

ABOUT BALLAST WATER MANAGEMENT SYSTEM

S&SYS PRODUCT BROCHURE

Purimar™

Eco-Purimar™

BWMS

Purimar™

Indirect electrolysis-based stable and efficient ballast water system

During ballast water management, the Purimar™ management process consists of two main stages: mechanical separation and disinfection. When discharging ballast water, the neutralization unit reduces the concentration of Total Residual Oxidants (TRO).

Eco-Purimar™

Eco-friendly, high-efficiency system using Micro Bubble technology

The Eco-Purimar™ system is designed based on Micro Bubble technology to meet the IMO and USCG requirements for ballast water management systems.

During the ballasting process, treatment is carried out in two stages. The first stage involves hydrodynamic cavitation through the Bubble Burst Pipe (BBP), where rapid changes in pressure and temperature effectively destroy organisms and bacteria present in the ballast water. The second stage uses the Bubble Burst Filter (BBF, 40 µm precision) for mechanical separation, removing remaining particles, sediments, and microorganisms to ensure complete treatment efficiency.



Space-saving design



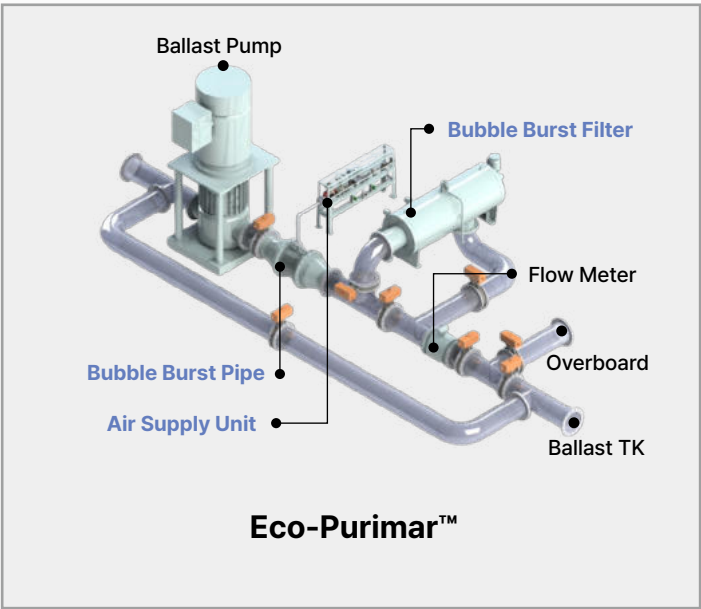
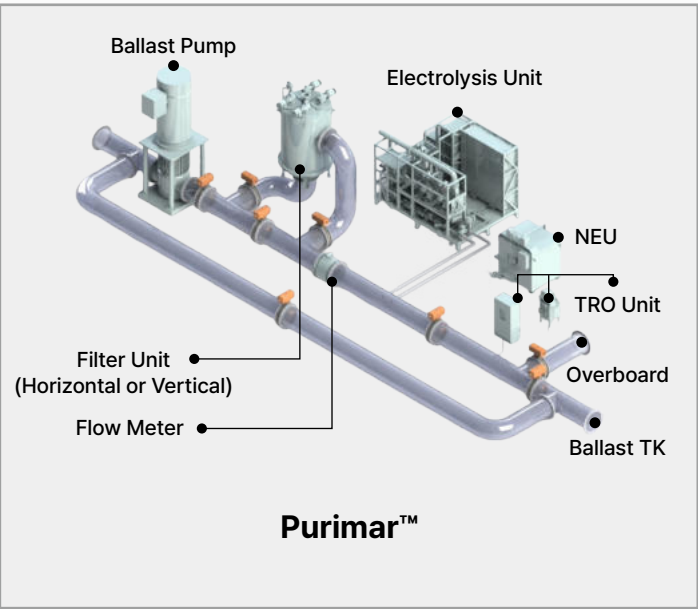
Non-toxic byproducts



Anti-corrosion & Coating protection



Cost saving



Eco-Purimar™ Definition

Bubble Technology

ISO 20480 standardizes bubble generation technology

ISO 20480 defines the terminology, classification, and measurement methods for Micro bubbles, which are gas bubbles smaller than 100 micrometers used in applications such as water treatment, cleaning, and agriculture.

