



# Together for sustainable shipping



#### 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

Up-to-date Alfa Laval contact details for all countries are always available on our website at [www.alfalaval.com](http://www.alfalaval.com)

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## Marine essentials

Equipment and services for marine applications

Whether you sail ships or build them, we can help you meet the challenges of today and tomorrow. In this era of decarbonization and compliance, protecting the environment and strengthening your operations go hand in hand.

As fuels, systems and operations evolve, Alfa Laval is delivering the innovation to ensure your efficiency. Our technologies and insights safeguard compliance and your business interests, despite ever-stricter regulations. Through reliable solutions, worldwide service and connected expertise, we're fulfilling the promise we made over 100 years ago. At sea or in port, on board or online – Alfa Laval is your constant partner.



# Solutions to keep you ahead

In a changing industry, count on Alfa Laval for solutions – from bow to stern, above deck and below, as well as far beyond.

## Oil cleaning

Alfa Laval separators opened the door for the fuels in common use today, giving us more oil treatment experience than any other marine supplier. Worldwide and on many types of vessels, our compact high-speed separators provide highly efficient cleaning of fuel and lubrication oils. Centrifugal separation is not only the most reliable treatment technology but also the most cost-effective.

## Filtration

Alfa Laval offers a wide range of automatic fuel and lubricating oil filters for reliable engine protection. Their high filtration efficiency is matched by their low need of maintenance, which means lower lifecycle costs. Since they also have a compact design, our filters enable flexible installation and require a minimum of space in the engine room.

## Fuel supply

Alfa Laval's outstanding experience in fuel supply systems secures peace of mind with both established fuels and newer fuel alternatives. Using cutting-edge automation, Alfa Laval fuel supply solutions ensure smooth changeover between traditional fuels and safe handling of more challenging fuels like LPG and methanol.

## Sludge dewatering

Minimizing sludge volumes leads to lower costs for waste handling. Alfa Laval PureDry™ removes water content, concentrating the solids into a super-dry sludge. Its high efficiency allows a significant reduction in holding tank volume, which frees up space on board. In addition, PureDry typically recovers around 0.5% of the consumed fuel volume – which can be reused.

## Oily water separation

Alfa Laval PureBilge™ is a fully automated centrifugal separation system for cleaning oily water. By effectively removing oil pollution to a level well below 5 ppm, it sets a new standard in making water safe and compliant for discharge overboard. PureBilge operates continuously and is unaffected by feed variations, oil shocks and rough weather conditions.

## Crankcase gas cleaning

The oil and particles in crankcase gas are a threat to the environment and human health. Alfa Laval PureVent™ is a compact solution for removing them, developed in cooperation with a major engine manufacturer. Using centrifugal separation instead of filters, PureVent returns virtually oil-free air while allowing collected oil to be recirculated as lubrication.

## Exhaust gas cleaning

By scrubbing harmful SOx from their exhaust gas, vessels can continue using economical HFO, rather than more expensive low-sulphur fuel. Alfa Laval PureSOx® is the scrubber solution at the forefront, proven in over 10 years at sea. Available in open-loop, closed-loop and hybrid configurations, it provides reliable compliance with both sulphur limits and water discharge regulations.

## EGR water treatment

In Exhaust Gas Recirculation (EGR), cleaned exhaust gas is used to reduce the engine's combustion temperature and the formation of NOx. To safeguard EGR operation and ensure discharge compliance, the process requires water treatment. Alfa Laval PureNOx™ technology offers an effective solution with more time at sea than any other, built on Alfa Laval's centrifugal separation expertise.

## Power from waste heat

New sustainability requirements put saving energy in focus. With the Alfa Laval E-PowerPack, vessels have a plug-and-play efficiency upgrade that lowers fuel costs, reduces emissions and shrinks carbon footprint. Based on Organic Rankine Cycle (ORC) technology, the compact E-PowerPack is a modular solution that converts waste heat directly into clean electrical power.

## Waste heat recovery

Half the energy from combusted fuel is released as heat. Rather than sending it up the funnel, it makes sense to reclaim as much as possible. Alfa Laval Aalborg® solutions recover exhaust gas waste heat from main or auxiliary engines, and today they can be extremely compact. Besides producing steam or hot water, the heat energy can be used to support power generation or propulsion.



LNG as fuel



LPG as fuel



Methanol as fuel

# Enabling the future today



## Fuel cells

Alfa Laval is developing fuel cell technology that will let vessels meet energy needs with emission-free power.



