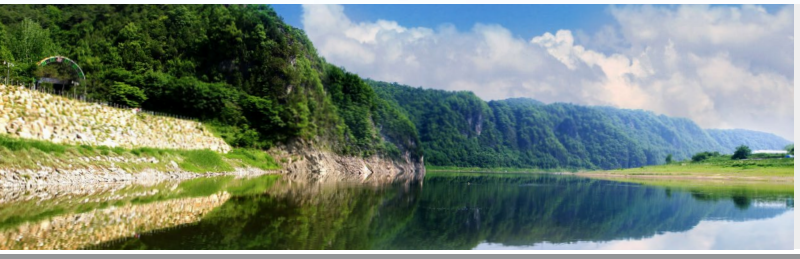
www.daehanwater.kr

Quality Water for Quality Life



DH water
대한환경

DH water 대한환경

Goal

Leaping to leading company in the
R/O system market by R&D Advanced
technology based on global platform

Strategy

- Challanging
- Activating
- Caring
- Innovating

- Strengthen R&D activities
- Acquisition of intellectual property
- Advanced Technology
- Develop high-value products

- Price innovation through cost reduction
- Securing overseas market through online marketing

Key Value

Customer

- Quality Satisfication
- Quick A/S

Economic

- Sound trading culture
- Co-growth

Social

- New Technology Development
- Technology Innovation
- Human resource training

Slogan

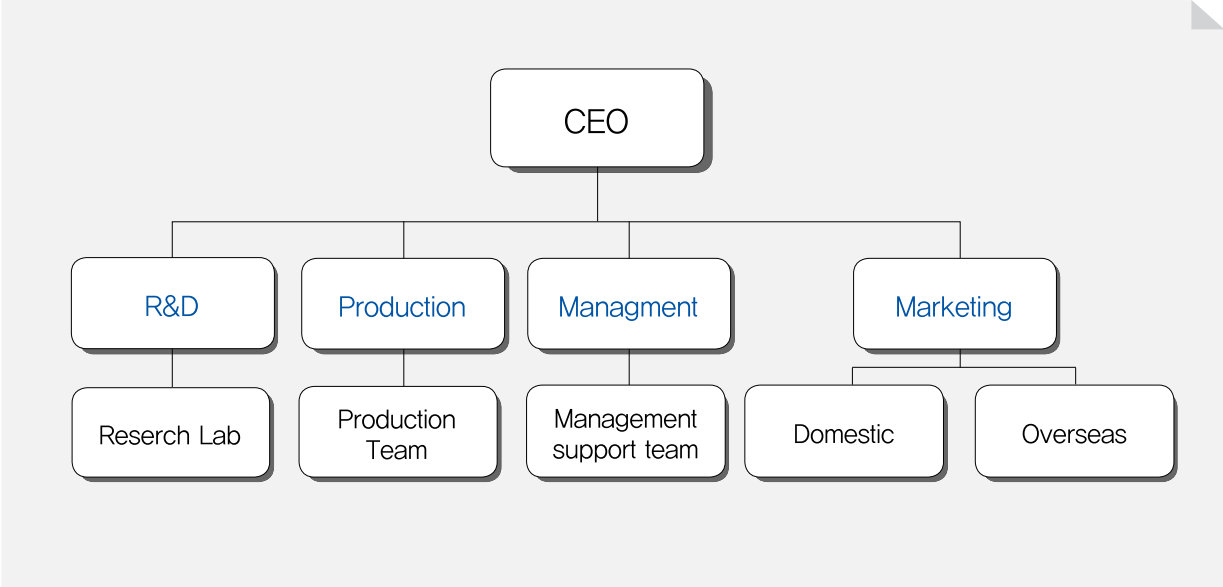
" Quality Water for Quality Life "

DH WATER

Since the mid-1990s, DH Water has recognized the problems and impacts related to drinking water & industrial water, and has been steadily committed to water-related fields for about 25 years We will strive for customer satisfaction and happiness through research and technological development with a focus on all areas related to the pure, ultrapure water, desalination.

