Pursuing Excellence with First Class Quality

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Provide comprehensive energy-saving equipment application solutions

JIANGSU GAOJIE ENERGY SAVING EQUIPMENT GROUP CO.,LTD.

GOJE®

Our vision:

Become the world's leading energy-saving equipment design and manufacturing company

Our mission:

Achieve employees internally and customers externally

Our philosophy:

Provide a full range of energy-saving equipment application solutions

Our perspective:

Customer first
Teamwork
Welcoming change
Gratitude and dedication

Company profile

GOJE group is an environmentally-friendly and energy-saving equipment manufacturing company, as well as a high-tech enterprise that integrates research and development, design, production, installation, and commissioning. The company specializes in the design, production, and manufacturing of MVR evaporation-crystallization systems, wastewater zero discharge treatment, and exhaust gas treatment equipment.The company is centered around the internationally leading MVR evaporation-crystallization technology, with two major divisions: the Environmental Chemical Division and the Biological Fermentation Division. Additionally,it possesses various technologies for ion exchange membrane concentration, biochemical water treatment, evaporation and concentration,as well as cooling and crystallization. These technologies provide comprehensive energy-saving solutions to various industries such as chemicals, environmental protection, agriculture, metallurgy, textile printing, biotechnology, fermentation, food processing, and pharmaceuticals.

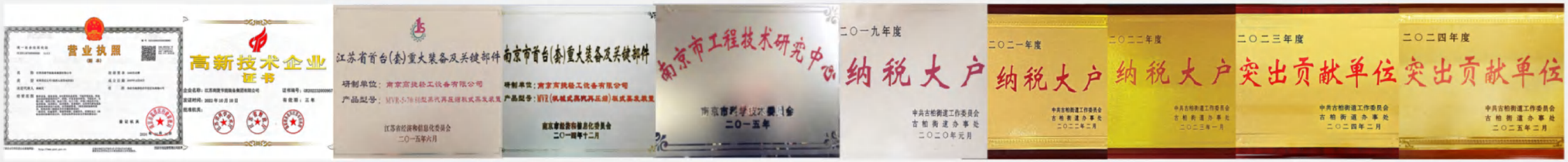
After years of development, the group has established a comprehensive system of intelligent and refined management and production models. The design and manufacturing of each product line strictly adhere to the quality management requirements of ISO9001:2015. The company also holds a D-level pressure vessel manufacturing license, ensuring the high quality and stability of its products. Moreover, the company is certified with ISO14001:2015 for environmental management, ISO45001:2018 for occupational health and safety management, and the EU CE certification,etc.GOJE has a strong team of talents in both research and development to production. Its corporate spirit of "Striving for Excellence and Innovating for the Future" has propelled the company's continuous innovation and development. The company has obtained numerous patents for its products, with several being recognized by the Jiangsu Provincial Department of Science and Technology as high-tech products.Equipments are widely sold to Southeast Asia, Africa, Europe, and other regions, with overseas offices and agents.It has been selected by numerous well-known domestic and international companies, earning a high reputation for its products.

Over the years, GOJE group has adhered to the business philosophy of "Technology-driven, Intelligent Manufacturing, People-oriented, and Customer First." Satisfying our customers is our ultimate goal.

GOJE®

Quality control

Company business license High-tech enterprise MVR evaporator is listed as the first provincial set Goje Group three years into the large tax payers



Company invention patent:

Company utility patent:

Advantages of GOJE Group

In the environmental protection chemical field, with the integration of water treatment general contracting and implementation:pretreatment, biochemical neutralization, various membranes and special membranes, MVR evaporation and crystallization zero discharge, and water reuse. In the bio-fermentation field: Integration of total process packages for starch sugars and fermentation fields.

In the field of energy-saving technologies such as fluid heat exchange, evaporation and crystallization, and waste heat recovery, we have over 20 years of development experience. In industries such as biotechnology, sugar alcohol fermentation, food and beverage, pharmaceuticals and healthcare products, fine chemicals, and wastewater treatment, we have accumulated rich experience in design and manufacturing engineering. We are dedicated to providing application solutions for energy-saving devices.

Among our peers, we are one of the few companies capable of designing and manufacturing various types of heat exchangers, plate evaporators, tube evaporators, crystallizers, separators, and other individual equipment. Additionally, we can provide turnkey projects for MVR tube and plate evaporative crystallization systems as well as integrated services for environmental chemical engineering and biotechnology fermentation.

The MVR plate evaporator system has been honored as the first set of products at both provincial and municipal levels in China. The semi-welded heat exchanger and plate evaporator device have been awarded the title of high-tech products, and the company has also been recognized as a national high-tech enterprise with a municipal engineering technology center and renowned products at the municipal level. Additionally, multiple certifications including quality management system, environmental management system, occupational health and safety management system, as well as CE certification have been obtained by the company.

A well-developed ERP management software can consistently ensure excellent quality and process control in every stage of design, production, and manufacturing.

Each product is equipped with a QR code for traceable program software. Scanning the QR code provides relevant information such as inspection reports, drawings, and company qualifications to ensure that customers can check all equipment at any time during use.

All heat exchangers, evaporators and condensers use advanced heat balance calculation software imported from Canada, which can accurately improve the calculation results and effectively reduce customer equipment investment costs.

All equipment can be detected with records and results of the pressure process, and the pressure test data table is constantly monitored and controlled by the computer.

We have a number of agents and service providers involved in various industries, such as Thailand, Vietnam, Indonesia, Malaysia, North, Iran, Russia, Turkey, etc.It can effectively and quickly solve the pre-sales and after-sales problems.

Evaporator introduction

Evaporator advantages

1.With more than 20 years of experience in the design and manufacturing of evaporation systems, we are able to quickly identify problems during the operation of the evaporation system, and have a data database of practical operation of over a hundred fluids.
2.The product serialization includes three major series of evaporators: rising film, rising falling film, and falling film, which combine the advantages of domestic and foreign evaporation forms and have gained rich experience in different industries. Currently, it is a relatively advanced and complete professional company in the evaporation field.
3.Diversified product processes: nearly ten processes, including multi effect evaporation system, TVR evaporation system, MR evaporation system, MVR+TVR evaporation system, flash evaporation system, falling film evaporation system, forced circulation evaporation system, evaporation crystallization system, plate and tube mixed evaporation system, cross flow evaporation system, etc., are available to meet the needs of different processes and customers at any time.
4.Complete evaporation plate type specifications, single plate with a full range of area from 0.25 to 2㎡ to meet the needs of different working conditions.
5.The large-scale evaporation plate adopts domestically leading laser welding processing technology, effectively increasing the strength of the plate surface and solving problems such as steam side leakage prevention, effectively reducing after-sales service costs.

