Fire Suppression & Detection

For Classed Vessels

Marine & Offshore
The issue with safety is not a question of whether or not carbon dioxide can cause injury or death at the concentrations used in total flooding systems. Everyone agrees the agent is nearly instantly lethal at those concentrations. The issue is whether or not the safety guards built into the systems coupled with the requirements of standards and regulations are adequate to assure safety to those who work around, visit or transit areas fitted with carbon dioxide systems.

Shipboard Fires Are Major Threats To Safety
Of all the perils at sea, one of the most dangerous is fire. Difficult to deal with and potentially deadly, fire leaves the crew and passengers caught between two unforgiving elements. There’s no local fire department to call. It’s up to the crew to control the fire. Fire-fighting at sea and on water is especially demanding. The complexity of design and component requirement of a traditional marine CO₂ system is there to achieve system safety, however, the results of an accidental discharge can be catastrophic.

With so many levels of safety being required to be put in place, even on the smallest installation, CO₂ systems can add significant extra weight and cost to the overall build of any vessel. Imagine being able to replace most of that expensive, heavy pipe work with electrical cable & what you could do with the extra space generated by not having all of those extra cylinders in storage!

This table shows the typical usage of cylinders and chemical for a 500m³ system.Whilst there is comparable weight of the Chemical Agent between CO₂ and the Clean Agents, the number of cylinders required to store the chemical agent is reduced by a factor of 8:1 thereby giving a 40% reduction in system weight.

<table>
<thead>
<tr>
<th>Agent</th>
<th>Agent Weight Kg</th>
<th>Cylinder Volume Liters</th>
<th>Number of cylinders Each</th>
<th>Footprint m²</th>
<th>Cube m³</th>
<th>Total weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halon 1301</td>
<td>216</td>
<td>246</td>
<td>1</td>
<td>0.3</td>
<td>0.5</td>
<td>400</td>
</tr>
<tr>
<td>Carbon Dioxide</td>
<td>364</td>
<td>68</td>
<td>8</td>
<td>0.6</td>
<td>0.9</td>
<td>1000</td>
</tr>
<tr>
<td>FE-13</td>
<td>425</td>
<td>68</td>
<td>9</td>
<td>0.6</td>
<td>1.0</td>
<td>1200</td>
</tr>
<tr>
<td>FM-200</td>
<td>319</td>
<td>368</td>
<td>1</td>
<td>0.4</td>
<td>0.7</td>
<td>600</td>
</tr>
<tr>
<td>Novac 1230</td>
<td>373</td>
<td>368</td>
<td>1</td>
<td>0.4</td>
<td>0.7</td>
<td>600</td>
</tr>
<tr>
<td>Inergen</td>
<td>320</td>
<td>82</td>
<td>19</td>
<td>1.3</td>
<td>2.7</td>
<td>2000</td>
</tr>
<tr>
<td>Water Mist</td>
<td>9000</td>
<td></td>
<td></td>
<td></td>
<td>3.8</td>
<td>6.9</td>
</tr>
</tbody>
</table>

Safe For People, Equipment and Environment
Todays modern ‘Clean Agents’ are approved worldwide for use in ‘Occupied’ spaces, however even with these safe chemicals, similar design rules have to be maintained to comply with IMO SOLAS requirements. Just replacing the chemical agent will not only have a profound effect on safety, but will also increase the cost of the total system overall system.
Clean Agents Remove Heat Energy, Not Oxygen

Every second counts when a fire occurs on-board. Clean Agent systems reach extinguishing levels in less than 10 seconds. Since even a few seconds can mean the difference between survival and a life destroying catastrophic fire, changing to the Fireboy FES system could give you a crucial margin of safety. That’s why you need a fast, people-safe and effective fire suppressant: Clean Agent Waterless Fire Protection from Fireboy-Xintex.

Benefits of the Fireboy-Xintex FES Engineered System

- Safe for personnel
- Reduced component count
- Reduced piping
- Reduced weight
- Reduced nozzle count
- Electrically activated with manual back-up
- Ease of installation
- Cost effective replacement for CO₂
- System monitor integration
- Multiple discharge panel facility
- Lower stored pressure

Clean Agents are approved by ALL Notified Bodies

HFC-227ea/
FM-200®

FM-200® was originally developed to replace ozone-depleting fire suppressants such as halon 1301. FM-200® does not deplete stratospheric ozone. It has been proven safe for people through extensive pharmacological testing rivaled by no other fire suppressant. Many fire suppressants cause collateral damage to the equipment and the assets they were supposed to protect. But not FM-200®. It deploys quickly and cleanly without leaving any residue or causing collateral damage. FM-200® is the world’s most trusted choice in waterless fire protection.

