



ERMA FIRST



PRODUCT CATALOGUE

*FROM SAVING THE OCEANS.
TO SAFEGUARDING THE PLANET.*



www.ermafirst.com

ERMA FIRST

From saving the oceans. To safeguarding the planet.

Founded in 2009 and headquartered in Greece, ERMA FIRST is a leading manufacturer and provider of future-proof sustainable maritime solutions. The company’s robust systems and solutions ensure worldwide compliance, provide operational simplicity and reduce operational expenditure, while at the same time minimising the impact of ship operations on the environment.

ERMA FIRST's customer-centric approach offers flexible and convenient servicing through a trusted network of certified engineers worldwide. ERMA FIRST provides sales, maintenance and training to clients via offices in 46 countries.

◆ Ballast Water Treatment



◆ Energy Saving Technologies



◆ Alternative Maritime Power



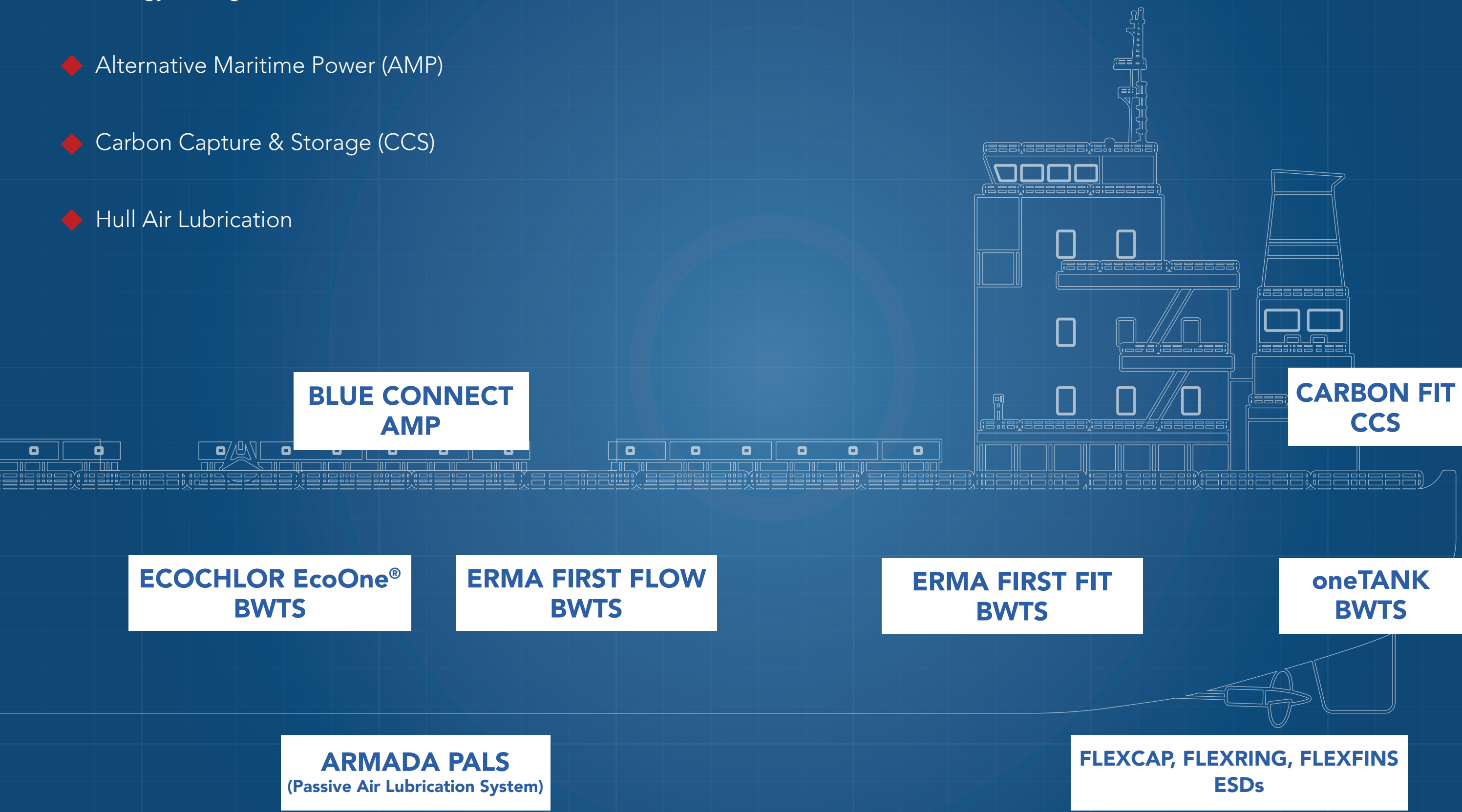
◆ Air Quality



◆ Hull Air Lubrication



- ◆ Ballast Water Treatment Systems (BWTS)
- ◆ Energy Saving Devices (ESD)
- ◆ Alternative Maritime Power (AMP)
- ◆ Carbon Capture & Storage (CCS)
- ◆ Hull Air Lubrication



ERMA FIRST FIT BWTS

THE INDUSTRY LEADER

OPERATION

ERMA FIRST FIT BWTS is a full flow electrolytic system that operates only during ballasting.

BALLASTING

FULL FLOW ELECTROLYSIS

During ballasting the water passes through a filter to remove organisms and sediment larger than 40 microns.

The filtered water enters the Electrolytic Cell. From the chlorides of the water, free chlorine is produced through the electrolysis process at a very low concentration (around 4-6 mg/L). The treated water then enters the ballast tanks.

