

... and nobody
has to leave the ship

Marine Fire Protection

Safe for certain.

MINIMAX



Introduction

- 全區域的火警系統設計
- 自動撒水系統運用於船艙旅客場所，餐廳等
- 泡沫系統運用於燃料油區，引擎全區，泵浦區
- 移動式泡沫或消防栓設置於重要或危險性場所
- 固定式砲塔設置於甲板上
- 廚房滅火系統設置於爐具上
- CO2 運用於大區域的引擎室
- 乾粉系統運用於氣瓶室
- 潔淨海龍替代系統運用於控制室及重要機房

Fire protection solutions for
ships and offshore facilities

Cool down.
Fire Protection by

MINIMAX



WATER MIST

MINIFOG MARINE XP



Minifog marine XP
water mist extinguishing system
High-pressure technology for maritime risks

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PROTECTION

all around

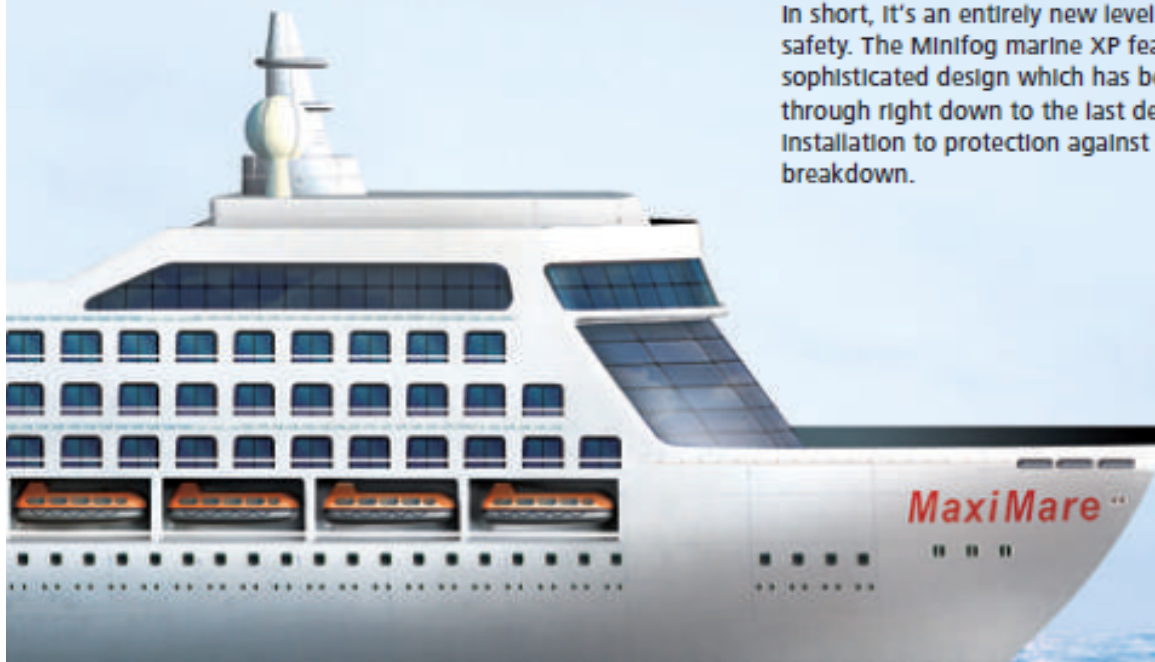
The special conditions at sea mean that safety is an incredibly important issue for ships. The aim is to prevent any danger to make sure everything runs smoothly on board. And the key safety issue for passenger ships is of course the people on board.

Ships are subject to a whole range of fire risks, which means fire protection on board has to be all the more effective. After all, in the event of a fire, it is not as easy to escape when at sea, and prompt fire-fighting assistance from outside cannot be counted on.

Minimax has developed the Minifog marine XP water mist extinguishing system specially for maritime risks. It takes high-pressure technology to new dimensions. Many years of experience in water mist extinguishing technology and the marine sector have gone into the research, and the Minifog marine XP is the result. It complies with all relevant directives and, above all, it is extremely easy to use.

