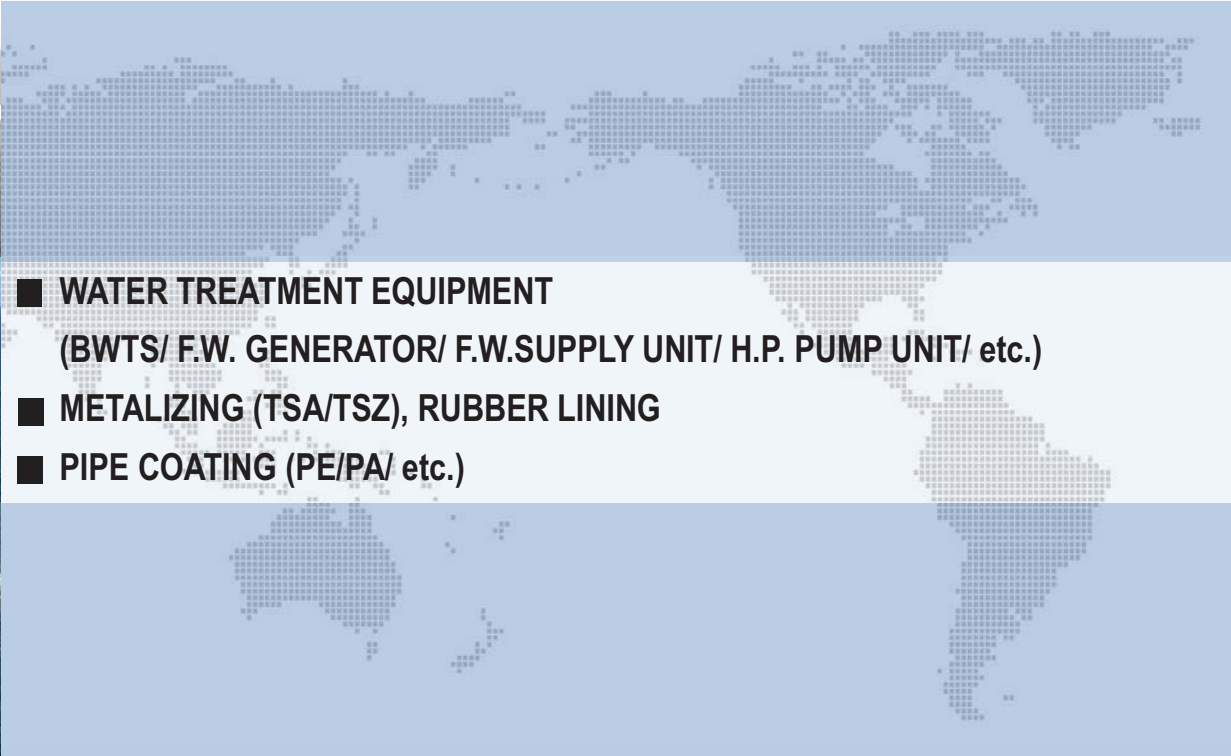




SAMKUN CENTURY CO., LTD.

- 
- WATER TREATMENT EQUIPMENT
(BWTS/ F.W. GENERATOR/ F.W.SUPPLY UNIT/ H.P. PUMP UNIT/ etc.)
 - METALIZING (TSA/TSZ), RUBBER LINING
 - PIPE COATING (PE/PA/ etc.)





CEO Message

First of all, we cordially express our gratitude for your continuing interest and support. Samkun Century was established in 1989, and has since advanced innovating new technologies over the last 20 years. Our willingness and ability to take on new challenges have driven our corporate success while contributing the development of marine equipment industry.

We have persevered in our efforts to supply the best quality and service to our clients, always following "Always, like the beginning". We will strive to make positive changes in the environment and contribute to humanity and society for our next generation. Thank you.

President **JUNG IL KANG**

INTRODUCTION

FILTER

LV PLASMA

MPUV

CONTROL PANEL



“History of Samkun Century”



- 2014.01 UV sterilizer NIPH type approval (SK11-JSD)
- 2013.11 Acquired **KR Type Approval (BWTS)**
- 2013.10 **AMS Acceptance by USCG (BWTS)**

- 2012.07 **Type Approval by Korean Government (BWTS)**
- 2011.01 Acquired KUN MARK from KCL

- 2010.12 Selected as a membership of exemplary medium enterpriser
- 2010.10 **Awarding a presidential citation**
- 2010.10 **Acquired FINAL Approval by IMO (BWTS)**
- 2010.03 **Acquired BASIC Approval by IMO (BWTS)**
- 2010.03 **Awarding an honor by the administer of NTS**
- 2010.01 Selected as an excellent cooperative company gained Suckryu medal by DSME

