Protecting the World's Cultural Treasures

- INERGEN® Fire Suppression Systems
- AUTOPULSE® Detection and Control Equipment
- CLEANGUARD™ Hand Portable Fire Extinguishers

FIRE ANSUL® SOLUTIONS

Cultural facilities need special fire protection.

Imagine: a priceless Van Gogh, a copy of the Gettysburg Address, ancient Mayan utensils. All destroyed by fire. ***Unthinkable.***

Even a small fire around significant historical or cultural objects could be devastating. While the loss of even a single priceless artifact would be regrettable, the damage to surrounding items from the extinguishing process itself is preventable. Direct damage to displays, labor costs for repairs and loss of revenue in the event of fire can be minimized with proper planning.

The Ansul solution

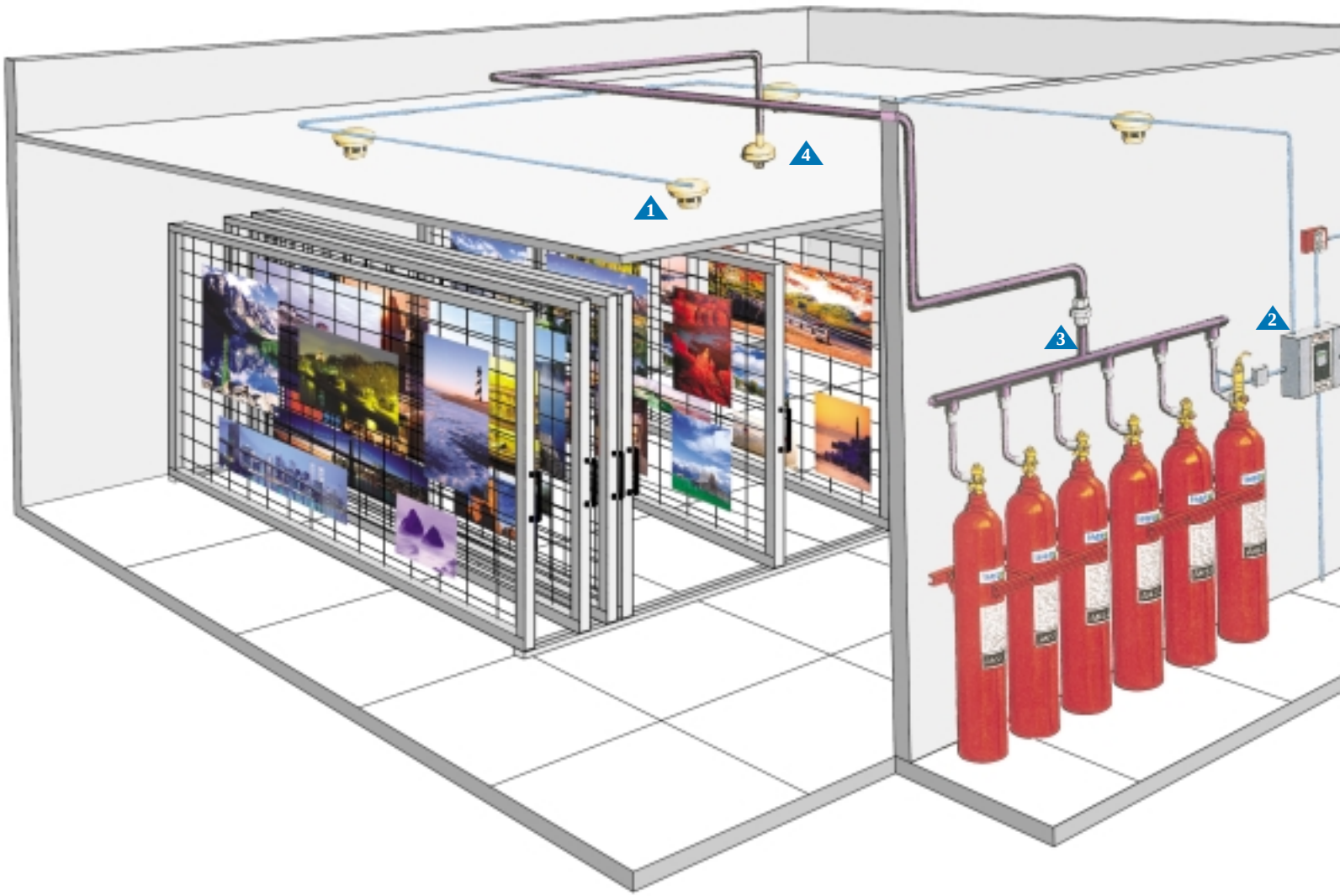
From Germany to China, Ivy League universities to Western Samoa, INERGEN® Fire Suppression Systems are installed in scores of museums, libraries, galleries and archives around the world.

