Automated Tape Storage Libraries

- INERGEN® Fire Suppression Systems
- AUTOPULSE® Detection & Control
- CLEANGUARD™ Hand Portable Fire Extinguishers
Automated cartridge drive library units are usually found in larger computer complexes. An integral computer-controlled robotic arm will select a data storage cartridge from the interior racks and place it in a drive. A single storage unit can have as many as 6000 data cartridges and several storage units can be linked together using pass-through ports. Due to the extremely high value of the system and its contents, a fire would have devastating consequences. Extensive downtime and service interruption can result in even greater losses.

The Ansul solution

INERGEN® fire suppression systems have been tested on working library units and numerous installations are in place worldwide.

- Tests have shown that library units cannot hold initial design concentrations; therefore three INERGEN cylinders are typically provided. One cylinder provides the initial concentration of gas while the other two cylinders maintain the design concentration for an extended period.
- INERGEN agent has nearly the same density as normal atmosphere and therefore is better able to maintain its extinguishing concentration for extended periods.
- INERGEN agent does not threaten hardware or tapes because it does not break down to form acidic gases, it is not a solvent, and it will not produce a significant temperature drop in the protected area.
- INERGEN systems come with a long list of built-in features, innovative design, precision manufacturing, and extensive testing - PLUS an EVERGREEN Warranty covering the cost of the agent whenever you discharge your system.
- Ansul also recommends the installation of CLEANGUARD® Fire Extinguishers in rooms containing tape storage libraries or other sensitive electronic equipment. These portable “clean agent” extinguishers meet or exceed the standards set forth by the authority having jurisdiction.

INERGEN agent is the long-term solution for protecting lives, property, and the environment. Composed of three naturally-occurring gases found in the air we breathe - nitrogen, argon, and carbon dioxide - INERGEN spreads quickly throughout a protected space with no agent residue to clean up. The environment-friendly agent, INERGEN boasts ZERO ozone depletion potential, ZERO global warming potential, and ZERO atmospheric lifetime. And because it is not a synthetic chemical, INERGEN has not been banned from use by any country. It is listed and approved by governmental and nationally recognized laboratories around the world.
NOTE: This drawing is conceptual in nature. The fire suppression system depicted was prepared from information provided through vendor’s sales literature and constitutes nominal hardware requirements. The final system design must consider other potential ignition and fuel source areas not evident in the vendor’s literature. This means a pre-installation in-depth analysis of all likely areas of probable fire incident must be performed.

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... sounds alarms - shuts down ventilation - and, after the prescribed time delay period, energizes the electric actuator on the INERGEN cylinder valve. (Each tape storage module is equipped with two detectors which must both sense the fire before the INERGEN system will actuate.)

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 two nozzles where it quickly floods the protected units to suppress the fire.

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 restorable electric actuator, mechanical manual actuator, or both. All remaining cylinders shall be pneumatically operated from the INERGEN agent.
D. Manifolded 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.) Orifice union/nozzle 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-53/EW or ASTM A-106A seamless.
C. Under no conditions shall ordinary cast iron pipe, steel pipe conforming to ASTM A-120 or ASTM A-120-A 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 orifice union/nozzle 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 orifice union must be a minimum of Schedule 40.
F. The system manifold up to the orifice union/nozzle must be constructed of Schedule 80 piping and 2000 lb. or 3000 lb. forged steel fittings.
G. All piping shall comply with NFPA 2001.
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” (3 m) of all discharge nozzles.
J. All piping shall be reamed, blown clear and swabbed with appropriate solvent 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, TFEFLON® tape shall be applied to the male threads only.

2.02 EXTINGUISHING AGENT
A. The agent shall be INERGEN, a trademark name registered to Ansul Incorporated.

2.03 STORAGE CYLINDERS
A. Cylinder assemblies shall be of steel construction with a standard 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 which provides relief at 3000-3860 psi 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 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 CV-98.

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. The orifice size shall be determined by a computerized UL Listed flow calculation program.
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 ORIFICE UNION/NIPEL ASSAMPLES
A. An orifice union shall be included in the manifold to reduce pressure in the downstream pipe network. A separate orifice union shall be included for the extended discharge nozzles.
B. Orifice union assemblies shall be rated at 2000 lb. Class minimum.
C. Orifice union assemblies shall be permanently marked with the manufacturer’s orifice code. The orifice union/nipple shall be threaded directly to the manifold piping without the use of special adapters.
D. Orifice union assemblies 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 recommendation.
B. Inspection shall be performed in the presence of the owner’s representative, architect or owner’s representative, inspecting 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. As-built drawings shall be provided by the contractor (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.) Alarm 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 consisting of detection, release, 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 the event of INERGEN agent leakage or system discharge from any of the above conditions, the installing contractor shall completely recharge and recondition the system at no cost to the owner.

For more information about Ansul Fire Protection Systems...
Contact your local Ansul Systems Distributor...
OR CALL:
1-800-TO-ANSUL (USA/CAN)
1-715-735-7411 (International)