- 2009.10 Acquired AA Class of HMD
- 2009.10 Registered as a Qualified Supplier in KOSPO
- 2009.10 **Acquired K MARK from KTL**
- 2009.09 UV sterilizer NIPH type approval (JSC40)
- 2009.07 Selected as clean work place by KOSHA
- 2009.07 Obtained a qualification of competitive bid
Joining in the office of supply Administration
- 2009.01 **Acquired ASME STAMP**

- 2008.12 Opened the office in Seoul
- 2008.03 Approved of GL classification
- 2008.03 **Acquired ISO9001 & ISO14001**

- 2007.12 Awarding a first prize of venture enterprise by DSME
- 2007.08 Dolomite NIPY type approval
- 2007.08 Moved Head Office with enlargement
- 2007.06 Dolomite NSF type approval
- 2007.05 Acquired authentication of NSF

- 2006.07 **Selected as technical innovation Enterprise**
- 2006.01 UV sterilizer NIPH (JSB-1,3,5,10,20,30)
- 2006.01 **Established R&D Institute**

- 2004.09 **Technical cooperation with German specialized PA coating company**
- 2004.03 Registered as a cooperor along STX, SHI, DSME, HMD & HHI

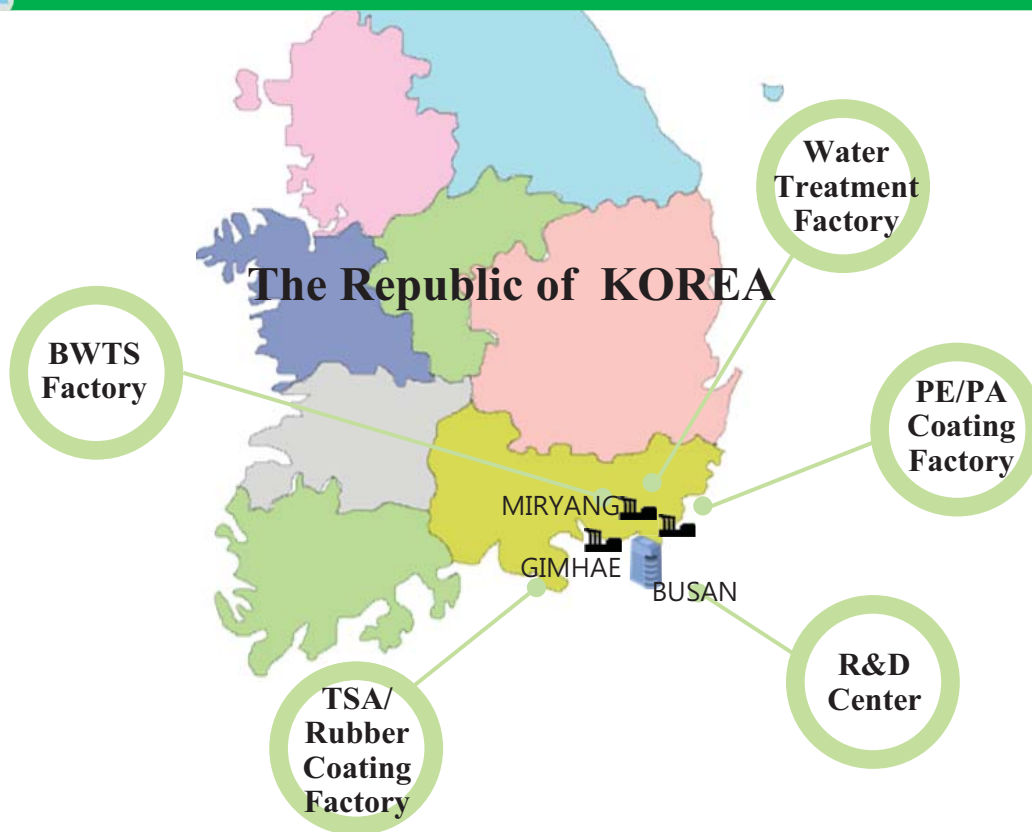
- 2003.04 **Acquired ISO 9001:2000**
- 2003.04 **Technical cooperation with Japanese specialized coating Company**

- 2002.07 Acquired “Water”Mark which means water purifier manufacturing approved
- 2002.06 Acquired DNV Classification
- 2002.04 Acquired KSA 9001:2001

- 2001.10 UV sterilizer NIPH type approval (JSA-5000)
- 2001.09 Established Samkun PNC
- 2000.12 **Acquired Europe Safety Standard CE Mark**
- 1998.06 Moved factory with its enlargement
- 1998.04 Joined in Korea Shipbuilding Material Industry Cooperative association
- 1998.02 Converted to Corporative Institution named Sam-kun century
- 1989.11 Established Su-Hyang Industry
(Producing Shipbuilding material & Water purifying system)