Micro bubble

Micro bubbles are gas bubbles ranging from 1 to 100 micrometers in diameter, positioned between nanobubbles (<1 µm) and Fine bubbles (>100 µm). They stay suspended in water longer than larger bubbles, giving a white, cloudy appearance.

Due to their high internal pressure and large surface area, microbubbles promote gas dissolution and generate reactive oxygen species (ROS) upon collapse. These effects enable them to sterilize marine plankton, bacteria, and microorganisms in ballast water and other aquatic systems. Today, microbubble technology is widely used in water treatment, cleaning, and agricultural applications for safe and eco-friendly disinfection.



ISO Standard

Overview of ISO 20480 Series

- ISO 20480-1:2017 — Terminology for Fine Bubble Technology
- ISO 20480-2:2018 — Categorization of Fine Bubbles
- ISO 20480-3:2021 — Methods for Generating Fine Bubbles
- ISO 20480-4:2021 — Terminology Related to Microbubble Beds
- ISO 20480-5:2023 — Terminology for Shelled Bubbles

Specification

System Specification

The Eco-Purimar™ system clearly defines its operational limits and performance indicators, ensuring stable and reliable operation across various marine environments.

Item	Operation Limitation
Type	Filtration + Hydrodynamic Cavitation(Bubble bursting)
Salinity	N/A
Hold Time	24h
BBF inlet Press.	Min.1.5 bar in ballasting operation.
Compressed air Press.	Min 3.5bar / Max 10 bar
Compressed air consumption	20~50 L/H per ballast water flow(m³/h) at ATM(Atmospheric Pressure)
Capacity	150 m³/h ~ 8000 m³/h
No limitation	Salinity, Temperature (Sea water, Ambient Temp.)

Considering point of Operation

It outlines key factors to consider during system operation, enabling users to operate the Eco-Purimar™ efficiently and safely in real ballasting and de-ballasting processes.

Items	Description
Treatment mechanism	Physical treatment, No used the active substance
	Ballasting(BBP+ASU+BBF), Deballasting(BBP+ASU)
System control method	Air volume & Pressure measurement

Requirement

Models

There are a total of 64 models, capable of meeting the ballast water requirements of any vessel.

