MS-SOx SCRUBBER

We are moving toward the **CLEAN OCEAN FUTURE**



- **Full turnkey provider**
- **2 weeks downtime at wharf (Without drydocking)**
- **Simple, compact and light system**
- **Reliable and proven system**

GLOBAL ECHO

About Global Echo

Global Echo has the goal of developing and realizing eco-friendly technologies that remove and prevent hazardous emission from ships.
In developing these technologies, we develop the most effective technologies based on a complete understanding of ship and actual operation.

01
Easy operation and maintenance

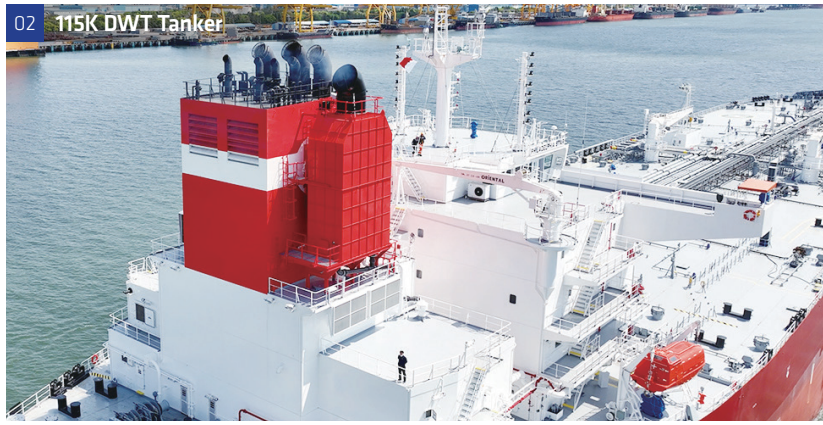
02
Reliable system with high performance

03
Minimizing the modification

Global Service & Cooperation Network










315K DWT Tanker 04


180K DWT Bulk Carrier 05


84K CBM Gas Carrier 06

MS-SOx Scrubber is technical leading scrubbing system.

We, Global Echo, intend to launch our MS-SOx Scrubber system to minimize the ship owners' & crews' difficulties to run the SOx scrubber system. Because of lack of understanding of ship's existing system, other makers' system is not 100% optimum for the vessel.

With our long term experience of managing and supervising the vessels, our MS-SOx Scrubber system is developed and launched based on full understanding of the ship's existing system.

