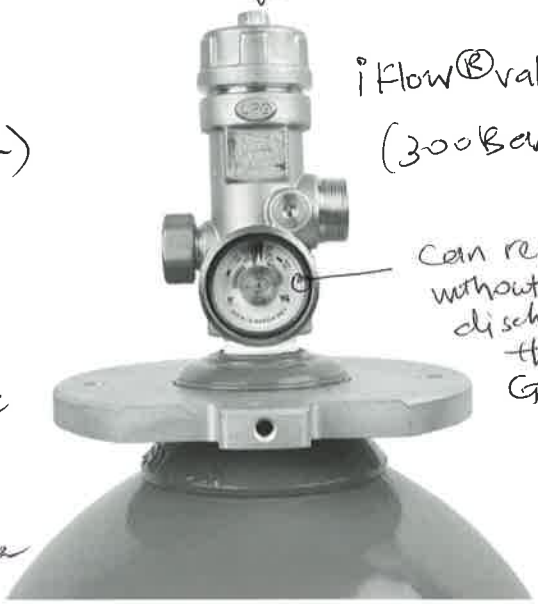
ANSUL®

INERGEN® 300 Bar Fire Suppression System with iFLOW Technology

Features

- Environment-friendly agent
- Safe for people
- Fail-safe pressure regulating valve
- Unique valve/bracket matrix system
- Multiple hazard protection
- Remote container storage location



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Application

The INERGEN® iFLOW fire suppression system is particularly suited for suppressing fires in hazards where an electrically non-conductive medium is essential or desirable, where clean-up of other agents presents a problem, or where the hazard is normally occupied and requires a non-toxic agent.

When properly designed, installed and maintained, the INERGEN fire suppression system will suppress surface burning fires in Class A, B, and C hazards by lowering the oxygen content below the level that supports combustion.

The following are typical hazards protected by INERGEN iFLOW fire suppression systems:

- Computer Rooms
- Subfloors
- Data Centers
- Telecommunications
- Museums
- Libraries
- Archives
- Machinery Spaces
- Switchgear
- Normally occupied or unoccupied electronic area where equipment is either very sensitive or valuable

Description

The INERGEN iFLOW fire suppression system, manufactured by Tyco Fire Protection Products, is an engineered clean agent system utilizing a fixed nozzle agent distribution network. The system should be designed and installed in accordance with the National Fire Protection Association (NFPA) Standard 2001, "Clean Agent Fire Extinguishing Systems." INERGEN agent has also been tested by Factory Mutual (FM) for inerting mixtures of propane/air and methane/air in concentrations between 40% and 50%.

The system can be actuated by detection and control equipment for automatic system operation in addition to local and remote manual operation as needed. Accessories can be installed to provide alarms, ventilation control, door closures, or other auxiliary shutdown or functions.

A system installation and maintenance manual is available containing information on system components and procedures concerning design, operation, inspection, maintenance, and recharge.

The system must be installed and serviced by authorized distributors trained by Tyco Fire Protection Products.

Composition and Materials – The basic system consists of suppressing agent stored in high-strength alloy steel containers. Either manual or automatic actuators are available for release of the agent into the hazard area. The agent is distributed throughout the hazard area by using a network of piping and nozzles. Each nozzle is drilled with a fixed orifice designed to deliver a uniform discharge to the protected area. In the unique matrix system the container(s) is connected to the distribution piping or the manifold by means of a flexible discharge hose and horizontal check valve assembly. Use of a manifold may be omitted on certain systems depending on container count.

Additional Equipment – All or some of the following system components are required when designing a functional system:

- Control panels
- Releasing devices
- Remote manual pull stations
- Corner pulleys
- Door closures
- Pressure trips
- Bells and alarms
- Pneumatic switches

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Description (Continued)

INERGEN Agent – INERGEN agent is a mixture of three inerting (oxygen diluting) gases: 52% nitrogen, 40% argon, and 8% carbon dioxide. INERGEN gas suppresses fire by lowering the oxygen content below the level that supports combustion. This is approximately 15% for most ordinary combustibles. When INERGEN agent is discharged into an enclosure, it introduces a mixture of gases that actually enhances the body's ability to assimilate oxygen. This will allow a person to breathe in the oxygen reduced atmosphere down to 10%. The normal atmosphere in a room contains approximately 20.9% oxygen and less than 1% carbon dioxide.

