





Alfa Laval has long been at the forefront of exhaust gas cleaning. Since the first Alfa Laval PureSOx system went to sea in 2009, we've kept vessels compliant and SOx scrubbers working at their best. Every PureSOx system we've ever sold is in compliance today.

Leading in scrubbers and service

As the marine industry evolves, there are still good reasons to choose a SOx scrubber. Scrubbers offer economical fuel sulphur compliance, both with global limits and with those in the expanding number of Emission Control Areas (ECAs). From May 2024, the Mediterranean Sea is also on the ECA list.

Looking ahead, you can count on PureSOx and Alfa Laval's lasting commitment. PureSOx scrubber systems have been smoothly installed on hundreds of vessels, and their performance is proven. Seeing the results, their owners continue to trust us for regular service and ongoing optimization.

Why Alfa Laval and PureSOx?

- Over 100 years of marine industry experience
- Over 50 of years of marine scrubber experience
- Proven removal of SOx (>98%) and particulate matter
- A truly global network for service and support
- Opportunities for continuous optimization



"Hybrid scrubbers are among the most efficient alternatives to using expensive low-sulphur fuel oil."

Kasper Moos

Vice President Technical Org., DFDS Seaways

Built for the way you sail

PureSOx is a reliable and flexible scrubber solution that can be configured in different ways. Which one is right for you depends on where and how your vessel sails.

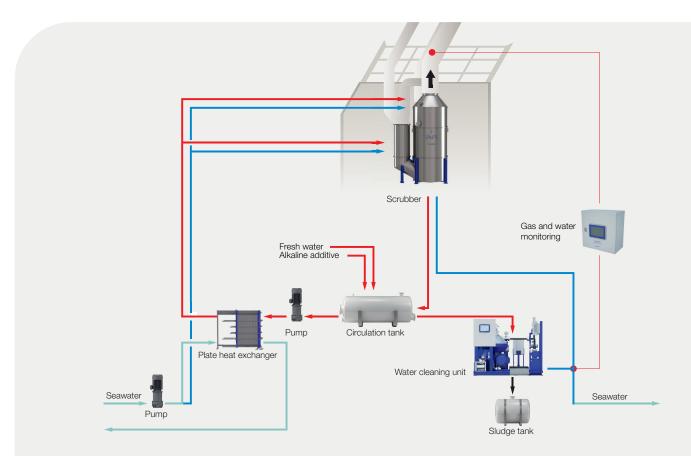
Open-loop or closed-loop configuration

Open-loop scrubbers, which discharge the scrubber water directly, are a common choice due to their lower CAPEX and OPEX. However, low water alkalinity or local bans on open-loop scrubbing can limit their use.

Closed-loop scrubbers recirculate the scrubber water, discharging only a small amount of cleaned bleed-off water. This increases CAPEX and OPEX, but it enables more widespread compliance.

Balance with a hybrid configuration

PureSOx can be configured as an open-loop or closed-loop scrubber, but the smartest choice is often a hybrid configuration. A hybrid scrubber provides both open-loop and closed-loop modes, which means future-proof economy. Costs are reduced wherever possible, but closed-loop operation is available when needed.





PureSOx offers reliable compliance with high efficiency and a minimal amount of equipment. A single PureSOx system can be configured for multiple exhaust gas sources, allowing one scrubber to serve both main and auxiliary engines.

Connections and space

Able to serve multiple engines, the scrubber can easily be adjusted or rotated to connect with vessel piping. Bracing lugs are incorporated from the start, which makes it a plug-and-play solution. Even maintenance area is accounted for in the design, which makes the scrubber easy to inspect and care for.



The PureSOx scrubber

Reliable water cleaning

Used in systems with closed-loop operation, the patented PureSOx water cleaning system minimizes sludge and allows instant bleed-off of cleaned circulation water. It relies on centrifugal separation, which is the most effective way to remove particles – and has been a core Alfa Laval technology for more than 100 years.



PureSOx water cleaning system

"The PureSOx solution was well engineered and allowed a sophisticated integration of the scrubber system into our container feeder ships."

Christoph Meier

Project Manager, Buss Shipping



"Having already done 21 retrofits with Alfa Laval, we can say with confidence that the cooperation works – just like the PureSOx technology"

Dr Loukas BarmparisPresident, Safe Bulkers

Success in installation

It takes expertise to get a SOx scrubber on board – especially on an existing vessel where it hasn't been planned for. Few suppliers come close to Alfa Laval's experience, whether in the number of scrubbers installed or the variety of vessels and installation challenges met.

Preparation and coordination

PureSOx is delivered as prefabricated components and modules, with the whole installation planned well in advance. Our well-documented procedures, developed over many years, ensure that design, installation, commissioning and class approval all go smoothly.

From the start, you have the full backing of our project team, which includes engineers of all disciplines. Everything is coordinated by a dedicated Project Manager, so that you have a single point of contact for anything concerning your order.

