

GLOBAL SERVICE NETWORK



Asia

Singapore
Aqua Logistics Pte. Ltd.
Tel : +65 6566 5166
Fax : +65 6566 6303
Mail : aqualog@singnet.com.sg

Japan
Dai shin Technos Co., Ltd.
Tel : +81 898 35 3331
Fax : +81 898 24 2451
Mail : eigyo@dai shin-technos.co.jp

Taiwan
Laurel Gather Corp.
Tel : +866 2 2232 9140
Fax : +866 2 2923 1385
Mail : captchen@lgc.tw

Singapore
Raycontrol Pte. Ltd.
Tel : +65 6563 0544
Fax : +65 6560 0941
Mail : sales@raycontrol.com

Vietnam
Cuong Vu Marine
Tel : +84 24 3795 9260
Fax : +84 24 3795 9261
Mail : purchasing@cuongvumarine.com

Malaysia
Sinc Automasi Sdn. Bhd.
Tel : +607 2552 898
Fax : +607 2555 898
Mail : sales@sincautomasi.com

South Asia

Middle East

India
Arkay Electronics &
Marine System Pvt.Ltd.
Tel : +91 22 2558 5881
Fax : +91 22 2558 5883
Mail : aenms@vsnl.net

Iran
Shivasp
Tel : +98 (21) 26600550
Fax : +98 (21) 26600551
Mail : marine@shivasp.net

UAE
KDU World Wide Technical
Services(FZC)
Tel : +971 6 5578581 / 06 5575480
Fax : +971 6 5578582 / 06 5575490
Mail : p.chandan@kduworld.com

America

Africa

U.S.A
STX Service Americas, LLC
Tel : +1 713 934 0056
Fax : +1 713 422 2344
Mail : stx-parts-usa@onestx.com

Peru
Navales SAC
Tel : +51 1 421 7412
Fax : +51 1 421 7466
Mail : navales@navales.net

Europe

Italy
2M Tecnica S.R.L
Tel : +39 045 6350393
Fax : +39 045 6350389
Mail : info@2mtecnica.it

Greece
Franman Ltd.
Tel : +30 210 9532350
Fax : +30 210 9532355
Mail : business1@franman.gr

Poland
Marine Technical Service Ltd.
Tel : +48 918 524 818
Fax : +48 918 865 942
Mail : office@mts.szczeecin.pl

Germany
Uniservice Germany Marine
Products GmbH
Tel : +47 2244 3153
Fax : +47 2255 1931
Mail : info@uniservice.as

Poland
Marcontrol
Tel : +48 91 886 1 884
Fax : +48 91 4 888 475
Mail : office@marcontrol.com

The Netherlands
ERIKS B.V.
Tel : +31 10 284 1100
Fax : +31 10 451 6851
Mail : info.cappelle@eriks.nl

Germany
Arknoah Ship management GmbH
Tel : +49 40 8195 2898
Fax : +49 40 8195 2967
Mail : info@arknoah.com

Tukey
ISGEM
Tel : +90 216 701 11 06
Fax : +90 216 701 11 07
Mail : sales@istanbulgasenergy.com
info@istanbulgasenergy.com

Spain
Iberfluid Instruments S.A.
Tel : +34 916 611 717
Fax : +34 636 894 451
Mail : marina@iberfluid.com

Since
1989
HANLA IMS
Manufacturing Line
Authorized by
the Quality



KOREA HEAD OFFICE & FACTORY

HANLA IMS CO.,LTD
115, Hwajeonsandan 1(il)-ro, Gangseo-gu, Busan, Korea
Tel : +82 51 601 7000 Fax : +82 51 831 1850
www.hanlaims.com E-mail : hanla@hanlaims.com

2ND FACTORY
1921-4, Beombang-dong, Gangseo-gu, Busan, Korea

LED FACTORY

CHINA HANLA CHINA CORPORATION

HANLA M&E CO.,LTD
Sales Office
Rm 711, Ouyin Buidling , No.1369 Wuzhong Road, Shanghai, China
Tel : +86 21 5484 3251 Fax : +86 21 5484 3702
www.hanlaims.com E-mail : sales@hanlachina.com.cn

Factory
Nanyuan Rd. South Area of Economic Development Zone,
Zhangjiagang, Jiangsu, China
Tel : +86 512 5879 7601 Fax : +86 512 5879 7602
www.hanlaims.com E-mail : hanla@hanlachina.com.cn

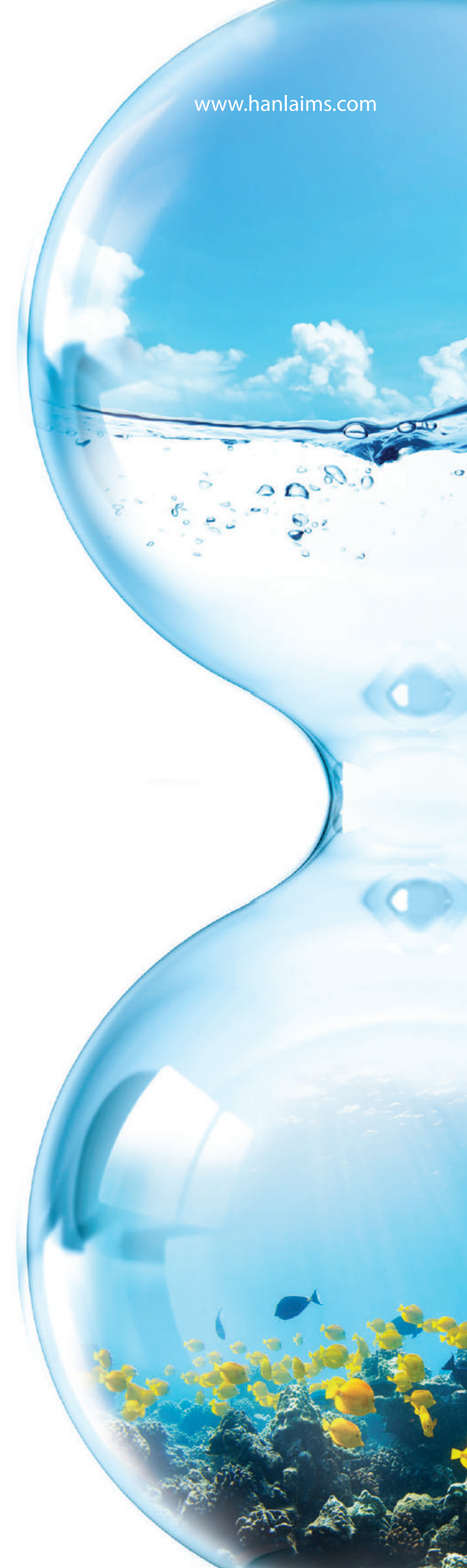
FRANCE BRANCH

HANLA IMS EUROPE
Tel : +33 1 8345 3241 Fax : +33 6 8617 1247
www.hanlaims.com E-mail : garcia@hanlaims.com