Unlike carbon dioxide (CO₂) and HCFC 124, FM-200® is safe for people and can be used in occupied spaces on all types of vessels. FM-200® has been proven to be so safe that the chemical is approved as a propellant for pharmaceutical inhalers. Unlike many other fire suppressants, FM-200® does not breakdown or metabolize when inhaled, which allows quick removal through normal respiration once the individual is no longer exposed.

Novec™ 1230 Fire Protection Fluid

Novec™ 1230 is a clean agent fire suppression solution from 3M. Novec™ 1230 offers an environmentally sustainable alternative to fluorinated chemical suppression agents which does not compromise on performance or asset protection.

Novec™ 1230 offers rapid fire suppression whilst alleviating installation and safety concerns which could be present in alternative inert gas solutions. Fire suppression applications often include the presence of people, so life safety is a critical issue when selecting a fire suppression product. 3M Novec™ 1230 fire suppression fluid is both low in acute toxicity and is a highly efficient fire extinguishing agent. This means that Novec™ 1230 fluid is designed to put out fires long before it reaches a level of concentration that could adversely affect humans, allowing ample time to egress the protected space. In fact, even at relatively high extinguishing concentrations, Novec™ 1230 fluid offers the widest margin of human safety over CO₂ and inert gas.

“In the case of carbon dioxide systems, the beneficiary of the risk and the risk taker are nearly always different parties. The decision to employ carbon dioxide systems is never made by those who are ultimately exposed to the danger of death or injury. Instead it is made by the owner or owner’s representative and it is to the owner that the benefit of a cost savings accrues. In this case, it is the workers or other persons exposed to the possibility of an accidental discharge of the carbon dioxide system who assume the risk.”

“In the Event of Engine Room Fire

ENSURE ENGINES/GENERATORS ARE STOPPED

1. OPERATE SHUTDOWN

2. OPERATE ENGINE ROOM EXTINGUISHER AND ALL VENTS ARE CLOSED BEFORE CARRYING ON

3. Check EXTINGUISHER DISCHARGING and EXTINGUISHER PRESSURE status lights turn vented.

4. If EXTINGUISHER PRESSURE status light remains RED Sounds Pre-Discharge Alarm and activates EXTINGUISHER SECONDARY 24V SOLENOID operate the MANUAL ACTIVATION

5. Reset switches and mute extinguisher low pressure alarm only after engine room has been vented.

FES Engineered System

• Lower stored pressure
• Multiple discharge panel facility
• System monitor integration
• Reduced piping
• Reduced component count
• Ease of installation
• Reduced weight
• Electrically activated with manual back-up
• Safe for personnel

Typical Fireboy Clean Agent FES System

Clean Agents are approved by ALL Notified Bodies

3M Novec™ 1230 is a registered trademark of 3M, used under license.
FM-200® is a registered trademark of Dupont, used under license.
All systems are designed in accordance with IMO SOLAS CH II-REG 7 MSC.CIRC 848 & 1267.

System components are in compliance with the Fire Protection requirements of Marine Equipment Directive (MED) 96/98/EC as modified by Directive 2002/75/EC.

Designs and Drawings to comply with:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Cylinder Capacity</th>
<th>Outlet Size</th>
<th>Dim A Nominal</th>
<th>Dim B (Diameter)</th>
<th>Tare-weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>FES-8L-227</td>
<td>4-8</td>
<td>25 BSP</td>
<td>304</td>
<td>254</td>
<td>14.8</td>
</tr>
<tr>
<td>FES-16L-227</td>
<td>8-16</td>
<td>25 BSP</td>
<td>502</td>
<td>254</td>
<td>18.4</td>
</tr>
<tr>
<td>FES-32L-227</td>
<td>16-32</td>
<td>25 BSP</td>
<td>833</td>
<td>254</td>
<td>26.1</td>
</tr>
<tr>
<td>FES-52L-227</td>
<td>26-52</td>
<td>50 BSP</td>
<td>596</td>
<td>406</td>
<td>49.1</td>
</tr>
<tr>
<td>FES-106L-227</td>
<td>53-106</td>
<td>50 BSP</td>
<td>1021</td>
<td>406</td>
<td>71.8</td>
</tr>
<tr>
<td>FES-147L-227</td>
<td>73.5-147</td>
<td>50 BSP</td>
<td>1354</td>
<td>406</td>
<td>89.9</td>
</tr>
<tr>
<td>FES-180L-227</td>
<td>90-180</td>
<td>50 BSP</td>
<td>1634</td>
<td>406</td>
<td>105.8</td>
</tr>
<tr>
<td>FES-343L-227</td>
<td>171.5-343</td>
<td>75 FLARE</td>
<td>1466</td>
<td>610</td>
<td>207</td>
</tr>
</tbody>
</table>

**GL**

Cylinder Stored Pressure:
- CO₂ - 140 bar
- FM-200™ - 25 bar
- Novec™ 1230 - 25 bar

Complying fully with the FSS Code and IMO SOLAS including the latest amendment Msc.Circ 1267, **Fireboy-Xintex** has developed a range of electrical release panels that can be customised to suit virtually every application from single cylinder installations to multi-cylinder installations. The benefits of electrical discharge include utilising a reduced number of system components and reducing installation labour. For the very first time, this gives the ability to be cost competitive against multi-cylinder CO₂ system.

