

NITROGEN-PAC M SERIES - GENERAL INFORMATION

FEATURES

- Inhibits corrosion inside of dry sprinkler pipe
- For dry-pipe or preaction sprinkler systems
- Inerts interior of pipe with nitrogen
- Uses atmospheric air
- Replaces ordinary supervisory air compressor
- Pressurizes system in 30 minutes or less (per NFPA 13)
- Low dew point (-40°F) nitrogen supplied
- System scaled to sprinkler system requirements

BENEFITS

- Cost-effective continuous supply of nitrogen
- Eliminates the need for chemical corrosion inhibitors
- No inconvenient handling of high-pressure cylinders
- Inerts piping interior – prevents oxidation corrosion
- Prevents microbiologically influenced corrosion (MIC)
- Fitting gaskets will not be deteriorated by chemical additives
- Reliable, dependable protection that functions as designed
- Expert field and in-house technical support

DESCRIPTION

The **UNITED Fire Systems NITROGEN-PAC™ M Series** is a fully integrated nitrogen generating system to introduce high-purity nitrogen into preaction or dry sprinkler piping. **NITROGEN-PAC™** replaces the existing air compressor, providing the necessary supervisory pressure in the form of nitrogen instead of air. **NITROGEN-PAC™** occupies minimal space, operates quietly, and can be installed near your sprinkler system riser.

Why Use Nitrogen?

The interior of preaction and dry sprinkler piping is subject to corrosion, which can lead to clogged sprinkler heads, leaks, and pipe failure. This corrosion can be of two distinct types. Oxidation corrosion takes place in the presence of oxygen, and is accelerated by the presence of water. Microbiologically influenced corrosion (MIC) takes place in the presence of certain microbes that attack metal, again in the presence of water and in many cases oxygen. Reducing the damaging effects of this corrosion is best accomplished by greatly reducing or eliminating the amount of water and oxygen left in the pipe. Ordinary air compressors that are used to provide supervisory pressure keep the oxygen concentration inside the pipe the same as normal air - ideal for oxidation corrosion to take place. Ordinary compressors also do not dry the air – residual water from system testing remains in low points, and moist air can actually increase standing water within pipes from condensation. The introduction of high-purity dry nitrogen with a low dew point reduces or eliminates these two problems. The interior of the pipe remains dry, with very little oxygen remaining to attack the metal.

IMPORTANT

UNITED Fire Systems recommends performing a leakage test on each fire sprinkler system, and correcting excess leakage, before designing, installing, and commissioning a **NITROGEN-PAC™** system.



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Why Use NITROGEN-PAC™?

Nitrogen has been used in sprinkler systems, but the source of the gas has been high-pressure cylinders. These cylinders represent an ongoing cost, they are hazardous to handle, and they can run out, leaving the system with no supervision. **NITROGEN-PAC™** represents a totally new way to supply nitrogen – an automatic generator, filtering atmospheric air to supply high-purity nitrogen continuously, with no possibility of running out and no cylinders to change or handle.

How Nitrogen Is Generated

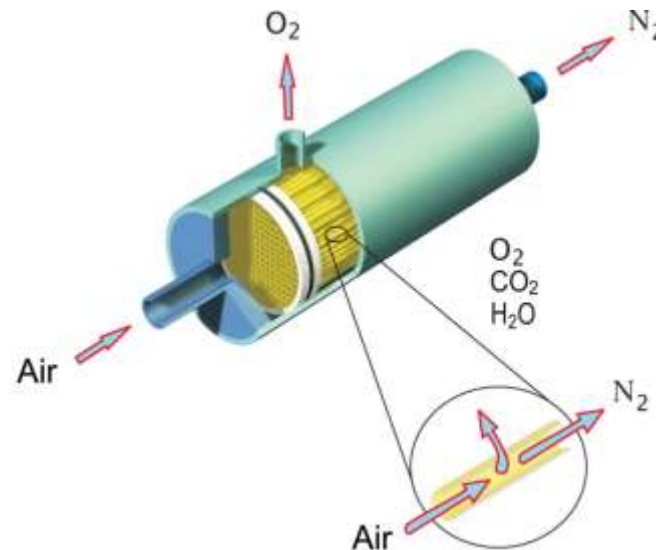
Ambient air contains nitrogen (78%), oxygen (21%) and trace amounts of argon, CO₂, water vapor, and other gases. Nitrogen molecules (N₂) are much larger than oxygen molecules (O₂). When dry compressed air is supplied to a membrane-type nitrogen generator, the smaller oxygen molecules and other gases permeate through the walls of hollow fiber membranes. Nitrogen molecules flow through the fibers and exit from the end of the device with a purity of approx.98% at -40°F dew point. This nitrogen enters a storage tank and the sprinkler system piping. Without oxygen, oxidation corrosion cannot occur. The low dew point greatly enhances the evaporation and expulsion of residual water from the piping, greatly reducing the likelihood of microbiologically influenced corrosion (MIC).

ALL NITROGEN-PAC™ M SERIES SYSTEMS INCLUDE:

- Nitrogen generator module with separator membrane
- Coalescing filters to remove oil and particulates
- Pressure gauges for monitoring and troubleshooting
- Valves for adjustment and fast-fill
- Air compressor / tank assembly
- Refrigerated dryer
- Nitrogen receiver assembly
- Pressure regulation equipment
- Piping purge vent assemblies as needed
- Hand-held nitrogen analyzer with digital readout
- Nitrogen / air maintenance device for proper system pressure regulation

Available Accessories:

- True Advanced Purge (TAP) – nitrogen analyzer and automatic purge control device
- Corrosion monitor assembly



NITROGEN SEPARATION by MEMBRANE TECHNOLOGY

Technical Data:

- Compressor horsepower available from 1.5 to 10 HP
- Refrigerated dryer capacity available from 7 to 42 SCFM
- Nitrogen receiver capacity available from 30 to 80 gallons
- Single largest sprinkler riser = 6200 gallons*
- Highest available supervisory pressure = 40 PSIG
- Maximum volume of all risers protected by a single M Series system = 13,000 gallons
- Maximum number of risers protected by a single system = 10

*at 20 PSIG

Refer to document UFS-1002 for individual component model numbers and capacities, and system design information.

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