

BALLAST WATER MANAGEMENT SYSTEM

PURIMAR™



ANNUAL SERVICE PACKAGE

ANNUAL SERVICE PACKAGE



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03. TIME & COST SAVING BY ASP

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■ ASP: ANNUAL SERVICE PACKAGE



■ SENSOR CALIBRATION

▣ Overview



Introducing

- ▣ Calibration Service is a service to verify and correct that all sensors and transmitters represent the correct values for PURIMAR system.
- ▣ This service can save money and allow you to use PURIMAR accurately and safely.
- ▣ This also provides general inspection of the system and can provide demonstration to Seafarers on board.

Benefits

- ▣ You can check the exact operation of the system.
- ▣ You can save cost and time by calibrating, repairing and checking all sensors and transmitters of the system.
- ▣ It is possible to prove the normal operation of the system through a CERTIFICATE OF SENSOR CALIBRATION after the Calibration service.

SENSOR CALIBRATION

Calibration & Inspection List

No.	Unit	Item	Model	Working scope			Cycle	Remark
				Inspection	Calibration	Replace		
1	Filter Unit	Pressure transmitter (Danfoss)	MBS3100 MBS4701 P40M	●			1 Year	
2		Pressure transmitter (Emerson)	2051	●			1 Year	
3	Electrolysis Unit	H2 sensor	GTD-2000Ex		●		6 Months	
4		Conductivity sensor	CTI-500	●			1 Year	
5		Flow meter	CN-100	●			1 Year	
6		Pressure switch	901	●			1 Year	
7		Level switch	FTL51C	●			1 Year	
8		Pressure sensor	MBS3100 P40M	●			1 Year	
10		Temperature sensor	TR34	●			1 Year	
11	Neutralization Unit	Pressure switch	P941	●			1 Year	
12		Level switch	LS-TM	●			6 Months	
12	TRO Unit	TRO sensor	CLX-XT CLX-EX	●			1 Month	T-strainer and Glass cuvette
						●	3 Months	Indicator of reagent kit
				●			3 Months	Check valve and Pump tubing
						●	1 Year	Buffer of reagent kit
		●			1 Year	Tubing of cap assembly for reagent		
13	Flow Meter	Flow meter (FC Korea)	CN-100	●			1 Year	
14		Flow meter (Krohne)	OPTIFLUX	●			1 Year	
15	TRO Drain Tank	Level switch	FMS-XH-WS-T	●			6 Month	

- The above list is a sample, and the item and model are applied differently for each ship.
- If a problem is found after inspection, S/E will try to repair it. If it is not able to be repaired on board, the sensor may need to be replaced.

SENSOR CALIBRATION

Certificate & Report



Certificate

S&SYS SAMSUNG HEAVY INDUSTRIES

(C) CERTIFICATE

Creation Date: 2021-09-08
Date of Issue: 2021-09-08
Expiry Date: 2021-09-08

CERTIFICATE OF SENSOR CALIBRATION

Name of Vessel
Owner
IMO Number

1. This certificate bears witness that the above vessel has successfully completed SENSOR CALIBRATION on PURMAR Ballast Water Treatment System.

1) Serial Number
2) Manufacturer
3) Inspection Place
4) Date of Calibration tests

2. The items of calibration tests have been examined in accordance with Sensor calibration & maintenance. CERTIFICATE OF SENSOR CALIBRATION is valid for 12(Month) after issuance, and you can refer to the detailed results of the sensor.

3. The undersigned hereby approves the authenticity of this certification.

Name: Younghoon Kim, Leader of Customer Support Team
Signature: *[Signature]*

Customer Support Team



Report

S&SYS SAMSUNG HEAVY INDUSTRIES

(C) REPORT

1. Vessel Information

IMU No. / Name	IMO
Owner	Vessel Type

2. Service Information

Date	Location
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3. Engineer Information

Name

4. Applicable Sensor

No.	Sensor	Ex	OK	Alarm	OK
1	PI (Pressure transmitter)				
2	MI (MI sensor)				
3	COG (Conductivity sensor)				
4	FFW (SLS Flowmeter)				
5	FFW (SLS Pressure switch)				
6	SLS (SLS Level switch)				
7	PT (Pressure transmitter)				
8	ETV (Temperature transmitter)				
9	SPS (SDI Pressure switch)				
10	MSL (MSL Level switch)				
11	TRD (Flowmeter)				
12	FM (Flowmeter)				
13	TRD Drain Tank Level switch				

