

Early Fire Detection



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Fike Specialty Detection Products



Overview



Fire Detection and Suppression Systems

- Open/Closed deck heat detection
- Open, weather, and closed deck flame detection/CCTV
- Closed deck video analytics smoke detection
- Weather deck fire monitors



✓ All systems tested and recommended in the LASH FIRE Report.

Engine room oil mist detection uses same video analytics

Sub-Committee on Ship Systems and Equipment

Flame detectors on weather decks

- a fixed fire detection and fire alarm system to be provided for the area on the weather deck intended for the carriage of vehicles

Video monitoring of garages, can add video smoke detection servers

- an effective video monitoring system shall be arranged in vehicle, special category and ro-ro spaces for continuous monitoring of these spaces;

Water monitors on weather decks

- a fixed water-based fire-extinguishing system based on monitor) to be installed in order to cover weather decks intended for the carriage of vehicles.

Fiber optic linear heat detection also allowed in garages.



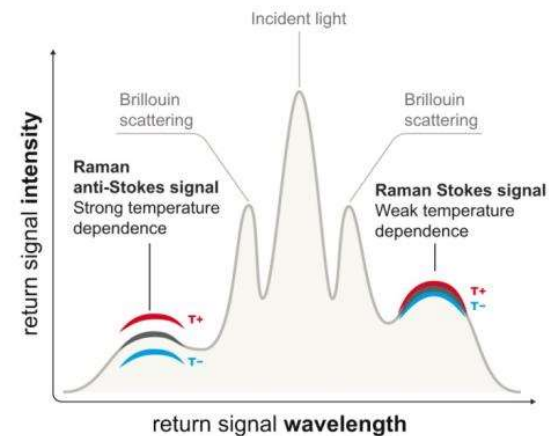
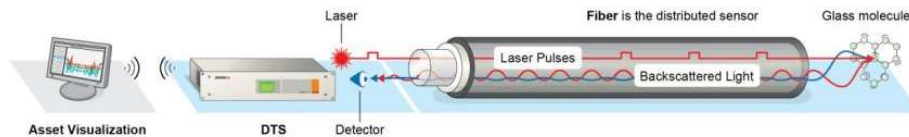
Fike Distributed Temperature Sensing



Raman DTS Principle

DTS utilizes the *Raman effect* to measure temperature. An optical *laser pulse* sent through the fiber results in some scattered light reflecting back to the transmitting end, where it is analyzed. The intensity of the Raman scattering is a measure of the *temperature* along the fiber. Monitors vibration of molecules.

The **position** of the temperature reading is determined by measuring the arrival timing of the returning light pulse similar to a radar echo.



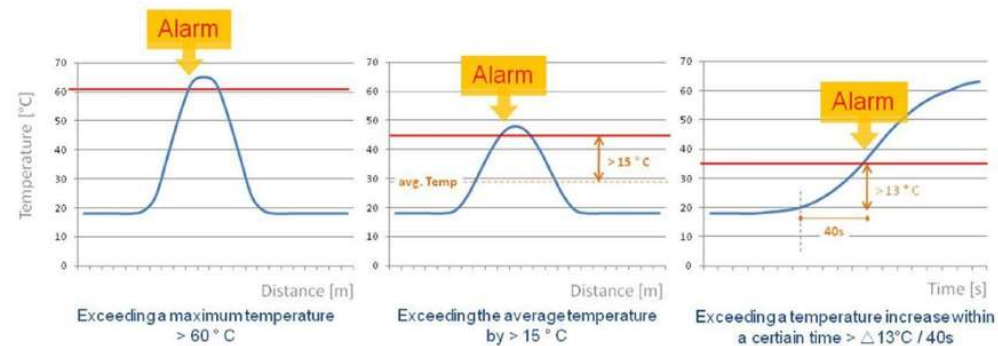
Confidential

Alarm Parameters

Flexible alarm zone concept allows individual sections with different alarm criteria (sensitivity) on the same sensor cable run.