Local Factory Network



INTRODUCTION

FILTER

LV PLASMA

MPUV

CONTROL PANEL

	FACTORY	PRODUCT	ADDRESS
	R&D Center	-Technical Design -Research & Development	8F, Sporex BD, 13, Geungok-daero 285beon-gil, Buk-gu, Busan Tel : 82-55-338-3030 Fax : 82-55-332-7123 E-Mail : sk@samkunok.com
	BWTS /Water Treatment Factory	-BWTS -Pipe Spool -Sterilizer (UV,Ozone,Silver Ion, Auto Chlorinator) -Fresh Water Supply	405, Miyul-ro, Samnangjin-eup, Miryang-si, Gyeongsangnam-do Tel : 82-55-338-3030 Fax : 82-55-325-0808 E-Mail : sk@samkunok.com
	PE/PA Coating Factory	-Poly Ethylene Coating -Poly Amide Coating -Teflon Coating	228, Yeocha-ro, Sangdong-myeon, Gimhae-si, Gyeongsangnam-do Tel : 82-55-338-0770 Fax : 82-55-338-3348 E-Mail : skpe@samkunok.com
	TSA/Rubber Coating Factory	-Metalizing (TSA) -Rubber Coating	107-16, Yuha-ro, Gimhae-si, Gyeongsangnam-do Tel : 82-55-335-3030 Fax : 82-55-312-0685 E-Mail : pnc@samkunok.com

Samkun Century has been a professional company based on steady growth and solid profit structure.

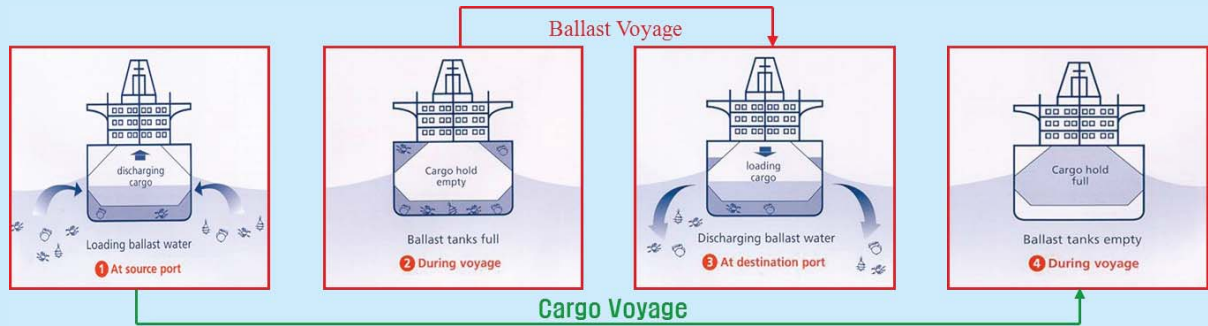
We have advanced development of new technologies and have established a solid foothold in marine equipment industry based on solid profit structure. Started from water treatment equipment especially inclusive many kinds of sterilizer for over 20 years, our company has diversified into offshore plant, ballast water treatment system, coating, painting and pipe spool to strengthen the competitiveness.





IMO Regulation

❖ Ballast & De-ballast



❖ D-1 Ballast water exchanging standard

- ▷ At least 95% of ballast water needs to be replaced.
- ▷ Pumping three times the volume of each ballast water tank should be considered in order to meet the standards for existing vessels.
- ▷ Pumping through less than three times the volume may be acceptable provided the ship can demonstrate that at least a 95% volumetric exchange is met
 - Replaceable Area : over 200m Sounding 200 Nautical miles / 50 Nautical miles or the party appointed

❖ D-2 Ballast water performance standard

- ▷ Over $50\mu\text{m}$: Less than 10inds/ m^3 ▷ 10- $50\mu\text{m}$: Less than 10inds/ m^3
- ▷ Bacteria
 - *Escherichia Coli* : Less than 250cfu/100mℓ
 - Intestinal Enterococci : Less than 100cfu/100mℓ
 - *Vibrio Cholerea* : Less than 1cfu/100mℓ

❖ Ballast Water Treatment Implementation Schedule

↙ In case that Convention enters into force on 1st Jan.2015

Build Date	Ballast Water Capacity (m ³)	Category	2013	2014	2015	2016	2017	2018	2019	2019	2020	2021	2022
Before 2009	Between 1,500 and 5,000	1 Existing			D-1						D-2		
	Less than 1,500 or greater than 5,000	2 Existing			D-1 or D-2	(*)	D-1						D-2
In or After 2009	Less than 5,000	3 New			D-2								
		3 Existing			D-1						D-2		
Between 2009 and 2012	5,000 or More	4 Existing			D-1 or D-2	(*)	D-1						D-2
In or After 2012		5 New			D-2								
		6 Existing			D-1						D-2		

