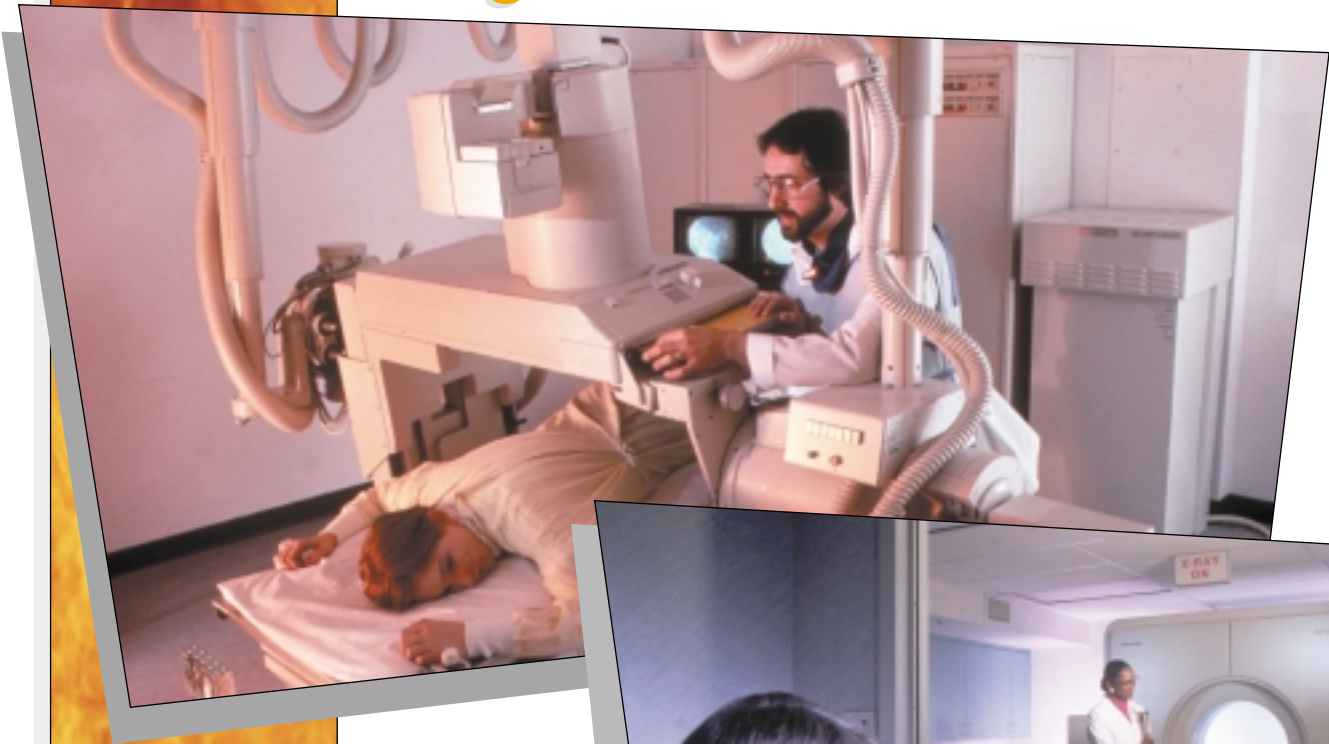


Hospitals and Major Medical Centers



- ◆ **INERGEN® Fire Suppression Systems**
- ◆ **AUTOPULSE® Detection and Control Equipment**
- ◆ **SENTRY® Hand Portable Fire Extinguishers**



Medical centers have special concerns for fire safety

In hospitals and medical centers, people with impaired health can be exposed to fire extinguishing agents. And, in fact, some extinguishing agents may cause cardiac sensitization. Therefore, extra precautions should be taken when selecting fire suppression systems for hospitals or medical centers. Only the safest Clean Agent Fire Suppression Systems should be considered.