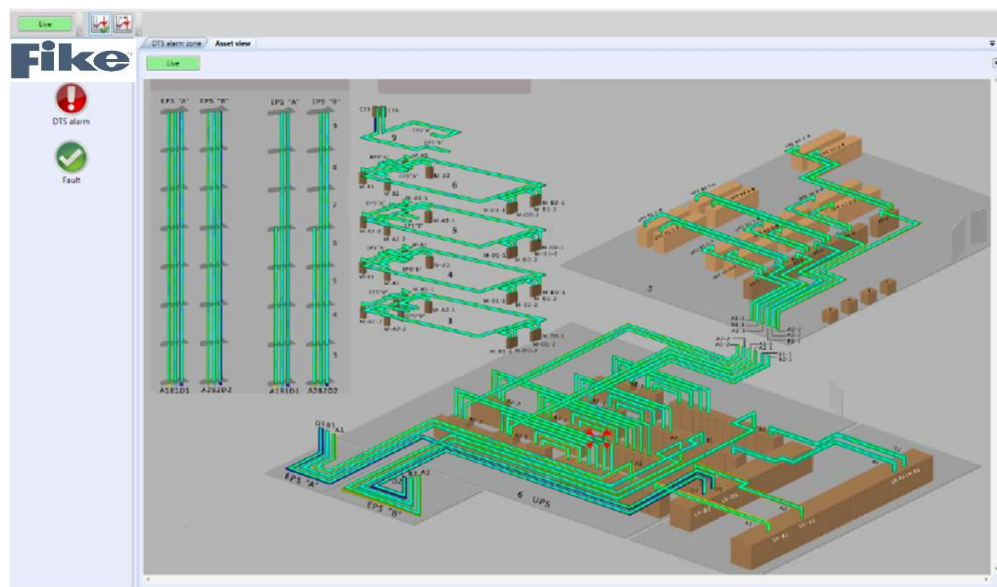
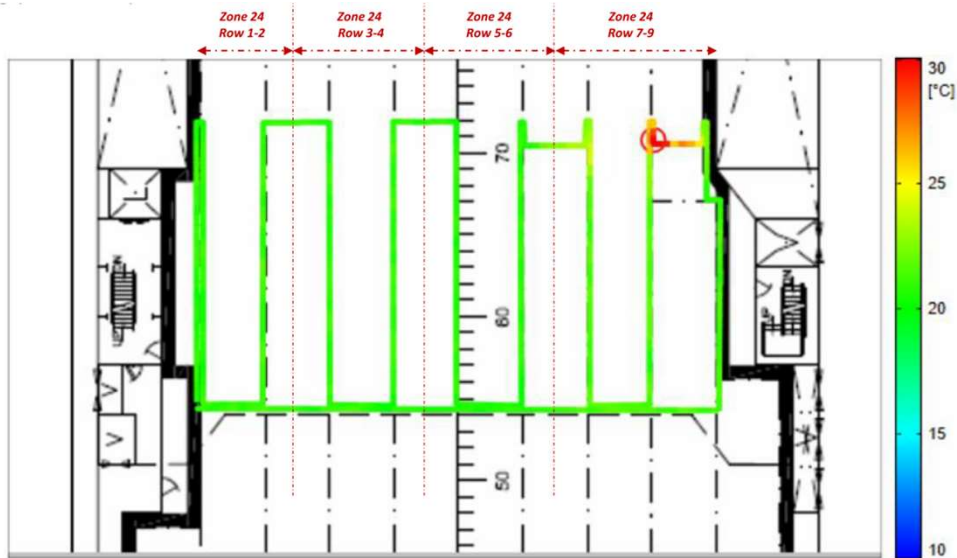
Five different alarm criteria per zone are programmable, up to 256 zones.

- Maximum alarm
- Rate of rise (gradient) I, II and III
- Difference to zone average (adaptive max.)

