



Poseidon

Focus on Fine Field—Technology
Innovation of Special Membrane Separation

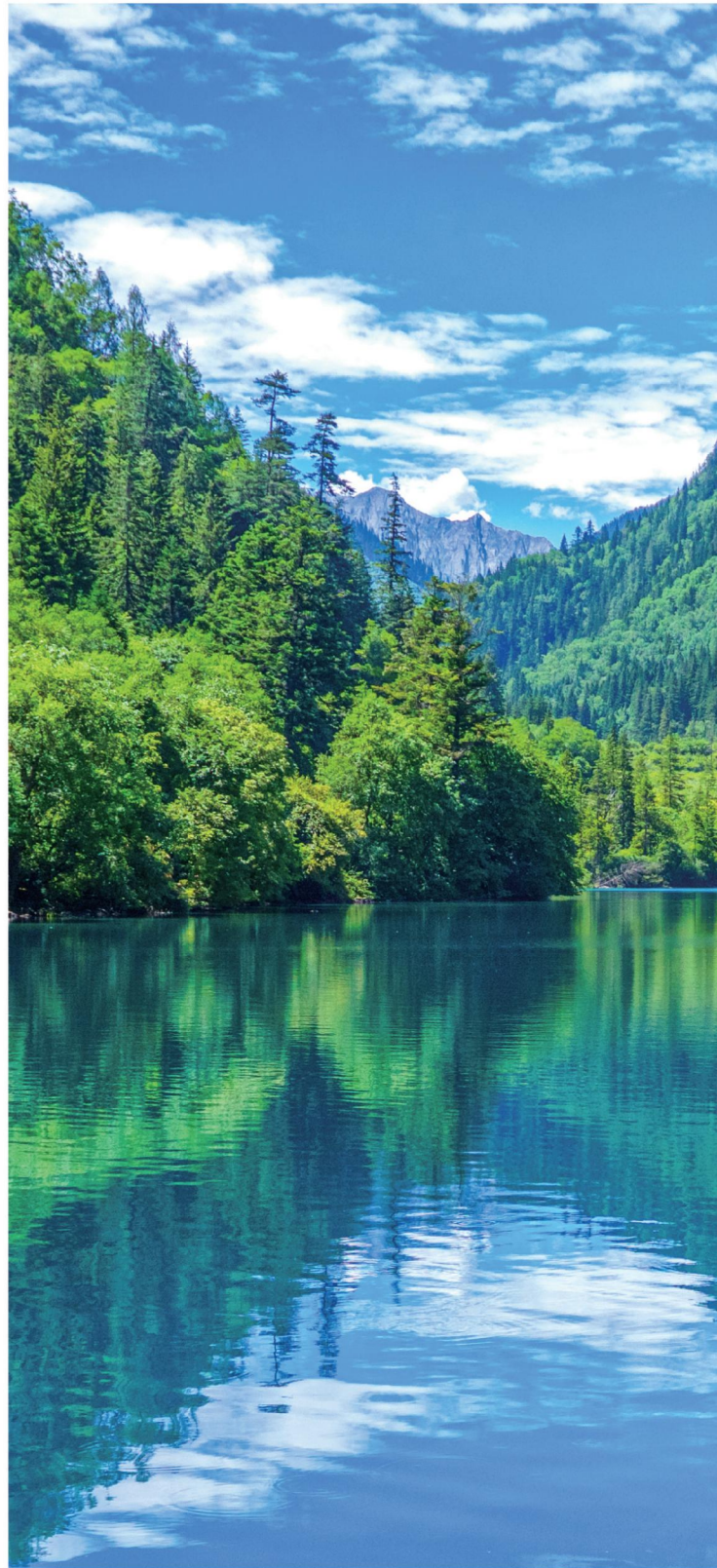


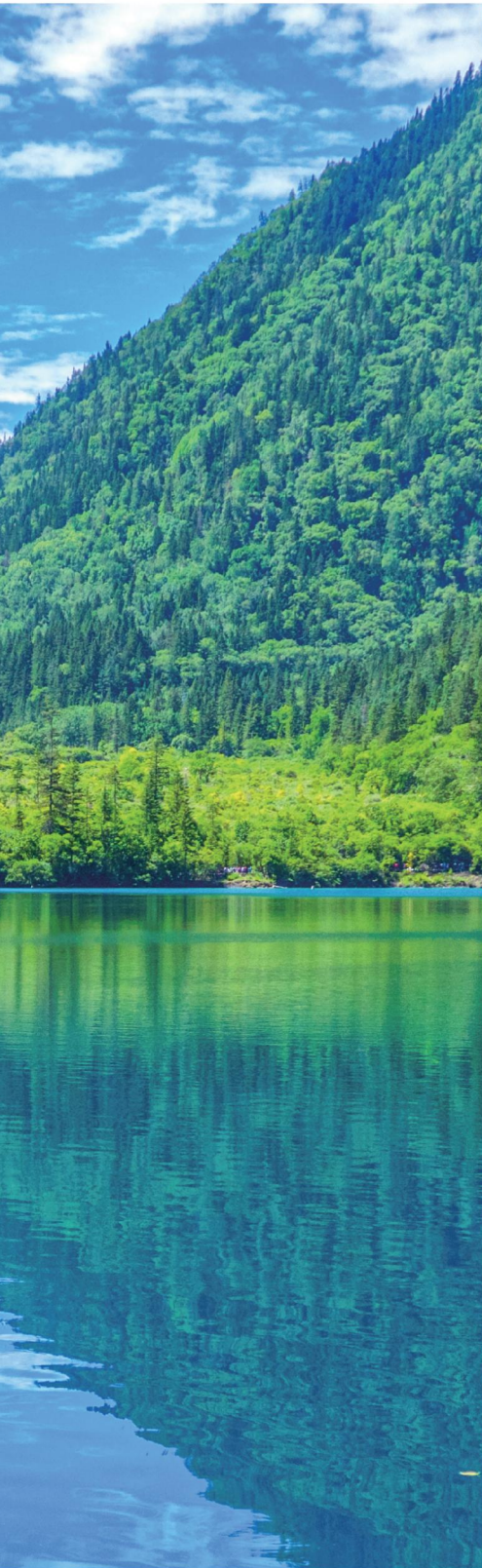
Version 2024

Poseidon (Jiangsu) New Material Technology Co., Ltd

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CORPORATE CULTURE

Enterprise Vision ■

Taking “practicing green development and jointly building green waters and green mountains” as its own mission, Committed to the innovative development of specialty membrane materials, membrane products and its applications Aspire to become a world-leading intelligent manufacturing enterprise of special membrane.

Business Philosophy ■

We have always insisted on creating a technology-based platform for employees to pursue continuous innovation and entrepreneurship by “co-creating, co-sharing and co-developing”.

Enterprise Mission ■

Industrialization of science and technology for creating value of human.

Company Introduction

Poseidon(Jiangsu) New Material Technology Co., Ltd (Poseidon New Material), located in Intelligent Equipment Enterprise Harbor, Xinbei District, Changzhou City (the capital of new energy) , Jiangsu Province, is a national high-tech enterprise focusing on the independent research and development, production, sales and service of high flux, constant hydrophilic tubular/sprial ultra-nano-filtration membranes and specialty filtration membranes products.

The company has developed PTS series membrane products with high pollution resistance, oil resistance, high flux and easy cleaning by adopting heteronaphthalene biphenyl polyaryl ether series of high-performance membrane materials with 3D structural units. It breaks through the boundary of traditional organic and inorganic membranes, and at the same time has the performance characteristics of constant hydrophilicity, high temperature resistance, acid and alkali resistance, high flux, and easy recovery from backwashing.



High-tech Enterprise Certificate



Certificate of Dual Innovation Talent



Quality Management System Certificate



Occupational Health and Safety Management System Certification



Environmental Management System Certificate

The founder of Poseidon New Materials was selected as one of Jiangsu Province's "Shuangchuang Talents" in 2022 (No. JSCRC2022046), and the company was selected as a national high-tech enterprise in 2022 (No. GR202232014490).

