



# 1230 CLEAN AGENT

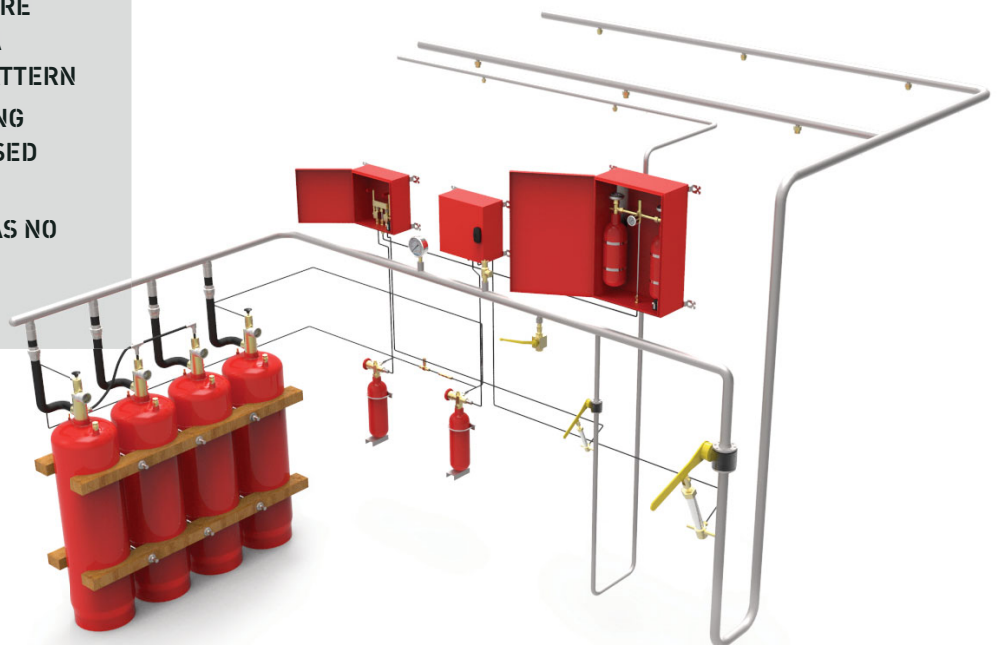
## FIRE EXTINGUISHING SYSTEM



Traditionally, fire extinguishing systems for the offshore and maritime industry have contained components harmful to the environment and personnel, such as Halon and CO<sub>2</sub>. The 1230 Clean Agent system is a high quality, compliant fire extinguishing system using a clean agent. The system is both environmentally friendly and harmless to people. The solution is particularly suited for rooms with sensitive equipment and vessels where space is limited.