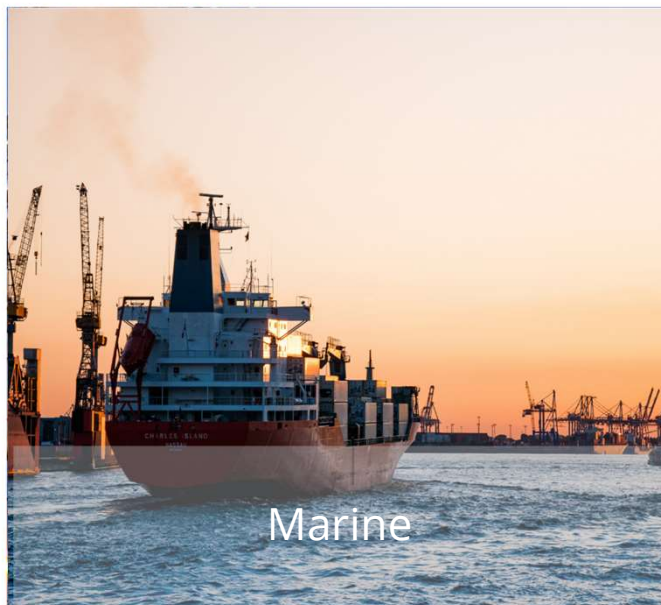


Visualization Software

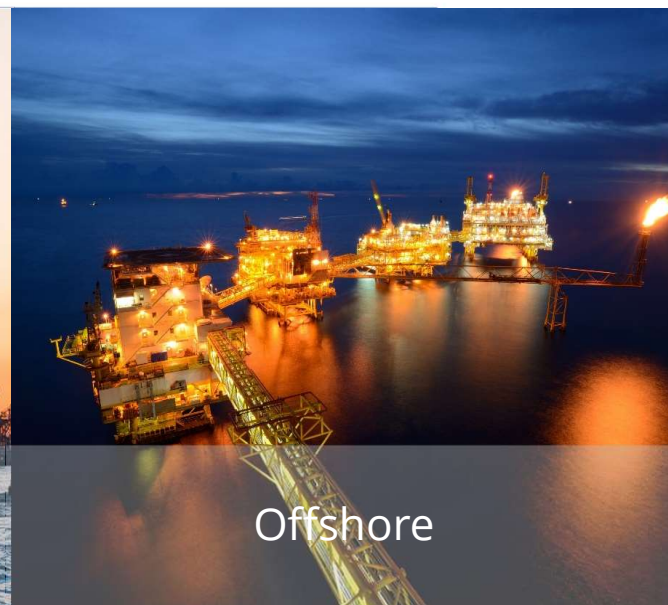
Actual ship installation



Flame Detection



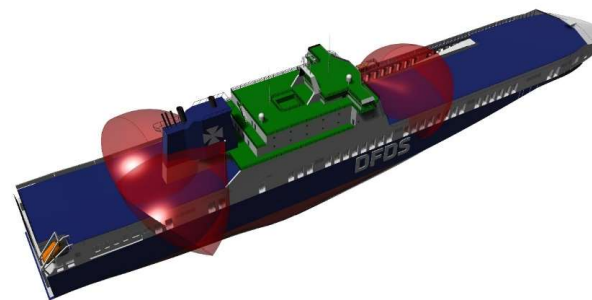
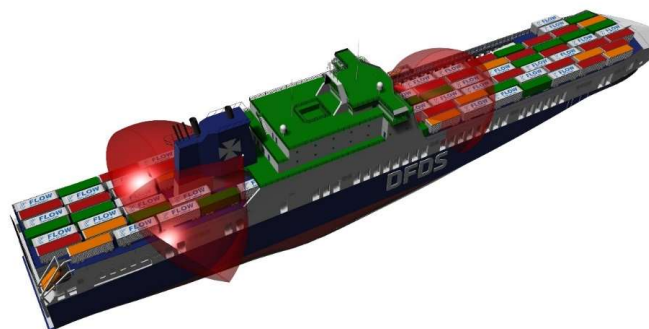
Marine



