

Aspiration: A Breath of Fresh Air for Challenging Installations

Frank Gardner knows his way around fire and life safety system design and installation, especially in mission-critical and special hazards applications. Gardner, project manager over the fire alarm/special hazards department for Fire Tech Systems, Inc. in Shreveport, Louisiana, is NICET certificated in inspecting and testing water-based sprinklers, special hazards suppression systems and fire alarm systems. Based on his more than 21 years of experience in the fire industry, he has a good understanding of how aspiration systems compare to other technologies and how to work through project challenges.

Generally, how is it decided to use aspiration within a fire and life safety system?

Most of the time aspiration detection is used when the customer wants the earliest possible warning of a fire incident. When the request for an aspiration system comes in, we determine if and to what level it's needed. When we consider aspiration systems, there is a life safety aspect. But it's really the need for early detection of a fire situation that plays into the critical nature of protecting our customers' assets and equipment.

Aspiration has found its niche in the protection of mission-critical information or equipment and irreplaceable items such as museum artifacts. When I first started in this business, we installed systems in server rooms to mainly protect the customer's data. As offsite data storage has become common practice, the protection of data is less of a concern and the focus has turned to the equipment itself.

Since we now live in a world governed by technology and virtually everyone and everything relies on the processing power of computers in one way or another, the threat of possible downtime is the major concern. The cost of unplanned downtime can be significant.

According to research from Emerson Network Power, the average cost due to an outage is about \$5,000 per minute. You can see the need for rapid fire detection system. If a fire can be detected and extinguished while it is still in its incipient stage, the chances of damage to critical equipment is minimized significantly.

How do you design a fire and life safety system when aspiration technology is integrated?

It's not a cookie-cutter approach. On the design side, we talk with the customer and exchange information to help us make a decision. The first thing we do when we design a life safety system is follow the appropriate codes and standards. Louisiana code regulations are unique in that we actually follow NFPA 101 and chapters 9 and 10 of the IBC.

These codes and standards are only minimum requirements, and in many cases, NFPA 101 or the IBC may not require any type of fire detection for a customer's facility. When that is the case, it comes down to what the customer wants. Sometimes, the customer doesn't know what they want or what they need. We explain their options, and if the best option is an aspiration system, such as the System Sensor FFAST system, that's when we move into the design phase of the project.

The design of this depends on the area layout, adjusting the design to the structure and the equipment inside it. Having good quality drawings of the building is key. If you are unable to get drawings of the building, then doing a thorough site survey is an absolute must. Make sure you detail anything that might be an obstacle during installation.

The one thing to keep in mind, especially if you have been designing fire alarm systems your whole life, is fire alarm systems can be drawn using two-dimensional thinking. But when designing a FFAST system, you must think in three dimensions. It is similar to designing an automatic fire sprinkler system. The obstruction becomes more difficult to avoid; it's easy to bend FPL wire around a piece of 4-foot duct work than it is to bend a stick of CPVC pipe.

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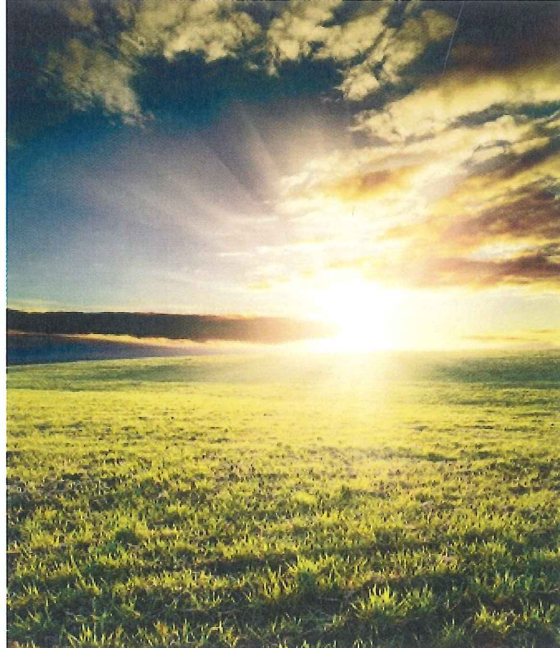
— Frank Gardner, Project Manager for Fire Tech Systems

What types of design or installation challenges have you encountered?

Our recent installation at the Cyber Innovation Center in Bossier City, Louisiana, is a good example. This facility houses mission-critical computer equipment, and if it goes down, there could be more at stake than just a dollar figure. When we started designing this system, our major concern was addressing its need for early warning of a fire situation. You don't want to lose a whole rack of equipment before you know there is a fire.

This particular 5,400-square-foot server room was unique in that they were using a hot aisle and cold aisle design. This in itself posed challenges because the cold aisles were separated from the hot aisle by heavy plastic sheeting creating a separate enclosure for each cold aisle. We had to take that into consideration during the design because of the pressure difference between the hot and cold aisles. Because FFAST constantly monitors for high and low air flow conditions, we opted to use four FFAST systems for this project: two for the cold aisles and two for the hot aisles.

Our main issue during the design phase of the Cyber Innovation Center project was the lack of information on the equipment location. We laid out the systems according to the plans, but when we got to the job site to start the installation, all we had to go by were lines spray painted on the concrete floor to show the location of the equipment. The location represented by the spray paint did not match our drawings. We had to make adjustments in the field to compensate for the discrepancies. Then we input those changes into the PipeIQ software. We verified that the transport times, pressures and flows were within the FFAST 8100 unit's threshold criteria.



What type of troubleshooting had to be done?

Our troubles weren't necessarily with the FAAST system. The problems we encountered were due to the tight deadline and that there were so many different trades on the job at one time. Some of them worked above the ceiling, and we had issues with them pulling the capillaries out of the backs of the sampling points. There is a total of 45 sampling points in this server room, and we had to verify that each capillary was securely connected to its sampling point before we could perform the final commissioning of the systems.

How does FAAST compare to other aspiration systems?

The FAAST system is extremely easy to install and programming of the 8100 unit is a no brainer. Its versatility and ease of installation makes this system second to none. FAAST is a superior product and when every second counts, it far outweighs traditional passive smoke detectors.

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Because this goes beyond code expectations, how is code inspection of these systems handled?

In Louisiana, all of our fire protection systems are submitted and reviewed by the state fire marshal's office. The fire marshal reviews fire systems under the current adopted NFPA standard, and as we all know NFPA only establishes the minimum requirements. As long as we provide the proper documentation, such as the manufacturer's cut sheets along with the UL listing that show this system meets or exceeds the minimum requirements of NFPA, we have no issues when it comes to the final fire marshal inspection of the project.

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