Patent (Filter device & Two way C.I.P) ISO9001 ISO14001

Lab certi Innobiz certi Venture company certi Excellent technology evaluation company



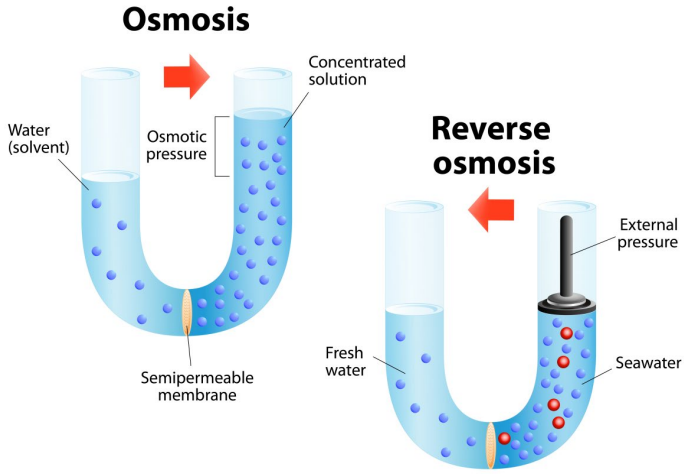
Principle of R/O system

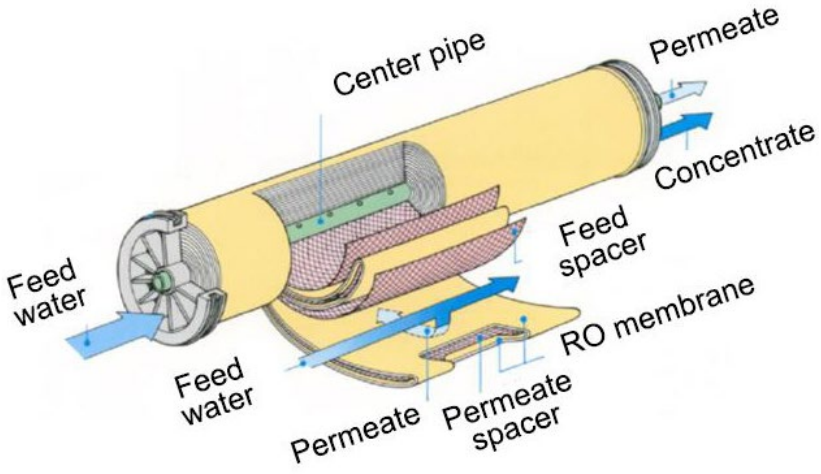
What is Reverse Osmosis ?

After separating the solution with concentration difference like salt water and fresh water into semipermeable membrane, Water of low concentration solution moves to the high concentration side after a certain time.
This phenomenon is an Osmotic phenomenon and the difference in water level that occurs at this time is called Osmotic pressure.

When a pressure higher than osmotic pressure is applied to a high concentration solution, the water moves toward the low concentration solution. This phenomenon is called Reverse Osmosis phenomenon.

The membranes used here are called Reverse Osmosis membranes and consist of a support layer and an active layer with a separating function. The Reverse Osmosis is used to separate the solvent and solute.





Characteristics of Reverse Osmosis

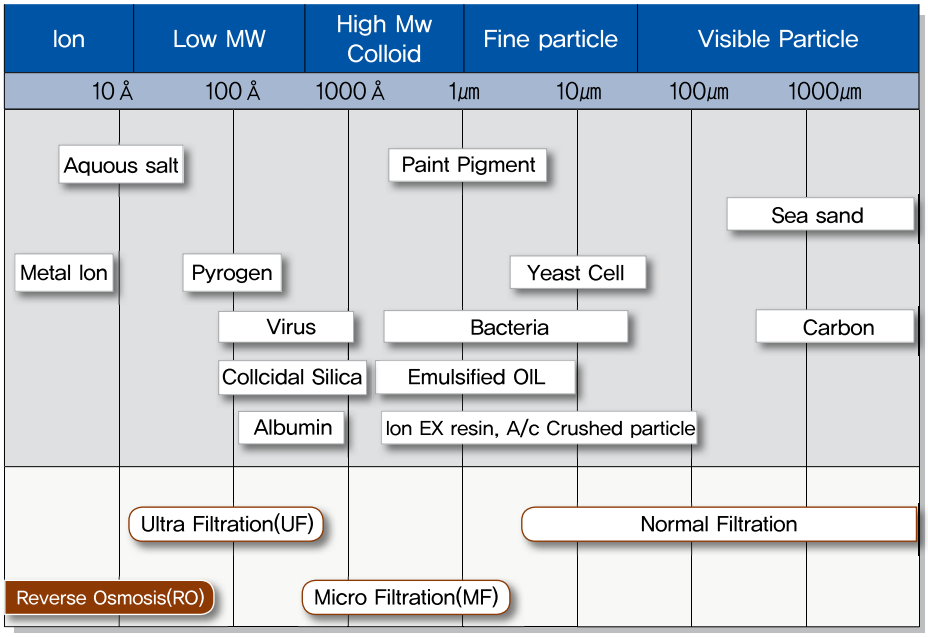
- Energy-saving and No physical property change
- Effective use in both seawater and fresh water.
- Having selectivity for toxic substances and Compact Equipment.
- Simple process design and scale-up & easy to automate.
- No impact the quality of treatment on Shock loading time.