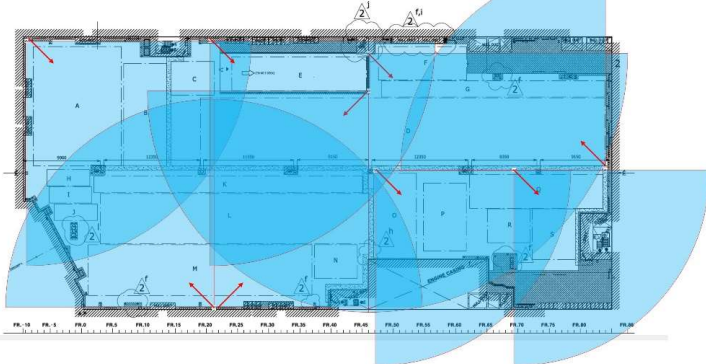
Offshore

Flame Detector Applications

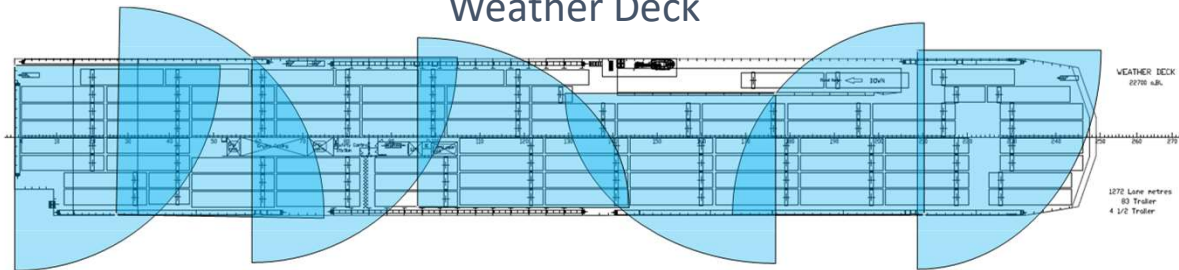
- ✓ Indoor or outdoor spaces where vehicles are carried
- ✓ Vehicle Decks/Weather decks
- ✓ LNG carriers
- ✓ Offshore oil and gas
- ✓ Any ship engine room
- ✓ Anywhere flammable materials, fuels or vapors
- ✓ With or without a camera



Vehicle Deck



Weather Deck



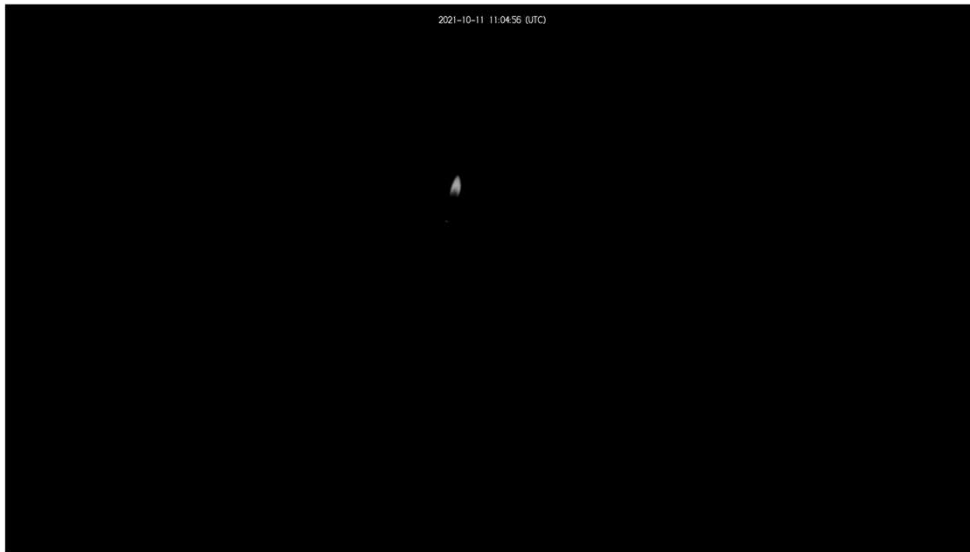
Fast Detection – Lithium Batteries



Lithium
battery fire

Detects: explosion, fast fire, slow evolving fire, small fire, big fire

XY 3D or Vector Location Output for Water/Foam Cannon Automatic Detection/Suppression



Fire/Oil Mist Detection Using Video Analytics



Marine engine room detection

170+ ships

- Carnival Corp: CCL, Princess, Holland America, etc. 102 ships
- Disney: 6 ships
- Norwegian: 20 ships
- Hurtigruten cruise
- Interlake Steamship – Bulk carrier
- Canada Steamship Line – Bulk carrier 57 Ship in process
- Australian/New Zealand Navies
- French Navy (6 new frigates)
- Pakistan Navy



Video Analytics for Rapid Oil Mist Detection

4.3 Detection of oil leakage and shutdown system

4.3.1 Rapid oil leak detection system

4.3.1.1 The critical leakage points in oil piping systems shall be covered by a rapid oil leakage detection system. This may be exempted provided that the requirements in [4.3.1.2] are met.

Guidance note:

A critical leakage point is defined as any leakage point on engine mounted oil piping systems and the oil piping connections between the engine and the vessel mounted oil piping systems. These leakage points are defined as critical due to their exposure to vibrations and their vicinity of potential ignition points. However, the definition of critical leakage points and thereby the requirement for rapid oil leakage detection system may be reconsidered if a study is presented that clearly indicates an acceptably low risk of oil leakage.

Guidance note:

Acceptable detection times for a rapid oil leak detection system are the best practices for detection of oil leaks in e.g. high pressure double walled oil pipes or detection times for major fuel leaks in alternative fuel systems.

Examples of rapid oil leak detection systems are:

- atmospheric hydrocarbon detection
- laser hydrocarbon leak detection
- pressure monitoring of annular space of double walled flexible hoses
- automatic oil leak detection by video analytics
- level switches, as typically used on high pressure oil pipes.