Customer Support Team

S&SYS SAMSUNG HEAVY INDUSTRIES

S-F FF (Pressure Transmitter)

No.	Make	Ex or Name	Serial No.	Replacement
1				
2				
3				
4				

Working Scope	Inspection	Calibration
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Result

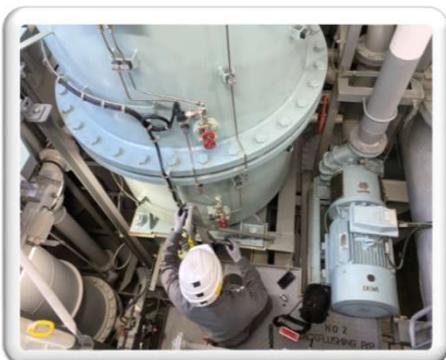
Remark

(Print)

Customer Support Team

- the Certificate is issued after confirmed the normal operation of all sensors.

QUALITY MAINTENANCE



S&SYS PURIMAR		O&M / PMS QUICK GUIDANCE		
PMS No.	Subject	Description	Remark	
D Daily	MCP	1. Check CCR and MCP(local) Monitors fault alarm. 2. Press reset button for temporary alarm.	1. Inform the detail to S&SYS if the alarm is repeated.	
	TRD	1. Check TRD drain inside cabinet keep dry , clean condition.		
	NEU	1. Check NEU system visual , tank level gauge and leakage.		
W Weekly	Visual Check	System Visual check : Damage or Leakage (Keep clear) * ELE skid → NEU skid → Filter → TRD → Flowmeter → Booster pump → (PUMP ROOM) → Filter → TRD → Flowmeter		
	SYSTEM	TRQ,ELE,NEU Valves Manual On/Off test on MCP SMCU screen 1. TRD Sol valves 2. ELE inlet / outlet / Fan pneumatic valves 3. NEU skid valves	Please see the sample INSTRUCTION_001	
	FILTER	1. Check visually the solenoid valves and air regulator 2. Push the Sol test button (for Filter backflushing outlet line) and check valve open/close normally 3. Check Control Air Pressure	Please see the sample INSTRUCTION_002	
	TRD	1. Check reagents color , level + Indicator and Buffer 2. Check TRD Cooling chamber : Normal Operation / POWER ON	ANNEX 02	
M Monthly	SYSTEM	1. Run the BWMS system Ballast / Deballast. 2. Check Pressure, Flow, Rectifier current and TRD values 3. Flush Ballast main Line and Filter in open sea, if required. 4. Watching PURIMAR system videos (total running : 40min)	See the OMSM manual SEA TO SEA MODE 9 Training videos	
	MCP	1. Transfer Report manager 2. Check the generated Log converter data		
	TRD	1. Check Reagents date 2. Check and clean the TRD T-strainer 3. Check reagent color , quantity and expiry date 4. Air inlet clean, dry condition and pressure	Indicator 3months Buffer 1year	
	TRD (in operational)	1. (During BWMS system running) Check TRD sampling, detecting and drain condition	Please see the sample INSTRUCTION_003 See the TRD sensing tutorial video	
	FILTER	1. Check valve,pump,pressure during operation 2. Manual check time / Open to Close , Close to Open.		
	BOOSTER PUMP	1. Check leakage or damaged		
	FLOW METER	1. Check system alarm in local and Skid converter (4pcs)		
	TRD	1. Check TRD Cuvette : Breakage & Leakage / Air bubble 2. Flushing the TRD tube and check valve by syringe	Refer the Training video	
	MCP	1. Check the all bolts connections are tighten in MCP & PDP panel 2. Clean or Replace the cabinet door filters. 3. Clean or Replace the Rectifier front/rear filters		
Q Quarterly	NEU	1. Open outlet valve and run Pumps manually / operation test. 2. Check Neutralizing solution leakage in pumps, line and valves. 3. If white solid leakage is founded, Clean it with fresh water.		
	ELE SKID	1. Carry out H2 sensor calibration	Please see the video manual	
	A // Recommended Annual or O&M Maintenance (depends on the vessel operation hours)			
	A Annual	ELE SKID	1. Check and clean the Electrolysis skid strainer 2. ACID cleaning 3. Check the Rectifier operation hour record	See the OMSM manual
FILTER		1. Open Filter cover and clean the element. 2. Replace the element O-ring. 3. Check the Reducer Oil 4. Replace 'Cover gasket', 'Reducer Oil seal', 'Reducer bearing', ETC.	See the OMSM manual	
Heat Exchanger		1. Check the protecting anode and replace it, if necessary. 2. Check the leakage and tubes. 3. Claning of inside of tubes , if necessary.	See the OMSM manual	