Performance of Reverse Osmosis

▼ Ion removal rate (B/W mem,brane)

NO	Ion	Rate (%)
1	Na	97
2	Ca	99
3	Mg	99
4	K	98
5	Fe	99
6	Mn	99
7	Al	99
8	NH_4	99
9	Cu	99
10	Ni	99
11	Zn	99
12	Sr	98
13	Cd	99
14	Ag	99
15	Hg	99
16	Cl	99
17	HCO_3	98
18	SO_4	99
19	NO_3	96
20	F	98
21	SiO_2	99
22	PO_4	99
23	Br	98

▼ Spectrum as per Paticle Size



▼ Solute removal rate (B/W mem,brane)

NO	Solute	Rate (%)	MW
1	NaF	99	42
2	NaCN	98	49
3	NaCl	99	58
4	SiO_2	99	60
5	$NaHCO_3$	99	84
6	$NaNO_3$	96	85
7	$MgCl_2$	99	95
8	$CaCl_2$	99	111
9	$MgSO_4$	99	120
10	$NiSO_4$	99	155
11	$CuSO_4$	99	160
12	FORMALDEHYDE	35	30
13	METHANOL	25	32
14	ETHANOL	70	46
15	ISOPROPANOL	90	60
16	Urea	70	60
17	Lactic Acid(PH2)	94	90
18	Lactic Acid(PH5)	99	90
19	GLUCOSE	98	180
20	SUCROSE	99	342
21	CHLORINATED PESTICIDES	99	–
22	BOD	95	–
23	COD	97	–

▼ Conductivity – Resistivity – TDS relation

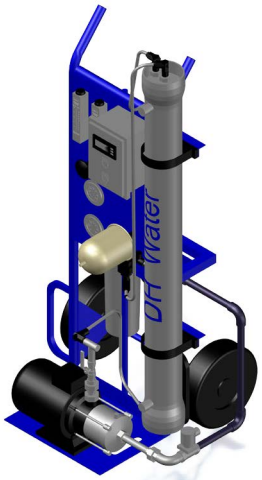
Conductivity μmho/cm 25℃	Resistivity Ω · cm 25℃	TDS ppm	Conductivity μmho/cm 25℃	Resistivity Ω · cm 25℃	TDS ppm
0.056	18,000,000	0.028	28.0	35,714	14
0.059	17,000,000	0.029	30.0	33,333	15
0.063	16,000,000	0.031	40.0	25,000	20
0.067	15,000,000	0.033	50.0	20,000	25
0.072	14,000,000	0.036	60.0	16,666	30
0.077	13,000,000	0.038	70.0	14,286	35
0.084	12,000,000	0.041	80.0	12,500	40
0.091	11,000,000	0.045	100.0	10,000	50
0.100	10,000,000	0.050	120.0	8,333	60
0.112	9,000,000	0.055	140.0	7,142	70
0.125	8,000,000	0.063	160.0	6,250	80
0.143	7,000,000	0.071	180.0	5,555	90
0.166	6,000,000	0.083	200.0	5,000	100
0.200	5,000,000	0.100	250.0	4,000	125
0.250	4,000,000	0.125	278.0	3,600	139
0.335	3,000,000	0.166	312.0	3,200	156
0.500	2,000,000	0.250	344.8	2,900	172
1.0	1,000,000	0.5	400.0	2,500	200
2.0	500,000	1	434.8	2,300	217
4.0	250,000	2	476.2	2,100	238
6.0	166,166	3	500.0	2,000	250
8.0	125,000	4	526.3	1,900	263
10.0	100,000	5	555.5	1,800	278
12.0	83,333	6	588.2	1,700	294
14.0	71,428	7	625.0	1,600	312
16.0	62,500	8	666.6	1,500	333
18.0	55,555	9	714.2	1,400	357
20.0	50,000	10	833.3	1,200	426
24.0	41,666	12	1,000.0	1,000	500
26.0	38,461	13	1,250.0	800	625
			1,666.0	600	833

Pure Water Purifying System

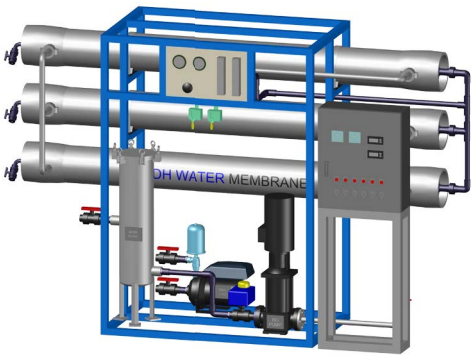
Pure water purifying system uses surface waters (river water, dams etc.) and ground water as raw water.
It is a device to purify and supply water for washing of industrial equipment,
manufacturing of cosmetics & plant cultivation.

