Ballast water treatment system implementation: 'the gift that keeps on giving'

Planning, communication, and training are keys to successful BWMS retrofit installations, according to experts specialising in the process. The caveat is that time is running out to meet the deadline, creating a logjam of retrofits

Debra DiCianna (NETSCo): noted that ballast water implementation was "the gift that keeps on giving." (source: NETSCo)

> **THE WORD INSTALLED MEANS THE ACTUAL DATE OF DELIVERY OF THE BALLAST WATER MANAGEMENT SYSTEM TO THE SHIP"**

Decades of regulatory development have brought the industry to the point where ballast water treatment system implementation is well underway, but closure is still a long way off. Speaking at a Riviera webinar, Choice Ballast Solutions (NETSCo) senior compliance engineer Debra DiCianna noted that ballast water treatment system implementation was "the gift that keeps on giving." In particular, the Covid-19 coronavirus pandemic has messed up installation deadlines, she said.

"We have heard of a few clients that, because of port restrictions, the ballast water management system equipment was just placed somewhere on the ship and nothing was connected," she said.

But what Ms DiCianna wanted clients and operators to understand is that compliance starts with the documentation. "The best way for you to have a compliant operation is to make sure the paperwork is in order. We have found that if the paperwork is not complete, when you get into an inspection, the officer will raise more questions."

Returning to installations, Ms DiCianna noted that MEPC Resolution 372 required that all ballast water management systems installed on or after 28 October 2020 had to be approved according to the Code. What does 'installed' mean? "The word installed means the actual date of delivery of the ballast water management system to the ship," she said.

Those attending the webinar agreed that ballast water treatment installation has presented challenges. These ranged from serious challenges (5%), significant challenges (35%), and moderate challenges (32%) to low level challenges (23%) and the lucky few with no challenges (5%).

Those challenges are ongoing for the early movers who fitted ballast water treatment systems prior to the US Coast Guard giving type-approvals. These systems have been granted US Coast Guard alternate management systems status, but the status does not last indefinitely. The systems are on a five-year lifespan from the vessels' compliance dates, and some have been granted an extension for eight or nine years, but new AMS extensions are unlikely.

"Upgrading from a US Coast Guard accepted management system to US Coast Guard type-approval is not just a paper exercise. Upgrading will include new operating manuals, a nameplate that is provided by the manufacturer," said Ms DiCianna. It does not mean, Ms DiCianna said, making up your own nameplate in the workshop.

Another of the many issues facing owners and operators looking to retrofit ballast water treatment systems is timing. Classification society ClassNK strongly recommends owners and operators do not leave the retrofit of ballast water management systems (BWMS) to the last minute. Its analysis shows an uncomfortable number of retrofit installations are due in 2022. As of the end of November 2020, 7,220 of the

9,159 ships registered with ClassNK are obligated to install ballast water treatment systems in accordance with the Ballast Water Management Convention. Among these, 3,982 ships have completed the installation of ballast water treatment systems, leaving 3,238 ships that still require BWMS to be installed.

Although the number of ships without ballast water treatment systems has decreased by 1,280 since August 2019, the installation deadline for these ships remains largely concentrated in 2022. As difficulties are expected in the installation of ballast water treatment systems if owners around the world wait until 2022, ClassNK recommends installing them well in advance.

In addition, plan approval applications are also expected to concentrate during this period, therefore early application is strongly recommended. "It is very important to plan in advance and provide constant updates to get everyone involved in the project. Everyone needs to know how to mitigate any delays," said BioMarine Services director John Loaiza. "Communication is the key" he said.

These project management elements have become especially important during the coronavirus pandemic. In a survey, more than three-quarters of those polled agreed or strongly agreed they had delayed the execution of projects from start to end.

Crew training is another important aspect and does not have to be left until the installation is complete. "Start the crew training early – get them involved. They need to understand the maintenance of the system. They will be the ones operating it at sea," said Mr Loaiza. He offered the following advice: before the commission testing, make sure the ballast water pipes are flushed and the tanks are clean.

Maersk Line project manager Shobhit Agarwal has been the ballast water treatment project manager for the group for the last three years. He said that a project starts "10 to 12 months before the start of the implementation of the project. We need to make sure all the drawings are class-approved, the specifications required by the shipyards are ready and all the technical clarifications with the shipyard are done," he said.

The planning should also include the days and time required for superintendents to be on site. One of the first tasks is to assess the condition of the existing ballast water system – are the pumps, gauges, pipework and tanks pressure-tested and in good order? The commissioning engineer needs to track paperwork, including customs clearances and alert the commission testing laboratory in good time.

Before installation, any prefabricated parts should be accompanied by their certification: material, welding, pressure-testing and non-destructive testing certification. In a survey, nearly everyone (98%) agreed that prefabrication of piping and associated foundation materials for the BWMS is critical to a timely and efficient retrofit.

