Facing the fire hazard challenge

Evolving fire safety legislation requires action from ship operators to protect passengers and vessels. Rebecca Gibson reports

Fires can occur in numerous places onboard passenger ships and can be highly damaging to both people and the vessel itself. In the event of a fire, it is important to ensure that the crew and ship are equipped to detect, contain and extinguish the outbreak as soon as possible to contain the risk of injury or damage.

In order to guarantee ships are able to cope with such an emergency, the International Maritime Organization's International Convention for the Safety Of Life At Sea (SOLAS) Chapter II-2 outlines a set of requirements for fire prevention, detection and suppression onboard ships. The directives were formed in conjunction with the International Fire Safety Systems Code and ensure ship operators focus on the prevention of fire outbreaks and casualties by installing the latest protection systems and appliances, as well as adhering to current safety procedures. The SOLAS regulations are continually reviewed and amended, before becoming mandatory for ship owners.

"Both the cruise and ferry lines have put the safety aspect at the top of their priority list, as new rules have been implemented for both the refit-market and in relation to newbuilds," says Jon Arne Simonsen, regional sales manager, maritime division, Autronica.

"Ship owners are making a concerted effort to comply with the latest regulations, in order to ensure they receive a certification of operation from the classification societies," agrees Tiago Pedrosa, export sales manager, Everlux.

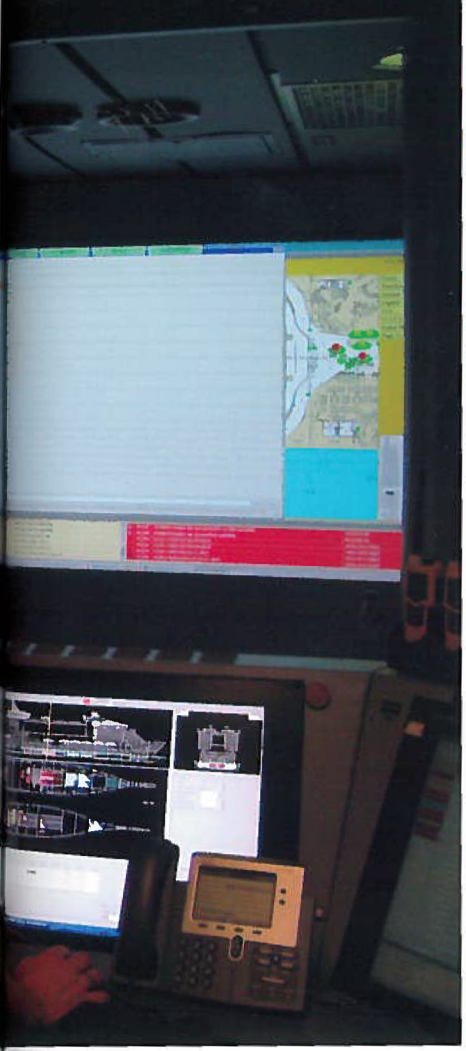
Recent SOLAS amendments include the Safe Return to Port (SRtP) regulations, which stipulate that all essential systems must remain operational following onboard fires or flooding, unless the damage exceeds a pre-defined threshold.

"The SRtP regulation and the SOLAS policies require a higher level of redundancy on the fire detection and all other safety systems onboard a ship, as well as a main system and a backup system," says Simonsen. "Dual Safety technology enables redundant control of the loop, meaning that the loss of the main detection system in a fire zone will not leave the ship unprotected, as the backup panel system will immediately take over the coverage and control."

SOLAS developments have also altered the types of system used to suppress onboard fires. "Water Mist is an extremely effective fire-fighting medium and is becoming a preferred solution for many applications in the maritime market," says Petter Traaholt, president, Wilhelmsen Technical Solutions, which acquired Novenco Fire Fighting in November 2012. "Water mist systems are chosen for their high flexibility in enclosed spaces, as well as their limited impact on personnel and the structure of the vessel. With the changes in SOLAS requirements, watermist will be a great option compared to less environmentally friendly solutions."

Updated regulations have also increased the demand for high luminance safety signs which can significantly reduce the risk of fire by identifying hazard areas, highlighting safety equipment and indicating escape routes.

"Safety signs identifying the location of all safety equipment, evacuation routes and designated muster stations are mandatory, as these will help to extinguish the fire before it spreads, as well as reducing evacuation time and minimising the risk of casualties



Clockwise from left: Building in redundancy to systems is a key aspect of Autronica's maritime work; Everlux supplies high-visibility signs and instructions that can be seen in conditions of poor visibility

"The increase in numbers of large passenger vessels is likely to make the issue of onboard safety even more prominent in the future"

during a ship abandonment scenario," explains Pedrosa.

According to ISO 16069, a Safety Way Guidance System (SWGS) must be installed on all ships for the use of crew and passengers in the case of an emergency. The system is comprised of signs placed at three different heights throughout the ship, all of which play a specific role if an outbreak occurs.

"Safety signs installed at high location levels above 1.80 metres allow immediate identification of the fire fighting equipment that should be used as first means of intervention against the fire, increasing the likelihood of extinguishing the fire at its source," explains Pedrosa. "Signs installed at an intermediate location level, from 1m to 1.8m in height, are easy to read and provide information and instructions to crew and passengers, including guidance on how to use fire-fighting equipment."

In the event of a fire, the accumulation of smoke reduces visibility and eventually blocks signs installed at high and intermediate location levels. A Low Location Lighting (LLL) System must also be installed 30cm from the deck. The LLL system remains illuminated and clearly marks the escape route, ensuring the safe evacuation of passengers and crew.

Many of the requirements have been developed with the aim of avoiding situations where passengers and crew are forced to evacuate the ship. "The SRtP and other SOLAS regulations reflect the notion that it is better for a ship to become its own lifeboat during an emergency, rather than abandoning to external lifeboats," explains Simonsen. "This is particularly relevant today as ships are larger than ever and can accommodate up to 6,000 passengers and a crew of 1,500."

The increase in the number of large passenger vessels is likely to make the issue of onboard safety even more prominent over the coming years and it is expected that current legislation will be developed accordingly.

"Ideally, the authorities should be able to develop safety legislation, which actively prevents accidents and the loss of lives at sea," says Pedrosa. "Unfortunately, the reality has been that requirements, standards and legislation are only improved as a reaction to major accidents and the loss of lives."

Pedrosa sees the potential for improvements to existing SOLAS directives: "The current minimum luminance requirements for LLL systems were set by IMO Resolution A. 752 (18) in 1993, but they should be altered to meet the higher requirements defined by several international standards for fire protection in buildings."

Simonsen highlights the need for a focus on the role of the crew: "As the industry regulations increase and the onboard safety systems become more complex, it will become more important for crews and system operators to be trained to handle onboard emergency systems correctly," he says, adding: "Safety packages have expanded in order to cover developments in the SOLAS requirements and we now offer emergency shutdown, safety management or integrated safety emergency management systems as part of independent fire detection systems. The advanced systems cover all aspects related to monitoring and control of all main emergency systems onboard and can be used as a digital plotting board or emergency training tool for the crew." **C&F**