Product Research & Development Service

At HISAKA' laboratory, we provide Research & Development,
Mini-Scale Processing Testing and evaluation for the processing of Concentrated fluid.
The process is identical to the commercial scale production system,
where all potential process hazards can be identified hence specially customized to each
and every single recipe evaporation requirements,
resulting in high yield as well as high efficiency evaporator system.

Global Pilot Evaporator Model:GY-02

Amount of Evaporation : 20～30kg/hour
Amount of Operational Fluid : 3～30ℓ
Temperature of Operation : 20～100℃
Floor Space : 2,100×1,100×2,000(H)mm
Utilities : Boiler Steam…23kg/hour at 0.2MPa
Cooling Water…6m³/hour at 20℃
Electricity…2.2kW(200V)

Flash Type Pilot Evaporator Model:REV-T2

Amount of Evaporation : 5～6kg/hour
Amount of Operational Fluid : 1.2～4ℓ
Temperature of Operation : 45～80℃
Floor Space : 700×1,000×1,800(H)mm
Utilities : Cooling Water…400ℓ/hour(30℃)
Electricity…7.2kW(200V)

Let us know following specifications if you will make inquiry about evaporators.

①Name of Fluid ----------

②Amount of Raw Fluid
〔 kg/hour hour/day〕

③Concentration
〔Raw Fluid wt%〕〔Conc.Fluid wt%〕

④Raw Fluid Temperature
〔 ℃〕

⑤Physicality of Fluid

	Density	Viscosity		B.P.R.
Raw Fluid		mPa·s at	℃	℃
		mPa·s at	℃	
Medium Conc. Fluid		mPa·s at	℃	℃
		mPa·s at	℃	
Conc.Fluid		mPa·s at	℃	℃
		mPa·s at	℃	

*We will make a measurement of them if you will send fluids to us.

⑥Purpose of Evaporation(Put a mark of circle to following items.)
Product (Concentration Products / To gain dried products /
To gain crystallization products) .

⑦Utilities
a . Boiler Steam :
〔 MPa〕〔 kg/hour or below〕〔Unit Price /kg〕

b . Electricity :
〔 V〕〔 Hz〕〔 kW or below〕〔Unit Price /kW〕

c . Cooling Water :
〔 ℃〕〔 m³/hour or below〕〔Unit Price /m³〕
※Water of Cooling Tower / Industrial Water / Clean Water / Well Water

⑧Installation Site : Indoors / Outdoors

⑨Specified Materials :

⑩Other Requests etc.

Name : ----------
Company : ----------
Address(City/State/Zip/Country) ----------

Phone : Fax : ----------
E-mail :

HISAKA WORKS, LTD.
PROCESS ENGINEERING DIV.

