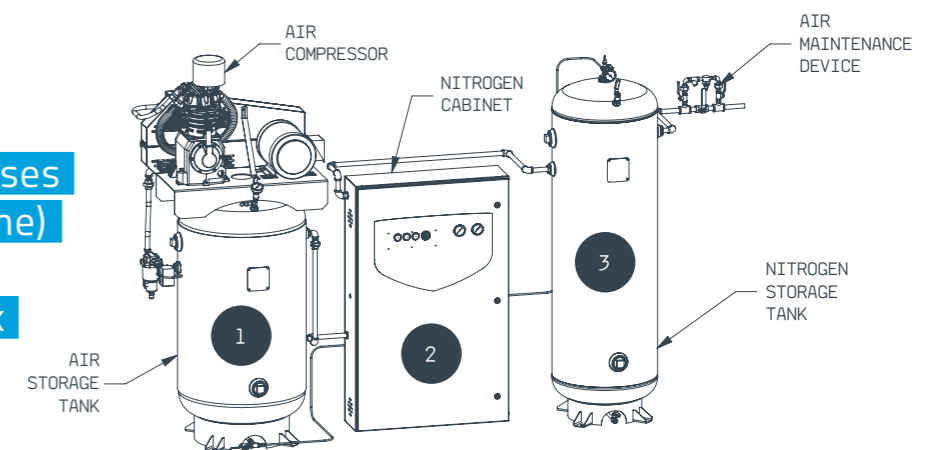
corrosion process by filling system piping with clean, dry, nitrogen. The Potter Nitrogen Generator is a pre-engineered, turn-key system and is ready to connect to a new or pre-existing pipe system. It includes everything needed to operate at peak efficiency.

The most dependable way to deliver nitrogen to your sprinkler system!



Nitrogen Generators have 3 main components:

- 1 Air compressor and tank
- 2 Nitrogen cabinet (houses the nitrogen membrane)
- 3 Nitrogen storage tank



Steps in the nitrogen generation process:

1. Air is compressed from the atmosphere and pressurized through a high pressure air compressor.
2. This compressed air is then fed from the air storage tank to the nitrogen cabinet.
3. In the nitrogen cabinet the air passes through the nitrogen membrane.
4. The nitrogen membrane—using an advanced hollow fiber membrane separation process—allows the nitrogen to separate from the oxygen and any other residual gas.
5. From the membrane, up to 99% nitrogen at a -58 degree F dew point is then piped into the storage tank.
6. From the storage tank, the nitrogen is piped to an Air Maintenance Device, which is connected to the fire sprinkler system.
7. If the fire sprinkler system supervisory pressure drops, the generator resumes operation and automatically supplies high-purity, dry nitrogen.

POTTER NITROGEN GENERATORS

INTEGRATED SYSTEMS

Potter's line of Integrated Nitrogen Systems is designed specifically for smaller dry and pre-action fire sprinkler systems. When space is at a premium, these units easily fit where others can't. Just pipe directly from the nitrogen outlet to the air maintenance device to start protecting the system from corrosion.



INTEGRATED SYSTEM FEATURES

- Complete skid mounted unit - easy plug and play installation
- Premium nitrogen membrane
- UL 508A listed industrial control panel
- Requires only one power connection
- Built-in Programmable Logic Controller for leak detection and air bypass alarm systems
- Form C dry contacts for Building Management System (BMS) notification
- Includes all filters, relief valves, automatic drains and gauges

	NGP-300D	NGP-500D
Compressor Size	Integrated 3/4 HP oil-less air compressor	Integrated 1 HP oil-less air compressor
Sprinkler System Capacity	500 gallons total sprinkler system capacity*	1,200 gallons total sprinkler system capacity*
NFPA 13 - 30 minutes fill capacity	300 gallons	500 gallons
Tank Size	20 gallon air tank, 20 gallon nitrogen tank	20 gallon air tank, 30 gallon nitrogen tank
Size (HxWxD)	50" x 41" x 28" Fits through standard 32" door	53" x 41" x 28" Fits through standard 32" door
Weight	350 lbs	400 lbs
Power Supply	Available in: 115V (7.4A), 208V (3.5A), 230V (3.7A), single phase	Available in: 115V (18A), 208V (7.7A), 230V (9.0A), single phase and 208V (4.5A), 230V (4.4A), 460V (2.2A) three phase
Fire Sprinkler System Connection	1/2" Female NPT	1/2" Female NPT
Max Operating Pressure	105 PSI	105 PSI
Temperature Range	50°F (10°C) to 110°F (43°C)	50°F (10°C) to 110°F (43°C)