Smooth retrofitting

Planning is especially important for retrofits, which comprise more than half of our PureSOx projects. PureSOx has been retrofitted at all major shipyards worldwide, and each experience has strengthened our routines.

Although shipyard slots are limited, time can be saved by preparing while your vessel is at sea. In some cases, PureSOx can be built into a new funnel on the shipyard quay, which can then be lifted on board and connected. Even the final commissioning can be handled en route, so that vessel downtime can generally be limited to 2–4 weeks.

Above all, we cooperate closely with you, the shipyard and any engineering company involved. This is the best way to overcome obstacles and ensure success.





Anywhere, anytime support

Wherever you sail, Alfa Laval Marine Service is your path to greater uptime, optimized performance and true peace of mind. With service centres, field service engineers and distribution worldwide, we're close to all major shipyards – and always available. Across oceans, continents and time zones, our 24/7 Service & Support function coordinates our resources to meet your need.

One phone call or e-mail is all it takes.

"Alfa Laval is more than an equipment supplier. In Alfa Laval, we have a reliable partner who can make sure our vessels are always in compliance and that we get the most out of our investment."

Juha Ahia

Manager for Newbuildings & Projects, Finnlines

Alfa Laval scrubber services

Our Alfa Laval service portfolio contains a wide range of services to secure SOx scrubber performance. By taking advantage of preventive maintenance, continuous optimization and more, you can rely on your PureSOx system for cost-effective compliance throughout your vessel's lifetime.

Training

Optimize scrubber performance and lower cost of ownership by increasing crew skills. Our PureSOx trainings, focused either on operation or on maintenance and basic troubleshooting, combine hands-on instruction from an Alfa Laval expert with an e-learning module.

Spare Parts

Keep PureSOx running smoothly and reliably with genuine Alfa Laval spare parts. Our full, up-to-date stock lets us ship anywhere within 24 hours, and we can help you identify the parts you need. If desired, we can even arrange tailor-made stocks to ensure parts are always on board.

Smarter with a Service Agreement

When you combine our scrubber services in a tailor-made Service Agreement, you get peace of mind with maximum value. A Service Agreement gives you the ideal mix for your needs at a fixed, budgeted cost. That's why more than 80% of PureSOx customers choose one.



"The big advantage of the Exchange Programme is having the sensors available when required, without the headache of enquiry, purchasing and storing sensors on board in advance."

Miltos Synefias

Technical Director, Pleiades Shipping Agents S.A

• Exchange Programme

Simplify proof of compliance by using our PureSOx Exchange Programme for sensor calibration. When PAH and turbidity sensors are due to be calibrated, you receive pre-calibrated sensors to swap in. We handle all the replacement logistics and keep your sensors under warranty.

Condition Audit

Safeguard compliance and reduce the risk of unscheduled downtime by knowing the state of your PureSOx system. An onboard Condition Audit identifies cleaning needs, repair needs, maintenance issues or other issues before they lead to problems – along with opportunities for optimization and upgrades.

Dry Dock Kits

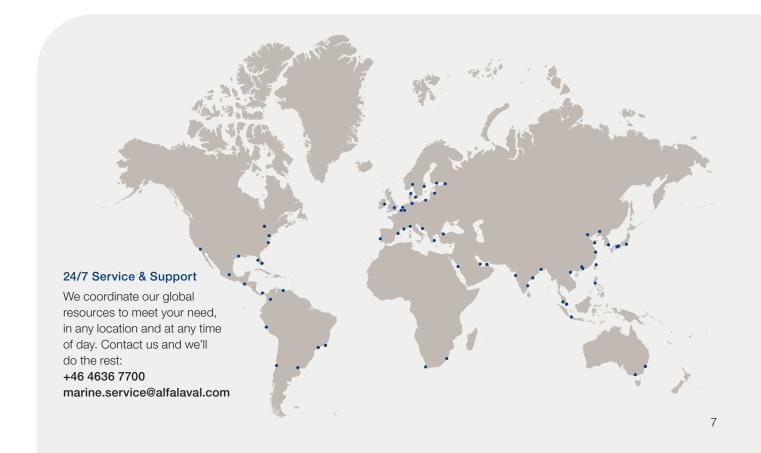
Use your time in dry dock to increase PureSOx lifetime and efficiency. As part of a Condition Audit, our experts can prepare a tailored overhaul kit with all the spares needed for essential maintenance, as well as kits for recommended upgrades or improvements.

Energy Reduction Mode

Save energy and money with Energy Reduction Mode, an upgrade for most PureSOx systems installed in recent years. Based on real-time performance measurements, Energy Reduction Mode automatically fine-tunes water flow, which minimizes open-loop pumping needs and cuts energy use by up to 25%.

PureSOx Connect

Save time and improve operations with our PureSOx Connect range of data-driven services. At its most basic, PureSOx Connect simplifies compliance by generating automatic reports. But the secure online portal also enables benchmarking, troubleshooting and more, available on a subscription basis.





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*.

How to contact Alfa Laval

Contact details for all countries are continually updated on our web site. Please visit www.alfalaval.com to access the information.