The Ansul solution

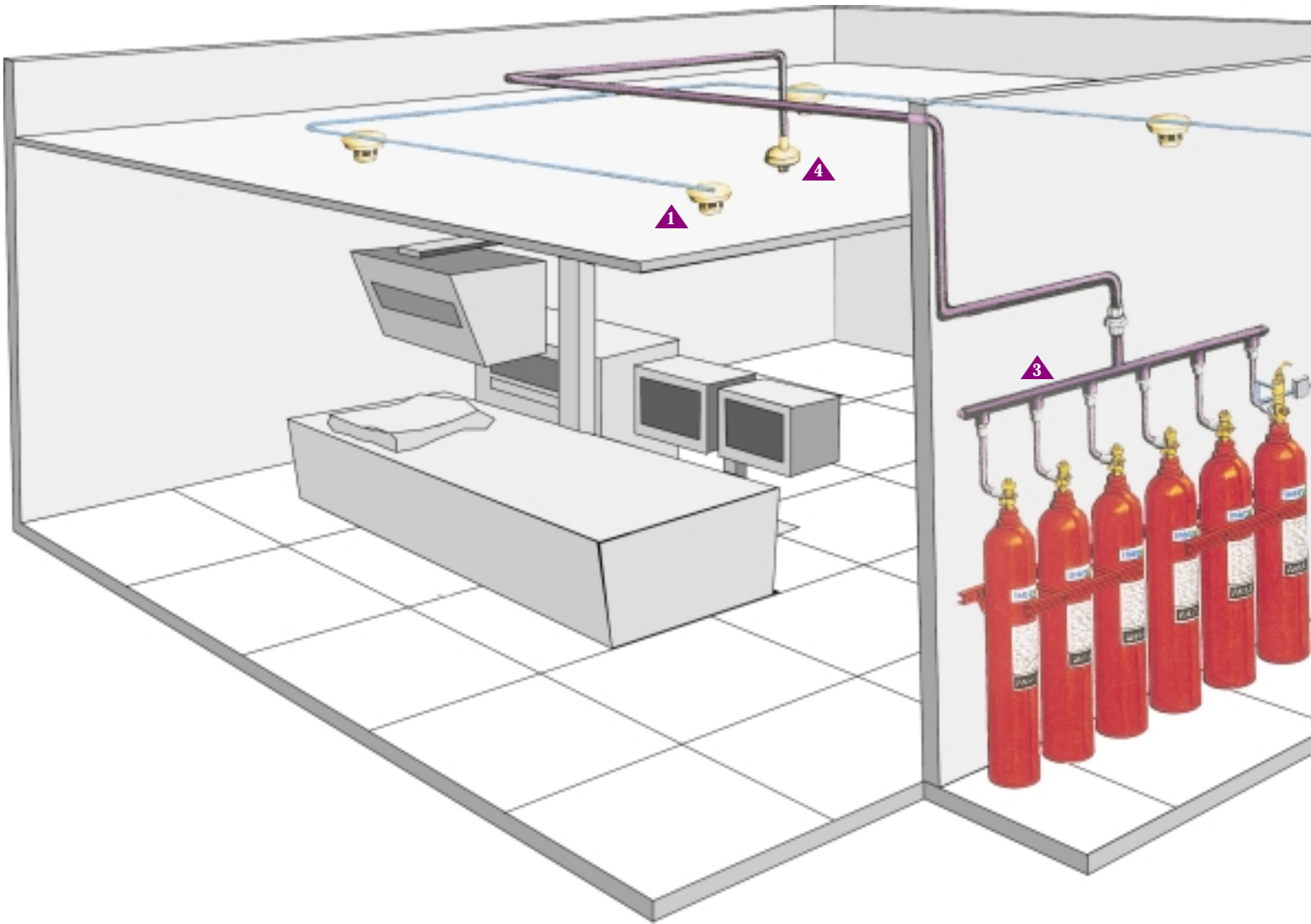
- ◆ INERGEN agent is a blend of three naturally-occurring inert gases. It does not decompose in a fire. Therefore, there are no concerns about the production of toxic gases.
- ◆ An extensive collection of published journal articles and scientific reports from independent internationally recognized medical and research specialists has confirmed that an INERGEN atmosphere is safe. Testing has been performed at and beyond normal system design concentrations to produce a wide safety margin.
- ◆ INERGEN Fire Suppression Systems have been installed in hospitals and medical centers worldwide. Fires have been successfully extinguished by INERGEN systems with only minor fire damage to the hardware involved.
- ◆ Innovative and flexible system designs are possible with INERGEN systems. The use of selector valves can provide tremendous savings by reducing the installed cost of an INERGEN system. Agent storage cylinders can be located in mechanical or storage areas and not take up valuable space in data centers or diagnostic rooms.
- ◆ Ansul offers a unique Evergreen Discharge Warranty. Basically, the warranty states that Ansul will pay for the cost of INERGEN agent replacement regardless of the cause of discharge (except commissioning discharge tests) for a period of 10 years. Ask for Warranty details and limitations.
- ◆ Ansul recommends the installation of SENTRY portable fire extinguishers in hospitals and medical centers. These extinguishers meet or exceed the standards set forth by the authority having jurisdiction to ensure the highest levels of life safety and property protection.