3B Package Solution
**BALLAST WATER
TREATMENT SYSTEM**

EcoGuardian™



HANLA IMS

Leading Company in Marine & Offshore with World's Best Technology for Customer Satisfaction



Instrument Division

Cargo Monitoring System (Radar/ Float)
Tank Remote Sounding System (Pneumatic/ Elec.Pressure)
Hi & Hi-Hi Level Alarm System (Acoustic wave/Float)
Fixed Gas Sampling System
Gas Detection & Analyzing System
Vapour Emission Control System
Water Ingress Detection System
Water Survey Detection System
Temperature/ Pressure Sensors
Level Transmitters
Level Gauges
Level Switches
Oil Sampler
Indicators

System Division

Valve Remote Control System
(Hydraulic / Electric / Pneumatic / Electro Hydraulic)
Loading Computer
Dynamic A (Integrated Control & Monitoring System)

Environment Division

Ballast Water Treatment System (EcoGuardian™)
Plant Water Treatment System

LED Division

LED Lighting
LED Lamp

- 2019 · USCG Type Approval Status : Under Review
- 2016 · Best Family Friendly Company Certification
· USCG AMS Approval of Ballast Water Treatment System
- 2015 · New Excellent Technology Authentication
· High technology product confirmation
· World Class 300 Company' Certificate of Designation
· Next Global Champ Certificate of Designation
· Type Approval Certificate of Ballast Water Treatment System
- 2014 · Leading Company Certificate (Marine Industry)
· Korean World-Class Product Award
· Certificate of Designation as an Advanced Technology Center
- 2013 · OEM/ ODM Agreement with Econosto
· EcoGuardian(BWTS) IMO final approval
· INNO-BIZ Certificate
- 2012 · Global Small Giants selection 2012 Leading Employer Award
(Busan Metropolitan City)
- 2011 · Certified by ISO 14001 of EMS and QMS
- 2010 · Start business Ballast Water Treatment System
· LED lighting certified by KS Mark
- 2009 · Change name to HANLA IMS
· Acquired equity in Blue Science Co., Ltd
- 2008 · Start business Valve Remote Control System
· Established affiliated company HANLA NMT
- 2007 · Established China Corporation HANLA M&E CO.,LTD
· Listed on Korean Stock Market
- 2005 · Awarded Q-GOLD MARK Certification from Samsung Heavy Industries
· Awarded an export prize.(10,000,000 USD)
- 2004 · Awarded an export prize(5,000,000 USD)
- 2002 · Established a Joint-Venture Company "TAIZHOU HANMI INSTRUMENT CO., LTD"
- 2000 · CE mark Certified from DNV
- 1995 · ISO 9001 Certified from DNV
· Registered on Manufacturer List of Korea Electric Power Corporation
- 1993 · Products type approved from
· - ABS, KR, LR, DNV, BV, GL, NK, RINA
- 1992 · Technical Agreement with Honeywell Marine System
· Representative Agreement with VEGA Germany
- 1989 · HANLA LEVEL established



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INTRODUCTION

General Information

Hanla IMS Co.,Ltd has developed eco-friendly EcoGuardian™ system for treating Aquatic Invasive Species in a ship's ballast water. Treatment method is side- Stream type which enables the system to be remotely installed away from the ballast lines. The EcoGuardian™ system can be installed separately by unit. So relocation of other equipments and additional engineering can be minimized.

Division	Description
Treatment Method	<ul style="list-style-type: none"> ✦ Ballasting Filtration + Electrolysis (Side-stream) ✦ De-ballasting Neutralization
Biological Efficiency	Compliance with IMO D2 performance standard & CFR 151.2030(BWDS)
Operation Mode	Automatic / Manual operation by remote control(option)
Operation H/W, S/W	Human Machine Interface(HMI), Touch Screen
Utility Required	<ol style="list-style-type: none"> Control air (6~7kgf/cm2) for pneumatic valves Fresh water for rectifier cooling
Installation type	1. Skid mounted / 2. Containerized / 3. Separate



Type and Dimention

	LIST					
	AFU	ECU	NEU	SIU	SUM	
EG0130	0.6 / 0.5	2.7 / 1.5	0.6 / 0.4	-	-	3.9 / 2.4
EG0130-Ex				0.4 / 0.2	4.3 / 2.6	
EG0250	0.7 / 0.6	2.7 / 1.7	0.6 / 0.4	-	-	4.0 / 2.7
EG0250-Ex				0.4 / 0.2	4.4 / 2.9	
EG0350	0.9 / 0.8	2.7 / 1.7	1.3 / 0.5	-	-	4.9 / 3.0
EG0350-Ex				0.4 / 0.2	5.3 / 3.2	
EG0500	1.0 / 1.3	3.3 / 1.8	1.3 / 0.5	-	-	5.6 / 3.6
EG0500-Ex				0.5 / 0.3	6.1 / 3.9	
EG0800	1.7 / 1.8	3.9 / 2.3	1.5 / 0.7	-	-	7.1 / 4.8
EG0800-Ex				0.5 / 0.3	7.6 / 5.1	
EG1000	1.8 / 2.1	4.1 / 3.7	1.5 / 0.7	-	-	7.4 / 6.5
EG1000-Ex				0.5 / 0.3	7.9 / 6.8	
EG1500	2.6 / 3.2	6.2 / 4.0	1.5 / 0.7	-	-	10.3 / 7.9
EG1500-Ex				0.5 / 0.3	10.8 / 8.2	
EG2000	3.3 / 4.2	7.2 / 4.4	1.5 / 0.7	-	-	12 / 9.3
EG2000-Ex				0.6 / 0.4	12.6 / 9.7	
EG2600	3.8 / 4.9	7.2 / 5.0	1.5 / 0.7	-	-	12.5 / 10.6
EG2600-Ex				0.6 / 0.5	13.1 / 11.1	
EG3000	5.3 / 6.2	7.6 / 5.6	1.5 / 0.7	-	-	14.4 / 12.5
EG3000-Ex				0.7 / 0.5	15.1 / 13	
EG4000	5.8 / 7.1	9.3 / 7.2	1.5 / 0.7	-	-	16.6 / 15
EG4000-Ex				0.8 / 0.6	17.4 / 15.6	
EG6000	10.6 / 12.4	12.8 / 10.3	1.5 / 0.7	-	-	24.9 / 23.4
EG6000-Ex				0.9 / 0.7	25.8 / 24.1	