Minifog marine XP offers the optimum all-around protection for seagoing and inland navigation vessels. The fire protection system can protect passenger, public and storage areas, as well as engine rooms.

In short, it's an entirely new level of operational safety. The Minifog marine XP features a sophisticated design which has been thought through right down to the last detail – from installation to protection against clogging or breakdown.



The Minifog marine XP system protects engine rooms up to 8,235 m³ volume.



Engine room test

SAFETY operation

SECURITY everywhere

Water supply

The extinguishing water for the Minifog marine XP system is held in a tank which is automatically fed from the ship's own freshwater systems. The system can also be supplied with filtered seawater from the ship's separate hydrant system (fire main), as well as via a shore connection pursuant to international standards and SOLAS regulations. In standby mode, the pipes are filled with water via a jockey pump kept under pressure. In the event of fire, the operating pressure is built up through high-pressure sprinkler pumps, which are integrated in a compact, pre-assembled water supply unit.

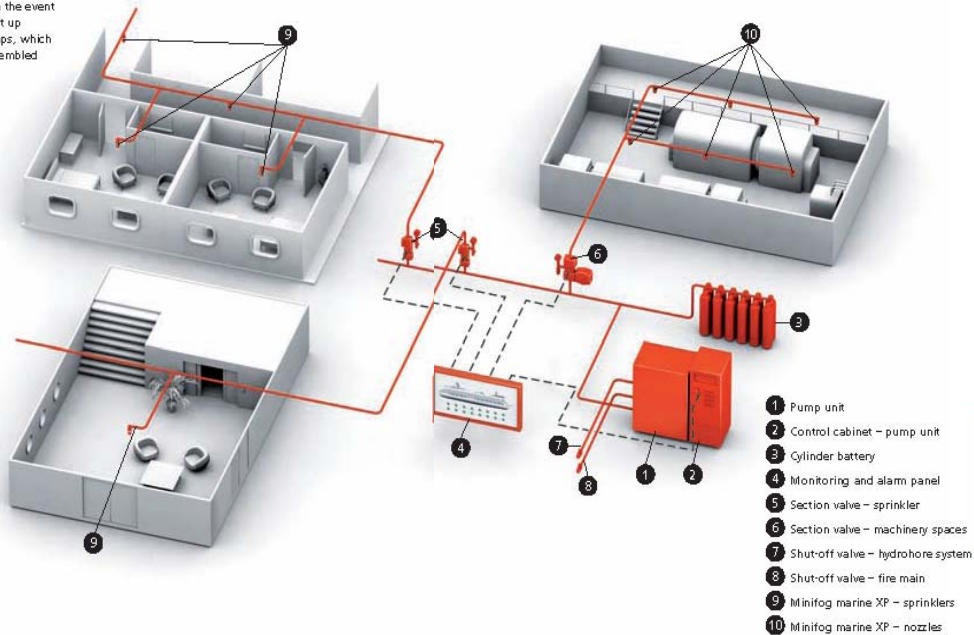
Foaming agent mix

Minifog marine XP can be used in all areas without extinguishing agent additives. A foaming agent can be added for fighting fire in the machinery spaces bilge in order to minimise extinguishing water usage even further here. In this case, a proportional device with a supply of foaming agent is connected directly near the machinery spaces to the piping network for the bilge.

Alarms and monitoring

Upon extinguishing system activation, the sprinkler pump control unit automatically sends the "water supply in progress" signal to the bridge or safety station. To localise the fire event, an alarm signal is also displayed, which is transmitted by the affected area's current indicator.

The Minifog marine XP system is equipped with electric monitoring supplied with power via the emergency power supply system, which monitors all security-related lines to control units and signal transmitters for short circuits or interruption.



