



Kidde Fire Systems

Multi-Tiered Fire Protection

The new standard for electrical infrastructure

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For modern facility managers, an electrical fire represents a dual threat: the immediate destruction of the asset(s) and the irreversible "secondary erasure" caused by those traditional suppression methods that utilize large volumes of water. When an electrical panel burns, the loss extends beyond hardware and may very well be a deletion of the facility's operational "DNA," including custom wiring logic and other proprietary PLC configurations.



KiddeFenwal proposes a fire detection and suppression strategy that is similar to "Nested Defense" type of architecture. By integrating Kidde Fire Systems NATURA™-Micro object-level suppression with one of several room-level Total Flood suppression from Kidde Fire Systems, facilities move from reactive firefighting to holistic and proactive asset protection. This tiered approach ensures that fires in the most mission-critical assets are neutralized immediately at the source, and that the other critical assets in the room, are afforded similar high speed protection strategies, thereby preserving both physical infrastructure and operational memory.

The Mission: Beyond Life Safety

While traditional water-based fire protection protects the building structure, for critical power infrastructure, the mission should be total asset preservation. When a fire consumes a control panel, it's not just hardware that is destroyed, it could be a permanent deletion of operational memory.

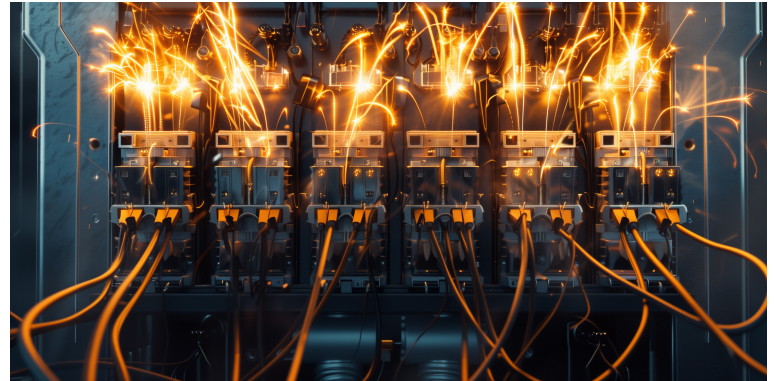
- The Loss of "Type" and Origin: Custom-engineered panels are the "DNA" of your facility. Once charred, the original wiring logic and proprietary configurations are severed forever.
- Systematic Operational Amnesia: The loss of integrated PLC records and schematics creates a "gap" in your infrastructure that may never be fully restored.

The fallout from an electrical panel fire is a "dual-threat" event, involving immediate physical destruction and long-term secondary erasure of infrastructure.

Physical Destruction

Total Component Loss: High temperatures from electrical arcing (which can exceed several thousand degrees Celsius) melt copper busbars, circuit breakers, and internal wiring insulation.

Arcing and Explosions: Faulty panels can "explode" sparks into the nearby environment or cause a chain reaction where adjacent breakers melt and fuse together, preventing them from ever tripping.



Structural Weakness: Intense heat from a fire "waiting" for the activation of a sprinkler bulb and the release of a traditional water-based system can weaken steel support beams, concrete foundations, and wooden framing near the electrical room, potentially making the building unsafe for occupancy. Remember, the heat required to activate a sprinkler bulb at the ceiling level of a room is typically hundreds of degrees higher than the temperature on the floor of that room. Once weakened by the fire, no amount of water can return the structure to its original strength.

Secondary "Hidden" Erasure

Even if flames are contained in the panel, the resulting smoke and soot can cause ongoing damage:

Corrosive Soot: Burning plastics and wire insulation release acidic smoke. This soot coats delicate circuit boards and gold-plated connectors, eating away at the metal and causing "delayed" malfunctions days, weeks or even months after the fire.

Conductive Residue: Soot particles are often conductive; when they settle on sensitive electronics, they often create "bridges" that lead to short circuits and signal interference.

Moisture: Resulting moisture from traditional building fire protection methods can cause wood rot and mold growth within a few days, and permanent corrosion of any electronics that survived the heat.

Operational and Business Impact

Business Interruption: An electrical panel fire is a "bottleneck" event. If or when the panel is the brain of the facility, its loss can lead to a total shutdown of operations, missed deadlines, and lost revenue.

Data and Logic Loss: Fires often destroy the integrated records and custom wiring configurations. Replacing the hardware is easy, but restoring the unique "logic" of a custom-built system can take months.

Regulatory Fallout: **Incidents can lead to safety code violations, legal liabilities, and an uphill battle with insurance companies** that may not cover older, unmaintained hardware models.