http://www.hisaka.co.jp/english/food/
http://www.hisaka.co.jp/english/pharmacy/

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1-15-20, HAKATAEKIMAE, HAKATA-KU, FUKUOKA, 812-0011, JAPAN
HEAD OFFICE :
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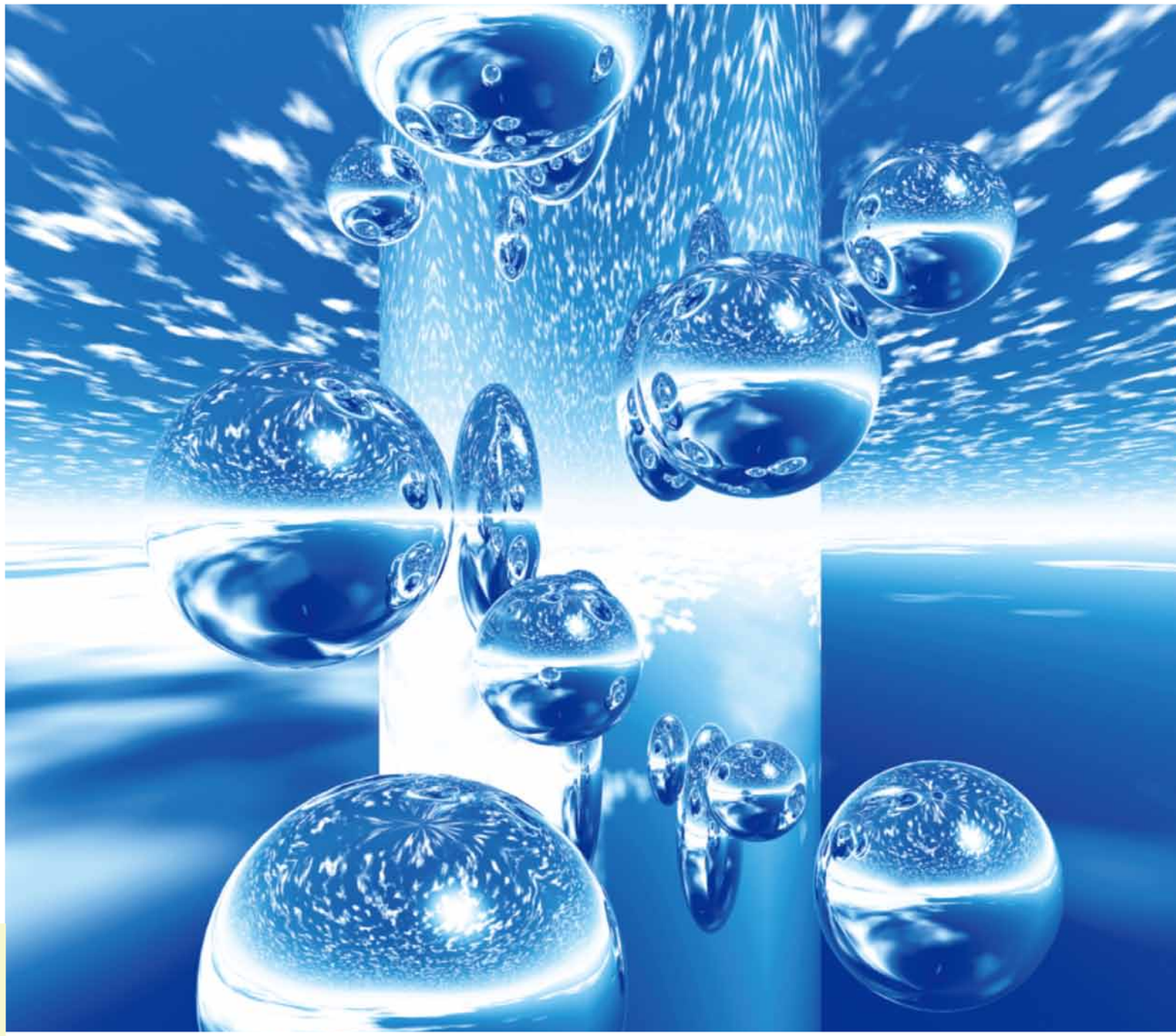
No.1902H(PC)

HISAKA

Evaporator・Concentrator



HISAKA WORKS, LTD.

Super-Long Plate Type Single-Pass Evaporator

Model: REN-MFE

Super-Long Plate indicate Advanced Performances of Evaporation

- Applicable to: MVR, TVR and Multiple-Effects
- High-Flex- Small-Scale Production. (High in Flexibility and Small Scale production.)
- Super-Long Plate Single-Pass (single effect) evaporator would enable the Premium products obtainable from a minimum quantity of the operation fluid.
- Highly recommended for heat sensitive product or aromatic production.

Features

No favor profile being affected or deteriorate take, it is as good as its original raw fluid conditions.
From the process start Up till its discharge, its require " A Very Short time "

