

VictaulicVortex™

fire suppression system



For Data Center and Control Room Applications

- Nearly zero wetting
- No costly clean up or equipment replacement
- Sustainable design
- Quick system recharge, minimal downtime
- No need for assurance of tight room integrity

The Victaulic Difference

“ In mission critical applications like data rooms and server spaces, the ability to provide fast, dependable fire suppression without any appreciable water presence or toxic chemicals is fantastic. At Bluehost, we are all about innovative technology. We look for flexible systems that can accommodate our specific needs, both in protecting equipment and people, as well as getting back up and running fast after an event. The Victaulic Vortex system offers all that and more — green technology, minimal water presence, effortless clean-up, economical recharge, immediate activation, no need for room integrity — this system simply has it all.”

—MATT HEATON, OWNER, BLUEHOST



**As little as 0.26 GPM / 0.98 LPM
of water per emitter discharged.**

100% green design.

**Zero need for maintenance
of room integrity.**

The Victaulic Vortex Fire Suppression System is built on more than 85 years of Victaulic innovation and product development experience and provides the best capabilities of both water mist and inert gas systems.

The homogeneous mixture of water droplets and nitrogen gas is discharged with enough energy to overcome the drag effect that has limited the effectiveness of traditional water mist systems.

Fire suppression for data centers and control rooms

- Minimal water presence
- Simple, modular system design for easy installation and maintenance
- Easy portability for facility relocations or renovations

Victaulic

Active release system

The Victaulic Vortex system utilizes an active release system to discharge nitrogen upon activation.

- Simple, low-maintenance piping
- Easy access to cylinders for refill and inspection
- Scalable, expandable design





Victaulic Vortex hybrid technology extinguishes via heat absorption and oxygen deprivation with minimal water presence.

1/4 gallon/
1 litre

SPARSE WATER PRESENCE

As little as 1/4 gallon / 1 litre of water per minute per emitter utilized to suppress fires.

ROOM INTEGRITY

Unlike other systems, maintaining room integrity is not essential; fires are extinguished in open, naturally ventilated areas.