- Non-Ex type : 32 models
- Ex type : 32 models

Power consumption

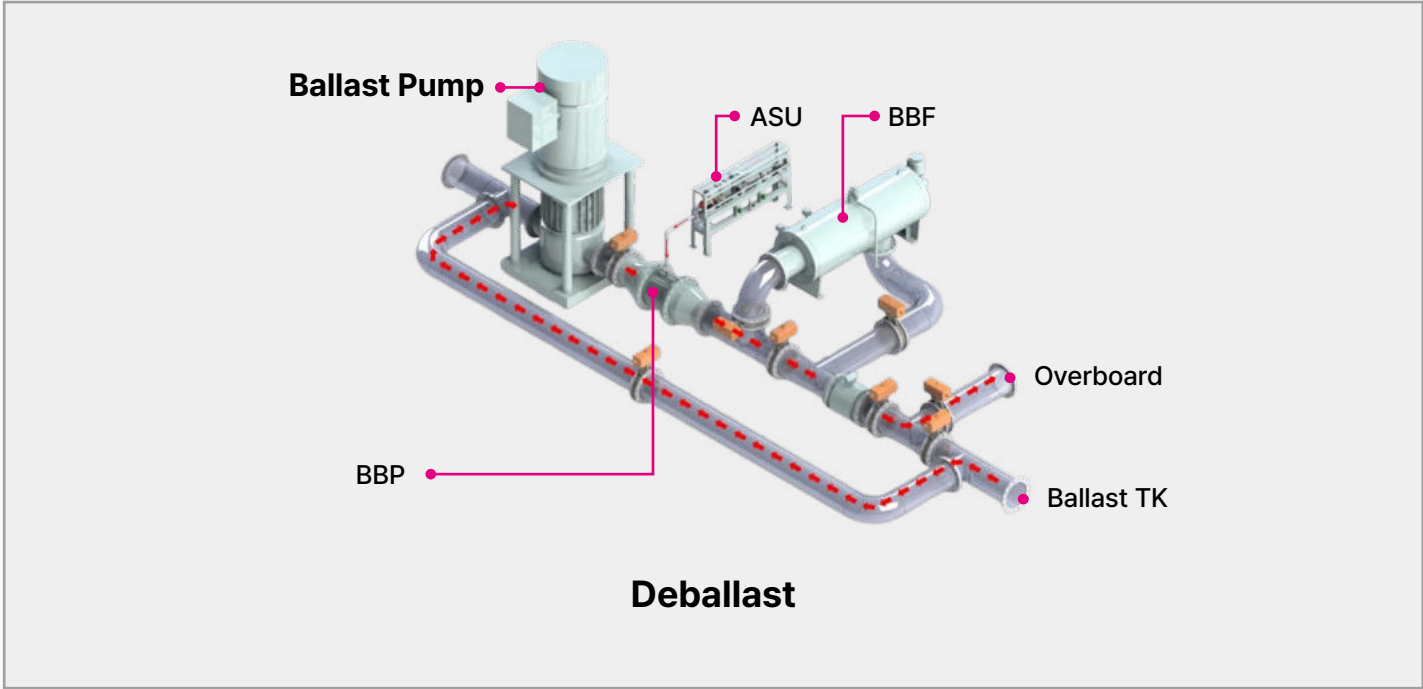
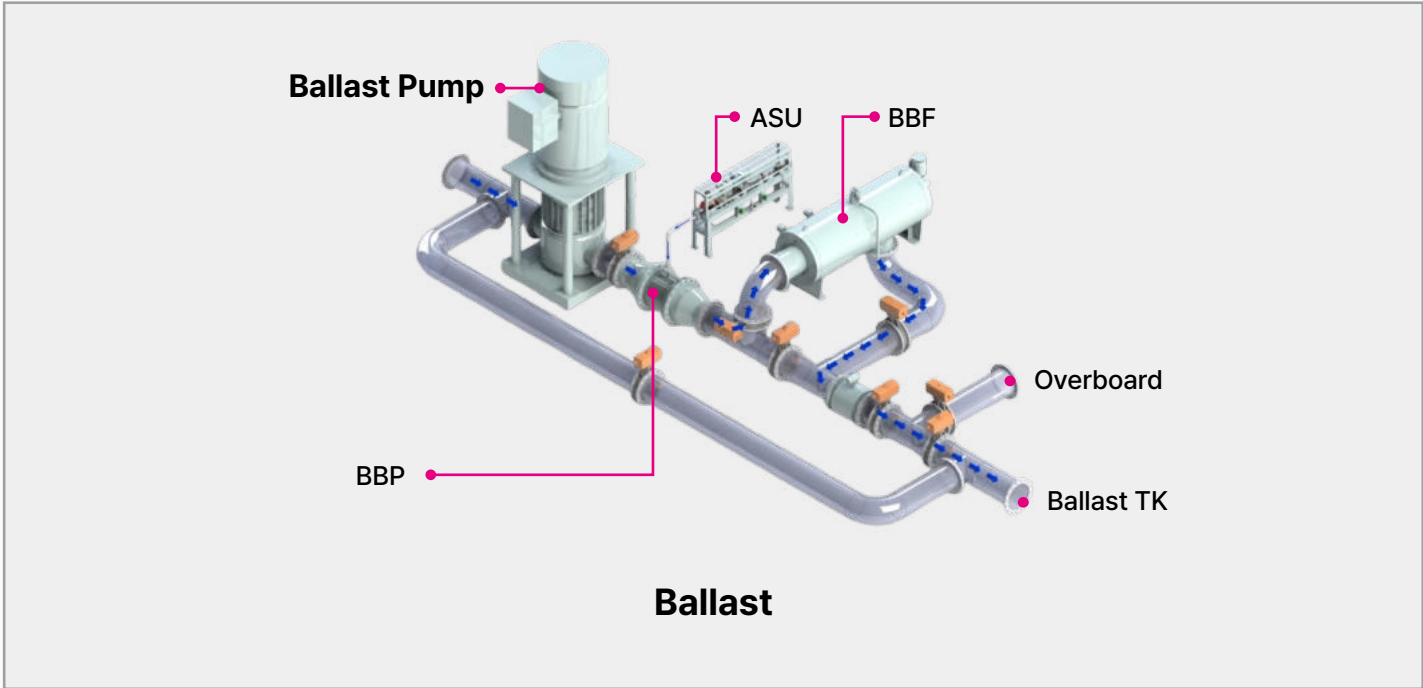
Calculated based on the non-explosion-proof type, which consumes more power than the explosion-proof model.

