

Hybrid Fire Extinguishing Systems



Origin Hybrid Technology



2003 Victaulic began research into special hazards market
In 2008 - FM approval of the Vortex system as a:
HYBRID FIRE PROTECTION SYSTEM



Why Hybrid Technology?

What is in the world today?





Fire Sprinklers

Water mist

- Use of water for cooling
- Area based
- Will control but not extinguish shielded fires



Why Hybrid Technology?

What is in the world today?



Clean Agent/Inert/Chemical

 CO_2

- Total flooding/dilute oxygen concentration
- Requires room integrity
- Byproducts/ Halocarbons











Emitter Design









Droplet Pattern Disbursement





Cooling Effect

Standard Sprinkler

Relative Surface Area of Heat Exposure 90 81 80 70 60 **Square Inches** 50 Per Minute, normalized 40 **Standard** Sprinkler = 1 30 20 7 10 1 0

POLIG 24 CONFERENCE

High Pressure Mist

Vortex



Room Integrity





Normally Occupied Areas

Oxygen Concentration Levels and Effects





Fire Testing

Against Watermist (FM 5560)	Against Clean Agent (UL2127)	NFPA 770 Hybrid
EXAMPLATION OF THE ADDRESS OF THE A	SPECIAL SERVICES INVESTIGATION TO CONDUCT CLASS A and B FIRE TESTS OF VICTAULIC R859 FIRE SUPPRESION SYSTEM	NFPA® 770 Standard on Hybrid
CONTRACT TEST REPORT	Prepared by Underwriters Laboratories Inc.	(Water and Inert Gas)
CONTRACT TESTS FOR R-859 FIRE SUPPRESSION SYSTEM FOR SPECIAL HAZARDS Prepared for:	Project 07NK11919, EX5170 for Victaulic Fire Safety Co.	Systems 2021 Edition
Victaulic Company 4901 Kesslersville Road P.O. Box 31 Easton, PA 18044-0031	Issued: April 8, 2008 Copyright © 2008, Underwriters Laboratories Inc.	- -
Project: 3031726 Class: 5560 Date of Approval: <u>May 13, 243 B</u> Authorized by: <u>With B. W.</u> Richard B. Dunne, Manager – Hydraulics Group		
FM Approvals 1151 Boston-Providence Turmpike PO Bos 9102 Norwood, MA 02062		NFPA®, 1 Batterymarch Park, PO Box 9101, Quincy, MA 02169-7471, USA An International Codes and Standards Organization



NFPA 770

NFPA 770

Standard on Hybrid (Water and Inert Gas) Fire Extinguishing Systems

2021

Scope

- Design
- Installation
- Acceptance
- Inspection
- Testing
- Maintenance





Data Processing Equipment

Reading/Writing Test

Equipment Details: Hybrid Computer Hard Drives: Hitachi Model HUS154530VLFS0 300 GB Capacity SAS Interface 15000 RPM

Western Digital Caviar Black Model: WD1002FAEX-00Z3A0 1.0 TB Capacity SATA Interface 7200 RPM

Western Digital Caviar SE Model: WD3200JS 320 GB Capacity SATA Interface 7200 RPM IBM Lenovo R60 Hard Drive: Model: HTS54106069SA00 60 GB Capacity EIDE Interface 5400 RPM

•EFD Software •Software: HD Tune Pro •Version 4.60 •www.hdtune.com

Literature: WP-19 – Victaulic Vortex® Fire Suppression System Study, Discharge Impact On Hard Disk Drives White Paper -



Data Processing Equipment









Multi-Zone















Local Application





Room Integrity Testing





Applications (Class A, B & C)





Applications (Class A, B & C)





Conclusion



No Room Integrity



Low refill costs



Low water requirement



Flexible Design



No equipment damage



Green System



Thank you for your attention!