CONSULTATION FOR SPARE PART & CONSUMABLES



Onboard Spare Parts List

Description	Applied equipment	Item	Installed Qty	Recessed Qty	Critical Qty	ISA	PRICE (USD)	Remarks
TRD		TRD SENSOR (New-E)	2	1	1	SET	8,822	8,822
		TRD SENSOR (E)	0	0	0	SET	21,721	0
		DRAIN CHECK VALVE FOR TM	2	2	2	EA	128	256
		SAMPLING PUMP	2	1	1	EA	888	888
		INTAKE SOL. VALVE	42	1	0	EA	527	527
REDUCER BOX CLAMP		REDUCER BOX CLAMP	2	1	1	EA	42	42
		REDUCER BOX CLAMP	2	1	1	EA	4	4
		ELUVENT GASKET	2	2	2	SET	7	14
		PRESSURE TRANSDUCER (New)	2	1	1	KIT	1,244.88	1,244.88
FILTER		PRESSURE TRANSDUCER (AV)	0	0	0	KIT	1,244.88	0
		BACKFLUSHING DRAIN SOL. VALVE (New-E)	2	1	1	EA	187.88	187.88
		BACKFLUSHING DRAIN SOL. VALVE (E)	0	0	0	EA	468.88	0
		NOPI I-2 card	4	2	1	EA	2,884	8,192
OPI-2 card		OPI-2 card	0	1	1	EA	848	848
		OPI-2 card	0	1	1	EA	788	788
		OPI-2 card	2	1	1	EA	1,521	1,521
		OPI-2 card	1	1	1	EA	2,421	2,421
MCP		SSAG P-1 CPU Base board	4	1	1	EA	527	527
		SSAG P-1 I/O Base board 8ch	1	1	1	EA	527	527
		SSAG P-1 I/O Base board 16ch	7	1	1	EA	527	527
		SSAG P-1 I/O Base board 24ch	6	1	1	EA	527	527
		SSAG OPERATING PC FOR MCP	2	1	0	EA	1,911	1,911
		DISKETER VARIATIONAL PARTS	1	1	1	EA	108	108
ELECTROLYSIS		PRESSURE TRANSDUCER	1	1	1	EA	360	360
		CONDUCTIVITY SENSOR	1	1	0	EA	1,987	1,987
		NO GAS SENSOR	1	1	0	EA	1,328	1,328
		STT SENSOR	1	1	0	EA	1,141	1,141

	EQUIPMENT	SPARE PART	Q
1	Backflushing Pump	Mechanical seal	4
2	Electrolysis unit	Screen perforating for strainer	6
		Fuse for rectifier	9
3	TRD sensor unit	Tubing / Cuvette kit	1
		Check valve set	2
		Check valve flushing kit	1
		Gasket	2
		Tube	5
		Protecting anode Material : Zinc(Zn)	2
		Nylon brush	1

ASSESSMENT

CONSULTATION

SUGGESTION

ASP INTRODUCTION

CREW TRAINING & FAMILIARIZATION



TRAINING COMPLETION REPORT

NO	ITEM	RANK	TRAINEE NAME	SIGNATURE	
1	BWMS SYSTEM	Officer	LEE, JONG	[Signature]	
2		Officer	MILAZ, VIKING	[Signature]	
3		Officer	PARK, JUNG	[Signature]	
4		Officer	BOLLOA, KIMHONG WOOK	[Signature]	
5		Officer	CHOI, JONG WOO	[Signature]	
6		Officer	PARK, JONG WOO	[Signature]	
7		Officer	PARK, JONG WOO	[Signature]	
8					
9					
10					

WE CONFIRM THAT THE TRAINING IS COMPLETED AS BELOW.

