FOT® FIRE CONTROL

...excellence in fire suppression

FOT-INERT

CLEAN AGENT GAS SUPPRESSION SYSTEM

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TECHNICAL DATA

SUPPRESSION AGENT	IG55, IG541, IG100, IG01
CYLINDER SIZES	80 and 140L
OPERATING PRESSURE	150/200 Bar
DISCHARGE VALVE	Brass
RELEASE DEVICE	Manual Pneumatic Electro-Magnetic
DISCHARGE NOZZLES	Brass
ORDERING INFORMATION	Size of Cylinder, Number of Cylinders & Nozzles, Pressure Rating, Requirement of Accessories such as Directional Valve, etc.

DESCRIPTION

The FOT-INERT System is a fire suppression system, that is particularly useful for suppressing fires in hazards where an electrically non-conductive medium is required; where clean-up of other extinguishing agents is a problem; or where the hazard is normally occupied and requires a non-toxic extinguishing agent and where an extinguishing capability with low weight is required.

The following examples are typical hazards protected by an FOT-INERT System:

- Computer rooms
- Telecommunication switch gear
- Storages
- Vaults
- Process equipment
- Machinery spaces
- Historic buildings and museums
- All normally occupied or non-occupied electronic areas where equipment is either very sensitive or irreplaceable.

The FOT-INERT System uses inert gas as extinguishing agent. The inert gas is stored in steel cylinders located in a safe and accessible location. The inert gas is distributed and discharged into the area affected by fire through a network of pipes and nozzles.

Each nozzle is drilled with a specific fixed opening designed to deliver an uniform amount of extinguishing agent into the protected area. The cylinders are connected to the pipework or the manifold by means of flexible discharge hoses and discharge constant flow and pressure discharge regulators. Various types of actuators are available for the release of the inert gas into the protected area in case of fire.

The FOT-INERT System can be actuated by detection and control equipment for automatic system operation along with providing local and remote manual operation as needed. Accessories are used to provide alarms, ventilation control, door closures, or other auxiliary shutdown functions.

The FOT-INERT System combines an environmentally safe extinguishing agent and specially developed components for a fast-extinguishing agent discharge. The resulting rapid-fire suppression reduces property damage to the lowest possible level.

The complexity of the FOT-INERT System does not allow for any simple method of manual calculation. Therefore, the flow calculations and design criteria described in this manual have been incorporated into calculation software. The calculations are based on conserving mass, energy and momentum in the pipework.

The routine calculates the flow in quasi-steady state steps from the initiation of the discharge to the final gas distribution. The system designer must become thoroughly familiar with this manual to learn the proper procedures for applying the input parameters to the FOT-INERT System flow calculation software. There are several limitations to these input parameters which must be observed if accurate results are to be obtained.

The FOT-INERT System is designed for the use with these inert gases:

- IG 55 (50 percent of Argon and 50 percent of Nitrogen)
- IG 541 (50 percent of Nitrogen, 40 percent of Argon and 10 percent of Carbon dioxide)
- IG 100 (100 percent of Nitrogen)
- IG 01 (100 percent of Argon)

As inert gases are derived from gases present in the earth's atmosphere, they exhibit no ozone depletion potential and they do not contribute to global warming.

When an inert gas is discharged into an enclosure, it introduces the proper mixture of gas that will allow persons to breathe in a reduced oxygen atmosphere.

The advantages of inert gases are:

- Safe for people at concentration levels required to suppress fire
- Zero ozone depletion potential
- Colorless and odorless
- No residue to clean up after discharge
- No decomposition products
- Electrically non-conductive

The extinguishing effect of the FOT-INERT System is based on distributing the inert gas into the protected area by total flooding. All gases used in the FOT-INERT System are chemically inert.

WORKING PRINCIPLE

The basic working principle behind an inert gas fire system is to reduce the amount of oxygen present in the area where the fire breaks out. This is important because fires need oxygen to spread. The oxygen concentration is minimized by the application of inert gas until it reaches a level of 12-13% where combustion is no longer supported. Each system is designed to decrease oxygen to a specific level. When discharged, inert gas is quickly and uniformly distributed within the enclosure, achieving design concentration in 60 seconds.

While the oxygen level is lowered, it does not eliminate oxygen from the space altogether. There is still enough present to support proper breathing as anyone in the immediate area moves along the escape route and exits the room.

The system can be actuated electrically from a control panel or manually actuated from the cylinder bank, and the discharged gas pressure is reduced to less than 60 bar by discharge pressure regulator. The system is normally designed as such that 95% of the gas will be discharged into the protected area within 60 seconds.

The system has one Master Cylinder and other Slave Cylinders for Actuation and Inert Gas Discharge.

