SUJING ENVIRONMENTAL PROTECTION NEW MATERIAL

# —— *UF MBR Membrane System*

## *One-Stop Solution*

## SUZHOU SUJING ENVIRONMENTAL PROTECTION NEW MATERIAL CO., LTD.

- SUJING Hollow Fiber Membrane
- R & D, design, production and sales of products and equipment


**SUZHOU SUJING ENVIRONMENTAL PROTECTION NEW MATERIAL CO., LTD.**

**Group add:** No. 2, Weixin Road, Suzhou Industrial Park, Jiangsu, China
**Company add:** No. 427, Youyi Road, Wujiang District, Suzhou
**Tel:** 0512-8206 5720
**Fax:** 0512-8206 5719
**P.C.:** 215200
**E-mail:** sjhbxcl@163.com
**Http:** www.sjhbxcl.com


**Jiangsu Sujing Group**

**SUZHOU SUJING ENVIRONMENTAL PROTECTION NEW MATERIAL CO., LTD.**

China • Suzhou
www.sjhbxcl.com


# COMPANY PROFILE

Jiangsu Sujing Group Co., Ltd. Is located in China–Singapore Suzhou Industrial Park which is the most active economic area. Sujing Group is hold by Create Technology & Science Co.,Ltd (Stock Code:000551), national innovative pilot enterprise and a national key high–tech enterprise. Sujing group is leading domestic supplier of air cleaning equipment and systems, bio–safety equipment and systems, energy–saving environmental protection equipment and systems, gas purification equipment and systems. The company has more than 1,000 employees, including more than 500 scientific and technical personnel, accounting for more than 50% of the total number of employees. Sujing trademark is a well–known trademark in China. The main economic indicators of leading products have led domestic counterparts for more than 30 years.

Suzhou Sujing Environmental Protection New Material Co.,Ltd is a subsidiary of Jiangsu Sujing Group Co., Ltd, located in Wujiang District, Suzhou. The company is manufacturing and technical service enterprise integrating environmental protection material R&D, production and sales and technical service. The company’s main business are R&D Design, Production and Sale of SUJING High Efficiency Nitrogen Filler and SUJING Hollow Fiber Membrane. SUJING High Efficiency Nitrogen Filler is national environmental friendly technology product and Jiangsu high–tech product. Awarded Jiangsu environmental science and technology award 2013 second prize, Hainan science and technology process award 2014 second prize. SUJING hollow fiber membrane which developed by Sujing group and Tianjin university, adopts state of the arts technology and imported raw material, and authorized many patents. We manufactured UF membrane, curtain type MBR membrane and column type MBR membrane. Material is hydrophilic PVDF. Our products are widely used in the fields of Spandex fiber industry, textile printing and dyeing industry, petrochemical industry, electroplating industry, municipal sewage, wastewater reuse, ultra–pure water industry and so on.

The company has a professional research team led by a postdoctoral fellow from Tongji University and composed of several senior engineers. The company has a professional research team led by a postdoctoral fellow from Tongji University and composed of several senior engineers. The company has test laboratory and well–equipped instrument analysis laboratory. We can provide comprehensive and accurate water test data and given technical proposal and solutions to help customer to solve wastewater treatment problems

Quality wins the market, Innovation leading the future. Technology and Innovation are our core competitiveness. New high–tech product meeting market demand is our goal. Environmental protection is good for our people and our nation. All of us devote to build blue sky and clean water.