COMPONENT

AFU Auto Filter Unit

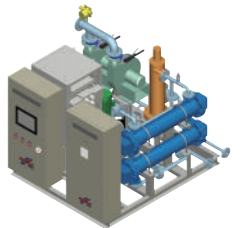
Basket Screen Type
Capacity : 130 ~ 3,000m³/hr
Differential pressure



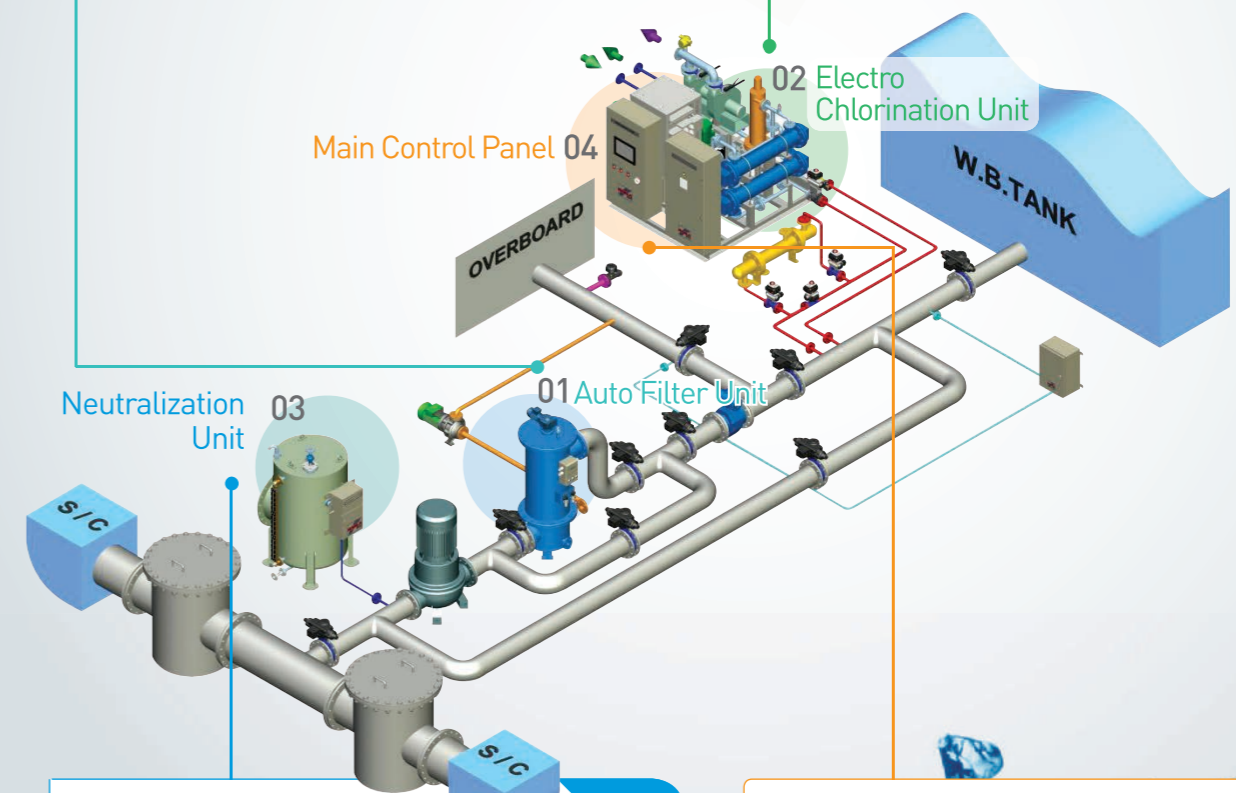
01

ECU Electro Chlorination Unit

Solution :
Total Residual Oxidants(TRO)
Capacity : 130 ~ 6,000m³/hr
H₂ Treatment :
Separate by degassing system



02



NEU Neutralization Unit

The de-ballast water is neutralized by the NEU prior to discharging overboard with the least amount of sodium thiosulfate through monitoring of TRO unit.