01 The world best SOx Scrubber proven by Global 1st class owners

02 Advanced technology

03 Full turnkey provider

04 4 months lead time and 2 weeks installation period without drydocking

05 Owner's exceptional benefits


IAPP - KR


IAPP - LR

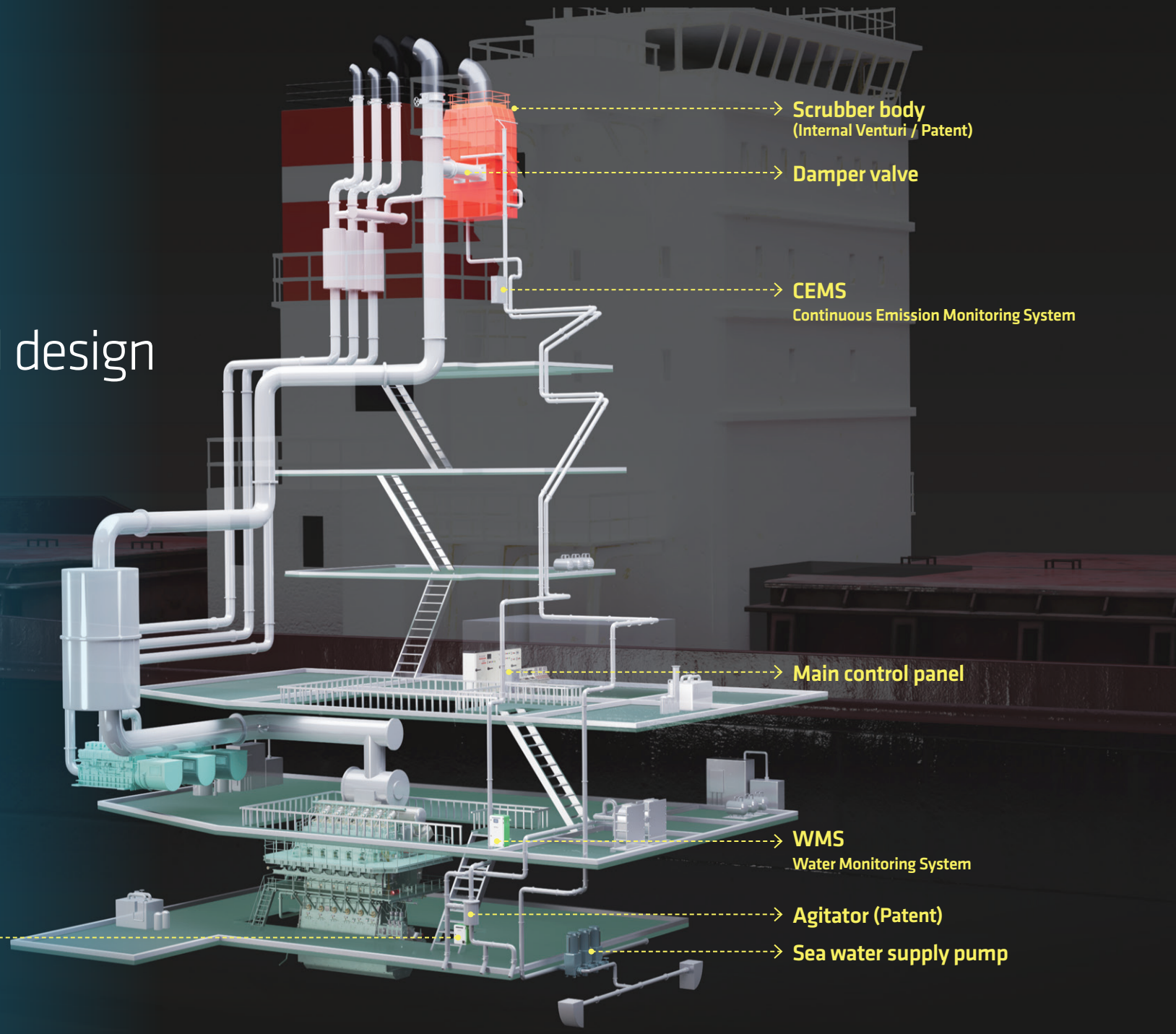

IAPP - DNV.GL


ISO 90012015


ISO 140012015

MS-SOx SCRUBBER

Most optimized and customized design for each vessel








Compact & Rectangular Scrubber body
(Titanium)

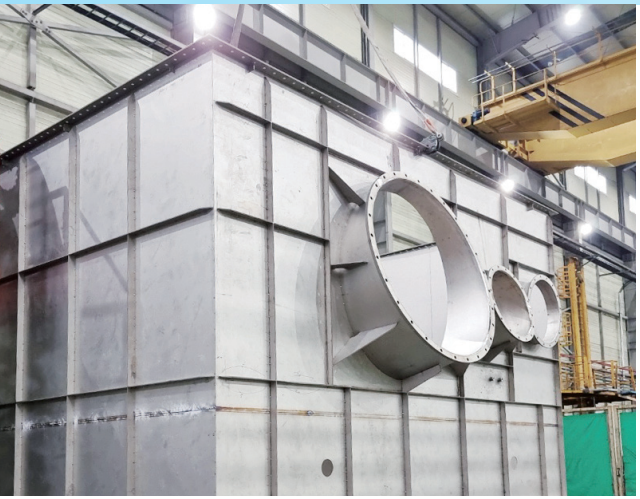
Vessel Type / Size	Exh. Gas Mass Flow (Abt. kg/h)	Scrubber Size LxBxH (Abt. mm)	Scrubber Weight (Abt.ton)	Seawater Flow (m^3/h)	Power Consumption (kW)
Chemical Tanker (50,000 DWT)	70,000	2,500 x 4,000 x 7,800	8	200 x 2	60 x 2
Crude Oil Tanker (158,000 DWT)	110,000	5,500 x 2,000 x 7,800	10	250 x 2	70 x 2
Bulk Carrier (180,000 DWT)	150,000	6,000 x 3,000 x 7,800	11	300 x 2	90 x 2
Crude Oil Tanker (300,000 DWT)	200,000	6,000 x 4,000 x 8,000	14	450 x 2	125 x 2
Feeder Container (1,000 TEU)	60,000	2,500 x 4,000 x 7,800	6	200 x 2	60 x 2
Mega Container (13,000 TEU)	M/E 463,000 A/E 62,000	Body 1 : 6,000 x 6,000 x 10,000 Body 2 : 4,000 x 2,000 x 7,500	23 7	800 x 2	230 x 2

* Scrubber dimensions are subject to change due to vessel's space restrictions.
* Power consumption is based on two pumps running.

