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MARINOMATE™

Ballast Water Management System

SMALL FOOTPRINT
LOW POWER CONSUMPTION
NO CORROSION EFFECT
LOW INSTALLATION COST & MAINTENANCE COST
HIGH PERFORMANCE

KTM
KOREA TOP MARINE CO.,LTD.

THE BEST TECHNOLOGY FOR MARINE ECOSYSTEM PRESERVATION

MARINOMATE™ BWMS provides the best solution with energy-efficiency and high performance for ships ballast water treatment.

Company Profile

Company Name	KT Marine Co.,LTD.
Address	Room No. 1801 Centum IS tower, 60, Centum buk-daero, Haeundae-Gu, Busan, Korea
Telephone	+82) 51-441-0692~3
E-mail	ktm@ktmarine.co.kr
Website	www.ktmarine.co.kr
Establishment	1st May 2001
Main Business	Ship Management & Marine Supply Ballast Water Management System

Certificates and Patents

Certificate of Type approval from Government of Korea

Certificate of Final Approval from IMO (MEPC 67-2-4)

Certificate of Patent (No.10-1118055)

Certificate of Patent (No.10-1296207)

Certificate of Approval ISO 9001

Certificate of Approval ISO 14001

PREPARATION FOR THE BWMS INSTALLATION

01 STEP — PREVIEW
- Survey on the ship
- Select types of the BWMS

02 STEP — SHIP SURVEY
-Check the installation location, new pipelines, power supply etc.

03 STEP — SELECTION OF BWMS TYPES
-Check the price of the BWMS, construction cost

04 STEP — DRAWING MODIFICATION FOR BWMS
-Decision the specification of the BWMS and modification
-Order BWMS
-Obtain approval DWG by Class
-Make the working DWG and detailed construction DWG.

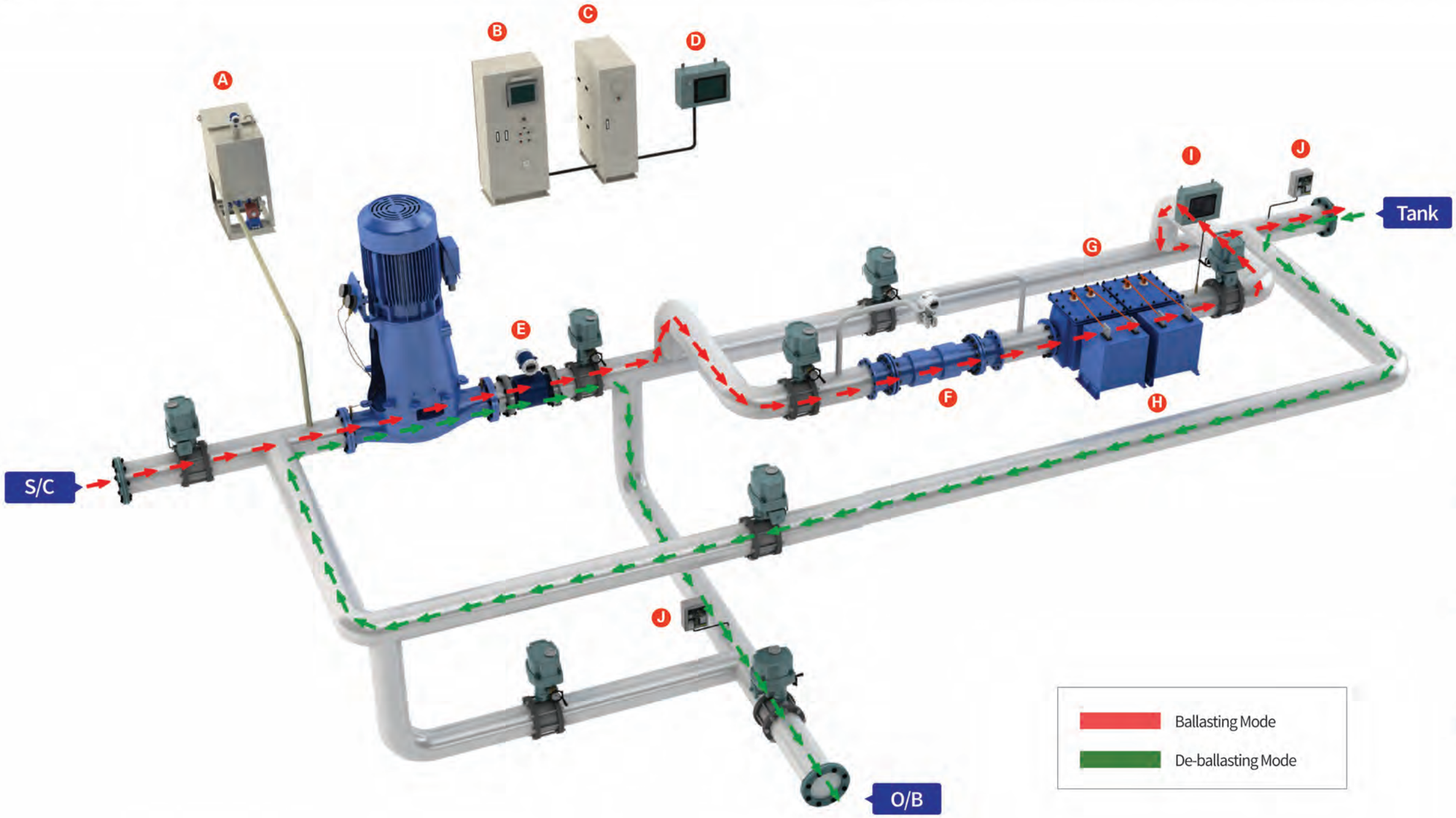
05 STEP — INSTALLATION/INSPECTION/FINAL CONFIRMATION
-Pipeline, BWMS installation, power supply, commissioning, class inspection, final confirmation