03

MCP Main Control Panel

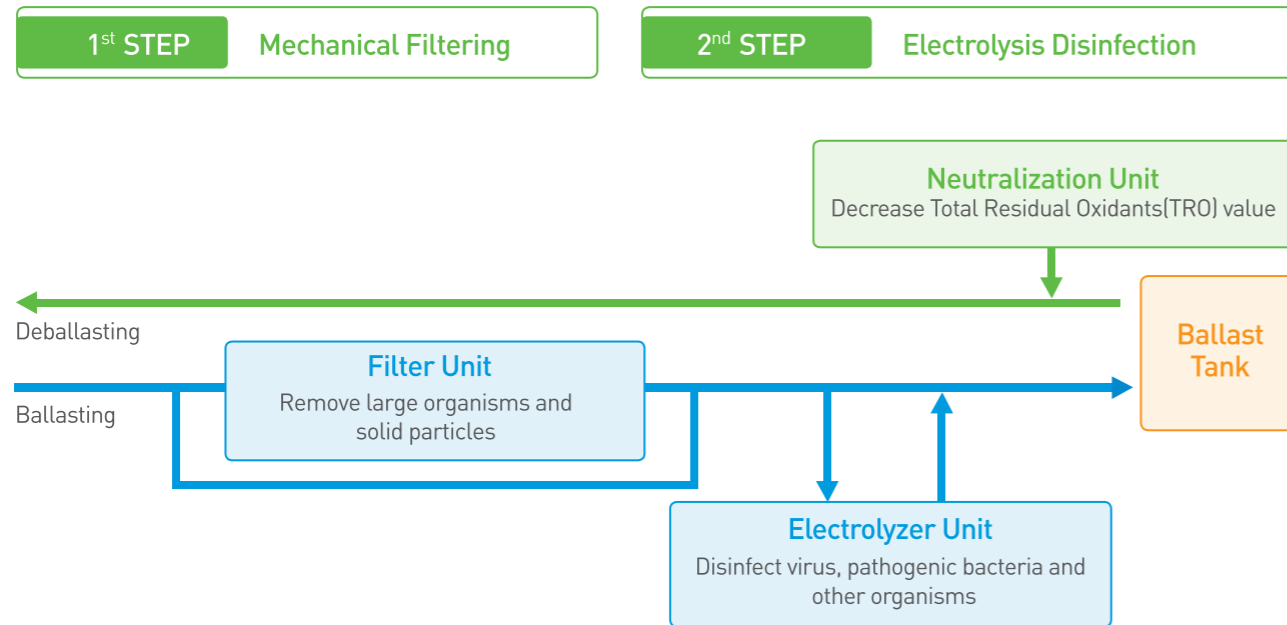
A control system consists of a main control panel and Human Machine Interface (HMI). It helps a user operate and control EcoGuardian™ in an easy and simple way.



04

PROCESS

EcoGuardian™ is based on the principles of pre-filtration and electrolysis.



Advantage

- 1/ Simple & Easy Installation
- 2/ Minimum modification of existing ballasting main line
- 3/ Effective even in the turbid water
- 4/ No corrosion to hulls & pipings
- 5/ No stock of dangerous chemicals
- 6/ Cost-effective by Hanla package solution
- 7/ Effective disinfection
- 8/ Low maintenance cost



- ◆ **Ballasting**
Precise Filtration
; Filtration + Electrolysis (Side-Stream)
- ◆ **Deballasting**
Reliable Neutralization
; Real-time monitoring by TRO sensor through Hanla Integrated ballast control system.

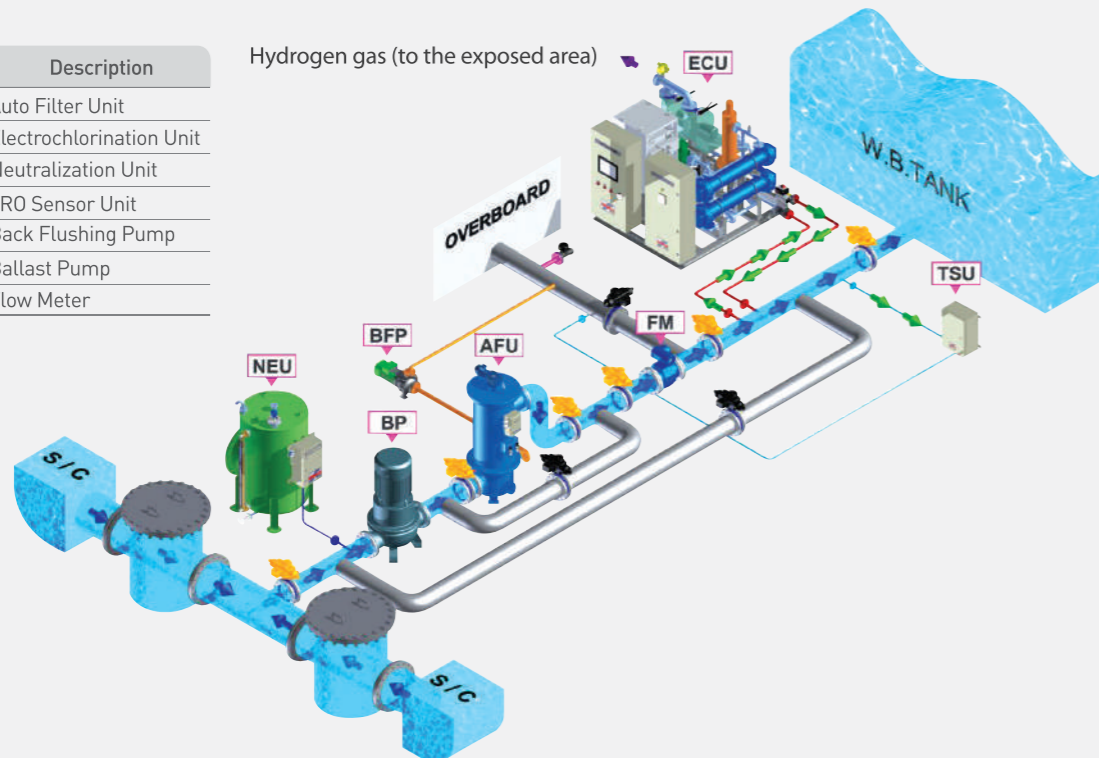
EcoGuardian™ Key Features

- Automatic backflushing filter unit removes large organisms
- Automatic backflushing operation starts when the pressure difference between the water inlet and outlet reaches a certain value;
- The side stream of the ballasting water goes through the electrolysis unit that generates the high concentration of TRO (Total Residual Oxidants). The concentrated stream is then injected back to the main ballasting line;
- Electrolysis unit (including electrolytic cells, rectifier/transformer, booster pumps, conductivity sensor and degassing devices) produces TRO in situ which disinfects the residual planktons, pathogens, larva or spores;
- Neutralization unit adds sodium thiosulfate solution into the treated ballast water to neutralize the TRO during de-ballasting;
- Control system including PLC, HMI and auxiliary equipment

