

Buyer beware

The hidden costs of installing inert gas fire suppression systems

Calculating the total installation cost of an inert gas fire protection system is a surprisingly complex equation.

Many “extra” installation and construction costs can potentially be avoided by choosing a more compact system using 3M™ Novec™ 1230 Fire Protection Fluid.

When choosing a fire suppression system, some things are obvious. You want a system that will protect your space – and the people and assets in it – while minimizing environmental impact and cost. What is less obvious is that often there are hidden costs to identify and consider. To choose the best system for your needs, it’s important to take into account not only the quoted system price but also the entire cost to design, install, certify, house, and maintain that system over the lifetime of the system.

Calculating the “extras” of an inert gas system

Here is some valuable insight into hidden charges associated with the installation of an inert gas clean agent fire suppression system:

- Inert gas fire suppression systems operate by reducing the oxygen in an area. On a volume basis, inert gas systems must deliver more agent into a room to displace as much as 40% of the air – compared to approximately 5% with a system using 3M™ Novec™ 1230 Fire Protection Fluid. This translates to many more cylinders of inert gas required to protect a given area.
- The “extra” inert gas cylinders needed to protect the same amount of space significantly increase the physical size and weight of the system. For example, based on similar sized cylinders,

approximately 28 cylinders of an inert gas system at 150 bar would equal one or two cylinders for a system designed for use with Novec 1230 fluid.

- Because inert gas systems require many more cylinders and more floor space to house the cylinders, the increased real estate cost is significant. For example, at an average rental cost of \$150 per sq. ft. in a large metropolitan area such as New York City, the annual rental space for a two cylinder system using Novec 1230 fluid requiring 12 sq. ft. would be \$21,600. However, the real estate cost for the 65 sq. ft. of space needed to house an inert gas system would be \$117,000 per year, making the real estate cost for a system using Novec 1230 fluid less than 1/5 that of an inert gas system. For more information, see our technical bulletin on the hidden real estate costs of inert gas systems: “When space makes waste”.
- High pressure inert gas systems require proper room pressure venting. Without such venting, an inert gas system discharge will cause damaging over-pressurization in the room. The installation of venting entails additional costs, including: cutting openings for each pressure vent in the wall of the protected space, and likely in an exterior wall as well; adding pneumatic schedule 40 line piping to operate mechanical latches; constructing

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custom framing for each opening in the breeched wall; adding duct work leading to the exterior of the building; and adding micro switches to monitor the pressure vent openings for security, as these openings can provide unobstructed access to sensitive areas, storage vaults, and mission critical assets from the exterior of the inert gas protected spaces. Security bars should also be considered to prevent illegal entry through the pressure vent openings. These additional costs are not normally associated with a suppression system using 3M™ Novec™ 1230 Fire Protection Fluid.

- Inert gas systems may require additional infrastructure to support the weight of the cylinders, which further increases construction costs.
- Testing costs associated with final check-out of an inert gas system are higher than those for a system using Novec 1230 fluid. One principal reason is that, per NFPA 2001, pipe pressure testing requires the removal of the cylinder valve connection to the manifold in order to isolate the piping network. A larger number of cylinders equates to more time and labor, thereby increasing the testing costs associated with inert gas systems.

Summary

Both the greater number of cylinders required for an inert gas system and the high pressures at which these systems operate represent additional expenses, or “extra” installation costs that may not be readily apparent in the initial bid. For example, the added construction costs associated with over-pressurization may not be included in the cost of system installation, but are nevertheless necessary expenses associated with installation. In addition, the larger amount of space required for inert gas systems translates to higher real estate costs. Systems using Novec 1230 fluid, on the other hand, are much more compact and can avoid many of the hidden installation costs associated with inert gas systems.

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3M™ Novec™ 1230 Fire Protection Fluid is an advanced clean agent fire suppression material, based on a proprietary chemistry from 3M. It was designed to address industry needs for clean agent fire protection that is safe and effective, while offering a sustainable environmental profile that no other halocarbon agent can match. This includes: Zero ozone depletion potential; a 5-day atmospheric lifetime, and; a Global Warming Potential of 1. Because of these properties, Novec 1230 fluid is not targeted for phase-down or regulatory restrictions anywhere in the world. It is approved for use in total flooding fire suppression systems by the U.S. EPA and most major regulatory bodies. All of this makes Novec 1230 fluid today's sustainable choice for clean agent fire protection.

The 3M™ Novec™ Brand Family

The Novec brand is the hallmark for a variety of proprietary 3M products. Although each has its own unique formula and performance properties, all Novec products are designed in common to address the need for safe, effective, sustainable solutions in industry-specific applications. These include precision and electronics cleaning, heat transfer, fire protection, protective coatings, immersion cooling, advanced insulation media replacement solutions and several specialty chemical applications.

3M™ Novec™ Engineered Fluids • 3M™ Novec™ Aerosol Cleaners • 3M™ Novec™ 1230 Fire Protection Fluid • 3M™ Novec™ Electronic Grade Coatings • 3M™ Novec™ Electronic Surfactants • 3M™ Novec™ Dielectric Fluids

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