IMO D-2 & USCG Phase-1, 2 Standard

Category		Regulation	
		IMO, USCG Phase-1	USCG Phase-2
Aquatic organisms	in minimum dimension, < 10μm	-	< 1,000 bacteria/100ml < 10,000 virus/100ml
	in minimum dimension, ≥ 50μm	< 10 viable organisms/m^3	< 1 visible organisms/$100m^3$
	in minimum dimension, 10~50μm	< 10 viable organisms/ml	< 1 visible organisms/100ml
Human health	Toxicogenic Vibrio cholerae (serotypes O1 and O139)	< 1 CFU/100ml	< 1 CFU/100ml
	Escherichia coli	< 250 CFU/100ml	< 126 CFU/100ml
	Intestinal Enterococci	< 100 CFU/100ml	< 33 CFU/100ml

PROCESS

BALLASTING MODE



A **Neutralization Unit**
- Reduction of residual TRO in the ballast tank during deballsting
- Size : W 1m×D 0.7m×H 1.1m

B **MCU(Main Control Unit)**
- Control and monitor the operating status in real time

C **PDU(Power Distribution Unit)**
- Supply power to MARINOMATE components

D **CCU**
- Automatically monitor and control the MARINOMATE in cargo control room
- Touch panel PC Type

E **Flow Meter**
- Monitor flow rates of ballast pump during ballasting & deballasting
- Check optimal inlet flow rates of Electrolyzer during ballasting

F **Plankill pipe Unit**
- Reduction of aquatic organisms by physical effect as collision and turbulence
- No power supply, easy to install and maintain
- Size : L 1m

G **Electrolyzer Unit**
- Disinfect aquatic organisms in the ballast water
- Including rectifier & electrode by special coating

H **Rectifier**
- INPUT AC 440V
- OUTPUT DC 10V 2000A

I **Gas Detector**
- Measure the concentration of hydrogen gas generated after electrolysis in an electrolyzer. An alarm occurs when the concentration exceeds a certain level.

