

# Addressing Life-Safety Challenges in Industrial Settings

## 4 Practical Tips to Help Strengthen Protection, Compliance and Efficiency



### Creating a Safe Environment While Maximizing Productivity

Managing industrial facilities can be a difficult balancing act. Your number-one objective is to keep the plant productive—day in and day out. But that’s sometimes easier said than done. To fulfill your responsibilities, it’s important to use resources wisely, weigh plant investments carefully, and be ever mindful of maintaining regulatory compliance. Above all, you need to be focused on the safety of your people and the protection of property, equipment, and the area surrounding your facility.

For many companies that operate in high-risk environments, whether it’s chemical processing, oil production, refining, or power generation, protecting lives and property has become a job in itself. There are multiple systems to manage—specialized detection, fire alarm, fire suppression, security, and emergency communications. Often, these systems are inspected, tested, and maintained by a variety of parties. It might be in-house staff and/or and multiple vendors.

The complexity of the environment, combined with the ever-increasing challenges associated with resource and budget constraints, can make the job even tougher and heighten the concerns about the potential consequences should something go wrong.

Considering all that’s at stake, industrial plant managers want to achieve excellence and perform their work at the highest possible level. In all likelihood, that means calling upon the available resources, insights and expertise to be at the top of your game. Toward that end, it helps to stay abreast of the latest developments and understand the practices and approaches that will make you most effective. The overriding goal is to keeping the plant safe, productive and compliant while controlling costs, increasing efficiency, and simplifying management.

This paper outlines four practical tips to strengthen your life-safety program and operations. The guidance is based on the in-depth knowledge and experience that Tyco SimplexGrinnell brings to industrial applications.

#### TIP #1

#### Choose a licensed and experienced fire protection contractor to design and install your systems.

One of the biggest challenges facing an industrial plant manager comes in knowing who to trust with critical tasks. In this complex environment, not every life-safety vendor has the knowledge, experience and capabilities to meet evolving code and regulatory requirements. So when making decisions regarding the design and installation of your life-safety systems, it’s advisable to work with a licensed fire protection contractor that brings the benefits of experience and dedicated resources.

To understand this recommendation, consider the application in an industrial setting of NFPA 11: Standard for Low-, Medium-, and High-Expansion Foam. You might be tempted to hire the manufacturer of your storage tanks to design and install the semi-fixed foam systems that must, by requirement, go hand in hand with the storage tanks. But experience in the industry shows that such installations are often performed improperly and fail to meet NFPA 11 requirements. Some designers neglect to perform—or improperly perform—the hydraulic calculations required by code. Systems have also been installed using non-compliant, non-galvanized pipe or low-point drains. In the worst circumstances, any of these issues can jeopardize safety and compliance.

Another practice that occurs commonly in the industry involves the use of standard ground monitors instead of foam chambers on the semi-fixed foam systems. While ground monitors are fine for putting foam in trenches around a tank or for providing additional support to a foam chamber system, they are not an efficient primary method for blanketing the tank itself.

Let's look for a moment at private fire service mains. When non-fire protection contractors install private fire service mains, there can be violations of NFPA 24: Standard for the Installation of Private Fire Service Mains and Their Appurtenances. For example, some use noncompliant pipe instead of the required welded carbon steel pipe. If corrosion subsequently builds up within the pipe, it can clog nozzle heads or other critical valves, potentially causing a system failure.

None of these code violations or deficiencies would be obvious or noticeable to the untrained eye. And any one of them could potentially shut down your plant temporarily or, in the worst-case scenario, put lives and property at risk. That's why the applicable codes specifically require the use of licensed fire protection companies to design and install fire systems.

To help your facility meet the highest standards of safety, consider working with a life-safety provider that requires all installation personnel to pass an intensive apprenticeship program and get individually licensed by the state before becoming full-fledged installers. These same individuals can serve you better when they receive ongoing training to stay abreast of code changes.

Put all these factors together, and they paint a clear picture of how the selection of a licensed and experienced fire protection contractor to design and install your fire systems can support your efforts to enhance protection, maintain regulatory compliance, and gain greater peace of mind.

**/ TIP #2 / Engage a licensed service provider with NICET-certified personnel to test, inspect, and maintain fire systems.** Intuitively, it may seem like a cost-effective and sensible idea for an industrial company to have in-house personnel handle fire system inspection, testing, and maintenance. After all, the reasoning goes, many of the tasks involved appear to be fairly straightforward and manageable.

