

Ballast Water Management System PURINAR TM

PURIMARTM

PURIMAR[™] Ballast Water Management System

PURIMAR[™], Ballast Water Management System is a safe and eco-friendly system to meet IMO's regulations, as it effectively eliminates organisms harmful to ecosystem and underwater environment. At the same time, it reduces active substances used in the process of neutralization process to the harmless level for environment and discharges them thereafter.

Certification & Approval Status



- 02 - 03

USCG Certificate of Approval on June 15, 2018

Operation Limitation	Solutions & Advantages
Salinity : N/A	-
Ambient Temp : 0 - 55℃	-
Electrolyte Feed Temp : 4 - 40°C	Below 5℃, a heater is used.
Hold Time N/A (Marine Water) N/A (Brackish Water) 24 Hours (Fresh Water)	24 hours Hold time limitation only for Fresh Water.
Electrolyte Feed Salineity : 10 PSU	Sea water is stored and utilized from AP tank in fresh water area.
Filter Inlet Pressure : 0.5 bar	With lower inlet pressure, more flexibility in filter installation level.
Total Residual Oxidant (TRO) : 2.5-3mg/L(PPM)	Low TRO enables to consume lower power in ballasting and little neutralizer during de-ballasting.

Coast Guard Approval Number : 162.060 /8/0

• Capacity : 250 - 10,000 m³/h

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PURIMAR[™] Model & Mode

PURIMAR™ MODEL

MODEL	BALLAST WATER FLOW (m'/hr)	POWER CONSUMPTION (KW)	FOOTP RINT (m)	MODEL	BALLAST WATER FLOW (m'/hr)	POWER CONSUMPTION (KW)	FOOTP RINT (m)
SP-50	500	16.2	11.0	SP-500	5,000	117.2	19.8
SP-100	1,000	26.3	11.8	SP-600	6,000	136.5	22.4
SP-150	1,500	38.1	13.3	SP-700	7.000	164.9	27.7
SP-200	2,000	47.8	14.1	SD 800	8 000	19/1 0	10.4
SP-250	2,500	59.2	15.1	3F-000	0,000	104.2	15.4
SP-300	3,000	69.6	15.2	SP-900	9,000	203.6	30.8
SP-400	4,000	92.1	17.0	SP-1000	10,000	222.9	32.3

Power Consumption : Operating condition 20deg.C, 30PSU, excluding backflushing pump power.

Power Consumption was calculated on the base of Bulk Carrier standard design.

S&SYS has the explosion-proof model for each treatment capacity.

Ballasting / Deballasting Mode





PURIMAR[™] Arrangement

Arrangement in Vessel Type

LNGC, Container & Bulker





Tanker with Conventional Ballast Pump





PURIMAR[™] Arrangement

Tanker with Submerged Ballast Pump





PURIMAR™ Master schedule

Lead time for BWMS (based on ETD Busan port)

- 7.0 Months after contract when we supply equipment & engineering
- 5.5 Months after contract when we supply equipment only



• Installation & Transportaion perids depend on retrofit shipyard location.

• Installation period could be changed according to the repair shipyard ability or D/D period.

: 2 weeks for installation (1 week for dry-docking, 1 week for quay side) assumed.

• Installation & Fabrication of Installation Material is out of scope.

PURIMAR™ Main Components

Electrolysis Unit

Best Performance for high flow ballast water

- Modularized Design
- Low Power Consumption
- Small Footprint / Weight
- Easy Maintemance





Electrolyzer

- Module capacity : 500m²/h, 1000m²/h
- Use the MOS-FET Rectifier
- Module Connection : Parallel
- Capacity Range : 250~10,000mⁱ/h



Advantage 🔆

- Prevent scales : LSE (Low Scale Electrode) system
- Pressure-resistant construction : Over 10 Bar
- No dead space area : the four corners of a square electrode
- Electrode monitoring system
- Performance verification check \rightarrow Alarm signal
- Easy maintenance : Replaceable each electrodes

Filter

- Filter Capacity (m²/hr) : 250,500,750,1000,1500,2000,2500, 3000,3500,4000,4500
- · Back-flushing pump : Enforced self cleaning
- Removal rate : Over 99.9%
- Pressure ranges : 5bar, 16bar

	Auto Backflushing Filter	Element	Item	Description
			Model	11 model
ing		6 20	Filter Capacity (m'/hr)	250,500,750,1000,1500, 2000,2500,3000,3500, 4000,4500
	and the second s	Back-flushing pump Filtration ratings Removal rate Housing materials Material of elements Internal corrosion protection Pressure drop Back flushing pressure Electrical protection class	Back-flushing pump	Enforced self cleaning
			Filtration ratings	Mesh 50µm Crease
			Removal rate	Over 99.9%
			Housing materials	Carbon steel
-			Material of elements	SUS316L
			Internal corrosion protection	P.E Coating
			Pressure drop	Normal 0.2bar, Max 0.5 bar (Back flushing)
			Back flushing pressure	Filter Outlet Pressure + 3bar
			Electrical protection class	IP44, IP55, IP56
			Pressure ranges	5bar, 10bar, 16bar

PURIMAR[™] Solution

Low Temperature & Low Salinity Solutions



• World Port Ranking - 2008 (American Association Port Authorities - Total Cargo Volume)

PURIMAR™ is installed in various vessels (Bulk Carrier, Tanker, Product Oil Carrier, LNGC & Container, etc.)



PURIMAR[™] Control System

System integration with Vessel Automation System



The Integration with Vessel Automation System

- · PURIMAR[™] system that consists of SSAS-Pro can be interworked with Vessel's Automation system.
- \cdot Integration package based on SSAS-Pro can achieve cost reduction and optimization of system configuration.

User Interface of PURIMAR™

PURIMAR's UI is designed user-friendly by GITOS(Graphic Intelligent Tools of Systems) which is a process control system of SSAS-Pro and provides the most optimized automation system. Through the UI, it is able to build an environment in which a user can operate PURIMAR in a simple and easy way.

Main Function

- · Various user interface
- · Ballast / Deballast mode function
- Monitoring & Alarm function
- \cdot Data logging function
- \cdot Global position indication function by user command

Ballast / Deballast Mode

- \cdot User selection function by ballast / deballast mode
- · Automatic control by ballast pump driving
- \cdot Automatic control by optimum solution



OPURIMAR™ Global Network



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JAPAN	🚨 Orient Marine Co.,Ltd.	Australia UNION	** 🏝 Sales Ägency



S&SYS Co.,Ltd.		Sales Department	Service Department	
Hwaseong Office	SK V1 center, 7F, 830, Dongtansunhwan-daero, Hwaseong-si, Gyeonggi-do, Republic of Korea(18468)	TEL +82-(0)31-229-1044	TEL +82-(0)31-229-1321	
Busan Office Chilseo Factory	10, Gwangjang-ro, Sasang-gu, Busan, Korea(46971) 89,Gongdanseo2gil,Chilseo-myeon,Haman-gun, Gyeongsangnam-do, Korea(52001)	E-Mail sales@snsys.net	E-Mail csas@snsys.net Web www.snsys.net	
http://www.snsys.net http://www.shipcs.com				

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