DE-BALLASTING

CONSIDERABLE GAINS

During de-ballasting, the system will only monitor the residual oxidants and will only intervene if necessary. The main stages of the system (filtration and disinfection) are bypassed.

A Total Residual Oxidants (TRO) sensor tests the residual chlorine at the discharge line. If it is greater than 0.1 mg/L, a dosing pump will deliver the correct dosage of neutralizing agent (Sodium Bisulfite). Successful neutralization of free chlorine is confirmed by a second TRO sensor installed at the end of the ballast discharge line.

SYSTEM

ERMA FIRST FIT BWTS is an autonomous and reliable solution for all types and sizes of vessels.

ERMA FIRST FIT BWTS is an advanced modular system that was developed to exceed all the special installation requirements for either newbuild vessels or any retrofit projects. The major components of the system include a high-end backwash filter and an electrolytic cell with outstanding performance. Covering an extensive capacity range of 50-3740 m³/hr and certified for operation in the most challenging conditions by the IMO, USCG and classification societies, ERMA FIRST FIT BWTS is an ideal solution for all types and sizes of ships.



SEPARATION

40 microns self-cleaning automatic screen filter
(three options available)



DISINFECTION

Advanced quality Electrolysis Cells



ERMA FIRST FIT BWTS BENEFITS

- Simple and flexible
- Suitable for all spaces and pump capacities
- Zero holding time
- Ballasting fresh water
- Expanded operational flexibility
- METIS remote data monitoring (optional)



ERMA FIRST ADVANTAGE

- 45+ years of experience
- 3,700+ vessels served
- Wide experience of enroute installations
- 24/7 technical support
- Worldwide service & spares network
- Best-in-class turnkey solutions

FULLY CERTIFIED



IMO
Type Approval



USCG
Type Approval



China
Type Approval



Korean
Type Approval

oneTANK BWTS

SMALLEST FOOTPRINT. LOWEST COST.

DESCRIPTION

ERMA FIRST oneTANK BWTS is a simple, low-cost ballast water treatment system that was developed to provide the simplest possible solution to treat one or a few ballast water tanks. Tanker vessel aftpeak tanks, superyachts, ATBs, Jack up platforms and workboats with space and power limitations are ideal applications.

✓ oneTANK BWTS BENEFITS

One-size fits all, units on stock

Smallest BWTS globally

Lowest cost BWTS globally (CapEx and OpEx)

Standard spare part packages available

Maximum flexibility (installation)

Ideal solution for tanker APTs and smaller vessels



TREATMENT

Ballasting procedure is conducted without any system integration. Disinfection takes place by injecting liquid bleach into the ballast tanks through a simple circulation loop and mixing nozzles. Once treatment is completed within holding time required, excessive chlorine is neutralized and ballast water is ready to be discharged over-board.

INSTALLATION - OPERATION

ERMA FIRST oneTANK BWTS has minimized footprint, weight and installation materials, leading into a timely retrofitting on board without any specialized workmanship requirement. Perfect match for newbuilding or existing vessels.

Systems are off-the-shelf while maintenance is simplified as no filter, complex UV lamps, electrolytic reactors or transformer rectifiers are incorporated.



