FM Global Data Sheet 4-14: Automated Monitor Systems in Lieu of Sprinklers

Resource guide · WatchDog Robotics · Updated June 2026

Executive Summary

FM Global published Property Loss Prevention Data Sheet 4-14, "Automated Monitor Fire Suppression Systems," in April 2026. It is the first FM data sheet devoted entirely to robotic and remote-operated water-monitor fire protection. Its scope states that these FM Approved systems may protect hazards "in lieu of traditional fire protection methods such as automatic sprinklers." That language, quoted from the data sheet, marks the point at which a major property insurer set out formal engineering guidance for replacing sprinklers with automated monitors in defined circumstances.

The data sheet builds on a milestone from March 2025, when FM Approvals certified the first FM Approved remote-operated robotic suppression monitor. It also complements the equivalency provisions already present in the model fire codes, namely the International Fire Code (IFC), NFPA 1, and NFPA 13, which permit an alternative system to stand in for sprinklers when the Authority Having Jurisdiction (AHJ) approves it.

The practical value of DS 4-14 lies in its precision. It recognizes automated monitors as primary, or sole, protection, while confining that use to specific conditions:

- Primary protection is currently limited to certain non-storage occupancies where a sprinkler system alone will not provide adequate protection, is not cost effective, or where the fire hazard is outdoors.
- Automatic sprinklers remain FM's recommended protection method for most hazards and occupancies.
- An automated monitor system qualifies as a sprinkler alternative only where the relevant occupancy-specific data sheet specifies that it does.
- Only one FM Approved system was available as of 2026, with applications expected to expand as the technology matures.

For facilities where sprinklers have always been a poor fit, such as waste-handling tipping halls and outdoor storage yards, DS 4-14 provides a recognized engineering basis for an alternative and establishes the standard for designing one well. This guide explains what the data sheet says, where automated monitors are recognized today, the FM Approvals standards behind the equipment, how the fire-code equivalency pathway applies, and what a compliant design and approval package requires.

> Key takeaway: FM Global Data Sheet 4-14 (April 2026) is the first dedicated engineering standard for automated monitor fire suppression. It recognizes the use of these systems in place of sprinklers for specific high-challenge and outdoor hazards, and it is a foundational reference for any facility evaluating an alternative to traditional sprinkler protection.

What DS 4-14 Is, and Why It Matters

FM Global Property Loss Prevention Data Sheet 4-14, "Automated Monitor Fire Suppression Systems," was first published in April 2026 as a first edition, with no prior version. It sits in FM's "Extinguishing Equipment" (4-series) data sheet family, alongside special protection systems (DS 4-0), fixed water spray (DS 4-1N), water mist (DS 4-2), foam systems (DS 4-3N, 4-7N, 4-12), and oxygen reduction (DS 4-13).

FM property loss prevention data sheets are the engineering guidelines that FM field staff and clients use to design and protect facilities. They are not building codes, but they carry significant weight. FM is both a global property insurer and a fire research organization with nearly two centuries of loss experience, and its data sheets routinely shape how insured facilities are built and how risk is underwritten.

The stated scope of DS 4-14 is specific. It focuses on FM Approved automated monitor fire suppression systems and provides recommendations for the hazards and occupancies these systems may protect in lieu of traditional fire protection methods such as automatic sprinklers, together with their design, installation, acceptance testing, inspection, and maintenance. It covers both fully automated systems that require no human interaction and systems that incorporate a central station validated as part of the FM Approval. It does not cover portable or mobile units.

What an automated monitor fire suppression system is

A monitor is a discharge device on which a firefighting nozzle is mounted. It is engineered with large, clear waterways to deliver a powerful, far-reaching stream of water or foam, adjustable across a wide range of vertical and horizontal angles. Historically, monitors were fixed in place, oscillated over a set area, or were aimed manually. Even remotely operated units required a person, often an emergency responder, to operate them, which limited their reliability and placed them in the category of supplemental protection.

DS 4-14 addresses a newer class of monitor that integrates image-based flame detection, using visual and infrared cameras, together with control logic. This allows the system to detect, locate, and deliver water to a fire automatically, without human intervention. That self-targeting capability is what supports the transition from supplemental protection to primary protection.

Supplementary Protection Compared With Primary Protection

DS 4-14 draws a firm line between two roles, and the distinction governs everything that follows.