6.In the field of starch sugar alcohols, our evaporation system has occupied a significant market share. With deep accumulation in many industries, we have successfully implemented many overseas projects to provide professional evaporation system solutions for customers.
7.The compact layout improves space utilization while optimizing the process to achieve more significant energy savings than comparable products. Each system is carefully designed by 3D software to ensure accurate docking and efficient collaboration between components, providing users with highly customized and reliable solutions.
8.Mature supplier procurement management system.
9.Welding process, using expansion welding method to ensure welding strength.
10.High degree of automation. Online video monitoring can be installed to monitor fluids evaporation at any time.
11.Rich project experience. Pipeline flushing and steam blowing ports have been added for fluids that are prone to blockage and scaling, achieving significant results.

12.There is a special dosing device for fluids with serious foaming to eliminate the impact of foam on the evaporation system, with obvious effect.
13.Adding gas scrubbers and mist eliminators to fluids with high salinity and COD can reduce the COD content in condensate water.
14.After sales is guaranteed. The service will respond within 2 hours and arrive on-site within 24 hours.
15.The design of the evaporation system adopts a process of combining plate and tube from the perspective of energy conservation and investment cost. Compared to the tubular process, the investment cost can be reduced by at least 30%, and the energy saving can reach over 20%.
16.Evaporation engineering project: turnkey engineering design from front-end heating, pre-treatment, evaporation concentration, crystallization salt production, packaging, etc..
17.The small skid-mounted evaporation system can flexibly handle the processing capacity of 50 to 2000kg, achieving a modular integrated design. This design not only facilitates rapid deployment, but also provides accurate data support for the pilot phase.

Introduction of plate evaporator

1.Plate evaporator:

The core equipment of plate evaporation equipment is a plate evaporator. Its working principle is that thin materials flow through the material channels between the plates, are heated by steam in the steam channels on both sides, and evaporate. The evaporated materials are in a mixed state of vapor and liquid, discharged from the discharge port, and then enter the cyclone separator to separate into secondary steam and concentrated materials; Heating steam, after releasing latent heat, becomes condensate and is discharged from the condensate outlet.

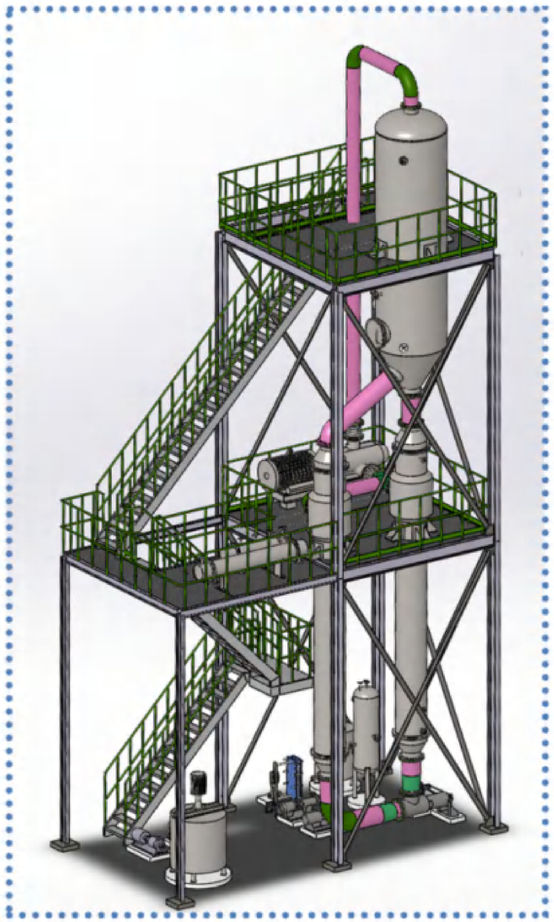
2.The forms of plate evaporator include three types:

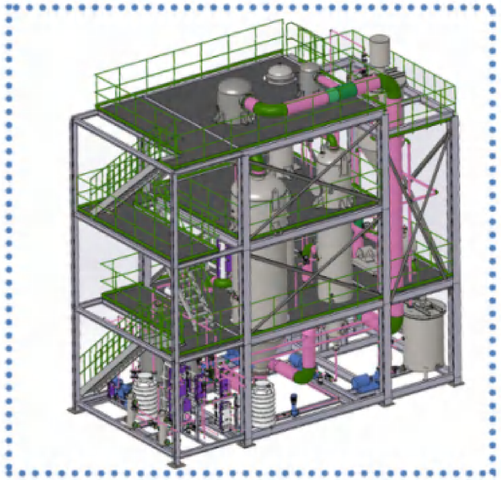
Rising film, falling film, and rising and falling film.

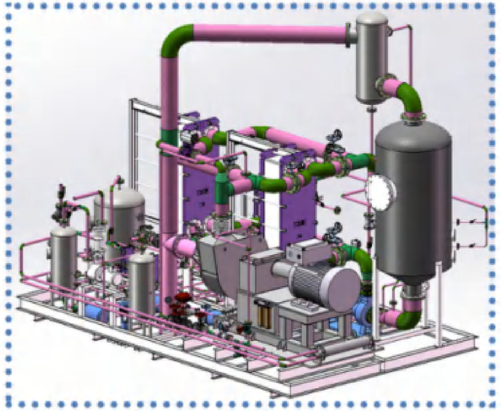
Rising and falling film plate evaporator

Falling film plate evaporator

Rising film semi welded plate evaporator







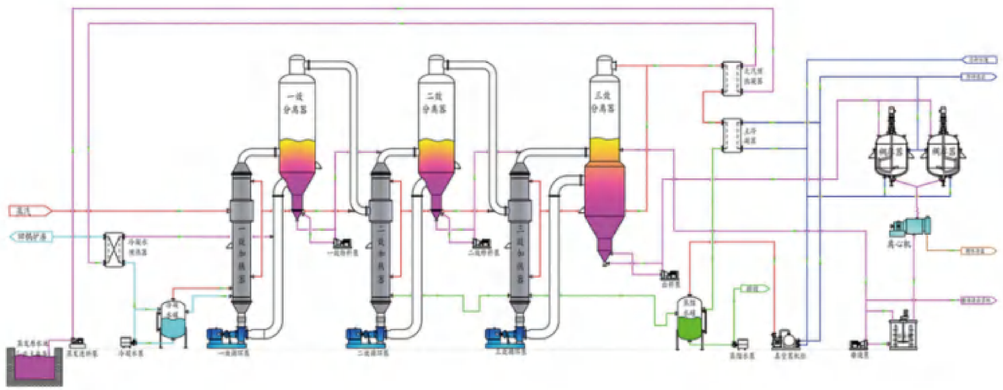
Introduction to Tubular Three Effect, MVR, and TVR Systems

Multi-effect evaporation system

Composition and principle of three-effect evaporator:

The composition and principle of an evaporator are mainly composed of three sets of evaporator, condenser, salt separator, and auxiliary equipment connected in series. Three sets of evaporators operate in series to form a three effect evaporator. The entire evaporation system adopts a production method of continuous feeding and continuous discharging. The material first enters the one effect evaporator, which is equipped with a circulating pump to drive the material into the evaporation heat exchange chamber. In the evaporation heat exchange chamber, the external steam liquefying generates latent heat of vaporization, which heats the material. Due to the high pressure in the evaporation heat exchange chamber, the material is heated to overheating at a pressure higher than the normal boiling point of the liquid in the evaporation heat exchange chamber. After the heated liquid enters the evaporation chamber, the pressure of the material rapidly dcreases, causing some materials to flash or boil rapidly. The evaporated steam of the material enters the secondary forced circulation evaporator as power steam, which heats the primary evaporator. The non evaporated material is temporarily stored in the evaporation chamber. The materials flow sequentially through the first effect, second effect, and third effect, and are continuously evaporated. The concentration of salt in the materials becomes higher and higher. When the salt content in the materials exceeds the saturation state, the salt in the water will continuously precipitate and enter the salt collection chamber (salt leg) at the bottom of the evaporation crystallization chamber. The discharge pump continuously sends saline materials to the thickener for further thickening, and the clarified liquid flows into the mother liquor tank through the overflow port. The crystalline salt precipitated at the bottom of the thickener flows into a centrifuge, where it is centrifuged and dehydrated to obtain solid wet salt. The filtrate flows into the mother liquor tank and is mostly transported back to the three-effect evaporator through the mother liquor pump. During the operation of the system, some high boiling point mother liquor accumulates continuously, causing the temperature rise of the boiling point of the solution to rise continuously. In order to avoid the accumulation of high boiling point substances affecting the evaporation of the system, it is necessary to exclude some mother liquor during the operation.

Three effects forced circulation PID



MVR evaporation system

Composition and principle of MVR evaporator:

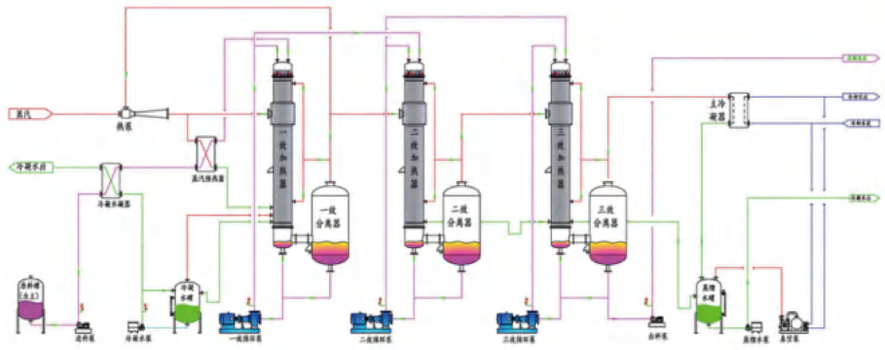
MVR is the abbreviation of Mechanical Vapor Recompression technology. MVR evaporator is an energy-saving technology that reuses the energy of the secondary steam generated by itself, thereby reducing the demand for external energy. The working process of MVR is to compress low-grade steam through a compressor, increase temperature and pressure, increase enthalpy, and then enter a heat exchanger for condensation to fully utilize the latent heat of the steam. Except for start-up, there is no need to generate steam during the entire evaporation process. The secondary steam from the separator is compressed by the compressor, causing the pressure and temperature to increase, and the enthalpy to increase. It is then sent to the heating chamber of the evaporator for use as heating steam to maintain the boiling state of the material, while the heating steam itself condenses into water. In this way, the steam that was originally to be discarded is fully utilized, latent heat is recovered, and thermal efficiency is improved.

TVR evaporation system

Composition and principle of TVR evaporator:

Based on the principle of a heat pump, the steam from the boiling chamber is pressurized to a higher pressure, and the corresponding saturated steam has a higher temperature compared to the steam in the heating chamber. The steam can then be reused. And using a steam jet compressor can meet the requirements. According to its performance characteristics, the energy saved by using a thermal steam compressor is equivalent to the energy saved by adding a one effect evaporator. Therefore, it is currently widely used. But the operation of the thermal evaporation compressor requires a certain amount of fresh steam, which is power steam.

TVR three effects evaporation system PID



Freeze crystallization

Cooling crystallization of thermally saturated solution is the simplest and most common crystallization method, which makes the solution become supersaturated solution and precipitates crystals.

Applicable object: Suitable for systems where solubility increases with temperature, and solubility should vary moderately with temperature.

Cooling mode: Free cooling, partition cooling (coolant is separated from materials), direct contact cooling (Inject coolant into the solution)

The commonly used carriers in partition cooling include ethylene glycol solution, calcium chloride solution, etc..

OSLO crystallizer

It is also called crystallization type and fluidized bed type crystallizer.

Characteristic

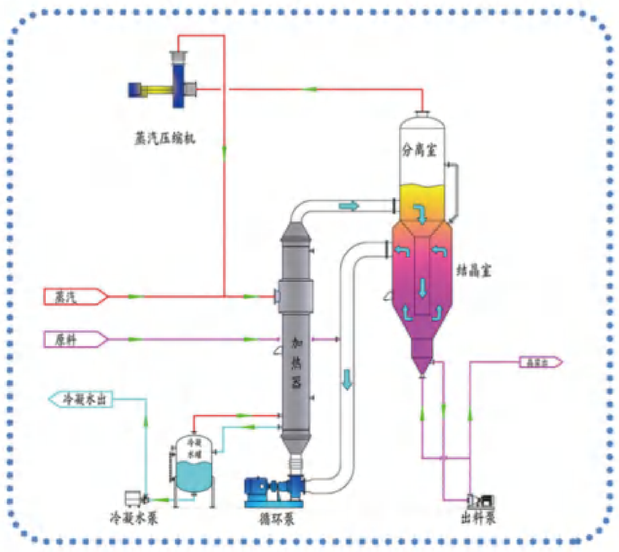
1.Because of its special structure, the product produced has the advantages of large particles and narrow particle size distribution; The material circulation speed in the crystallization chamber is slow, and the supersaturation of the solution is small, making it difficult to generate secondary crystal nuclei and easy to grow crystals;

2.It can be continuously produced, and the output can be large or small;

3.There is no problem of crystal breakage in the clear liquid circulation.