The company's high-performance separation membrane series products have independent intellectual property rights, currently has 16 authorized patents; 5 softwritings; 3 authorized trademarks. The existing production line of special tubular/sprial membrane, annual output of 1 million square meters of high-performance separation membrane products and other production lines, the production process is in strict accordance with international standards, abide by the ISO9001 quality management system, and successfully passed the environmental management system certification, occupational health and safety management system certification.

The key technology products are widely used in the deep treatment of garbage leachate, pharmaceutical wastewater, chemical wastewater, municipal wastewater, etc., as well as for biomedical concentration and purification, food and beverage turbidity removal, etc., It has unique technological advantages in the process of material resource utilization.



The company was founded by Changzhou Huiheng Membrane Technology Co., Ltd, the holding subsidiary of WELLE Environmental Group Co., Ltd. (stock code: 300190) and a scientific research team composed of a group of experts in the field of membrane technology, and the company has been selected as the 14th batch of Changzhou Dragon City Talent Leading Innovation and Entrepreneurship Talent Project in 2020.

In the process of core product development of high-end ultrafiltration membrane equipment and supporting non-standard sewage treatment equipment, the company emphasizes the combination of production, learning, research and use. With Jiangnan University, Changzhou University, Jiangsu University of Science and Technology, Dalian University of Technology, Shenyang University of Science and Technology and so on, the company has established a strategic cooperative relationship, which provides strong support and guarantee for the continuous development and innovation of high-end membrane products and supporting equipment.



Innovation



R&D



Manufacturing



Services

Poseidon New Materials has always insisted on creating a technology-based platform for continuous innovation and entrepreneurship with its employees, "Co-creation, Co-Sharing and Co-development". Our pre-sale and after-sale equipped with specialized personnel to answer the actual problems encountered in the use of customers, the whole logistics tracking, to ensure that the delivery of orders as promised, so that customers have no worries.

We believe that the innovation of separation membrane is not only the innovation of technology, but also the pursuit of better life for human beings. We will continue to work hard to contribute to the creation of a cleaner and healthier future and make the world more beautiful because of us.

Patents & Test Reports

Invention Patent



Utility model patents



Test Reports



Patents & Test Reports



XIGAO JIAN

Academician of the Chinese Academy of Engineering

Fellow of the Asia-Pacific Academy for Materials Science

Specialist of Organic Polymer Materials

Poseidon (Jiangsu) New Material Technology Co., Ltd

Cooperate-founder/Chief Scientist

Long-term engaged in innovation and industrialization practice of organic polymer materials. Having won the Second Prize of National Technical Invention twice. Invented PPESK/PPEK/PPES series of high-performance engineering plastics.

Solved the technical problem that traditional engineering plastics cannot be both heat-resistant and soluble; Proposed a new idea of high-performance polymer design, and developed a new system of high-performance polymer with unique structure.

Up to now, more than 40 invention patents have been authorized, 12 technologies have been industrialized, 2 invention patents have been awarded as World Chinese Major Scientific and Technological Achievements, and 1 invention patent has been awarded the Gold Medal of China's Invention Patent and the Gold Medal of Geneva International Invention in 2016.

Raw material must become material. Material should be made into tool. Tool should be useful.

—XIGAO JIAN

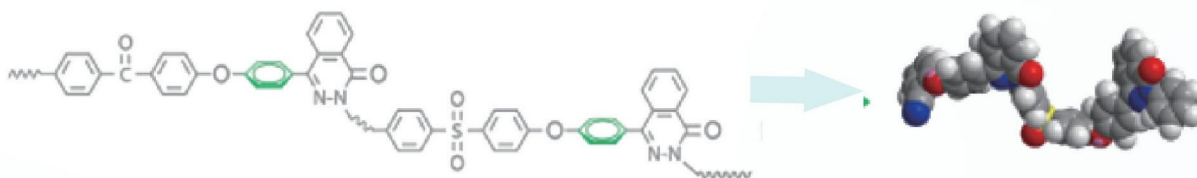
Original Innovation-Heterocyclic High Performance Membrane Materials

new monomer



The benzene ring of its DHPZ and the diazane ring are not in the same plane, twisted into an angle with each other, with twisted, non-co-planar structural characteristics; the activity is similar to bisphenol monomer.

The structure of the diazane is similar to that of the amide ring in polyimide, but the chemical stability of the six-membered diazo is significantly better than that of the imide.

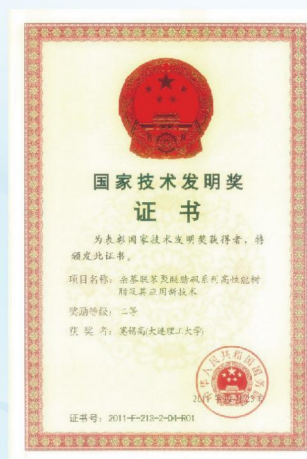


Due to the induction of DHPZ structure, the polymer also has a twisted non-coplanar structure, which hinders crystallization and facilitates dissolution, realizing both high-temperature resistance and solubility, and solving the technical problem that traditional polyaryl ethers cannot be both high-temperature resistant and soluble.