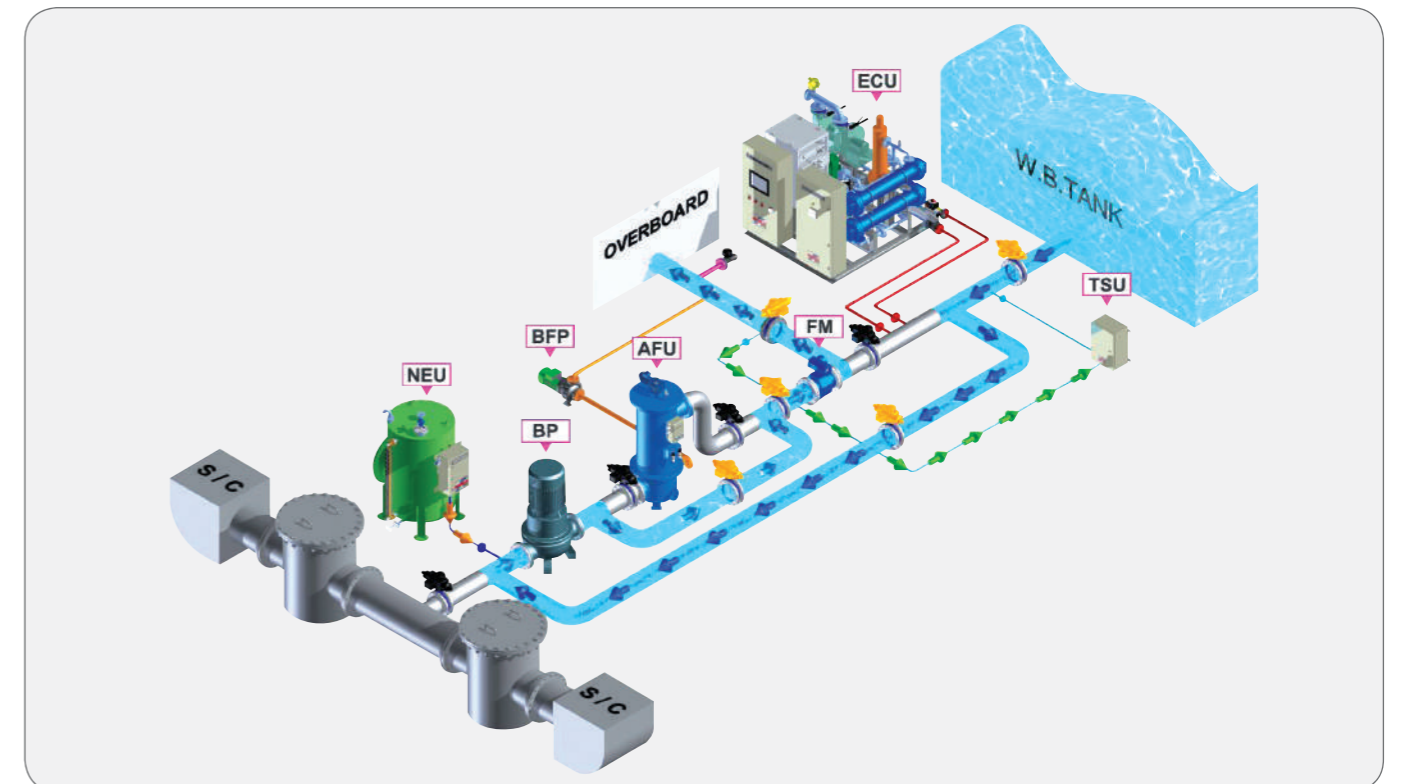
BALLASTING

Abbr.	Description
AFU	Auto Filter Unit
ECU	Electrochlorination Unit
NEU	Neutralization Unit
TSU	TRO Sensor Unit
BFP	Back Flushing Pump
BP	Ballast Pump
FM	Flow Meter

Hydrogen gas (to the exposed area)



