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Improving fire safety on cruise ships



Carnival Dream---Protecting cruise ship fire extinguishing systems is vital.

Special Report
International Cruise Ship Industry

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Coltraco Ultrasonics is helping Carnival Cruises to test CO2 installations on board.

Fires on board ships can be devastating, to passengers, crew and vessel, thus fire safety standards on board a passenger carrying vessel cannot afford to slip.

Part of safety standards on board a cruise ship is the maintenance of gaseous fire extinguishing installations, which may be compromised by the holes in the regulations.

It is understood that a need for practical cost-efficient solutions to safety issues is paramount. However, maintaining high standards of fire safety practice does not have to be expensive or time consuming, according to fire safety expert Coltraco Ultrasonics.

The company claims that it strives to provide easy and long lasting solutions that are suitable for varying budgets. Regulations should be responded to with a rigorous attitude, to go above and beyond the rules in order to provide security of life and infrastructure. For example, installations must be maintained so that they can provide the protection that they are intended for.



Coltraco's CEO and managing director, Dr Carl Stephen Patrick Hunter has been actively lobbying the UK Houses of Parliament and the IMO membership about the dangers of fire extinguishing systems.

This is a call to the industry to be aware of the problem and the action to be taken, Coltraco said.

At sea, fire poses one of the biggest threats to ships. Sailing alone and at sea throughout the year, and without the ability to call upon the emergency services, as a land-based asset might, the danger is shown in the statistics.

Although serious fires on cruise ships are ferries are very rare, a recent study published by the Finnish Transport Safety Agency showed that almost 800 fires occurred in European waters between 2004 – 2014 on vessels of all types. Of these, some 10% of these were classed as serious. Further to this, around 200 of these incidents required external support to help deal with the fire.

In some of these cases, the fire suppression installations may not have been at their full capacity, which led to uncontrollable fires, Coltraco said.

Could a cruise or ferry company afford to have a crippling financial, physical and probably more importantly, damage to its reputation caused by a fire that could put the passengers, crew and vessel in danger? The correct answer for everybody involved is "No."

'Ungoverned space'

Chances must not be taken when lives are at risk and when a vessel is at sea, which is most of the time. Coltraco called this the 'ungoverned space'. Simply put, this space is the area where either the regulations or the protecting systems of the critical infrastructure are not effectively providing consistent and reliable safety.

This life-threatening issue must be dealt with, specifically with regard to loss of contents in fixed fire extinguishing systems and the need for improvements in room integrity testing.

Gaseous extinguishing installations are difficult systems. There are few who understand them in all their complexity. Vessels' extinguishing installations are an essential defence against the risk of fire at sea. The main thing that needs to be understood is that they must be able to actuate, or release their gas, in the event of a fire.

Surely an extinguishing installation should extinguish? This may seem like an obvious point, but on further investigation, difficulties with this statement arise. What if the extinguishing installation cannot actuate fully because there isn't enough gas inside the cylinder?

Gaseous extinguishing systems are highly pressurised. The risk of leaking and discharging is accepted, as part of their use, shown in the regulations that demand their upkeep, eg IMO SOLAS FSS Ch5. 2.1.1.3: 'Means shall be provided for the crew to safely check the quantity of the fire extinguishing medium in the container.'

Often this is misunderstood. This code specifically states that the crew must test the extinguishing installations in between the mandated inspection, maintenance and certification periods. Only undertaking annual inspections by accredited marine service companies is not enough – the crew must take responsibility for the ship's own fire protection.

However, what must be realised is that the crew are often not trained or certified to shut down, dismantle, weigh and re-install the gaseous cylinders.

In addition, the details of their leakage within the regulations is troubling. ISO 14520-1 clearly states that: 'If a container shows a loss of agent quantity or a loss of pressure (adjusted for temperature) of more than 5%, it shall be refilled or replaced.'

Given that the gaseous systems are designed specifically to the individual need of the vessel, then a 5% loss of an agent may mean that they would not fully extinguish the fire.

The CO2 UK Marine Equipment Directive (MED) UK/EU legislation with US Coast Guard Mutual Recognition 7.3.2.6 states: 'Means should be provided to verify the liquid level in all the cylinders, either by weighing the cylinders or by using a suitable liquid level detector.'

Case Study - Carnival Cruises

Carnival Cruises chose to protect its fleet in part by improving fire safety. The cruise company selected Coltraco Ultrasonics to supply the Portalevel® MAX Marine, which tests the CO2 fire installations on board for content leaks.

Portalevel® MAX Marine is primarily designed to enable the crew to inspect large fire suppression



Carnival is using Coltraco's Portalevel MAX - a hand held ultrasonic liquid level indicator for testing cylinder contents of fixed fire extinguishing systems.

systems of up to 600 cylinders. The ease of operation in comparison to weighing, increases the ability of more regular and frequent checks, improving fire safety management on board.

Coltraco's innovative method of inspecting leaking cylinders with ultrasonics, enables identification in under 30 seconds using Portalevel® by just one person, instead of the traditional 15 minutes, with two people laboriously weighing the cylinders.

Using ultrasonic technology - to pinpoint the liquid level of suppressant agent in the extinguishing system's cylinders- testing is quicker and easier. The equipment is available worldwide with seven service stations to support the lifetime of the equipment, as part of Coltraco Customer Care (CCC).

In addition, combined with MAX Marine, the Portasteele® Calculator is an advanced calculator application, that converts the liquid level height of CO2, NOVEC™ 1230 and FM-200® liquefied gaseous extinguishant agent readings taken on an ultrasonic non-destructive liquid level indicator device into the agent's weight/mass.

Furthermore, Portasteele® can convert an expected agent weight back to the required liquid level, thus allowing users to anticipate where the level should be.

On board safety management system can be improved with the use of Portalevel® MAX Marine, Coltraco claimed.

The maintenance of installations must be a priority. It need not be expensive or time consuming. Coltraco will offer support in ensuring the safety of a crew and vessel. Tragic case studies of incidents prove that fire safety on board must be a priority.

Earlier this year, Coltraco Ultrasonics was awarded class society ABS Type Approval for the patented Portalevel MAX and Portascanner WATERTIGHT equipment.

As mentioned, Portalevel MAX is a hand held ultrasonic liquid level indicator for testing cylinder

contents of fixed fire extinguishing systems, such as CO2, clean agents, etc. As well as being ABS type approved, this piece of equipment is also UL listed and approved, plus RINA approved.

Portascanner WATERTIGHT is a hand held ultrasonic watertight integrity test indicator for testing watertight/weathertight seals of hatch covers, doors, multiple cable transits and more.

Last February, Coltraco's CEO and managing director, Dr Carl Stephen Patrick Hunter, was invited to 'educate' the IMO about fire safety and watertight integrity.

He said; "Although there are adequate regulations in place, they are commonly misunderstood, misinterpreted, blatantly disregarded, neglected - this leads to increased risk and thus cost in the event of fire, even risking safety of life at sea."

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