National Invention Award

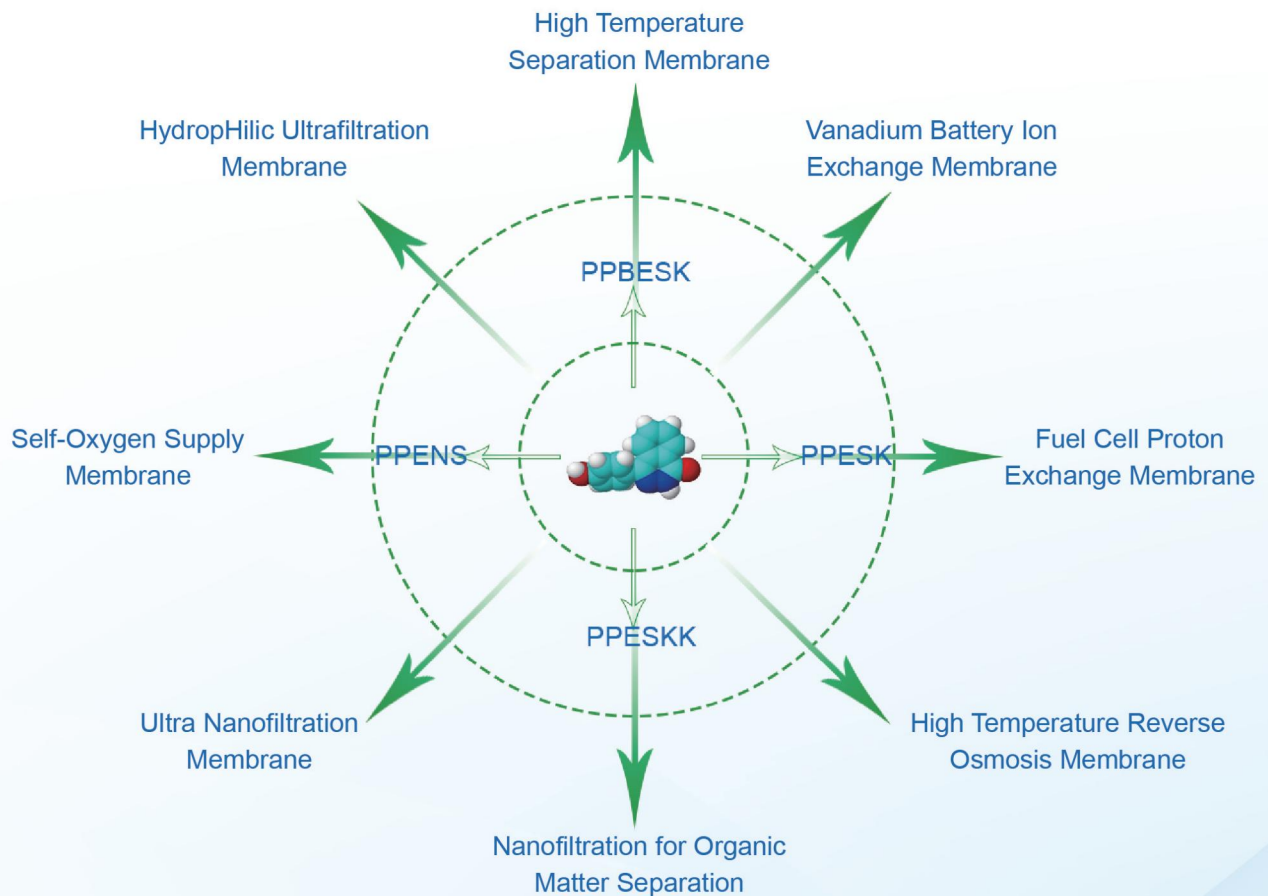


Second-class Prize of National Technological Invention, 2003



Second-class prize of National Technological Invention in 2011

Product Platform



Advantages of New Membrane Material Technology

- 1) High temperature material system separation;
High-temperature large flux, simplifying the cooling process, and realizing the reuse of heat energy.
- 2) realizing the reuse of heat energy. ;
Low operating pressure, and solution flux increased by more than 30%.
- 3) Good anti-pollution ability:
Introduction of strong hydrophilic group increases hydrophilicity and reduces the pollution.
- 4) Low operation cost:
Operating pressure of trans-membrane is lower, the backwashing cycle is extended by 50%, and the advantages of water-saving, Cleaning agents-saving and energy-saving are significant.

MBR Membrane Products

--Tubular Membrane



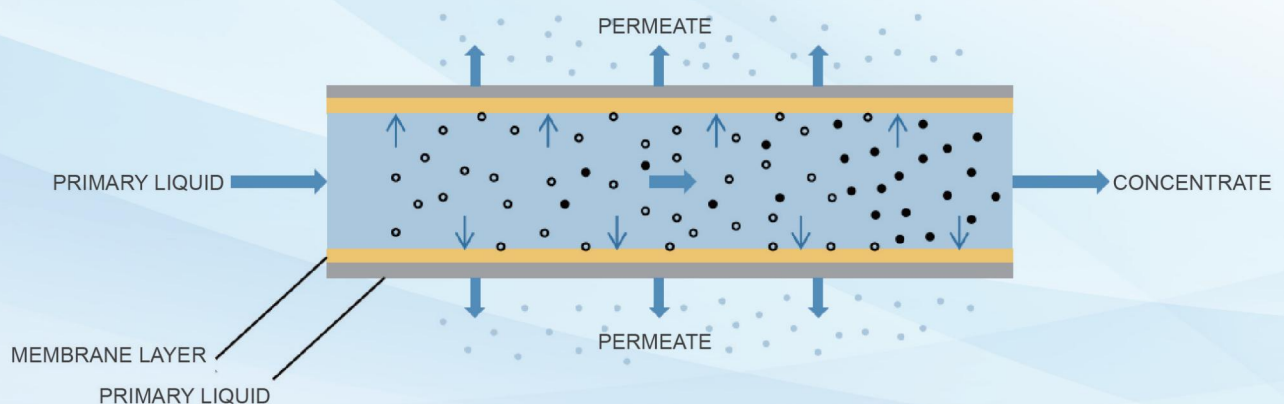
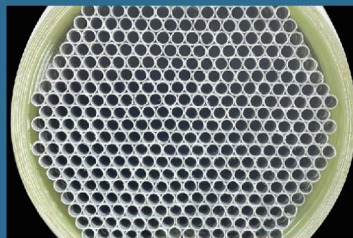
Products Introduction

PTS super alkali/acid-resistant tubular membrane is an internal pressure mosaic structure, the functional separation layer material can be designed according to the characteristics of the material system as PPEsk, PVDF, PES, PPBES, etc., and the external material is modified PET high-strength support material.

Product Features

Special sealing materials are used to fix a certain number of membrane tubes with specific diameters inside the membrane shell to form a tubular membrane module. When applied, the material to be treated enters the inner lumen of the membrane tube with a specific separation aperture under a certain pressure. The produced water containing small molecules is separated and permeated through the membrane wall, and the concentrated liquid is discharged from the other end of the membrane tube, which has the following technical characteristics:

1. With double layer structure, the inner layer has small pore size and uniform and consistent distribution, the outer layer is loose and high porosity;
2. inlaid structure, with strong wear resistance and long life;
3. The special functional layer on the inner surface has hydrophilic and smooth characteristics, and has excellent anti-pollution performance.



SCHEMATIC DIAGRAM OF THE PRINCIPLE OF TUBULAR MEMBRANE FILTRATION

Product Advantages

- ◆ **High water flux:** membrane porosity of more than 70%, the same transmembrane pressure, flux increased by more than 30%.
- ◆ **High separation precision:** Membrane pore of the separation layer is uniform and the pore diameter is adjustable from 0.01 to 0.2 μ m, which ensures the filtration precision of the membrane.
- ◆ **Low operation cost:** High-speed cross-flow of the original liquid in the membrane tube, pollutants are not easy to attach on the surface of the membrane, with obvious advantages of water-saving, cleaning agent-saving and energy-saving.
- ◆ **Long service life:** Membrane surface prepared by polar polarization process has strong hydrophilic group, which reduces the contamination phenomenon caused by hydrophobic pollutants, high membrane flux recovery rate, high pressure strength, and the service life can be as long as 5-10 years.

Product Specification

Tubular Membrane Performance Parameters

| Series | molecular weight cut-off (MWCO) | Pure water flux | Operating pressure | Operating temperature | pH | Resistant to free chlorine |
|----------------------|---------------------------------|-----------------------|--------------------|--|------|----------------------------|
| Unit | μ m /Dalton | L/(m ² ·h) | KPa | °C | | ppm·h |
| microfiltration | 0.1 | 800-1200 | 50~600 | 25-90 | 1~13 | 250000 |
| | 0.2 | 1000-1500 | | (Membrane material determines operating temperature) | | |
| | 0.45 | 1500-2000 | | | | |
| ultrafiltration | 100000 | 800-1500 | 100~700 | 25-90 | 1~13 | 250000 |
| | 50000 | 300-600 | | (Membrane material determines operating temperature) | | |
| | 30000 | 200-400 | | | | |
| | 10000 | 150-200 | | | | |
| | 6000 | 80-150 | | | | |
| ultra-nanofiltration | 2000 | 60-80 | 400-900 | 25-90 | 1~13 | 250000 |
| | 1000 | 50-70 | | (Membrane material determines operating temperature) | | |
| | 500 | 40-60 | | | | |

PTS-TM Series MBR Tubular Membrane Module Key Parameters

| Membrane model | Membrane tube diameter (mm) | Number of cores | Die diameter (mm) | Membrane Module Housing Material | Connection method | Scope of application |
|----------------|-----------------------------|-----------------|-------------------|--------------------------------------|-------------------|---|
| PTS -TM-203080 | PPESK/PVDF /PES/PPBES | 37 | 5/8/12.5 | PVC or fiberglass reinforced plastic | Groove type clamp | Material separation; Large scale sewage treatment and landfill leachate treatment |
| PTS -TM-204120 | | 85 | | | | |
| PTS -TM-206120 | | 201 | | | | |
| PTS -TM-208120 | | 365 | | | | |
| PTS -TM-210160 | | 566 | | | | |

Fields of application

- ◆ Waste permeate
- ◆ Coking wastewater
- ◆ Soften of high hardness wastewater
- ◆ Oil wastewater
- ◆ Municipal wastewater reuse
- ◆ Turbidity removal for food and beverage

MBR Membrane Products

--Curtain Membrane



Products Introduction

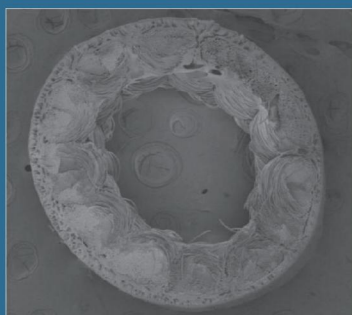
High-performance enhanced hollow fiber ultrafiltration membrane preparation patented technology, using a unique membrane formulation and specific membrane manufacturing process to produce hollow fiber ultrafiltration membrane with ultra-thin separation layer, and typical spongy cross-section structure characteristics, with higher tensile strength, while having a strong hydrophilic retention properties.

