



**Exhaust Gas Cleaning Solutions
for ship owners and operators.**



Supporting the Shipping Community

At Bluesoul we contribute to a cleaner environment. Our cost-effective solutions help ensure ship owners and operators achieve their own environmental vision, in line with regulatory expectations.

We pride ourselves in supporting the shipping community in complying with new regulatory requirements. Bluesoul's experienced team of engineers and designers provide tailored ship exhaust gas cleaning systems. Our scrubber systems are compatible with all vessel types, including cruise liners, tankers, gas carriers, bulk carriers, general cargo ships, container ships and RoRo vessels.

Why Install an Exhaust Gas Cleaning System?

An Exhaust Gas Cleaning System (EGCS) offers considerable cost savings in comparison to using low-sulphur fuel oil or LNG. Bluesoul's tailored approach and suite of systems provide options for our clients, ensuring optimal performance for their vessel type. EGCS solutions allow operators to meet the latest regulatory requirements without incurring increased bunker prices.

Bluesoul's EGCS remove more than 98% of exhaust gas sulphur oxides (SOx), vastly reducing harmful emissions and complying with IMO 2020 standards.

Seamless Installation

Our project teams have significant installation experience and know-how. Collaborative planning with our clients is the foundation of our approach, with ongoing open communication continued throughout the project. Our experienced engineering teams manage the project from kick-off to final commissioning, with emphasis on minimising vessel downtime.



Tailored Solutions

Bluesoul's tailored approach begins well before a cleaning system has been selected. From our first meeting, we strive to understand our client's specific needs and expectations. We build our solutions around a mutually agreed set of requirements.

Selecting the appropriate scrubber system for your vessel is an important decision for shipowners. Based on the vessel machinery and operating profile, we offer expert guidance to ensure the selected system is the optimal solution.

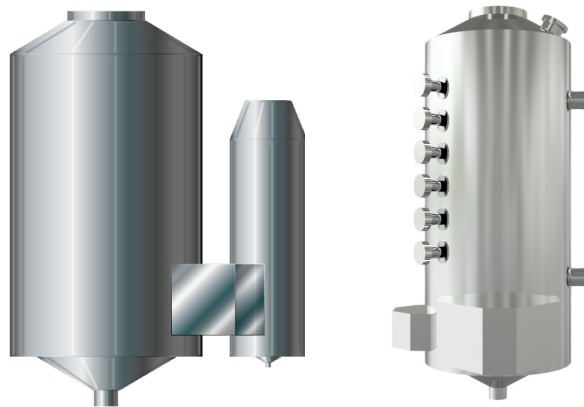
All of our systems offer high efficiency, with low energy consumption and backpressure. Cleaning to IMO 2020 standards is ensured through real time monitoring and automation systems.

Scrubbers

U-type or I-Type scrubber layouts are selected to match the vessel's installed machinery and layout to ensure maximum efficiency and seamless integration.

U-Type Scrubber

- Lower height
- Lower power consumption
- Multi-steam inlet
- Lower weight



I-Type Scrubber

- Lower diameter
- Cyclone steam inlet
- Multi or single steam inlet
- Easy to install

Our Systems

Open Loop

In an open loop system, outgoing exhaust gases are washed by seawater. The process water is then discharged to sea directly after treatment.

As it relies on the natural alkalinity of seawater, open loop systems would not be suitable for fresh or brackish water.

