

TESTING DCP FIRE-FIGHTING SOLUTIONS TO ACHIEVE TYPE APPROVAL AND MED CERTIFICATION

Survitec Group has achieved Type Approval and EU Marine Equipment Directive (MED) certification from Germanischer Lloyd (GL) for its Dry Chemical Powder (DCP) fire-fighting systems.

Over the last years, there has been some different interpretation of the guidelines and rules for DCP systems. This has caused some confusion and even installation of systems that do not comply with the regulations. Now the IGC code is updated and the room for different interpretation has been closed. With these certifications, Survitec has a system approved for all European-flagged ships as well as those sailing under GL class. Such vessels must use a DCP system with Type Approval or MED certification which has been tested according to the new requirements.

To ensure that its Unitor DCP system complied with the required standards, Survitec successfully completed an extensive programme of laboratory tests, witnessed by the classification society.

As a result, the system is approved for installation on the largest LPG tankers and LNG carriers in service or on order and has also been proven to perform efficiently under low temperature conditions.

New requirements

The International Maritime Organization's Maritime Safety Committee approved circular MSC.1/Circ 1315 in 2009, setting out new test standards for DCP fire-fighting systems. This requirement is in addition to the requirements in the IGC Code.

The 2009 standard is the basis of a requirement that came into force in October 2012 for the European Union's MED Certificate, applicable to all EU-flagged ships as well as those flagged by Norway.

The objective of testing the Unitor DCP system was to gather additional data to confirm that the solution is capable of fulfilling the necessary regulatory requirements. However, the testing also provided useful data related to the configuration of the DCP system and the influence of the configuration upon overall performance.

Survitec had on its own initiative, performed a set of tests on the DCP system more than a decade ago and had already amassed considerable expertise and experience with this type of system.

DCP testing

The tests demonstrated that mass flow rate in DCP systems can be influenced by a number of factors. These include tank release pressure, pipe diameter, the number of bends, elevation and length, discharge nozzle diameter and the diameter of the riser tube in the DCP tank. Powder discharge range is a function of available pressure at the monitor which depends on pipeline size and configuration. Long and complex pipeline configurations decrease the capacity and increase the potential for clogging, hence the necessity for correct distribution in the pipe design.

The new set of tests were performed in an independent laboratory where Survitec installed a system of long, enclosed pipe loops between the DCP tank unit and a receiving tank placed on a load cell. The first test was done to measure the maximum capacity and the maximum length of pipe that could transport powder from the tank to the hose stations and DCP monitors on the cargo deck.

To provide optimal fire-fighting potential, the Unitor system is capable of simultaneous powder conveyance in two pipeline configurations and under test conditions, the desired transport rate in a two-pipe design was achieved.

The system was also tested under low temperature conditions at -5.5 degC and passed. Indeed the DCP system performance at low temperature was identical to test runs at 20 degC. A selection of equipment commonly situated on the open deck of tankers and LPG carriers was placed in a salt spray chamber and passed a subsequent functionality test.

In addition to the required testing, a comparison of the conveying performance of two types of powder was completed. Both sodium bicarbonate powder (BC Jet) and potassium sulphate powder (BC Karate) were tested and passed without any significant difference in the flow capacity, but potassium sulphate proved to have better resistance to clogging.

The second test was for discharge range, undertaken on an open field to see if the required range could be achieved at a certain capacity to the standard required by the IGC Code.

The Unitor DCP system passed all the tests required under IMO MSC.1/Circ.1315, for long pipe duration and flow rate, low temperature operation, discharge range and exposed components salt spray test.

To underline the effectiveness of the system, Survitec conducted an additional series of tests, including the ability to extinguish a propane fire, which was also passed successfully.

System certification

The new IMO regulation requires the powder used to be based on Potassium Sulphate and that testing is carried out with this type of powder. Potassium Sulphate offers better compatibility with foam compared to the historical choice, Sodium Bicarbonate and hence the system can be used together with foam fire-fighting systems.

The regulation also states that any Type Approval test shall be carried out using the same type of powder that will be supplied with the unit, a test the Unitor system was able to satisfy.

Germanischer Lloyd was selected to witness the testing for the Unitor DCP system. GL requires Type Approval of shipboard equipment for all the ships it classes, regardless of their flag state so the result would have a wider impact than on European Union flag ships.

Further approvals are being considered by other Flag States and Classification Societies in order to adopt the test standard into their requirements.

A proven solution

Survitec has more than 20 years' experience in developing, testing, manufacturing and delivering DCP system to the marine and offshore markets. It has considerable experience in supplying fire safety systems to LNG and LPG carriers.

With IMO MSC.1/Circ 1315 approval and MED Standards achieved, Survitec is ready to deliver this state of the art system to its customers, providing support and maintenance through its world-wide network.

End