The Fireboy electrical discharge panel also offers the ability to communicate with a ships already installed monitoring system via Volt Free contact outputs for all alarm and monitoring states of the system giving ship-wide information. Cylinder pressure status can also be fed directly to the **Fireboy ASM** Fire detection panel for constant monitoring.

Designs can be supplied in the following formats:
- Autocad 2010 (2D)
- Solidworks (3D)
- Inventor (3D)
- All Adobe Graphic Formats
MANUAL BACK-UP/SYSTEM OVERRIDE

Manual back-up is achieved in one of two ways. Firstly, if the cylinders are stored in a readily accessible space, a cylinder mounted ‘Manual Strike Actuator’ can be fitted on top of the Electrical Solenoid Actuator. Alternatively, the Manual Strike Actuator can be substituted for a ‘Cable Release Actuator’ which is also mounted directly on top of the Electrical Solenoid Actuator.

FES ELECTRICAL DISCHARGE PANELS

The FES-XXXPE range of discharge panels are designed to be flexible and are tailored to meet each individual applications design depending on the amount of spaces requiring protection. This flexibility also allows multiple FES-XXXPE discharge panels to be connected throughout the vessel.

Offering full operational and monitoring control of the entire fixed fire extinguishing system the Fireboy-Xintex range of FES Electrical Discharge Panels can be easily integrated with other on-board monitoring systems via the Volt Free outputs.

All control and alarm outputs are diode protected allowing multiple panels to be connected together even when protecting a single space, however, discharge panels are available for protecting multiple spaces individually each with their own timed discharge, monitoring and alarms.

Features

- Compact size 250mm x 150mm x 75mm
- Dual 24V input supply
- Dual 24V supply monitoring
- Cylinder low pressure alarm
- Pre-discharge alarm
- Machinery shutdown control
- Activation line monitoring
- Cylinder discharge monitoring
- Volt free monitoring outputs
- Available in many configurations

IMO Msc.Circ 1267 Electrical Release Requirements

6.0 All systems should be designed to allow evacuation of the protected spaces prior to discharge. Means should also be provided for automatically giving audible and visual warning of the release of fire-extinguishing medium into any space in which personnel normally work or to which they have access. The alarm should operate for the period of time necessary to evacuate the space, but not less than 20s before the medium is released.

11.2 Electric power circuits connecting the containers should be monitored for fault conditions and loss of power. Visual and audible alarms should be provided to indicate this.

11.3 Pneumatic, electric or hydraulic power circuits connecting the containers should be duplicated and widely separated. The sources of pneumatic or hydraulic pressure should be monitored for loss of pressure. Visual and audible alarms should be provided to indicate this.

11.7 The containers should be monitored for decrease in pressure due to leakage and discharge. Visual and audible alarms in the protected area and on the navigation bridge or in the space where the fire control equipment is centralised should be provided to indicate this condition.
Product Overview

- The Marine & Offshore Syncro ASM is a versatile range of open protocol fire alarm control panels compatible with existing Syncro fire alarm panel technology.

- Hosting up to 126 Apollo fire detection devices and modules per loop, Syncro ASM uses leading edge microprocessor based electronics to provide a flexible control system with high reliability and integrity.

- Suitable for all small to medium sized vessels, Syncro ASM control panels can be expanded and networked to become part of much larger systems if the need arises, therefore providing a future proof solution for any vessel.

- With its large graphical display and ergonomic button and indicator layout, the Syncro ASM control panel is simple and straightforward to understand for installers, commissioning engineers and end users alike.

Features

- 16 zonal LED indicators
- 2 programmable sounder circuits
- 5 programmable inputs
- 3 programmable relays
- 3A power supply
- Large graphic display
- Real time clock
- Powerful, network wide cause and effects
- Sensitivity adjustment and drift compensation
- Apollo protocol
- Same look and feel as Syncro range
- Stores 1000 last events in event log
- Compact, stylish enclosure
- Installer friendly, removable equipment chassis
- Different language and character set variants available
- Fully EN54-2 and EN54-4 compliant

Syncro ASM Panels

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Zones</th>
<th>Loops</th>
<th>Printer</th>
<th>Size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apollo</td>
<td>16</td>
<td>2</td>
<td>No</td>
<td>385 x 310 x 90</td>
</tr>
</tbody>
</table>

Product Code

- 90900-EN
- 90900-IT
- 90900-ES

Language

- English
- Italian
- Spanish

Other languages can be programmed upon completion of a simple conversion form.