4.The uniform supersaturation in the suspension bed provides good conditions for crystal growth;

5. Suitable for occasions with high requirements for crystal particle size.



DTB crystallizer

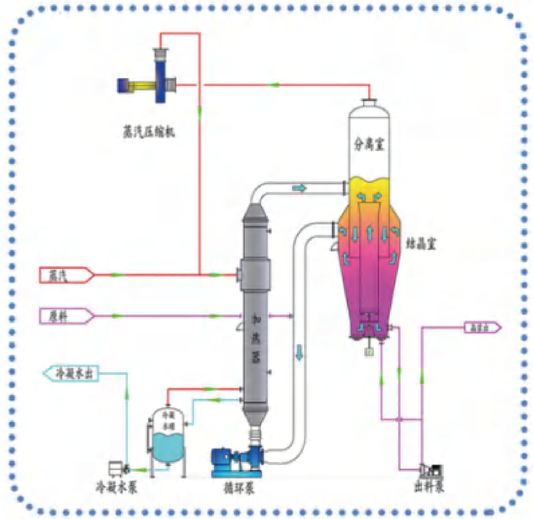
The DTB type crystallizer belongs to a typical slurry internal circulation crystallizer. Due to the installation of an inner guide tube in the crystallizer, a circulation channel is formed, which provides good mixing conditions for the crystal slurry. Only a very low pressure is required to achieve good internal circulation in the crystallizer.

Characteristic:

1.It can quickly eliminate the degree of supersaturation at the boiling interface in evaporative crystallization, and can keep the supersaturation of the solution at a relatively low level. Especially suitable for products with steep solubility curves.

2.Through practice, it has been proven that the DTB type crystallizer has good performance, high production intensity, and can produce larger grains, which are not easy to form scars inside the crystallizer.

3.It has become one of the main forms of continuous crystallizer. It can be applied to crystallization operations using vacuum cooling, evaporation, direct contact freezing, and reaction methods.



FC crystallizer

FC type crystallizer, also known as external heating forced circulation evaporation crystallizer, consists of a heating chamber, evaporation crystallization chamber, forced circulation horizontal axial flow pump, and upper and lower circulation pipes. The crystal size is not large, approximately between 0.1 and 0.3mm. Its characteristics are simple structure and easy operation. Designers should pay attention to the fact that the position of the evaporative crystallization chamber is 4-6 meters higher than the position of the heating chamber (the distance between the liquid level in the evaporative crystallization chamber and the tube plate on the heating chamber) in structural design to ensure that the tube mouth on the heat exchange tube does not boil, and there will be no crystallization inside the heat exchange tube, and there will be no pipe blockage phenomenon. At the same time, the flow velocity inside the circulating pipe should be controlled between 1.5m/s and 2.2m/s. Further preventing pipe blockage.

Performance comparison between MVR and traditional evaporators

ITEM/TYPE	Reaction kettle	Single effect evaporator	Multi effect evaporator	MVR evaporator	TVR evaporator
Energy consumption	Extremely high energy consumption, evaporation of 1 ton of water requires approximately 1.2 to 2 tons of raw steam	High energy consumption, evaporation of 1 ton of water requires approximately 1.1 tons of raw steam	Low energy consumption, the four effect evaporator requires approximately 0.25 to 0.4 tons of raw steam to evaporate 1 ton of water	Low energy consumption, evaporation of 1 ton of water requires approximately 20-50kw/h of electricity consumption	Low energy consumption, the three-effect +TVR evaporator requires approximately 0.25 to 0.4 tons of raw steam to evaporate 1 ton of water
Energy	live steam	live steam	live steam	Industrial electricity	live steam
Operating unit consumption (ton)	Extremely high	high	Lower	Lower	Lower
Product quality	Long product retention time, unstable quality, and significant impact on product quality	Short product retention time, low temperature evaporation, and minimal impact on product	The product has a long residence time and a large temperature difference, which has a small impact on product quality	Short product retention time, low temperature evaporation, and minimal impact on product quality	Short product retention time, low temperature evaporation, and minimal impact on product quality
Control mode	manual operation	Semi-automatic	Semi-automatic	Automatic	Semi-automatic
Recommend discharge mode	Discontinuity	Continuous	Continuous	Continuous	Continuous
Area occupancy	Small	Small	Big	Small	Big

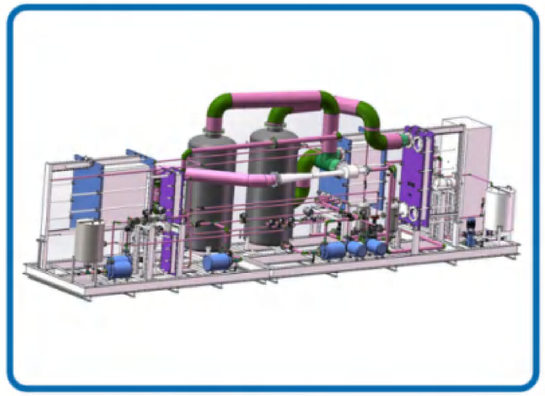
Skid mounted evaporator unit

Application scope: Pilot project, college experimental unit, measuring the boiling point rise and material data of different materials

Evaporation capacity: 30kg-500kg

Steam source: steam generator, fresh steam

Evaporation forms: rising film, falling film, rising and falling film, forced circulation and other evaporation processes



MVR tubular falling film evaporator

After preheating by the preheater, the material is added from the upper tube box of the heat exchanger, and distributed to each heat exchange tube through a liquid distributor. A uniform liquid film is formed along the inner wall of the heat exchange tube. The liquid film inside the tube is heated by the heating steam on the shell side during the downward flow process, boiling and evaporating while flowing downward. The material at the bottom of the heat exchange tube becomes concentrated liquid and secondary steam. The cocentrated liquid falls into the lower pipe box, and the secondary steam enters the gas-liquid separator. The liquid droplets carried by the secondary steam in the gas-liquid separator are removed, and the pure secondary evaporation is transported from the separator to the compressor. The compressor compresses the secondary steam and sends it as heating steam to the shell side of the heat exchanger for use as a heat source in the evaporator, achieving a continuous evaporation process.

Characteristics of MVR Tubular Falling Film Evaporator

1.The solution flows in a film shape in a one-way evaporator, and the heat transfer coefficient is high;

2.Small footprint;

3.For heat sensitive materials, they can be processed in one pass, with a short retention time and less likely to cause deterioration;

4.Low energy consumption;

5.Low liquid retention, easy to achieve automatic cleaning.

The MVR falling film evaporation system is suitable for material concentration and pre concentration of salt crystallization. It is suitable for evaporating materials that do not contain particles, are not prone to scaling, and have low viscosity, especially for heat sensitive materials.

MVR Tubular Forced Circulation Evaporator

The MVR forced circulation evaporation system consists of an evaporator, a separator, a forced circulation pump, and a steam compressor. The material is inside the tube and after heat exchange with the steam outside the tube, it is divided into steam and concentrated liquid. The steam rises to the separator, and the demister separates the liquid droplets carried in the steam. The purified secondary steam is transported to the compressor, and after compression, it is transported to the shell side of the evaporator as heating steam, achieving secondary steam circulation and continuous evaporation. The material is concentrated into supersaturated material, crystallized, and the crystal slurry is transported out from the circulation pipeline using a discharge pump, while the mother liquor enters the forced circulation pump, under the action of the circulation pump, enters the evaporator and evaporates again. This cycle continuously evaporates, concentrates, and crystallizes.