USCG & BWMS

Code Approved

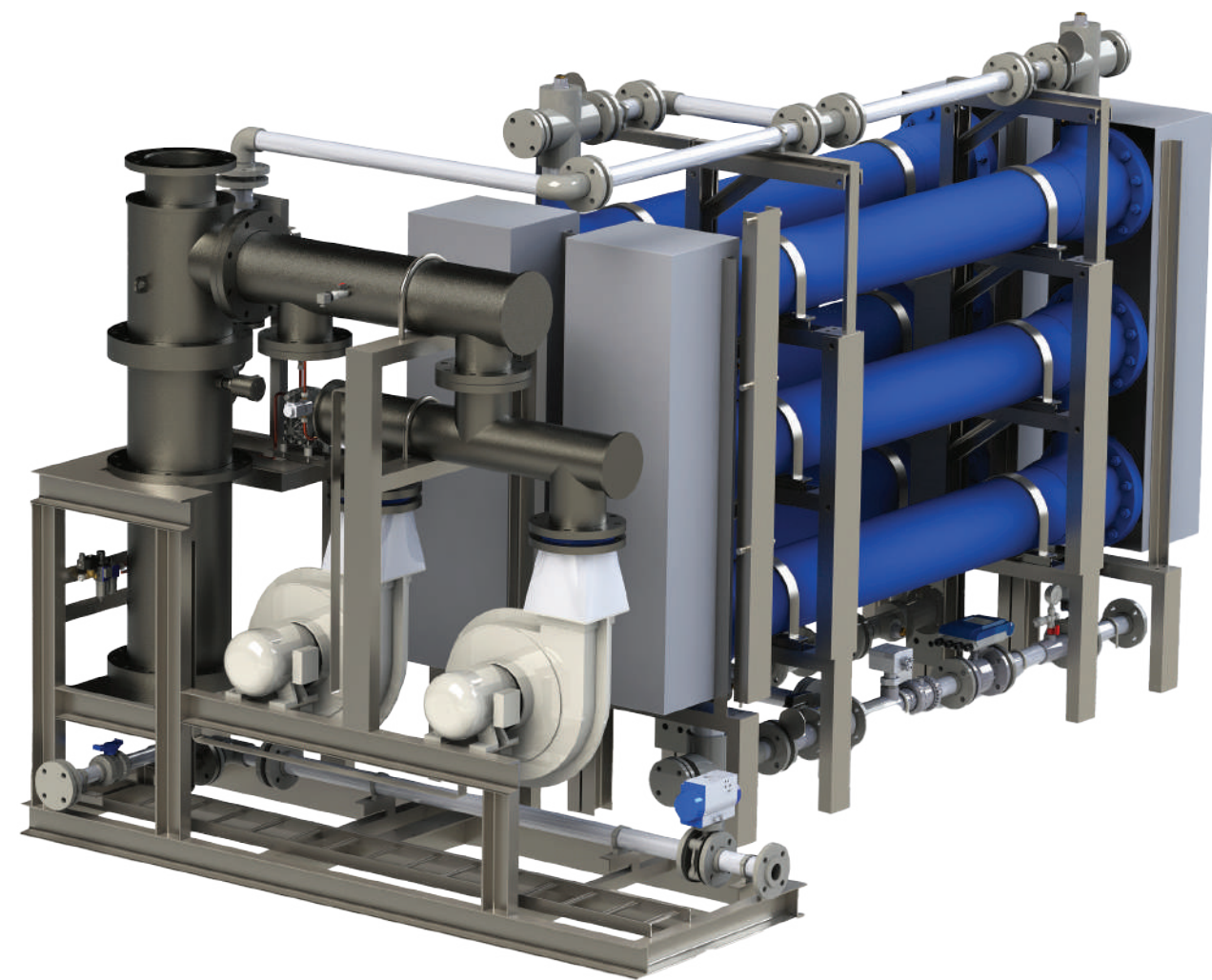


ERMA FIRST FLOW BWTS

PIONEERING FILTERLESS SOLUTION
FOR NEW BUILDINGS

DESCRIPTION

The ERMA FIRST FLOW Ballast Water Treatment System (BWTS) offers an advanced, automated solution for treating ballast water in marine vessels. This system is designed to be highly efficient and flexible, capable of being installed as a single unit. The system features filter-less, side-stream treatment technology that is particularly suitable for large-capacity vessels and requires less installation space. Installation is streamlined with pre-assembled, skid-mounted components including electrolysis cells (E/C), transformers/rectifiers (T/R), and degassing units.



✓ ERMA FIRST FLOW BENEFITS

Space Efficiency: Occupies less space due to its side-stream configuration, making it ideal for large ships.

Reduced Operational Costs: Minimizes energy consumption and operational expenses with only 0.4% of total ballasting capacity required.

Safety and Compliance: Components are installed in non-hazardous areas, making it suitable for tankers and complying with marine safety standards.

Ease of Installation and Maintenance: Offers easier installation and maintenance with skid-mounted components and marine-approved flexible couplings.

Automation and Control: Fully automated with a comprehensive sensor set for monitoring the treatment process, including flow, pressure, temperature, and salinity sensors.

PRODUCT RANGE

MODEL	TRC (m3/h)	Sidestream Flow Rate (m3/h)
FLOW 500	500	
FLOW 1500	1500	10
FLOW 2000	2000	15
FLOW 2500	2500	15
FLOW 3000	3000	15
FLOW 4000	4000	20
FLOW 5000	5000	20
FLOW 6000	6000	30
FLOW 7000	7000	30

Ecochlor BWTS

ANY VESSEL, ANY ROUTE, ANY PORT

DESCRIPTION

The EcoOne® BWMS is available in filterless mode or hybrid options, as well as in the EcoOne® Container Unit. This affords you even more choices when it comes to choosing the ballast water management system that is best suited for your vessel.

All our BWMS come with the same BWMS reliability, high level of efficacy and superior global service. One major benefit of choosing Ecochlor is the simple operation for your crew!

Other benefits include:

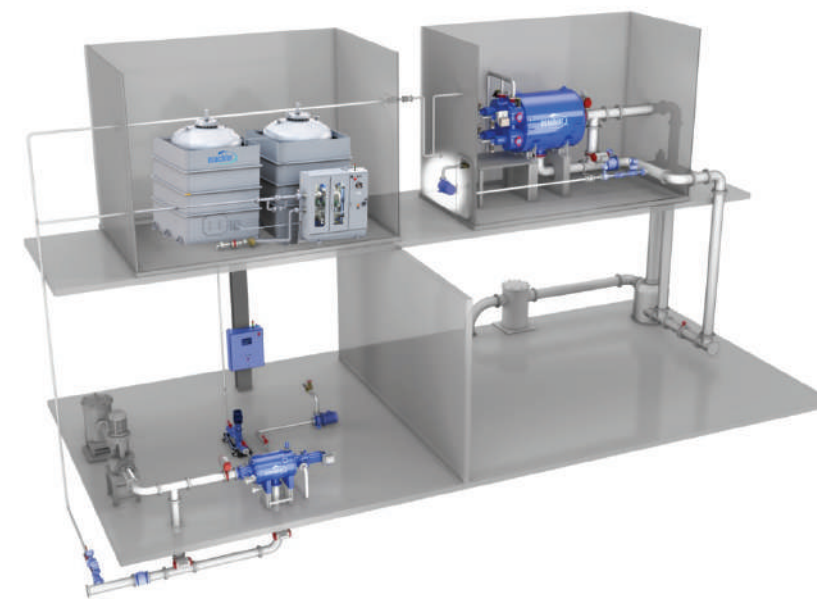
- ◆ NO TRO sensors
- ◆ NO electrodes
- ◆ NO complex power requirements

Additionally, with our system you will be using a low power and carbon footprint solution that helps you reduce your environmental impact and lower emissions.