Agent selection is vital

Halon 1301 and first generation halocarbon replacement agents decompose when they contact flame producing toxic gases such as Hydrogen Fluoride (HF). Third-party information from small, intermediate, and large-scale independent testing facilities should be evaluated for an unbiased view of the issue. However, NIOSH has established 30 parts per million (PPM) of HF as the maximum legal exposure level. The American Industrial Hygiene Association "Emergency Response Planning Guide" identifies 50 PPM of HF as a level that could be fatal to highly susceptible people and generally the level requires evacuation of all individuals in the vicinity.



**SENTRY® Hand
Portable Fire Extinguishers**



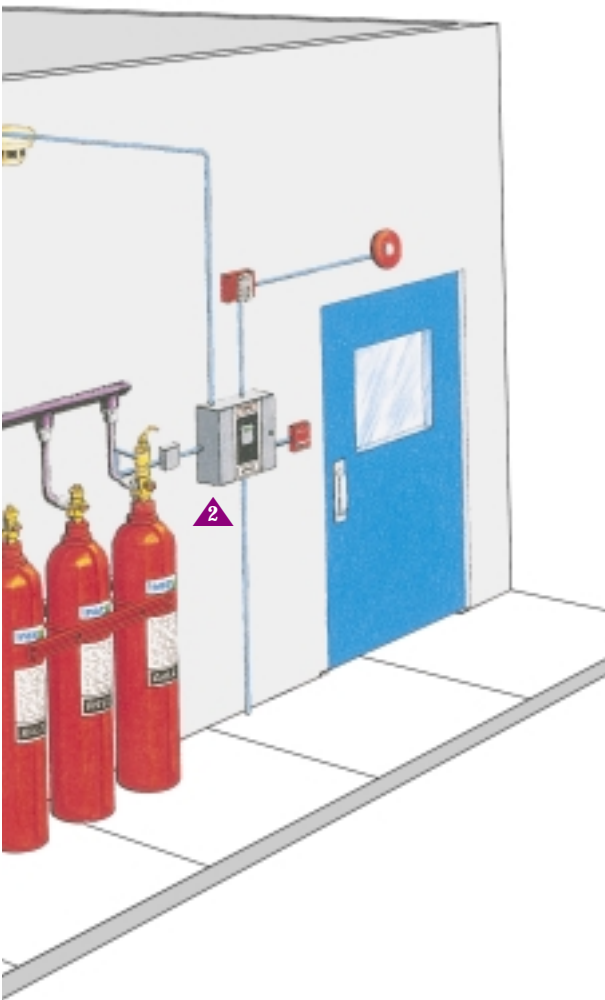
NOTE: This drawing is conceptual in nature. The fire suppression system depicted constitutes typical hardware requirements. The final system design must consider other factors that are only determined through a pre-installation in-depth analysis of all likely areas of probable fire incident.



Detection and Control Equipment



**AUTOPULSE®
Control Units**



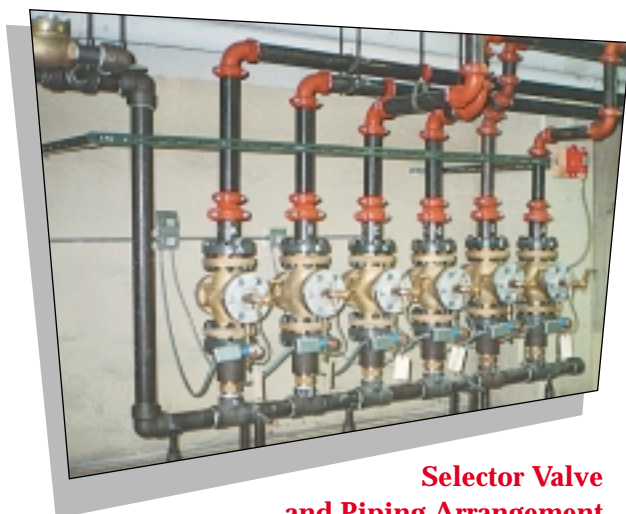
INERGEN agent is stored as a gas mixture in DOT approved cylinders. INERGEN cylinders can be installed either vertically or horizontally – and are available in various sizes – allowing the system design engineer to store the proper amount of agent in the fewest number of cylinders to save space and installation costs.