Its advantages are:

1.Suitable for materials with high viscosity;
2.Materials containing particles;
3.High concentration ratio;
4.The pipeline has a high flow rate and is not prone to dry walls or scaling.

Evaporation system process

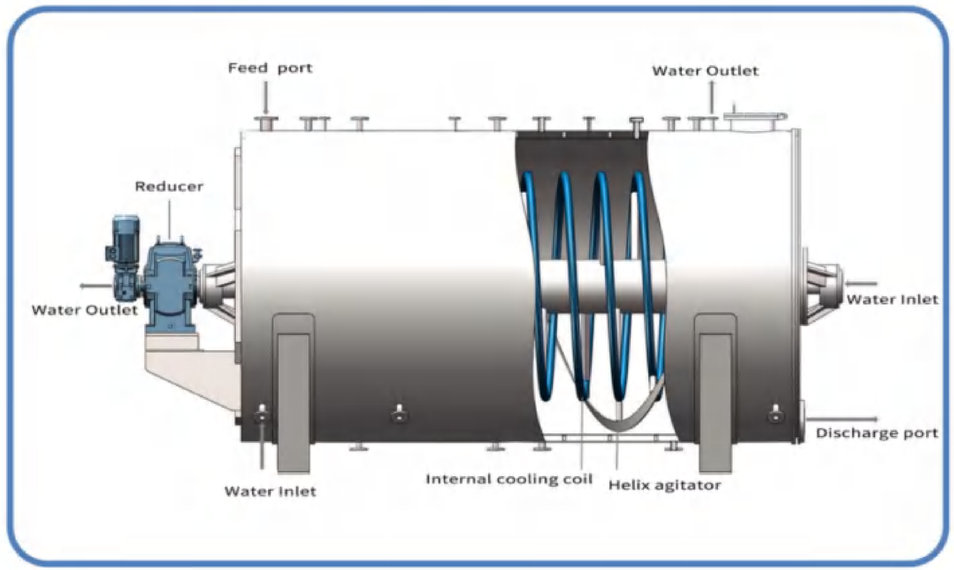
- Multi effect evaporation system
- Multi effect+flash evaporation system
- Forced circulation evaporation system
- Waste heat steam recovery evaporation system
- TVR Multi effect evaporation system
- Multi effect plate type and tube shell type combined evaporation system
- MVR Single effect evaporation system
- Multi effect plate type+scraper evaporation
- MVR+TVR combined evaporation system
- Cross flow evaporation system

Application scope

Horizontal Cooling Crystallizer

Working principle

The horizontal cooling crystallizer is a typical batch operation equipment, and it is also the most widely used and simplest technology product in the field of deep processing of grain products to produce monohydric glucose and other sugar alcohols. It is basically suitable for all types of material for primary and secondary crystallization. The equipment structure is a horizontal jacket structure with a welded center axis, and the internal structure includes a forward push stirring spiral belt and a reverse cooling spiral coil, which are integrated into a single structure through pipes welded to the center axis. During operation, the jacket and inner coil are cooled by desalination cooling water through special designed pipes, and the temperature is adjusted according to the crystallization curve of the material to achieve a certain crystallization yield. After a certain amount of crystal sugar paste is released, a portion of the sugar paste is retained as seed for the next batch of crystallization. This crystallizer has distinct advantages and disadvantages. Its advantages are flexible operation and simplicity, and it has low requirements on the technical capabilities and upstream and downstream unit matching of the factory, but its disadvantages are that the quality and effect of each batch of material crystallization are different, the energy consumption and land occupation are large, and it also puts higher requirements on the subsequent operation unit. This is due to the limited structure of the horizontal crystallizer, where the heat exchange between the material and the cooling components is very uneven, with radial temperature differences of 5-10°C, resulting in a relatively flat distribution curve of crystal grains. This natural contradiction with the narrower crystal grain distribution curve required for the final product requires frequent adjustment of suitable parameters during subsequent centrifugation, washing, drying, and classification and packaging.

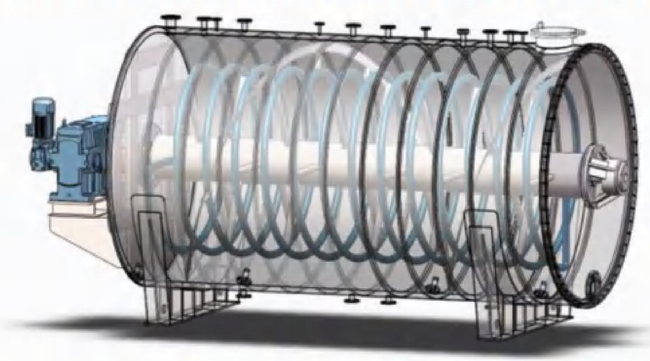


Characteristics of Horizontal Cooling Crystallizer

By optimizing the process and structure, the batch horizontal cooling mold has obvious performance characteristics:

Features

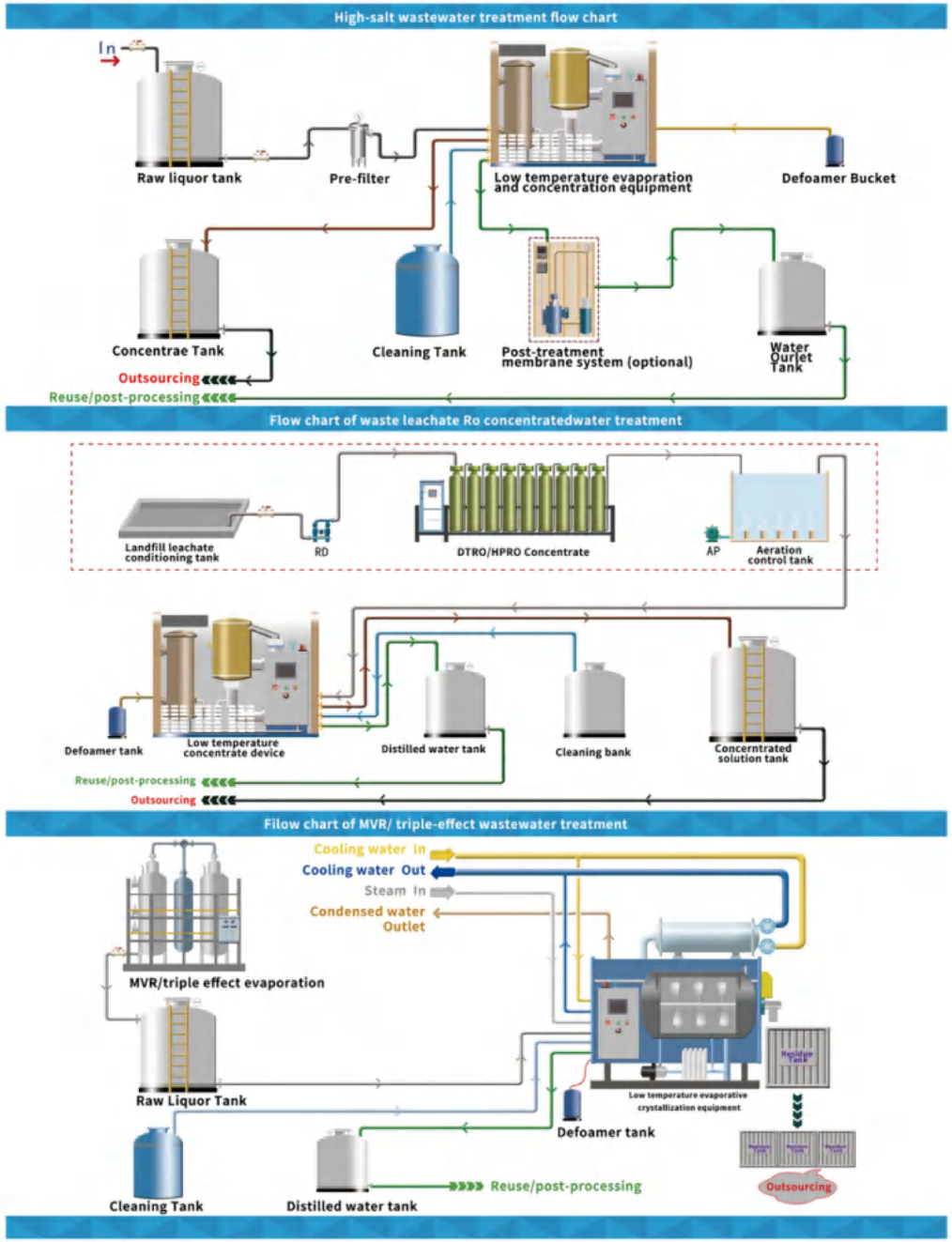
1. Single-end mechanical seal, no need for cooling flush
2. Integrated installation of both end seals and center shaft support, reducing the risk of leaks
3. The propeller-type spiral belt has a gap of less than 12mm with the inner cylinder wall
4. The jacket flow channel is equipped with longitudinal baffles: With the same circulating water flow, it increases the medium flow rate, enhances heat transfer, and avoids the potential risks of cooling water short circuits and dead corners.
5. It can be equipped with the GOJE single-channel dual logic control super-temperature control skid system and software, which will have better results.



Application field

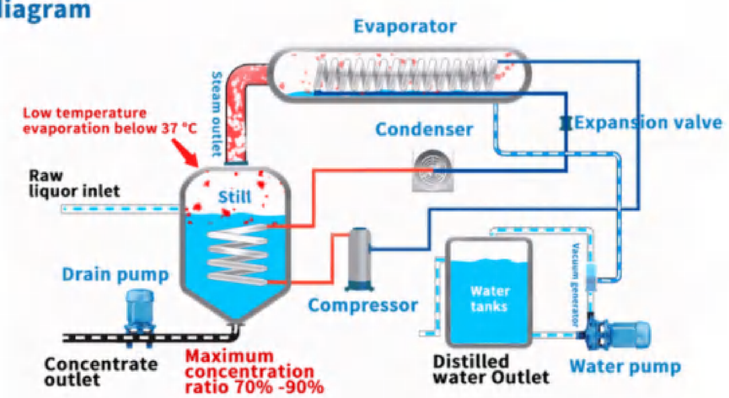
The crystallization of glucosum anhydricum, mannitol, allulose, erythritol, maltitol, isomaltol, xylitol, monohydrate, trehalose and other materials.

Low-temperature evaporation hazardous waste reduction treatment system



Low temperature heat pump concentrated evaporation system

Schematic diagram

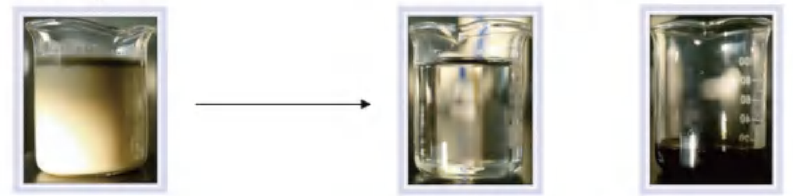


Low temperature heat pump concentration evaporation equipment

Advantages

1. no need to add drugs
2. no requirement for the concerntration of treated wastewater
3. waste minimization
4. evaporation at 37°C， the effluent water quality is good, and it is not easy to produce scale
5.waste water heating and steam refrigeration energy recycling
6. extremely low maintenance cost, no consum-ables
7.high degree of integration
8.remote monitoring, autonomous operation, no personnel on duty

Comparison diagram



100%Waste water

90%-95% Distilled water

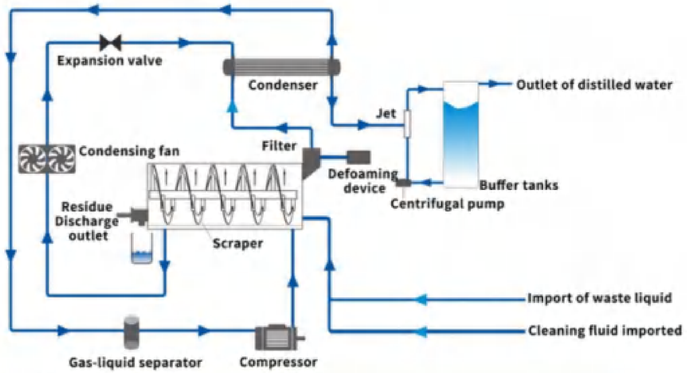
Heavy metals, organic matter, inorganic matter, oil, etc. 5%-10%

Product model list

Models	Daily apacity (L/D)	Output capacity (L/h)	Input Power (kw/h)	Dimension(L*W*H)(mm)
200	200	10	3	1400×800×1730
600	600	30	4	1600×1100×2100
1000	1000	50	7.5	1850×1200×2380
2000	2000	100	17	2300×1652×3200
3000	3000	150	23	2700×1800×3200
4000	4000	200	30	2900×2100×3200
6000	6000	300	38	3700×2500×3200
8000	8000	400	45	3700×3900×3200
10000	10000	500	50	4000×2300×3200
20000	20000	1000	86	4200×2800×3200
30000	30000	1500	130	4300×3500×3200