## Voyage optimization

Part of Alfa Laval, StormGeo is reducing fuel use and carbon emissions through digital services for optimized routing.



## Wind propulsion

Through Oceanbird, a joint venture with Wallenius, Alfa Laval is enabling wind-assisted and wind propulsion.



## Air lubrication

Through Marine Performance Systems, Alfa Laval is helping to make fuel-saving air lubrication a reality.



# Welcome aboard

## Steam and hot water production

For over 100 years, Alfa Laval Aalborg boilers, burners and related expertise have been at the leading edge. Today's Alfa Laval Aalborg boiler solutions are prepared for any marine fuel, and their duties go beyond producing hot water and steam. On LNG carriers, our boiler solutions offer safe ways to manage boil-off gas (BOG) and simplify operations connected with tank inspection.

## Thermal fluid heating

Thermal fluid heating systems are a smart application of Alfa Laval's thermal expertise. They combine superior heat transport efficiency with low system pressure, as well as low costs for installation and maintenance. Our complete thermal fluid heating systems include the Alfa Laval Aalborg TFO thermal fluid heater, waste heat recovery units, pumps, valves, accessories and intelligent control.

## Heating and cooling

Alfa Laval has the marine industry's widest portfolio of heat exchangers. Our offering covers every possible onboard application, from engine and lube oil cooling to LPG cargo condensing and fuel cells. Suitable for alternative fuels as well as traditional options, our heat exchangers handle temperatures from cryogenic to 800°C and pressures up to 1250 bar.

## Freshwater generation

Having pioneered freshwater generation over a half-century ago, Alfa Laval now has freshwater generators for all capacities. Among them is the compact and revolutionary Alfa Laval AQUA™ Blue. With 3-in-1 plate technology that requires only half as much seawater, AQUA Blue uses only half the pumping energy of other freshwater generators.

## Ballast water treatment

Alfa Laval pioneered ballast water treatment and still sets the benchmark today. Alfa Laval PureBallast® 3 handles the full range of ballast water flow requirements and provides optimized solutions to specific vessel needs. Type approved by the U.S. Coast Guard as well as by IMO, it offers unmatched performance in the most challenging waters.

## Exhaust gas cooling

Using LNG as fuel reduces CO<sub>2</sub> emissions, but the climate is also affected when uncombusted methane slips through the engine. Alfa Laval PureCool, as a part of iCER for WinGD X-DF engines, enables a 50% decrease in methane slip – plus Tier III NOx compliance in diesel mode. PureCool provides the exhaust gas cooling at the heart of iCER, an emission-reducing option that also saves fuel.

## Inert gas production

For decades, Alfa Laval has optimized the safety of volatile cargo under the Smit name. We produce inert gas through a number of methods, adapted to the safety requirements of IMO and the classification societies. Most of our inert gas systems use the unique Ultramizing® principle, which atomizes the fuel oil for soot-free inert combustion, even at partial loads.

## Gas combustion

LNG carriers must dispose of boil-off gas (BOG) when it cannot be used for propulsion, or when the tank is prepared for inspection. The Alfa Laval Gas Combustion Unit (GCU) is a high-capacity solution, built with a simple – and therefore reliable – design. It safely regulates cargo tank pressure on LNG carriers with dual-fuel or low-speed dual-fuel engines.

## Cargo pumping

Framo® pumping systems are vital for maximizing the utilization of product and chemical tankers. The hydraulically driven submerged cargo pumps provide safe, efficient and flexible cargo handling of any type of liquid cargo. Improved cargo handling performance gives quicker turnaround time and fewer voyages in ballast. Framo cargo pumps and other Framo products are sold exclusively by Framo AS.

## Tank management

Alfa Laval provides Scanjet tank cleaning machines that prevent sediment build-up and enable rapid changes between cargoes. Part of a wider tank management portfolio, they are supported by equipment for monitoring the level, temperature and pressure in all tanks on board – with a direct interface to vessel automation. The portfolio also includes PV valves to safeguard tank pressure and prevent any passage of flames.

## Service

All equipment needs attention over its lifetime. Our Alfa Laval Marine Service network is always on the job, coordinating across oceans, continents and time zones to provide 24/7 Service & Support. In addition to parts and immediate assistance, our experts deliver a full range of services – digital as well as physical – to bring customers maximum uptime and value from Alfa Laval equipment.