- INERGEN systems with early warning AUTOPULSE® detection systems detect and suppress a fire in its incipient stages while protecting valuable historical items and artwork. There is often little or no damage or business interruption to the affected area.
- INERGEN agent will not harm priceless artwork or fragile historic artifacts because it does not break down to form acidic byproducts.
- INERGEN agent does not produce a significant temperature drop in the protected space upon discharge. It does not produce a dense fog that could collect on displays or impede evacuation. Because it is nearly the same density as air, INERGEN agent will maintain its extinguishing concentration for extended periods.
- INERGEN agent is safe for human exposure, being the only agent that has had extensive actual human exposure testing. The presence of carbon dioxide in INERGEN agent results in more efficient transfer of oxygen to the brain tissue, maintaining an oxygen amount equivalent to normal atmosphere.
- The use of selector valves can provide a tremendous advantage by reducing the installed cost of an INERGEN system. Because INERGEN agent is stored and flows as a gas, it can be discharged over significant distances. INERGEN storage cylinders can be located away from displays, collections or galleries.
- INERGEN systems come with a long list of built-in features, innovative design, precision manufacturing, exhaustive testing, plus an EVERGREEN Warranty to cover the agent cost whenever the system is discharged.
- Ansul also recommends the installation of CLEANGUARD™ portable fire extinguishers in museums, libraries and galleries. These "clean agent" portables meet or exceed the standards set forth by the authority having jurisdiction.

Systems you can depend on

INERGEN systems are the long-term solution to protect lives, property and the environment. INERGEN agent is composed of three naturally occurring gases found in the air we breathe – nitrogen, argon and a small amount of carbon dioxide, which improves human safety. Fires are suppressed quickly with no residue to clean up. INERGEN agent's ozone depletion level, global warming potential and atmospheric lifetime are all ZERO. Because it is not a synthetic chemical, it has not been banned or restricted for use by any country. It is listed and approved by governmental, nationally and internationally recognized testing laboratories.

CLEANGUARD™ 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 factors that are only determined through a pre-installation in-depth analysis of all likely areas of probable fire incident.

Detection and Control Equipment

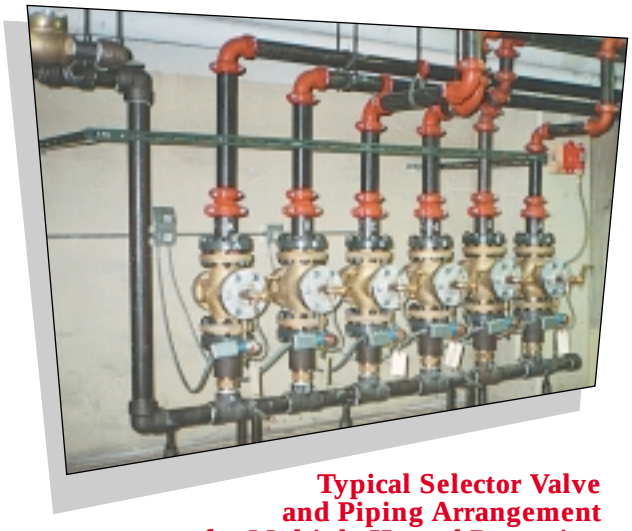
AUTOPULSE® Control Units

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. An early warning fire detector senses minimal, invisible smoke. This sends an advanced warning signal to the AUTOPULSE Control Panel. If the fire condition progresses, a fire signal is generated.
2. The AUTOPULSE Control Unit activates alarms and shuts down ventilation. After the required time delay, it energizes the cylinder electric actuator. (When selector valves are provided for multiple area protection, the corresponding selector valve will be energized for the affected area.)
3. The cylinder valve (and selector valve) opens allowing INERGEN agent to flow through the piping network into the affected area.
4. INERGEN agent discharges through the nozzles where it quickly floods the protected space to suppress the fire.



Typical Selector Valve and Piping Arrangement for Multiple Hazard Protection

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 using back pressure from the manifold.

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 valve outlet.

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 a minimum 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 in. (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 enamel 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.

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.

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 DETECTION AND CONTROL

A. The detection system shall be an AUTOPULSE control system with battery backup providing 24 hours of standby and 5 minutes in alarm.

B. Early warning smoke detectors shall be installed at no more than 250 sq. ft. (23.2 sq. m) coverage per detector with the first detector in alarm providing general alarm and the second detector in alarm starting the release sequence.

C. Manual pull operation shall provide immediate system discharge and all shutdown functions.

D. An alarm bell shall indicate first detector in alarm, a sounder/strobe shall indicate the start of the release sequence, and a strobe shall indicate system discharge.

E. The release circuit shall be compatible with the INERGEN system and selector valve actuators.

F. The detection and control system shall be UL Listed as compatible with the INERGEN system.

2.10 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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