Config. Features

- Comprehensive day/night mode facility
- Programmable one touch test mode
- Powerful and versatile cause & effect programming
- Cause & effect wizard including:
  - Cause & effect action
  - Disablement configuration
  - Test mode configuration

Designed for use with Discovery Detection Devices
**Technical**

<table>
<thead>
<tr>
<th>Construction</th>
<th>1.2mm sheet steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure finish</td>
<td>BS 00 A 05 light grey textured</td>
</tr>
<tr>
<td>Mains voltage supply</td>
<td>230V AC 50 or 60 Hz.</td>
</tr>
<tr>
<td>Display</td>
<td>8 lines of 40 characters graphic LCD</td>
</tr>
<tr>
<td>Mains supply fuse</td>
<td>1.6A 250V</td>
</tr>
<tr>
<td>Power supply DC rating</td>
<td>24V 3 amps</td>
</tr>
<tr>
<td>Aux 24V supply</td>
<td>Fused at 500 milliamps</td>
</tr>
<tr>
<td>Battery (24 hour standby)</td>
<td>7Ah 12V (2 per panel) (non-networked)</td>
</tr>
<tr>
<td>Fault contact rating</td>
<td>30V DC 1 amp</td>
</tr>
<tr>
<td>Fire contact rating</td>
<td>30V DC 1 amp</td>
</tr>
<tr>
<td>Alarm contact rating</td>
<td>30V DC 1 amp</td>
</tr>
<tr>
<td>Sounder output rating</td>
<td>Fused at 1 amp each</td>
</tr>
<tr>
<td>Detection loop</td>
<td>400 milliamp output</td>
</tr>
<tr>
<td>Detector protocol</td>
<td>Apollo Discovery</td>
</tr>
<tr>
<td>Printer port</td>
<td>Serial RS232</td>
</tr>
<tr>
<td>Serial expansion port</td>
<td>Serial RS485</td>
</tr>
<tr>
<td>(Compatible with all Syncro I/O modules)</td>
<td></td>
</tr>
<tr>
<td>PC port</td>
<td>Serial RS232</td>
</tr>
<tr>
<td>Network connection</td>
<td>RS485 - Up to 64 panels via fully fault tolerant optional network card</td>
</tr>
<tr>
<td>Remote Silence input (SIL)</td>
<td>Switched -ve</td>
</tr>
<tr>
<td>Remote fault input (FLT)</td>
<td>Switched -ve</td>
</tr>
<tr>
<td>Remote reset input (RES)</td>
<td>Switched -ve</td>
</tr>
<tr>
<td>Remote alert input (INT)</td>
<td>Switched -ve</td>
</tr>
<tr>
<td>Remote evacuate input (CNT)</td>
<td>Switched -ve</td>
</tr>
<tr>
<td>Download lead</td>
<td>Standard S187, X187LS economy</td>
</tr>
<tr>
<td>Configuration</td>
<td>Via Loop Explorer PC utility</td>
</tr>
</tbody>
</table>

**ASM Repeater Panels**

The Syncro VIEW fire alarm annunciator provides a simple and convenient method of extending the controls and indications of the Syncro fire alarm control panel to other locations.

The large, graphic liquid crystal display and high brightness LED indicators duplicate the indications on the Syncro ASM fire alarm control panel at up to 15 additional locations via a simple, two-wire serial data connection.

The Syncro VIEW is available in either a 24V DC powered option (which can be powered via an additional 2 cores from the Syncro control panel/local 24V DC supply) or a 230V powered option with local battery back up.

Up to 15 Syncro VIEW annunciators can be connected to each control panel on the Syncro network making VIEW ideal where multiple points of indication and/or controls are required such as crew’s quarters and engineers cabins.

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Size (mm)</th>
<th>Product Code</th>
<th>Size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>90925 (Std)</td>
<td>330 x 255 x 90</td>
<td>90931 (Flush mount)</td>
<td>310 x 240 x 40</td>
</tr>
</tbody>
</table>

**MED Approved Analogue Addressable Devices**

- Smoke
- Heat
- Heat/Smoke
- Manual Call Points
- Sounder Bases
- Sounder Beacon Bases
- Relay Bases
- Beacons
- Sounders
- Intrinsically safe Devices
- Line Monitors