In the process of water treatment, it shows the technical advantages of higher solution flux, stronger pollution resistance, easy cleaning after pollution, and so on.

Essentially solves the existing hollow fiber ultrafiltration membrane low strength, poor anti-pollution performance and other issues.

Product Structure

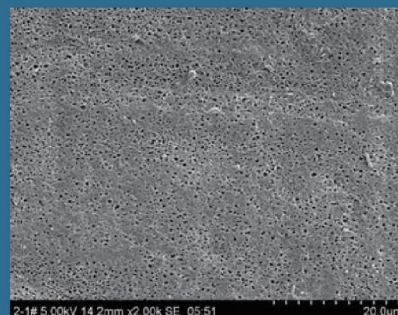
Reinforced hollow fiber ultrafiltration membrane micro-structure



Full view of the section



Section magnification 150 times

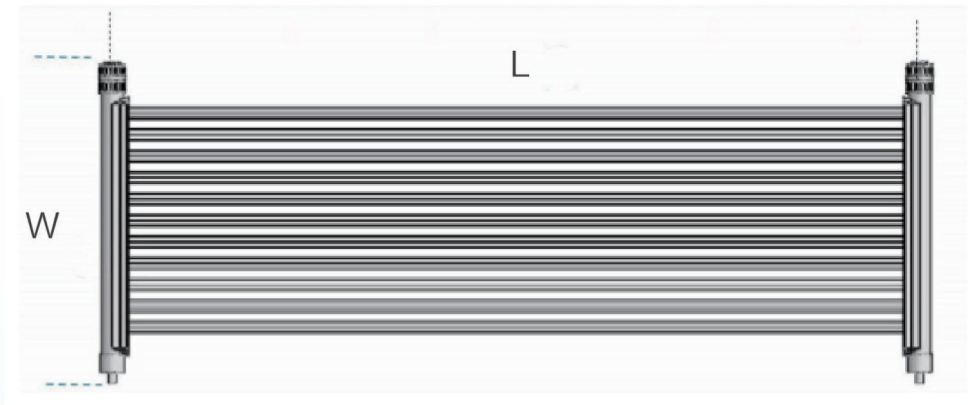


Pore size of outer layer

Product Advantages

- ◆ **Low operating costs:** under the same operating conditions, the trans-membrane operating pressure is lower, low pressure and high flux operation can be kept for a long time, and the backwash cycle is extended by more than 50%, which has obvious advantages of water saving, drug saving and energy saving.
- ◆ **Low pressure and large flux:** with the same trans-membrane pressure, the solution flux of high-performance hollow fiber ultrafiltration membrane is increased by more than 30%.
- ◆ **Good anti-pollution ability:** Surface of ultrafiltration membrane has a strong hydrophilic group, whose performance has been improved to a greater extent, the contact angle is less than 43 °, which reduces the contamination caused by hydrophobic pollutants, and can be applied to highly polluted wastewater treatment.

Product Specification



PTS-MBR Enhanced Curtain Membrane Module Parameter Sheet

| Model | PTS -MBR-HF15 | PTS -MBR-HF20 | PTS -MBR-HF30 |
|---|--|---------------|---------------|
| Specification | 537×40×1500 | 537×40×2000 | 1250×30×2000 |
| Effective membrane area (m ²) | 15 | 20 | 30 |
| Diameter of Hollow fiber membrane ID/OD(mm) | 1.3/2.0 | 1.3/2.0 | 1.3/2.0 |
| Center distance of collecting pipe(mm) | 1500 | 2000 | 2000 |
| Collector pipe connection diameter ID/OD (mm) | 32.7/39.7 | | 22 |
| Pore Size | 0.1μm | | |
| Breaking Force (N) | ≥150 | | |
| Membrane Material | Separation layer hydrophilic PVDF、 Reinforcement material micro-modified PET | | |
| Potting adhesive | Epoxy resins and polyurethanes | | |
| Water collection pipe | ABS | | |
| Water collection method | water collection at both ends | | |
| Running method | Submerged suction filtration | | |
| Average Permeate Flux | 15~25 | | |
| Recommended operating temperature (°C) | 15~35 | | |
| Recommended operating pH range | 6~8 | | |
| Maximum transmembrane differential pressure (MPa) | 0.035 | | |
| Ultimate transmembrane pressure difference (MPa) | 0.08 | | |

*Membrane module specifications can be customized as needed.

Fields of application

- ◆ Municipal wastewater treatment
- ◆ Landfill and compost leachate treatment
- ◆ Integrated wastewater treatment device
- ◆ Pre-treatment for water reuse in tanning industry.
- ◆ Industrial wastewater deep treatment and water reuse



MBR Membrane Products —Flat sheet Membrane



Products Introduction

Flat sheet membrane element consists of solid ABS plate, antibacterial flow guide layer and inlaid PVDF flat membrane sheet. The use of the vertical state, the sewage filtered by the membrane at the same time the bottom of the aeration of the membrane surface flushing, so that the activated sludge is not easy to be deposited on the membrane surface, to extend the membrane cleaning cycle, to ensure that the membrane equipment long-term stability.

Product characteristics

- 1、 Hydrophilic skin layer, near-skin layer and porous support layer are spongy, dense and topological structure in order of gradual progression, with higher porosity.
- 2、 Strong capillary force reduces the membrane pore resistance and improves permeate flux in the application of the membrane.
- 3、 Separation layer and support layer form a semi-interpenetrating network, which improves interlayer adhesion and bursting strength, prolonging service life.



Flat Sheet Membrane Elements



Flat Sheet Membrane Stacks

Product Advantages

- ◆ **Better anti-pollution performance:** It can maintain high flux at higher activated sludge concentration, with superior anti-pollution performance.
- ◆ **Good mechanical stability:** high strength support will not tear phenomenon, can completely ensure high quality water.
- ◆ **More convenient cleaning method, longer cleaning cycle:** Bottom aeration combined with large bubbles, effective shear on the surface of membrane, long chemical cleaning cycle.
- ◆ **Long life, low operating costs:** life is normally 5-8 years, do not need to frequently replace the membrane sheet, unique design can be a single sheet replacement.

Product Specification

PTS80 series flat MBR membrane module Key Parameters

| Model | PTS -FS80-140 | PTS -FS80-120 | PTS -FS80-100 | PTS -FS80-80 | PTS -FS80-60 |
|---|------------------------|---------------|---------------|---------------|---------------|
| Number of membrane elements (piece) | 140 | 120 | 100 | 80 | 60 |
| Effective area(m ²) | 112 | 96 | 80 | 64 | 48 |
| Scale of Permeate (m ³ /d) | 42 ~ 68 | 35 ~ 60 | 30 ~ 50 | 23 ~ 40 | 17 ~ 30 |
| Aeration capacity (m ³ /min) | 1.5~1.9 | 1.3~1.6 | 1.1~1.3 | 0.85~1.1 | 0.64~0.8 |
| MLSS(mg/L) | 8000 ~ 18000 | | | | |
| Permeate turbidity (NTU) | < 1.0 | | | | |
| Suspended matter in water (mg/L) | < 1.0 | | | | |
| Transmembrane differential pressure (kPa) | 5 ~ 20 | | | | |
| pH value | 2 ~ 13 | | | | |
| temperature (°C) | 5 ~ 40 | | | | |
| Frame material | 304 stainless steel | | | | |
| Aeration pipe coupling | Convex Flange P=1.0MPa | | | | |
| Aeration pipe material | UPVC | | | | |
| Aeration pipe connection size | DN65 | | | DN50 | |
| Water collecting pipe coupling | Coupling/UPVC | | | | |
| Water collecting pipe material | UPVC | | | | |
| Collector Pipe Connection Size | DN50 | | DN32 | | |
| Overall dimensions (mm) | 2200×610×1500 | 1900×610×1500 | 1600×610×1500 | 1300×610×1500 | 1000×610×1500 |
| Weight(kg) | 630 | 560 | 490 | 340 | 290 |

