



# Corrosion Solutions for Fire Sprinkler Systems



Extend the life of your fire sprinkler system

The power behind **your mission**



# Mitigating Fire Sprinkler System Corrosion

Corrosion in fire sprinkler systems leads to plugging problems, diminished sprinkler performance, water leak damage and reduced service life – this translates to significant risks to life safety, structural integrity and business continuity.

Corrosion is a chemical action requiring three components and a water-based fire sprinkler system typically has all three:

1. Metal - black steel or galvanized pipe
2. Water - in the pipes and/or the moisture in compressed air
3. Oxygen - trapped or compressed air in the system

Replacing oxygen in the system with nitrogen can stop the corrosion process and extend the service life of a sprinkler system. TYCO® Nitrogen Generators are FM & CE approved. They generate 98% purity nitrogen, replacing nearly all oxygen as the pressure-maintenance gas.

Many governing bodies of the fire protection industry recognize that the reduction in oxygen in pipework will significantly reduce risk of corrosion and recommend or require nitrogen for mitigating corrosion. These include FM Global, NFPA, US DoD, and many other internationally-recognized authorities.

## Common Applications

- Data Centers
- Cold Storage
- Warehouses & Distribution Centers
- Healthcare Facilities
- Museums & Cultural Resources
- Assisted Living Facilities
- Parking Structures
- Mission Critical Manufacturing
- Stadiums & Sports Arenas
- Libraries

## Return on Investment (ROI) for TYCO® Corrosion Solutions

- Greatly reduces corrosion risks.
- Extends the useful life of a water-based fire sprinkler system.
- Minimizes risk of business interruption due to leaks.



# Why TYCO® Corrosion Solutions

## Nitrogen Generators

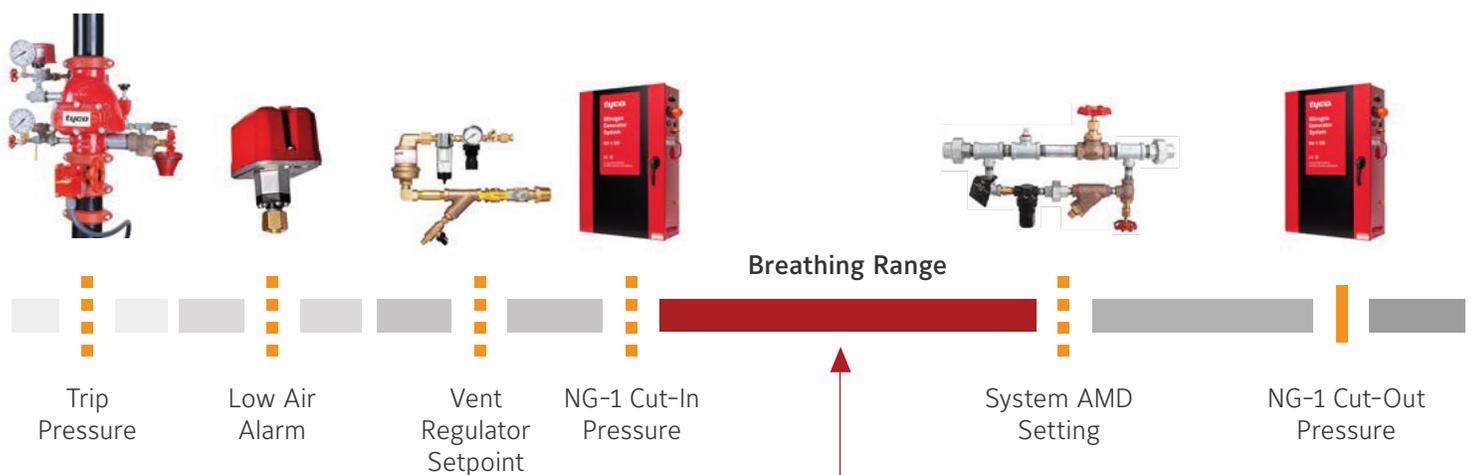
The Model NG-1 nitrogen generator is at the heart of the TYCO® corrosion solutions portfolio. These generators offer unique benefits that fight corrosion while also reducing installation and maintenance labor.

### “Fill & Purge” Breathing Method

- Removes corrosive oxygen - 98% purity nitrogen throughout entire fire sprinkler system.
- Allows vent installation directly on riser for faster, easier installation - no vents needed at far points of system.
- Eliminates need for nitrogen tank - reduces equipment footprint.

### Additional Features & Benefits:

- Nitrogen membrane technology eliminates refrigerated air dryers.
- Can support multiple systems at the same time.
- Pre-engineered units available to minimize installation time.



### Fill & Purge Breathing

- 3-5 psi pressure range
- Above low air alarm/trip pressures

# Dry-pipe and Preaction System Solutions

## TYCO® NG-1 Nitrogen Generators for Dry Pipe Nitrogen Inerting (DPNI)

DPNI is a dilution process that replaces corrosion-causing oxygen with nitrogen as the pressure maintenance gas in dry and pre-action fire sprinkler systems.

## The three critical elements of DPNI:

- 1 A 98% purity nitrogen generator
- 2 An integral venting device
- 3 A system to control the nitrogen breathing process



**Stand Alone Nitrogen Generators**  
FM Approved, CE Certification, UL 508A Listed control panel, paired with oil-lubricated air compressor. (HP of air compressor ranges from 5-10 hp depending on generator size.)



**Skid-Mount Nitrogen Generators**  
FM Approved, CE Certification, UL 508A Listed control panel, integrated oil-less air compressor with air receiver tank. Available in the Americas only.