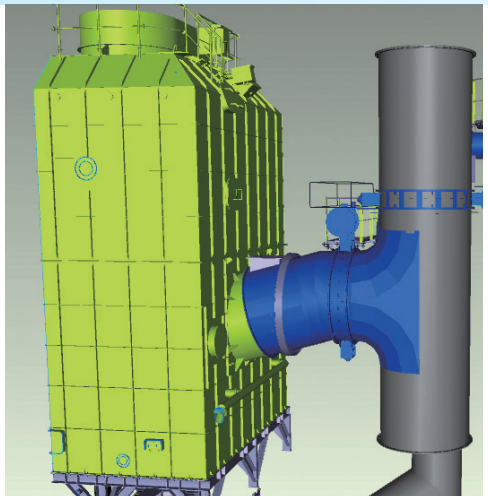
Advanced Technology

Deliver better value to customers with more advanced technologies.

Our Global Echo MS-SOx Scrubbers are designed from the view of actual ship operation and maintenance. It is designed to retrofit existing ship with modifications.









Titanium scrubber body

- Corrosion free from high acidity and outside environment
- Light weight, no need change Class document
  (No change DWT, cargo loading program, Trim & Stability, EEXI etc.)
- Customized design for actual vessel's condition

Advanced technology with patent

- Dilution system with agitator
- Special 'T' joint & damper valve at exhaust gas pipe line
- WMS, without sampling water pump and 'Ti' tubing line
- Titanium sleeve at overboard pipe
- Main Control Unit : Easy operating and maintenance

High efficiency of SOx scrubber system

- Much less sea water amount required than the others
- Smaller scrubbing pump and pipe size
- Less electrical power consumption
- Y-D start with fixed RPM, No need VFD control
- Easy and compact installation

Reliability

Experience a trustworthy Global Echo system

Full turnkey provider

- After contract, Global Echo will take full responsibility of the works (Design, 3D Scanning, Fabrication of the system, Logistics, Installation and Commissioning, Sea trial with Class, IAPP, Arrangement of wharf or shipyard, General service etc.)
- No extra cost after contract
- Proven by the World first class ship-owners

Optimization design

- Global Echo's design team provides the optimized & customized system
- These capabilities have been proven as a result of continuous cooperation with the world's leading ship owners.

The best materials and equipment the best stable performance

- Titanium scrubber body for light weight and corrosion free
- GRVE pipe for outlet pipe
- Titanium sleeve at overboard pipe
- WMS, without sampling water pump and all titanium tubing & connector

Effective and prompt A/S

- Best and reliable makers, Kongsberg Maritime, SICK
- Worldwide service network available & log data analysis

4 months lead time

- Only 4 months from contract to readiness of installation





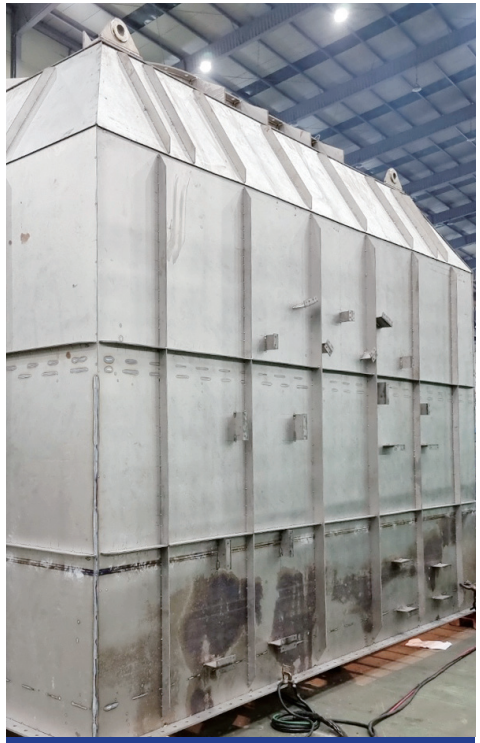


Minimized and optimized retrofit works

- No need drydocking
- Minimized hull conversion
- Not require extension or additional sea chest, sea cross lines

KR KOREAN REGISTER · Lloyd's Register · ABS · BUREAU VERITAS · ClassNK · DNV

Global Echo's Special Technology



Titanium scrubber body

- Light & compact
- Corrosion free from High acidity & temperature
- Internal venturi



Damper valve

- Non air sealing type
- Less OPEX and Maintenance



Agitator

- Dilution
- Higher than pH 6.0
- No need additional power



Sea water supply pump

- Less water capacity
- Constant operation
- No need VFD



Owner's exceptional benefits

- **Simple and light system**
  - Easy and simple operation, less maintenance point, low OPEX
- **Minimum off hire**
  - Only 2 weeks retrofit period at wharf
- **Optimal and customized design**
  - No change DWT. (Light weight, Titanium body etc.)
  - No change Class documentation
    (Trim & Stability, Fire fighting, Cargo loading program, EEXI etc.)
  - No need a large scale hull conversion
- **Low electric consumption**
  - Save fuel cost, Reduce CO_2 emission, Longer maintenance interval of A/E

New ship building, what are the advantages of corporation with Global Echo?