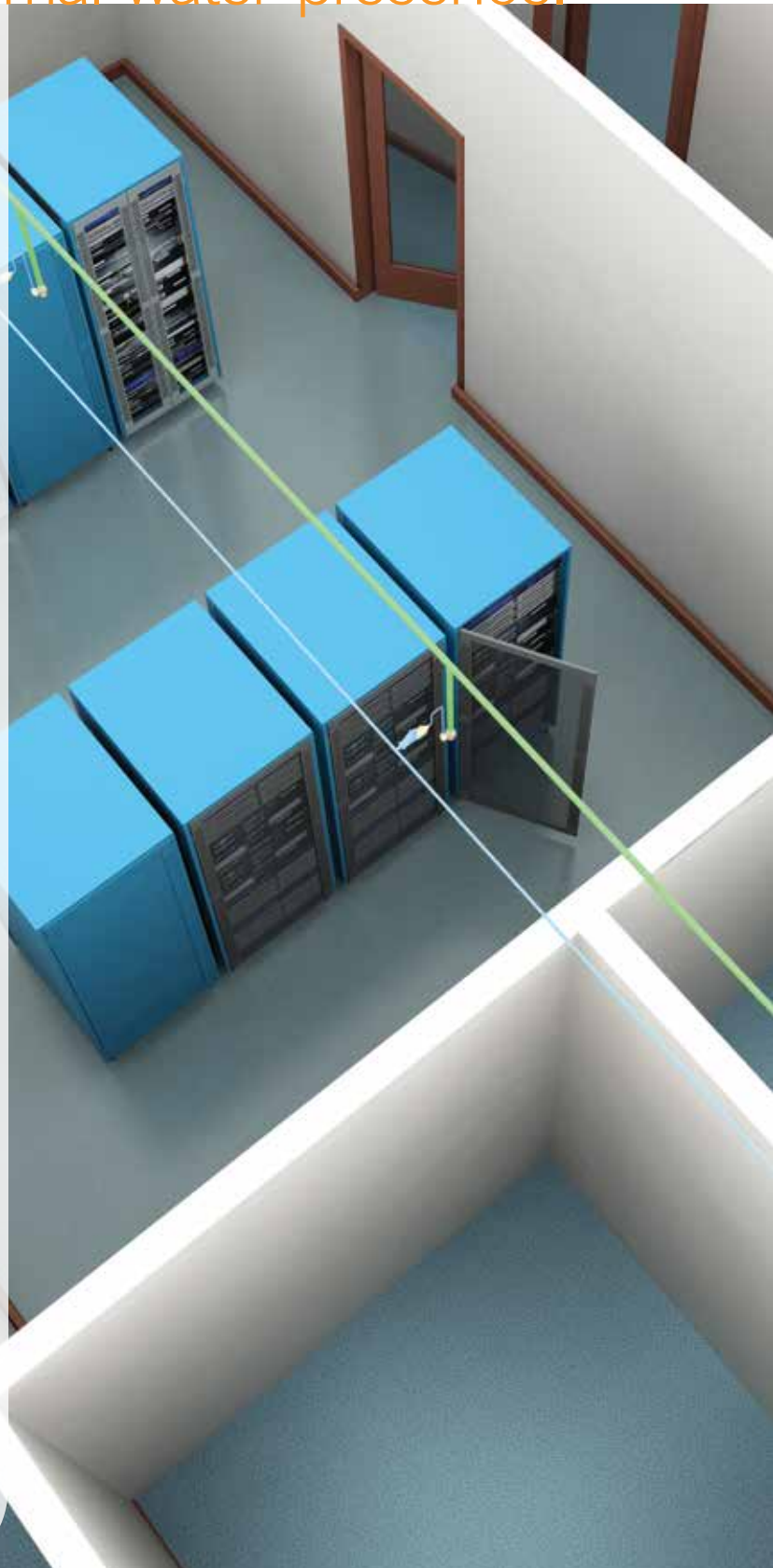
SUB FLOORS

Sub-floor spaces easily protected by scalable, zoned system design.

40 mph/
65 kph

EMITTER/DISCHARGE

High velocity and low pressure creates a uniform blend of water and nitrogen; water is introduced to a jet stream of nitrogen at supersonic speed, then delivered with the nitrogen into the protected space at 40 mph / 65 kph.





COMPATIBLE WITH SECURITY SYSTEM

The system is compatible with facility fire protection systems providing greater design flexibility in both retrofit and new construction.

ZONEABLE AND SCALABLE

System activation is immediate when sensors detect smoke or heat — there is no delay in activation to evacuate personnel to avoid a toxic environment.

nearly
zero
wetting

PROTECTION WITHIN ENCLOSURES

Even small, smoldering fires within racks are detected and extinguished with negligible water exposure for components or hardware.

sustainable
design

100% GREEN DESIGN

Made entirely of non-toxic agents — personnel are safe even during activation; reduction of oxygen in the space is at levels within safe breathing tolerances.



Performance



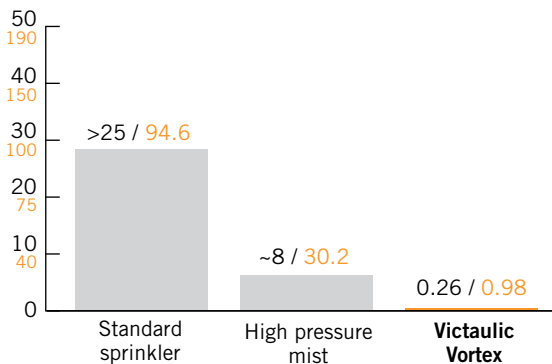
The average Victaulic Vortex droplet size is around 10 microns, and the minimal amount of water released per emitter—as little as ¼ gallon or 1 litre per minute—virtually eliminates any wetting in a space.