Video analytics recommended



RULES FOR CLASSIFICATION

Ships

Edition July 2018
Amended February 2019

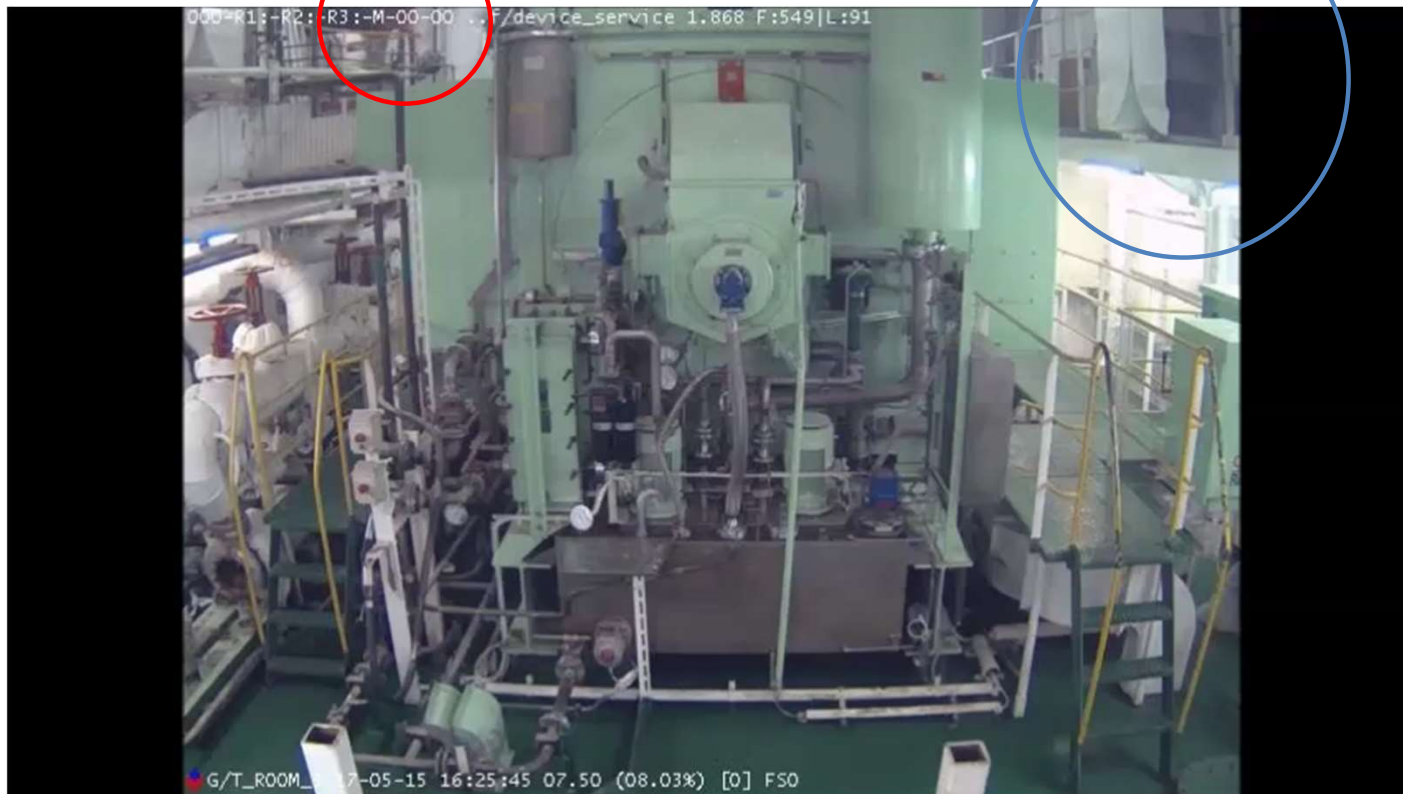
Part 6 Additional class notations

Chapter 5 Equipment and design features

The following section supersedes the July 2018 edition:
- Section 4 *Additional fire safety - F*

This document includes the amended section only.
For sections not listed above, the July 2018 edition is valid.