High-Flex- Small-Quantity Production

High production efficiency with conservation of energy

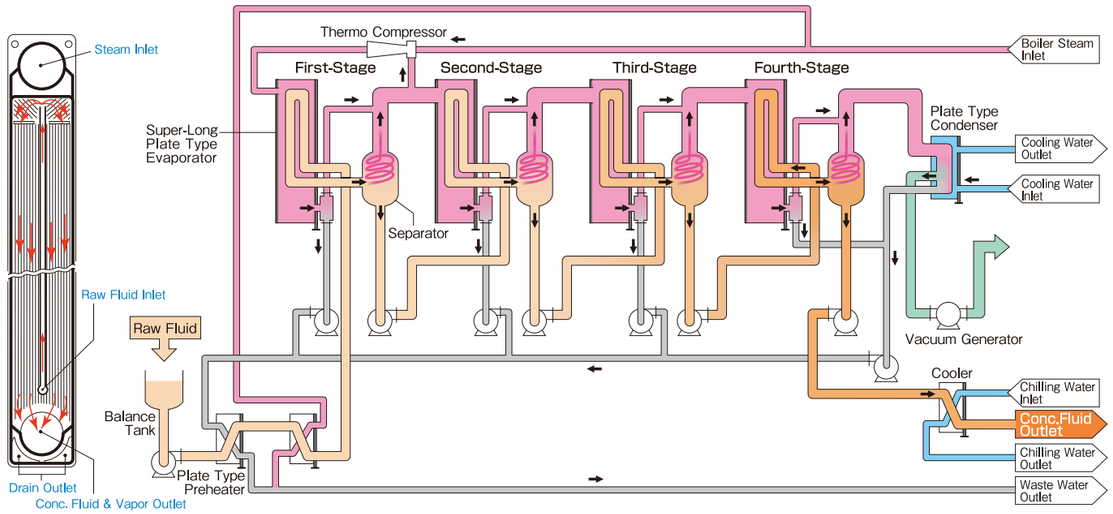
More save energy

MVR, TVR, Multiple-Effects available

Reserve of scale build up
High speed down flow of fluid in the plates makes inhibition of scale build up

Min. Floor space

4-Effective TVR Evaporator



Model	Number of Effects	Evaporating Capacity (kg/hour)	Floor Space W×L×H (m)
MFE 01	Single	200	3.0×2.0×3.0
	Double	400	4.0×2.0×3.0
	Triple	750	4.0×2.5×3.0
MFE 05	Single	600	4.0×3.5×5.5
	Double	1,000	5.5×3.5×5.5
	Triple	2,000	6.5×3.5×5.5
MFE 15N	Single	2,000	4.0×4.0×7.2
	Double	4,000	6.0×4.0×7.2
	Triple	8,000	7.5×4.0×7.2
	Quadruple	10,000	10.0×4.0×7.2

Plate Type Evaporator

Model: REN-LEP

Optimal Design for Great Capacity of Evaporation

- Applicable to: MVR, TVR, Multiple-Effects
- Evaporation Inhibition of scale builds up
- The process involves the raw fluid flow through the evaporating plate, the temperature differentiation existing in the heating surface area and the raw fluid temperature will enable the evaporation of the raw fluid.
- Free Flow of fluid circulation on the evaporating plate surface ensure that the inhibition of scale build up.

Features

Even distribution of the fluid enables high efficient circulation on the evaporator surface plate.

High performance of the heat transfer of evaporation plate
The heat transfer coefficient is double or triple compared with tube type evaporator.

Short treatment time
The contact times between raw fluid and evaporation plate is instantly. (Approximately 2 seconds)

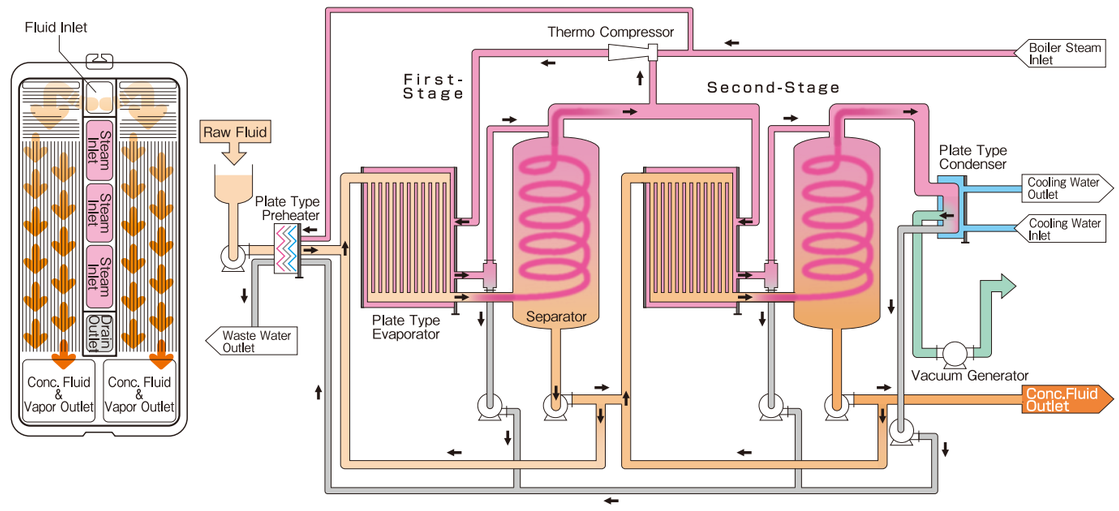
Therefore it's available for heat sensitive products.

Easy maintenance and capacity adjustment
The evaporation plates are easy to dismantling and assembly for cleaning & maintenance.