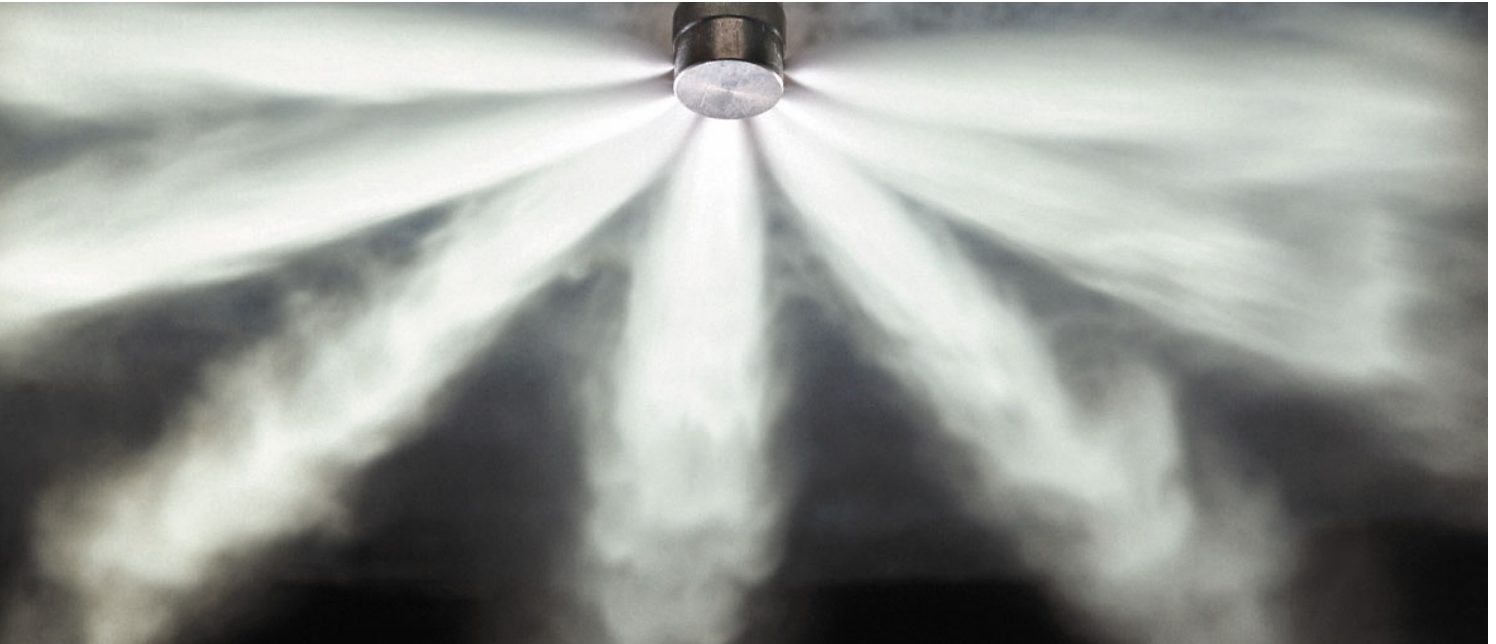
### FEATURES

- LARGE NOZZLE COVERAGE DESIGNED SPECIFICALLY FOR THE OFFSHORE AND MARINE INDUSTRY, WITH A UNIQUE NOZZLE DISCHARGE PATTERN
- IN MANY CASES, EXISTING PIPING ARRANGEMENTS CAN BE UTILISED FOR HALON RETROFITS
- EXTINGUISHING FLUID USED HAS NO ENVIRONMENTAL IMPACT



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FIRE EXTINGUISHING SYSTEM ↓



## A true Halon replacement

The 1230 Clean Agent system is designed as a total flooding system for machinery spaces of Category A, cargo pump rooms on tankers, gas carrier cargo compressors rooms and spaces onboard vessels or offshore installations needing fire protection.

Existing piping arrangements can be utilised for Halon retrofits. The solution has a large nozzle coverage designed specifically for the offshore and maritime industry, with a unique nozzle discharge pattern.

## Benefits

The solution is especially suited where space is limited, and is safe for use as a total flooding agent in occupied areas. Replacement fluid is available worldwide. All components of the 1230 Clean Agent System are designed for optimal system performance. Small pipe dimensions are saving installation space and weight, and lowering total installed cost.

## Harmless to people and environment

The 1230 Clean Agent system is an environmental friendly alternative. The extinguishing fluid used has no measurable environmental impact, and is safe to use in areas where humans are working. The design gas concentration for extinguishing is far below the acceptable concentration for people.

## No measurable impact on climate

- Ozone Depletion Potential (ODP) equal to zero
- Global Warming Potential (GWP) is one
- Atmospheric life time of only five days

## Application

- Machinery spaces Category A
- Cargo pump rooms
- Paint and flammable liquid lockers
- Control rooms
- Switchboard rooms
- Cargo compressor rooms on gas tankers

The system is applicable where space is a premium, and can protect high/low voltage switchboard rooms and computer service installations.

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### System description

The 1230 Clean Agent system uses Novec 1230 fluid developed by 3M. The fluid is stored in steel cylinders, pressurised with nitrogen. The cylinder valve outlets are connected to distribution pipes with discharge nozzles via flexible hoses.

The cylinder valve assembly can be equipped with a supervisory pressure switch connection for monitoring cylinder pressure, a pressure gauge and a safety burst disc. The valves can be actuated electrically, pneumatically or manually.

Installation can be flexible depending on storage accessibility:

#### Modular system

- Cylinders can be evenly located inside the protected space
- Duplicated release lines connecting the cylinders are required

#### Central system

- Cylinders can be located in a centrally stored bank outside the protected space
- Distribution valves and piping are provided for each space

Time delay and a pre-discharge alarm are provided as per Rules requirement.