– Multipurpose water purification system designed for various purposes
– Removal of harmful and organic substances 95 ~ 99% through microfiltration (MF) + reverse osmosis (R/O) method
– Increase economic effect by minimizing installation area through easy structure

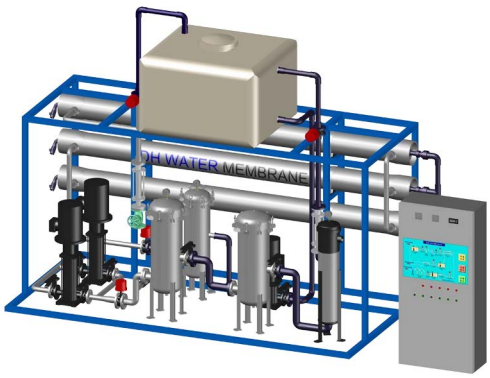
Small pure water purifying system is optimized for home or small-scale industrial use.
Equipped with wheels for easy movement, it is manufactured in 220V single phase & 380V 3phase
and can be connected directly to the raw water line.



DH-T 10/80



DH-T 80/200



DH-T 200/400

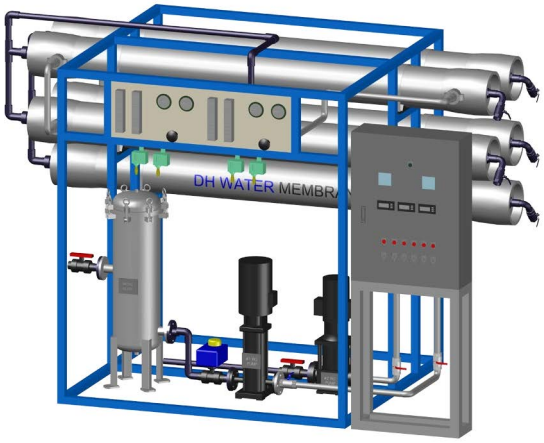
Specification

	DH-T 10/80	DH-T 80/200	DH-T 200/400
Flow rate of Permeate	10~80ton/day	80~200ton/day	200~400ton/day
Max Feed TDS	2000ppm		
Max Permeate TDS	20ppm		
Working Pressure	20kg/㎠		
Power supply	220V, single phase 380V, 3phase	380V, 3phase	

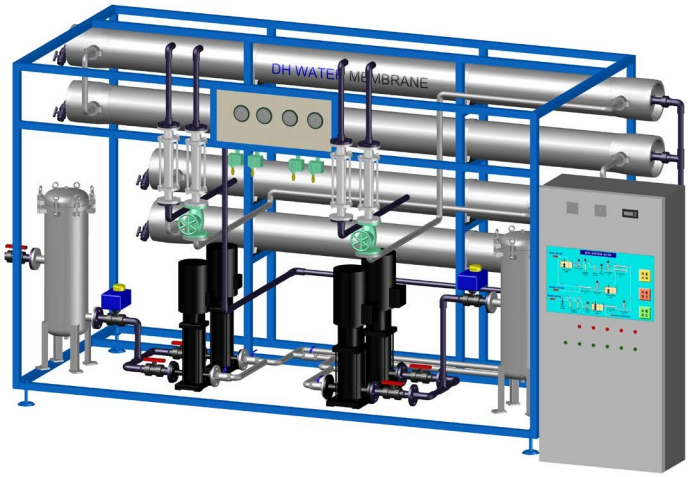
Two Pass R/O System

Two-pass R/O equipment is available when needed purified water than pure water.
It is used where cleaning of electronic, electric products and fine dust is required.