NO.	ITEM	CONTENTS	RESULT
1	OPERATION	NORMAL BALLASTING	✓
		LOW SALT BALLASTING	N/A
		LOW TEMP. BALLASTING	✓
		DE-BALLASTING	✓
		STRIPPING	✓
		AP BALLASTING/DE-BALLASTING	N/A
2	OPTIONS	RECIRCULATION MODE(LNG)	N/A
3	LOG & REPORT	LOG CONVERTER PROGRAM	✓
4	LOCAL EQUIPMENT	REPORT MANAGEMENT	✓
		TRO.ELE.NEU.FILTER UNIT	✓

TRAINING DATE (YYYY-MM-DD):

TRAINER: Park Wook [Signature] / [Signature] - PARK JAE SEUNG [Signature]

Above work has been completed satisfactorily

Master/Customer

COMPANY: D.K

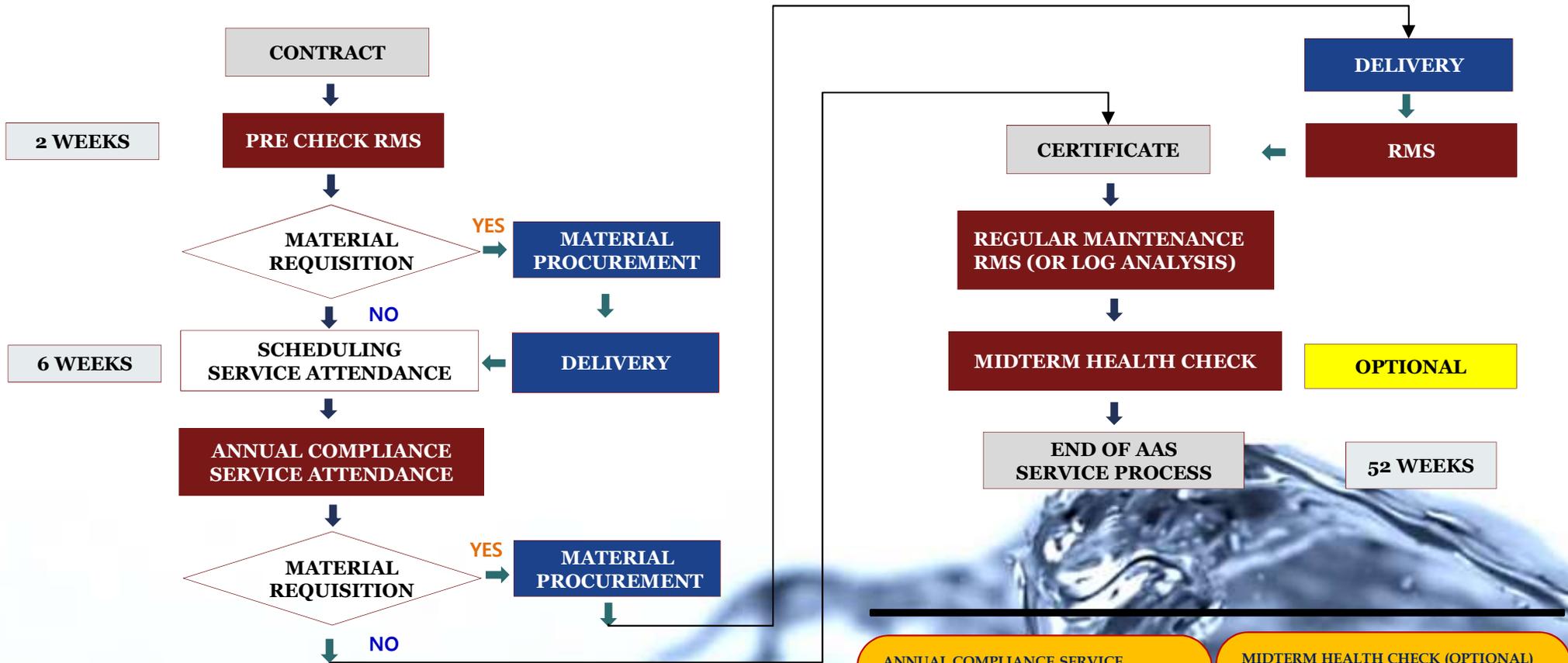
Person in charge

RANK: MASTER



< Authorized Full name & Signature (with ship's stamp) >

ANNUAL SERVICE PACKAGE PROCESS



※ Log Analysis will be substituted for RMS if RMS is not available.
 ※ Number of Regular Monitoring RMS is according to the contract.

- ANNUAL COMPLIANCE SERVICE**
- SENSOR INSPECTION/CALIBRATION
 - OVERALL SYSTEM INSPECTION
 - OPERATION TEST
 - LOG DATA ANALYSIS
 - CREW TRAINING
 - CONSUMABLES & SPARE PARTS SURVEY
 - SYSTEM UPGRADE SURVEY

- MIDTERM HEALTH CHECK (OPTIONAL)**
- SENSOR INSPECTION/CALIBRATION
 - OVERALL SYSTEM INSPECTION
 - OPERATION TEST
 - LOG DATA ANALYSIS
 - CREW TRAINING
 - CONSUMABLES & SPARE PARTS SURVEY
 - SYSTEM UPGRADE SURVEY

● WHY ASP?

■ WHY ASP?



SENSOR INSPECTION & CALIBRATION | MEPC 279(70)



TROUBLE FREE OPERATION BY QUALITY MAINTENANCE & ACTIVE SERVICE



CREW TRAINING ON THE EQUIPMENT & FAMILIARIZATION



