



Kidde Fire Systems

Multi-Tiered Fire Protection

The new standard for protecting museums
and cultural artifacts.



KiddeFenwal

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For modern curators and conservators, a museum fire is a "dual threat" because the immediate heat and flames can destroy an artifact, while the very water used to save it may cause even deeper, irreversible loss. This second form of loss, often termed "secondary erasure," refers to the destruction of an object's historical and scientific data—such as forensic evidence, chemical markers, or delicate original inks—that occurs when it is saturated by traditional fire suppression systems. The Kidde Fire Systems strategy leverages integrated technology to create a multi-tiered defense.



Integrating NATURA™-Micro ASP object-level protection with a Total Flood Suppression System and Aspirating Smoke Detection (ASD) creates a comprehensive, "nested" defense architecture. This configuration ensures that a fire is addressed at the earliest possible moment, before a flame even manifests—while providing a heavy-duty safety net for the entire architectural space.

The Mission: Beyond Life Safety

Traditional fire protection is designed to save buildings and people. For a museum, the mission is total preservation. When a fire consumes an archive or gallery, the tragedy extends far beyond the loss of physical property, it represents a permanent deletion of cultural history.

The Death of Unique Knowledge

Many artifacts are the "primary source" for entire fields of study. When these are lost, the link to specific historical periods, extinct languages, or ancient scientific data is severed forever. Unlike a modern book or digital file, these items have no backup; their destruction ends any future understanding of that specific human history.

The Loss of "Type" and Origin

In many collections, a single object serves as the global standard for its category—whether a biological species or a foundational piece of art. Once charred, the authenticity is gone. Even a perfect replica lacks the "DNA" of the original, stripping the community of its tangible connection to its roots.

Systematic "Cultural Amnesia"

Large-scale fires destroy context. The loss of curatorial records, maps, and field notes means that even if an object is pulled from the ashes, its story and significance may be lost to time. This creates a "gap" in a society's timeline that can never be filled.

Secondary Erasure

Even if flames don't touch an icon, heat and smoke can chemically alter its composition. Acidic soot from electrical fires eats away at delicate surfaces, while moisture causes organic materials to warp, rot, or develop mold.

The Challenge: Beyond Life Safety

- The Smoke Threat: Even a minor electrical fire in a climate-controlled archive releases acidic soot that can permanently stain textiles, parchment, and oil paintings.
- The Moisture Dilemma: Moisture can cause wooden frames and stretcher bars to warp and paper to cockle or develop "tide line" stains. Mold can develop within 24 to 48 hours often rendering an artifact a "total loss".
- Aesthetic Constraints: Bulky sensors and heavy piping often clash with historic architecture or minimalist gallery designs, compromising the visitor experience.

The Nested Defense Architecture

The Intelligent Brain: NATURA™-Micro Aspirating Smoke Detection (ASD)

Kidde Fire Systems NATURA™-Micro ASD system continuously "draws" the air from inside the cabinet, detecting sub-visible smoke particles at the incipient stage. This allows for manual intervention or localized discharge within the enclosure before heat ever builds to a destructive level. The Surgical Strike: NATURA™-Micro

Acting as the initial line of defense, these systems monitor the most common ignition points—electrical cabinets, media servers, and individual display cases. Using Nitrogen (IG-100), they extinguish fires within seconds at the source, preventing smoke migration and avoiding the need for "Total Flooding" discharges for localized faults.

NATURA™-Micro ASP (Aspirating Smoke Detection)

Engineered for "high-value assets in small spaces," this system protects sensitive items at the incipient stage—detecting microscopic combustion before a flame even breaks out.

- **Ultra-Fast Response:** Detection happens inside the enclosure, catching a fire before it can spread to adjacent artifacts like ancient textiles or paper documents.
- **Inert Gas Intelligence:** Utilizing Nitrogen (IG-100), it is non-conductive and leaves zero residue. It is the gold standard for protecting delicate, organic materials.
- **Discreet & Non-Invasive:** Both the agent discharge tube and small-diameter flexible tubing is easily hidden within historic architectural features or display trim, avoiding the need for structural modifications.



NATURA™-Micro ASP



NATURA™-Micro LHS

NATURA™-Micro LHS (Linear Heat Sensing)

Designed for "back-of-house" infrastructure and harsh environments, this system uses a specialized heat-sensing cable to trigger suppression when a specific temperature threshold is met.

- **High-Reliability in Tough Zones:** Ideal for cabinets in mechanical rooms, elevator motor rooms, or loading docks where dust, humidity, or fumes might cause false alarms in smoke-based systems.
- **Targeted Thermal Protection:** Provides a physical "line of defense" along electrical bus-ways or within compact storage shelving where airflow might dissipate smoke.
- **Fail-Safe Reliability:** As a pneumatic and mechanical system, it remains fully functional during power outages or when the main building fire alarm is offline.

The Museum Advantage: Business Continuity

With localized suppression, if a small electrical fire starts in a control panel or specific display case, only that specific area is flooded. This prevents a building-wide discharge, allowing the rest of the gallery to remain open while minimizing the cost of cleanup and restoration.