INSTALLATION INSTRUCTIONS

Inert fire suppression system should only be installed by a trained and specialized fire suppression installation personnel only. The person should be conversant with FOT Fire's Design, Installation, Operation and Maintenance Manual for FOT-INERT SYSTEM.

Any area to be protected by an Inert gas fire suppression system must be accurately measured to ensure the correct amount of agent is used to sufficiently suppress a fire/potential fire within the specific risk area.

This is especially important for inert gas suppression systems such as IG55 and IG541 systems due to the oxygen reducing properties used to extinguish a fire.

For inspection and testing requirements one can refer to relevant NFPA standard like NFPA 2001Standard on Clean Agent Fire Extinguishing Systems.

ALL THE COMPONENTS FOR A COMPLETE INERT GAS SYSTEM

The FOT-INERT System offers all the components needed to configurea complete system for 150/200 bar inert gas extinguishing agent.

- Components entirely compatible and inter-changable
- Easier and faster installation
- System pre-tested and qualified
- Everything to the same high -specification- Greater confidence in performance at the critical time
- Full warranty protection
- Simplicity of a single supplier

The FOT-INERT System makes it easy for system engineers and installers to configure fixed suppression systems–choosing only select components – or using the entire system.

For maximum ease and certainty of performance, specify The FOT-INERT System components to configure the entire system.

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CLEAN AGENT GAS SUPPRESSION SYSTEM

A complete component solution	
1	Cylinder 80 L - 200/300 bar
2	Valve 200/300 bar
3	Discharge pressure regulator
4	Manual release device
5	Pneumatic release device
6	Electromagnetic release device
7	Pressure sensor
8	Bleed valve
9	Discharge hose
10	Check valve
11	Pilot hose
12	Manifold
13	Nozzle
14	Support for Cylinder
15	Wall Mounting Rail
16	Bracket for manifold
17	Clamp for manifold
18	Label


16
12
10
17
9
4
6
11
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2
7
3
1
18
14
15
13
IG 541 - 80 L - 150/200 bar
FOT-Inert Clean Agent Fire Suppression System
WARNING
AVOID EXPOSURE TO VAPORS, FUMES
AND PRODUCTS OF COMBUSTION
IG 541
80 L
150/200 bar

