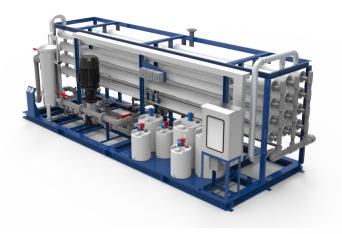
Modular Water treatment system

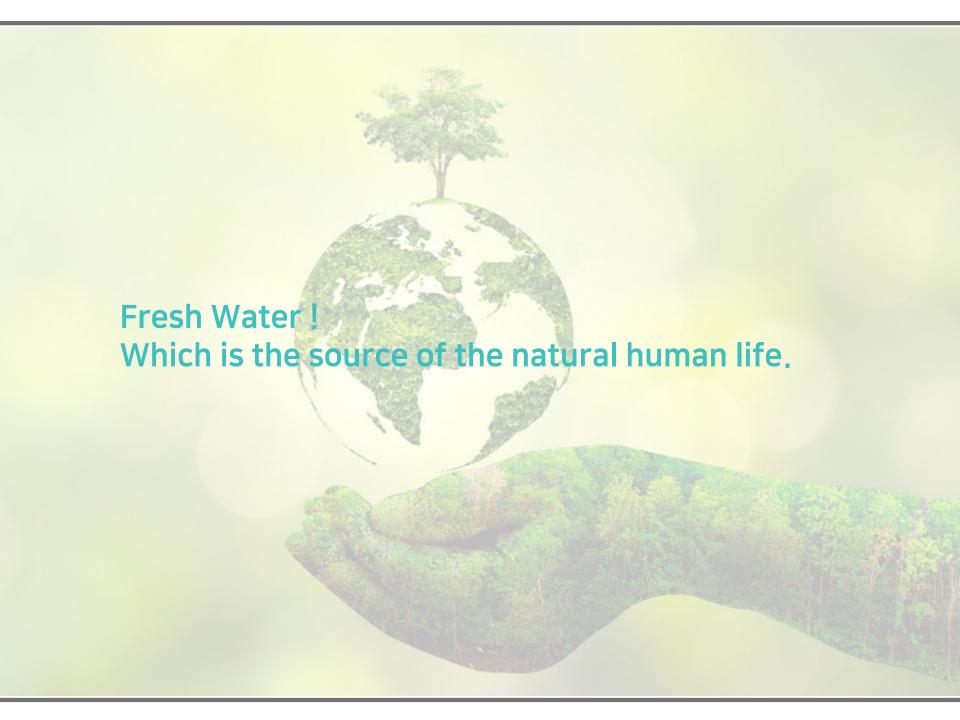
- Drinking water
- **▶** Seawater Desalination
- WWT Total Solution











Modular water treatment system

This is a Solution that focuses on the total water treatment system, HMI and PLC based control. Our company supplies design, engineering and manufacturing such as desalination, wastewater treatment solution and ultra-pure water system, comprehensively.

Water treatment solution & System engineering



Head Office of



Factory of **KSYS**

(Korea water treatment System for Your Satisfaction)

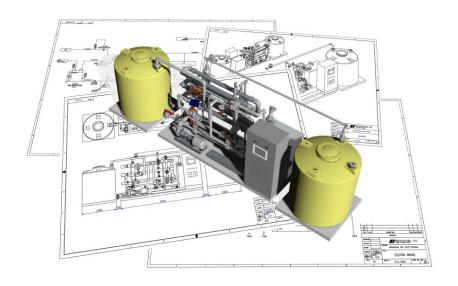
Head office and R&D center



Factory 3,300m²







System engineering



Business categories



 Based on WK E&C's Powerful construction capability, all of water treatment projects to be managed with safety.

- UF/RO System
- Wastewater Treatment System
- Desalinator for Marine vessels
- Mobilized Water Treatment System
- Pilot System for Institute
- Effective Maintenance parts
- Activated 3D Modeling
- PLC Based PID control
- HMI Based, Fall Automatic Control





Registration and Patent



KSYS Standard System

BWRO PACKAGE SYSTEM

Isolated area of rural
Construction site, Temporary water supply of
Hotel and resort, Island.
Emergency Drinking Water.

* BWRO (Brackish Water Reverse Osmosis)











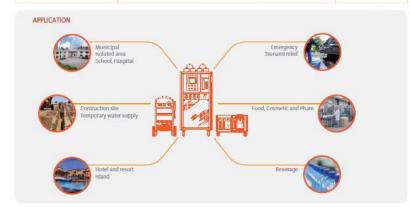




BRACKISH WATER SYSTEM



Model	KBSP-010	KBSP-015	KBSP-020	KBSP-030H		
Capacity (Liter/day)	10,000	15,000	20,000	30,000		
Feed water source	Brackish water (borehole, municipal water, well, river, lake)					
Filtration Technology	Reverse Osmosis					
Product water quality	Potable water					
Feed flow rate (m3/hr)	1.5	1.6	1.8	2.2		
Recovery (%)	28	39	46	58		
Operating pressure (bar)	Feed 1~3, RO 7~10					
Power consumption (kW)	1.8	2,0	2.2	2,5		
Control type	HMI, PLC Fully automatic oepration					
Feed water temp. (°C)	4~40					
Ambient air temp. (°C)	10~50					
Weight (kg)	250	270	290	340		
Size (W x B x H mm)		1400 x 800 x 1550				