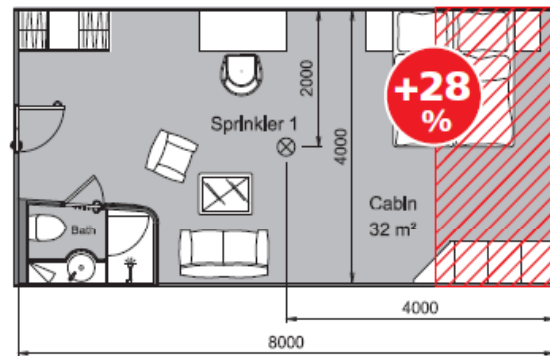
細水霧系統水源可為利用海水+加壓氣體+泵浦+控制閥件和主機等

ADVANTAGES



Minifog marine XP advantages

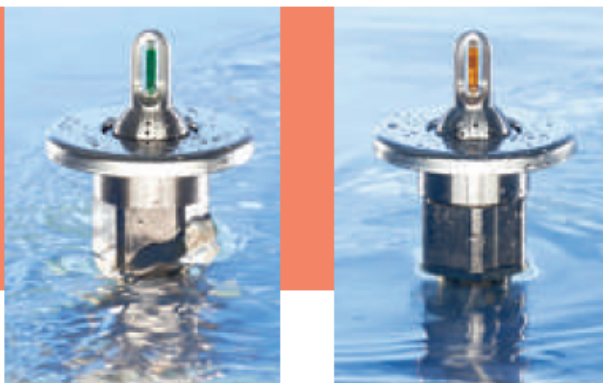
- ▶ Uses 90% less extinguishing water than classic sprinkler systems.
- ▶ Engine rooms of up to 8,235 m³ volume.
- ▶ Conduit diameters from 10 to 42 mm save valuable space.
- ▶ No separate fire protection system needed to protect the engine rooms.
- ▶ Just one sprinkler in a cabin can cover up to 32 m².
- ▶ Sprinklers can be spaced up to 6 m apart in the corridors.
- ▶ Protects the entire engine rooms, including objects and the bilge, with just one nozzle type.
- ▶ Stainless steel sprinklers and nozzles.
- ▶ Sprinkler and nozzle outlet ports 1 mm in diameter or more. No risk at clogging.
- ▶ Engine rooms (incl. bilge) can be protected without foaming agent.



Classic sprinkler 16 m²

Conventional high-pressure water mist sprinkler 25 m²

Minifog marine XP sprinkler 32 m²



Minimax GmbH & Co. KG
 Industriestrasse 10/12
 23840 Bad Oldesloe
 Germany
 Phone +49 4531 803-0
 Fax +49 4531 803-248
 E-mail marine-division@minimax.de
www.minimax.de





WATERMIST
MINIFOG SYSTEM

Minifog Watermist System
Local application systems
for ship engine rooms

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SAFETY

Competent



The risk

Ships require particularly high standards of safety on account of the particular conditions at sea. This applies especially to fire protection, and in particular in and around the engine room, which is home to fuel lines and other supply lines such as those that feed the main engines, auxiliary diesel engines, boiler burners, fuel separators and pumps – all these are typical areas of risk which must be considered when choosing an extinguishing system. The International Maritime Organization (IMO) therefore recommends a permanent, quick activation fire fighting system to protect equipment on board in addition to the total flooding fire suppression system.

The solution

Minimax has developed the perfect solution to this special scenario: Minifog Watermist System for Ships. Special impulse nozzles, with a minimum operating pressure of only four bar at the nozzle, create a fine water. The tiny water particles heat up far more quickly than larger particles and the effect is the fire is cooled and extinguished more effectively. The fact that the water droplets vaporise rapidly also impairs the supply of oxygen to the fire, thus smothering it. Minifog Watermist System also fulfils another major IMO requirement: its low water quantities and fine droplets minimise the risk of distortion in hot machine parts. This prevents damage and keeps the machines in normal operation. They do not need to be switched off during extinguishing, and the ship remains manoeuvrable.