Cryogenic heat pump crystallization evaporation system

Schematic diagram



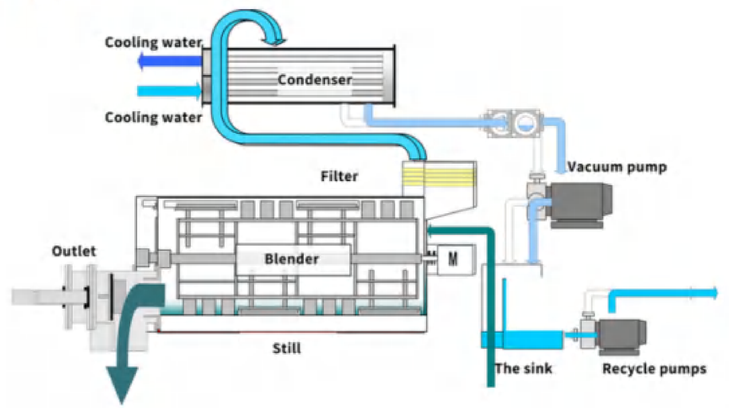
Low temperature heat pump crystallization evaporation equipment

Product model list

Models	Daily output (L/D)	Output per hour (L/h)	Input Power (kw/h)	Dimension(L*W*H)(mm)
500	500	25	5.5	2300×1620×2500
1000	1000	50	12.5	2800×1820×1500
2000	2000	100	21	2800×1820×3050
3000	3000	150	32	2950×2100×3200

Low temperature steam crystallization evaporation system

Schematic diagram



Process:

1.High-concentration waste liquid is pumped into the measuring device tank through an external pump, and the vacuum door is opened to suck it into the kettle, completing the liquid intake and measurement.

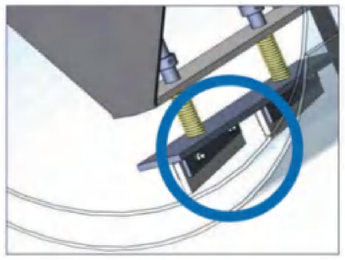
2.Before entering the designated area, operators must use a gas detector to check the air quality in the area and ensure it is safe before entering

3.The vacuum pump will vacuum the entire process to -80 to - 90 kPa, and water boils and evaporates at 45°C. Low temperature can prevent other substances from undergoing secondary quality changes due to high temperature, making the conditions more efficient and allowing for a faster reduction in moisture content. The stirring device is used to prevent clumping.

4.The heating process is evenly heated and stirred, and the device can be set to automatically discharge after the stewing cycle and batch are set.

5.The water evaporated from hazardous waste is returned to the wastewater treatment plant, and which from domestic wastewater is reused or discharged.

Low temperature steam crystallization equipment



Features

1.Distillation kettle built-in stirring scraper, not easy to crystallize

2.Residue moisture content is low to 5-20%

3.No daily consumables, low operating costs

4· No scaling inside, no manual/chemical cleaning

5 .Simple structure, automatic operation, easy operation

Advantages:

1. No clogging - Unlike traditional heat exchange methods, the patented jacketed heat exchanger technology is used for the evaporator, ensuring that it will never clog.
2. Anti-scalding - The unique stirring device inside the distillation vessel prevents the accumulation of residue and completely prevents the scalding of the inner wall of the distillation vessel.
3. Crystallization - The substances within the device are evaporated from the liquid state and form crystals.
4. Energy saving - With a small footprint and low operating costs, the physical treatment device achieves energy savings and emission reductions.
5. Volume reduction - The waste liquid can be evaporated and concentrated to form a residue with a moisture content of about 5% or concentrated into a more concentrated waste liquid.

Product model list

Models	Weight (Kg)	Processing capacity (L/hr)	Power consumption (kw)	Dimension(L*W*H) (mm)
250	3700	160-200	6	1800×3650×3500
300	3700	240-300	7.3	1870×3650×3500
500	5500	400-500	11.8	2400×3650×3500
750	8000	600-750	17	3600×3650×3500
1000	11000	800-1000	22.6	4800×3650×3500
1250	13500	1000-1250	27.74	6000×3650×3500
1500	16000	1200-1500	36	7200×3650×3500

Application field

Surface treatment
Waste liquid containing phosphorus

Membrane filtration
MVR concentrated water to crystallization

PCB electroplating
Solidification of heavy metal waste liquid

High salt
High COD concentration to crystallization

Organic solvent
Limiting concentration

Chemical Industry
Crystallization of acid and alkali waste liquid

Cutting fluid
Ultimate concentration of abrasive fluid and release agent

Landfill leachate
Concentrated crystallization

Customer cases

Evaporation: 2.6 T/h
Evaporation process: MVR tube evaporation system
Material: zinc sulfate heptahydrate
Final concentration: frozen crystallization
Main material: 2507

Evaporation: 5.4 T/h
Process: MVR tube forced circulation evaporation system
Material: Nacl
Final concentration: Crystallization
Main material: TA2

Evaporation: 3.5 t/h 2.5 t/h
Evaporation process: 2 sets of triple-effects tube forced circulation evaporation system
Material: Nacl,Nabr
Final concentration: Crystallization
Main material: TA2

Evaporation: 18 T/h
Process: MVR triple-effects plate evaporation system
Material: NaOH
Final concentration: 21.7%
Main material: 316L

Evaporation: 1.6 T/h
Evaporation process: Pretreatment + MVR evaporation system
Materials: High-salt wastewater
Final concentration: Crystallization
Main material: TA2

Evaporation: 1.88 t/h
Evaporation process: MVR+single still evaporation system
Material: NaNO3
Final concentration: Crystallization
Main material: 316L

Evaporation: 5 T/h
Evaporation process: Triple-effect evaporation system
Material: NaF
Final concentration: Crystallization
Main material: 316L

Evaporation: 10 T/h
Evaporation process: MVR falling film evaporation system
Material: hyaluronic acid
Final concentration: Crystallization
Main material: 316L

Evaporation: 1 T/h
Process: MVR plate rising film evaporation system
Material: Pickling wastewater
Final concentration: 50%
Main material: 904L

Evaporation: 3 T/h
Evaporation process: Triple-effect evaporation system
Materials: High-salt wastewater
Final concentration: crystallized salt
Main material: titanium

Evaporation: 2.5 T/h
Process: Double-effect tube force circulation+single still
Material: CaCl2,MgCl2,KCl,Nacl
Final concentration: Crystallization
Main material: TA2

Evaporation: 1.4 T/h
Process: Double-effect tube force circulation+packing unit
Material: Na2SO4
Final concentration: Crystallization
Main material: 316L

Customer cases

Evaporation capacity: 20t/h
Evaporation process: four effects
Material: Sugar solution
Final concentration: 77%
Main material: SS316L

Evaporation capacity: 3T/H
Evaporation process: MVR single effect
Material: Blood peptide solution
Final concentration: 41%
Main material: SS316L

Evaporation capacity: 15.8T/H
Evaporation process: triple effect plate+single effect tube
Material: Potassium dihydrogen phosphate
Final concentration: 60%
Main material: TA2