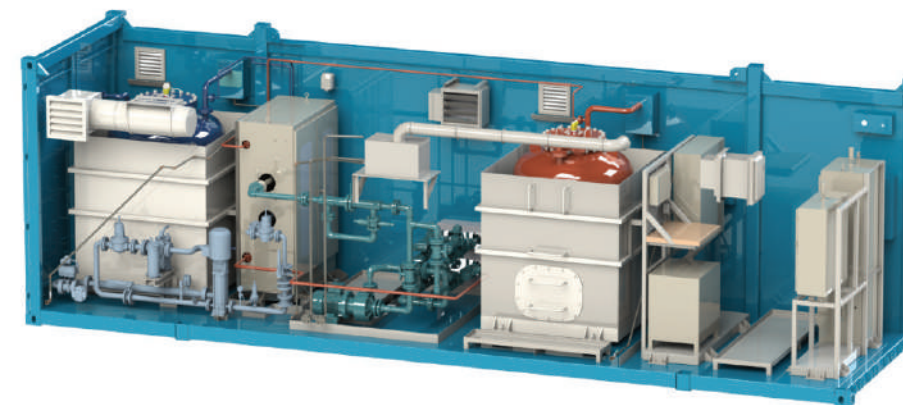
EcoOne® Filterless BWMS

- ◆ Single-step disinfection process (ClO₂)
- ◆ Suitable for marine and brackish waters (>1 PSU)
- ◆ No operational restrictions on temperature or water turbidity
- ◆ Simplified, efficient system with no filtration required



EcoOne® Hybrid BWMS

- ◆ Dual-mode system (Filtration & ClO₂ or ClO₂-only)
- ◆ Flexible to operate with or without filter
- ◆ Ideal for global operations with unrestricted water conditions
- ◆ Versatile options for shipowners for BWM



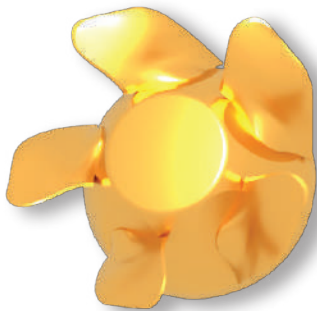
EcoOne® Containerized BWMS

- ◆ Single unit servicing four quadrants or substations
- ◆ One-way, small-diameter piping system for offshore
- ◆ No filtration required, allowing for gravity ballasting
- ◆ One system can manage multiple offshore rigs effectively

FLEXCAP, FLEXRING, FLEXFINS

IMPOVING EEXI. REDUCING EMISSIONS.
STAYING COMPLIANT.

FLEXCAP



ERMA FIRST FLEXCAP helps to reduce the formation of hub vortex, which can reduce the propeller's efficiency and cause cavitation and noise. The fins cancel out the vortices generated at the root of each blade, reducing the torque demanded for the same RPM and can occasionally generate additional thrust.

- ◆ **Diameter:** Approximately 23%-25% of the propeller diameter
- ◆ **Weight:** Roughly 3% of the propeller weight (no need for shaft alignment recalculation)
- ◆ **Material:** ERMA FIRST FLEXCAP is made from NiAlBronze, the same material as the propeller, ensuring durability and longevity