	NGP-1000D-M1	NGP-1000D-M2	NGP-1000D-M3
Compressor Size	Integrated 2 HP oil-less air compressor	Integrated 2 HP oil-less air compressor	Integrated 2 HP oil-less air compressor
Sprinkler System Capacity	1,200 gallons total sprinkler system capacity*	3,000 gallons total sprinkler system capacity*	5,000 gallons total sprinkler system capacity*
NFPA 13 - 30 minutes fill capacity	1,000 gallons	1,000 gallons	1,000 gallons
Tank Size	30 gallon air tank, 30 gallon nitrogen tank	30 gallon air tank, 30 gallon nitrogen tank	30 gallon air tank, 30 gallon nitrogen tank
Size (HxWxD)	54" x 44" x 32"	62" x 44" x 33"	62" x 44" x 33"
Weight	500 lbs	550 lbs	550 lbs
Power Supply	Available in: 208V (11.6A), 230V (11A), single phase and 208V (9.2A), 230V (9.2A), 460V (4.6A) three phase	Available in 208V (11.6A), 230V (11A), single phase and 208V (9.2A), 230V (9.2A), 460V (4.6A) three phase	Available in 208V (11.6A), 230V (11A), single phase and 208V (9.2A), 230V (9.2A), 460V (4.6A) three phase
Fire Sprinkler System Connection	1/2" Female NPT	1/2" Female NPT	1/2" Female NPT
Max Operating Pressure	105 PSI	105 PSI	105 PSI
Temperature Range	50°F (10°C) to 110°F (43°C)	50°F (10°C) to 110°F (43°C)	50°F (10°C) to 110°F (43°C)

*Based on NFPA 13 allowable leak rates for a new single sprinkler system. Existing systems with larger leak rates may vary. Please consult Potter for unit selection.

MODULAR SYSTEMS

Our modular line of Nitrogen Generators allows us to design a unit specifically for any fire sprinkler system; while ensuring that a unit economically meets all corresponding NFPA requirements for fire sprinkler systems. These units are typically for larger dry systems or for applications where several sprinkler systems will be operated by one unit.



MODULAR SYSTEM FEATURES

- Form C dry contacts for Building Management System (BMS) notification
- Includes all filters, relief valves, automatic drains and gauges
- Built-in Programmable Logic Controller for leak detection and air bypass alarm systems
- UL 508A listed industrial control panel
- Premium nitrogen membrane

	NGP-2200D-M2	NGP-2200D-M3
Compressor Size	7.5 HP lubricated air compressor	7.5 HP lubricated air compressor
Sprinkler System Capacity	3,000 gallons total sprinkler system capacity*	5,000 gallons total sprinkler system capacity*
NFPA 13 - 30 minutes fill capacity	2,200 gallons	2,200 gallons
Tank Size	80 gallon air tank, 30 gallon nitrogen tank	80 gallon air tank, 30 gallon nitrogen tank
Compressor Package Size (HxWxD) and Weight	75" x 34" x 29" 500 lbs	75" x 34" x 29" 500 lbs
Nitrogen Cabinet Size (HxWxD) and Weight	48" x 30" x 11" 200 lbs	48" x 30" x 11" 200 lbs
Nitrogen Tank Size (HxØ) and Weight	45" x 16" 125 lbs	45" x 16" 125 lbs
Power Supply	Available in: 208V (13.3A), 230V (12.4A), 460V (6.2A) three phase	Available in 208V (13.3A), 230V (12.4A), 460V (6.2A) three phase
Max Operating Pressure	105 PSI	105 PSI
Temperature Range	50°F (10°C) to 110°F (43°C)	50°F (10°C) to 110°F (43°C)