Evaporation capacity: 7.5T/H
Evaporation process: MVR single effect evaporation crystallization
Material: Sodium chloride
Main material: TA2

Evaporation capacity: 6t/h
Evaporation process: Three effects
Material: Pectin
Final concentration: 10%
Main material: SS316L

Evaporation capacity: 5t/h
Evaporation process: MVR+TVR combined evaporation
Material: Maltose
Final concentration: 78%
Main material: SS304

Evaporation capacity: 5T/H
Evaporation process: MVR evaporation system
Material: Sodium hydroxide
Discharge concentration: 16.8%
Main material: SS316L

Evaporation capacity: 2.6T/H
Evaporation process: MVR evaporation concentration
Material: Pickling wastewater
Main material: 2545M0

Evaporation capacity 4.13t/h
Evaporation process: MVR evaporation crystallization
Material: Manganese sulfate
Main material: TA2

Evaporation capacity: 5t/h
Evaporation process: Three effects
Material: Sodium sulfate
Main material: SS316L

Evaporation capacity: 46.6T/H
Evaporation process: triple effect tube+MVR forced circulation
Material: Lithium sulfate
Final concentration: crystallization
Main material: SS316L

Evaporation capacity: 41T/H
Evaporation process: Two effect falling film+MVR forced circulation
Material: Sodium sulfate
Final concentration: 28%
Main material: SS316L

Customer cases

Evaporation capacity：10T/H
Evaporation process：Four effect forced circulation
Fluid：Sodium chloride+Sodium sulfate

Evaporation capacity: 2.6t/h
Evaporation process: Three effects
Fluid: Oat milk
Final concentration: 80%
Main material: SS304

Evaporation capacity: 3t/h
Evaporation process: MVR+ single effect evaporation crystallization
Fluid: Sodium chloride sodium sulfate mixture
Main material: TA2

Evaporation capacity: 28t/h
Evaporation process: MVR plate evaporation system
Fluid: Erythritol
Main material: 30403

Evaporation capacity: 10t/h
Evaporation process: MVR plate evaporation system
Fluid: Juice
Discharge concentration: 75%
Main material: S30403

Evaporation capacity: 1.77t/h
Evaporation process: Multi effect evaporation system
Fluid: Glycerin
Discharge concentration: 80%
Main material: S30408

Evaporation capacity: 26t/h
Evaporation process: Five effect TVR evaporation system
Fluid: Xylose
Discharge concentration: 50%
Main material: S31603

Evaporation capacity: 2t/h
Evaporation process: Multi - set multi - effect
Fluid: Glucose, polysaccharide
Final concentration: 75%
Main material: SS316L

Evaporation capacity: 10t/h
Evaporation process: MVRfalling film + forced cycle evaporation crystallization
Fluid: potassium sulfate
Final concentration: 10%
Main material: SS316L

Evaporation capacity: 55+5t/h
Evaporation process: MVR two-stage plate evaporation system
Fluid: lactic acid
Main material: TA1

Evaporation capacity: 0.5t/h
Evaporation process: two effects
Fluid: Arabinose
Final concentration: 70%
Main material: SS316L

Customer cases

Evaporation capacity: 3T/H
Evaporation process: Three effect
Fluid: Sorbitol
Final concentration: 70%
Main material: SS304

Evaporation capacity: 5T/H
Evaporation process: MVR single effect
Fluid: Sodium gluconate
Final concentration: 70%
Main material: SS316L

Evaporation capacity: 2T/H
Evaporation process: Two effect evaporation crystallization
Fluid: Pickling wastewater
Final concentration: crystallize
Main material: SS316L

Evaporation capacity: 7T/H
Evaporation process: MVR single effect
Fluid: Low temperature fructose
Final concentration: 75%
Main material: SS316L

Evaporation capacity: 3T/H
Evaporation process: MVR single effect+multi effect
Fluid:Lactic acid
Final concentration: 85%
Main material: Ti

Evaporation capacity: 10T/H
Evaporation process: MVR single effect+multi effect
Fluid:Isomaltooligosaccharide
Final concentration: 75%
Main material:SS304

Evaporation capacity: 20T/H
Evaporation process: Four effect
Fluid:Oligofructose
Final concentration: 75%
Main material:SS316L

Evaporation capacity: 4T/H
Evaporation process: 3+1 effect flash evaporation
Fluid:Polyethylene glycol
Final concentration: 99.5%
Main material:SS316L

Evaporation capacity: 1.5T/H
Evaporation process: MVR evaporation
Fluid:Potassium fulvic acid
Main material:SS304

Evaporation capacity: 13T/H
Evaporation process: Three effect evaporation
Fluid:Refined sugar
Final concentration: 75%
Main material:SS316L

Evaporation capacity: 2T/H
Evaporation process: 3 effect evaporation
Fluid:Xylitol
Final concentration: 82%
Main material:SS316L

Evaporation capacity: 20T/H
Evaporation process: 4 effect evaporation
Fluid:Maltose
Final concentration: 77%
Main material:SS316L

Customer cases

Evaporation capacity: 5T/H
Evaporation process: MVR+TVR Multi-effect
Fluid:Mannitol
Final concentration: 45%
Main material:SS316L

Evaporation capacity: 2T/H
Evaporation process: Two effect
Fluid:Glucose
Final concentration: 75%
Main material:SS316L

Evaporation capacity: 7T/D
Evaporation process: low-temperature heat pump evaporation crystallization
Fluid:electroplating wastewater (galvanized oily wastewater, chromium wastewater, nickel wastewater, copper wastewater)
Final concentration: Crystallization
Main material:TA2

Evaporation capacity: 0.85T/H
Evaporation process: Two effect evaporation crystallization system
Fluid:Sodium chloride and ammonium chloride
Main material:2205

Evaporation capacity: 30T/H
Evaporation process: Four effect
Fluid:Maltose syrup
Final concentration: 80%
Main material:SS316L

Evaporation capacity:20T/H
Evaporation process: MVR falling film+forced circulation
Fluid:Ammonium sulfate solution
Final concentration: Crystallization discharge
Main material:SS316L

Evaporation capacity:10T/H
Evaporation process: TVR triple effect + column tube
Fluid:Gluconolactone
Final concentration: 85%
Main material:SS316L

Evaporation capacity:10T/H
Evaporation process: Four effects
Fluid:Mulberry juice
Final concentration: 65%
Main material:SS316L

Evaporation capacity:2T/H
Evaporation process: Two effect TVR
Fluid:Tartaric acid
Final concentration: 50%
Main material:SS316L

Evaporation capacity:2.5T/H
Evaporation process: Two effect
Fluid:Oil
Final concentration: 99.5%
Main material:SS304

Evaporation capacity:0.6T/H
Evaporation process: Pre treatment+MVR evaporation crystallization
Fluid:Wastewater
Final concentration: Salt crystallization
Main material:Ti