Containers – The containers are constructed, tested, and marked in accordance with applicable transportation specifications.

Container/Valve Assembly – The container assembly is of steel construction. Two sizes are available depending on transportation approval requirements (80 L and 140 L). Each container is equipped with a pressure regulating valve equipped with a gauge. The valve is constructed of forged brass and is capable of regulating the nominal discharge pressure at 870 psi (60 bar) while allowing for 95% of the design concentration to be discharged within 60 seconds or 120 seconds (140 L container 120 seconds only). The valve is designed to close if pipeline pressure exceeds a nominal 870 psi (60 bar) and also includes a safety pressure relief device which provides relief at 5903 psi to 6193 psi (407 bar to 427 bar) per CGA test method. Container charging pressure is 4351 psi (300 bar). The containers are shipped with a maintenance record card and shipping cap. The cap is attached to the threaded collar or affixed to a flange on the neck of each container to protect the valve while in transit. The container serial number and date of manufacture are stamped near the neck of each container.

Electric Actuator – Electric actuation of a pilot actuation container is accomplished by an electric actuator interfaced through an approved/listed control system.

Manual or Pneumatic Actuation Container – Manual actuation is accomplished by pulling the hand lever on the pilot actuation container.

Selector Valve – Selector valves can be used either locally or remotely to direct the flow of INERGEN agent into a single hazard of a multiple hazard system.

Detection System – A listed/approved detection and alarm system must be used where an automatic electronic control system is required to actuate the INERGEN iFLOW system. This control system is used to control a single fixed fire suppression or alarm system based on inputs received from fire detection devices.

Flow Calculation Program – The system design is confirmed using a listed and approved INERGEN agent flow calculation program, which is used to size pipework, determine nozzle orifice areas, and to ensure the system complies with the requirements of NFPA 2001 and the UL Listings and FM Approvals. Authorized ANSUL distributors receive training and must use the flow calculation program.

Nozzles – Custom-drilled nozzles are designed to direct the discharge of INERGEN agent throughout the enclosures and are available in either 360° or 180° discharge patterns. After entering fire hazard specifications into the INERGEN agent system design flow calculation program, nozzle and orifice sizes are specified for proper flow rate and distribution pattern. The nozzle selection depends on the geometry of the hazard to be protected.

Pipe and Fittings – Distribution piping downstream from the agent container pressure regulating valve must be constructed to withstand the maximum downstream pressure as determined by the flow calculation program.

Limitations – The INERGEN iFLOW system must be designed and installed within the guidelines of the manufacturer's design, installation, operation, inspection, recharge, and maintenance manual. The ambient operating temperature limitations are: -4 °F to 130 °F (-20 °C to 54 °C).

Technical Data

Applicable Standards – The INERGEN iFLOW system complies with NFPA Standard 2001, Standard for Clean Agent Fire Extinguishing System, and EPA Program SNAP (Significant New Alternate Policy).

The INERGEN iFLOW system has a pending listing by Underwriters Laboratories, Inc. (UL) and Underwriters Laboratories of Canada (ULC), and Factory Mutual (FM) Approval.

INERGEN Agent is listed by Underwriters Laboratories, Inc. (UL) and Underwriters Laboratories of Canada (ULC), and is approved by Factory Mutual (FM).

Installations

All system components and accessories must be installed by authorized distributors trained by Tyco Fire Protection Products. All installations must be performed according to the guidelines stated in the manufacturer's design, installation, operation, inspection, recharge, and maintenance manual.

Availability and Cost

Availability – INERGEN iFLOW systems are supplied and serviced through a network of independent authorized distributors located in many countries.

Cost – Cost varies with type of system specified, size, and design.

Maintenance

Maintenance is a vital step in the performance of a fire suppression system. As such, it must be performed by an authorized distributor in accordance with NFPA 2001 and the manufacturer's design, installation, recharge, and maintenance manual. When replacing components on the fire suppression system, use only approved parts.

Note: The converted metric values in this document are provided for dimensional reference only and do not reflect an actual measurement.

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