J **TRO Sensor**
- Monitor TRO values during ballasting & deballasting

ADVANTAGES

1 Small footprint

· Can be installed by a skid arrangement with compact, modular type

2 Low power consumption

· Based on 1,000 m^3/hr capacity, power consumption under 30kwh (>30psu)

3 No corrosion effect

· The result of the corrosion test proves that there is no effect of corrosion on ballast tanks and pipe lines

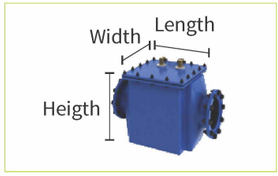
4 Low installation cost & maintenance cost

· Installed directly due to its compact size and modular type
· Can install within a few days during voyage
· No filter system, and can save the replacement cost of filters

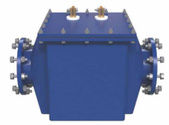
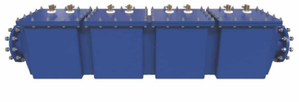
5 High performance

· The MARINOMATE™ generates disinfectants having residual effects that can disinfect aquatic microorganisms in the ballast water
· High reliability on inhibition of re-growth of microorganisms

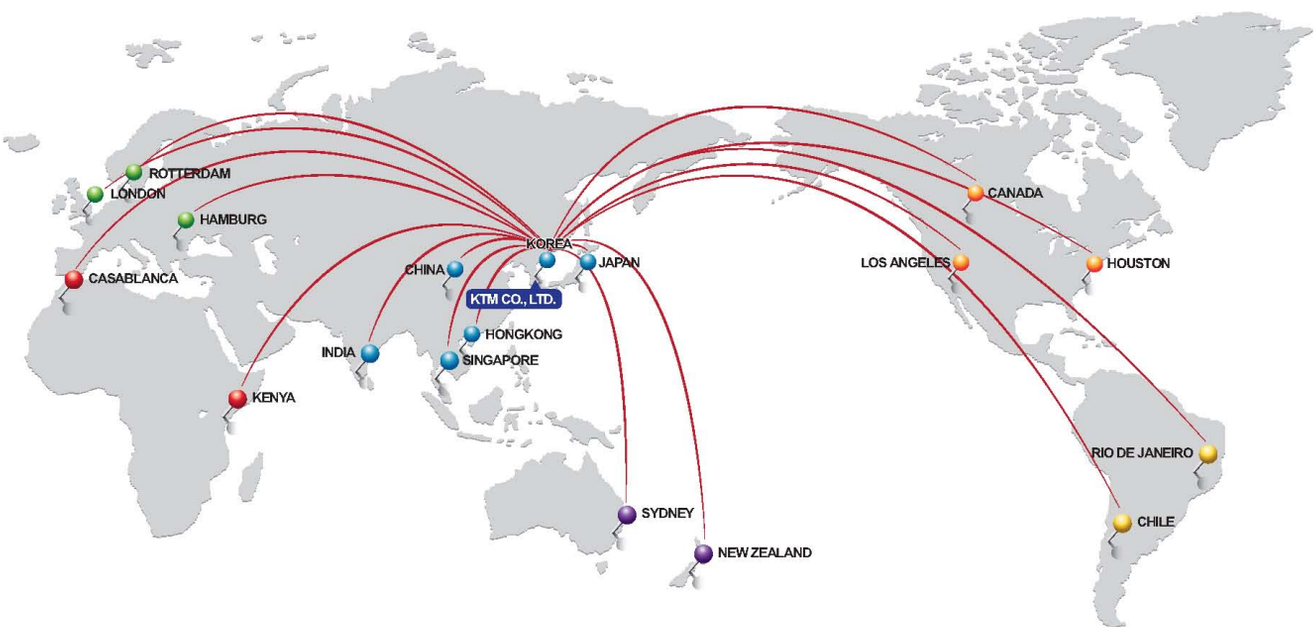
TYPICAL DESIGN MODEL



TYPICAL DESIGN MODEL

Model	Ballast Pump Capacity	Power consumption	Size (Unit : mm)
 MARINOMATE-150	150m^3/h	4kw	750(L)X229(W)X405(H)
 MARINOMATE-300	300m^3/h	8kw	750(L)X458(W)X405(H)
 MARINOMATE-600	600m^3/h	16kw	1500(L)X458(W)X405(H)
 MARINOMATE-900	900m^3/h	24kw	2080(L)X458(W)X405(H)
 MARINOMATE-1200	1200m^3/h	32kw	2660(L)X458(W)X405(H)

Global Supply Chain Management



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KTM
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Room No. 1801 Centum IS tower, 60, Centum buk-daero, Haeundae-Gu, Busan, Korea
TEL +82) 51-441-0692~3 **FAX** +82) 51-441-0695 **E-mail** ktm@ktmarine.co.kr, marino@marinobnc.com