HIXSON
ARCHITECTURE ENGINEERING INTERIORS

NOVEMBER 2024

From Experience

Nitrogen vs. Compressed Air for Dry Sprinkler Systems

Many facilities use compressed air for dry sprinkler systems, due to convenience and a lower initial investment. However, compressed air is also a common failure point for these systems, as its use can lead to pinhole leaks. (See how pinhole leaks form in "Experience in Brief.") Since these leaks can compromise entire sections of the dry sprinkler system, daily operations must be shut down to replace the affected sections.

Such fixes, though, address the symptom and not the cause. To prolong your sprinkler system, consider the use of a nitrogen system. Nitrogen systems mitigate the risk of corrosion by taking oxygen out of the equation: With no oxygen, there can be no corrosion.

In addition to removing oxygen, nitrogen also has a lower dewpoint than compressed air. This makes nitrogen ideal for coolers, freezers and exterior applications. Since the water vapor inside the pipe is unable to condense, the risk of ice plugs is reduced.

Of course, a nitrogen system will typically cost as much as 75% more compared to a standard compressor/dryer package approved for sprinkler systems. This pricing difference can be surprising initially, but this initial investment may be easier to bear when compared to the overall costs of lost production time, coupled with the cost of piping system replacements. From that perspective, facilities focused on maintaining seamless and safe operations may find that nitrogen systems aren't just an alternative – they're a positive investment in the future.

Continued on next page >

EXPERIENCE IN BRIEF

The pinhole leaks in compressed air systems are caused by oxidation, which eventually leads to corrosion when moisture is introduced. Oxidation occurs when the oxygen in the compressed air accepts an electron and bonds with the iron from the pipe forming iron oxide. The iron oxide sits at the surface and forms rust when exposed to water vapors. The rust buildup restricts flow through the pipe and can clog downstream sprinkler heads. Pinhole leaks can also form when the corrosion concentrates at one point and eats through the pipe.

HIXSON | 659 Van Meter Street, Cincinnati, OH 45202 | 513-241-1230 | info@hixson-inc.com | www.hixson-inc.com

RELATED CONTENT

Propylene Glycol: Too Much of a Good Thing?

Conduit Seal Effectiveness

CONTACT US

Direct any comments or questions to:

John Brockmeier, P.E.
Manager of Plumbing Systems & Fire Protection Engineering
jbrockmeier@hixson-inc.com
Phone: 513.241.1230
www.hixson-inc.com