	NGP-2200D-M4	NGP-2200D-M5
Compressor Size	7.5 HP lubricated air compressor	7.5 HP lubricated air compressor
Sprinkler System Capacity	9,500 gallons total sprinkler system capacity*	16,000 gallons of total sprinkler system capacity*
NFPA 13 - 30 minutes fill capacity	2,200 gallons	2,200 gallons
Tank Size	80 gallon air tank, 80 gallon nitrogen tank	80 gallon air tank, 80 gallon nitrogen tank
Compressor Package Size (HxWxD) and Weight	75" x 34" x 29" 500 lbs	75" x 34" x 29" 500 lbs
Nitrogen Cabinet Size (HxWxD) and Weight	48" x 30" x 11" 200 lbs	72" x 30" x 15" 250 lbs
Nitrogen Tank Size (HxØ) and Weight	70" x 20" 200 lbs	70" x 20" 200 lbs
Power Supply	Available in: 208V (13.3A), 230V (12.4A), 460V (6.2A) three phase	Available in 208V (13.3A), 230V (12.4A), 460V (6.2A) three phase
Max Operating Pressure	105 PSI	105 PSI
Temperature Range	50°F (10°C) to 110°F (43°C)	50°F (10°C) to 110°F (43°C)

*Based on NFPA 13 allowable leak rates for a new single sprinkler system. Existing systems with larger leak rates may vary. Please consult Potter for unit selection.

NITROGEN PURGE VALVES



In order to provide high purity nitrogen throughout the sprinkler system, the entrapped oxygenated air needs to be removed. The easiest way to remove that oxygen is to purge that system with nitrogen. In order to remove the oxygen, there must be a purge device installed at the far point of the system to allow it to escape. Potter has two options available that, combined with your Potter Nitrogen Generator, ensure your system is full of high purity nitrogen.

1



NGP-SPV

Self-Purging Valve
Stock # 1119784

The Potter Nitrogen Self Purge valve (NGP-SPV) purges corrosive oxygen from a fire sprinkler system while maintaining adequate system pressure. Potter's Self Purge Valve is the simple way to ensure nitrogen is equally distributed throughout the fire sprinkler system. When the nitrogen generator is in operation, the purge orifice automatically bleeds out the oxygen as well as the residual moisture in the system. After a set number of days, simply return to the purge valve and test the nitrogen purity exiting the system using the sampling port. Once the system has reached the desired purity, close the ball valve. No electrical connections are required.

2



INS-PV

IntelliPurge® Nitrogen
Purge Valve
Stock # 1030001

INS-RA

IntelliPurge® Remote
Annunciator for INS-PV
Stock # 1030001

The INS-PV Potter IntelliPurge® Nitrogen Purge Valve is the newest and most advanced technology available to purge corrosive oxygen from a fire sprinkler system. Potter's INS-PV improves on the NGP-SPV by doing all the work itself. Simply install the INS-PV at a remote point in the fire sprinkler system and start the purge cycle. The built in nitrogen analyzer samples the exiting gas, providing up to date information on the nitrogen levels in the fire sprinkler system. Once the INS-PV has measured that the fire sprinkler system has reach 98% nitrogen, the unit automatically stops purging and signals a successful purge. Even after the system has stopped purging, the INS-PV periodically samples the gas within the sprinkler system, ensuring that the fire sprinkler system is at 98% nitrogen and the fire sprinkler system is protected. Dry contacts are provided for BMS notification. Using the optional INS-RA Remote Annunciator up to 27 INS-PV units can be networked together, allowing for large nitrogen applications to be easily controlled and monitored from one convenient location.

3



WET SYSTEM CORROSION SOLUTIONS

WET SYSTEM TREATMENT



Corrosive oxygen in your wet system

It may not seem possible that a new sprinkler system can produce pinhole leaks in less than two years, but it is. The corrosive effects of oxygen trapped in your wet system could be more costly than you think.