Highly Friendly Men-Machine interface auto-operation

The material of evaporation plate consists of:-
Stainless steel or Titanium is available for selection on meet various processing requirements.

2-Effective TVR Evaporator



Number of Effects	Evaporating Capacity (kg/hour)	Floor Space W×L×H (m)
Single	1,000	3.0× 7.0×5.5
Double	3,000	6.0× 7.5×5.5
Triple	8,000	6.0×11.0×5.5
Quadruple	20,000	10.0×15.0×8.0

Flash Evaporator

Model : REV

Anti-Foaming Evaporation

- To prevent foaming, evaporation is performed in the Separator Tank while being heated and circulated through the high efficiency Plate Type Heat Exchanger (PHE).
- Equipment is designed as compact and integrated on base trestle.
- Fully auto programming function including start Up, start off, as well as the Cleaning operation.
- A Small-scale evaporation can be operated.
- Fluid with forming ingredient can be evaporated with suppressed foaming perfectly, by suitable structure and mechanism.

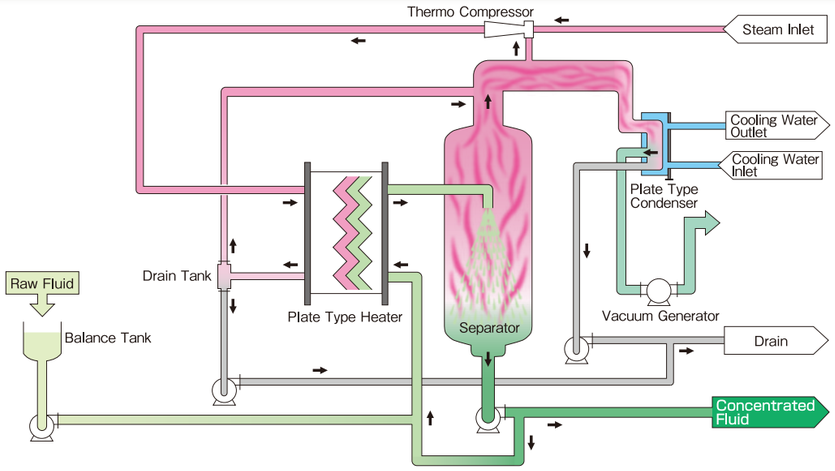
Features

Anti-Foaming
To prevent foaming rises from proteins & detergents etc. solutions, Hisaka REV System has the specially designed with excellent structure and mechanism.

Compact and package unit on base trestle
Saving the installation space.

High-viscosity evaporation.
Up to 2,000mPa･s (2,000cp)

Variety of materials in PHE
Stainless steel or Titanium is available for selection on meet various processing requirements.



Model	Evaporating Capacity (kg/hour)	Holding Capacity max./min.(ℓ)	Floor Space W×L×H (m)
REV-40/10	100	100/ 20	2.0×2.2×3.1
REV-60/30	300	200/ 60	2.4×3.6×4.3
REV-80/60	600	400/100	2.4×4.1×4.6
REV-100/90	900	600/200	2.6×4.3×4.8
REV-120/130	1,300	900/250	2.8×4.5×5.0

Global Evaporator

Model : GY

High concentration and High viscosity Evaporation

- By rotation of a coiled heating tube, centrifugal force is generated. Thus, great heating effects can be obtained on High concentration and High viscosity Evaporation.
- Scale adhesion and scorched are usually not found.
- Consistency of the evaporative power is always maintained.

Features

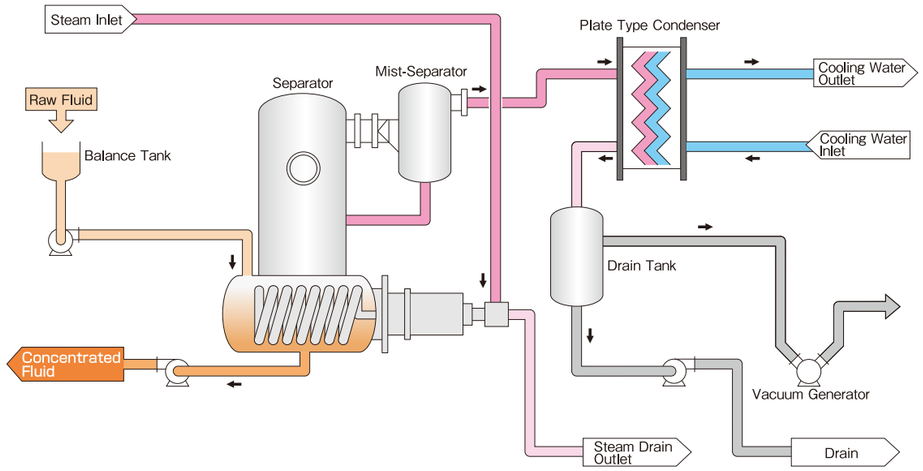
Low temperature heating evaporation
Specifically suitable for high premium fluid, and ingredients extraction as well as pharmaceutical products where high concentration and quality are essential.