SEA WATER SYSTEM



KSSP-005/H	KSSP-010H	KSSP-015H		
5,000	10,000	15,000		
	Seawater			
	Reverse Osmosis			
	Potable water			
0.6	1.4	1.6		
38	30	40		
	Feed 1~3, RO 50~60			
1.5	4.8	6.5		
PCB auto control	HMI, PLC Fully automatic oepration			
	4~32			
	10 ~ 50			
130	410	460		
660 x 580 x 1400 1200 x 470 x 630(H type)	1400 x 800 x 1600			

KSYS EMERGENCY & SPECIAL





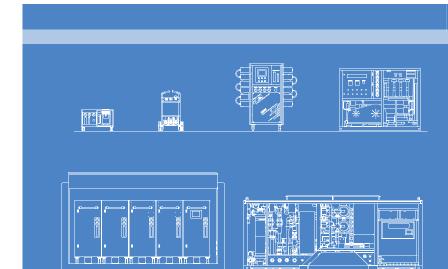
KBEP-0015M	KSEP-0015E		
1,500	1,500		
Brackish water	Seawater		
Reverse	Osmosis		
Potabl	e water		
0,35	0.24		
20	30		
7~10	50~60		
0.75	1.1		
Manual	operation		
4 ~ 40	4~32		
10 ~ 50	10 ~ 50		
50	55		
570 x 750 x 950	760 x 710 x 510		





* The specifications of product are subject to change without notice.



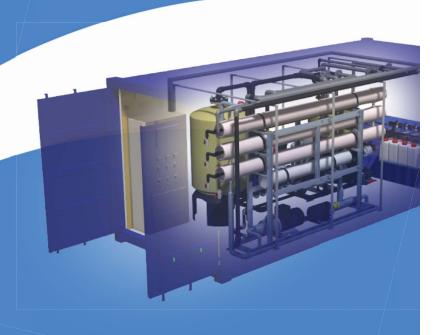






PACKAGE RO SYSTEM







SYSTEM SPECIFICATION

Model	KU-10F-200	KU-20F-500	KS-10F-50	KS-20F-100	KB-10F-120	KB-20F-250
Outline		KU-10F			KS-10F KB-10F	
Capacity(m³/day)	200	500	кu-2	100	120	KS-20F KB-20F
Feed source	Seawater, we		Seawater Well, river, lake			
	Less than 1NTU, remove virus, bacteria		Seav	vater	Well, ri	
Product quality			Seav		Well, ri n 500ppm TDS	
Product quality Power consumption (kW)			Seav 16			
Power consumption	Less than 1NTU, re	move virus, bacteria		Less that	n 500ppm TDS	ver, lake
Power consumption (kW)	Less than 1NTU, re normal 2.5 backwash 8.5	move virus, bacteria normal 4 backwash 19	16	Less that	6.5	ver, lake

- * The size and weight are the system only.
- * The system can be mounted ISO Standard container.

Screen Filter

- · Max, working pressure: 10 bar
- Max. fluid temperature : 50°C Max. flow rate: 70 m3/h
- Pore size: 125 μm
- · Screen material: Non-corrosive stainless steel
- Weight: 42 kg
- Filtration of fine particles using cartridges

UF Membrane

- · Size: Ø 250 * 1,680 mm
- Max. operating pressure: 5 bar
- Max, operating temperautre: 40°C
- Pore size: 0.02
- · Membrane material : PESm
- · Weight: 55 kg
- log 4 virus and log 6 bacteria removal

RO Membrane / Vessel

- · Membrane size : Ø8 * 40 inch
- · Membrane material : PA
- Max, operating pressure: 1,000psi
- · Flow rate (each) : 57 m³/day
- · Stabilized Salt rejection: 99.8%
- · Stabilized Boron rejection: 41%
- > Salt ion removal from seawater and surface water

SYSTEM CONFIGURATION

UF 200ton System single operation

KU-10F-200

■ UF 200ton + SWRO 50ton system operation

KU-10F-200

KS-10F-50

■ UF 500ton + BWRO 120ton X 2sets system operation

KU-20F-500

KB-10F-120

KB-10F-120

APPLICATION

- Municipal / Isolated area
- Hotel, Resort and School water supply
- Pilot system for Large plant
- Temporary water supply for Contruction site
- Emergency, Tsunami relief

MODEL INFORMATION

KS-10F-100-CT

N/A: STANDARD / CT: CONTAINER / CV: CANVAS COVER

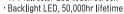
---- 100 : PRODUCT FLOWRATE -m3/day

— 10F: For 10FT Container / 20F: 20FT U: UF System / S: SW RO System / B: BW RO System

Seawater 35,000ppm TDS (25°C) / RO Recovery rate 10~40% Surface water 3,000ppm TDS (25°C) / RO Recovery rate 50~70% Main power source: 380 or 440VAC, 3Phase, 50/60Hz Weight in Specification table is excluded container weight.

Touch Pannel / PLC





- · Certificate : CE, UL, KC









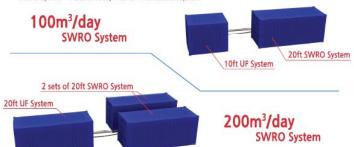
SWRO System configuration

Single system

- UF System 200, 500m³/day OPTION
- SWRO System 50, 100m3/day

Full package system

■ SWRO System 100/200m³/day with UF Pretreatment system



Multiple full package system

SWRO System 200/400/600m3/day and more!