(*) anniversary date of delivery of the ship

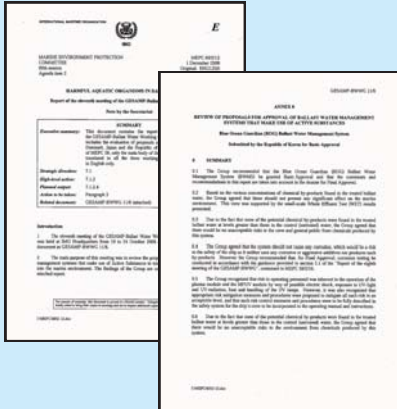
Approval



ARA PLASMA BWTS which was developed by the SAMKUN CENTURY Company, acquired Basic approval of ballast water treatment system during the MEPC 60 (MEPC 60/2/15) in March 2010 and Final approval during the MEPC 61 (MEPC 61/2/5) in September 2010.

❖ IMO Basic Approval (Mar. 2010)

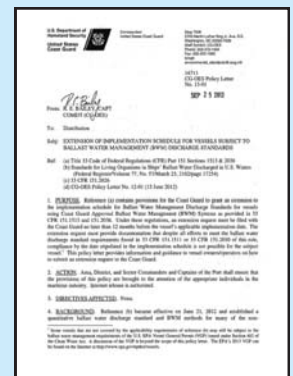
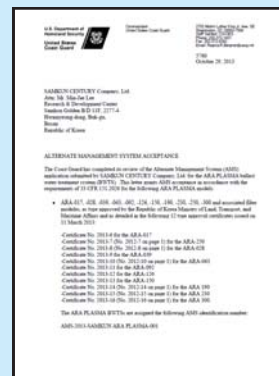
❖ IMO Final Approval (Oct. 2010)



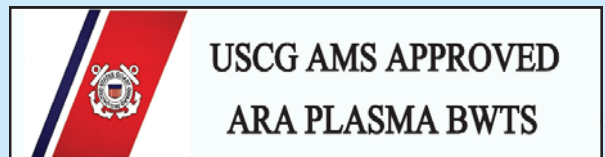
❖ Type Approval by Korean Government (Jul.2012)



❖ USCG AMS Approval (Oct.2013)



❖ Type Approval by KR Class (Dec.2013)





ARA PLASMA BWTS SYSTEM

Filtration



- ◆ It removes large particles and organisms that are bigger than 50µm in ballast water.
- ◆ It automatically removes any substances in filter cartridges by housing internal pressure increase.
- ◆ It is highly accurate and reliable

Items	Description (for 250m ³ /hr)
Mesh size	50 µm
Design pressure	6.6 bar
Max. working temperature	50 °C
Power Source	3 Phase, AC380/440 V 50/60 Hz

Low Voltage Plasma



- ◆ It generate plasma underwater by using a low-voltage generator.
- ◆ A Pressure shock wave is produced by a high-energy plasma arc.
- ◆ Shock wave destroys targeted micro-organisms by causing physical damage to their cell membranes underwater.

Items	Description (for 250m ³ /hr)
Power Source	Input : 3Phase, AC 380/440V 50/60Hz Output : 2 kW
Plasma chamber	Carbon steel &PE coating

During Ballasting

During De-ballasting



ARA PLASMA BWTS has strong sterilization in seawater of high level turbidity.

MPUV



- ◆ It has high performance of disinfection for bacteria and viruses.
- ◆ There are no formation of residual toxics or harmful substances.
- ◆ Use a wavelength of UV-C(200~280nm) to sterilize microorganisms.

Items	Description (for 250m ³ /hr)
UV sensor	0 ~ 500 mW/cm ²
Temperature sensor	PT-100
Wiper Seal	EPDM
UV chamber	STS 316L

Control Panel



- ◆ User conveniently operate “ARA PLASMA BWTS” by touch screen.
- ◆ The status of each module and any alarm messages are easily monitored in real time.
- ◆ Control panel consists of four parts; monitoring & operating part, main switch, emergency stop switch and cabinet ventilators.

