

Marine application

BSKY WATER MIST Fixed Water-based Fire-fighting System For Ro-Ro Spaces And Special Category Spaces



BSKY Fire Protection — Enjoy the Way to Safety

High-Efficiency and Safe Fire-Fighting System for Ro-Ro and Special Spaces

The BSKY WATER MIST fixed high-pressure water-based fire-extinguishing device adopts high-pressure water mist technology based on performance requirements and advanced design concepts. It provides functions such as cooling, oxygen isolation, fire and smoke suppression, and multiple reactivation for fire-affected areas. Compared with the popular high-pressure water mist systems based on flux density technology in the market, it consumes less water, delivers higher fire-extinguishing efficiency, and can effectively replace low-pressure carbon dioxide fire-extinguishing systems. It is designed to handle various fire incidents in ro-ro spaces and special spaces.

Different from the fire characteristics in other areas of the ship, the ro-ro space provides sufficient oxygen for combustion due to its huge cargo-holding space; meanwhile, vehicles are densely arranged and a large amount of combustibles exist, so the fire may spread rapidly. Without effective cooling measures, the intense thermal radiation makes it difficult or even impossible for on-site workers to carry out fire intervention. If a fire occurs during loading and unloading, the entire space will lose airtightness. Due to the diversity of loaded vehicles and goods, there are multiple potential ignition sources and various types of fire loads. Therefore, traditional fire protection measures (such as low-pressure carbon dioxide systems) can no longer meet the requirements of ro-ro spaces.

Advantages

- **Low Water Consumption:** Adopts high-efficiency flame suppression technology with ultra-fine droplet size, significantly reducing water consumption per nozzle to only 12.4–24 L/min.
- **High-Efficiency Blocking:** Rapidly isolates the burning area, precisely protects vehicles around the fire source, and effectively restrains flame spread.
- **Sustained Fire Control:** Adapted to the combustion characteristics of new energy vehicles, it provides longer-lasting fire suppression capability with ultra-low water consumption.
- **Deep Cooling:** Continuously cools burning vehicles, targets the core of battery thermal runaway, and fundamentally suppresses secondary re-ignition.
- **Re-ignition Response:** Supports repeated activation and discharge mechanisms, calmly coping with repeated fires in extreme scenarios.
- **Dust Reduction and Smoke Ventilation:** Ultra-fine water mist particles efficiently capture suspended dust. Combined with evaporative heat absorption and directional spray disturbance, it quickly channels smoke paths and improves visibility at the fire scene.



BSKY WATER MIST meets the single-ship certification requirements of classification societies including BV, ABS and RS. The type approval and certification of the fixed high-pressure water-based fire-extinguishing device complies with the requirements of MSC.1-Circ.1430-Rev.3.

BSKY WATER MIST

Regulatory Requirements

- Meets the requirements defined in SOLAS Convention Chapters II-2/3.12, II-2/3.13, II-2/3.35, II-2/3.36, II-2/3.46 and II-2/3.49.
- Applicable spaces as per MSC.1-Circ.1430-Rev.3 (Performance Certification)