In a supplementary role, the automated monitor operates alongside sprinklers to limit loss, assist manual firefighting, or achieve final extinguishment. In this configuration, automatic sprinkler protection is still needed. This is the most common application and the most readily accepted.

In a sole, or primary, role, the automated monitor serves as the adequate protection for a specific hazard in place of sprinklers. FM permits this use under defined conditions. Primary protection is currently limited to some non-storage occupancies having hazards for which a sprinkler system alone will not provide adequate fire protection, is not cost effective, or where the fire hazard is outdoors. A system is not an alternative to sprinkler protection unless the

relevant occupancy-specific data sheet specifies that it is. When a monitor system is installed as an alternative to sprinklers, the water supply must deliver the design discharge flow for the minimum duration stated in the occupancy data sheet, or for two hours where no duration is specified.

FM is clear about the trajectory of the technology. The data sheet states that applications are expected to increase in the future but that current applications recommended by FM are limited, and that only one FM Approved system is available as of 2026. The reasonable reading is that this is the first edition of guidance for a category FM expects to grow, not a general authorization to remove sprinklers.

Where Automated Monitors Are Recognized Today (DS 4-14 Table 3.2)

Table 3.2 of DS 4-14 lists the applications where FM Approved automated monitor systems are currently recommended. The list is dominated by outdoor fire hazards and indoor non-storage occupancies where conventional sprinklers are ineffective or not cost-efficient.

Hazard / Occupancy	Role and Notes	Governing Data Sheet
Waste fuel-fired facilities (tipping halls, bunker buildings)	Recognized application	DS 6-13, *Waste Fuel-Fired Facilities*
Pulp and paper	Protection of outdoor storage, or storage within noncombustible buildings	DS 8-22, *Storage of Baled Wastepaper*
Automatic Storage and Retrieval Systems (ASRS)	Supplement only, not sole protection. Used with sprinklers to help achieve final extinguishment of ASRS	DS 8-34, *Protection for ASRS*

FM notes that the table is a summary, and that the binding design criteria, including minimum monitor flow rates and the number of operating monitors, reside in the occupancy-specific data sheets. The data sheet also notes that automated monitors can be beneficial as a supplement in higher-challenge scenarios such as storage occupancies, even where they are not approved as primary protection.

For a facility owner, the operative question is whether the hazard resembles one of these recognized cases, such as a waste-handling tipping hall or an outdoor pulp and paper yard, and whether the applicable occupancy data sheet permits a monitor system in lieu of sprinklers. Where it does, DS 4-14 gives the design engineer a recognized FM framework to build around.

The FM Approvals Standards Behind the Equipment

DS 4-14 is built on FM Approved equipment, and it identifies the FM Approvals certification standards that validate it. Two are central to system validation:

- FM Approval Standard Class Number 1421, *Examination Standard for Fire Protection Monitor Assemblies*. DS 4-14 states that this standard was modified to incorporate evaluation criteria for these remote and automated systems, which means the certification framework was deliberately updated to evaluate robotic monitors rather than only manual assemblies.
- FM Approval Standard Class Number 5511, *Firefighting Nozzles for Use with Hose, Monitor Assemblies and other Firefighting Equipment*.

Together these standards confirm the performance of individual components and the functionality of the full system. They connect directly to the March 2025 certification of the first FM Approved remote-operated robotic fire protection system, which was evaluated against six FM standards covering monitors (FM 1421), nozzles (FM 5511), control electronics (FM 3810), fire alarm signaling (FM 3010), central-station service (FM 3011), and radiant-energy flame detection (FM 3260). DS 4-14 functions as the engineering data sheet that tells designers and underwriters how to deploy that newly certified class of product. The standards produced the certified hardware; the data sheet governs how to design, install, accept, and maintain it.

FM Approvals and FM Global perform distinct functions. FM Approvals, the certification body, issues the Class Number standards referenced above. FM Global, the insurer (Factory Mutual), issues the numbered data sheets such as DS 4-14. DS 4-14 is a data sheet that relies on FM Approvals-certified products.

How DS 4-14 Relates to the Fire Code: The Equivalency Pathway

DS 4-14 is an insurer's engineering standard. It is influential for design and underwriting, but it does not by itself amend the building or fire code in a given jurisdiction. Code acceptance of a sprinkler alternative is obtained through the equivalency and alternative-means provisions that every U.S. model code contains so that superior new technology is not blocked.