Items	Description
Control panel type	PLC Type(Auto)
Power Source	AC 230V, 1Phase & DC 24V
Frequency	50/60Hz
Color	Munsell no. 7.5BG 7/2

❖ MODEL ❖



No	Model	Capacity
1	ARA-017	150m ³ /hr
2	ARA-028	250m ³ /hr
3	ARA-039	350m ³ /hr
4	ARA-063	550m ³ /hr
5	ARA-092	800m ³ /hr
6	ARA-126	1,100m ³ /hr
7	ARA-150	1,300m ³ /hr



Advantages

Eco-Friendly

- * No use chemical substances
- * **By-product is not generated**
- * No use neutralizing agent, so there are no secondary pollutant

Convenience

- * Simple maintenance
- * **Easy installation to newly constructed & existing vessel**
- * Easy operation by automatic control system

Cost-Effective

- * **Competitive Price**
- * **Compact size with minimal foot print**
- * **Low Power Consumption**

Advantage

- * **Exceptional performance of ARA PLASMA BWTS in high level of turbidity**
- * Differentiation of leakage sensor in MPUV chamber
- * Use of inner polyethylene coating pipes

Safety

- * **Safety for marine environment**
- * **Safety for your assets and your people**

INTRODUCTION

FILTER

LV PLASMA

MPUV

CONTROL PANEL

Land-base facility





3D Camera Scan



Actual Survey of drawing





Offshore Plant Division

Since 1989, We Samkun Century have manufactured and supplied Fresh water & Potable water treatment system to our clients. We have always strived to develop new products such as UV sterilizer, Re-hardening Filter, Silver Ion sterilizer and Oil-Water separator.

Thanks to our effort, now we supply technology-intensive Fresh Water Supply Unit.

**UV STERILIZER
(TOTAL PAZFOR FPSO)**



**CALORIFIER
(TOTAL PAZFOR FPSO)**



**HIGH PRESSURE
WASHING PUMP UNIT**



**HYDROPHORE TANK
(TOTAL PAZFOR FPSO)**



SEA WATER AUTO FILTER



**INVERTER TYPE
HYDROPHORE SYSTEM**



PRESSURE VESSEL



P. P COVER



GREASE TRAP



**SEA WATER SUPPLY UNIT
(SEA WATER AUTO FILTER)**

OFFSHORE PLANT
DIVISION

WATER TREAT
MENT DIVISION

F-W GENERATOR
DIVISION

COATING
DIVISION

WORLDWIDE
NETWORK

OWNER	PROJECT	SHIPYARD
1 BP	Atlantis Rig	DSME
2 CHEVRON	Agbami FPSO	DSME
3 SEA DRILL	Drill Rig	DSME
4 ODFJELL	Semi-sub Rig	DSME
5 PETROSERV	Drill Rig	DSME
6 ODFJELL	semi-sub Rig	DSME
7 TRANSOCEAN	Drillship	DSME
8 GRUPO R	Drill Rig	DSME
9 ODFJELL	DP Moored Rig	DSME
10 TMT	Drillship	DSME
11 ODBRECHT	Drillship	DSME
12 PETROSERV	Drill Rig	DSME
13 TOTAL	Pazflor FPSO	DSME
14 TOTAL	CLOV FPSO	DSME
15 RWEI	Wind Turbine Installation Vessel	DSME
16 STATOIL	Semi-rig	DSME
17 EXXONMOBIL	ARKUTUN-DAGI Fixed Platform	DSME
18 TRANSOCEAN	Drillship	DSME
19 ATWOOD	Drillship	DSME
20 VANTAGE	Drillship	DSME
21 ODBRECHT	Offshore Pipe Laying Support Vessel	DSME
22 SEA DRILL	Rig	DSME
23 PETRONAS	LNG FPSO	DSME
24 TRANSOCEAN	Drillship	DSME
25 TRANSOCEAN	Drillship	HHI
26 GLOBAL SANTA FE	Drillship	HHI
27 DOCKWISE, NETHERLAND	Semi sub heavy transport vessel	HHI
28 DEAWOO ENGINEERING	SHWE Field	HHI
29 WOODSIDE ENERGY LTD.	NRB PLATFORM	HHI
30 NOBLE	Drillship	HHI
31 DIAMOND	Drillship	HHI
32 SEA DRILL	Semi sub drilling rig	HHI
33 DOLPHIN	Drillship	HHI
34 ROWAN	Drillship	HHI
35 SEA LION	Multi Purpose Offshore Construction Vessel	HHI
36 EDDA	Offshore accommodation Vessel	HHI
37 DIAMOND	Drillship	HHI
38 TOTAL	Moho Nord FPU	HHI