SERIES G0480 VALVES AND ACCESSORIES

CYLINDER-VALVE ASSEMBLIES

Valve

DISCHARGE PRESSURE REGULATOR

DIMES SYSTEM

PRESSURE GAUGE

ACTUATION DEVICES & ACCESSORIES

MANUAL ACTUATOR

MANUAL / PNEUMATIC ACTUATOR

PNEUMATIC ACTUATOR

ELECTROMAGNETIC ACTUATOR

MONITORING SWITCH

BLEED VALVE

PILOT HOSE

DISCHARGE HOSES, MANIFOLDS, NOZZLES & ACCESSORIES

DISCHARGE HOSES

CHECK VALVE

MANIFOLDS

MANIFOLD CAPS AND CONNECTORS

PRESSURE GAUGE FOR MANIFOLD

RELIEF DEVICES

PRESSURE SWITCHES

ELECTRIC DIRECTIONAL VALVES

PNEUMATICAL DIRECTIONAL VALVES

NOZZLES

MOUNTING BRACKETS

SINGLE-ROW BRACKETS

DOUBLE -ROW BRACKETS

MANIFOLD BRACKETS

PRESSURE REGULATOR TECHNOLOGY

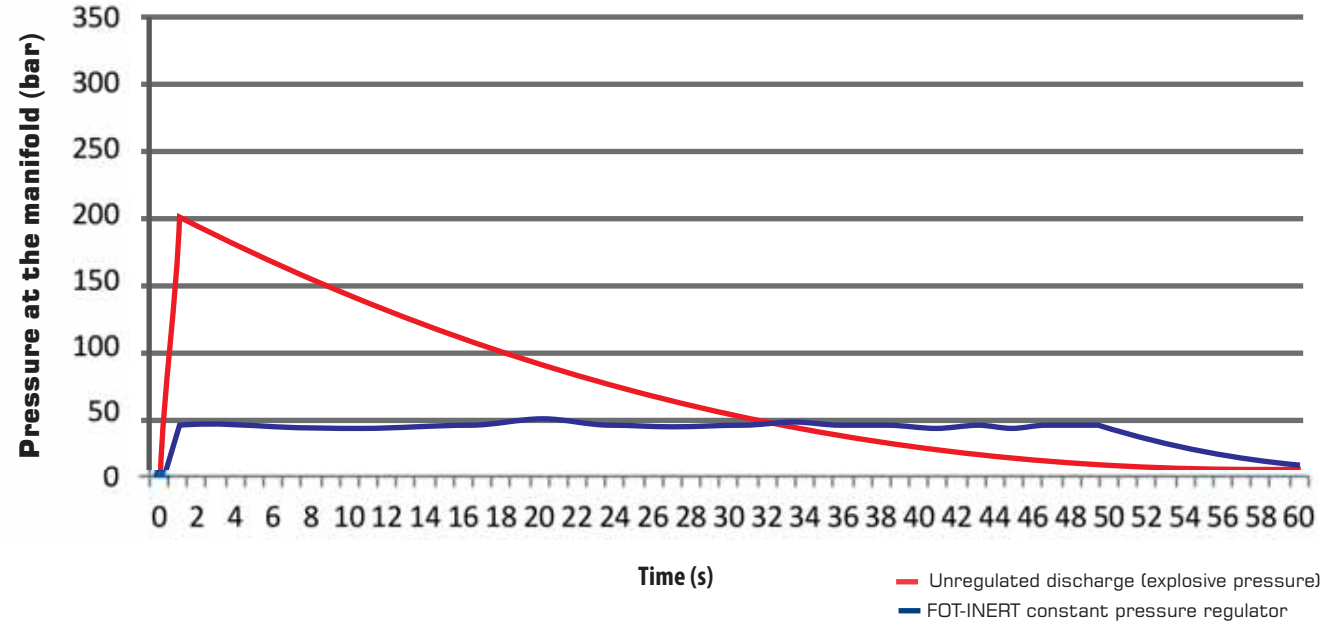
The FOT-INERT System Pressure Regulators modulate the discharge pressure to a constant 40-60 bar which still delivers the design concentration within 60 seconds, but with significant performance and cost benefits:

BETTER SAFETY:
- Prevents explosive force of discharge

SAVES TIME AND MONEY:
- Enables low pressure manifolds & pipework to be used
- that are lower cost and easy to install
- Reduces the difficulty and cost of locating/fitting pressure vents in the protected space

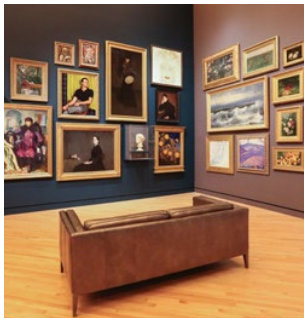
EASY MAINTENANCE:
- After a system discharge, simply remove the regulator, recharge, and reconnect. No reconditioning necessary
- Functional tests are possible even while the system is armed

Dynamic pressure comparison
Unregulated VS regulated discharg

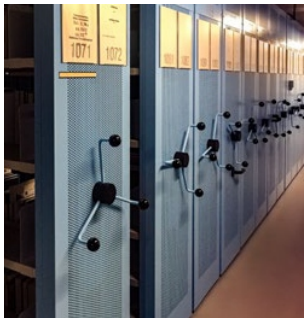


SYSTEM APPLICATIONS

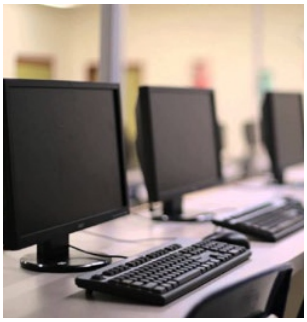
The FOT-INERT System is the most natural and environmentally friendly fire to protect your valuable assets which uses inert gases as an extinguishing agent



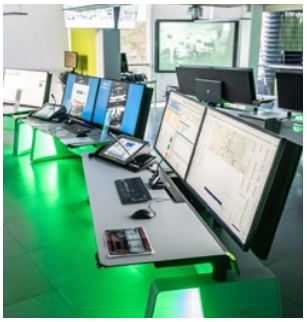
Art Galleries



Archive Storage



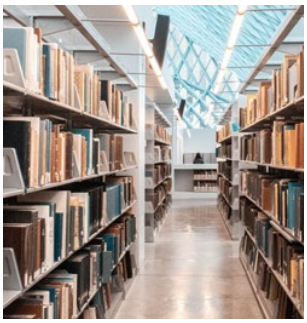
Computer Rooms



Control Rooms

Data Centers

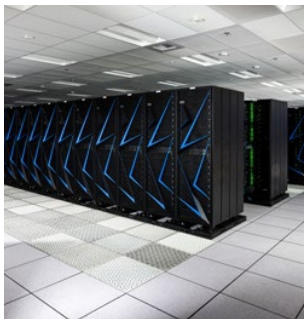
Hospitals



Libraries

Museums

Power Plant



Server Rooms

Substation

Telecommunication

FOT® FIRE CONTROL

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