Key Parameters of PTS100 Series Flat Sheet MBR Membrane Module

| Model | PTS-FS100-140 | PTS-FS100-120 | PTS-FS100-100 | PTS-FS100-80 | PTS-FS100-60 |
|---|------------------------------|---------------|---------------|---------------|---------------|
| Number of membrane elements (piece) | 140 | 120 | 100 | 80 | 60 |
| Effective area(m ²) | 140 | 120 | 100 | 80 | 60 |
| Scale of Permeate (m ³ /d) | 45 ~ 76 | 38 ~ 65 | 32 ~ 54 | 26 ~ 43 | 19 ~ 34 |
| Aeration capacity (m ³ /min) | 1.6~2.1 | 1.4~1.8 | 1.2~1.5 | 0.96~1.2 | 0.72~0.9 |
| MLSS(mg/L) | 8000 ~ 18000 | | | | |
| Permeate turbidity (NTU) | < 1.0 | | | | |
| Transmembrane differential pressure (kPa) | 5 ~ 20 | | | | |
| pH value/temperature (°C) | 2 ~ 13/5 ~ 40 | | | | |
| Frame material | 304 stainless steel | | | | |
| Aeration pipe coupling/material | Convex Flange P=1.0MPa/ UPVC | | | | |
| Aeration pipe connection size | DN65 | | | | DN50 |
| Water collecting pipe coupling /material | Coupling/UPVC | | | | |
| Collector Pipe Connection Size | DN50 | | DN32 | | |
| Overall dimensions (mm) | 2200×630×1500 | 1900×630×1500 | 1600×630×1500 | 1300×630×1500 | 1000×630×1500 |
| Weight(kg) | 700 | 620 | 540 | 380 | 320 |

Key Parameters of PTS150 Series Flat Sheet MBR Membrane Module

| Model | PTS-FS150-140 | PTS-FS150-120 | PTS-FS150-100 | PTS-FS150-80 |
|---|----------------------------------|---------------|---------------|---------------|
| Number of membrane elements (piece) | 140 | 120 | 100 | 80 |
| Effective area(m ²) | 210 | 180 | 150 | 120 |
| Scale of Permeate (m ³ /d) | 76 ~ 126 | 65 ~ 108 | 54 ~ 90 | 43 ~ 60 |
| Aeration capacity (m ³ /min) | 1.68~2.1 | 1.44~1.8 | 1.2~1.5 | 1.0~1.2 |
| MLSS(mg/L) | 8000 ~ 18000 | | | |
| Permeate turbidity (NTU) | < 1.0 | | | |
| Transmembrane differential pressure (kPa) | 5 ~ 20 | | | |
| pH value/ temperature (°C) | 2 ~ 13/5 ~ 40 | | | |
| Frame material | 304 stainless steel | | | |
| Aeration pipe coupling/material | Convex Flange DN65 P=1.0MPa/UPVC | | | |
| Aeration pipe connection size | DN50 Coupling/UPVC | | | |
| Overall dimensions (mm) | 2200×630×2500 | 1900×630×2500 | 1600×630×2500 | 1300×630×2500 |
| Weight(kg) | 900 | 780 | 660 | 520 |

Fields of application

- ◆ Municipal wastewater reuse
- ◆ Integrated domestic wastewater equipment
- ◆ Black Odor Water Treatment
- ◆ Dyeing wastewater treatment
- ◆ Chemical wastewater treatment
- ◆ Food and beverage wastewater treatment

External Pressure Hollow Fiber Ultrafiltration Membrane



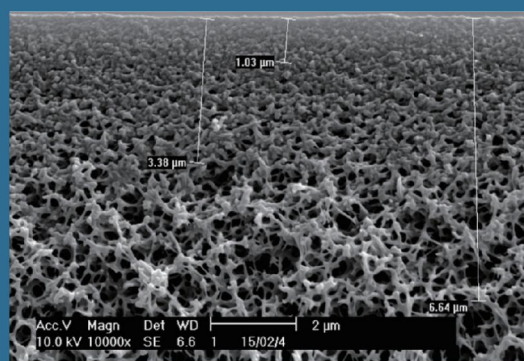
Products Introduction

The external pressure ultrafiltration membrane module is currently dominated by hollow fiber membrane. This product adopts the external pressure structure with higher pollutant-holding capacity, unique ring gap water collection-drainage structure, and at the same time combines the air-water scrubbing mode to greatly enhance the cleaning and drainage effect of the module.

PTS-OPUF is made of high-performance PVDF membrane material, with an average pore size of 30nm, capable of removing almost all particles, bacteria, most germs and colloids, with good chemical stability, and long term resistance to chemical cleaning with high concentration of oxidizing biocides.



Hollow Fiber Membrane



Microstructure of hollow fiber membrane

Product features

- 1、 Small separation pore size, excellent water quality:**
Nominal average pore size is 30nm, high filtration precision, can effectively filter out bacteria, viruses and colloids and other particles.
- 2、 High mechanical strength and excellent chemical resistance:**
With good mechanical properties, it can withstand repeated air scrubbing, and at the same time has excellent chemical resistance.
- 3、 High hydrophilicity and excellent wash recovery performance:**
Hydrophilic modified PVD hollow fiber membrane with good hydrophilic and excellent pollution resistance helps to maintain long-term stability of performance.
- 4、 External pressure structure with low pretreat requirements:**
The external pressure design allows larger particle size pollutants to enter, which can reduce the pretreatment process.

Product Advantages

◆ Low maintenance cost:

The external pressure module structure with higher dirt-carrying capacity makes the module's ability to contain pollution significantly better than other structures, and with the external pressure water inlet, there is a large free space between the hollow fiber membranes, which allows the use of highly efficient air-water mixing scrubbing to reduce pollution.

◆ High rejection of pollutants and easy cleaning:

The unique ring gap water collection-drainage design maximizes the membrane module's drainage capacity and effectively improves the cleaning and drainage effect of membrane module.

◆ Chemically stable:

permanently hydrophilic polyvinylidene fluoride (PVDF) has excellent resistance to oxidation, pollution and long service life.

PTS-OPUF external pressure ultrafiltration membrane performance parameters

| Membrane parameters | | | |
|--------------------------------------|---------------------------------|---------------------------------------|--------------------------------|
| Material | PVDF | Membrane type | External Pressure Hollow Fiber |
| Average pore size | 30nm | Inner/Outer Diameter | 0.7/1.3mm |
| Component parameters | | | |
| Membrane Shell and End Cap Materials | UPVC | Membrane Module Area | 77m ² |
| End cap hoop material | 304 stainless steel | Seal Material | EPDM rubber |
| End cap connection method | Stainless steel hoop connection | Interface Connection Method | coplin connection |
| Wet weight | 100kg | Component water volume | 39L |
| Influent pressure | ≤6.25Bar | Differential pressure across membrane | ≤2.1Bar |
| Maximum operating temperature | 40℃ | Maximum Inlet Turbidity | 300NTU |
| Effluent quality | | | |
| Turbidity | ≤0.1NTU | SDI ₁₅ | ≤3.0 |

Fields of application

- ◆ Municipal wastewater reuse
- ◆ Water purification in tap water plants
- ◆ Chemical wastewater reuse
- ◆ Pre-treatment of seawater desalination
- ◆ Deep treatment of oil refining wastewater
- ◆ Deep treatment of Coal chemical industry wastewater