Feature	NATURA™-Micro ASP	NATURA™-Micro LHS
Detection Method	Aspirating Smoke Detection (ASD): Actively "draws" air through a sampling port to find smoke.	Linear Heat Sensing (LHS): Uses a heat-sensitive cable to detect a physical temperature rise.
Detection Trigger	Incipient Stage: Detects microscopic combustion particles before there is any open flame or heat.	Thermal Threshold: Triggers only when the cable reaches a specific temperature (e.g., 155°F).
Best For	Display cases in high-value galleries, open atriums, and climate-controlled areas.	Cabinets in mechanical rooms, elevator shafts, and loading docks.
Artifact Protection	High Sensitivity: Ideal for paper, textiles, and wood that are easily damaged by smoke/soot.	Zoned Protection: Useful for protecting controllers for specific heavy machinery like HVAC units or boilers.
Museum Use Case	Protecting a period room or rare manuscript where even a "small" fire is a total loss.	Fully Enclosed (Cabinets): For sensitive artifacts like textiles or fossils, specialized preservation cabinets with airtight gaskets are mounted on the mobile carriages.
Visual Impact	Near Invisible: Sampling tubes are hidden in crown molding; only one tiny sample port is visible.	Visible: The sensing cable must be strung along the ceiling or equipment, often appearing as a wire.

Key Takeaway:

Choose ASP to protect the collection itself with the earliest possible warning and minimal visual impact. or LHS for the "back-of-house" infrastructure where dust, humidity, or fumes make smoke detectors less reliable.

The Architectural Shield: Total Flood Room Suppression:

NATURA™-Micro Series provides a surgical strike at the source, The Architectural Shield (Total Flood Suppression) protects the wider area if a fire originates outside an enclosure. This layer acts as a broader defense, ensuring the entire room is neutralized.

Advanced Clean Agents Systems utilizing Kidde Fire systems Fluoro-K™ or NATURA™ Inert Gas evaporate instantly, leaving zero residue. Unlike older agents these modern solutions are designed for long-term sustainability. With a Global Warming Potential (GWP) of less than 1 (or zero for NATURA™), these systems align with "Green Museum" sustainability mandates and current environmental regulations like the U.S. AIM Act.

Damage-Free Protection: These non-conductive, non-corrosive agents are specifically designed not to harm rare books, sensitive electronics, or delicate canvas.

The Integrated Defense: Multi-Layered Strategy

When NATURA™-Micro Series is paired with a total flood suppression system and intelligent detection, the probability of a catastrophic incident drops significantly.

- 1. Intelligent Sequencing:** Kidde Fire Systems ARIES® and AEGIS™ control panels can link NATURA™-Micro Series with a KFS Total Flood Suppression System. A micro-discharge can alert authorities immediately while holding off on room-wide suppression unless secondary smoke is detected. Intelligent interlocking ensures that if a NATURA™-Micro system discharges in a single display case, the room-level system remains in "standby." This prevents a total room discharge for a localized event, saving the museum tens of thousands in recharge costs and downtime.
- 2. Advanced Air Sampling:** By integrating Aspirating Smoke Detection (ASD) into their total flood system, curators receive a unified early warning, monitoring both the general room air and high-risk internal cabinets simultaneously.

Integrated Defense:

A nested architecture approach such as integrating Kidde Fire Systems NATURA™-Micro ASP with high-sensitivity air sampling smoke detection, allows museums to transition from reactive firefighting to proactive resilience. This approach allows curators to extinguish a fire instantly without leaving behind residue or causing collateral damage to the collection. It ensures the physical record of our history remains perfectly intact and undisturbed by the system designed to protect it. From infrastructure to priceless cultural objects, Kidde Fire Systems fire suppression systems offer superior protection by eliminating fire threats without causing secondary damage.

The Loss of "Type" and Origin

In many collections, a single object serves as the global standard for an entire category—whether it be a biological species, a religious icon, or a foundational piece of art. Once charred, the authenticity is gone. Even a perfect replica lacks the "DNA" of the original, stripping the community of its tangible connection to its roots.

Systematic "Cultural Amnesia"

Large-scale fires don't just destroy objects; they destroy context. The loss of curatorial records, maps, and field notes that accompany a collection means that even if a physical object is pulled from the ashes, its story, origin, and significance may be lost to time. This creates a "gap" in a society's timeline that can never be filled.

Secondary Erasure

Even if flames don't touch an icon, the heat and smoke can chemically alter its composition. The fine soot from an electrical fire is often acidic, eating away at delicate surfaces, while the high-pressure water used to save the building can cause organic materials to warp or rot, essentially finishing what the fire started.

Why This is the New Standard for Museums

Redundancy without Risk: You have two layers of suppression, yet both are "clean." Whether the micro-system or the total room flood system activates, there is zero water, zero residue, and zero corrosive byproduct.

Aesthetic Synergy: Both the ASD sampling pipes and the NATURA™-Micro agent discharge tubing are remarkably small. They can be integrated into historic mill work or minimalist modern displays far more discreetly than standard smoke detectors and 2-inch steel sprinkler pipes.

Maximum Resilience: This configuration addresses the most common museum fire scenario: a small electrical fault in a lighting ballast or media server. Instead of a building-wide catastrophe, it becomes a localized maintenance event.

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 designing a new gallery or upgrading an existing archive, investing in a KiddeFenwal fire protection solution—combining early warning detection, anomaly sensing, and multi-tiered fire suppression is an essential step in safeguarding cultural history. KiddeFenwal offers tailored Kidde Fire Systems solutions that allow museums to operate with confidence, knowing their irreplaceable collections are shielded by the most advanced protection available.

These comprehensive solutions are more than just an insurance policy; they are a fundamental component of preserving cultural memory and ensuring business continuity. By stopping a threat before it spreads, this technology moves the museum from reactive firefighting to proactive resilience, ensuring that the physical record of our past remains perfectly intact and undisturbed.



Kidde-Fenwal, LLC
400 Main St
Ashland, MA 01721, USA

KFI U.K. Limited
Station Road,
Bentham,
Lancaster, LA2 7NA
Company No 15335712

Kidde Technologies PVT. LTD.
Survey No. 28/2,44/2 and 45
Rasyani, Dandapta Road
Raigad Maharashtra-410207 India
CIN: U28192HR2024PTC118812

www.kiddefenwal.com | 508.881-2000

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