When the vessel arrives at the shipyard, the supervisor plays a critical role in preventing delays and ensuring the timeline is met. Mr Agarwal warned that some items can be forgotten. "Take into account the commissioning time for the ballast water treatment system – we have noticed this is not always taken into consideration while planning the job. It differs from maker to maker and a suitable time should be made available for commissioning, training crew and sufficient time to take the sample," he said.

Surprisingly, engaging the crew from design to commissioning the ballast water treatment was treated with some ambivalence. In a survey, only 29% strongly agreed with this approach. There was agreement from 40% of those surveyed but 17% felt it was of middling importance and 14% of those surveyed felt it had little importance.

Hyde Marine sales engineer Tom Hazen provided some interesting details on the state-of-play for owners and operators when it came to choosing a ballast water treatment system. It is estimated that around 10,000 vessels will require a ballast water treatment retrofit installation. Although IMO has approved nearly 80 systems, Mr Hazen noted that only 37 were currently US Coast Guard type-approved.

"We can actually reduce that list even further," said Mr Hazen, "It's a little hard to be exact, but about 20 to 25 products

Shobhit Agarwal (Maersk): An installation project starts 10 to 12 months before implementation (source: Maersk)

"START THE CREW TRAINING EARLY – GET THEM INVOLVED"

are type-approved in accordance with the modified IMO type-approval guidelines."

Therefore, is there the capacity of the pool of type-approved system manufacturers to provide the systems required, given that 12 months is regarded as the minimum time required to commence the planning and implementation of a retrofit?

"It is fair to say that not one of us (manufacturers) is going to be capable of handling that huge demand alone," he said. "A quick turnaround may not be possible due to equipment availability, which could result in owners needing to either take their business elsewhere or ultimately accept a system that may not be configured precisely for the vessel," warned Mr Hazen.

Having a BWMS configured specifically to the vessel is a top priority. According to a survey, 67% said it was of absolute importance and 31% agreed it was very important to have the ballast water treatment system configured to the vessel.

Mr Argawal said, "It is very, very critical to have the system dedicated to the vessel requirements. And it has to be a perfect match to ensure not only the successful installation, but also smooth operation during the life of the vessel."

Another question was, how long does it take to receive the results from sampling the ballast water? Mr Loaiza said that it could take two to three days to get the results from a laboratory. As noted in the previous ballast water week webinar on compliance monitoring, there are also indicative tools which alert operators if the system is working.

Hyde's Mr Hazen asked owners and operators to prepare their ballast water treatment plans early to give manufacturers sufficient time to meet deadlines, while Maresk Line's Mr Argwal noted that experience of installations and training was improving and wished that things would return to a pre-Covid-19 normality. BioMarine's Mr Loaiza echoed these sentiments and reiterated that planning and communication is key to successful ballast water treatment retrofit installations.

As mentioned above, one of the reasons even ballast water treatment system providers struggle to give an exact number of available type-approved systems is the sheer complexity of the regulatory framework, which covers global requirements (IMO), important trading requirements, such as US and/or EU waters, and now national variations, such as those imposed by China.

Despite the trials and tribulations of ballast water treatment systems, installations are proceeding and Alfa Laval's PureBallast 3 ballast water treatment system has been chosen by Oslo Stock Exchange-listed MPC Container Ships (MPCC) for 14 of its fleet of 65 inter-regional container ships. These have also been equipped with the data-driven PureBallast Connect service. "For new equipment like ballast water treatment systems, the possibility to remotely access the systems provides several benefits," MPCC Verwaltungs managing director Philipp Niesing explained.

He has been responsible for overseeing previous and upcoming PureBallast Connect projects. "It was important for us from the start that Alfa Laval could access and troubleshoot the systems remotely, to avoid deploying service technicians to cater for small needs. We want to have our systems ready for use and compliant at all times, so as to prevent issues with port state officers and interruptions to our customers' routes and operations."

Mr Niesing chose PureBallast Connect as a smart way to prevent downtime and reduce service costs; he also stressed the benefits for the crews on board MPCC vessels. "The crews are well trained, but we want to facilitate immediate crew support to the greatest extent possible," he said.

"Crews are challenged to handle a range of sophisticated technologies on board, and connectivity provides an opportunity for prompt support in troubleshooting."

Using PureBallast Connect's secure online portal, superintendents can support vessels by following the parameters, conditions, and alarms of connected ballast water treatment systems. "If something happens, crews contact the superintendent, who will be able to see what actions can be taken," said Mr Niesing.

"The superintendents are able to validate system performance themselves, and they can also take advantage of Alfa Laval's expert knowledge. Having that access is important." CST

Alfa Laval's PureBallast 3 ballast water treatment system covers a range of flow rates required for container ships (source: Alfa Laval)