Applicable Spaces

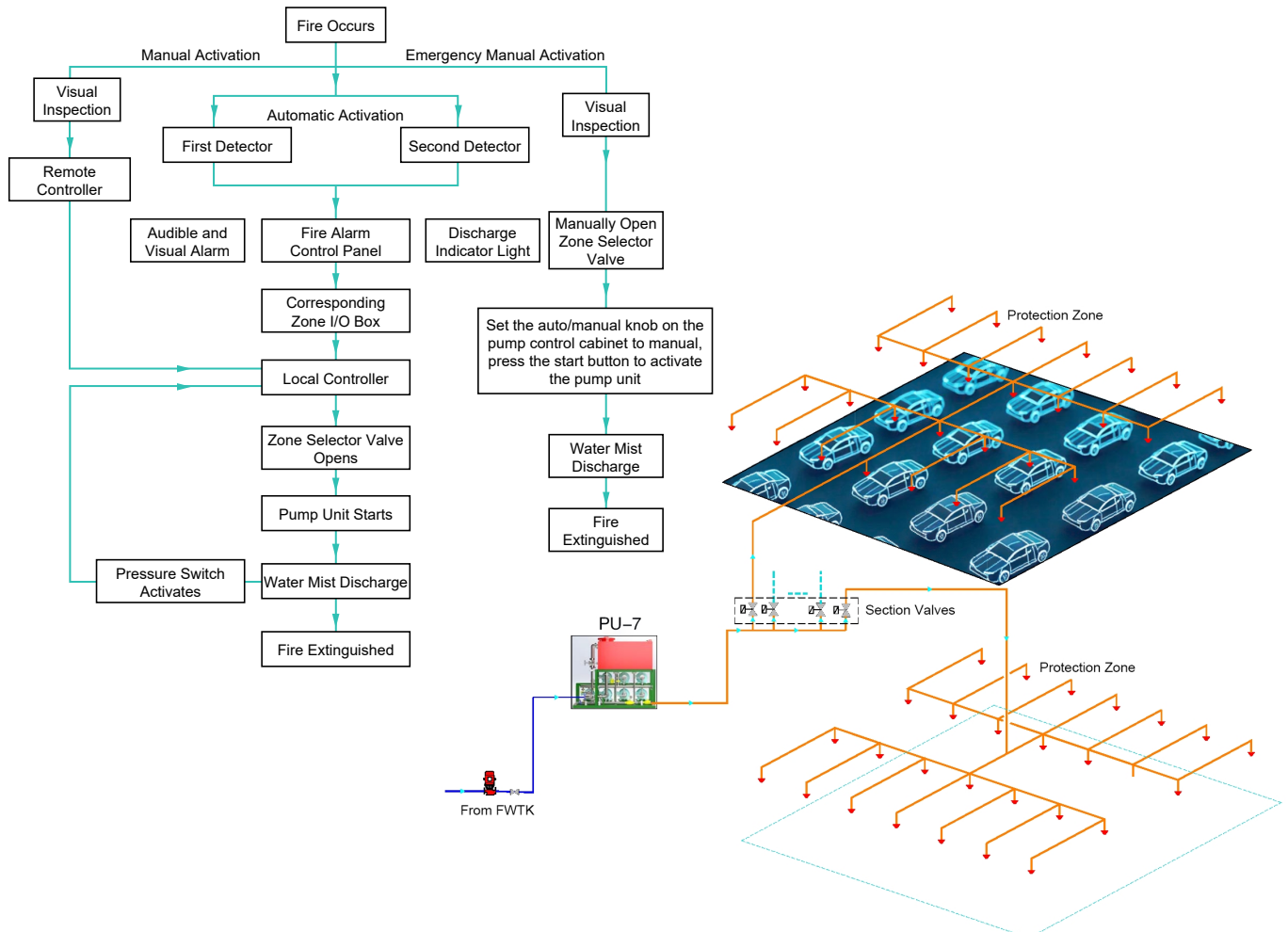
Ro-Ro Spaces And Special Category Spaces.

Comparison with Existing Ro-Ro Fire-Fighting Systems

Dimension	Water Consumption	Fire Control Capability	Long-term Cooling Capability	Flame Isolation Capability	Water Damage	Applicable to Occupied Spaces	Enclosed Space Requirement	Replenishment Requirement	Insulation	Multiple Activations
BSKY WATER MIST	Low	Excellent	Excellent	Excellent	Minimal	Applicable	Moderate	Very Low	Yes	Yes
Low-pressure CO ₂	None	Excellent	None	None	None	Not Applicable	High	High	Yes	否
System based on flux density requirement	High	Moderate	Moderate	Moderate	Severe	Applicable	Moderate	Low	No	Yes

BSKY WATER MIST Principle & Description

The BSKY WATER MIST system is designated as model CXSW-RSH. It mainly consists of a pump unit (PU-7), pump control cabinet, local controller, I/O cabinet, remote control panel, zone control valve bank, water mist nozzles and auxiliary equipment. The CXSW-RSH supports automatic, manual and emergency activation: Automatic activation is triggered by signals from the fire detection system. Manual activation can be initiated via one-touch operation on the remote touchscreen. In the event of control system failure, manual emergency activation is available. A commissioning mode is integrated for initial parameter configuration before first use and subsequent maintenance after system installation.