Environmental Fallout: While less in the news, both traditional and low-water fire suppression solutions have the potential for toxin and residue-laden water runoff into storm water drains and other water bodies.

The Nested Defense Architecture

1. The Surgical Strike: NATURA™-Micro ASP or NATURA™-Micro LHS

This object-level layer protects the most common ignition points—electrical cabinets, server racks, and switchgear—using one of two specialized detection methods: aspirating smoke detection or linear heat detection.

The object-level layer protects targets the specific "point of ignition"—the interior of the cabinet—using Nitrogen (IG-100). This inert gas is non-conductive and leaves zero residue.

For electrical control panels and power distribution systems, selecting between the NATURA™-Micro ASP and NATURA™-Micro LHS depends on the specific environmental conditions and the sensitivity of the internal components.



NATURA™-Micro ASP



NATURA™-Micro LHS

NATURA™-Micro Series: Electrical Panel Comparison

Feature	NATURA™-Micro ASP	NATURA™-Micro LHS
Method	Aspirating Smoke Detection: "Draws" air within cabinet via sampling tubes.	Linear Heat Sensing: Specialized cable detects specific temperature conditions within cabinet.
Philosophy	Very Early Warning: Identifies incipient combustion before heat builds.	Environmental Resilience: Triggers on physical temperature, ignoring contaminants.
Best For	Clean rooms, sensitive PLCs, and media servers.	Dusty, high-vibration, or humid industrial MCCs.
Application	Use when detecting a smoldering component before ignition is critical.	Use in harsh areas where dust causes false smoke alarms.
Suppression Agent	Nitrogen (IG-100): non-conductive, non-corrosive, and leaves zero residue on delicate wiring.	Nitrogen (IG-100): Same clean agent, ensuring no damage to electrical contacts.

Application Guidance for Electrical Professionals

Choose ASP for high-value electrical control panels where detecting a "smoldering" wire or a failing capacitor minutes before it ignites or smoke is visible is critical to preventing data loss or hardware failure.

Choose LHS for industrial electrical cabinets located in harsh environments. The physical heat-sensing cable is immune to dust, oil mist, or humidity that might cause false alarms in smoke-based systems.

2. The Architectural Shield: To Aspirating Smoke Detection (ASD) and a Total Flood Suppression

If a fire originates outside a protected enclosure, room-level defense takes over.

Aspirating Smoke Detection (ASD): Higher capacity models than the 'object-protection' versions, continuously samples the entire room's air to identify sub-visible smoke particles, providing time for manual intervention.

Total Flood Suppression: Utilizing NATURA™ Inert Gas or Fluoro-K™, these clean agents evaporate instantly, neutralizing threats across the entire room volume while requiring zero agent cleanup.

3. Intelligent Interlocking: The Control Layer

Systems are linked via Kidde Fire Systems ARIES® addressable intelligent or AEGIS™ conventional fire suppression control units. This "intelligent interlocking" allows a micro-discharge to alert authorities immediately while holding off on a full room-wide discharge unless secondary smoke is detected. This prevents unnecessary room-level discharges, saving tens of thousands of dollars in downtime and agent recharge expenses.

Conclusion: The Integrated Advantage - Business Continuity

This tiered strategy ensures that in a localized electrical event, only the affected component is neutralized. Because the agents are clean and leave no moisture or film, agent cleanup is zero.

In most cases, the rest of the facility remains fully operational, preserving both your revenue and your infrastructure. You save your equipment from fire without the "secondary erasure" caused by traditional suppression.

About KiddeFenwal:

For decades, KiddeFenwal has been an industry leader in fire prevention, detection & control, and suppression. Our name is backed by a strong commitment to product quality, innovation, and expertise in system design, installation, and service. We operate across the globe through a network of trained and authorized Engineered Systems Integrators/Distributors that excel in initial hazard analysis, system design, installation, testing and commissioning as well as aftermarket service including parts, refills and code-mandated periodic testing and maintenance.

Closing Thoughts:

Whether you are installing new electrical infrastructure or upgrading an existing power room, investing in a KiddeFenwal fire solution—featuring early warning detection, anomaly sensing, and both micro and total flood fire suppression systems—is an essential step in safeguarding your facility. KiddeFenwal provides tailored Kidde Fire Systems solutions that allow your operations to run with confidence, knowing your critical electrical assets are shielded by the most advanced protection available.

These comprehensive solutions are more than just an insurance policy; they are a fundamental component of uptime and risk management. By stopping a thermal event inside the cabinet before it spreads, this technology moves your maintenance team from reactive firefighting to proactive resilience, ensuring that your power systems remain fully operational and free from the residue or collateral damage caused by traditional fire response.

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