Victaulic®

Victaulic Vortex®
Cutting Edge Special Hazard “Hybrid” Fire Extinguishment System

Mark Martella
Vortex Sales Manager
Company Overview

- Easton, PA
- 150+ Engineers
- Thousands of Patents/Employees
- Privately Held
- Manufacturing World Wide
- Invented “Grooved” Concept
What Is Vortex?

A special hazards hybrid system that utilizes both an inert gas and atomized water droplets to extinguish a fire

Combination of a water mist and clean agent/gaseous system
Vortex Hybrid System Inerts & Cools To Fully Extinguish Fires
Vortex Approvals

- NFPA 770
- FM 5580
- UL 2127 Class A&B
- FM Local Application For Wet Benches
- EPA SNAP Approval
How Does The Vortex Hybrid System Work?

• The patented supersonic emitter creates a multi-layer shock wave of nitrogen that atomizes water to a sub 10 micron level. Then it:

• Creates a homogenous suspension of nitrogen and water by embedding the water molecules into the nitrogen molecules
How Does The Vortex Hybrid System Work?

**Clean Agent/Gaseous Component**
Nitrogen gas actively dilutes the oxygen level down to a safe 14 to 15%

**Water Mist Component**
Sub 10 micron non conductive atomized water droplets absorb heat from the fire to vaporize as steam
Differences Between Gaseous/Clean Agent & Vortex Hybrid Systems…..

• Reduced Room Integrity Issues
  - No dampers, fan tests or sealing the room

• Sustainable “Green” System
  - Only uses water and nitrogen

• Inexpensive Refill
  - Nitrogen and water are inexpensive and readily available

• Eliminates Life Safety Concerns
  - Safe for occupied spaces
150,000 ft³ Data Center
Differences Between Water Mist & Vortex Hybrid Systems.....

- Little or no containment needed
  - Reduced disposal costs & eliminates containment tanks
- No risk of damage to high value assets
  - Completely safe on records storage, turbines, bearings..
- Multiple piping material options
  - Schedule 10 plastic/metal piping
- Uses less water more efficiently
  - 1gpm per emitter per minute down to < a 1/4gpm
Pickle Line Local Application
Water Tanks

- Multiple sizes
- No pumps
- Low maintenance
- Potable/distilled water
- Site glass
- ASME rated
Nitrogen Cylinder Options
## Performance Analysis

<table>
<thead>
<tr>
<th>Agent</th>
<th>Flow, gpm</th>
<th>Drop Size, µm</th>
<th>Pressure, psig</th>
<th>Momentum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vortex</strong></td>
<td>&lt;= 1</td>
<td>&lt; 10</td>
<td>25</td>
<td>High</td>
</tr>
<tr>
<td><strong>Intermediate Pressure Water Mist</strong></td>
<td>20</td>
<td>400-1000</td>
<td>350</td>
<td>High</td>
</tr>
<tr>
<td><strong>High Pressure Water Mist</strong></td>
<td>8</td>
<td>100</td>
<td>1500-2500</td>
<td>Low to Moderate</td>
</tr>
<tr>
<td><strong>Sprinkler Systems</strong></td>
<td>&gt;25</td>
<td>&gt;1000</td>
<td>20-min</td>
<td>High</td>
</tr>
<tr>
<td><strong>Inert Gases</strong></td>
<td>NA</td>
<td>NA</td>
<td>2500</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Halogenated Agents</strong></td>
<td>NA</td>
<td>N/A</td>
<td>350</td>
<td>NA</td>
</tr>
</tbody>
</table>
# Performance Analysis

<table>
<thead>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Vortex</td>
<td>negligible</td>
<td>Gradual</td>
<td>Fast</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes (insignificant wetting)</td>
</tr>
<tr>
<td>Intermediate Pressure Water Mist</td>
<td>High</td>
<td>Gradual</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Deluge (significant wetting)</td>
</tr>
<tr>
<td>High Pressure Water Mist</td>
<td>medium</td>
<td>Gradual</td>
<td>Fast</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes (heavy wetting)</td>
</tr>
<tr>
<td>Sprinkler Systems</td>
<td>Very High</td>
<td>Gradual</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Deluge (significant flooding)</td>
</tr>
<tr>
<td>Inert Gases</td>
<td>None</td>
<td>Rapid</td>
<td>Minimal</td>
<td>No</td>
<td>No</td>
<td>Yes (no wetting)</td>
</tr>
<tr>
<td>Halogenated Agents</td>
<td>None</td>
<td>N/A</td>
<td>Moderate</td>
<td>No</td>
<td>No</td>
<td>Yes (no wetting)</td>
</tr>
</tbody>
</table>
The “Solution” System

• Room integrity issues
• Lock out/down time
• Little or no running water
• Life safety concerns
• Sustainability
• Agent recharge costs
• Multi-zoned applications
• Asset protection
THANK YOU