- **It is possible to arrange on outside, INDEPENDENT.**
  - No extension of funnel required
  - Minimize changes from already completed drawings
  - No change of Class approval documentation
  - Keep the sea chest size as it is
  - Easy arrangement thanks to less pump/pipe size
- **In case of inside arrangement**
  - Minimized funnel modification
  - Shorter exhaust gas pipe extension

When reviewed comprehensively,
Eco-friendly equipment, EGCS can be installed without large-scale changes and with minimal changes without affecting the shipbuilding process.

2 Weeks installation complete

- **Full turnkey Provider**
- Full readiness in **4 months**
- Full retrofit in **2 weeks**



Contract

3D Scanning

Feasibility study

Design & Class approval

Shipyard or Wharf arrangement

All Equipment & Material ready for delivery

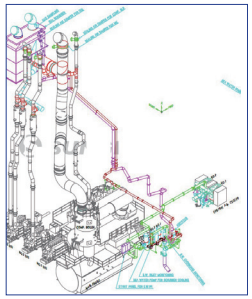
16 weeks

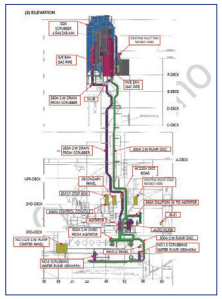
Installation start

2 weeks

Installation, Commissioning and Sea trial

+IAPP renewal including EGCS













Summary of Strong Points of Global Echo

Items	Global Echo (MS-SOx)	Remark
Project scope	Full turnkey	3D Scanning Design, Class approval, Supply all system, Arrange the wharf, Labours, Installation, Sea trial and IAPP cert.
Guarantee	Whole system, 2 years	
Scrubber tower's material	Full titanium	Corrosion free, light and compact
Venturi	Special internal venturi (patent)	Simple connection
Delivery time	Max. 4 months	
Installation place	Wharf	Arranged by Global Echo
Installation time	2 weeks	By Global Echo's supervisors and labours
Required seawater amount	About 50% than the others	Lower electric consumption, Less OPEX
Power consumption of pump	About 50% than the others	Less OPEX
Water flow control	Y-D start with constant speed operation	Simple and easy operation, Crew's familiar system
Discharge water pH value	pH 4.5 – 6.1, thanks to dilution system	More neutral without additional electric consumption Less risk of damage at ship side piece and hull coating
Sealing air fan	Not required	Patent and approved non air sealing type Damper valve
Weight of system including pipe	25 ~ 40 ton for whole system	Light and No need change DWT, TS Booklet, Loading manual, EEXI and Class doc.
Structural design at funnel area	Minimum change from original design	Not required large scale funnel extension No need to change DWT, Fire fighting system and documents
Overboard pipe	Titanium sleeve. Corrosion free!	
WMS	Without sampling water pump Titanium tubing and connector	Easy and stable operation

MS-SOx Scrubber, Optimized for New building project
Delivering value to both shipowners and shipyards

A more complete solution

Our solution allows late-stage scrubber installation with minimal design approvals and no major production site modifications, ensuring on-time vessel delivery.
No extensive hull modifications are required, and there is no cargo loss due to increased DWT. additionally, no further class approval is needed for performance-related aspects.

Optimization & Customized design

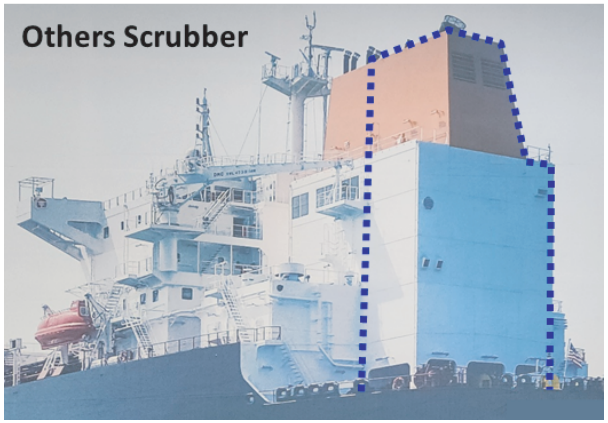
Scrubber tower's rectangular form enables ideal external installation on vessels under construction. The titanium material ensures high durability against sulfur acid, contaminants, rust and seawater with no operational issues during its lifetime.