Capacity expansion



KSYS

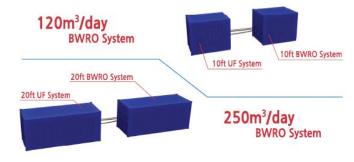
BWRO System configuration

Single system

- UF System 200, 500m3/day OPTION
- BWRO System 120, 250m3/day

Full package system

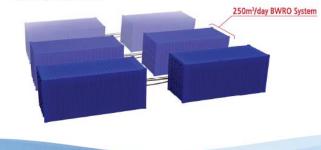
■ BWRO System 120/250m³/day with UF Pretreatment system



Multiple full package system

■ BWRO System 250/500/750m³/day and more!

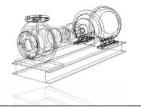
Capacity expansion







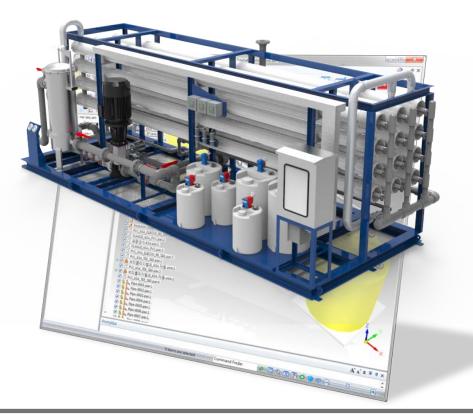
3D Modeling



Software : SolidEdge ST8

Cadian 2014

- 3D System modeling
- 3D Piping (Isometric Issue)
- BOM Issue Based on 3D modeling
- Optimization design without Loss
- Lower defect rate
- Lower cost Effects
- 3D Simulation Activating







T PROJECT BWRO 3000TPD Bird's eye view





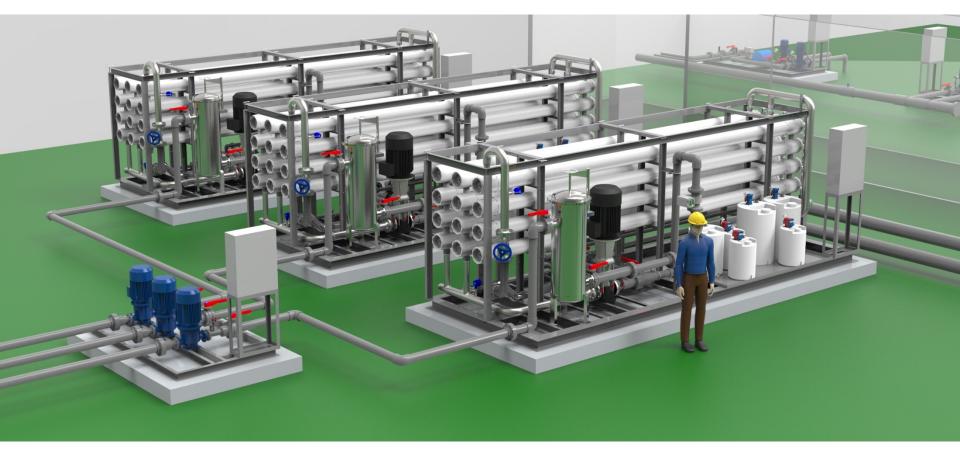
T PROJECT BWRO 3000TPD Bird's eye view





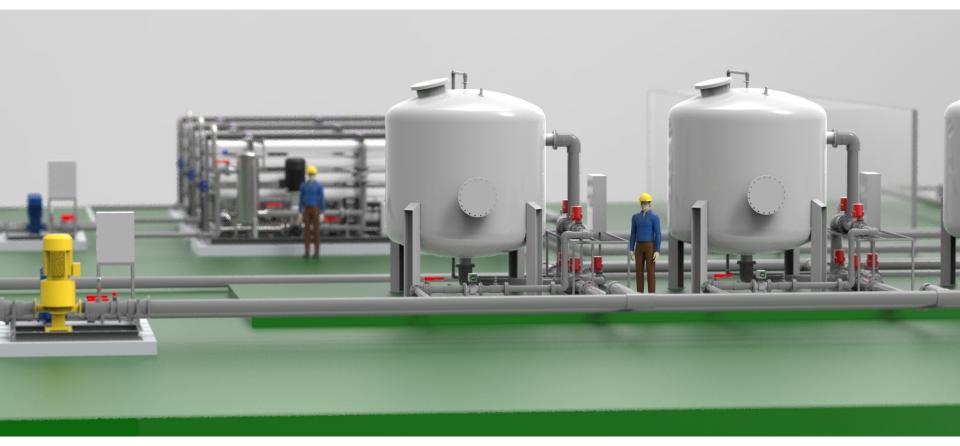
T PROJECT BWRO 3000TPD DMF VIEW





T PROJECT BWRO 3000TPD RO VIEW





T PROJECT BWRO 3000TPD DMF VIEW



Reference - BWRO System





BWRO SYSTEM

Drinking water supply 2,000 m³/day Aug. 2017. / Bangladesh

* BWRO (Brackish Water Reverse Osmosis)



Reference - SWRO SYSTEM (Containerized)





SWRO SYSTEM (Containerized)

Drinking water supply 2,000 m³/day (500m³/day x 4 sets) Aug. 2017. / Malaysia

* SWRO (SeaWater Reverse Osmosis)