- Microfiltration (MF) + 1st reverse osmosis (R/O) + 2nd reverse osmosis (R/O) system
- 98% or more removal of harmful and organic matter removed
- Installed in front of ultrapure water production equipment



DH-2T 80/200



DH-2T 200/400

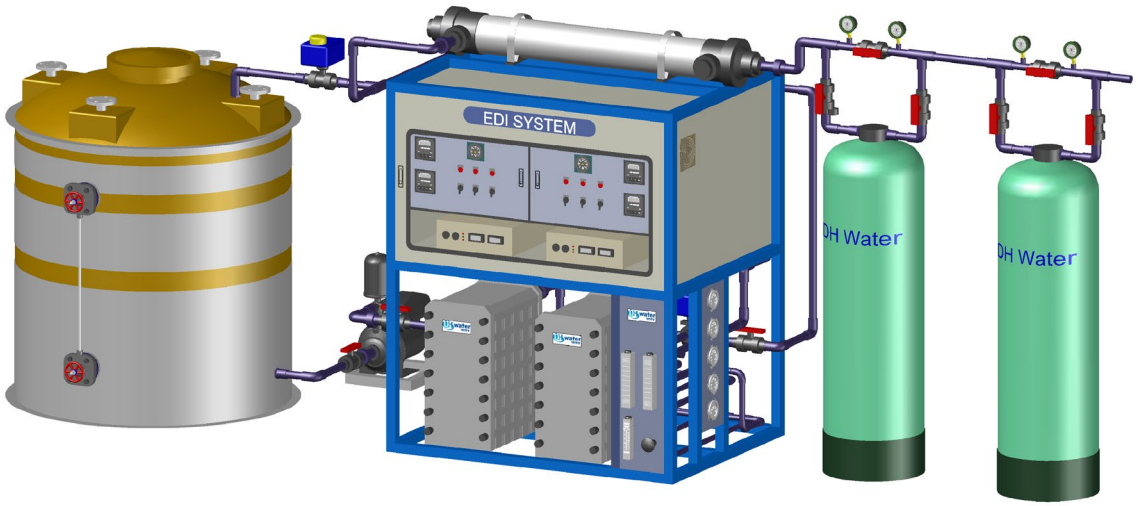
Specification

	DH-2T 80/200	DH-2T 200/400
Flow rate of Permeate	80~200ton/day	200~400ton/day
Max Feed TDS	2000ppm	
Max Permeate TDS	12ppm	
Working Pressure	20kg/㎠	
Power supply	380V, 3phase	

Ultra Pure Water Purifying System

Ultrapure water Purifying system is mainly used in the semiconductor and pharmaceutical industries. Electrodeionization, Degasifier and MB Polisher are installed at the end of reverse osmosis (R/O) to obtain ultra pure water by completely removing tiny amount of ions in raw water.

– Two Pass R/O System + post treatment system
– Maintain purity through pure ultrapure water production in pure tank
– Used in C–PVC, Sanitary pipes



DH-UP Series

Specification

	DH–UP Series
Flow rate of Permeate	100~200ton/day–module
Max Feed TDS	Less than 10μS/㎝
Max Permeate TDS	0.055 μS/㎝
Working Pressure	Less than 7kg/㎠
Power supply	380V, 3phase

Nano Filtration Water Purifying System

The Nano filtration water purifying system is used to purify raw water with high water or contamination of raw water including bivalent ions and metallic substances in the same way as existing reverse osmosis system, and is mainly used for the front end of reverse osmosis (R/O) facilities.

- Microfiltration (MF) + Nano filtration (NF) + Reverse osmosis (R/O) process
- Nano-filtration membrane (NF) removal efficiency of bivalent ions and metals is more than 99%
- Reduction of reverse osmosis (R/O) load and increase membrane life
- Used as a water softener to remove hardness components of ground water.

DH-NF 80/200

DH-NF 200/400

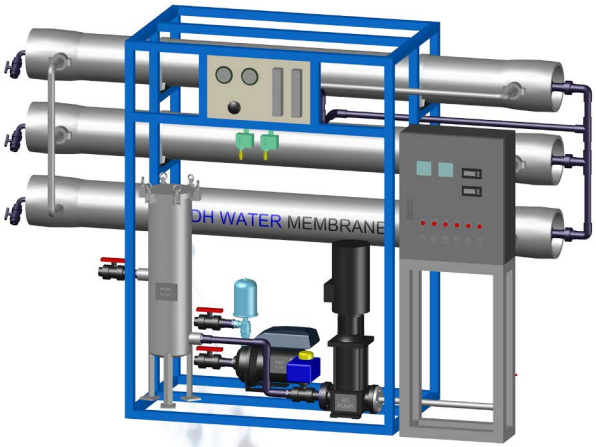
Specification

	DH-NF 80/200	DH-NF 200/400
Flow rate of Permeate	80~200ton/day	200~400ton/day
Max Feed TDS	10000ppm	
Max Permeate TDS	3000ppm	
Working Pressure	15kg/㎠	
Power supply	380V, 3phase	