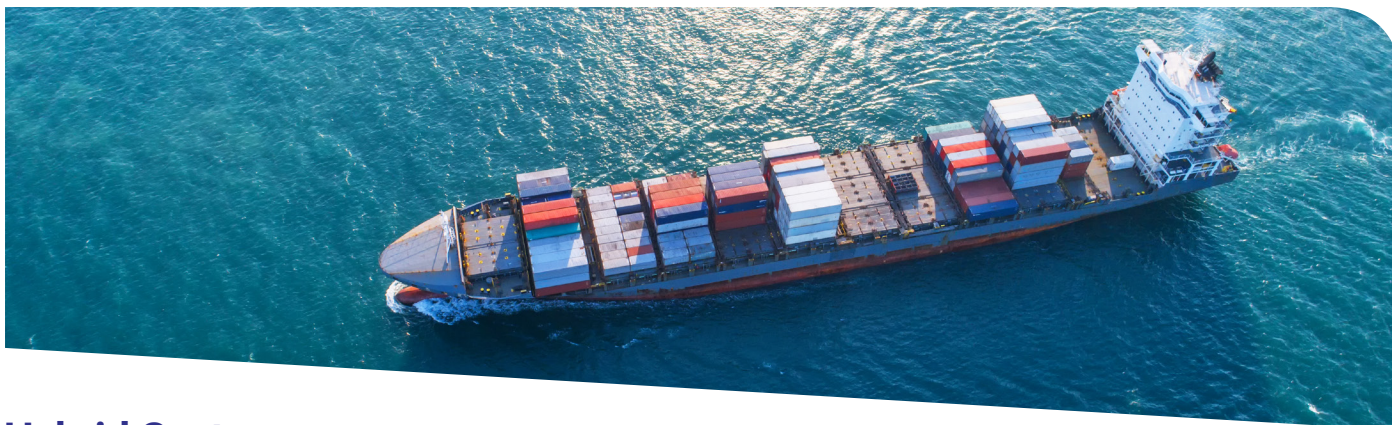
Closed Loop

In a closed loop system, outgoing exhaust gases are washed with process water in the scrubber.

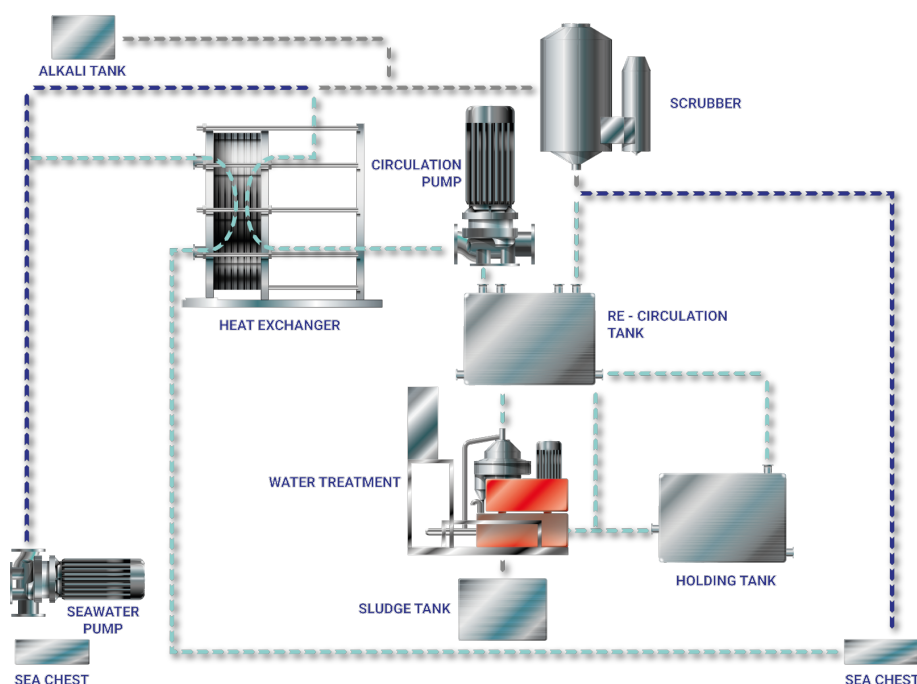
This process water is a mixture of seawater and caustic soda which is continuously recirculated. The only overboard discharge is seawater used for cooling.

Hybrid

The hybrid system provides both options and can be run in open or closed loop mode depending on the vessel's operating environment.



Hybrid System



Scrubber

The scrubber is a non-pressurised cylinder with no internal moving parts or filters.

Recirculation Module

Supply and return pipes are made from Glassfibre Reinforced Epoxy (GRE). This is lightweight and corrosion free. The recirculation pumps have redundant backup and are automatically adjusted based on feedback.

Alkali Feed Module

This module automatically adjusts the pH level in the wash water based on feedback, taking account of both exhaust load and system efficiency.

NaOH

To neutralise the acidity of the exhaust gas, Caustic Soda is added just before the entrance to the process tank, for optimum mixture. This process is automatically controlled.

Automation and Control System

The scrubber system constantly monitors the quality of both the wash water and the exhaust gas to provide automatic control. Once the system is turned on, it runs automatically. The scrubber constantly adjusts to minimise energy consumption and control the wash water pH and turbidity level.

Head Office

**Shanghai Bluesoul Environmental Technology
Room 1707, 2#, 155 SongBao Rd
Shanghai
China**

**T: +86-21-56176755
E: info@blue-soul.cn**

www.blue-soul.cn

Agents (Europe and Singapore)

**Tritec Marine
Alba House
2 Central Avenue
Clydebank
United Kingdom
G81 2QR**

**T: +44 (0)141 876 3230
E: bluesoul@tritec-marine.com**

www.tritec-marine.com/blue-soul