Technical advantage

The overall system is lightweight, keeping the additional DWT increase within 0.1%, which liminates the need for any changes to EEDI or EEXI class approvals.
Since the unit is externally installed, no additions or modifications to the fire fighting system are required. The scrubbing water is atomized through fine nozzles, reducing water consumption by 50% compared to ompetitors. Consequently, the power required to supply this water is also reduced by 50%, minimizing the need for extra generator usage and resulting in lower fuel and operating costs.

The most suitable system for realizing shipowner benefits immediately upon delivery, without disrupting shipyard processes or design integrity - even when installed within a highly limited timeframe.





MS-WMS
WATER MONITORING SYSTEM

Water Monitoring System

MS-WMS

Global Echo creats a product that crews and superintendents no longer need to worry about WMS, by fully understanding the problems in existing products, finding optimal solutions.

- Without sampling water pump (Ejector system)
- Titanium tubing line and connector
- Less maintenance
- Stable operation
- Simple and easy operation



Fuel oil for Main Engine

MS FUEL SAVER

HFO 10 %

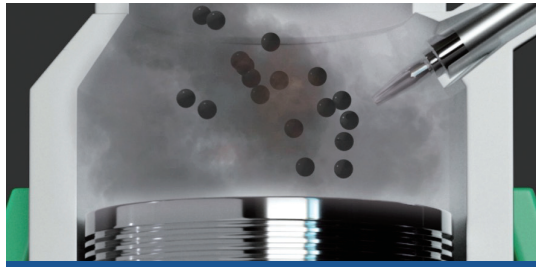
PM 50 %

NOx 30 %

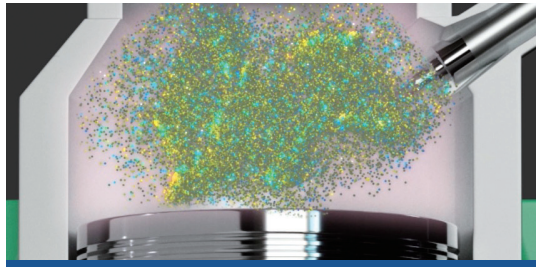
SOx 20 %

MS Fuel Saver aims to dramatically reduce the total amount of existing hazardous substances, CO_2, PM, NOx and SOx, by mixing HFO and Fresh water effectively and supplying to the Main engine.

By optimally combining with MS-SOx Scrubber, Global Echo will be supply the perfect service technically and commercially.



Heavy Fuel Oil



Heavy Fuel Oil+Water (Micronized)



Unique feature of **Global Echo**

MS-SOx SCRUBBER

MS-WMS WATER MONITORING SYSTEM

MS-MCU MAIN CONTROL SYSTEM FOR EGCS

MS-CEMS CONTINUOUS EMISSIONS MONITORING SYSTEM

MS FUEL SAVER

Profile

· Established in 2018
· Located in Ulsan
· Own design team supports project from start to completion.
· R&D team carries out development of New Technology

Customer Service

· Service specialists always at your service
· Real time assistance with global service network
· Daily basis log sheet analysis
· AS cooperation with sub suppliers

Zodiac Maritime · Vitol · HYUNDAI MIPO DOCKYARD · SITC · Bahri البحري

AEGEAN · ATLAS MARITIME · THENAMARIS · EURONAV · BW LPG

TMS TANKERS LTD · HMM · SINOKOR · PANOCEAN · SM LINE

Cooperation yard

Country	Company
KOREA	Hanjin Heavy Industries (Busan)
	Daesun Shipyard (Busan)
	Yeosu Ocean (Yeosu)
SINGAPORE	Paxocean Singapore
CHINA	Paxocean Zhoushan (Zhoushan)
	Zhoushan Longshan Shipyard (Zhoushan)
	CSIC Tianjin Xingang Shipyard (Tianjin)
	Huafeng Shipyard (Zhoushan)
	CSSC Wenchong Shipyard (Guangzhou)
	Fujian Huadong Shipyard (Fujian)
INDONESIA	Paxocean Pertama (Batam)
Country	**Company**
UAE	Drydock world (Dubai)
BAHRAIN	ASRY (Bahrain)
OMAN	OMAN Drydock company (OMAN)
Country	**Company**
TURKIYE	Cicek Shipyard (Tuzla)
	TK Shipyard (Tuzla)

These are the list only for the reference.
If you inform ship's movement, we can arrange the best wharf



GLOBAL ECHO

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