EARLIER ADOPTION OF ANY UPDATE OR NEW REGULATIONS



OPTIMIZED INVENTORY PLAN & SPECIAL DISCOUNT!



■ WHY ASP?

ITEM	WITH ASP	WITHOUT ASP
	<ul style="list-style-type: none"> - . REGULAR MONITORING - . CREW TRAINING - . PROACTIVE SERVICE 	<ul style="list-style-type: none"> - . MALFUNCTION BY POOR MAINTENANCNE - . MALFUNCTION BY OPERATION ERROR - . MALFUNCTION BY SYSTEM BROKEN
SENSOR CALIBRATION	ISSUE AND RESERVE MAKER CERTIFIATE REF. MEPC 279(70) & BWM.2/Circ.66/Rev.4	INACTIVE; ACTUALLY PENDING
S/E TRAVELLING	FIXED DATE & LOCATION	UNEXPECTED & SUDDEN ARRANGEMENT
TIME & COST	OPTIMUM & MIN. TRAVELLING TIME & COST	RUSHED ARRANGEMENT; EXTRA TIME & COST
ADMINISTRATION	FREE FROM QUALITY REPORT, CLAIM REPORT OR FURTHER DISCUSSION	SPEND TIME FOR REPORTING & WAITING FOR THE SERVICE ARRANGEMENT OR DISCUSSION
MAINTENANCE PLAN	<p>“AS PLANNED” SEASONED ENGINEER MONITORS & SUPPORTS EQUIPMENT MAINTENANCE!</p> 	<p>“CHANGE PLAN” IF TROUBLE HAPPENS, MAINTENANCE PLAN MUST BE MODIFIED. TIME WASTING!</p>  <p>HEADACHE</p>

● TIME & COST SAVING BY ASP

■ HOW TO SAVE THE TIME & COST?

👉 SAVE TIME FOR ADMINISTRATION & LABOR COST



👉 PLANNED SHIP MANAGEMENT & FREE FROM UNEXPECTED SITUATION!

■ CUSTOMER BENEFIT



SPECIAL DISCOUNT FOR SPARE PART & CONSUMABLES

1. REPLACEMENT SPARE PART: UP TO 25%

2. EXTRA SPARE PART: UP TO 30% (IN 6 MONTHS)



S&SYS FOR CUSTOMER !



THANK YOU