# LEADERSHIP CARE

中共中央政治局常委、国务院总理李克强视察苏净

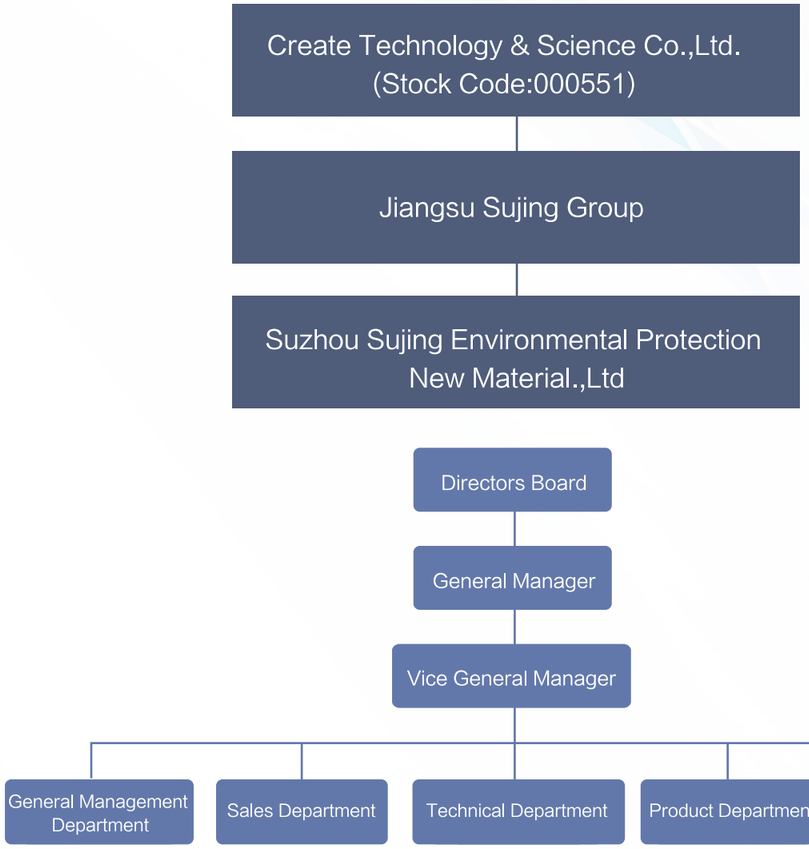
全国政协副主席、九三学社中央主席韩启德视察苏净

江苏省省长李学勇、国家环保部副部长
周建参观苏净展位

国家发改委解振华主任视察苏净




# CORPORATE ORGANIZATIONAL RELATIONS



# HONOR DISPLAY







## 56 National authorized patents

## 19 Invention patents

## 24 Utility model patents

## 13 Appearance patents











# SUJING Hollow Fiber Membrane

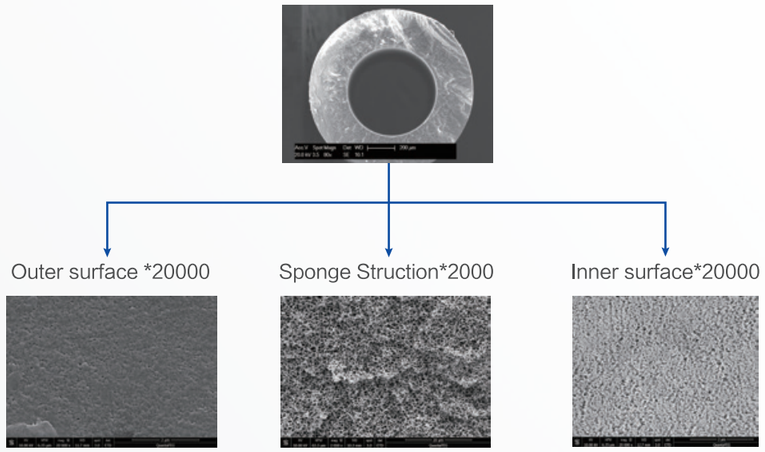
PVDF From France

## SUJING Hollow Fiber Membrane Introduction

SUJING Hollow Fiber Membrane is developed by Sujin group and Tianjin University. We adopt state of the arts MBR Membrane making technology and import raw material from France to develop hydrophilic polyvinylidene fluoride (PVDF) Hollow Fiber Membrane. It includes UF, curtain and column MBR Membrane. QC manage system to control quality begin with raw material. To improve performance of MBR membrane, we research and develop membrane material continuously. Which brings many advantages, such as: long term hydrophilic, excellent anti-pollution, large water flux, high separation efficiency, samall weaken of filtration performance.