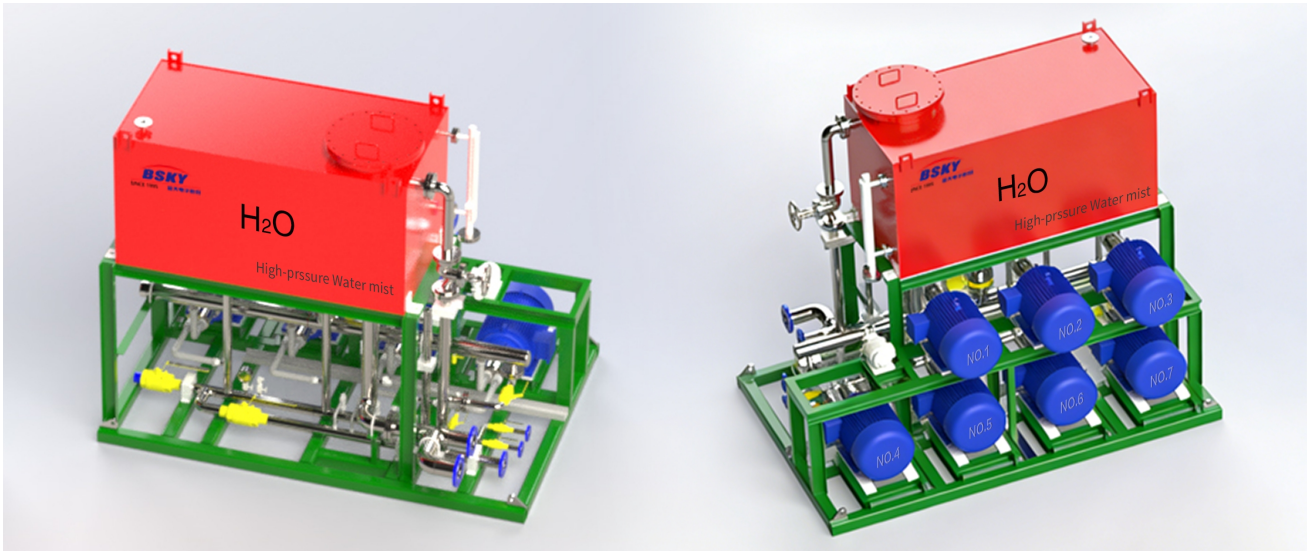


BSKY WATER MIST

High-Pressure Water Mist Pump Unit

As the core component of the BSKY WATER MIST high-pressure water mist fire extinguishing system, the high-pressure water mist pump unit (Model PU-7) integrates key components such as a plunger pump, intermediate water tank, pressure relief pump, sensors, and pipelines. Adopting a modular design concept, the pump unit features a compact layout and rational maintenance space planning, thereby maximizing the reduction of cabin space occupation. Meanwhile, it supports a decentralized installation scheme to flexibly adapt to the space limitations of retrofitted ships, balancing functional integrity and ship adaptability.

Rated Treatment Capacity	Maximum Working Pressure	Minimum Working Pressure	Minimum Inlet Pressure	Rated Power
840 L/min	10 MPa	6 MPa	0.1 MPa	280 KW



Water Mist Nozzles

The CXSW high-pressure water mist nozzles, specifically developed for ro-ro spaces and special spaces, are designed based on superior performance-certified technology. With ultra-low water consumption, they achieve a wider coverage area and strong initial momentum, ensuring optimal fire control effects while minimizing the potential risk of instability and capsizing caused by large accumulations of fire water forming a floating liquid surface.

Model	Minimum Working Pressure	Maximum Installation Distance	Installation Height
CXSW-T1.6 BSKY	6 MPa	4m	≤2.5m
CXSW-T3.1 BSKY	6 MPa	4m	≤5m



Water Consumption Comparison Based on Performance Requirements and Flux Density Requirements (at a deck height of 2.5 m)

Certification Type	Performance-Based	Flux Density-Based
Minimum Water Discharge Density[mm/min]	0.77	5

Nozzles using performance-based technology produce a theoretical free liquid surface height of only 23.1 mm; in contrast, nozzles using conventional flux density-based requirements generate a theoretical free liquid surface height of up to 150 mm, which poses a significant potential risk to the ship's stability.

BSKY WATER MIST

Pump Control Cabinet

As the core power supply and distribution unit of the system, the PCC-H pump control cabinet integrates an intelligent switching function between the main power supply and the backup power supply, ensuring the continuity and reliability of power supply. It is also equipped with a local manual emergency operation interface for the pump unit, providing dual guarantees for equipment control under emergency conditions, and meeting both normal operation & maintenance and emergency response requirements.

Dimension	1600X600X2200mm (L x W x H)
Input Power	AC380/440V ± 5%, 3 P, 50/60Hz
Ambient Temperature	0 ~ 55°C
Ingress Protection Rating	IP 54

Local Control Panel

As the core central hub of the system, the LCP-H local controller integrates core functions such as overall control, real-time monitoring and intelligent alarm, realizing efficient management and status control of the entire fire-extinguishing system process.

Dimension	800X400X1100mm (L x W x H)
Input Power	AC220V ± 5%, 1 P, 50/60Hz
Ambient Temperature	0 ~ 55°C
Ingress Protection Rating	IP 54

I/O Cabinet

The IO-H I/O Cabinet is deployed in the centralized area of zone selector valves on each deck. As a key node for system information interaction, it undertakes functions such as collecting the status of zone selector valves and transmitting data from pressure switches. It also efficiently executes the upload and issuance of control commands, realizing the linkage and status monitoring of all zones.

Dimension	1200X400X1500mm (L x W x H)
Input Power	AC220V ± 5%, 1 P, 50/60Hz
Ambient Temperature	0 ~ 55°C
Ingress Protection Rating	IP 54
Maximum Supported Zones	30个
Maximum Simultaneous Zone Discharges	9个



BSKY WATER MIST

Remote Control Panel

The RCP-H remote control panel is preferably deployed in locations requiring remote operation, such as the fire control station and bridge console. As an extended terminal of the LCP-H main control interface, its visual interactive interface fully reproduces the core information of the main control interface and supports selective display of key parameters as needed. It also integrates remote operation, discharge status indication and hierarchical alarm functions, realizing global visual management and cross-space cooperative control of the fire-extinguishing system.

Dimension	Wall-mounted:420X176X450mm (L x W x H)
Mounting Method	Flush-mounted / Wall-mounted
Input Power	AC220V ± 5%, 1 P, 50/60Hz
Ambient Temperature	0 ~ 55°C
Ingress Protection Rating	IP 54 (Ingress Protection Rating)



Website



Wechat

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