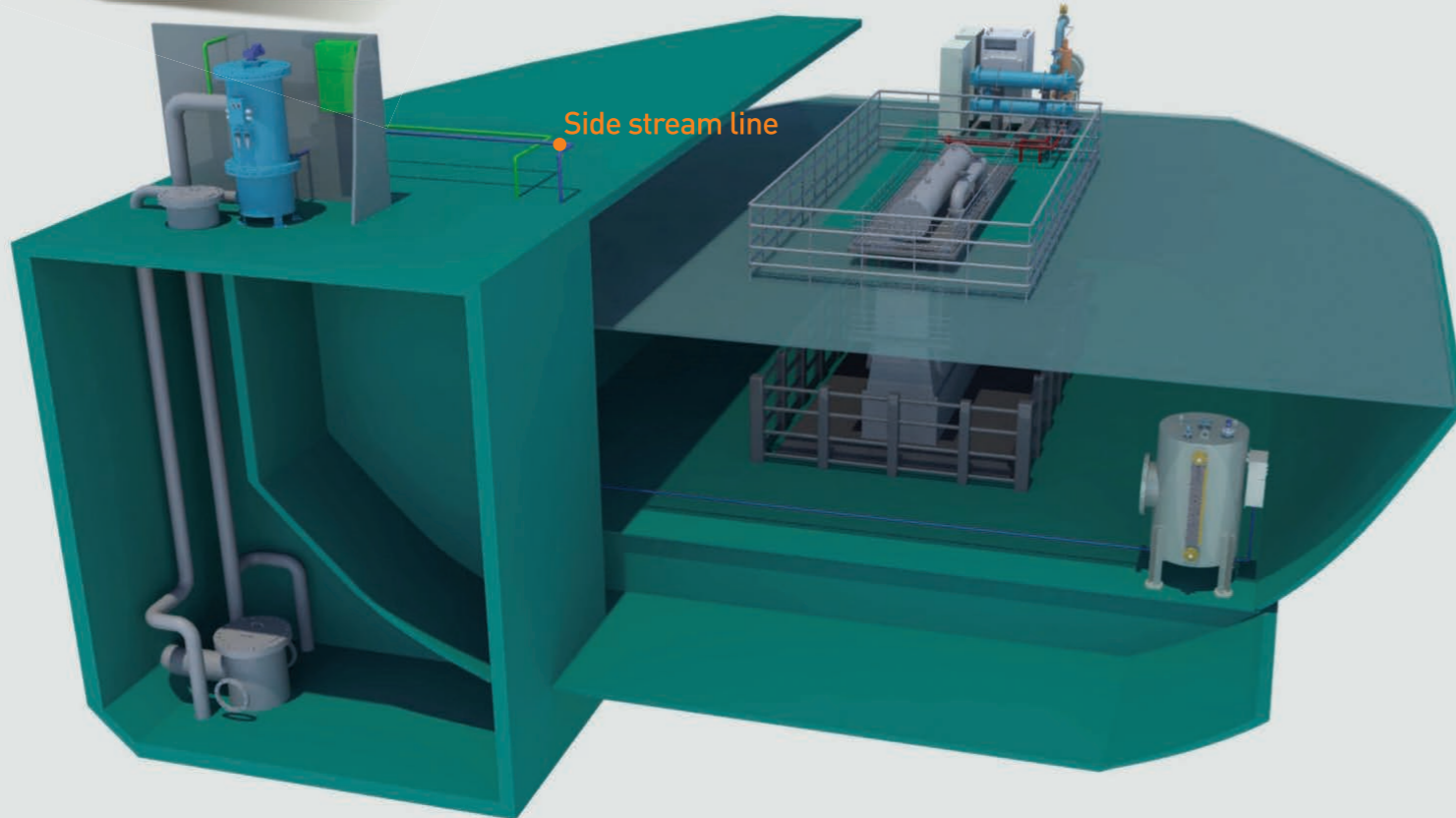
DE-BALLASTING



INSTALLATION SOLUTION

This sideline type electrolysis system can be constructed in a small size. Also due to the characteristics of system which uses active substance as disinfectant, our system can be easily modularized and scalable. So our system can be installed easily with low cost even in retrofit. In some cases if needed, our system can be seated on the skid mount or containerized for easy transportation and installation.