Submerged hollow fiber ultrafiltration membrane

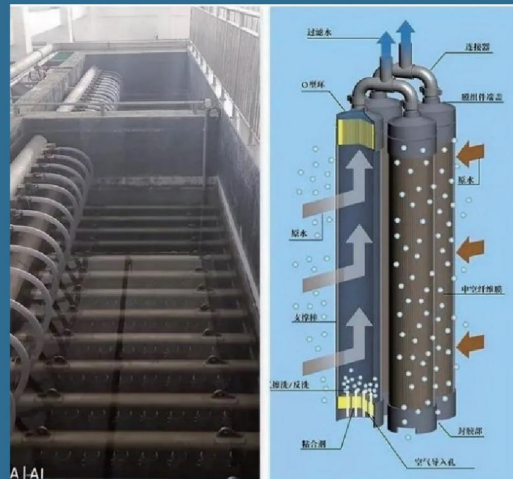


Products Introduction

Submerged hollow fiber ultrafiltration uses specific encapsulation technology to seal ultrafiltration membrane in components, directly submerged in the water to be treated, negative pressure or gravity in the membrane to generate a vacuum, the membrane surface on both sides of the formation of the driving force, through the mechanical sieving and adsorption of the membrane pores make the water purification.

Product features

Submerged ultrafiltration membrane module adopts PVDF hollow fiber ultrafiltration membrane, adopts openfiltration, reduces the requirement of influent pretreatment, and reduces the footprint of the whole installation. It has become another new type of membrane application technology after pressure ultrafiltration.

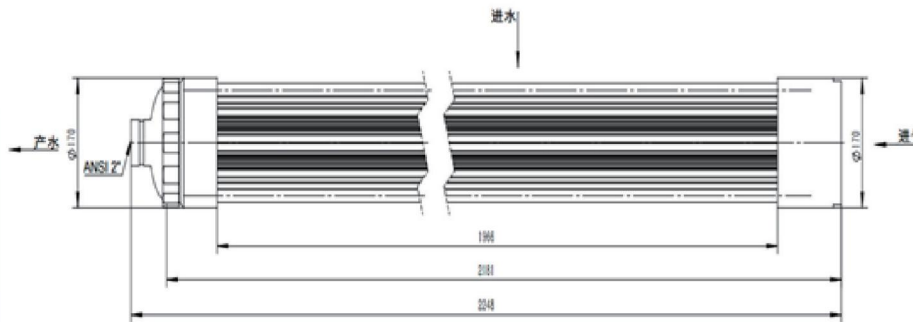


Product Advantages

- 1、 Fully open design with large flux, high strength, drug-resistant washing and other characteristics, reducing pollutant deposition.
- 2、 Membrane organization as a whole submerged in the wastewater, aeration and water collection integration reduces the pipeline and bracket. Installation and maintenance of time-saving and labor-saving, reducing the membrane pool footprint.
- 3、 Periodic backwashing and membrane pool aeration can effectively reduce membrane surface contamination, low-frequency chemical on-line cleaning, which is conducive to eliminating the depth of membrane contamination, to ensure the long-term stable operation of membrane system.

Product Specification

Structural schematic diagram of submerged hollow fiber ultrafiltration membrane module



Key Parameters of Submerged Hollow Fiber Ultrafiltration Membrane

| Membrane parameters | | | |
|---|--------------------------------|----------------------------|--------------------------------|
| Membrane parameters | PVDF | Membrane type | External Pressure Hollow Fiber |
| Nominal Pore Diameter | 0.1μm | inner/outer diameter | 0.7/1.3mm |
| Component parameters | | | |
| Membrane area(m ²) | 50 | Module Nominal Size (mm) | 170*2248 |
| Connection port size (mm) | DN50 | End material | ABS |
| Seal material | Epoxy resins and polyurethanes | Full water/empty weight | 15kg/30kg |
| Operating parameters | | | |
| Temperature range | 0~40℃ | Operation pH range | 1~11 |
| Maximum NaClO tolerance | 5000ppm | Chemical Cleaning pH Range | 1~13 |
| Operational Flux | 25~70L/(m ² hr) | Backwash flux | 30~70L/(m ² hr) |
| Operational transmembrane pressure difference | 0~0.04MPa | Maximum backwash pressure | 0.12MPa |
| Effluent Indicators | | | |
| Turbidity | ≤0.2NTU | Pollution index | ≤3.0 |

Fields of application

- ◆ Drinking water supply terminals
- ◆ Surface water pre-treatment
- ◆ Seawater pre-treatment
- ◆ Depth treatment of municipal wastewater secondary sedimentation tank effluent

Tubular Material Separation Membrane



Products Introduction

Poseidon spiral tube membrane product registration trademark Spi-Tub-Mem[®] (abbreviated as STM) includes pressure type coiled tube membrane components and immersion type coiled tube membrane components. The product types are divided into ultrafiltration membrane, special nanofiltration, and nanofiltration membrane (STM-NF) series products, The interception molecular weight includes three commonly used interception molecular weight nanofiltration membranes: NF300, NF500, and NF1000, as well as special nanofiltration membranes that only remove organic matter without desalination.

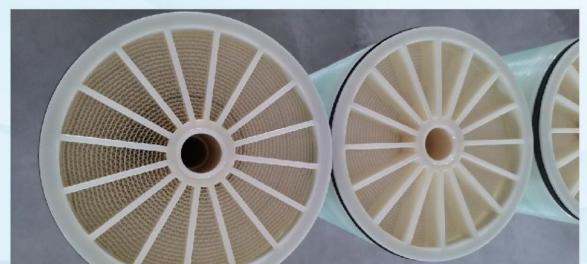
Product features

It can effectively remove specific molecular weight organics in industrial reverse osmosis concentrated water and garbage leachate nanofiltration or reverse osmosis concentrate under low-pressure conditions, with only a very small amount of retention of dissolved salts in wastewater, showing excellent deorganization performance. It also has the following characteristics:

- ◆ Wider water inlet flow channel, filtration without dead angle, effectively enhance the flow rate of the membrane surface, reduce the concentration of the membrane surface polarization.
- ◆ It has high loading density, which effectively improves the filtration efficiency and reduces the floor space of the equipment.
- ◆ Strong anti-pollution ability, stable operation and low energy consumption.
- ◆ Has low investment and operating costs.

Fields of application

- ◆ Material Concentration and Separation
- ◆ COD Removal from Reverse Osmosis Concentrate
- ◆ COD removal from waste leachate concentrate
- ◆ Separation and concentration of organic matter in industrial wastewater
- ◆ Preparation of organic carbon sources from kitchen wastewater



Product Specification

STM-NF300 Industrial Module Model and Performance Parameter Sheet

| Membrane element type | Effective Membrane Area (m ²) | Stabilized desalination rate(%) | Average water production (m ³ /d) | Test condition | | |
|-----------------------|---|---------------------------------|--|---------------------|-----------------------------------|-------------------|
| | | | | Test pressure (Mpa) | Test solution concentration (ppm) | Recovery rate (%) |
| STM-NF300-8040 | 20.2 | 20 ~ 30% | 24.8 | 0.48 | 2000ppmNaCl | 15 |
| | | ≥90% | 24.0 | | 2000ppmMgSO ₄ | |
| STM-NF300-4040 | 5.2 | 20 ~ 30% | 5.3 | | 2000ppmNaCl | |
| | | ≥90% | 6.0 | | 2000ppmMgSO ₄ | |

Test conditions: Inlet water temperature 25 °C ; Inlet water pH 7-8

STM-NF500 Industrial Module Model and Performance Parameter Sheet

| Membrane element type | Effective Membrane Area (m ²) | Stabilized desalination rate(%) | Average water production (m ³ /d) | Test condition | | |
|-----------------------|---|---------------------------------|--|---------------------|-----------------------------------|-------------------|
| | | | | Test pressure (Mpa) | Test solution concentration (ppm) | Recovery rate (%) |
| STM-NF500-8040 | 20.2 | ≥90% | 27.3 | 0.48 | 2000ppmMgSO ₄ | 15 |
| STM-NF500-4040 | 5.2 | | 7 | | | |