**The dimensions and weight may vary based on specific design but are not expected to increase significantly*

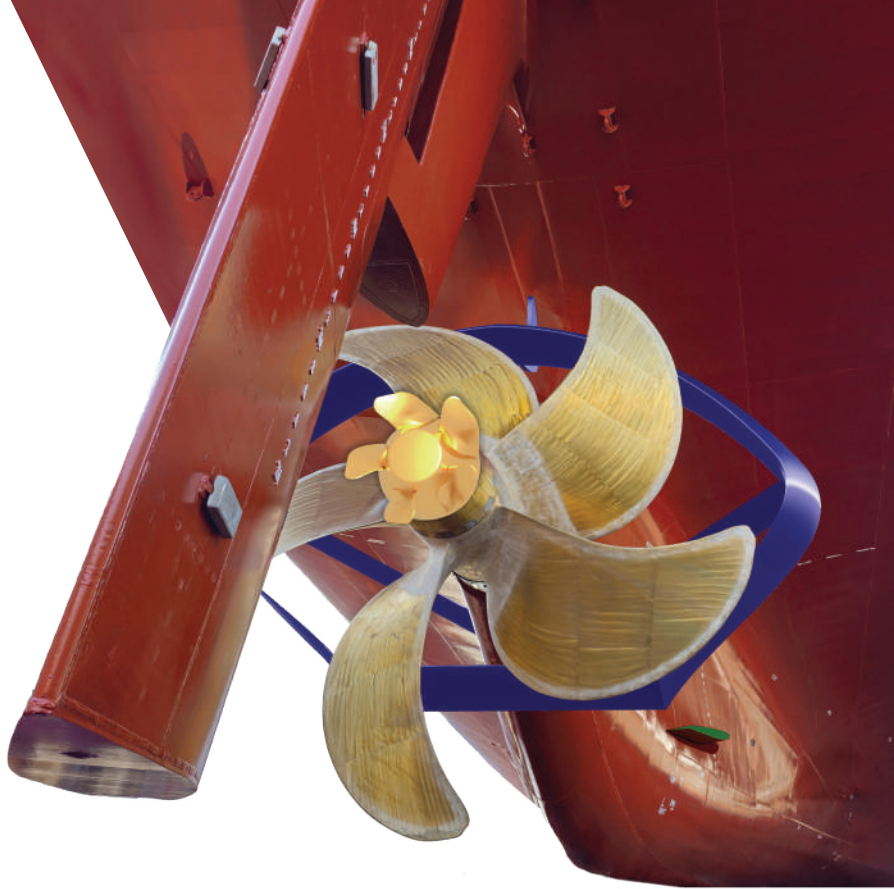
FLEXRING



The ring guides the flow towards the propeller in a way that it increases the speed at the areas of obstructed flow and improves propulsive efficiency. Additionally, there is some thrust that develops on the duct and with proper alignment of the fins (optional) a pre swirl effect is created, increasing further the efficiency of the propeller.

- ◆ **Easy to assemble parts & quick installation**
- ◆ **Case-specific adjustments**

Options	Savings (%)
FLEXCAP	2-5
FLEXRING	3-7
FLEXFIN	1-3
CAP + RING	4-10
CAP + FIN	3-6
RING + FIN	4-8
CAP + RING + FIN	5-16



FLEXFINS



A set of fins properly placed and aligned, guide the flow around the hull in a way that it is more evenly distributed, reducing resistance, and assisting in directing better flow to the propeller.

- ◆ **Minimal intervention to the hull**
- ◆ **Same day installation**



ERMA FIRST ESD's BENEFITS

- Optimize CII and EEXI performance
- Reduce fuel consumption
- Minimize operational expenses
- Increase propulsive efficiency
- Improve engine load, wear and part lifecycle
- Bespoke design

BLUE CONNECT

THE ULTIMATE ALTERNATIVE MARITIME POWER SOLUTION

DESCRIPTION

ERMA FIRST BLUE CONNECT is the Shore Power solution designed and offered by ERMA FIRST. Shore Power is the connection of vessels in a port's electrical grid to power onboard services, systems and equipment. This enables ships' diesel generators to be switched off with a resultant reduction in noise and emissions, such as particulate matter, nitrogen oxides, sulphur oxides, carbon oxides and volatile organic compounds. Vessels with power demands higher than 1MVA must establish High Voltage Connections (6,6kV or 11kV) with the mainland's power grid, implementing suitable equipment according to international regulations and ports requirements.

ERMA FIRST BLUE CONNECT is available for: Ro-Ro/Ro-Pax, PCTC, Ferries, Containers, Cruise and Tankers.

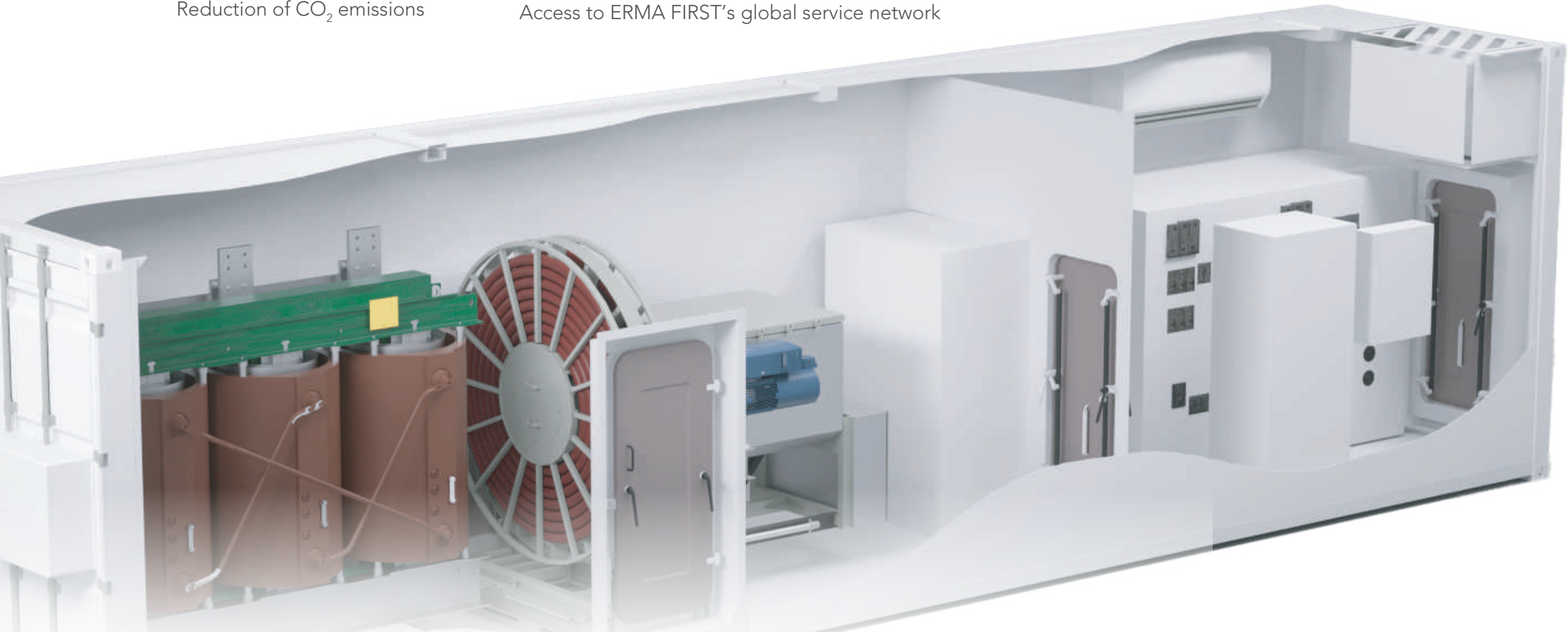
✓ BLUE CONNECT BENEFITS

- Low-emissions port compliance
- Elimination of emissions SOx, NOx, PMs
- Tailor-made vessel specific solutions
- Reduced maintenance costs
- Reduction of CO₂ emissions
- Access to ERMA FIRST's global service network