Model	Ballast Water Flow(m³/h)	Power consumption(kw)	Min. Air consumption (Nm³/h)
EP-150	150	24.8	3.0
EP-250	250	26	5.0
EP-400	400	26	8.0
EP-500	500	27.8	10.0
EP-750	750	27.8	15.0
EP-900	900	28.7	18.0
EP-1000	1000	28.7	20.0
EP-1200	1200	31.52	24.0
EP-1500	1500	31.52	30.0
EP-2000	2000	35.72	40.0
EP-2600	2600	41.18	52.0
EP-3000	3000	41.18	60.0
EP-3500	3500	45.38	70.0
EP-4000	4000	45.38	80.0
EP-5000	5000	62	100.0
EP-6000	6000	62	120.0
EP-7000	7000	70.4	140.0
EP-8000	8000	70.4	160.0

Specification

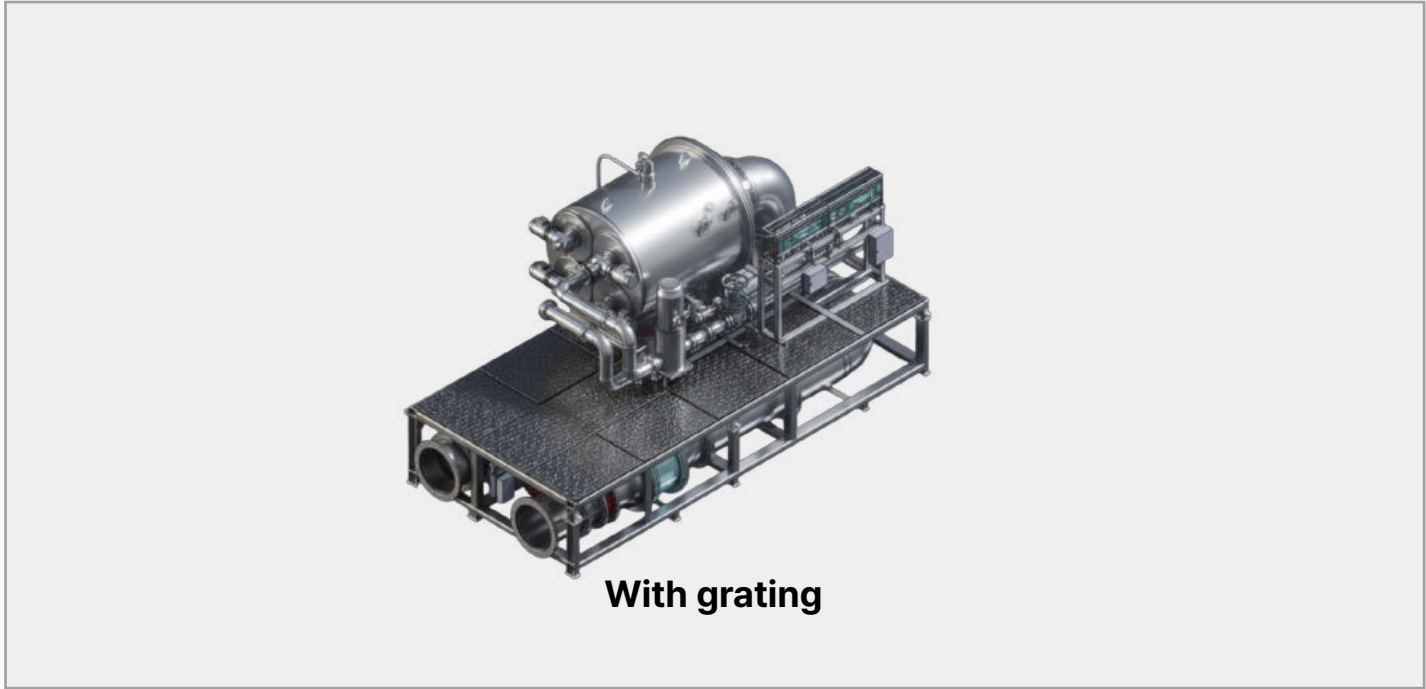
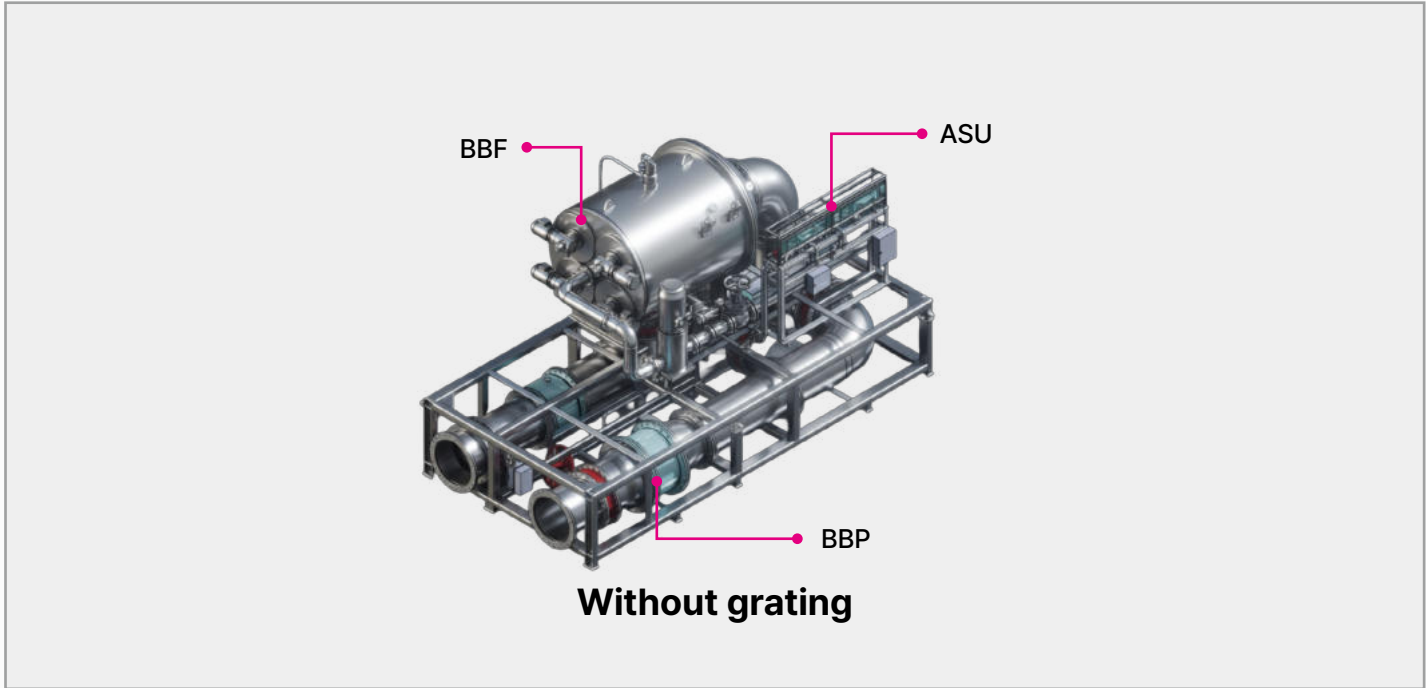
For Modularized System