OWNER	PROJECT	SHIPYARD
39 COROCORO	FPSO	SHI
40 ENFIELD	FPSO	SHI
41 TANK PACIFIC	Drillship	SHI
42 STENA	Drillship	SHI
43 MOSVOLD	Drillship	SHI
44 TANK PACIFIC	Drillship	SHI
45 NEXUS	FPSO	SHI
46 PETROBASS	Drillship	SHI
47 STENA	Drillship	SHI
48 PRIDE	Drillship	SHI
49 STENA	Drillship	SHI
50 TANK PACIFIC	Drillship	SHI
51 SAIPEM	Drillship	SHI
52 SCHAHIN	Drillship	SHI
53 BP	SKARV FPSO	SHI
54 VASHI	ONGC	SHI
55 QGOG	Drillship	SHI
56 SEA DRILL	Drillship	SHI
57 TEEKAY	Petrojarl Knarr FPSO	SHI
58 OCEAN RIG	Drillship	SHI
59 MAERSK DRILLING	Drillship	SHI
60 SEADRILL	Drillship	SHI
61 ENSCO	Drillship	SHI
62 OCEAN RIG	Drillship	SHI
63 STATOIL	FSU	SHI
64 QGOG	Drillship	SHI
65 SEA JACKS	WTIV	SHI
66 ENSCO	Drillship	SHI
67 STATOIL MARINER	FSU	SHI
68 PDC	Drillship	SHI
69 STATOIL	Drilling Jack-up	SHI
70 SHELL	Prelude LNG FPSO	SHI
71 TOTAL	Egina FPSO	SHI
72 TECHNIP	Pipe Layer	STX
73 IOOC	FSU	STX
74 NOBLE	Drillship	STX
75 PETROSERV	FDPSO Dynamic Producer	SINGAPORE
76 CHEVRON MODEC	FPSO	SINGAPORE
77 OCEAN APEX	Semi sub mersible drillship	SINGAPORE
78 SEADRILL	Drillship	SINGAPORE
79 PETROBRASS / TANKPACIFIC	FSO	CHINA





Water Treatment Division



FRESH WATER SUPPLY UNIT

- Simple Construction
- Easy Installation
- Easy Maintenance
- Easy Operation

The fresh water supply unit supplies fresh , warm and cold drinking water for the crew and It consists of technical system of water tank, sterilizer, re-hardening filter(mineralizer), calorifier and pumps.

- Capacity : 1,000 ~ 10,000 L/hr



Hydrophore system of VFD (Variable Frequency drive)

Specific type of hydrophore system is appropriate to efficiency for maintenance and saving energy. Most of conventional hydrophore tank need for Much of foot print and heavy weight of vessel approx. over 3 ton base on 2m3 capacity of tank which supply with storage water to crew and facility. A VFD system is used for control of process flow without the use of separate controller. Suitable sensors and electronics are used to interface the driven Equipment with the VFD.

MINERALIZER(RE-HARDENING FILTER)

The water which is generated by fresh water generator in vessel, can not be used by drinking water directly, because of pH value, hardness none of mineral component. For using mineralizer, increase hardness, pH value, mineral component.

- Maintenance -

- Dolomite & re-hardening material are usually changed per 3month. (If pH value is lower than 6.5, recharging activity much be done)
- Capacity : 1,000 ~ 30,000 L/hr



HYDROPHORE TANK

Fresh water will be stored and pressure it maintains.

The hydrophore tank is a welded steel fabrication, interior of which is specially coated with epoxy (PE coating or Rubber coating), a manhole is provided on the tank for inspection or cleaning the interior. All products are tested-welding point by penetration inspection.

Hydrophore unit is available in the size from 100L to 5000L.

HOT WATER CALORIFIER



In the galley, every time hot water is needed, Our H.W Calorifier is proper in that's circumstance.
It is used by shower, cooking, feeding etc.
Capacity : 50 ~ 3,000L/hr

SILVER ION STERILIZER



The bactericidal effect of silver is known from ancient times. Silver foils were used for treating wounds and silver vessels made it possible to store water. We supply silver ion sterilizer which remove micro-organisms by a catalytic method.
Capacity : 1,000 ~ 30,000L/hr

OZONE GENERATOR



GREASE TRAP



AUTO CHLORINATOR



The function of Auto Chlorinator is to provide the water with the chlorine in order to sterilize the water which contains a variety of bacteria, bacillus, and so on. HOCL&OH Radical are formed when chlorine dissolves in water. And they have strong oxidizing power to destroy the microorganism in disinfection. This method can disinfect the water with easy and long term.
Capacity : 1,000 ~ 50,000L/hr

UV STERILIZER



The UV sterilizer of Samkun Century has superiority of operating system. It protects mineral components, but disinfect typical viruses, colitis germs, bacteria in water.
Emission of ultra violet rays : 253.7nm (Most effective wavelength for removing bacteria)
Capacity : 1,000 ~ 30,000L/Hr

WATER FOUNTAIN



HOT WATER BOILER





F·W Generator Division

“ SAMKUN CENTURY CO., LTD

that cares about the environment & humans”

We have specialized in water treatment equipment for more than 20 years. Through year’s experience & continuous effort, we have developed a variety of type of water facilities. We also offer you package system which consists of fresh water generator & fresh water supply system.