In fact, the "do-it-yourself" approach, while common in industrial facilities, may not be the best way to handle system service. And there are a number of reasons for that. Most states require licensed personnel to perform the work. Some even require NICET certification. Licensed inspectors can add significant value by bringing a critical level of experience to the process. Their



contributions and support should be viewed from that value perspective, rather than on a cost basis. Using their experience and ongoing training on code changes, licensed inspectors are capable of spotting potential violations and risks before disaster strikes, a shutdown is ordered, or costs escalate. When issues are identified earlier, they can usually be remedied more easily and cost effectively—and with less disruption to your operations.

Questions involving conflict of interest and time management can also emerge in deciding whether to handle service in-house or contract with an outside provider. Will an employee doing an inspection be reluctant to flag a problem if it might have a negative financial or operational impact on the company? What if an in-house inspector overlooks an issue because it might require more difficult work for the maintenance department? If the inspecting employee has other production responsibilities, is there a risk that fire systems will be neglected for higher-priority work?

Cost savings and liability should also be carefully weighed. The cost savings associated with in-house inspection, testing, and maintenance can be outweighed by potential liability the company could face in the event of a failure. In a high-risk industrial setting, there could be devastating financial implications, not to mention the negative impact from adverse publicity.

These challenges and issues can be overcome by enlisting the services of a licensed provider with experienced, NICET-certified personnel. The right service provider can help you maintain the highest standards and keep your facility well protected and code compliant.

**/ TIP #3 / Use the right system to control and monitor fire and life-safety functions and operations.** NFPA 72: National Fire Alarm and Signaling Code mandates specific requirements for configuration, installation and survivability of fire systems. Some industrial companies have been known to use Programmable Logic Controllers (PLCs)—and their related Distributed Control Systems (DCS)—to control and monitor fire systems. PLCs and Distributed Control Systems play important roles in industrial facilities, but are not appropriate for this purpose. In fact, it is a code violation to use them in that way.

Secondly, NFPA standards require parts and components to be UL Listed—individually and in how they work together. For example, solenoid valves in a fire system have to be listed with the panel controlling them. This is intended to ensure that critical components perform as designed in an emergency. If those components are controlled by a different system—one not expressly designed for fire protection—there is no assurance they will function smoothly together. Nor is it certain that they will perform appropriately in adverse conditions such as extreme heat or when water from sprinkler/deluge activation is present.

In addition to these considerations, there's another very pragmatic reason for having a dedicated system to control and monitoring fire protection operations and activities. It enables you to test, maintain, and repair life-safety systems without impeding or disrupting the DCS-controlled production systems that are essential to uptime, productivity, and profitability. A DCS can be connected to fire systems to monitor information in a control room and help management make critical decisions, but it should never be used to control these systems.

**TIP #4** Capitalize on the benefits of using a single-source life-safety service provider. The industrial community is served by a broad range of life-safety vendors, many of whom specialize in particular products or services related to fire alarms, sprinklers, fire suppression, gas detection, emergency communications, integrated security, and special hazards. Entrusting responsibility for the upkeep and repair of each of these areas to a different vendor may appear sensible—after all, why put all your eggs in one basket?

However, there can be several major disadvantages to doing so. That approach can leave you with multiple vendors to manage, multiple contracts with different terms and conditions, and no single point of contact in an emergency.

If a problem arises that affects several systems maintained by different vendors, will there be finger-pointing? Can any vendor be fully accountable if their responsibilities only go so far?



For example, let's say an industrial company uses one vendor for the fire alarm system and another for sprinkler systems. With a pre-action system, the fire panel controls the sprinkler system. So who is ultimately responsible for the overall performance across multiple systems? Furthermore, scheduling, coordinating, and overseeing multiple inspections by multiple vendors can be a time-consuming hassle.

A better course of action is to build a single-source relationship with a primary life-safety company that can assume responsibility for the upkeep of all systems and equipment—even those from other vendors. Besides relieving you of the task of coordinating inspections, tests, and maintenance, this approach can bring the advantages of working more closely and collaboratively with a company whose life-safety capabilities are broad and wide ranging. Together, you can take a more comprehensive view of your life-safety needs and determine to best fulfill them and keep your facility compliant.

#### **The Bottom Line: Strengthening Your Life-safety Program**

Given the significance of the responsibilities held by those responsible for life safety in industrial facilities, you definitely don't want to go it alone. It makes sense to look for every opportunity to ease your burden while keeping your facility safe and compliant.

The tips outlined in this paper are offered to help simplify your life, minimize disruption, and enable you to focus on what matters most: a safe, secure environment, maximum efficiency and uptime, and a healthy bottom line.

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