PRODUCT RANGE

Models	Voltage Configuraton	Type of connection to vessel'sMSB	Maximum Power Supply Pn (MVA)
75HV6F	High	Fixed system: Permanent connection to vessel's MSB	7.5
15LV6F	Low		1.5
25LV6F			2.5
40LV6F			4.0
50LV6F			5.0
75LV6F			7.5
75HV6P	High	Portable system: Plug-in type of connection vessel side	7.5
15LV6P	Low		1.5
25LV6P			2.5
40LV6P			4.0
50LV6P			5.0
75LV6P			7.5

* Product range depicted above is designed specifically for Containers



ERMA FIRST BLUE CONNECT is a shore power containerized system designed for high voltage shore connection, according to 'IEC/IEEE/ISO 8005-1-2019: High Voltage Shore Connection Systems - General Requirements'. ERMA FIRST BLUE CONNECT enables a vessel to shut down auxiliary engines during port stays.

BLUE CONNECT holds
Approval in Principle (AiP) by

Recognised as an
Energy Saving Device (ESD) by



CARBON FIT

ACHIEVING CARBON NEUTRAL SAILING

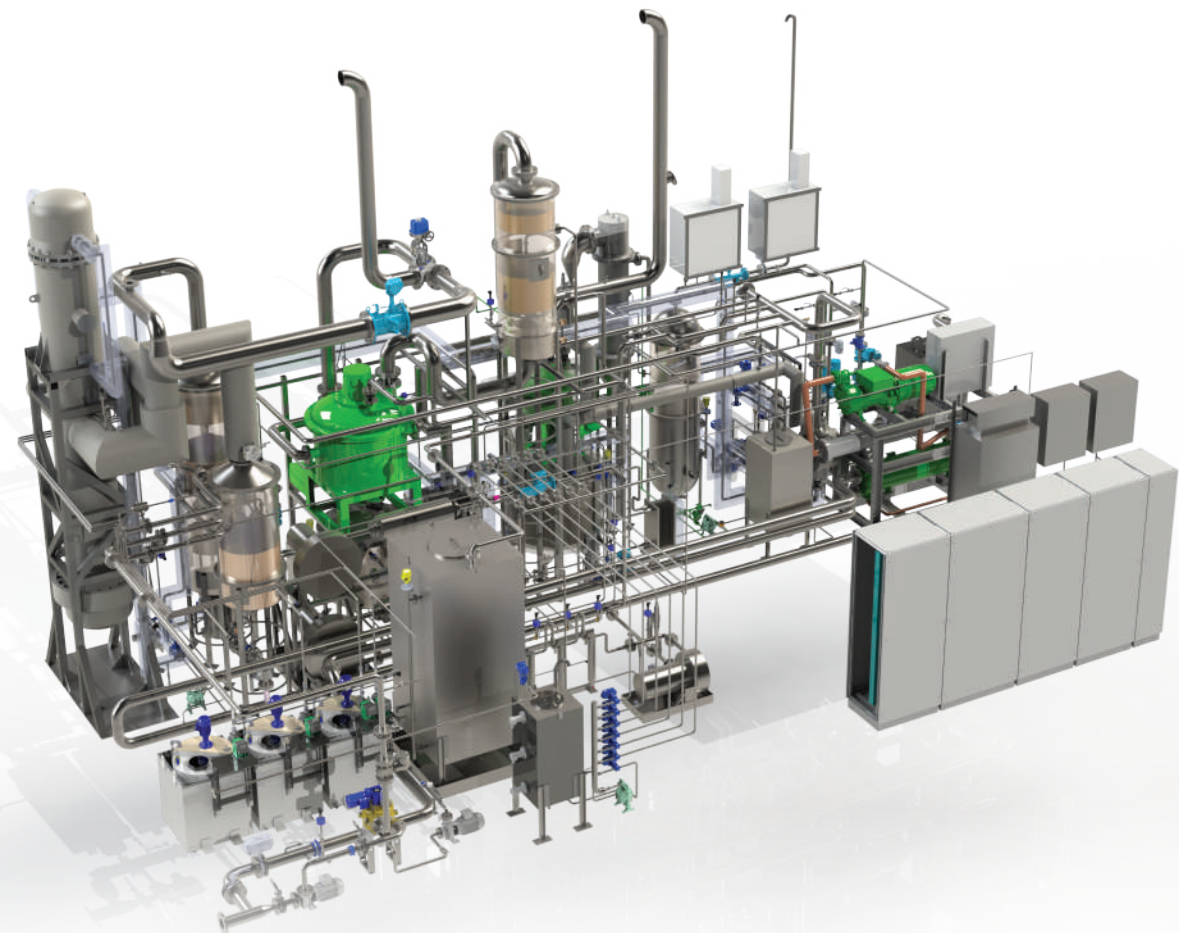
DESCRIPTION

CARBON FIT AMINE ABSORPTION SYSTEM

This system relies on the proven amine absorption technology. Our proprietary amine solvent absorbs CO₂ from the flue gas in a specially designed absorber. The solvent is then regenerated through the application of heat, releasing the CO₂ which is subsequently liquefied and stored under cryogenic conditions onboard. The regenerated amine solvent is then reused, creating a cyclical, efficient process for capturing and storing CO₂.