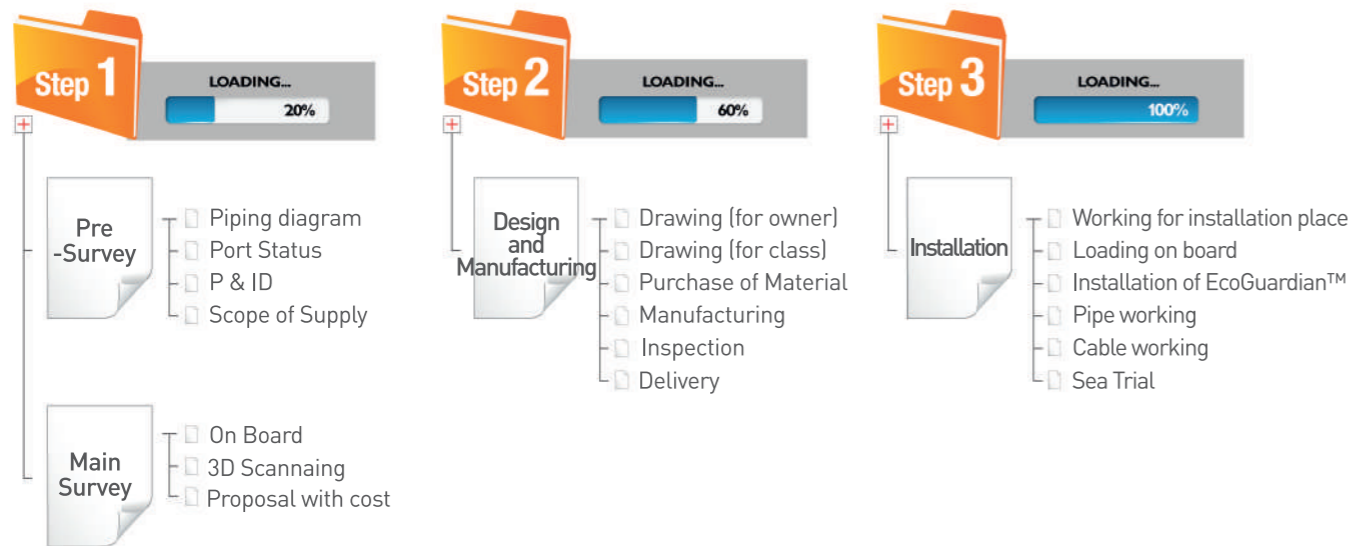
Submerged pumps



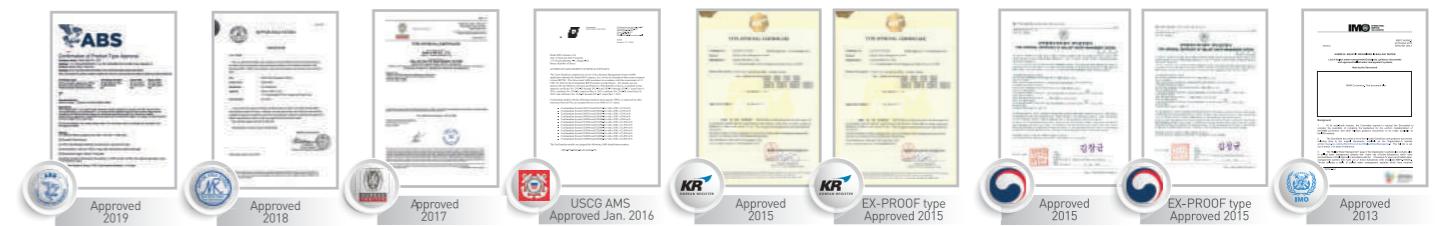
Pump room



Retrofit Solution



Approval Status

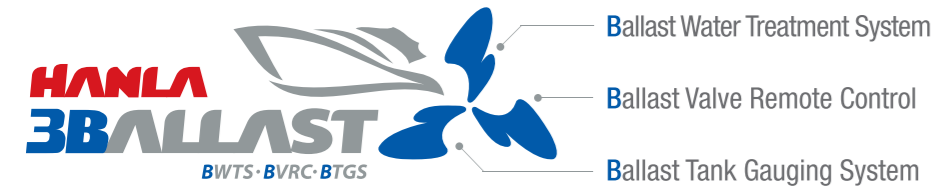


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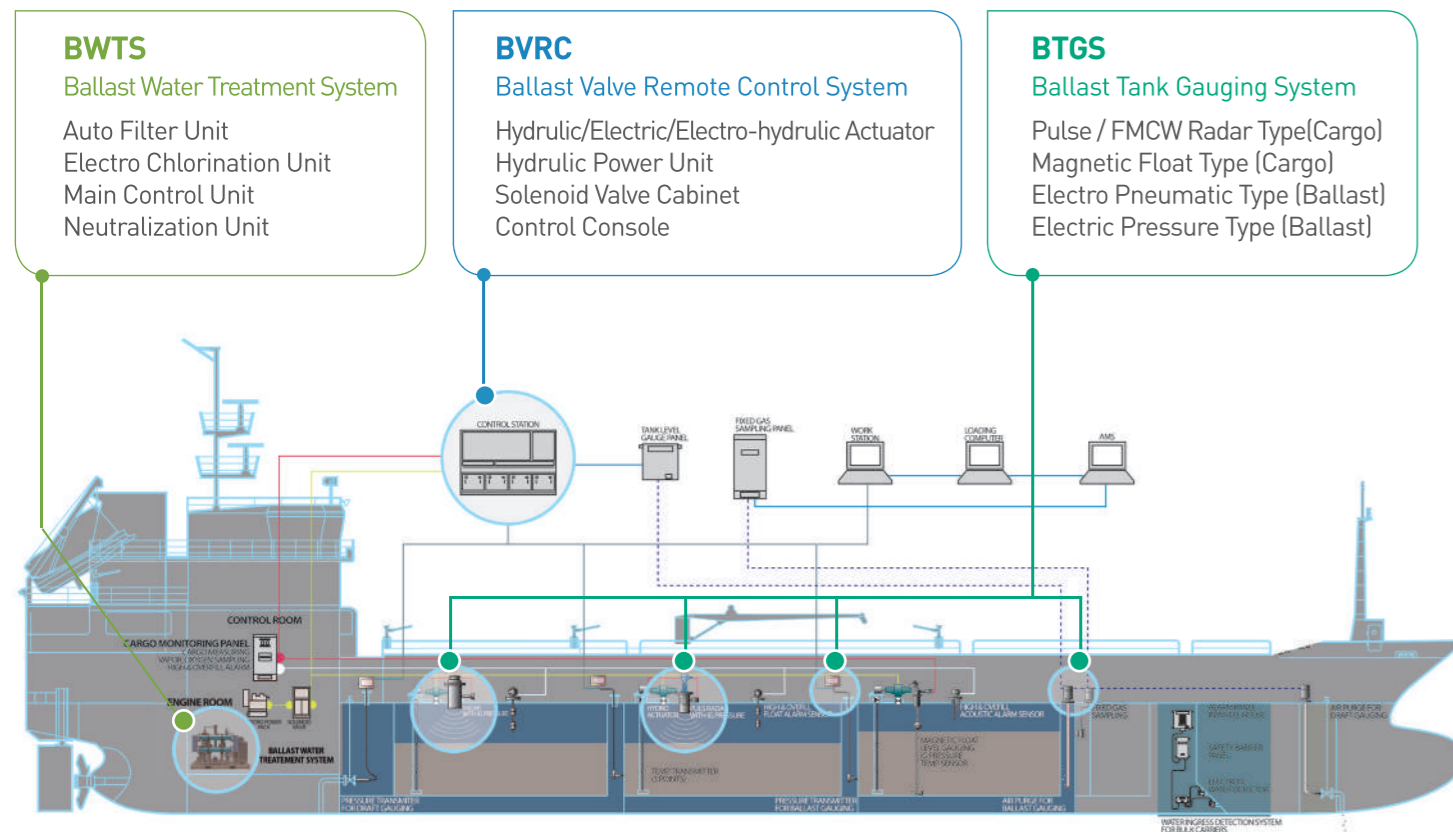


HANLA is the only company which can provide "Integrated Triple Ballast Package Solution" developed by our own technologies throughout the world

World Best



Optimized process solution that integrates a wide range of marine systems based on Hanla's advanced technologies



3BALLAST™ PACKAGE SOLUTION

Since starting a business in marine equipment industry in 1989, we "HANLA IMS" have supplied reliable products to customers for over 26 years. Based on these 26 years experiences, Loading Computer, Tank Monitoring System, Valve Remote Control System, Ballast Water Treatment System(BWTS), LED Lighting have been developed by our own technologies and we have been continuously growing up to become the best company in this field.

Now, as a specialist of Total Ballast System Line Up, all of our staff are going to run more faster with the 3B in their mind. This 3B is our new campaign logo to introduce that we "HANLA IMS" is a specialist of Total Ballast System Line Up.

3B ballast package solution has been created based on the highest customer satisfaction and we are committed to providing the best service to our customers with cost-effective optimal system. The 3B means not only Ballast Water Treatment System, Ballast Valve Remote Control System, and Ballast Tank Gauging System but also Best quality, Best technology and Best service.

How can the Hanla 3BALLAST™ package solution operate systematically?

Each of 3B System communicates through an integrated ballast control console by Dynamic-A.

1B BWTS - BVRC

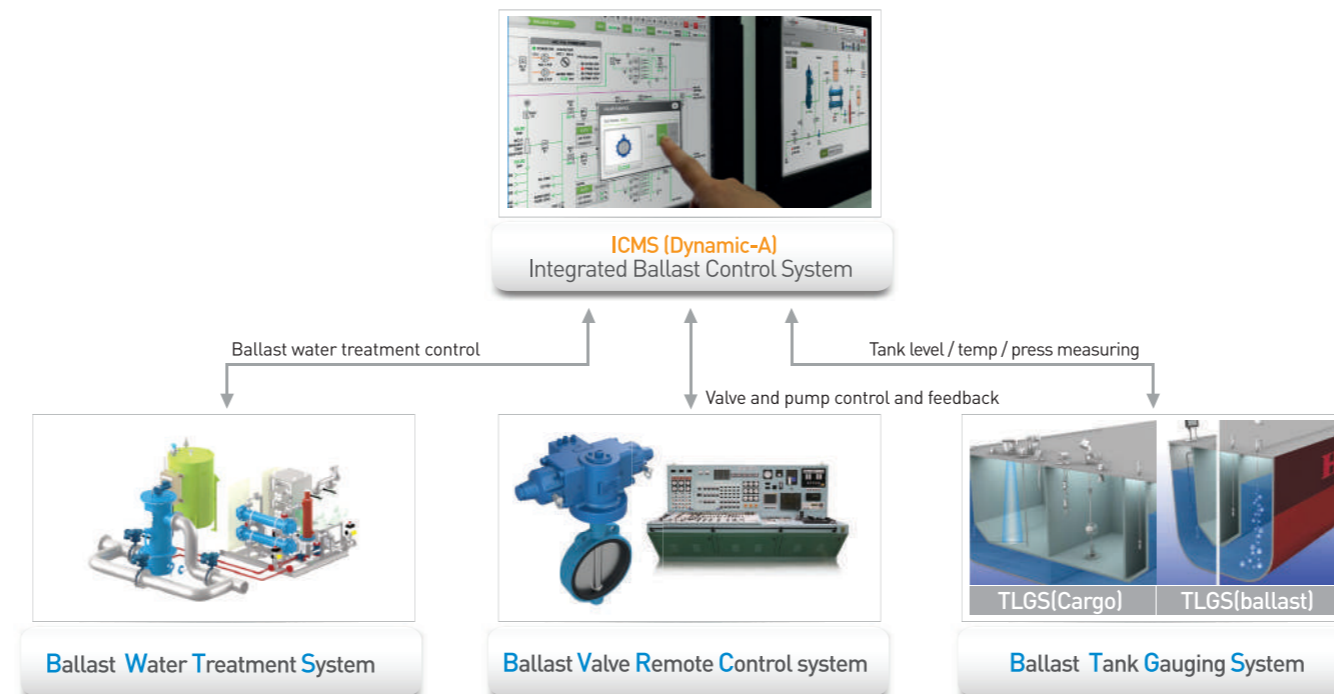
When ballast water treatment system (BWTS) operates, a ballast control console displays operating status of BWTS. During the treatment, all of the valves can be controlled by the ballast valve control system in accordance with progression of BWTS.