Test conditions: Inlet water temperature 25 °C ; Inlet water pH 7-8

Operating condition

| | | | |
|--|---|--|------|
| Maximum operating pressure | 4.14MPa | Maximum inlet water temperature | 50°C |
| Maximum inlet flow | 17.0m ³ /h (8040) 3.6m ³ /h (4040) | Maximum inlet water SDI ₁₅ | ≤3 |
| Free chlorine concentration in influent water | ≤0.1mg/L | pH range of influent water in continuous operation | 2-12 |
| pH range of influent water for chemical cleaning | 2-12 | Maximum Allowable Pressure Drop of Single Membrane Element | 1bar |

Inlet and outlet water quality indexes of spiral material membrane



(From left to right: feed water, outlet water 1, outlet water 2, concentrated water)

| | pH value | TDS(mg/L) | COD _{cr} (mg/L) | Total Nitrogen (mg/L) |
|--------------------|----------|-----------|--------------------------|-----------------------|
| STM-NF1K Raw Water | 6.6 | 29140 | 8600 | 480 |
| STM-NF1K Permeate | 6.3 | 23280 | 438 | 320 |

Spiral-tube anti-pollution reverse osmosis membrane



Products Introduction

ULP, BW and SW spiral-tube anti-pollution reverse osmosis membrane elements are polyamide composite membranes developed by Poseidon New Material for the desalination of different water sources, including tap water with low salt content, surface water, brackish water and industrial wastewater with high salt content. The membrane surface is treated with a special process, which enhances the hydrophilicity of the membrane surface, thus reducing the deposition of pollutants and salts on the membrane surface and providing excellent anti-pollution effects.



Product features

- ◆ Wide flow channel feed reduces the pre-treatment requirements for reverse osmosis feed water.
- ◆ Superior anti-pollution performance, extended chemical cleaning cycles and reduced use of cleaning chemicals.
- ◆ Low operating pressure, high water production and high desalination rate.
- ◆ Customization can meet the needs of customers for products for different working conditions.

Product Specification

ULP Series Reverse Osmosis Membrane Product Specifications and Performance

| Product Model | Effective Membrane Area ft ² (m ²) | Inlet Spacer Width (mil) | Scale of Permeate (gpd(m ³ /d)) | Rejection of Salt % | Minimum Rejection of Salt % |
|-----------------------|---|--------------------------|--|---------------------|-----------------------------|
| PTS -SRO32-ULP-8040FR | 400(37.2) | 32 | 10000(37.9) | 99.3 | 99.0 |
| PTS -SRO32-ULP-4040FR | 85(7.9) | 32 | 2000(7.5) | 99.3 | 99.1 |
| PTS -SRO34-ULP-8040FR | 370(34.4) | 34 | 9000(34.1) | 99.3 | 99.2 |
| PTS -SRO34-ULP-4040FR | 70(6.5) | 34 | 1600(6.1) | 99.3 | 99.0 |

BW Series Reverse Osmosis Membrane Product Specifications and Performance

| Product Model | Effective Membrane Area ft ² (m ²) | Inlet Spacer Width (mil) | Scale of Permeate (gpd(m ³ /d)) | Rejection of Salt % | Minimum Rejection of Salt % |
|--------------------------|---|--------------------------|--|---------------------|-----------------------------|
| PTS -SRO32-BW30HR-8040FR | 400(37.2) | 32 | 9500(35.9) | 99.3 | 99.0 |
| PTS -SRO32-BW30HR-4040FR | 85(7.9) | 32 | 2200(8.3) | 99.3 | 99.0 |
| PTS -SRO34-BW30HR-8040FR | 370(34.4) | 34 | 8500(32.1) | 99.3 | 99.0 |
| PTS -SRO34-BW30HR-4040FR | 70(6.5) | 34 | 1600(6.0) | 99.3 | 99.0 |

SW Series Reverse Osmosis Membrane Product Specifications and Performance

| Product Model | Effective Membrane Area ft ² (m ²) | Inlet Spacer Width (mil) | Scale of Permeate (gpd(m ³ /d)) | Rejection of Salt % | Minimum Rejection of Salt % |
|----------------------------|---|--------------------------|--|---------------------|-----------------------------|
| PTS -SRO32-SW30HRLE-8040FR | 400(37.2) | 32 | 7300(27.6) | 98 | 97 |
| PTS -SRO32-SW30HRLE-4040FR | 85(7.9) | 32 | 1800(6.8) | 98 | 97 |
| PTS -SRO34-SW30HRLE-8040FR | 370(34.4) | 34 | 6600(24.9) | 98 | 97 |
| PTS -SRO34-SW30HRLE-4040FR | 70(6.5) | 34 | 1200(4.5) | 98 | 97 |

Fields of application

- ◆ Municipal Tap Water Treatment
- ◆ Industrial Water Softening
- ◆ Industrial water reuse
- ◆ Municipal wastewater treatment; desalination and purification of desalinated water in foodstuffs, pharmaceuticals, chemical plants, power plants, etc.
- ◆ Desalination and purification of school and community water stations

Application case

Deep treatment and reuse of refinery wastewater (UF-RO- pressure ultrafiltration)

Number of ultrafiltration membranes elements: 60
pieces/group, total 10 groups of 600 pieces
(membrane replacement)

Production Scale: 14400-16000T/D

Turbidity of permeate: 0.2-0.5NTU

SDI:<3

Running time: September 2018



Deep treatment and reuse of refinery wastewater (UF-RO - pressure ultrafiltration)

Quantity of ultrafiltration membrane: 50pcs/group, 1 group in total

Production Scale: 1320-1560T/D

Turbidity of permeate: 0.5-1.0NTU

Turbidity : <0.3 NTU

Running time: March 2017



Refinery wastewater (60%) + domestic wastewater (40%) (curtain MBR and Flat sheet MBR)

Ultrafiltration membrane pool: 4 groups (1 group curtain MBR and 3 groups Flat sheet MBR)

Sludge concentration in membrane tank: 3000–8000 mg/L

Curtain-type MBR ultrafiltration membrane (D group):
8 groups of curtain-type membrane (72 pieces/group, total 576 pieces, 8640 square meters)

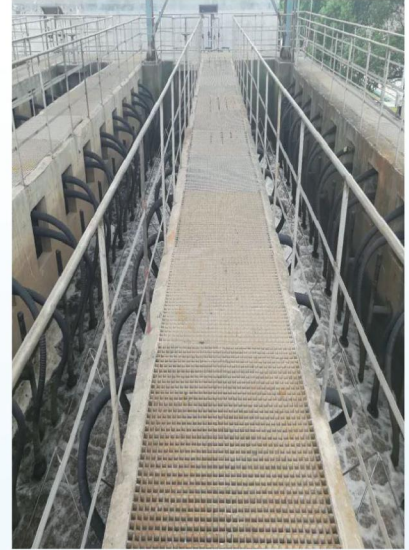
Production Scale: 2800–3000T/D

Turbidity of permeate: <0.5 NTU

Total production of the system: 10080–12480 T/D

Turbidity: <1.0 NTU

Running time: September 2017



Ethylene recycling water sewage water reuse (curtain MBR)

Ultrafiltration membrane pool: 4 groups (curtain MBR)

Turbidity of Permeate: < 5NTU

Curtain-type MBR water production: 4320–4800T/D

Turbidity: <0.5 NTU

Running time: March 2014



Application case

River Treatment--Yandang River Project in Xuejia, Changzhou, Jiangsu Province (Flat Sheet MBR)

Integrated flat membrane stack: 15 groups (flat MBR-150 type), membrane area 2250 square meters

Black-smelling water body of the river: inferior fifth class water body

Flat sheet MBR production capacity: 800-1000T/D

Permeate quality: Class IV water

Running time: October 2019



Beautiful countryside domestic wastewater treatment--Sichuan Bazhong Guangong Town Sewage Treatment Station (AO-MBR)

Integrated curtain membrane stack: 2 groups (curtain MBR-HF20-36), membrane area 1440 square meters

Wastewater treatment system: centralized rural domestic sewage treatment

Curtain-type MBR production Scale: 400-500T/D

Permeate quality: Class A standard of "Pollutant Emission Standards for Urban Sewage Treatment Plants" (GB18918-2002).