Where does the oxygen come from?

A common misconception is that the piping array of a wet fire sprinkler system is completely full of water. However, research shows that fire sprinkler systems can actually be up to 70% trapped air.

If the trapped air in a wet fire sprinkler system is not properly eliminated, an environment for accelerated corrosion occurs, and the life expectancy of that fire sprinkler system decreases.

Trapped Air Causes:

- Increased generalized corrosion (more oxygen)
- More conducive environment for MIC growth
- Unnecessary false flow alarms

What about dissolved oxygen?

The amount of oxygen in water is around 10 parts per million, or .001%. The amount of oxygen in trapped air is 210,000 parts per million, or 21%. Removing the dissolved oxygen from water is negligible when compared to the amount of oxygen in the trapped air pockets. **Focusing on removing the trapped air is the number one priority** and the most cost effective method.

Solution? Automatic Air Vents.

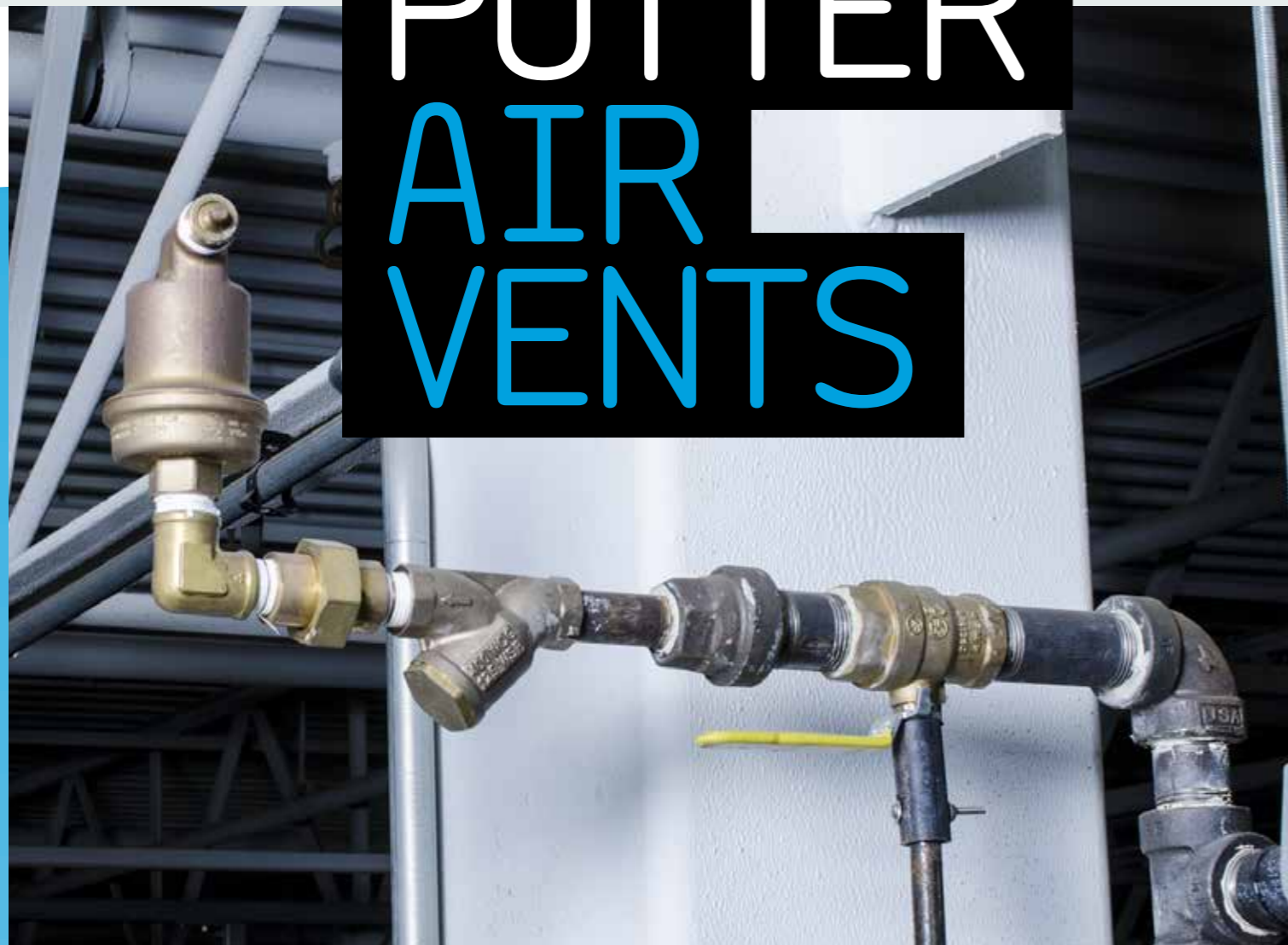
Automatic air vents are the easiest and most cost effective solution to eliminate trapped air pockets in your sprinkler system. Simply install a Potter PAAR-B or Potter PAV at the high point on your sprinkler system most remote from the riser. As the system fills, the corrosive oxygen can escape and the system can fill with water.