Reference - SWRO SYSTEM VIEW



SWRO SYSTEM 2,000 m³/day



Reference - MOBILE UF SYSTEM







MOBILE UF SYSTEM

Emergency Water Treatment 500GPM (2700m³/day) Jun. 2019. / Ulsan, Korea



Reference - MOBILE SWRO SYSTEM







MOBILE SWRO SYSTEM

Drinking water supply from Seawater 60m³/day May. 2019. / Yongin, Korea



PLANT 3D DESIGN FOR MD (Membrane Distillation System)



MD 200TPD



Reference for MD System







MD SYSTEM (Membrane Distillation)

Drinking water supply 200 m³/day Jul. 2018. / Pusan, Korea



Reference for Multi-purpose Cartridge type System

Multi-purpose Cartridge type Water Treatment System

MF / UF / RO Cartridge system Emergency water supply Small drinking water system Aug. 2014. / KICT, Korea











Reference for Membrane Inspection System

Membrane Inspection System

Total MF/UF quality inspection system for membrane manufacturer.
Mar. 2015. / Hangzhou, China











Reference for Variety Package Systems

Package SWRO System

Seawater RO long term pilot test system Oct. 2011. / Daecheon, Korea









Mobilized UF/RO Package system

Emergency water supply Small drinking water system Sep. 2012. / Seoul, Korea

Mobilized BWRO System

Emergency water supply Small drinking water system Jun. 2014. / Seoul, Korea







Reference for Variety Package Systems

UF System

Small drinking water system
Oct. 2013. / Cho-do, Korea
UF Membrane - inge GMBH(Germany)









Engine driven BWRO system
Emergency water supply
Des. 2011. / Seoul, Korea

Seawater Desalinator for Marine vessels

Drinking water supply Aug. 2012. / Ulsan, Korea







Reference for Control and HMI Systems

Li Concentration System Control and HMI

Mineral concentration system Feb. 2013. / Chile









MF/BWRO pilot plant Control and HMI Water treatment pilot system Oct. 2013. / Daegu, Korea

MF/SWRO Pilot plant Control / HMI

Water treatment pilot system Dec. 2011. / Seoul, Korea







Reference for Control and HMI Systems

BWRO System Control and HMI BWRO system Jan. 2014. / Iraq







SWRO plant Control / HMI SWRO System Aug. 2013. / Indonesia

SWRO System Control and HMI SWRO system Mar. 2013. / Livia





Reference for Control and HMI Systems

Ag Electro-refining Control and HMI Metal electro-refining system Nov. 2012. / Paju, Korea









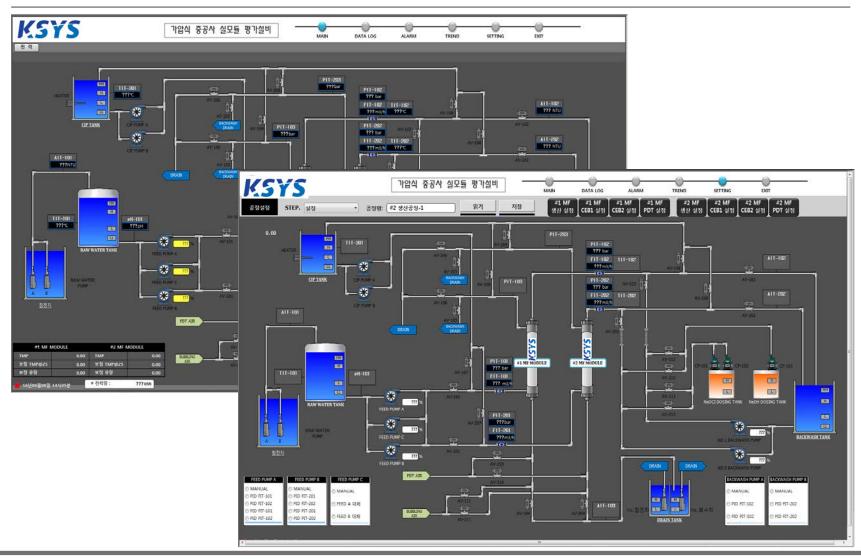
HH system Control panel Helicopter Handling System Sep. 2010. / Ulsan, Korea

MBR Pilot plant Control panel Water treatment pilot system Dec. 2011. / Osan, Korea