Maersk Recorder

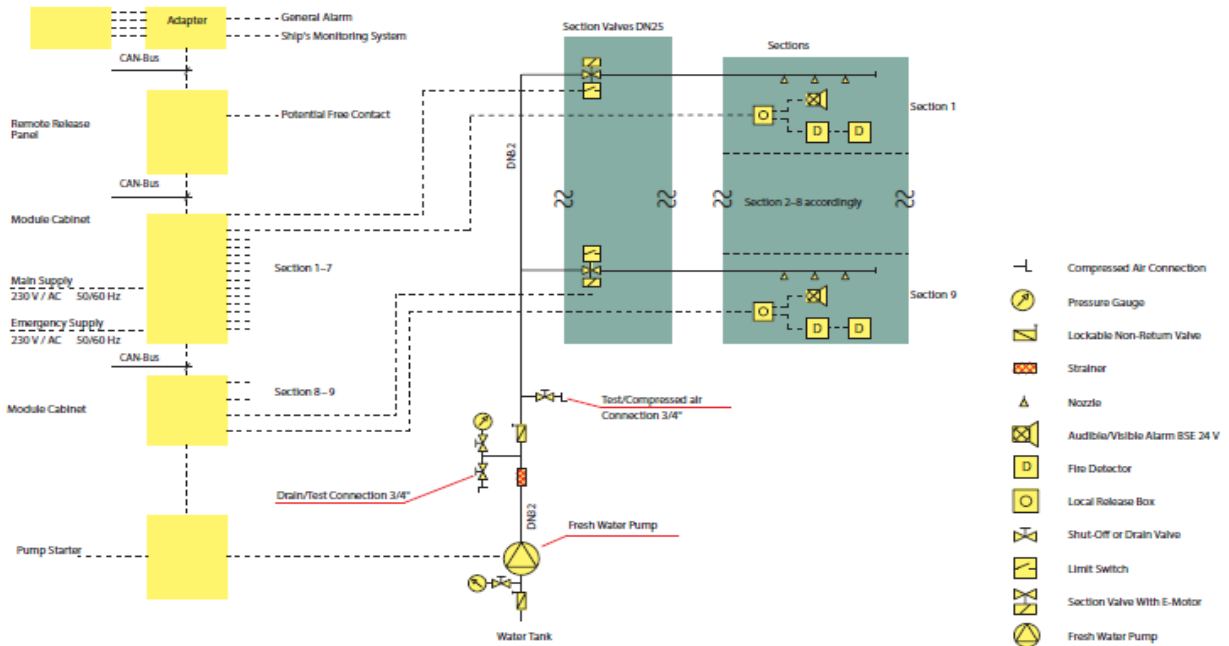


AIDAvita



Octopus

Local Application System Scheme of operation



Fire Detection Panel



Local Release Box



Remote Release Panel



FOAM EXTINGUISHING SYSTEMS
ROTATING POP-UP NOZZLE



Rotating Pop-Up Foam Extinguishing Nozzle
for Helidecks

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SAFETY

360°

The Risk

At sea, safety requirements for ships and offshore facilities such as oil platforms are of the utmost importance. This also applies to fire protection measures. After all, in the event of fire, rapid escape is usually impossible and the prompt arrival of help from outside cannot be expected.

In light of the various types of fire risks, which exist on board ships, specific solutions are

necessary for the space or object to be protected in order to ensure optimal fire protection on board.

A helicopter accident, resulting in fuel spillage with wreckage and/or fire and smoke, may render some of the equipment unusable or preclude the use of some passenger escape routes.

The solution

The new rotating foam extinguishing nozzle has been designed and developed to meet exacting fire protection requirements for landing decks. The industry's trend towards ships with smaller crews and unmanned platforms makes this equipment essential for maintaining the safety of these critical areas.

The nozzle is fully recessed in the deck. So it represents neither a visual obstruction nor a potential tripping hazard.

In the event of activation, liquid pressure raises a baffle and the deck is coated with a carpet of foam. The rotational action of the nozzles enables three spray jets to be propelled up to a height of five meters increasing the overall coverage and producing a carpet of protective foam over the deck area and any large pieces of equipment.

In the case of a blocked baffle plate the water can pass through openings to the surface. The extinguishing function is preserved.