Reverse Osmosis is most commonly known for its use in drinking water purification from seawater, removing the salt and other substances. Reverse Osmosis is the process of forcing a solvent through a membrane from a region of high solute concentration to a region of low solute concentration by applying a pressure in excess of the osmotic pressure.

- Capacity : 5 Ton/day ~ 200 Ton/day

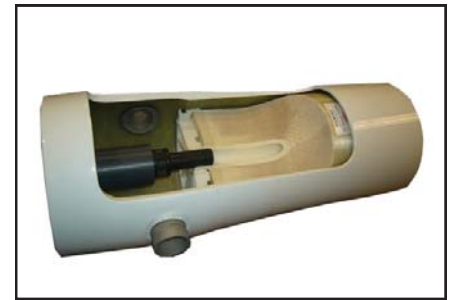
Components



Pre-processing Treatment

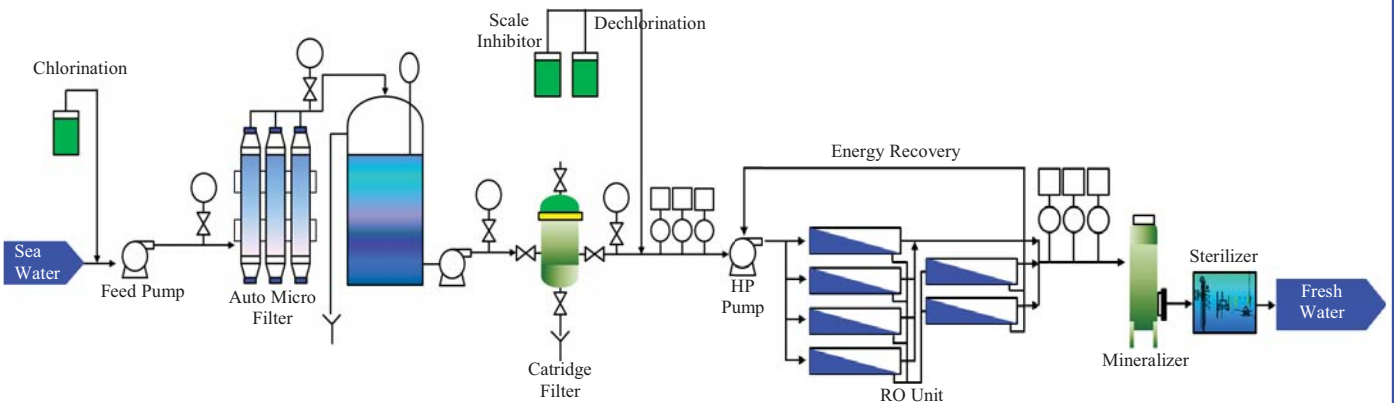


High Pressure Pump



RO Membrane

Scheme

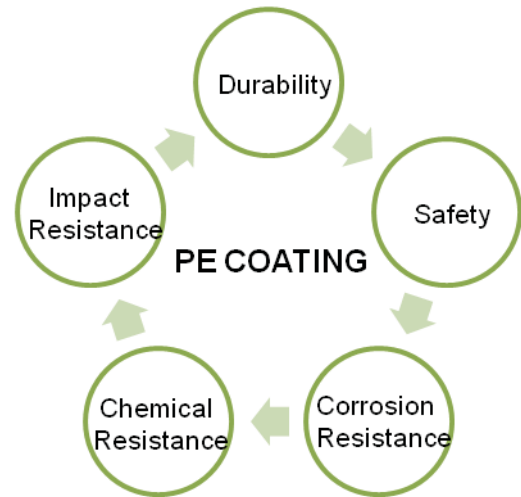
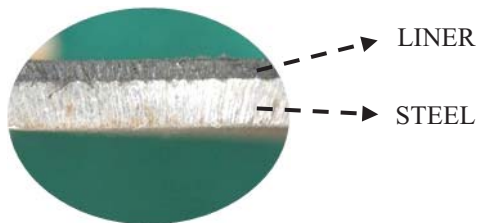


Arrangement is changeable from case to case.

Coating division supplies outstanding products which have both excellent mechanical property of steel pipe and rust prevention property of plastic. Coating has resistance to seawater and organic solvents, and also it doesn't contain dioxins and VOCs(Volatile organic compounds).

We maximize our technical efficiency to expand usage of PE/PA coating from sea to land based on our core PE, PA Coating Technology.