The International Fire Code addresses alternatives in two places. Section 104, Alternative Materials and Methods, allows the fire code official to approve an alternative that is at least equivalent in quality, strength, effectiveness, fire resistance, durability, and safety, supported by sufficient-scale testing and an evaluation report from an approved agency. This appears at Section 104.2.3 in the 2024 IFC and at Section 104.9 in the 2018 and 2021 editions. Section 904, Alternative Automatic Fire-Extinguishing Systems, requires that systems other than standard sprinklers be approved by the fire code official and installed per their listing and the referenced standards. Section 904 systems are not, by themselves, substitutes for the code exceptions or reductions that a full sprinkler system earns.

NFPA 1, the Fire Code, contains a parallel equivalency clause at Section 1.4, and NFPA 13, the sprinkler installation standard, contains one at Section 1.5. Both permit systems, methods, or devices of equivalent or superior quality, with technical documentation submitted to the AHJ, who makes the final determination.

The contribution of DS 4-14 is that it supplies the recognized, third-party engineering basis the equivalency pathway requires. Rather than constructing an alternative-means argument from first principles, an engineer can reference an FM data sheet and FM Approvals-listed

equipment, both of which AHJs and insurers already recognize, and proceed through the ordinary permit review rather than a prolonged variance.

Why Automated Monitors Perform Well Where Sprinklers Struggle

DS 4-14 limits in-lieu-of use to hazards where sprinklers are ineffective, uneconomical, or outdoors. The performance characteristics of each technology explain that limitation. Automatic sprinklers are proven, code-default, and effective in most occupancies. The following comparison applies to the specific high-challenge settings the data sheet addresses.

Response time. A standard sprinkler head activates when a glass bulb or fusible link reaches roughly 155°F to 200°F, which typically takes two to four minutes as a fire grows hot enough to trigger the nearest head. An automated monitor detects fire optically or thermally, often within one second of ignition, and can place water on the target in roughly 5 to 15 seconds. Because a fire can double in size every 30 to 60 seconds during its growth phase, engaging it within seconds rather than minutes produces a materially smaller event.

Targeted water and far-reaching streams. A sprinkler wets a fixed pattern and continues to flow until it is shut off manually, often by the fire department after it arrives. A monitor delivers a powerful, aimable stream directly at the seat of the fire, and an automated system can stop when the fire is out. In facilities where water damage frequently exceeds fire damage, that precision is significant, and DS 4-14 specifically credits the larger water streams of monitors for hazards that sprinklers cannot reach.

Coverage and obstructions. A single long-range monitor can cover large open or outdoor areas that would be impractical to protect with ceiling piping. These are the high-bay, outdoor-yard, and tipping-hall conditions the data sheet identifies.

Reliability through automation. The premise of DS 4-14 is that removing the human-in-the-loop requirement, through FM Approved detection and control, is what elevated these systems from supplemental to potential primary protection. FM is equally clear that this added complexity is the reason only FM Approved systems should be used.

Designing a DS 4-14-Compliant System

DS 4-14 sets out a detailed engineering program for installation. The principal requirements an owner should expect a designer and contractor to follow are as follows.

- Provide FM Approved equipment, installed in accordance with the manufacturer's FM Approved DIOM manual (Design, Installation, Operation, Maintenance), the Approval Guide listing, and the relevant occupancy or hazard data sheet.
- Design the water supply per DS 2-0 (Installation Guidelines for Automatic Sprinklers) and the applicable 3-series data sheets, hydraulically calculated per DS 3-0, with a two-hour duration as the default where the occupancy data sheet does not specify one.
- Provide detection per DS 5-48 (Automatic Fire Detection), selecting the FM Approved detector type for the hazard, coverage area, indoor or outdoor conditions, field of view and obstructions, and sources of false activation.

- Where a central station is used, limit operation to the station validated under the FM Approval, and provide a means of on-site manual operation. Provide primary and backup communications per DS 5-40.
- Provide an emergency and standby power source with automatic transfer, a minimum of 24 hours of standby power and 10 minutes of alarm power (DS 5-23), on dedicated, separated circuits for the monitors and accessories.
- Conduct acceptance testing, including visual inspection, functional testing, and full discharge tests across the complete spray and motion range of the monitors. For systems with a central station, conduct the full discharge test remotely through that station.
- Conduct inspection, testing, and maintenance, including weekly network-connectivity checks, weekly visual inspections, monthly physical monitor tests without flow, an annual full discharge test, and impairment management per DS 10-7.
- Provide interlocks that automatically shut down ventilation, close dampers, stop conveyors, and de-energize equipment on system operation, in accordance with the occupancy data sheet.
- Train all personnel on the DIOM manual, system functionality, manual and automatic operation, and inspection, testing, and maintenance.