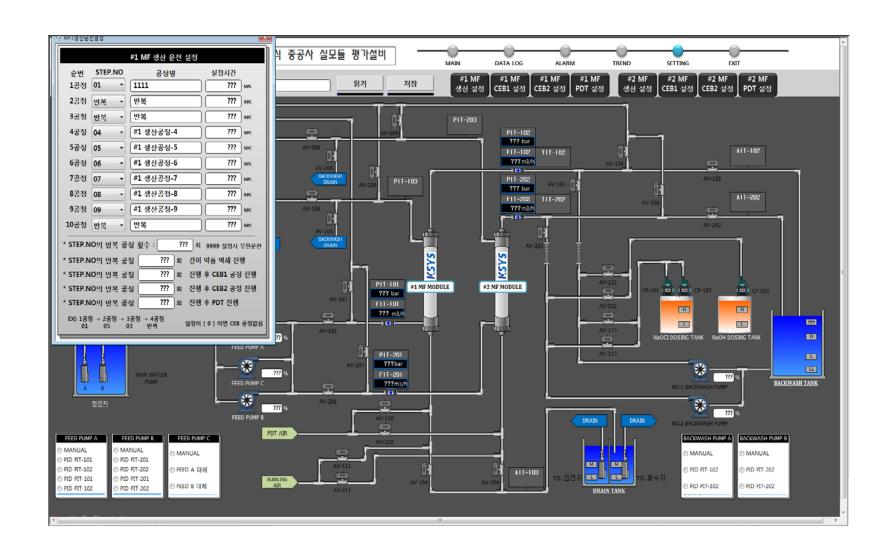




Reference for HMI Sample for MF Systems







Reference for Pilot system

Pilot system for Institute
MF / UF / RO / TMF pilot system









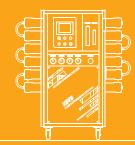


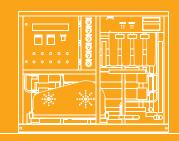




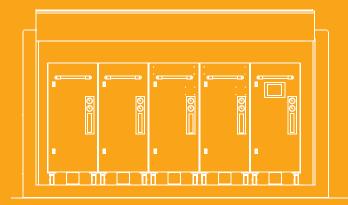


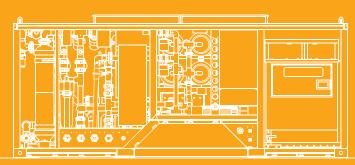






MULTI PURPOSE RO PACKAGE SYSTEM





MOBILIZED RO PACKAGE SYSTEM



Korea water treatment System for Your Satisfaction



6F, World-beater bldg., 13 Jeongja-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea

TEL. 82-31-713-7070 FAX. 82-31-713-6010

E-MAIL. wkcos@daum.net WEBSITE. http://www.wkcos.com

PACKAGE RO SYSTEM

KSYS MULTI PURPOSE WATER TREATMENTS SYSTEM



Specialized Features





Smart & Easy Control
Built in HMI Touch screen and PLC

Strong Performance
High efficiency pumps and VFD inverter applied

Certificated Membrane
NSF certified membrane filter applied

Safety Function
Protected by pressure switches & solenoid valves.

Standard Compliance
Use of KS, ANSI & CE certified pipe & electrical parts.

Space Efficient Design
Increase space utilization with optimized system design.

Mobility
Light weight and Large caster

Applications

Fresh drinking water supply

Municipal, Isolated area, School, Hospital





Temporary water supply

Construction site, Emergency, Tsunami relief







Fresh water supply

Hotel, Resort, Island



Technical Specification

BRACKISH WATER SYSTEM



Model	KBSP-010 / Plus	KBSP-015 / Plus	KBSP-020 / Plus	KBSP-030H			
Capacity (Liter/day)	10,000	15,000	20,000	30,000			
Feed water source	Brackish water (borehole, municipal water, well, river, lake)						
Filtration Technology	Reverse Osmosis						
Product water quality	Potable water						
Feed flow rate (m3/hr)	1.5	1.6	1.8	2.2			
Recovery (%)	*28	*39	*46	58			
Operating pressure (bar)	Feed 1~3, RO 7~10						
Power consumption (kW)	1.8	2.0	2.2	2.5			
Control type	HMI, PLC Fully automatic operation						
Feed water temp. (°C)	4 ~ 40						
Ambient air temp. (°C)	10 ~ 50						
Dry weight (kg)	200	220	240	290			
Size (W x B x H mm)		1400 x 800 x 1550					

^{*} The Plus model can raise recovery rate more than 50%.

SEA WATER SYSTEM







KSSP-005	KSSP-010H	KSSP-015H					
5,000	10,000	15,000					
	Seawater						
	Reverse Osmosis						
Potable water							
0.6	1.4	1.6					
38	30	40					
Feed 1~3, RO 50~60							
1.5	4.8	6.5					
HMI, PLC Fully automatic operation							
	4 ~ 32						
10 ~ 50							
180	410	460					
660 x 650 x 1500	1400 x 850 x 1600						

High pressure Pump



- Multistage centrifugal pump(BW)
- Multiplex plunger pump(SW)
- High energy efficiency
- Material : Non-corrosive stainless steel
- Max. operating pressure : 10 bar(BW) / 55 bar(SW)
- ► High pressure supply for R0 membrane

RO Membrane / Vessel



- Membrane size : Ø4 * 40 inch
- · Membrane material : PA · Vessel material : FRP
- · Max. operating pressure: 600(BW) / 1000(SW) psi
- Flow rate (each): 9.1(BW) / 4.5(SW) m³/day - Stabilized Salt rejection: 99.5(BW) / 99.8(SW) %

lon removal from brackish water or seawater

Safty Device



- Feed water pressure abnormal
- High pressure abnormal
- Product pressure abnormal
- SPDT contact machanism
- Operating temperature: max, 120°C
- ► Protect system from abnormal pressure condition

Cartridge Filter / Housing



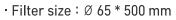
Filter material : PP Housing material : PP

Operating pressure: 2.0~3.0 bar (max. 8.8 bar)

- Capacity : $1.5 \text{ m}^3/\text{h}$ (max. $2.0 \text{ m}^3/\text{h}$)

► Filtration of fine particles using cartridges

Carbon Filter / Housing



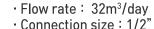


Operating pressure: 2.0~3.0 bar (max. 8.8 bar)