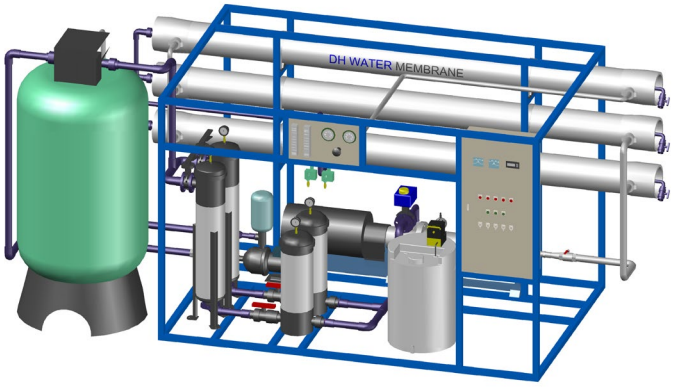
Brackish Water Purifying System

Salt groundwater refers to groundwater with salinity due to the inflow of seawater into groundwater. By using this Brakish Water Purifying system, more than 98% of salt and harmful substances contained in salt groundwater can be removed to obtain drinking water and domestic water.

– Salt water desalination equipment with TDS less than 10,000ppm
– System that can save maintenance cost because there is little corrosion and trouble
– TDS of production water is below 200ppm and can be drinkable



DH-BS 40/100



DH-BS 100/200

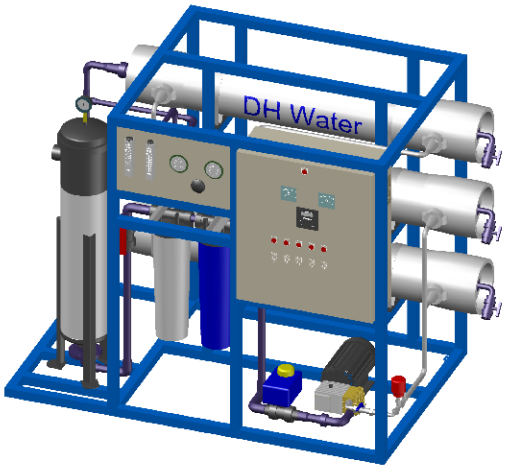
Specification

	DH-BS 40/100	DH-BS 100/200
Flow rate of Permeate	40~100ton/day	100~200ton/day
Max Feed TDS	10000ppm	
Max Permeate TDS	200ppm	
Working Pressure	30kg/㎠	
Power supply	380V, 3phase	

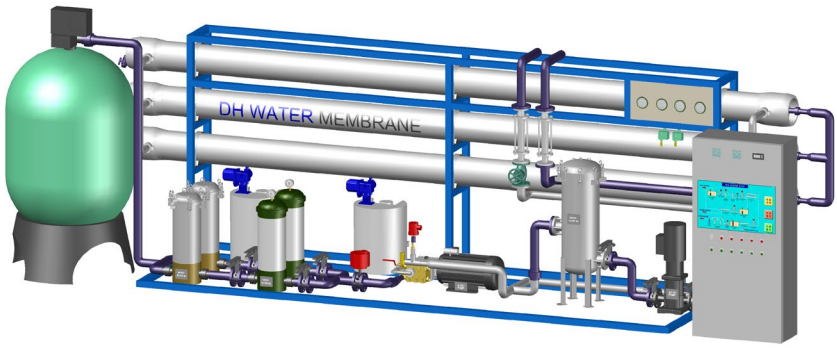
Sea Water Desalination System

The seawater desalination system is a facility that can obtain drinking water and domestic water by removing salt and harmful substances in seawater.
Especially, it is possible to take seawater from island areas and coastal areas where is not available Desalination and can be provide drinking water, domestic water and industrial water.

- Desalination equipment of sea water below 35,000 ppm TDS
- Equipment configuration using reverse osmosis membrane suitable for seawater
- System that can save maintenance cost because there is little corrosion and trouble
- Use of duplex grade materials with excellent corrosion resistance to seawater



DH-SS 40/100



DH-SS 100/200

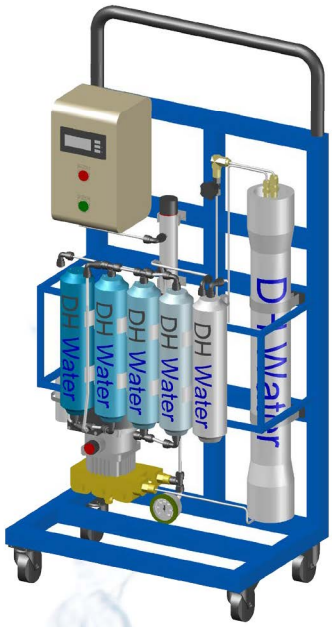
Specification

	DH-SS 40/100	DH-SS 100/200
Flow rate of Permeate	40~100ton/day	100~200ton/day
Max Feed TDS	35000ppm	
Max Permeate TDS	350ppm	
Working Pressure	65kg/㎠	
Power supply	380V, 3phase	