CARBON FIT CALCIUM HYDROXIDE SYSTEM

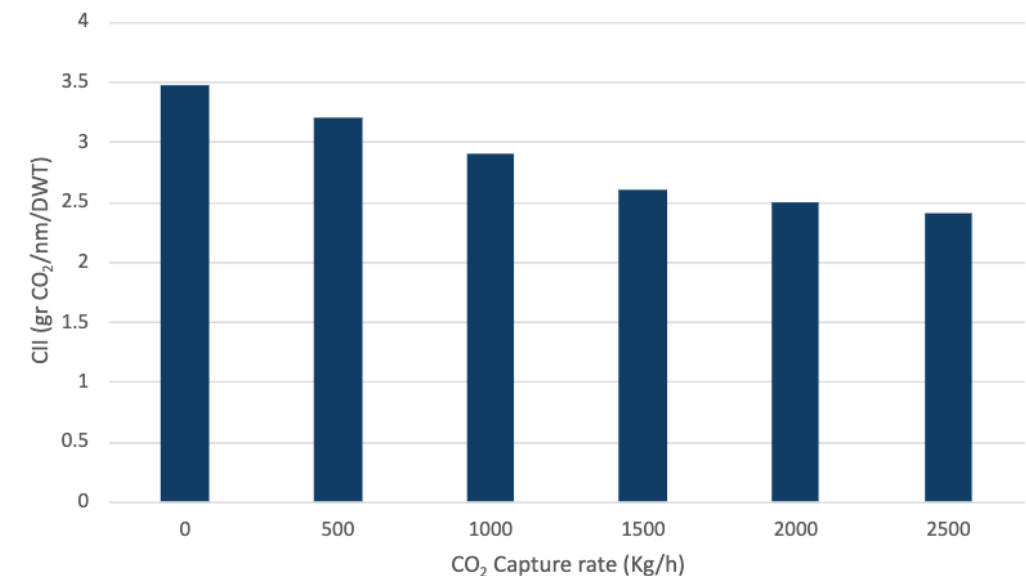
This system utilizes calcium hydroxide as an inorganic alkali agent to capture CO₂. The flue gas comes into contact with the calcium hydroxide solution in a specially designed reactor, creating a calcium carbonate slurry as a byproduct. This byproduct is then dehydrated and stored onboard until it can be disposed of at authorized facilities.



WHY ERMA FIRST CARBON FIT?

By choosing ERMA FIRST CARBON FIT, you're investing in advanced, effective technology that helps you meet and exceed the IMO's stringent emission reduction targets. It's not just about compliance; it's about contributing to a greener, more sustainable future for the maritime industry.

CII of the CCS cases vs baseline.



With increasing environmental regulations and growing awareness around climate change, the maritime industry's move towards carbon-neutral operations is imperative. ERMA FIRST is at the forefront of this revolution, offering a proprietary Carbon Capture & Storage (CCS) system (CARBON FIT) designed to meet the industry's rigorous emission reduction targets.

ERMA FIRST CARBON FIT
holds Approval in Principle (AiP) by



ARMADA PALS

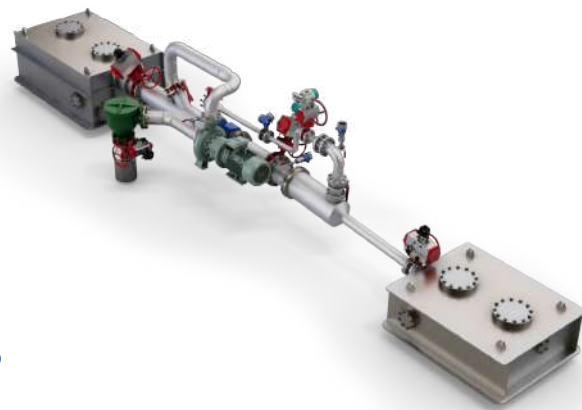
A LOW POWER SUSTAINABLE SOLUTION

Armada Technologies is an Affiliate of ERMA FIRST

DESCRIPTION

PASSIVE AIR LUBRICATION SYSTEM (PALS)

Armada Technologies is transforming the shipping industry with PALS, our patented air lubrication system. Unlike traditional methods, PALS uses the ship's forward motion to create a precise air-water mixture without the need for energy-intensive compressors. It's the future of efficient, eco-friendly shipping.



WHY CHOOSE PALS?

1. Optimized Efficiency at Any Speed or Sea State

- ◆ Unmatched Versatility: PALS excels under varied operating conditions, from slow steaming to high seas, ensuring consistent performance without energy waste.
- ◆ Superior Adaptability: Maintains peak lubrication in choppy waters, shallow drafts, or high sea states, delivering steady fuel savings across your voyage.

2. Smarter Bubble Control for Maximum Coverage

- ◆ Innovative Design: PALS uses a venturi system and the vessel's natural motion for an optimal bubble spread, lubricating the entire hull surface effortlessly.
- ◆ Machine Learning Integration: Tailors bubble production to match your ship's unique operational needs, guaranteeing efficiency under all conditions.