FM Recommended

"Minimizing air pockets in wet pipe system is recommended. An air release valve which is capable of venting trapped air in the pipe can mitigate this kind of corrosion."

— FM Global Research Technical Report, "Corrosion and Corrosion Mitigation in Fire Protection Systems"

POTTER AIR VENTS



Code Required

NFPA 13 2016 7.1.5

Air Venting. A single air vent with a connection conforming to 8.16.6 shall be provided on each wet pipe system utilizing metallic pipe.

Potter's Automatic Air Vents are the **ONLY UL listed and FM approved automatic air vents** for fire sprinkler systems. Designed to reduce the amount of air in a fire sprinkler system with little or no maintenance, they are the ideal choice for meeting NFPA 13 7.1.5.

1



PAV
Automatic Air Release
Stock # 1119720

The Potter Air Vent provides an easy and cost effective way to eliminate trapped air in a fire sprinkler system. Installed at a high point in a sprinkler system the PAV automatically allows trapped air to be released when the system fills with water. Once the water reaches the vent, the PAV closes. No need to open and close remote valves, saving you time and money.

2



PAAR-B
Automatic Air Release with Drip Pan
Stock # 1030001

The Potter Automatic Air Release Valve improves on the PAV by adding additional safety features. With a built in automatic shutoff and collection pan, the PAAR-B is designed to go into locations where failures are not an option. Typical applications include over computers, above drop ceiling or over expensive merchandise.

WET SYSTEM INERTING

Because nitrogen is an inert gas, it does not react with the metal in a fire sprinkler system. Even in the presence of water, no oxidation or rust will occur.

Nitrogen for Wet Systems

Using Nitrogen for corrosion control is a well established practice for dry and pre-action systems. Taking the same concept of purging out the oxygen, replacing it with nitrogen, and applying it to wet systems leads to similarly great results. Simply pre-filling the wet sprinkler system with high purity nitrogen changes the air pockets to nitrogen pockets.

Research shows on average, systems with 99% nitrogen pockets have an increased life expectancy of

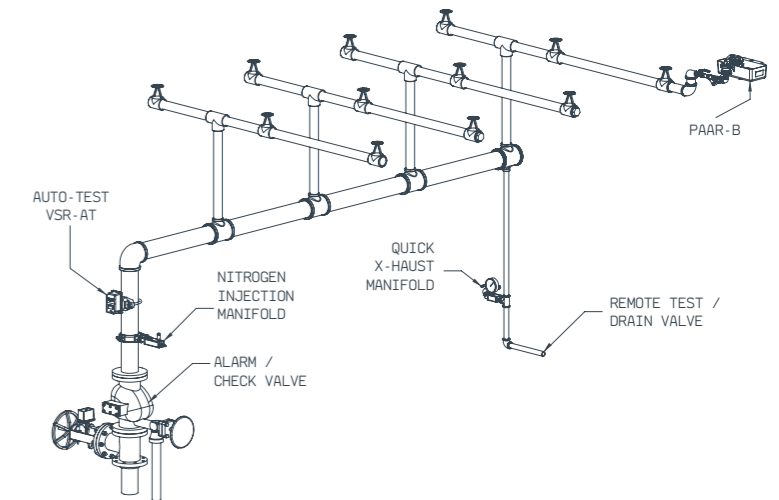
2.8X that of systems with air pockets.