- Capacity : 1.5 m³/h (max. 2.0 m³/h)

► High dirt-Holding capacity

UV Sterilizer



- · Lamp failure device equipped
- Accumulated timer equipped
- Lamp watts: 20W
- Chamber material: 304SS

Disinfect product water

Touch Pannel / PLC



- Backlight : LED, 50,000hr lifetime
- · Certificate : CE, UL, KC
- · High speed and large capable PLC control
- Maximized reliability
- K-PID Control applied(option)
- Smart and Easy operation



Appendix (Option items, Size information)

Option item



Generator

- · Sound proof gasolin engine generator
- Output : 3kV, 5kV, 11kVA
- ► Reliable power supply

Portable TDS

- Accuracy: 2%
- Quick to test the TDS of water
- ► Portable light weight handheld TDS meter

Multi-media filter / Softner / AC filter

- · Variable filter media available
- Automatic backwashing / regeneration
- ► High turbidity water filtering

Option item skid

- · Filter housing / Chemical unit / Feed pump mountable
- · One, two or three item free selectable
- ► Convenient mount for various option items

Solar Power

- · Average daily energy harvest: 6 kWh
- · Battery capacity @ 20hr rate : 627AH @ 24VDC
- ► Clean and silent energy supply

Feed pump

- Multistage centrifugal pump
- · High energy efficiency
- ► Stable supply feed water

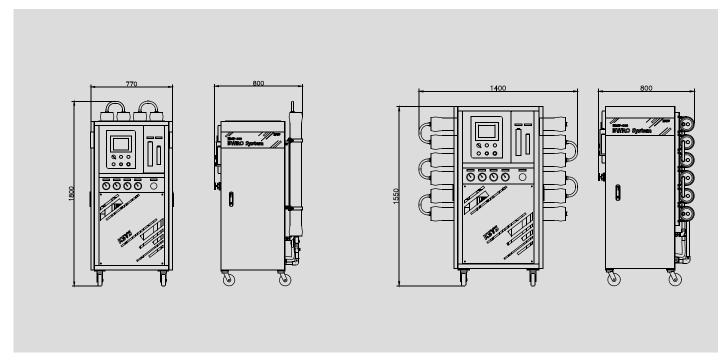
Chemical dosing unit

- · Anti-scalant / PAC / Chloine
- Diaphragm pump / PE tank
- ► Chemcal dosing to feed or product water

Salinity sensor / Controller (premium)

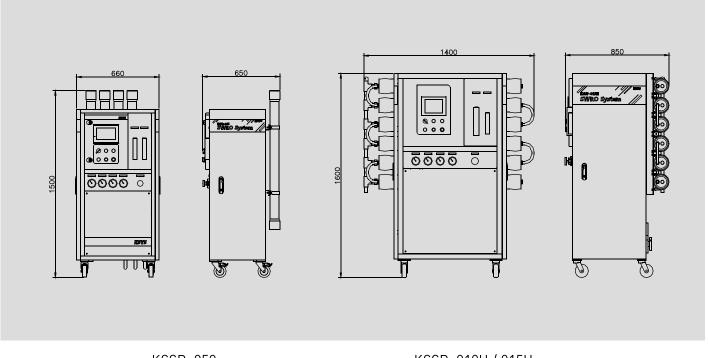
- · High accuracy and repeatability
- · LCD Backlit display contoller
- ► Measuring and display of product water quality

Size Information



KBSP-010 / KBSP-015 / KBSP-020

KBSP-030H



KSSP-050

KSSP-010H / 015H

Appendix (Connect Infomation, Certifications)

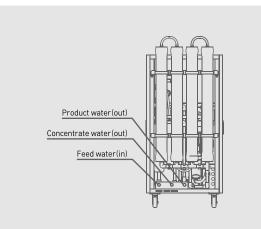
Connect Infomation

KBSP-010 / KBSP-015 / KBSP-020

- · Feed water(out) 3/4" / 20A Female pipe thread
- Concentrate water(out) 3/4" / 20A Female pipe thread
- Product water(out) 3/4" / 20A Female pipe thread

KBSP-030H

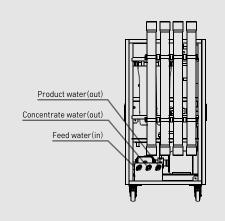
- Feed water(out) 1" / 25A Female pipe thread
- Concentrate water(out) 1" / 25A Female pipe thread
- Product water(out) 1" / 25A Female pipe thread



* Flange connection option available

KSSP-005

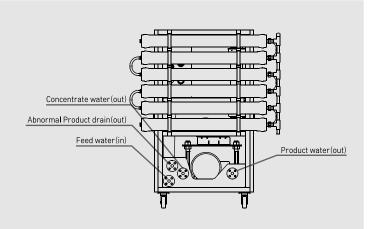
- · Feed water(out) 3/4" / 20A Female pipe thread
- Concentrate water(out) 3/4" / 20A Female pipe thread
- · Product water(out) 3/4" / 20A Female pipe thread



* Flange connection option available

KSSP-010H / KBSP-015H

- · Feed water(out) 3/4" /20A ANSI FLANGE
- Concentrate water(out) 3/4" /20A ANSI FLANGE
- Product water(out) 3/4" /20A ANSI FLANGE



* Socket connection option available

Component Certifications

High pressure pump (Grundfos)