### Extinguishing fire using Novec 1230 fluid

The 1230 Clean Agent system uses Novec 1230 which is stored as fluid and discharged as gas. The system extinguishes fire by removing the heat from the fire while it absorbs the heat at its low boiling temperature.

A low design concentration of 4 to 6 % in combination with a high No Observable Adverse Effect Level (NOAEL) of 10 % gives a safety margin of up to 100 %. The US EPA Significant New Alternatives Program (SNAP) classifies Novec 1230 fluid as acceptable for use as a total flooding agent in occupied spaces.

### Approvals

The 1230 Clean Agent system fulfils the requirements of IMO MSC/Circ. 848 and MSC.1/Circ.1267, and is equivalent to Fire Extinguishing Systems required by SOLAS 1974 as amended, Chapter II-2. The system can be applied on merchant maritime and offshore structures as design is in accordance to SOLAS, class requirements and IMO MODU Code.

### Environmental properties comparison

The below table compares Novec 1230 fluid with other gaseous fire extinguishing agents in the market:

Properties	Novec 1230	Halon 1211	Halon 1301	HFC-227ea (FM-200)	HFC-236fa	HCFC Blend B
Ozone Depleting Potential (ODP)	0.0	4.0	12.0	0.0	0.0	0.014
Global Warming Potential-IPCC 2001 <sup>1</sup>	1	1300 <sup>2</sup>	6900 <sup>2</sup>	3500	9400	120 <sup>3</sup>
Atmospheric Lifetime (years)	0.014	11.0	65	33	220.0	1.4
SNAP (Yes/No)	Yes	No	No	Yes	Yes	Yes/Phase-out

<sup>1</sup> IPCC Intergovernmental Panel on Climate Change Method 100 Year (1TH)

<sup>2</sup> Global Warming Potential 1998 WMO Method 100 Year (1TH)

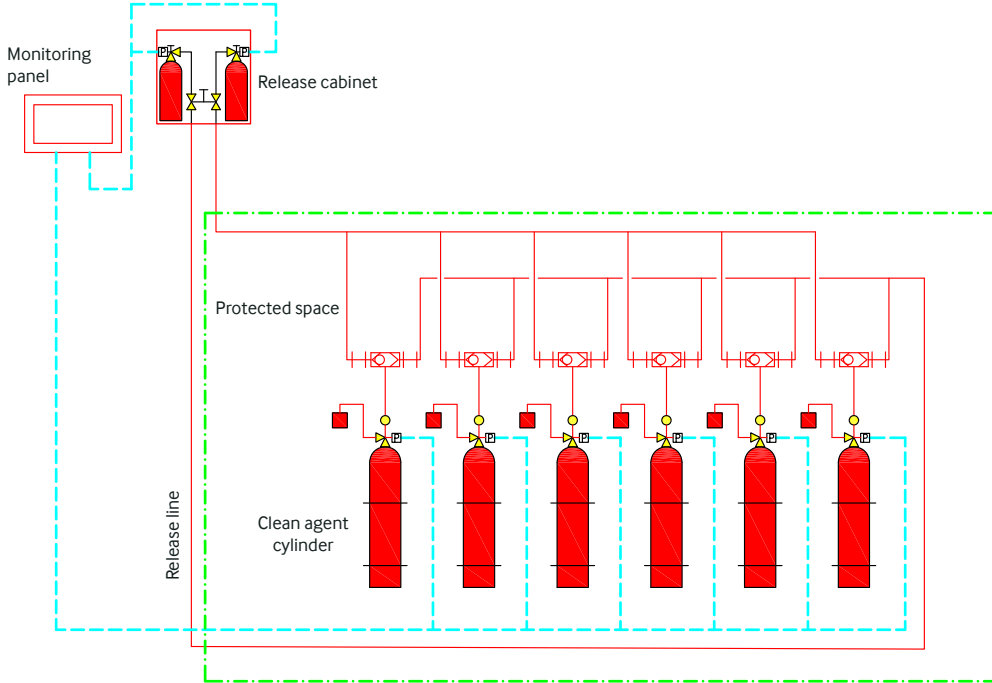
<sup>3</sup> Data based on HCFC-123 only -- also contains CF4

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## Standard configuration

Modular system:



Central system:

