



November 2017

In muddy waters, customers rely on high-end filters to keep ballast water treatment systems problem-free

Virtually all ballast water treatment systems employ fixed-screen filters to remove sediment particles and larger organisms prior to main treatment. This raises concerns about filter clogging, especially for companies that operate frequently in coastal or river areas, such as Van Oord and MSC. Both of these companies have found security in Alfa Laval PureBallast 3.1 systems, which use high-end filters with enhanced cleaning.

The issue of filter clogging is in sharp focus in the marine industry, now that the IMO Ballast Water Management Convention has entered into force. Many of the systems installed over the past 10 years are first now being put into regular use, which means filter challenges – often overlooked when selecting a treatment technology – are coming to light. Especially for customers who operate in muddy waters, such as those of Mumbai, India or China’s Yangtze River, the consequences can be significant.

For these customers, the choice of a low-end or high-end filter is a critical one for ballast water treatment systems. High-end filters have enhanced cleaning mechanisms that speed up backflushing and improve their effectiveness. If well integrated into a ballast water treatment system, they can make the difference between smooth operations and lengthy stoppage or non-compliance when sailing in heavily sedimented waters.

The filter is a key component

“In the industry and from the test facilities, what you hear is that the filter will be a primary key for the success of a ballast water treatment system,” says Klaas Van Dijk, who heads Engineering Support for Dutch marine contractor Van Oord. Van Oord, an international dredging specialist, has every reason to be concerned about filter clogging. “Coastal waters contain more particulate matter,” Van Dijk explains. “That’s why we need to have reliable

ballast water treatment systems.”

Van Oord currently has two ballast water treatment systems installed, including one Alfa Laval PureBallast system, but has so far used them only in more forgiving operations offshore. Before purchasing additional systems, the company thus decided to test filter performance under controlled conditions at Dutch research facility Marine Eco Analytics (MEA-nl).

As a basis, Van Oord collected samples worldwide from waters where its dredging operations occur. “There were several ports where the sediment levels were above the IMO testing standards of 50 mg/L,” says Van Dijk. “Mumbai, India was the most challenging of those.”

Filter performance confirmed in testing

Based partly on positive experience with PureBallast in the offshore environment, Van Oord chose a PureBallast 3.1 system with a high-end basket filter for the tests at MEA-nl. Using natural sediment from the Den Oever area of the Wadden Sea, the system was subjected to consistent sediment loads from 50 up to 150 mg/L, as well as intermittent loads over 200 mg/L and a maximum load of 400 mg/L.

When the test runs were evaluated, they showed that the filter – which has enhanced cleaning capabilities and is tightly integrated into the system – had significantly reduced the sediment content, despite the fact that most of the particles were much smaller than the filter mesh size. The results made clear that Alfa Laval PureBallast 3.1 could operate reliably at 250 mg/L, the challenging concentration Van Oord had found in Mumbai.

“We managed to achieve a long enough continuous flow of dirty water to be able to see if the filter could recover or if it would clog,” says Van Dijk of the tests, which provided Van Oord with the proof of high-end filter capabilities and operational reliability in muddy water. “It turned out that the filter can, in fact, provide a reasonable level of cleanliness without getting clogged.”

Lengthy experience with high-end filters

One of those already convinced about high-end filters is cruise operator MSC, a company that has been working actively with ballast water treatment for the past three years. “We frequently operate in waters with high sediment loads, and the worst of these are in river areas,” says Captain Luigi Russo of MSC. “There we face a significant risk of clogging, which could slow

our operations drastically.”

MSC has 26 PureBallast 3.1 systems installed, as well as orders placed for additional systems numbering in double digits. According to Russo, the use of a high-end filter with enhanced cleaning was a plus during selection. “We were well aware of the clogging issue when we began looking into ballast water treatment, but there was no discussion needed when it came to the filter used with PureBallast 3.1,” he says. “The Filtrex filter is well known and simpler to work with than others, because it has fewer maintenance needs.”

Indeed, selecting a system that has a high-end filter with enhanced cleaning has proven a solid investment for MSC. “UV treatment is the best fit for our vessels, and we will continue to choose PureBallast,” Russo says. “Even in the most challenging waters where we operate, our ships have no problems when it comes to ballast water treatment.”

Filter integration makes a difference

For both Van Oord and MSC, it is not only the filter itself, but also its integration into the ballast water treatment system, that matters. Van Dijk says that this became especially clear in the testing at MEA-nl.

“What we really learned is that it’s important to look into the entire configuration of the ballast water treatment system and how it will backflush,” Van Dijk explains. “Alfa Laval has integrated the operation and backflushing process of the filter well into the PureBallast 3.1 system, which makes the backflush cycle effective. In the end, that makes it able to work better in tougher conditions.”

At MSC, Russo and his team are similarly impressed by the system as a whole. “Alfa Laval’s knowledge and technology are well proven,” Russo says. “We can only recommend Alfa Laval and PureBallast.”

A full white paper on ballast water treatment in muddy waters can be downloaded at:
www.alfalaval.com/globalassets/documents/products/process-solutions/ballast-water-solutions/Muddy_waters_and_filter_clogging_in_ballast_water_treatment.pdf

To learn more about Alfa Laval PureBallast and Alfa Laval's approach to ballast water treatment, visit www.alfalaval.com/pureballast

For further information, please contact:

Anders Lindmark

Head of Alfa Laval PureBallast

Alfa Laval Marine Division

Phone: +46 70 104 29 19

E-mail: anders.lindmark@alfalaval.com

Anja Simonsson

Vice President Communication

Alfa Laval Marine Division

Phone: +46 8 53 06 55 27

E-mail: anja.simonsson@alfalaval.com

www.alfalaval.com/marine

Editor's notes

About Alfa Laval PureBallast

PureBallast, which was the first commercially available ballast water treatment system, is a chemical-free system sold and serviced by Alfa Laval. A vital component of the system is the Enhanced UV Reactor, which was developed jointly by Alfa Laval and Wallenius Water based on Wallenius Water Technology.

About Alfa Laval

Alfa Laval is a leading global provider of specialized products and engineering solutions based on its key technologies of heat transfer, separation and fluid handling.

The company's equipment, systems and services are dedicated to assisting customers in optimizing the performance of their processes. The solutions help them to heat, cool, separate and transport products in industries that produce food and beverages, chemicals and petrochemicals, pharmaceuticals, starch, sugar and ethanol.

Alfa Laval's products are also used in power plants, aboard ships, oil and gas exploration, in the mechanical engineering industry, in the mining industry and for wastewater treatment, as well as for comfort climate and refrigeration applications.

Alfa Laval's worldwide organization works closely with customers in nearly 100 countries to help them stay ahead in the global arena. Alfa Laval's worldwide organization works closely with customers in nearly 100 countries to help them stay ahead in the global arena. Alfa Laval

is listed on Nasdaq OMX, and, in 2016, posted annual sales of about SEK 35.6 billion (approx. 3.77 billion Euros). The company has about 17 000 employees.

www.alfalaval.com