## Features of SUJING Hollow Fiber Membrane

- ◇Stable chemical properties, Good corrosion resistance, Long service life;
- ◇ Two filtration layers, Strong resistance to pollution;
- ◇Large water flux;
- ◇Strong resistance to acid-base property and oxidation;
- ◇High separation efficiency, Good water quality;
- ◇Low filtration pressure, Low energy consumption




Hydrophilic PVDF Hollow Fiber Membrane Microscope Image



# Pressurized UF Module

## UF Working Principle

Ultrafiltration membrane with certain pressure and flow at room temperature, using asymmetric microporous structure and semi-permeable membrane, driven by pressure difference on both sides of the membrane, via cross-flow or dead end filtration, permeate solvent and small molecular substances, hold back macromolecular material and particles such as colloid, protein, water-soluble polymer, bacteria, spores. In this way to separation, classification, purification and concentration.

## Model of UF

SJ-UF2633 SJ-UF2640 SJ-UFI2952/2972 SJ-UFII2952/2972

## Application

It is wide used for chemical industry, metallurgical industry, electricity industry, food, industry water, municipal sewage, sea water desalination and so on.

## UF Specification and Technical Data

| UF | Model | SJUF-2633 | SJUF-2640 | SJUFI-2952/ SJUFII-2952 | | SJUFI-2972/ SJUFII-2972 | |
|---|---|---|---|---|---|---|---|
| | Material | PVDF | | | | | |
| Size | Dimension | 160*1795 | 160*1750 | 225*1765 | 225*1860 | 225*2265 | 225*2360 |
| | Active UF Area/m² | 33 | 40 | 52 | | 68 | |
| Material | End Cap/Socket | UPVC | | | | | |
| | Housing Material | UPVC | | | | | |
| | Seal Material | Epoxy resins/Polyurethane0.03 | | | | | |
| Operation Data | Filter Precision/ μm | | | | | | |
| | OD/ID /mm | 1.3/0.7 | | 1.4/0.8 | | | |
| | Filtration Method | External Pressure | | | | | |
| | Operation Temperature /℃ | 5-40℃ | | | | | |
| | Design Flux (LMH, 0.1MPa，25℃) | 40-120 | | | | | |
| | Operation PH Range | 2-10 | | | | | |
| | Instant PH Range | 1-12 | | | | | |
| | Pressure /MPa | ≤0.15 | | | | | |
| | Residual Chloride/ppm | 2000 | | | | | |
| | Max Inlet Pressure /MPa | 0.4 | | | | | |
| Inlet | Inlet Turbidity /NTU | 100 | | | | | |
| | Max Particle | 100 μ m | | | | | |

Note: Above data maybe modified according feeding water.

## Permeate Water Quality

| Item | Value |
|---|---|
| Turbidity (NTU) | ≤0.1 |
| SS Remove Rate(100ml) | 99.99% |
| Colibacillus | N |
| Sludge Density Index (SDI) | ≤3 |



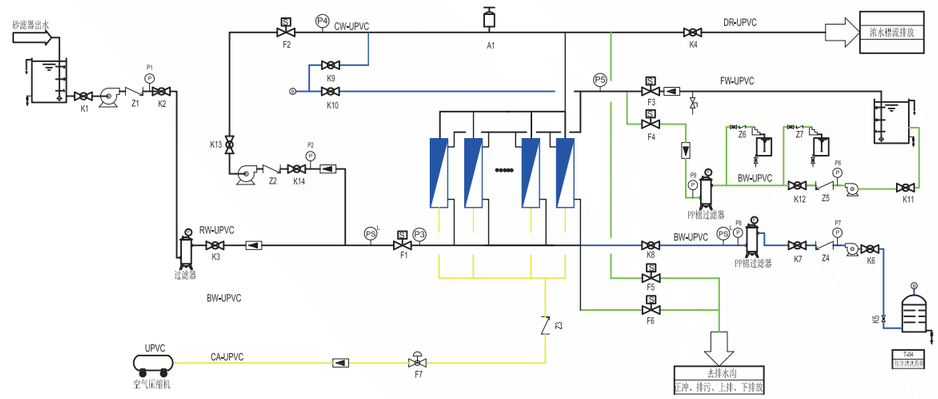
# CMF Application

Continuous Membrane Filtration (CMF for short) technology is a new membrane separation technology process. Modular design, cross flow filtration and intermittent auto cleaning (air, water wash) system combined a closed continuous membrane filtration system.