What This Means for Facility Owners

For an operator of a facility where sprinklers are a poor fit, such as a waste or recycling tipping hall, an outdoor pulp and paper or wood-products yard, or another high-challenge non-storage occupancy, DS 4-14 has three practical consequences.

First, there is now a recognized FM engineering basis for protecting the hazard with an automated monitor system in lieu of sprinklers, where the occupancy data sheet allows it. Second, approvals and underwriting become more straightforward, because designers and insurers can reference an FM data sheet and FM Approved equipment instead of improvising a one-off justification. Third, the limitations are real and should be respected. Primary use is currently confined to defined cases, is gated by occupancy-specific data sheets, and coexists with sprinklers as FM's default for most occupancies. Engaging the AHJ and insurer early in the process is the most reliable way to keep a project on schedule.

The accurate position, and the one that builds trust with code officials and underwriters, is that DS 4-14 establishes and structures the in-lieu-of-sprinklers pathway for specific high-value cases, and sets the engineering standard for executing it well.

Frequently Asked Questions

Does FM Global Data Sheet 4-14 allow automated monitors to replace sprinklers?

Yes, within limits. DS 4-14 (April 2026) provides engineering guidance for using FM Approved automated monitor systems to protect certain hazards in lieu of traditional fire protection methods such as automatic sprinklers. Primary, or sole, use is currently limited to specific non-

storage and outdoor hazards, is gated by occupancy-specific data sheets, and is not a general substitution. Sprinklers remain FM's recommended default for most occupancies.

Is DS 4-14 a real document?

Yes. It is FM Global Property Loss Prevention Data Sheet 4-14, "Automated Monitor Fire Suppression Systems," first published in April 2026 as a first edition. It is part of FM's 4-series "Extinguishing Equipment" data sheets.

Which hazards can use an automated monitor in lieu of sprinklers at present?

Table 3.2 of DS 4-14 recognizes waste fuel-fired facilities (tipping halls and bunker buildings, governed by DS 6-13) and pulp and paper outdoor or noncombustible-building storage (DS 8-22) as recommended applications. It lists ASRS (DS 8-34) as a supplement-only use, not sole protection. FM expects the list to expand as the technology matures.

Is DS 4-14 the same as a building code?

No. DS 4-14 is an FM insurer engineering data sheet, not a code. Code acceptance of a sprinkler alternative is obtained through the equivalency and alternative-means provisions of the IFC (Sections 104 and 904), NFPA 1 (Section 1.4), and NFPA 13 (Section 1.5), with AHJ approval. DS 4-14 and FM Approvals listings provide supporting evidence for that approval.

Which FM Approvals standards apply?

FM Approval Standard Class Number 1421 (Fire Protection Monitor Assemblies), modified to add criteria for remote and automated systems, and Class Number 5511 (Firefighting Nozzles). The first FM Approved remote-operated robotic system, certified in March 2025, met these standards along with standards for controls, alarm signaling, central-station service, and flame detection.

How many systems qualify at present?

FM states that only one FM Approved system is available as of 2026. Additional systems are expected as manufacturers complete certification.

Sources and Further Reading

- FM Global Property Loss Prevention Data Sheet 4-14, *Automated Monitor Fire Suppression Systems* (April 2026, first edition). FM data sheets: https://www.fm.com/resources/fm-data-sheets (filter: 04. Extinguishing Equipment)
- International Fire Code (IFC), Section 104 (Alternative Materials and Methods; 2024 edition Section 104.2.3) and Section 904 (Alternative Automatic Fire-Extinguishing Systems): https://codes.iccsafe.org and https://up.codes/s/alternative-automatic-fire-extinguishing-systems
- NFPA 1, *Fire Code*, Section 1.4 (Equivalency), and NFPA 13, Section 1.5 (Equivalency, 2025 edition): https://www.nfpa.org
- FM data sheets referenced within DS 4-14: DS 6-13 (Waste Fuel-Fired Facilities), DS 8-22 (Storage of Baled Wastepaper), DS 8-34 (Protection for ASRS), DS 2-0, DS 3-0, DS 5-23, DS 5-40, DS 5-48, DS 10-7.