The system uses **97% less water** than high-pressure water mist systems. For example, a space the size of two football fields can be protected by a system that activates immediately to extinguish a high hazard fire with **around 3 gallons / 11 litres of water in less than four minutes**.

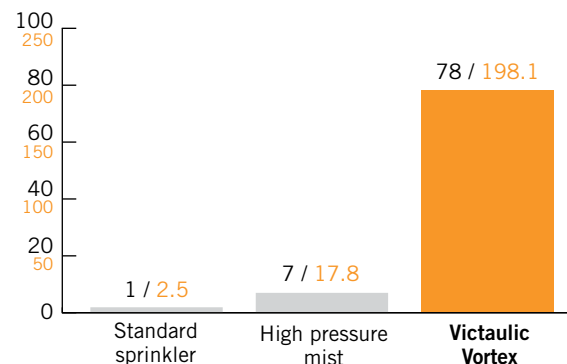
Unlike other combined agent systems, the Victaulic Vortex hybrid system utilizes both nitrogen and water as **complementary extinguishing agents**.

For smaller fires, the Victaulic Vortex system utilizes nitrogen as the primary extinguishing agent, reducing the oxygen level in the space to a breathable level, where combustion cannot be sustained.

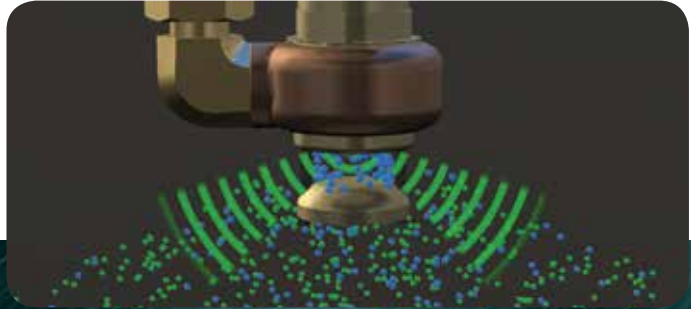
RELATIVE AMOUNT OF WATER REQUIRED
GPM / LPM FLOW PER EMITTER, NOZZLE OR SPRINKLER



RELATIVE SURFACE AREA OF HEAT EXPOSURE IN² PER MIN. /
CM² PER MIN., NORMALIZED STANDARD SPRINKLER=1



In larger fires, the water mist is more effective, cooling the fire by absorbing the heat and reducing the available oxygen. In fact, the heat-absorbing water droplet surface area is **90 times greater** than that of any standard sprinkler system, providing maximum heat absorption efficiency.



PERFORMANCE ANALYSIS:

WATER CHARACTERISTICS COMPARISON

	FLOW, GPM / LPM PER EMITTER, NOZZLE OR SPRINKLER	DROP SIZE, μm	OPERATING PRESSURE, PSIG	VELOCITY
Agent				
Victaulic Vortex Fire Suppression System	0.26 / 0.98	<10	25 / 172.4	High
Intermediate Pressure Water Mist	37 / 140	400 – 1000	350 / 2413.2	High
High Pressure Water Mist	~ 8* / 30.2	50 – 100	1500 – 2500 / 10342.1 – 17236.9	Low
Sprinkler Systems	>25 / 94.6	>1000	>20 min / 137.9	Moderate
Inert Gases	N/A	N/A	2500 / 17236.9	N/A
Halogenated Agents	N/A	N/A	360 / 2482.1	N/A

*Dependent upon system design

PERFORMANCE ANALYSIS:

ENVIRONMENT IMPACT COMPARISON

Agent	
Victaulic Vortex Fire Suppression System	A hybrid system utilizing inert clean agent gas and water. The ~ 10 μm sized water droplets remove the heat in large fires and aid in the radiative and convective heat blocking. The nitrogen extinguishes small fires in large rooms in naturally ventilated environments.
Intermediate Pressure Water Mist and Sprinkler Systems	Larger size water droplet are used to soak the fuel source. Steam generated from the fire aids in the radiative and convective heat blocking. Large droplet size and momentum generally make these less efficient for shielded fires.
High Pressure Water Mist	Water extracts heat from the fire. Steam generated from the fire aids in the radiative and convective heat blocking. Momentum is generally lost within a short distance of the nozzle. Most efficient for large fire extinguishment.
Inert Clean Agent Gases	Rely primarily on oxygen reduction. Limited thermal cooling and no reduction of radiative or convective heat transfer. Fuel is not cooled and re-ignition from hot objects is possible.
Halogenated Agents	Rely on flame temperature reduction due to the thermal characteristics of the agent or disruption of the combustion process. No reduction in radiative or convective heat transfer and the fuel is generally not cooled leading to possible reignition.

project brief

Zappos Data Center

LOUISVILLE, KENTUCKY, USA

TYPE OF FACILITY: DATA CENTER



When the Zappos company needed a new fire suppression system to protect its data center in their Louisville, Kentucky facility, they turned to Midwest Fire Protection. Midwest chose to install the Victaulic Vortex Fire Suppression system, in order to avoid large amounts of water around the computer equipment as well as to fulfill a need to suppress fires out in the open, ventilated space and inside the electrical cabinets.

The environmentally-friendly Victaulic Vortex system was also desired by the Zappos Company for its zero emissions and absolute lack of toxic chemicals or agents. The project was completed in 2009.

ENGINEER/CONSULTANT

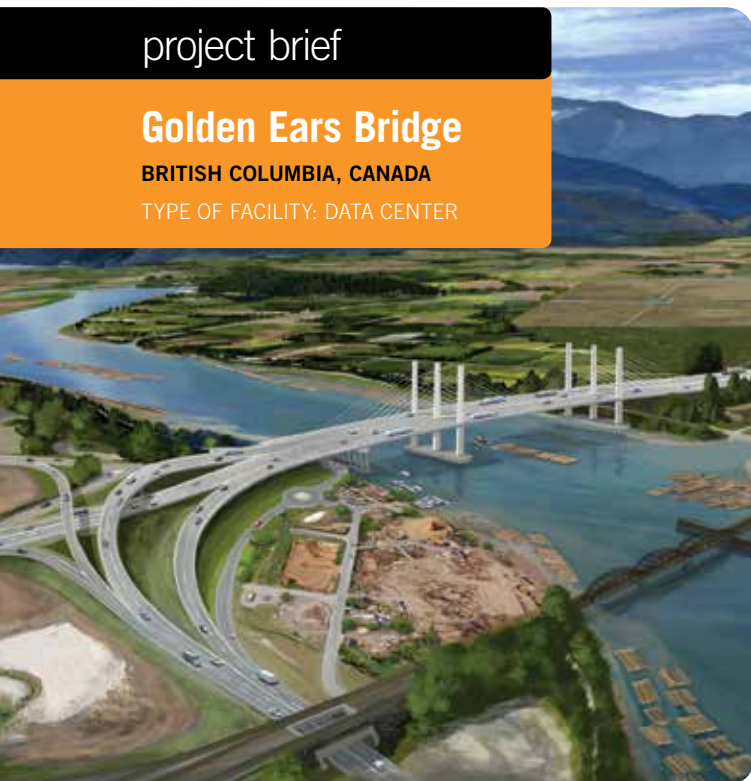
Meyer General Contracting, Inc.

project brief

Golden Ears Bridge

BRITISH COLUMBIA, CANADA

TYPE OF FACILITY: DATA CENTER



This data center facility, located approximately five miles from the Golden Ears Bridge, is operated by Transroute, Canada and supports the bridge's automated toll equipment. ASD Technologies selected the Victaulic Vortex™ Fire Suppression system because it can adequately suppress fires which may start inside computer rack cabinets with minimal water damage. Further, since the Victaulic Vortex system only deploys water and nitrogen, it is a 100% green system which was also a requirement for this project.

Another key Victaulic Vortex system benefit is its ability to be installed as a stand-alone system, operating independently of the fire safety systems for the surrounding building. The project was completed in 2010.

ENGINEER/CONSULTANT

Novota Group

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