Blocked rotor - baffle plate not extended

ON HELIDECKS

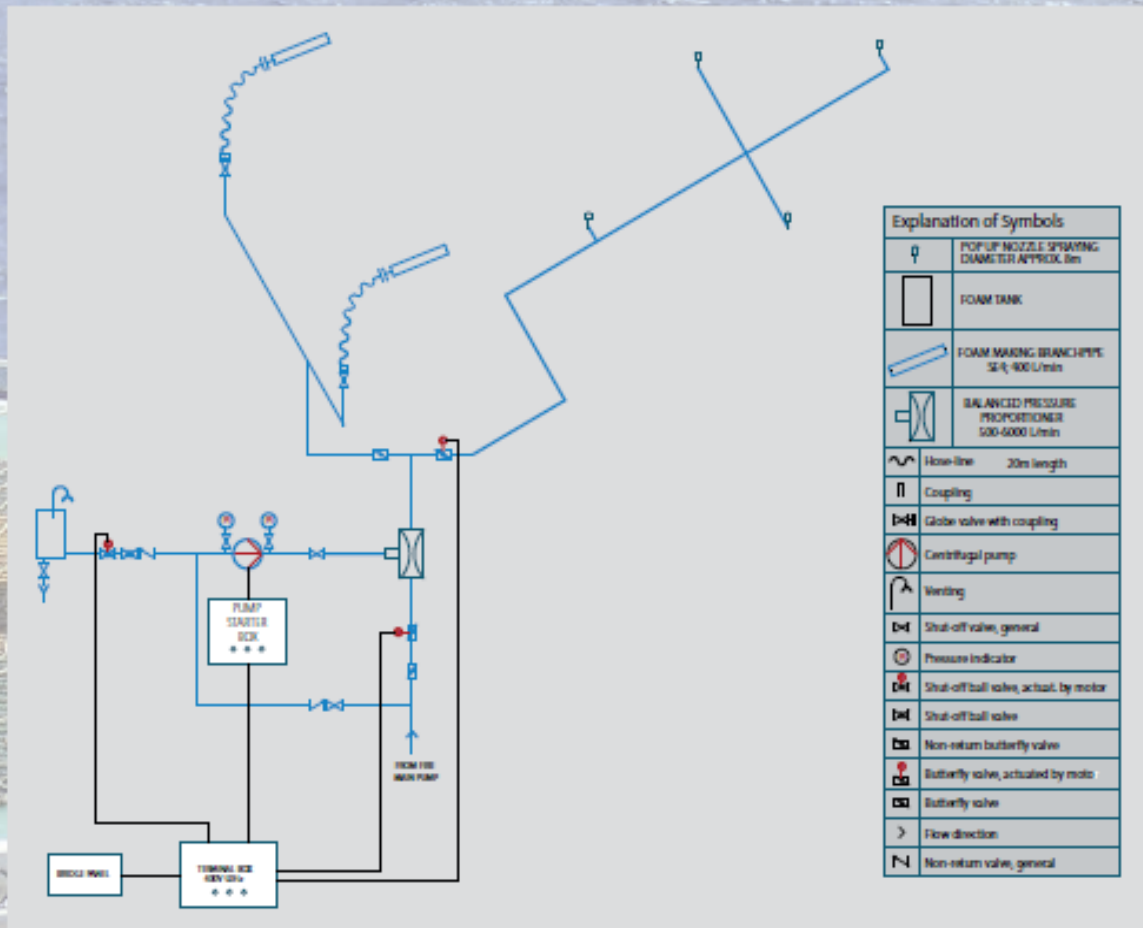
rotating pop-up foam extinguishing nozzle

How the system works

The system is started manually. The pop-up nozzles are propelled upward by the water pressure and opened. A foam inductor mixes the water with the corresponding volume of foaming agent, which is stored in a foaming agent tank.

An optional electrical trigger is available.