- EN 10204 3 1 C
- LRS, DNV, GL, BV, ABS, RINA, CCS, RS, BKI, USCG, NKK

High pressure pump (Cat pumps)

ATEX Compliant

RO Membrane (Toray chemcal)

- NSF(National Science Foundation)
- ANSI standard 61

R0 Vessel (R0PV)

· ASME

Conductivity meter (GF Signet)

· CE, UL, RoHS

HMI Touch panel, PLC (LS IS)

- · CE. UL. KC
- ABS, DNV, LRS, BV, NK
- · RINA, GL, CCS, KR























Company Certifications

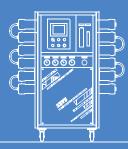


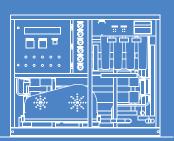


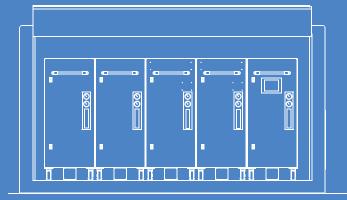


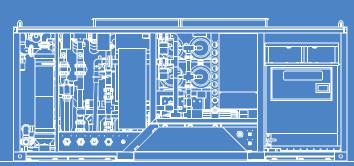












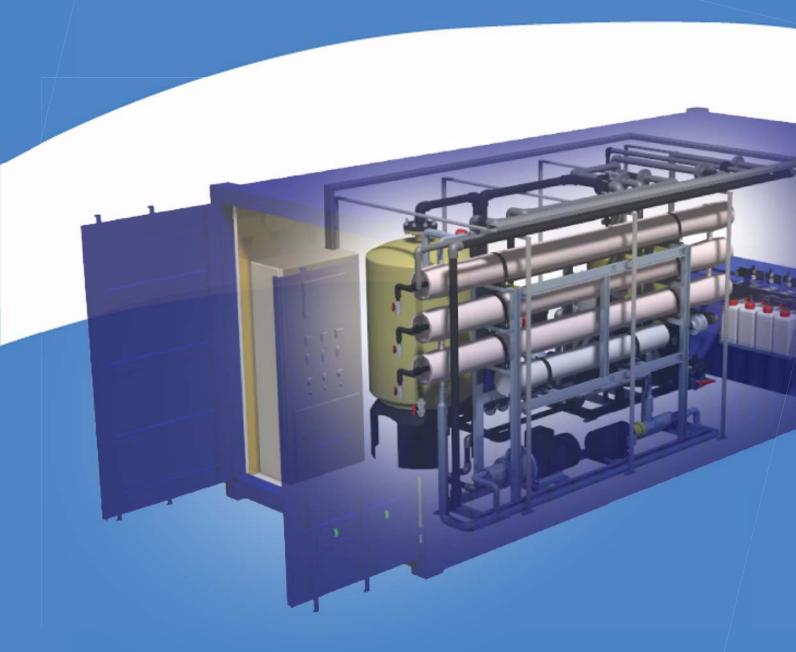


Korea water treatment System for Your Satisfaction



PACKAGE RO SYSTEM

KSYS MULTI PURPOSE WATER TREATMENTS SYSTEN



Specialized Features



Suitable for Users

Intuitive facility status & remote operation are possible.



Smart & Easy Control

Built in HMI Touch screen and PLC



Strong Performance

High efficiency pumps and inverters were used.



Certificated Membrane

Application of NSF certified membrane filter.



Safety Function

Protected by pressure switches & solenoid valves.



Standard Compliance

Use of KS & CE certified pipe & electrical parts.



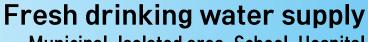
Space Efficient Design

Increase space utilization with efficient system design.



Mobility

ISO Standard transportation



Municipal, Isolated area, School, Hospital





Temporary water supply

Construction site, Emergency, Tsunami relief







Fresh water supply Hotel, Resort, Island

Technical Specification

SYSTEM SPECIFICATION

Model	KU-10F-200	KU-20F-500	KS-10F-50	KS-20F-100	KB-10F-120	KB-20F-250
		KU-10F			KS-10F KB-10F	
Outline			KU-2	OF		KS-20F KB-20F
Capacity(m³/day)	200	500	50	100	120	250
Feed source	Seawater, well, rever, lake		Seawater		Well, river, lake	
Product quality	Less than 1NTU, remove virus, bacteria		Less than 500ppm TDS			
Power consumption (kW)	normal 2.5 backwash 8.5	normal 4 backwash 19	16	23	6.5	12
Size(m)*	2.7 × 2.2 × 2.2	5.7 × 2.2 × 2.2	2.7 × 2.2 × 2.2	5.7 × 2.2 × 2.2	2.7 × 2.2 × 2.2	5.7 × 2.2 × 2.2
Weight(kg)	750	1,350	950	1,800	850	1,700
	Ultra filtration membrane			SW High rejection RO membrane		

- * The size and weight are the system only.
- * The system can be mounted ISO Standard container.