A modular design that can be flexibly applied to suit the vessel's structure and layout conditions. It provides an optimized flow during ballasting and deballasting processes, ensuring easy installation and maintenance.



For Packaged skid system

Key equipment is provided in an integrated skid type, enabling easy installation and quick operation. With Grating / Without Grating options are available depending on shipyard requests or vessel conditions.



Major Equipment



BBP (Bubble Burst Pipe)

Function

- Generating bubble from compressed air of ASU

Design

- Nozzle Model Capacity : 150T(150m3/h), 250T(250m3/h), 500T(500m3/h)
- Pressure : 6bar/10bar/16bar



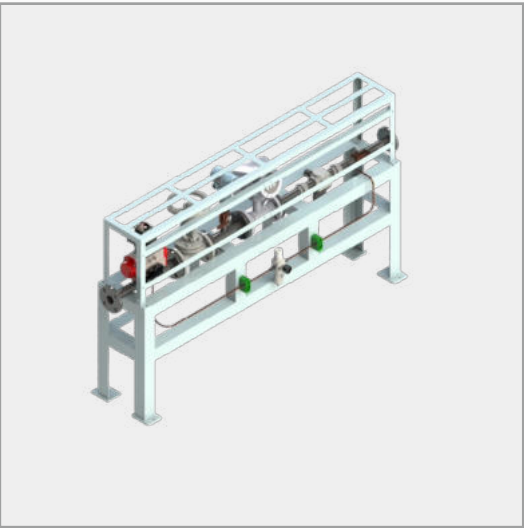
BBF (Bubble Burst Filter)

Function

- Remove>40µm organism & Particles
- Extermination of organisms & bacteria

Design

- Pressure : 6bar/10bar/16bar
- Flow rate : 150 ~ 4000(m3/h)
- Element Rating : 40 µm
- Inlet Press : Min 1.5bar at Ballast operation
- Ex & Non-Ex type



ASU (Air Supply Unit)

Function

- Air supply system(From compressed air of vessel to BBP)
- The control for air injection to BBP

Design

- Pressure : 10bar
- Ex & Non-Ex type

Loose Part & Supply Scope



MCP (Main Control Panel)

Function

- Mornitoring, Alarm, Shut down
- Power supply
- Interface with ship's Automation & VRCS

Design

- 440VAC 3PH, 220VAC, DC24V
- 800(W) x 600(D) x 1800(H)



FLOW METER

Function

- Measuring ballast water flow rate

Design

- A. Electrode type
 - Range : 0.3~ 12m/s
- B. Flow sensor type
 - 0.04 ~ 3m/s(Absolute)
 - 0.04 ~ 6m/s(Relative)