Scheme of operation



BENEFITS

- ▶ Foam is sprayed instantaneously onto the landing surface and any objects placed on it
- ▶ Nozzle assembly completely recessed and flush with the deck when not in use
- ▶ Nozzle rotational drive give high throw for greater coverage
- ▶ Quick and cost-effective installed from the top of the deck
- ▶ Foam spraying density exceeds CAP 437 (6l/min/m²)



Technical Details:

- Flow Rate, water V_w : 367l/min at 4bar
- Spray coverage: up to 9m diameter
- Spray height: up to 5m
- Recommended operating pressure: 4-8bar

Minimax GmbH & Co. KG
Division Marine
Industriestrasse 10/12
D-23840 Bad Oldesloe
Phone: +49 45 31 8 03-0
Fax: +49 45 31 8 03-248
E-Mail: marine@minimax.de
www.minimax.de





MX 1230 Marine & MX 200 Marine
clean agent fire suppression systems

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EFFECTIVE

speedy and careful

At sea, safety requirements for ships are of the utmost importance. This also applies to fire protection measures. After all, in the event of fire, rapid escape is usually impossible and the prompt arrival of help from outside cannot be expected.

In light of the various types of fire risks which exist on board ships, specific solutions are necessary for the space or object to be protected in order to ensure optimal fire protection on board.

Areas that deserve special attention include machine rooms and rooms with electrical and electronic devices, such as control rooms and switch cabinets. In the event of a fire, the failure of machines or devices on board a ship at sea can have fatal consequences. In such risk areas, fire suppression systems must put out fires quickly and residue-free, in order to ensure that sensitive equipment is not damaged.

A perfect solution are the MX 1230 Marine and MX 200 Marine clean agent fire suppression systems, which meet the demanding requirements on board a ship and are fully certified with many major marine sector approvals (e.g. GL, ABS, MED).

The systems utilise the approved fire suppression agents Novec™ 1230 or HFC-227ea: neither fire suppression agent is corrosive or electrically conductive, or causes any damage to sensitive parts through short circuits or residues.

Fire suppression agents

Novec™ 1230 is used in the MX 1230 suppression system. Novec™ 1230 is the latest clean agent and is environmentally friendly and safe to persons. Of both fire suppression agents, Novec™ 1230 possesses a larger safety margin between the design and a hazardous concentration.

HFC-227ea is used in the MX 200 Marine clean agent fire suppression system. It is the most common clean agent and world wide available.

New standard:
The 50-bar system
pressure for clean
agent fire suppression on ships.



CLEAN

residue-free suppression



Unique

The 50-bar system pressure is a new standard for clean agent fire suppression on ships:

- ▶ at most 30% smaller nominal pipe width and consequently less weight and space required
- ▶ cylinder displacement from machinery space – consequently no redundancy required
- ▶ more fire suppression agent per cylinder

Effectiveness

The fire suppression systems are characterised by their rapid fire suppression. The common flooding time is maximum 10 seconds. This minimises the possible damage and prevents the spreading of flames to other nearby areas.

Space & weight

Both clean agents are extremely effective: the fire suppression is effective at a design concentration of 5.5 resp. 8.7% per vol. – consequently less space for storage is required.

Personal safety

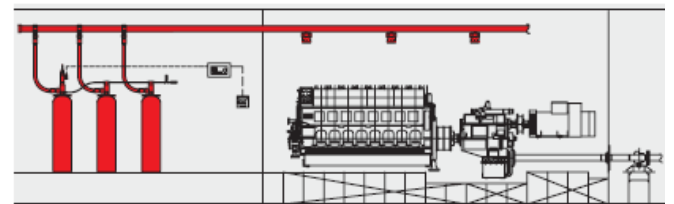
Releasing the fire suppression systems does not present any danger to people. Both fire suppression agents are completely safe for use in occupied spaces due to their large safety margin between the design and a hazardous concentration.

Respect for the environment

Neither fire suppression agent possesses ozone depletion potential. However, the Novec™ 1230 fire suppression agent is categorised as more environmentally friendly based on its extremely low greenhouse potential (GWP = 1).