2B BVRC - BTGS

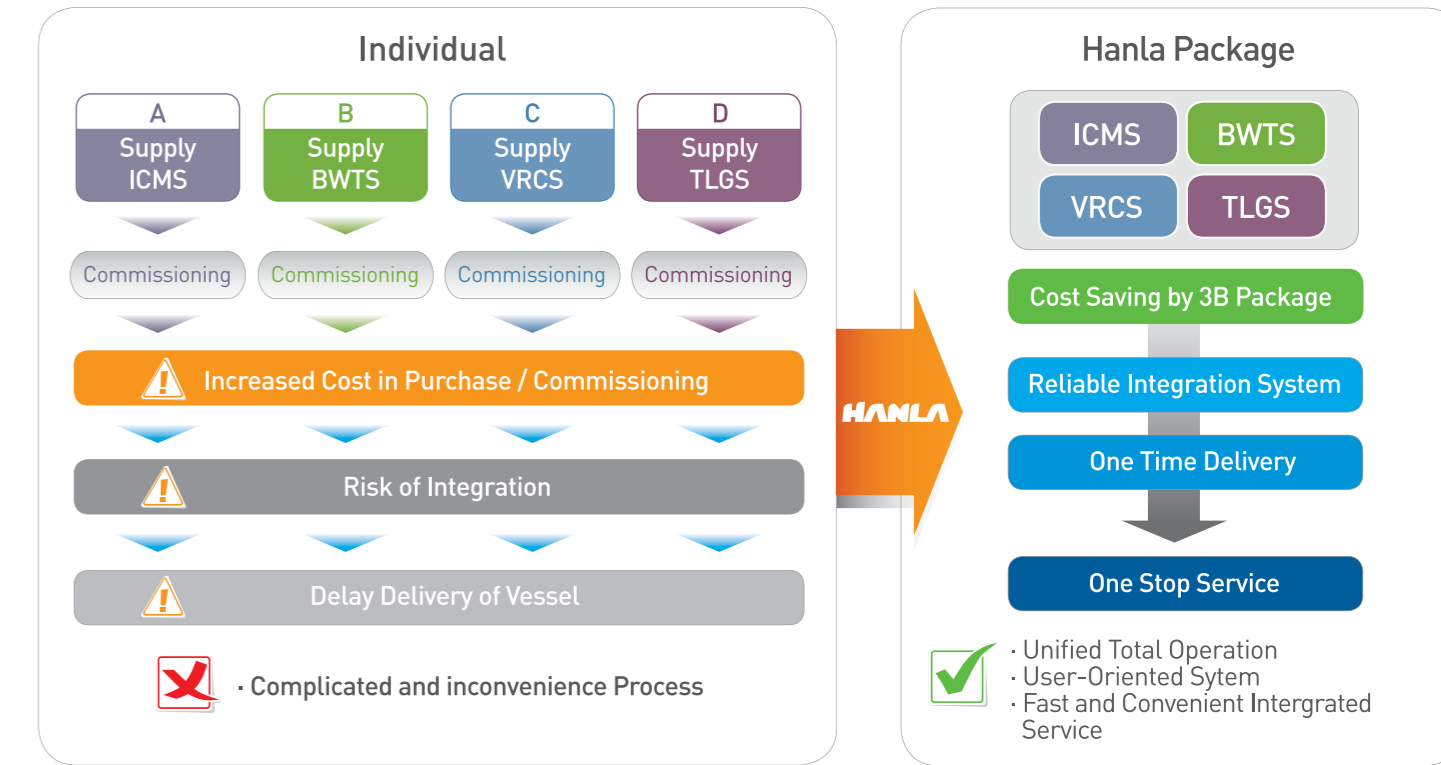
When treated ballast water flows into ballast tanks, the level of ballast tanks is measured and monitored by the ballast gauging system. And then, its signal goes to the ballast control console. It helps a decision by the signal to open or close of valves.

3B BTGS - BWTS

When the level of ballast tanks becomes maximum height, ballast control console transfers a signal to BWTS for a stop. Before BWTS starts, ballast gauging system monitors the level of ballast tank.



What is the difference of the HANLA's 3BALLAST™ ?



Optimized 3BALLAST™ Solution is the answer and we provides the most perfect integrated system.

VRCS

- Hydraulic type
- Pneumatic type
- Electric motor type
- Electro-Hydraulic type
- Control Console
- PLC Control
- I.S. Type Sol.valve Cabinet

TLGS

- Cargo Monitoring System
- Ballast & Draft Gauging System
- Gas Sampling/Detection System
- Independent High Level Alarm System
- Vapour Emission Control System
- Water Ingress Detection System
- Loading computer & ICMS
- Instruments



BWTS

- Electrolysis type
- Side-Stream type
- Neutralization unit