Nozzles and Manifold Orifice Devices

Fire detection/ suppression system operation

- 1 Detectors sense fire in the protected area and electronically signal the AUTOPULSE control unit.
- 2 The AUTOPULSE control unit then triggers a series of actions... activates alarms – shuts down ventilation – and, after the prescribed time delay period, energizes the electric actuator on the INERGEN cylinder valve.
- 3 The cylinder valve opens allowing INERGEN agent to escape from the storage cylinder(s) into the distribution piping network.
- 4 INERGEN agent discharges through the nozzles where it quickly floods the protected area to suppress the fire.



Selector Valve and Piping Arrangement

Installation and service

INERGEN fire suppression systems are installed, maintained, and serviced by a worldwide network of Ansul authorized fire equipment distributors who are factory trained and fully equipped to keep your systems fire-ready.



Specifications

1.01 SYSTEM ARRANGEMENT

- A. INERGEN fire suppression system shall be of the engineered fixed-nozzle type with all pertinent components provided by Ansul Incorporated.
- B. Agent storage cylinders shall be centrally located, free-standing cylinders with wall-mounted retaining brackets. Where multiple cylinders are required for the same hazard, a common manifold shall be employed.
- C. One cylinder shall be designated as the pilot cylinder and employ the electric actuator, mechanical manual actuator, or both. All remaining cylinders shall be pneumatically operated from the INERGEN agent.
- D. Manifold cylinders shall employ a flexible discharge hose to facilitate installation and system maintenance. Each cylinder on a manifold shall also include an agent check valve installed to the manifold inlet.

1.02 FLOW CALCULATIONS

- A. Computerized verification of flow calculations shall be submitted for each INERGEN fire suppression system and include the following data as a minimum:
 - 1) Quantity of agent per nozzle.
 - 2) Manifold orifice device and nozzle orifice diameters.
 - 3) Pressure at nozzle.
 - 4) Nozzle body nominal pipe size.
 - 5) Number and size of cylinders.
 - 6) Total agent quantity.
 - 7) Pipe size and schedule per pipe section.
 - 8) Number, size and type of fitting per pipe section.
 - 9) Actual and equivalent lengths per pipe section.
 - 10) Discharge time.

2.01 PIPE MATERIAL

- A. System piping shall be of noncombustible materials having physical and chemical characteristics such that its integrity under stress can be predicted with reliability.
- B. As a minimum, piping materials shall be black steel pipe conforming to ASTM A-53A ERW or ASTM A-106A seamless.
- C. Under no conditions shall ordinary cast iron pipe, steel pipe conforming to ASTM A-120 or ASTM A-53/A-120 be used.
- D. Piping joints shall be suitable for the design conditions and shall be selected with consideration of joint tightness and mechanical strength.
- E. As a minimum, fittings beyond the manifold orifice device shall be black, 300 lb. class conforming to ANSI B-16.3. Ordinary cast iron fittings shall not be used. Distribution piping downstream of the manifold orifice device must be a minimum of Schedule 40.
- F. The system manifold up to the manifold orifice device must be constructed of Schedule 80 piping and 2000 lb. or 3000 lb. forged steel fittings.
- G. All piping shall comply with NFPA 2001: *Standard on Clean Agent Fire Extinguishing Systems*.
- H. Piping shall be installed in accordance with good commercial practice to the appropriate codes, securely supported with UL Listed hangers and arranged with close attention to the design layout since deviations may alter the design flow performance as calculated.
- I. Piping shall be bracketed within 12" (300 mm) of all discharge nozzles.
- J. All piping shall be reamed, blown clear and swabbed with appropriate cleaner to remove mill varnish and cutting oils before assembly.
- K. Multi-outlet fittings, other than tees, shall not be permitted.
- L. Assembly of all joints shall conform to the appropriate standards. On threaded pipe joints, TEFLON® tape shall be applied to the male threads only.

2.02 EXTINGUISHING AGENT

- A. The agent shall be INERGEN®, a trademark registered to Ansul Incorporated.

2.03 STORAGE CYLINDERS

A. Cylinder assemblies shall be of steel construction with a red epoxy paint finish. Each cylinder shall be equipped with a pressure-seat type valve and gauge. The cylinder shall utilize Ansul CV-98 forged brass valve assemblies providing a leak-tight seal at the valve-to-cylinder connection. Each valve shall include a safety pressure relief device per CGA test methods.