Mist and Flame Event

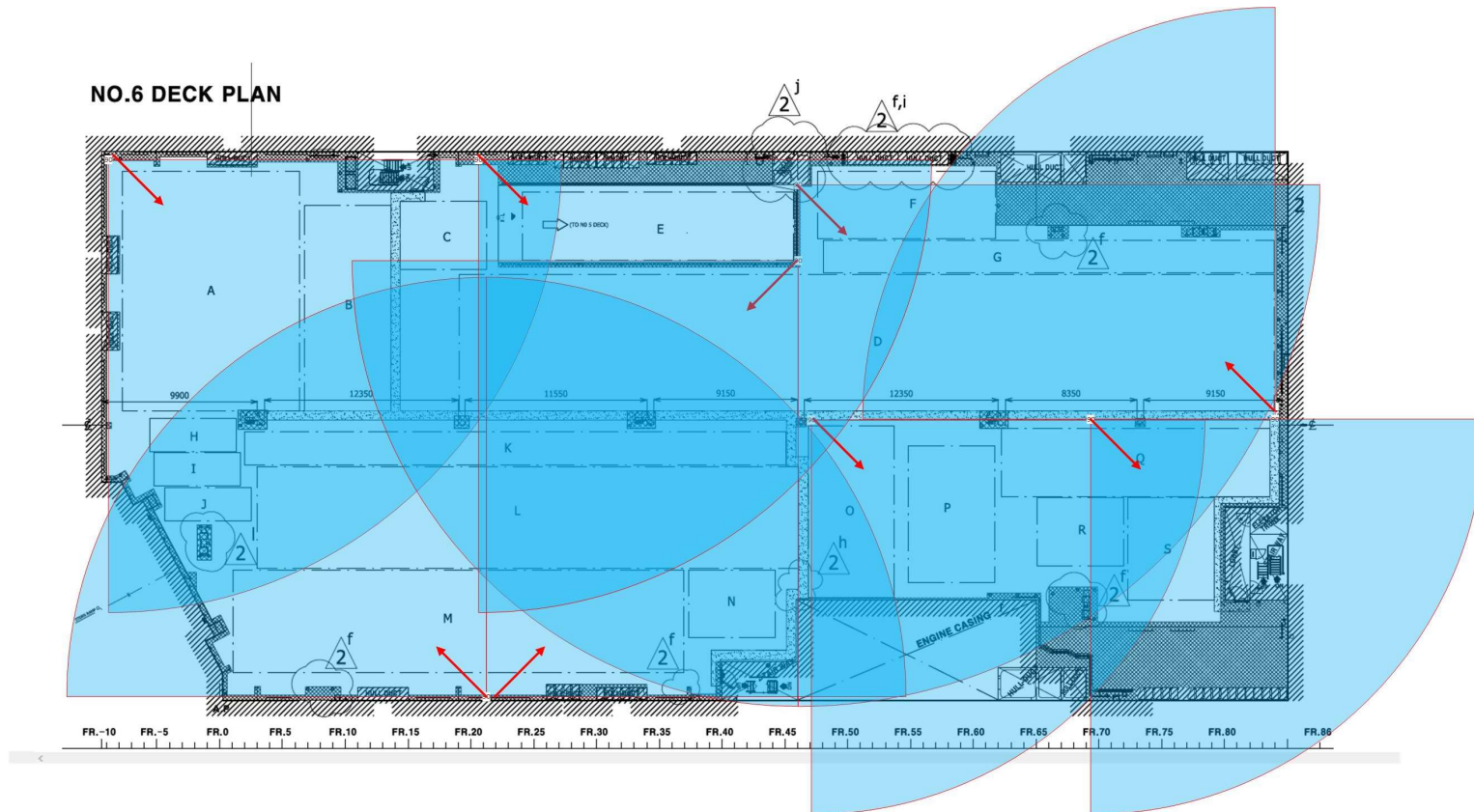


Vehicle Deck Fire/Smoke Detection



Ship design video analytics smoke detection

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Engine Smoke Event

"Looks good, .. It is a very nice system as it detects things which one cannot see but it is there. Beneficial for us as leaks are being detected before we see them."

Chief Engineer, Holland America



Fike Fire Monitor



Offers automatic solutions with virtually any detection technology



LASH FIRE

Legislative Assessment for Safety Hazards of Fire
and Innovations in Ro-Ro Ship Environment



Spray Patterns

Straight Steam



Narrow Steam



Wide Fog



Sales/Consulting and Application Process



Dankie Gracias
Спасибо شكرًا
Merci Takk
Köszönjük Terima kasih
Grazie Dziękujemy Dékojame
Ďakujeme Vielen Dank Paldies
Kiitos Täname teid 谢谢
Thank You Tak
感謝您 Obrigado Teşekkür Ederiz
Σας ευχαριστούμε 감사합니다
Bedankt Děkujeme vám
ありがとうございます
Tack

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