Evaporating deteriorations are always in the predetermined control parameters.
Scale adhesion and scorched are hardly found in the rotation of coiled heating tube where centrifugal force is generated.

High concentration and High viscosity

Excellent wash ability and flexibility for various fluid
There are little contaminations and Coiled Heating Tube can be dismounted.

High yield and less wastage of the fluid concentration can be obtainable.



Model	Evaporating Capacity (kg/hour)	Holding Capacity max./min.(ℓ)	Floor Space W×L×H (m)
GY-10	100	240/ 20	3.0×2.3×3.8
GY-20	200	300/ 30	3.5×2.4×4.0
GY-30	300	500/ 30	4.6×2.6×4.0
GY-50	500	920/ 40	4.7×3.1×4.6
GY-100	1,000	1,500/ 55	5.5×3.3×5.1
GYW-150	1,500	2,000/250	5.2×3.8×6.0
GYW-200	2,000	2,500/300	5.2×4.0×6.4

Plate Type
Mechanical Vapor-Recompression Evaporator

Model : VEV

Conservation of Energy & Waste Reduction

- The Hisaka MVR evaporator uses LEP evaporation plate that has many features.
- LEP plate is designed for Falling Film type evaporation plate which has a shape of Double-Fluted on the surface.
- These features bring LEP to a higher heat transfer coefficient.
- Therefore a more stable thermal distribution is achieved resulting saving in electrical energy of the vapor compressor.

Features

Conservation of Energy
MVR save heating steam more than 10-stages evaporator.

Has No Condenser
Consumption of Cooling water hence substantial reduced.

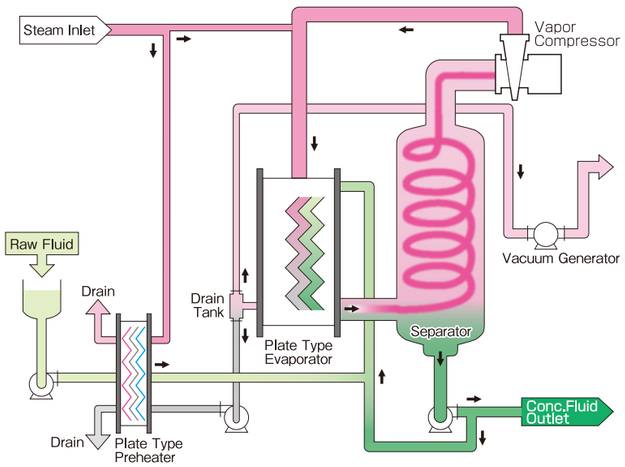
Inhibition of scale requires build up
Even distribution of substantial amount of fluid enable better circulation on the evaporator surface plate.

High performance of the heat transfer of evaporation plate
The heat transfer coefficient is double or triple compared with tube type evaporator.

Easy maintenance and capacity changeable
The evaporation plates are easy to dismantling and assembly for cleaning & maintenance.

Highly Friendly Men-Machine interface auto-operation

The material of evaporation plate
Stainless steel or titanium, material selection that depends on application



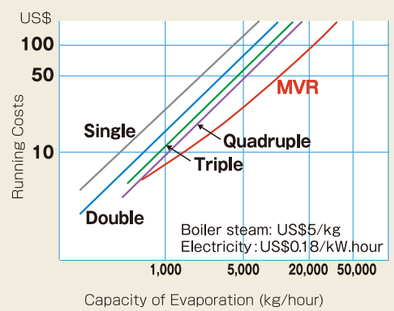
MVR v.s. Multi-Effective Evaporator

Required energy for 5,000kg/hour evaporation
(at 0.49MPa Boiler steam)

- Boiler steam for evaporation
- Required boiler steam preheating or auxiliary
- Total boiler steam
- Electricity for vapor compressor
- Required energy for 5,000kg/hour evaporation

	kg/hour	kg/hour	kg/hour	kW/hour	kW
Single	4,833	197	5,030	0	3,404
Double	1,786	197	1,983	0	1,318
MVR	150		150	200	287

The table of comparison of running costs



Vapor Compression Plate Type
Water Distillation Unit

Model : HRD

Excellent evaporation system makes High Purity Distillated Water

PLATE TYPE WATER DISTILLATION UNIT, Model HRD is of hight efficiency and easy maintenance developed through our concentration of both technologies; HISAKA-MECO Watermaking Unit which is the most advanced in the field of seawater distillation and our original Plate Type Evaporator for which we have many years' manufacturing experience and technical know-how.