Potter's AquaN₂ Method

The Potter AquaN₂ Kit is designed to quickly and effectively purge oxygenated air from wet fire protection systems and replace it with high purity nitrogen gas. Reducing oxygen levels in wet fire protection systems is essential in protecting them from the effects of oxygen related corrosion often found at the air water interface in the fire sprinkler piping.

How it works

Using the AquaN₂ Kit, which includes the Nitrogen Injection Manifold (NIM) and the Quick X-Haust Manifold (QXM), in combination with a Potter Automatic Air Release (PAAR-B) or Potter Air Vent (PAV) and a nitrogen source, can easily remove up to 99.9% of oxygen from a wet system.



▶ Watch how-to videos on our wet system inerting system.
Visit: www.PotterAquaN2.com

1



AquaN₂ Kit
Nitrogen Injection Manifold
Stock # 1119500

Potter's AquaN₂ kit comes with both the Nitrogen Injection Manifold (NIM) and the Quick X-Haust Manifold (QXM). When used in accordance with the purging procedure, nitrogen becomes equally distributed throughout the wet pipe sprinkler system. The NIM has a built in pressure relief valve to ensure the nitrogen safely enters the sprinkler system at an appropriate level. The QXM comes with a pressure gauge to ensure the nitrogen gas reaches the necessary pressure levels to purge. Both the NIM and QXM come with FM approved ball valves for sprinkler systems.

2



NCPR
Nitrogen Cylinder Pressure Regulator
Stock # 1119501

The NCPR is a high quality all brass pressure regulator designed to regulate pressure down from several thousand PSI to 40 PSI. This ensures that nitrogen enters the sprinkler system at a safe pressure level. It also includes a 10 ft rubber hose and quick disconnect which mounts easily to the NIM.

3



NGP-PSN2
Portable Nitrogen Analyzer
Stock # 1119796

The Potter Portable Nitrogen Analyzer is a quick and easy way to determine the exhaust gas nitrogen purity levels. Hold the unit next to the QXM and the Portable Nitrogen Analyzer will ensure that 98%+ nitrogen is flowing out of your system.

Prevent
the introduction
of water

AUTO-TEST FLOW SWITCH

Test your flow switch, without the need to flow water!

The VSR-AT is a UL Listed and FM Approved flow switch that can be tested without flowing water—and money—down the drain. In addition to reducing the time and cost associated with testing multiple flow switches in a facility, the AutoTest feature helps to conserve water and reduce corrosion in fire sprinkler systems.

Here's how it works: the VSR-AT is our standard flow switch except the pneumatic retard has been replaced with an electronic retard that includes a small motor programmed with the AutoTest software. When the AutoTest feature is initiated, the motor will move the trip stem/paddle assembly simulating the flow of water. The motor will hold the trip stem assembly in this position until the retard time expires. The motor will then release the trip stem and the software will measure the time it takes for the trip stem assembly to return back to the original position. This will ensure that the trip stem / paddle assembly is still in place and that there is water in the pipe.



After a successful test, the VSR-AT will go into alarm for a few seconds to activate the local notification appliance as well as the fire alarm panel. If there was no water in the pipe or the paddle was missing from the device, the device would show an unsuccessful test. This would be indicated by a flashing LED on the test switch and the waterflow zone on the fire panel would be put in a trouble condition.

In the event of an actual fire scenario, when water flows through the sprinkler system the flow switch will operate when the retard expires the same as a standard flow switch.