Standard Supply

	ITEM
Major Equipment	BBP
	BBF
	ASU
Loose Part	MCP
	Flowmeter

Optional

Remote valve (Butterfly valve)
For Shut / Open
For Throttling

MCP

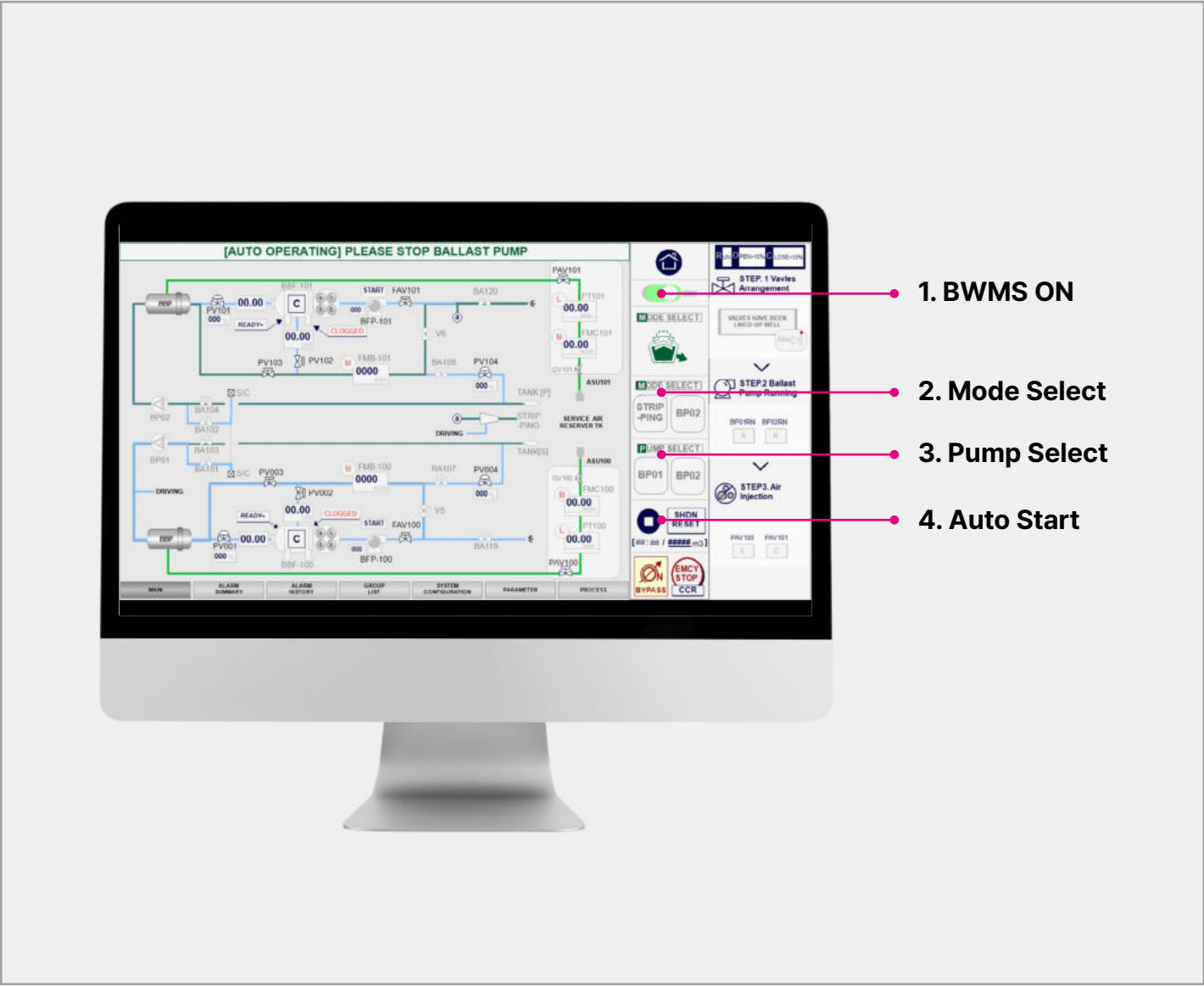
Mimic Display Operation

Easy and Simple Operation!

The Eco-Purimar™ system allows easy operation through an intuitive mimic screen.

By simply following the sequence — BWMS ON → Mode Select → Pump Select → Auto Start — the ballast water treatment process is automatically executed.

Anyone can operate it quickly and safely without complex procedures.