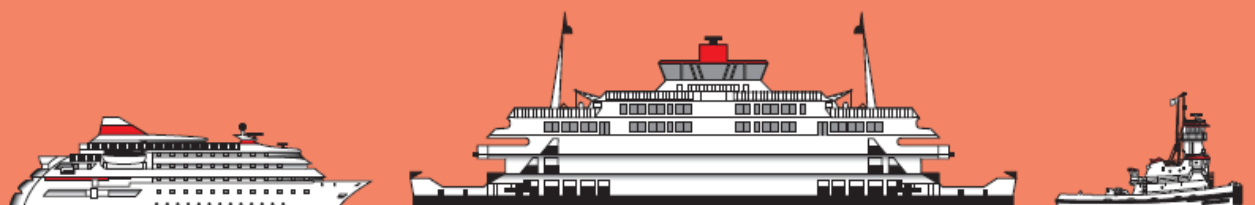
Flexibility

Flexibility in pipe routing and the wide range of fire suppression agent cylinder sizes ensure that the system can be individually adapted to the room to be protected and the space available for installation.



System lay-out

The main components of MX 1230 Marine and MX 200 Marine clean agent fire suppression systems are the fire suppression agent supply with a pipe network and discharge nozzle.



ADVANTAGES

MX 1230 Marine & MX 200 Marine

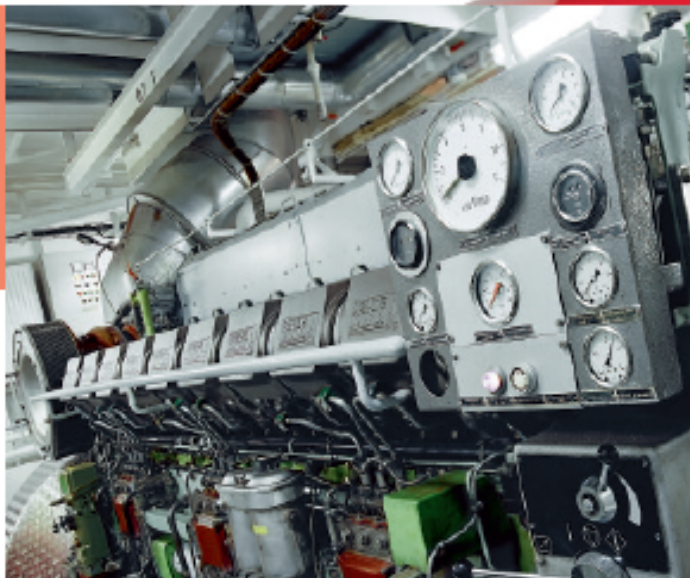
Advantages of the MX 1230 Marine & MX 200 Marine clean agent fire suppression systems

The fire suppression systems have been developed especially for machine rooms and areas with electronic and electrical risks on ships.

- ▶ Unique: 50-bar system pressure
- ▶ Rapid flooding and suppression (<10 seconds)
- ▶ No consequential damage caused thanks to residue-free and clean fire suppression
- ▶ Weight and space saving installation
- ▶ Easy to refill, worldwide available agents
- ▶ Environmentally friendly and safe for use in occupied areas
- ▶ Approved for many major marine applications (e.g. GL, ABS, MED)



Printed in Germany



Minimax GmbH & Co. KG
Industriestrasse 10/12
23840 Bad Oldesloe
Germany
Phone +49 4531 803-0
Fax +49 4531 803-248
E-mail info@minimax.de
www.minimax.de



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SAFETY

Competent

Ships and offshore facilities such as oil platforms require an above-average level of safety due to the special conditions that prevail at sea. In most cases people cannot quickly escape in the event of a fire to receive immediate help from the outside to fight a blaze. Apart from many fire risks, panic and compromised manoeuvrability are further typical sources of danger after a fire and must be taken into consideration when choosing an extinguishing system. The variety of fire risks on ships calls for a partner who provides fire protection from planning through to realisation and who takes special requirements into consideration. Minimax is Europe's leading full-service provider for fire protection and one of the top companies in this area worldwide.

With Minimax you can play it safe

We provide complete stationary and mobile fire protection solutions, from risk analysis and technical design through to installation. We look after the approval of the components, submission of documents to classification societies and acceptance of the systems during commissioning on your ship. Minimax provides a customised fire protection concept and the perfect combination of individual systems.

Fire protection solutions for
ships and offshore facilities

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