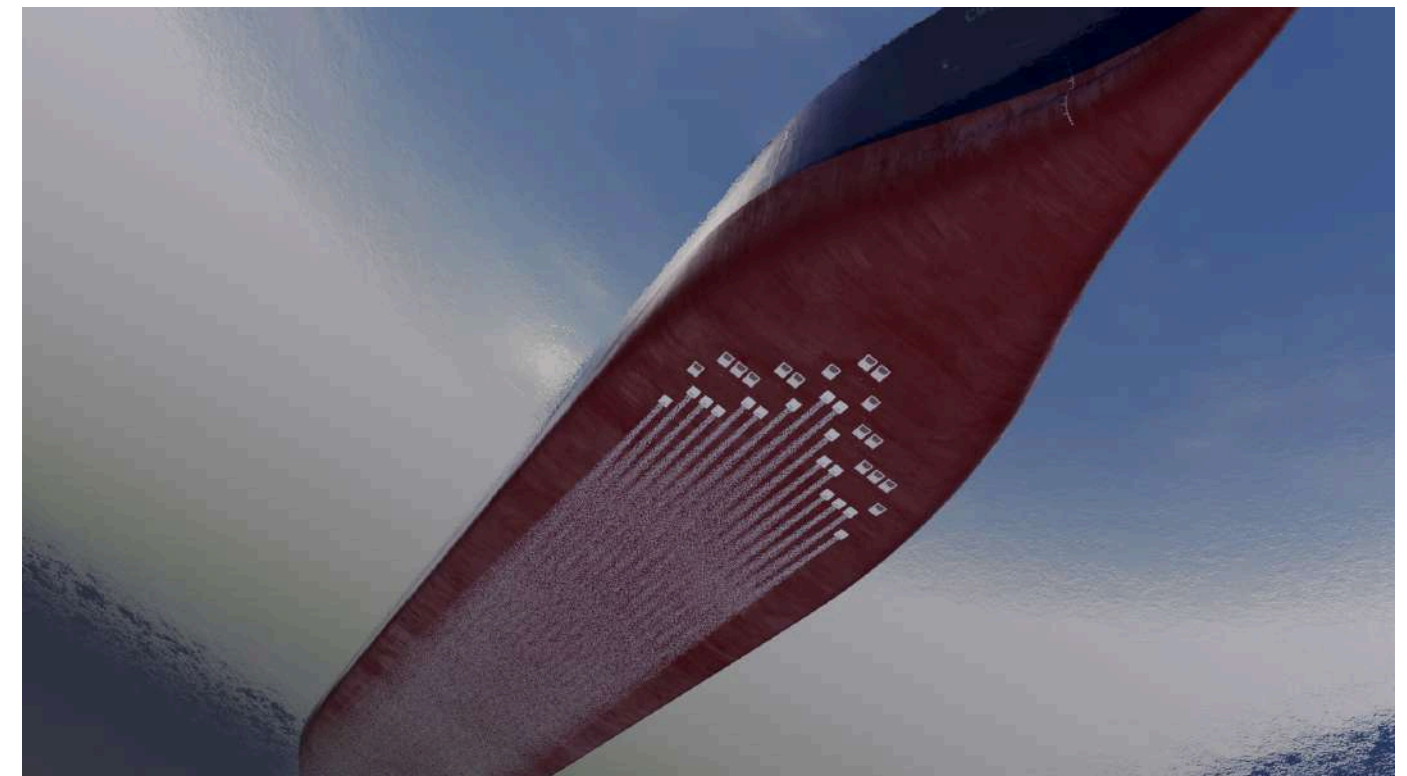
3. Sustainable and Cost-Effective

- ◆ Minimal Energy Consumption: Small water pumps activate only when conditions demand, cutting down on energy usage and operational costs.
- ◆ Compact and Quiet: Eliminates the need for bulky, noisy compressors, saving space and reducing onboard vibrations.

OVERCOMING TRADITIONAL LIMITATIONS

With PALS, you can eliminate:

- ◆ High energy consumption from air compressors
- ◆ Ineffectiveness in rough seas or at lower speeds
- ◆ Systems requiring frequent maintenance and prone to failures
- ◆ The risk of excessive drag from inactive equipment
- ◆ Overinflated claims about fuel savings



CERTIFICATIONS



IMO
Type Approval



USCG
Type Approval



China
Type Approval



Korean
Type Approval



LR Class
Type Approval



Certification
ISO 9001



Certification
ISO 14001

AWARDS



Technical Achievement
Award 2013



Technical Achievement
Award 2023



Technology Award
2016



Sustainability Award
2023

NETWORK

ERMA FIRST serves ships internationally through an expanding sales agents, service and spare parts network. For further information or enquiries please do not hesitate to contact us at sales@ermafirst.com.

SALES NETWORK

Belgium	Korea
Brazil	Latvia
China	Lithuania
Croatia	Netherlands
Cyprus	Norway
Denmark	Poland
Estonia	Portugal
Finland	Romania
France	Singapore
Germany	Spain
Greece	Sweden
Hong Kong	Taiwan
India	Turkey
Israel	United Arab Emirates
Italy	United Kingdom
Japan	United States of America

SERVICE STATIONS

EUROPE

Greece
Turkey
Latvia
Cyprus
Poland
Romania
Ukraine
France
Germany
Portugal
ARA Region

MIDDLE EAST

All Middle East Ports
India

ASIA

China (all ports)
Korea
Singapore

AMERICAS

USA
Canada
Panama

OCEANIA

Australia

HEAD OFFICE

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