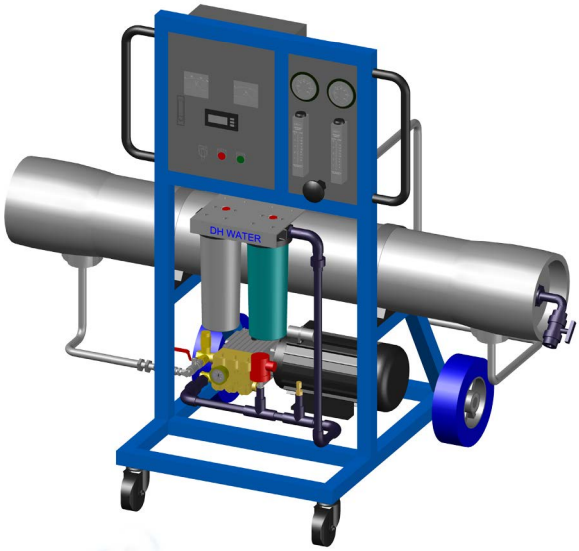
Portable Desalination System

The optimized system for home and small industrial purpose from existing seawater desalination system.

- Wheel mounted for easy movement
- Made in 220V single phase
- Direct connection to intake pump



DH-BS 5/40



DH-SS 5/40

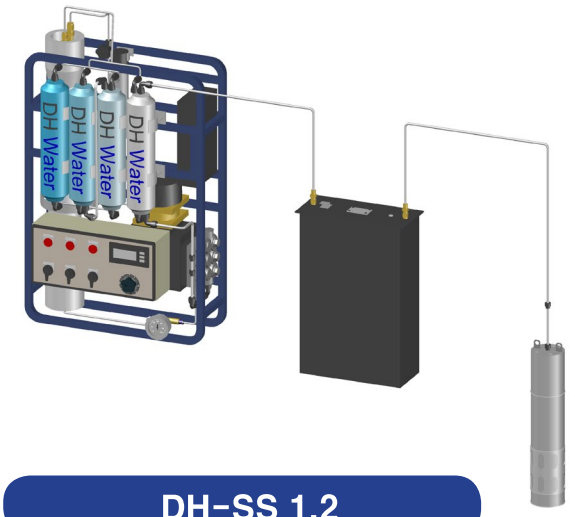
Specification

	DH-BS 5/40	DH-SS 5/40
Flow rate of Permeate	5~40ton/day	
Max Feed TDS	8000ppm	35000ppm
Max Permeate TDS	100ppm	350ppm
Working Pressure	30kg/㎠	65kg/㎠
Power supply	220V, single phase / 380V, 3phase	

Battery Type Desalination System

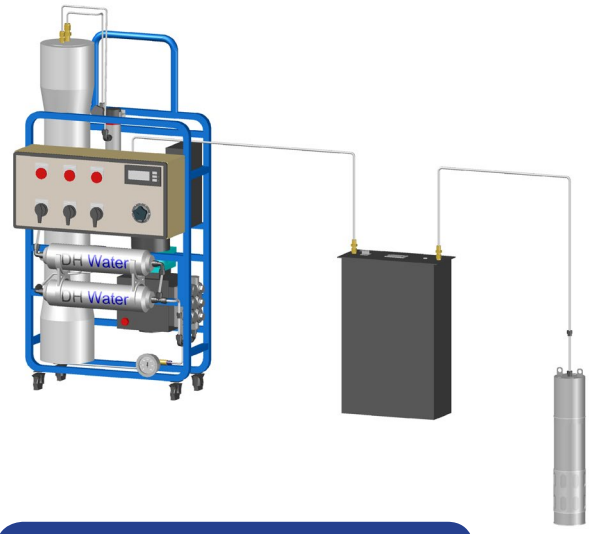
The optimized system for using at the sea and the living from existing seawater desalination system.