For more information and videos go to pottersignal.com/VSR-AT



VSR-AT

- Remotely tests flow switch without flowing water
- Initiates test using ATC or Fire Alarm Panel
- Ensures compliance regarding:
 - Waterflow
 - Delay Time
 - Paddle Integrity
- Conserves water – contributes to LEED's Section 3.1 & 3.2
- Reduces corrosion – no new oxygen when testing
- Preserves chemical treatments
- No environmental concerns over sprinkler water discharge
- Replaces standard flow switch
- UL listed, FM approved



FM Recommended

"Note that control of the frequency of introducing oxygenated fresh water into the piping system can also mitigate corrosion of wet pipe systems."

— FM Global Research Technical Report, "Corrosion and Corrosion Mitigation in Fire Protection Systems"

The
importance
of monitoring.

Prevention is the least expensive form of maintenance for protecting your fire sprinkler system. At Potter, we understand this fact and offer a wide array of cost-effective, proven solutions to monitor your investment. From monitoring the fire sprinkler riser with the Potter Corrosion Monitoring Station (PCMS-RM) to the Potter Corrosion Monitoring Probe (PCMPK) tied directly to the building fire alarm panel alerting you of corrosion with a supervisory or trouble signal, Potter will protect your fire sprinkler system every step of the way.

CORROSION MONITORING



Code Required

NFPA 13 2016 24.1.5.2

Water supplies and environmental conditions shall be evaluated for conditions that contribute to unusual corrosive properties. Where conditions are found that contribute to unusual corrosive properties, the owner(s) shall notify the sprinkler system installer and a plan shall be developed to treat the system using one of the following methods:

(4) Install corrosion monitoring station and monitor at established intervals.

The solution: Potter Corrosion Monitoring Station (PCMS-RM) along with Corrosion Monitoring Probe Kit (PCMPK)

1



PCMS-RM

Potter Corrosion
Monitoring Station
Riser Mount
Stock # 1119546

The Potter Corrosion Monitoring Station is designed to be placed at the riser of a fire sprinkler system. Inside the Monitoring Station are corrosion coupons that mimic the common metals found in a wet sprinkler system: copper and black steel. The corrosion coupons corrode at a rate similar to what your pipes are experiencing. To check your corrosion rates, simply send in the coupons to the Potter Lab. A full report of your corrosion rates will be sent back, explaining your results.

2



PCMPK

Potter Corrosion
Monitoring
Probe Kit
Stock # 0090180

The Potter Corrosion Monitoring Probe Kit is an automatic way to determine the corrosion rates in your sprinkler system. Designed to have a 5 year life expectancy, if the probe fails before it reaches 5 years of service, it indicates that excessive corrosion is occurring in your system.

NITROGEN PROJECT FORM

Customer Information:

Customer: _____
Address: _____
State: _____
Phone: _____

Project Name: _____
Company: _____
City: _____
Zip: _____
Email: _____

Systems Information (circle one):

Building: New Existing

Fire Sprinkler Condition - Leak Rate:

New
(Generator selection will assume a system leak rate of 1.5 PSI loss over 24 hrs per NFPA 13)

Existing
(Generator selection will assume a system leak rate of 3 PSI loss over 2 hrs per NFPA 25)

System: Dry Pre-action

System Material: Steel Galvanized

Model/Manufacturer of Dry Valve: _____

Standard Nitrogen Purity Level 98%

Individual Riser Information:

Riser #	Capacity (Gallons)	Supervisory Pressure (PSI)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Electric Requirements (circle one):

Voltage: 120v 208v 230v 460v

Phase: Single Three

Nitrogen Generator Accessories (select):

- Air Maintenance Device (AMD-1)
(One required for each riser)
- Nitrogen Generator Annual Maintenance Kit
- Vibration Kit
- Bleeder Valve for Testing Purposes (BVL)

Purge Valves (select):

Check one Purge Valve option. One required for each riser. More than one may be selected for quoting purposes.

- Nitrogen Purge Valve (NGP-SPV)
- IntelliPurge Nitrogen Purge Valve (INS-PV)
- IntelliPurge Remote Annunciator (INS-RA)
(Optional with INS-PV)

Distributor Information:

Salesperson: _____ Company: _____ Location: _____
Email: _____ Phone: _____ Date: _____

Return to Potter Electric Signal Company by email: corrosion@pottersignal.com or Fax: 800-768-8377