Features

Produced water is completely sterilized.
Feed water is evaporated at 102℃

Purity of product water is high
The unit is so constructed that the entrainment is less to secure distillated water of high quality.The salt content from seawater is less than 4 ppm,if required.

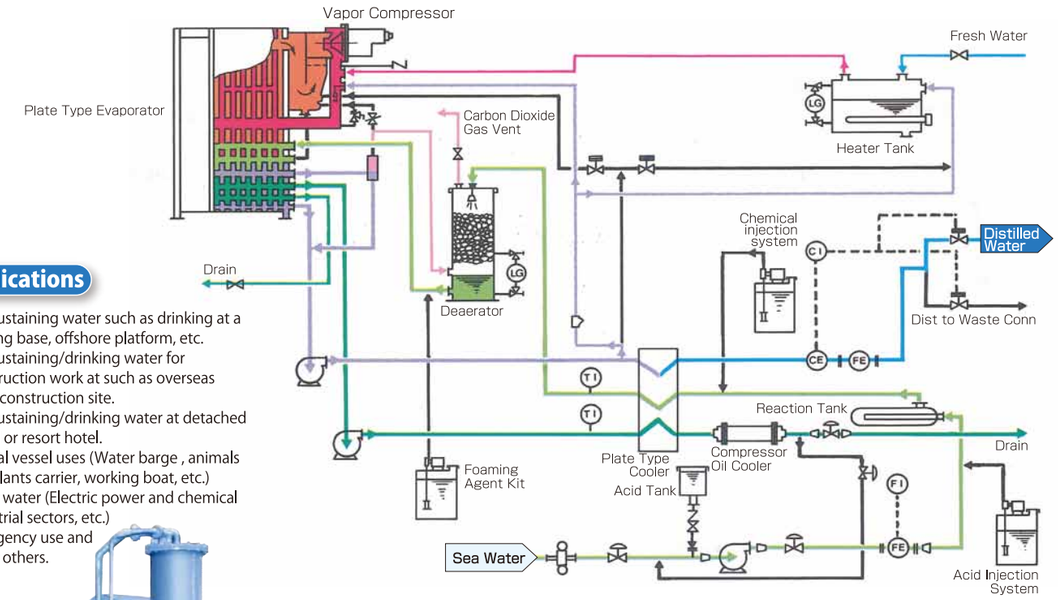
Plates formation is minimum
Plate evaporator makes it easy to disassemble, check, clean, etc.

Scale formation is minimum
Many hours' continuous running is available, providing with chemical treatment system.

High grade material is used for seawater service
Non-corrosive long life service is warranted by properly selected material (Titanium) for evaporation plates.

Operation is quite simple
New operators can be trained quickly. Experienced operators can not make mistake.

Small installation space is required
The unit comes in a compact package, arranged various components logically on a skid.



Applications

- Life-sustaining water such as drinking at a floating base, offshore platform, etc.
- Life-sustaining/drinking water for construction work at such as overseas plant construction site.
- Life-sustaining/drinking water at detached island or resort hotel.
- Special vessel uses (Water barge , animals and plants carrier, working boat, etc.)
- Boiler water (Electric power and chemical industrial sectors, etc.)
- Emergency use and many others.

Model	Sea Water (ℓ/hour)	Distillation Rate (ℓ/hour)	Distillation Rate (kℓ/day)	Power Consumption Moter (kW)	Power Consumption Electric Heater (kW)	Floor Space W×L×H(m)
HRD-10 EN	840	375	9	8.9	8~12	2.0×3.0×2.3
HRD-20 EN	1,690	750	18	13.2	14~20	2.0×3.2×2.4
HRD-30 EN	2,530	1,125	27	17.8	18~30	2.0×3.3×2.5
HRD-40 EN	3,375	1,500	36	19.5	24~40	2.1×3.5×2.5
HRD-60 EN	5,060	2,250	54	26.2	28~50	2.1×3.7×2.8