PE COATING(POLYETHYLENE)



PE Coating has been applied for Ships, Off shore plant , Power Plants, Water-Supply pipes, Steel tube plants. Especially, main products are coated steel pipe for Vessels, Offshore plant and covered-steel pipes.

Applications

- ◆ Sea water line for Ship
- ◆ Offshore plant
- ◆ Power plant
- ◆ Cable Tray
- ◆ Water pipe for Industrial
- ◆ Water Supply & Sewage Pipe
- ◆ Chemical Plant



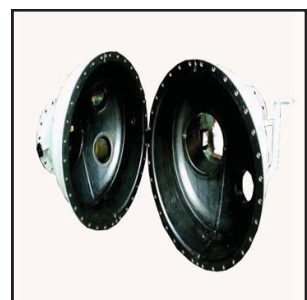


Coating Division

Samkun Century has steel fabrication shop, Shot shop, Painting shop, and coating shop and perform from various design to construction based on accumulated technological Know-how and experience.

RUBBER COATING

Rubber plays a leading role in the fascinating world of sealing. And with good reason – this material has a large number of excellent characteristics. Rubber is flexible and resilient, strong, easy to manufacture. Our rubber coated products have a lot of advantages such as an excellent anti-chemical property, anti-corrosion property and outstanding adhesion.



RUBBER PRODUCTS



OFFSHORE PLANT DIVISION

WATER TREATMENT DIVISION

F-W GENERATOR DIVISION

COATING DIVISION

WORLDWIDE NETWORK

METALIZING COATING

Metalizing coating is an excellent way of protecting iron and steel from corrosion. It is reasonable cost like painting, but has a long life time. Based on accumulated technological know-how and experience, we offer wind power parts to clients which are famous for wind power generation business like Gamesa, Vestas Hyosung and Dongyang e&c.



◆ **CS PIPE**

Shipbuilding & Offshore project



◆ **SUS PIPE**

Shipbuilding & Offshore project



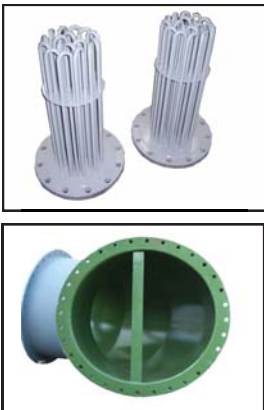
◆ **METALIZING PROCESS**

Use : Wind power
Size : 2MW



PA COATING (POLYAMIDE)

The most merits of PA Coating are high physical intensity and low gas permeability. Therefore, PA coating is suitable for high-quality products and also it is capable of working on such complicated compositions. At the same time, it is harmless against human body.



TEFLON COATING

Teflon has its unlimited application range from general manufacturing industry to high-tech semiconductor and further to aerospace industry.

Worldwide Network



EUROPE

Germany

Hansa Lifeboat
Tel : 49-471-7005882

Greece

Sea Power Hellas
Tel : 30-2104284170

Netherlands

Hyundai Engine Service
Tel : 31-10-447-3457

Spain/Portugal

Jose Miguel Garcia-Agullo
Tel : 34-91-533-9200

Norway

GMC Maritime AS
Tel : 47-518-48000

AMERICA

Canada

Davtec Marine
Tel : 001-709-579-0448

Brazil

Metalock
Tel : 55-13-3226-4686

MIDDLE EAST

Arab Emirates

Tensosys Fzco
Tel : 971-4-324-7502
Alsamier
Tel : 971-437-90551

Oman

Petrohouse
Tel : 968-248-15738

ASIA

Singapore

Paterson Integrated
Engineering
Tel : 65-6760-0928

China

China Shipping Industry
Tel : 86-21-50890066
Thinker International Co.,Ltd
Tel : 86-21-64325585
CM Korea
Tel : 86-21-51330562
Daeyang Shipyard Co., Ltd
Tel : 86-411-3924-6770
Zhoushan Nanyang Star Shipyard
Tel : 86-0580-2928861

Hong Kong

Marland Technical Service Ltd
Tel : 852-2571-9322

ASIA

Korea

Marine Technical Engineering
Tel : 82-51-831-1118
Korea Maritime Service Co., Ltd
Tel : 82-51-603-1000
Sungwon DSP
Tel : 82-2-2644-0508

Taiwan

Richtop Enterprise
Tel : 886-7-5312365

Japan

USHIO REINETSO Co., Ltd.
Tel : 81-898-34-1203

AFRICA

Nigeria

Platinum Samandy Ventures
Tel : 234-807-407-2031

**We have 61 companies of global Equipment Service Center (A/S Network).
We are choosing and building up the representative of A/S network by regional groups.**

