



February 2022

Alfa Laval PureSOx scrubbers employ efficient water cleaning on the world's largest container vessel

On 28 July 2021, the world's largest container vessel set sail from Samsung Heavy Industries. Owned by Evergreen Marine Corporation, Ever Ace has two Alfa Laval PureSOx scrubbers with a shared water cleaning system (WCS). This consolidated solution provides maximum reliability with a minimal footprint.

Cleaning to match 80 MW of engine power

Ever Ace is the first of 12 vessels planned for Evergreen's record-breaking A Class, which comprises container vessels of nearly 24,000 TEU capacity. Powered by a massive main engine of nearly 60 MW, it also has five auxiliary engines of 4.5 MW each.

To clean the engines' exhaust gas, the Ever Ace has two PureSOx scrubbers on board – one for the main engine and one for the auxiliaries. As hybrid scrubbers that can operate in open or closed loop, they require effective cleaning of the closed-loop circulation water. This is provided by a shared WCS based primarily on high-speed centrifugal separation.

Reliability and low operating costs are always important factors in Evergreen's decision-making. In this case, especially Alfa Laval's strong references for PureSOx and water cleaning technology played a crucial role.

Expanding capacity, not size

Alfa Laval's WCS design was recently updated, providing additional modular options to ensure a compact and cost-effective fit. On vessels with high engine power, such as mega-container vessels, it allows for greater capacity by adding flocculation to the centrifugal separation at its heart.

This is the case on the Ever Ace, where the WCS incorporates three high-speed separators, flocculator modules and a feed pump. Though it serves two PureSOx scrubbers with a combined exhaust gas cleaning capacity of almost 200 t/h, the WCS has a minimal footprint in relation to its high efficiency.

Performance confirmed at sea

Just as the Ever Ace is the first in its class, the shared WCS was the first with the new design to be commissioned by the PureSOx team. The limited gas load during a short shipyard sea trial was not enough to test the full WCS cleaning capacity, so Alfa Laval experts followed Ever Ace during a September journey from the UK to Germany and the Netherlands. This provided time for a more thorough WCS evaluation, as well as for crew training and the resolution of open items after leaving the shipyard.

Along the route, the WCS could be observed during longer periods with high engine loads. Cleaning performance was high throughout the voyage, even when much larger amounts of

circulation water reached the WCS. With that real-life proof in hand, Evergreen can be confident of future compliance with PureSOx.

To learn more about Alfa Laval PureSOx and Alfa Laval's approach to exhaust gas cleaning, please visit: www.alfalaval.com/puresox

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Editor's notes

This is Alfa Laval

Alfa Laval is active in the areas of Energy, Marine, and Food & Water, offering its expertise, products, and service to a wide range of industries in some 100 countries. The company is committed to optimizing processes, creating responsible growth, and driving progress – always going the extra mile to support customers in achieving their business goals and sustainability targets.

Alfa Laval's innovative technologies are dedicated to purifying, refining, and reusing materials, promoting more responsible use of natural resources. They contribute to improved energy efficiency and heat recovery, better water treatment, and reduced emissions. Thereby, Alfa Laval is not only accelerating success for its customers, but also for people and the planet. Making the world better, every day. It's all about *Advancing better™*.

Alfa Laval has 16,700 employees. Annual sales in 2020 were SEK 41.5 billion (approx. EUR 4 billion). The company is listed on Nasdaq OMX.

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