B. Filling of the cylinder assembly shall be by Ansul Incorporated or an authorized INERGEN systems distributor in conjunction with a factory authorized INERGEN agent filling station. Initial filling and recharge shall be performed in accordance with the manufacturer's established procedures and shall not require replacement components for normal service.

2.04 CYLINDER BRACKET

A. Each cylinder assembly shall be furnished with a welded steel bracket. The bracket shall hold the cylinders in a saddle with a front securing device. The brackets shall be modular in design to allow added bracketing or stacking of cylinders depending on installation requirements.

B. Cylinder brackets shall be UL listed and/or FM approved for use with the INERGEN system.

2.05 SELECTOR/CYLINDER VALVE ACTUATORS

A. Electric valve actuators shall be of brass construction and stackable design with swivel connections to allow removal for maintenance or testing.

B. Actuation devices shall be UL listed and/or FM approved for use with the INERGEN system.

2.06 DISCHARGE HOSE/CHECK VALVE

A. When manifolding, all cylinder assemblies shall include a flexible discharge hose and check valve for connection to the manifold inlet.

B. All hose/check valves shall be UL listed and/or FM approved for use with the Ansul CV98 valve.

2.07 DISCHARGE NOZZLES

A. Discharge nozzles shall be of two-piece construction and sized to provide flow rates in accordance with system design calculations.

B. A nozzle inlet orifice plate shall be included. A computerized, UL listed, flow calculation program shall determine the orifice size.

C. Orifice(s) shall be machined in the nozzle body to provide a horizontal discharge pattern based on the approved coverage arrangements.

D. Nozzles shall be permanently marked with the manufacturer's part number and threaded directly to the discharge piping without the use of special adapters.

E. Nozzles shall be UL listed as manufactured by Ansul Incorporated.

2.08 MANIFOLD ORIFICE DEVICE

A. An orifice device shall be included in the manifold to reduce pressure in the downstream pipe network. A separate manifold orifice device shall be included for the extended discharge nozzles.

B. Manifold orifice devices shall be rated at 2000 lb. Class minimum.

C. Manifold orifice devices shall be permanently marked with the manufacturer's orifice code.

D. Manifold orifice devices shall be UL listed and/or FM approved for use with the INERGEN system.

2.09 SYSTEM CHECKOUT AND TESTING

A. The completed installation shall be inspected by factory authorized and trained personnel. The inspection shall include a full operational test of all components per the equipment manufacturer's recommendations (including agent discharge).

B. Inspection shall be performed in the presence of the owner's representative, architect or engineer's representative, insuring authority, and/or the local authority having jurisdiction.

C. All mechanical and electrical components shall be tested according to the manufacturer's recommended procedure to verify system integrity.

D. Inspection shall include a complete checkout of the detection/control system and certification of cylinder pressure. A written report shall be filed with the owner.

E. The contractor shall provide as-built drawings (2 copies) indicating the installation details. All routing of piping, electrical conduit, and accessories shall be noted.

F. Equipment installation and maintenance manuals shall be provided in addition to the as-built drawings.

G. Prior to final acceptance, the contractor shall provide operational training to the owner's key personnel. Training shall consist of:

- 1) Control system operation.
- 2) Trouble procedures.
- 3) Abort procedures.
- 4) Emergency procedures.
- 5) Safety requirements.
- 6) Demonstration of the system (excluding INERGEN release).

H. The quantity of agent shall reflect the actual design quantity of INERGEN agent.

I. A functional test shall be completed prior to the concentration test consisting of detection, alarm, accessories related to the system, control unit and a review of the cylinders, piping, fittings, hangers and cylinder pressure.

3.01 WARRANTY

A. All INERGEN system components furnished under this contract shall be guaranteed against defects in design, material and workmanship for the full warranty time which is standard with the manufacturer and/or supplier but not less than one (1) year from the date of system acceptance. In addition, the installing contractor must guarantee the system against false actuation or leakage due to faulty equipment, design or workmanship for a period of one (1) year from final acceptance.

**For more information about Ansul
Fire Protection Systems...**

Contact your local Ansul Distributor...

Or Call:

1-800-TO-ANSUL (USA/CAN)

1-715-735-7411 (International)

www.ansul.com

tyco

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