- Can be used in rescue in case of disaster, marine leisure sports
- Combination style of backpack and carrier type for easy transportation
- Easy to install and use due to small footprint.
- Operate in non-electricity supply area with battery



DH-SS 1.2

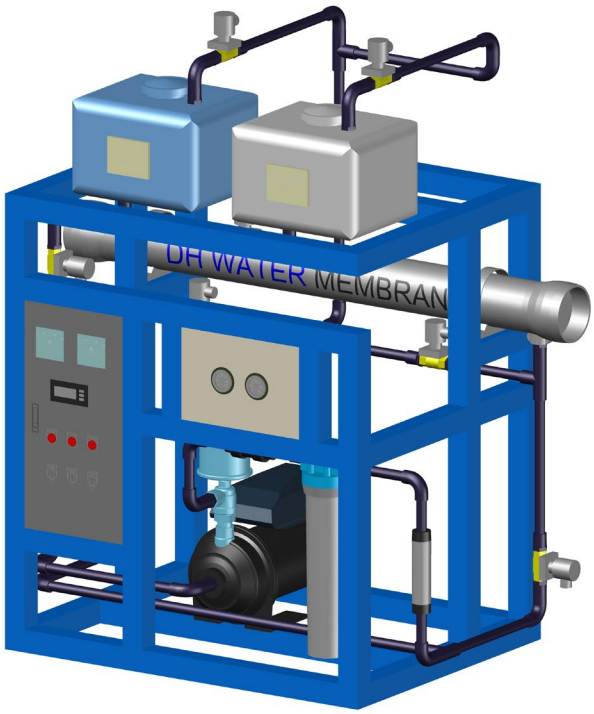
	DH-SS 1.2
Application	Marine Leisure sports
Flow rate of Permeate	60L/hr
Max Feed TDS	35000ppm
Max Permeate TDS	350ppm
Working Pressure	65kg/㎠
Battery Uptime	2hr

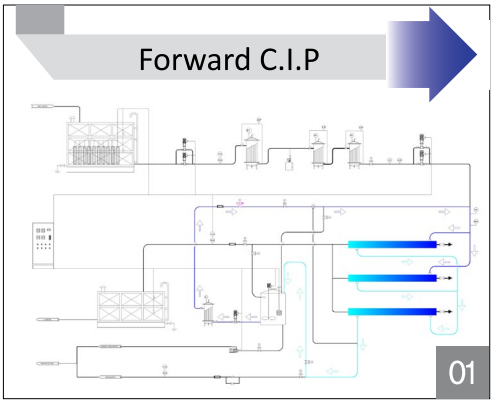


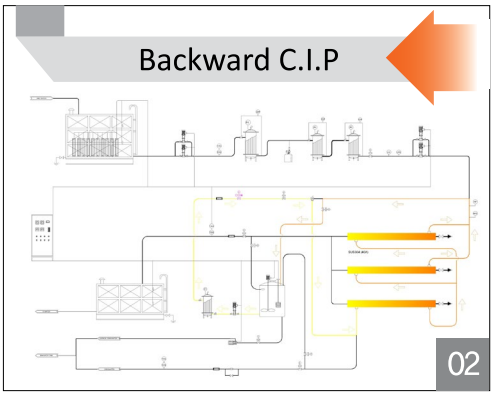
DH-SS 3.6

	DH-SS 3.6
Application	Rescue
Flow rate of Permeate	180L/hr
Max Feed TDS	35000ppm
Max Permeate TDS	350ppm
Working Pressure	65kg/㎠
Battery Uptime	2hr

Two Way Cleaning in Place System

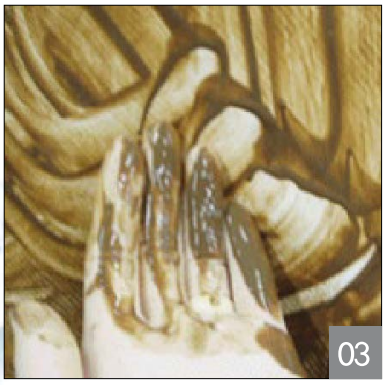






Patented product (Registration No. 10–1769609),
It is improved the existing C.I.P System performance and maximizes the cleaning efficiency by washing the organic material which is difficult to clean in one direction.
It is applicable to medium & large capacity products.

– Longer R/O membrane lifetime of 20% than conventional cleaning method
– Reduced operating cost



01 Forward C.I.P

Removal of Fouling–inducing materials of R/O membranes by conventional C.I.P process

02 Backward C.I.P

Contrary to the progress of general C.I.P, the washing operation is carried out to remove the remaining fouling inducing materials of the reverse osmosis membrane

03 Before/after Mamberane

Increasing membrane efficiency & Prolonging the lifetime

04 Two Way C.I.P patent

Enables Two–way C.I.P with patented know–how of DH Water to supply higher quality fresh water

Gallery

DH water
대한환경