## CMF Application

- Recycle system of municipal sewage which treated by biotreatment system;
- Purification and remove turbidity of tap water, ground water and underground water;
- Pre-treatment of RO system;
- Pre-treatment of sea water desalination system

## CMF Process Diagram




自动阀门说明：
F1：进水阀；F2：循环阀；F3：产水阀；F4：反洗阀；
F5：反洗下排放阀；F6：反洗上排放阀；F7：进气阀；

手动阀门说明：
K8：化学清洗进水阀；K9：化学清洗回流阀；K10：化学清洗回流阀；
A1：浓水侧排气阀（安装于浓水侧最高点）；

# SUJING UF Application

## 101/. Thermal Power Industry

- A Thermal Power Plant in Shangdong
  - Capacity: 20000t/d
  - Water: Yellow River Water
  - Usage: Chemical Water in Power Plant

- A Thermal Power Plant in wuxi
  - Capacity: 7200t/d
  - Water: River Water
  - Usage: Chemical Water in Power Plant

- A Steel Mills in Yancheng
  - Capacity: 16000t/d
  - Water: River Water
  - Usage: Chemical Water in Power Plant



## 102/. Textile Dyeing Industry

- A Textile Dyeing Wastewater Recycling Treatment Project in Shaoxing
  - Capacity: 5000t/d
  - Water: Dyeing Wastewater
  - Usage: Recycling + Discharge

- A Textile Dyeing Wastewater Recycling Treatment Project in Shaoxing
  - Capacity: 7000t/d
  - Water: Dyeing Wastewater
  - Usage: Recycling + Discharge

- A Textile Dyeing Wastewater Recycling Treatment Project in Shaoxing
  - Capacity: 7000t/d
  - Water: Dyeing Wastewater
  - Usage: Recycling + Discharge

## 103/. Municipal Sewage & Industry Park Wastewater Treatment

- A Municipal Sewage Recycling Treatment Project in West Menggu
  - Capacity: 20000t/d
  - Water: Municipal Sewage
  - Usage: Recycling + Discharge

- A Municipal Sewage Recycling Treatment Project
  - Capacity: 20000t/d
  - Water: Municipal Sewage
  - Usage: Recycling + Discharge

## 104/. Mineral Wastewater Recycling Treatment Project

- A Mineral Wastewater Recycling Treatment Project
  - Capacity: 2500t/d
  - Water: Municipal Sewage
  - Usage: Recycling



## 105/. Electron Industry

- A Electron Wastewater Recycling Treatment Project in Kunshan
  - Capacity: 1200t/d
  - Water: Electron Wastewater
  - Usage: Recycling + Discharge

- A PCB Wastewater Recycling Treatment Project in Jiaxing
  - Capacity: 4500t/d
  - Water: PCB Wastewater
  - Usage: Recycling

## 106/. Pharmaceutical Industry

- A Pharmaceutical Wastewater Recycling Treatment Project in Menggu
  - Capacity: 6500t/d
  - Water: Pharmaceutical Wastewater
  - Usage: Recycling

## 107/. Photovoltaic Industry

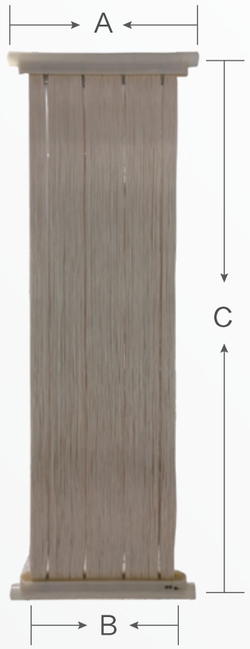
- A Photovoltaic Wastewater Recycling Treatment Project in Suzhou
  - Capacity: 5000t/d
  - Water: Photovoltaic Wastewater
  - Usage: Recycling + Discharge

# Submerged MBR Module

## SUJING Hollow Fiber Membrane

### 101/. SJ-BMBR

| Model | SJ-BMBR12.5 | SJ-BMBR20 |
|---|---|---|
| A | 538 | 538 |
| B | 450 | 450 |
| C | 950 | 1500 |