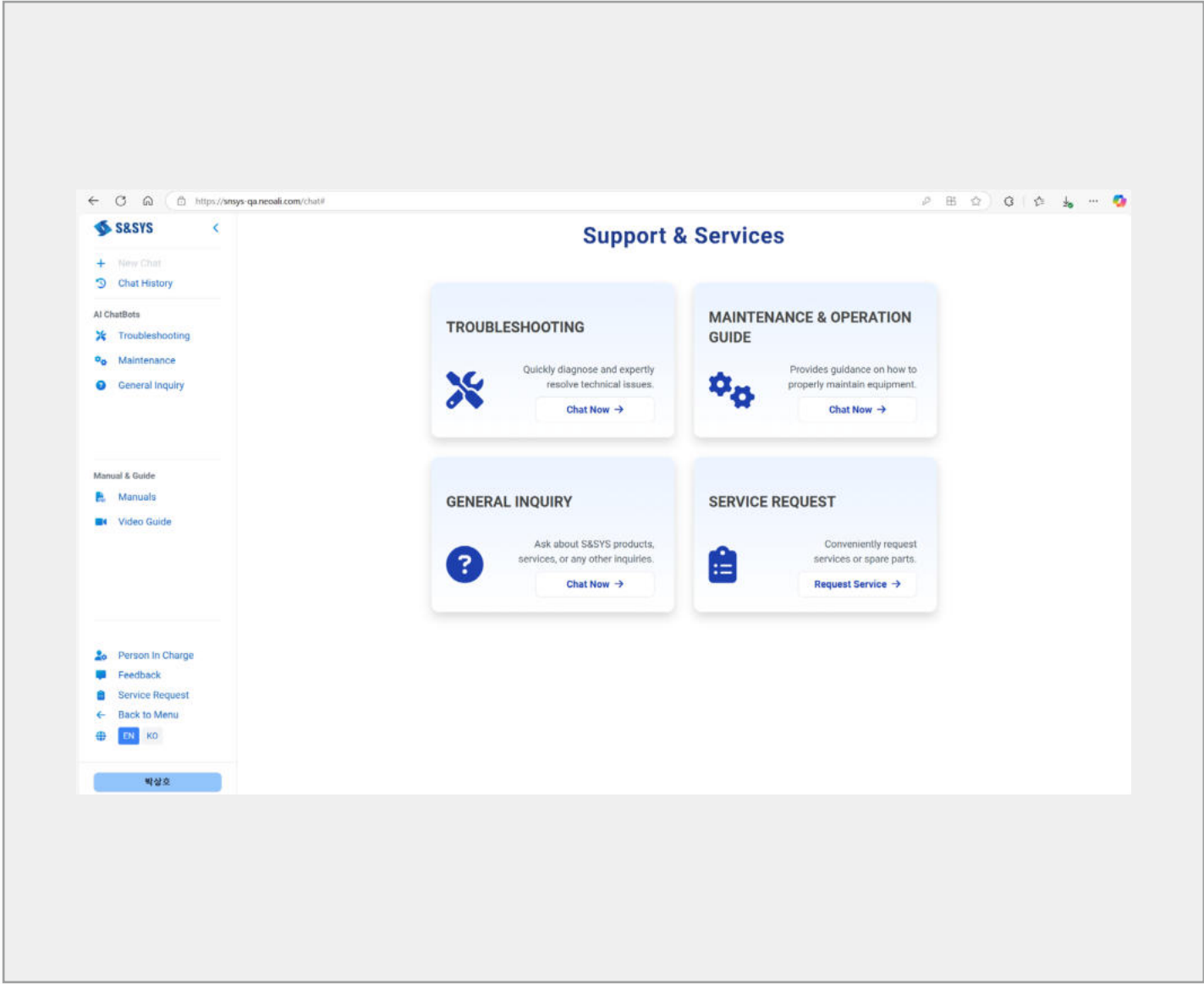


AI Customer Support

Support & Services

AI solves your problems.

S&SYS provides AI-based customer support to quickly resolve equipment failures or issues that occur during vessel operation. Real-time support is available for BWMS, automation systems, and switchboard solutions, offering an AI platform that anyone can easily access.





Beyond Technology, Toward a Sustainable Tomorrow.

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