SYSTEM CONFIGURATION

■ UF 200ton System single operation

KU-10F-200

■ UF 200ton + SWRO 50ton system operation

KU-10F-200

KS-10F-50

■ UF 500ton + BWRO 120ton X 2sets system operation

KU-20F-500

KB-10F-120

KB-10F-120

APPLICATION

- Municipal / Isolated area
- Hotel, Resort and School water supply
- Pilot system for Large plant
- Temporary water supply for Contruction site
- Emergency, Tsunami relief

MODEL INFORMATION

KS-10F-100-CT

N/A: STANDARD / CT: CONTAINER / CV: CANVAS COVER

- 100 : PRODUCT FLOWRATE -m³/day - 10F: For 10FT Container / 20F: 20FT

− U: UF System / S: SW RO System / B: BW RO System

Seawater 35,000ppm TDS (25°C) / RO Recovery rate 10~40% Surface water 3,000ppm TDS (25°C) / RO Recovery rate 50~70%

Main power source: 380 or 440VAC, 3Phase, 50/60Hz Weight in Specification table is excluded container weight.

Screen Filter

- Max. working pressure: 10 bar
- Max fluid temperature : 50°C Max flow rate: 70 m³/h
- Pore size : 125 μ m
- · Screen material: Non-corrosive stainless steel
- · Weight: 42 kg
- ► Filtration of fine particles using cartridges

UF Membrane

- Size : Ø 250 * 1,680 mm
- Max. operating pressure: 5 bar
- Max. operating temperautre: 40°C
- Pore size: 0.02
- Membrane material : PESm
- · Weight: 55 kg
- log 4 virus and log 6 bacteria removal

RO Membrane / Vessel

- Membrane size : Ø8 * 40 inch
- · Membrane material : PA · Max. operating pressure: 1,000psi
- Flow rate (each) : 57 m³/day
- Stabilized Salt rejection: 99.8%
- Stabilized Boron rejection: 41%
- ▶ Salt ion removal from seawater and surface water

Touch Pannel / PLC

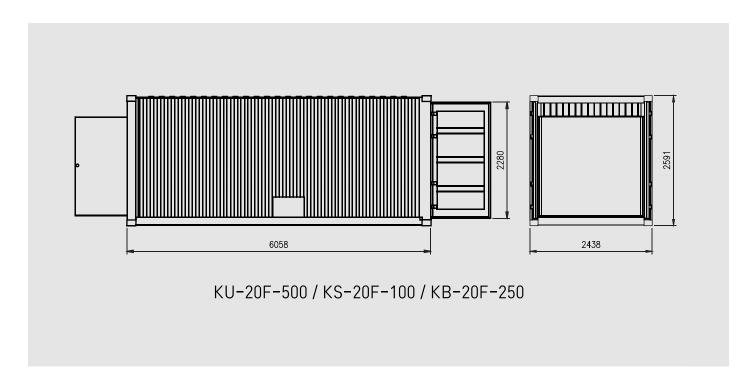
- · TFT full color LCD touch screen
- Certificate : CE, UL, KC
- · High speed and large capable PLC control
- Maximized reliability
- · K-PID Control applied
- ► Smart and Easy operation

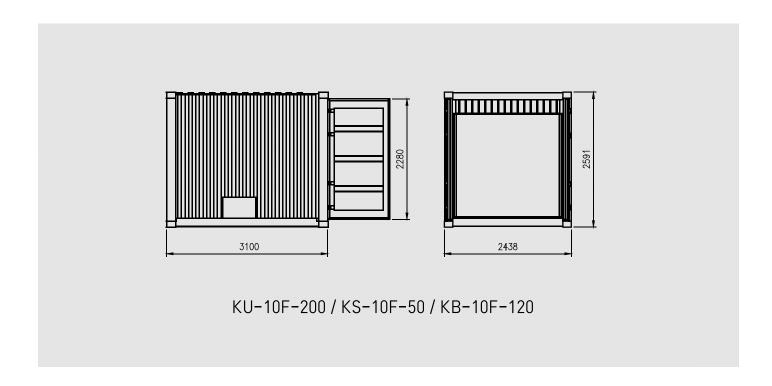




Appendix

SIZE INFORMATION





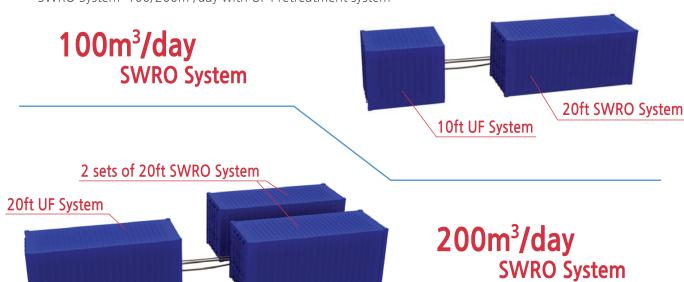
SYSTEM CONFIGURATION

Single system

- UF System 200, 500m³/day OPTION
- SWRO System 50, 100m³/day

Full package system

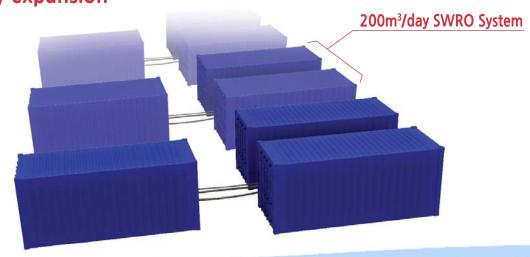
■ SWRO System 100/200m³/day with UF Pretreatment system



Multiple full package system

■ SWRO System 200/400/600m³/day and more!

Capacity expansion



Fresh Water! Which is the source of the natural human life.



6F, World-beater bldg., 13 Jeongja-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea