ASPIRATION

Case Study: **Science Museum of Minnesota**

Science's Answer to **Critical Protection**

Project:

Science Museum of Minnesota
St. Paul, Minnesota

Connected storage area
Volatile materials
Challenging architecture
Dusty environment
Very Early Warning required

Aspiration FAAST 8100

The Science Museum of Minnesota installed **FAAST™ Fire Alarm Aspiration Sensing Technology** for maximum protection in its hazardous fluids and equipment storage area.

Fire protection for a mission-critical facility, such as the Science Museum of Minnesota, is not limited to the exhibit space; it extends to other buildings. For instance, maintaining a museum with irreplaceable and invaluable artifacts requires sophisticated equipment, many cleaning and maintenance supplies and a first-rate storage facility to service the museum.

"Because of the proximity of the storage facility to the museum, fire safety and protection have to be top rated," says Don Hedin, Assistant Director of Facilities at the Science Museum of Minnesota in St. Paul, Minn. That led the museum to install the FAAST Fire Alarm Aspiration Sensing Technology in its storage facility.

"We store fuel and other volatile liquids in secured safety cabinets," he continues. "We also store our tractors, garden and snow removal equipment, vehicles and other maintenance equipment there." The 1,225 sq. ft. locked storage area is located in the museum's adjoining 810-vehicle parking structure.

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"The storage area's unusual concrete ceiling," Hedin says, "consists of 18 pre-cast double tee ceiling panels that are roughly 3 ft. x 4 ft. x 25 ft. each." Smoke easily could collect in the concave-shaped ceiling before an alarm would be signaled. Further complicating fire detection, the storage facility can be a dirty and dusty environment.

"We researched various methods of detection and needed a very early warning system," Hedin continues. "We didn't want to trigger unnecessary false alarms, disturb our visitors or possibly endanger our priceless exhibits. We chose aspiration technology not only for the safety factor, but for cost savings. The museum couldn't jeopardize its mission-critical exhibits by triggering nuisance false alarms because of the storage room's dusty environment."

Hedin relied on Dan Westberg, Vice President of Low Voltage Contractors (LVC) of Minneapolis, to select a fire alarm aspirating system. "We recommended System Sensor's FAAST system for a primary reason, to ensure that the high nuisance dust factor in the storage area does not cause an alarm state," Westberg says. The piping and system installation took only eight hours as only one unit was installed, as opposed to installation of multiple area detectors. The system was tested and approved by the city of St. Paul.

When designing the system, LVC used System Sensor PipeIQ™ software that is included with FAAST as a guide to the pipe layout. (Note: All pipes must be installed in accordance with local and national codes and regulations.) The software provides intuitive control over pipe design layout, system configuration and ongoing system monitoring.

The FAAST system is monitored by a NOTIFIER® control panel, which is in the museum's security office. For quick-read information, facility personnel can view the FAAST device display, which provides a clear indication of the system status, particulate levels, alarm levels, airflow and faults.

Because of FAAST's tolerance to dusty and dirty environments, it reduces nuisance alarms while providing the very early warning of fires the museum requires. First, FAAST's multi-stage filtering process helps to remove contaminants. After being drawn into the pipe network's sampling ports, the air sample moves through a patented particle separator that removes larger nuisance contaminants. Then, a replaceable filter further removes nuisance particulate before the sample enters the detection chamber. This four-year filter is easily replaceable through the front panel door of the FAAST device.

Next, the detector utilizes a unique dual vision sensing technology that uses a high-sensitivity blue LED to detect incipient fire conditions (with particulate levels as low as 0.00046 %/ft obscuration) and an infrared laser to detect larger nuisance particulate. Advanced algorithms process data from both sensors to provide the facility with the earliest and most accurate fire detection available.

Finally, FAAST includes an Acclimate mode, which initially adapts to the environment in 24 hours. It then continuously adjusts to the environment, greatly reducing susceptibility to nuisance alarms. This is especially important if the storage facility's environmental conditions fluctuate.

For anyone hesitant to use aspirating detection based on early generation products from other manufacturers that did not deliver as promised, the technology has been perfected to the point where it is now a "go to" system. According to Westberg, aspiration detection requests have been growing steadily. "Aspiration detection is a must in fire protection design," he concludes.

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>
> **— Dan Westberg,** VP of Low Voltage Contractors

Science Museum of Minnesota®

The **Science Museum of Minnesota,** founded in 1907, is a large regional science museum located in downtown St. Paul. The Science Museum campus includes research and collection facilities, a public science education center and an IMAX Convertible Dome Omnitheater to provide science education to more than a million people per year. The Science Museum's building is 370,000 square feet, built into the bluffs overlooking the Mississippi River.

The museum's 70,000 square feet of exhibition space includes a 10,000- square-foot temporary exhibit gallery and five permanent galleries covering the topics of paleontology, physical science and technology, the human body, peoples and cultures of the Mississippi River, and the museum's collections. The Mississippi River flows just outside the windows of the museum and past the museum's 10 acres of outdoor exhibits and programming space.

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