**Wall-Mount Nitrogen Generators**  
FM Approved, CE Certification, UL 508A Listed control panel, integrated oil-less air compressor.

## Nitrogen Generator Accessories



TYCO® Protector Manual Vent (TAV-D)



TYCO® Protector Dry SMART Vent (TSV-D)

# Determining the right generator for your DPNI project

Johnson Controls is here to help you order the right generator for your project. To ensure you order both the appropriately sized nitrogen generator and all required components, please contact your Johnson Controls Sales representative.



## Steps You will need to provide the following information:

1

The total cumulative size of all dry/preaction sprinkler systems.

2

The size of the largest single dry/preaction sprinkler system.

3

The total number of dry/preaction sprinkler systems.

4

The supervisory pressure of all dry/preaction sprinkler systems.

5

Do you require manual or automatic air vents for each system?

6

Specify voltage requirements for electrical connections.

We recommend the purchase of a TYCO® Handheld Gas Analyzer with every generator. For additional monitoring options, please speak to your local Johnson Controls Sales representative.



TYCO® Handheld Gas Analyzer (THGA)



TYCO® SMART Gas Analyzer (TSGA)

# Available Models and Specifications

		Wall-Mounted			Skid-Mounted	Stand-Alone			
		NG-1 100	NG-1 250	NG-1 500	NG-1 1000 <sup>1</sup>	NG-1 1150	NG-1 1500	NG-1 2000	NG-1 3000
Total System Capacity	Gal	675	950	2000	3200	6500	11000	18500	22500
	L	2555	3596	7571	12113	24605	416440	70030	85172
Single System Capacity <sup>2</sup> @40psi (2.75 bar)	Gal	215	265	560	950	1150	1440	2025	2900
	L	814	1003	2120	3596	4353	5451	7666	10978
Single System Capacity <sup>2</sup> @30psi (2 bar)	Gal	378	427	840	1375	1725	2160	3037	4350
	L	1431	1616	3180	5205	6530	8176	11496	16467
Single System Capacity <sup>2</sup> @20psi (1.4 bar)	Gal	540	590	1120	1800	2300	2880	4050	5800
	L	2044	2233	4240	6814	8706	10902	15331	21955
Air Compressor		Integral	Integral	Integral	Integral	Separate	Separate	Separate	Separate
Size (H x W x D)	In	36.5 x 24.5 x 9.25	36.5 x 24.5 x 9.25	36.5 x 28.5 x 11.5	57 x 32 x 40	52.5 x 32.5 x 8.5 <sup>3</sup>	52.5 x 32.5 x 8.5 <sup>3</sup>	76 x 32 x 12.5 <sup>3</sup>	76 x 32 x 12.5 <sup>3</sup>
	mm	927 x 622 x 235	927 x 622 x 235	927 x 724 x 292	1448 x 813 x 1016	1334 x 826 x 216 <sup>3</sup>	1334 x 826 x 216 <sup>3</sup>	1930 x 813 x 318 <sup>3</sup>	1930 x 813 x 318 <sup>3</sup>
Weight	Lbs	125	125	175	425	152	152	300	300
	kg	57	57	79	193	69	69	136	136

## Notes

Generators available in either 120VAC/1 phase/60Hz or 230 VAC/1 phase/50Hz; see data-sheets for compressor options.

1. NG-1 1000 available for the *North Americas* market only in 120VAC/1 phase/60Hz.
2. Size and weight of nitrogen generator only (including bypass); does not include air compressor.



TYCO® In-Line Corrosion Detector (TILD) **UL Listed**



TYCO® Nitrogen Interface Controller (TNIC)

# Corrosion Solutions for Wet Pipe Systems

Removing oxygen is the most effective way to reduce wet pipe fire sprinkler system corrosion. The TYCO® corrosion solutions portfolio offers the following options:



## Air Venting

This method vents trapped air from the system, producing a linear reduction in corrosion (vent 50% of trapped air, reduce corrosion by 50%). Install a TAV-W air vent at an accessible high point in the system for this method.

## Wet Pipe Nitrogen Inerting (WPNI)

This process replaces the oxygen in the system with nitrogen to stop the corrosion process. Use a TAV-WN air vent and follow the WPNI process for this method.



TYCO® Air Vent, Wet - Nitrogen (TAV-WN)

UL Listed FM Approved



TYCO® Air Vent, Wet (TAV-W)

UL Listed FM Approved

The WPNI process displaces corrosion-causing oxygen within a wet pipe fire sprinkler system with nitrogen gas.

### This process requires three essential components:

- 1 An integral venting device to remove oxygen installed at a remote accessible high point.
- 2 A nitrogen injection port installed at the sprinkler riser.
- 3 A source of nitrogen gas - either nitrogen cylinders or a nitrogen generator.

For more information visit: [www.tyco-fire.com/CorrosionSolutions](http://www.tyco-fire.com/CorrosionSolutions)

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## About Johnson Controls Building Technologies and Solutions

At Johnson Controls, we transform the environments where people live, work, learn and play. From optimizing building performance to improving safety and enhancing comfort, we drive the outcomes that matter most. We deliver our promise in industries such as healthcare, education, data centers and manufacturing. With a global team of 105,000 experts in more than 150 countries and over 130 years of innovation, we are the power behind our customers' mission. Our leading portfolio of building technology and solutions includes some of the most trusted names in the industry, such as Tyco®, York®, Metasys®, Ruskin®, Titus®, Frick®, Penn®, Sabroe®, Simplex®, Ansul® and Grinnell®

For more information, contact your regional Johnson Controls product representative or visit [www.tyco-fire.com](http://www.tyco-fire.com).

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