Running time: November 2020



Waste leachate hardness removal--Changsha Heiyufeng ash project of landfill plant (tubular membrane hardness removal and evaporation)

Process: Double-alkali method and tubular membrane hardness removal and RO concentration and evaporation (two 8-inch tubular membrane modules)

Wastewater treatment system: zero discharge of leachate wastewater from landfills

Water quantity treated: 50T/D

Effluent quality: hardness of effluent from tubular membrane <20 mg/L; leachate is effectively disposed of, and produced water is used for ash flushing

Running time: June 2022



Deep treatment of coking wastewater--Depth treatment of wastewater from Shanxi Wangqiao Coal chemical wastewater treatment and recycle (Biochemical-UF-RO)

Process: UF+RO

Wastewater type: production wastewater and high-salt wastewater

Production Scale: 20,000 tons/D production wastewater and 10,000 tons/D of high-salt wastewater

Effluent quality: turbidity<0.5NTU; SDI<3

Running time: August 2022



Application case

Water Treatment – Xinjiang Shihezi Water Treatment Station (AO–Flat Sheet MBR)

Integrated Flat Sheet membrane stack: 8 groups (Flat Sheet MBR–150), membrane area 2400 square meters

Wastewater type: miscellaneous domestic water and domestic sewage

Production Scale: 800–1000T/D

Effluent index: "Urban wastewater recycling urban miscellaneous water quality" (GB/T 18920–2002)

Running time: April 2013



Ecological Management--Water Environment Treatment of inland small river water in Guanjingyuan, Yao Guan Town, Changzhou (AO–Flat Sheet MBR)

Integrated flat membrane stack: 8 groups (flat MBR–150), membrane area 2400 square meters

Wastewater type: miscellaneous domestic water + domestic water

Production Scale: 800–1000T/D

Permeate quality: 《Urban wastewater recycling urban miscellaneous water quality》 (GB/T 18920–2002)

Running time: June 2018



Membrane Application Case Summary

| Serial No. | Application category | Project name | Scale (T/D) |
|------------|------------------------------------|---|-------------|
| 1 | Coal chemical wastewater | Shanxi Changzhi Xiangyuan County Wangqiao New Type Coal Chemical Industrial Park Sewage treatment | 30000 |
| 2 | Inorganic chemical wastewater | Tianji Coal Chemical Group Company Limited | 15000 |
| 3 | Coal chemical wastewater | Xinjiang Xinye Energy & Chemical Industry Co., Ltd. | 12000 |
| 4 | Coal chemical wastewater | Qian'an Sinochem Coal Chemical Co., Ltd. | 10000 |
| 5 | Paper wastewater | Tengzhou City, Shandong Province, JiSuo town sewage treatment plant | 10000 |
| 6 | Airport comprehensive wastewater | Shanghai Zhanlangi Engineering Technology Co., Ltd. | 5300 |
| 7 | River management | Jiangsu Sucheng Environmental Technology Co., Ltd. (14 sets of integrated equipment 500T/D) | 5000 |
| 8 | Rural sewage | Jiangsu Changzhou Xinbei District sewage collection and treatment full coverage of rural sewage treatment facilities | 4000 |
| 9 | Municipal sewage | Hangzhou Oulu Environmental Technology Co., Ltd. | 4000 |
| 10 | Surface water | Shanghai Yuanzhong Environmental Protection Technology Co., Ltd. | 2600 |
| 11 | Chemical wastewater | Lanzhou Hewei Environmental Protection Technology Co., Ltd. | 2000 |
| 12 | Domestic sewage | Deyang Shanshui Environmental Engineering Co., Ltd. | 2000 |
| 13 | Garbage leachate | Changzhou Huiheng Membrane Technology Co., Ltd. | 2000 |
| 14 | Domestic sewage | Wujin Yincun Vocational Education Park Water Reuse Project | 1500 |
| 15 | Electroplating wastewater | Changzhou Wujin High-tech Zone Recycled Water Treatment Project | 1500 |
| 16 | Garbage leachate | WELLE Environmental Group Co. Ltd. | 1500 |
| 17 | Domestic sewage | Deyang Shanshui Environmental Engineering Co., Ltd. (12 sets of integrated equipment) | 1470 |
| 18 | Industrial wastewater | Tangshan Hengdao Technology Co., Ltd | 1400 |
| 19 | Domestic sewage | Chishui Bishui Qingyuan Environmental Technology Co., Ltd | 1260 |
| 20 | Domestic sewage | Jiangsu Wujin Luoyang Town Sewage Treatment Station Process Renovation Project | 1200 |
| 21 | Electroplating wastewater | Conghua Huasheng Electroplating Hardware Comprehensive Water Treatment Project | 1000 |
| 22 | Steel wastewater | Heilongjiang Jianlong Vanadium Industry Co., Ltd | 1000 |
| 23 | Domestic sewage | Frunmir Industrial Technology (Shanghai) Co., Ltd | 1000 |
| 24 | Rehabilitation of water ecosystems | Yandang River Water Quality Improvement in Xuejia Town, Xinbei District, Changzhou, Jiangsu Province (National 135 Water Special Demonstration) | 1000 |
| 25 | Domestic sewage | Anhui Tongling Datong Town Rural Joint Environmental Improvement Project | 800 |
| 26 | Mine water | Shanxi Tiejue Environmental Protection Technology Co., Ltd | 800 |
| 27 | Domestic sewage | Shanxi Tiejue Environmental Protection Technology Co., Ltd. (Distributed Integrated Equipment) | 650 |
| 28 | Domestic sewage | Dongzhi County Jiazeli Environmental Technology Co., Ltd. Rural Sewage Integration Project (Distributed) | 600 |
| 29 | Domestic sewage | Shandong Expressway Service Area Project (Distributed) | 600 |
| 30 | Water Reuse | Jiangsu Xinlian Automation System Co., Ltd | 500 |
| 31 | Mine water | Shanxi Tiejue Environmental Protection Technology Co., Ltd | 500 |
| 32 | Domestic sewage | Beijing Dongbang Dingsheng Environmental Engineering Technology Co., Ltd | 500 |
| 33 | Leachate | Ningxia Yinchuan Huimin Village Leachate Treatment Project | 500 |
| 34 | Domestic sewage | Changzhou Silk Weaving Factory Water Treatment Project | 500 |
| 35 | Leather wastewater | Hebei Boyao Industrial Park Operation Co., Ltd | 400 |
| 36 | Garbage leachate | Xi'an Kangrun Environmental Protection Engineering Co., Ltd | 300 |
| 37 | Domestic sewage | Jiangsu Ziyin Electronic Circuit Copper Containing Wastewater Renovation Project | 300 |
| 38 | Garbage leachate | Xi'an Fumao Electromechanical Technology Co., Ltd | 200 |
| 39 | Pharmaceutical wastewater | Changzhou Sunshine Pharmaceutical Co., Ltd. Sewage Treatment Project | 200 |
| 40 | industrial wastewater | Jianghai Chemical Group Co., Ltd | 200 |

**Leveraging the power of Ultra-Nanofiltration,
digging for the gold of wastewater!
Restoring the water of nature,
gifting green waters and mountains!**

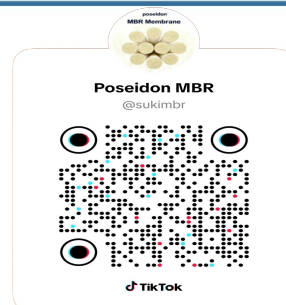
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