### Curtain MBR Module Specification

| | | SJ-BMBR12.5 | SJ-BMBR20 |
|---|---|---|---|
| Material | Dimension | 538*450*950 | 538*450*1500 |
| | Filtration Method | Vacuum suction/ gravity | |
| | Material | Polyvinylidene fluoride | |
| | Membrane OD/ID | 1.3/0.7mm | |
| | Encapsulation Material | Epoxy Resins, polyurethane | |
| | Connector Material | ABS | |
| | Effective Membrane Area | 12.5m$^2$ | 20m$^2$ |
| | Pore Size | 0.1 μm | |
| Operation Condition | Back Wash Pressure Max | 0.15 MPa | |
| | Temperature Range | 5~40℃ | |
| | pH Range | Normal running pH 4~8.5 ,Wash pH 1~12 | |
| | MLSS | <8000 mg/L | |
| | Oil | Vegetable Oil<10 mg/L, Mineral Oil<3 mg/L | |
| Operation Data | Design Flux | 10~40 L/h · m$^2$(according to feed water condition) | |
| | Aeration | 7:1~30:1 | |
| | Max Pressure | <50 KPa | |
| | Chemical Wash Frequency | Once every 6-10days | |
| | Field Wash Frequency | Once every 3-12 month | |



## Submerged MBR Working Principle

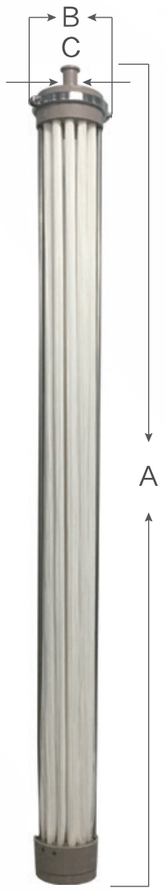
Submerged MBR filtration is driven by gravity or other pressure force to separate particles from water, such as: colloid, sludge, alga, cryptosporidium, colibacillus, bacteria and most virus. It has high remove rate. Drive force should be negative pressure suction and gravity.

## Application

Submerged MBR is widely used in municipal sewage treatment, chemical and pharmacy wastewater treatment, textile dyeing wastewater treatment, electron and electroplate wastewater treatment, landfill leachate wastewater treatment and so on.

### 102/. SJ-CMBR

| Model | SJ-CMBR16 | SJ-CMBR20 |
|---|---|---|
| A | 1640 | 2045 |
| B | 195 | 195 |
| C | Ø32 | Ø32 |




### Column MBR Module Specification

| | | SJ-CMBR16 | SJ-CMBR20 |
|---|---|---|---|
| Material | Dimension | Ø195*1640* Ø32 | Ø195*2045* Ø32 |
| | Filtration Method | Vacuum suction/ gravity | |
| | Material | Polyvinylidene fluoride | |
| | Membrane OD/ID | 1.3/0.7mm | 1.4/0.8mm |
| | Encapsulation Material | Epoxy Resins, polyurethane | |
| | Connector Material | UPVC | |
| | Effective Membrane Area | 16m$^2$ | 20m$^2$ |
| | Pore Size | 0.1 μm | |
| Operation Condition | Back Wash Pressure Max | 0.15 MPa | |
| | Temperature Range | 5~40 ℃ | |
| | pH Range | Normal running pH 4~8.5 ,Wash pH 1~12 | |
| | MLSS | <12000 mg/L | |
| | Oil | Vegetable Oil<15mg/L, Mineral Oil<3mg/L | |
| Operation Data | Design Flux | 10~40 L/h · m$^2$(according to feed water condition) | |
| | Aeration | 7:1~30:1 | |
| | Max Pressure | <50 KPa | |
| | Chemical Wash Frequency | Once every 6-10days | |
| | Field Wash Frequency | Once every 6-12 month | |

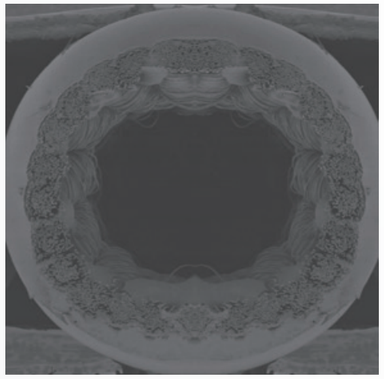
# Submerged MBR Module

## SUJING Reinforced Hollow Fiber Membrane

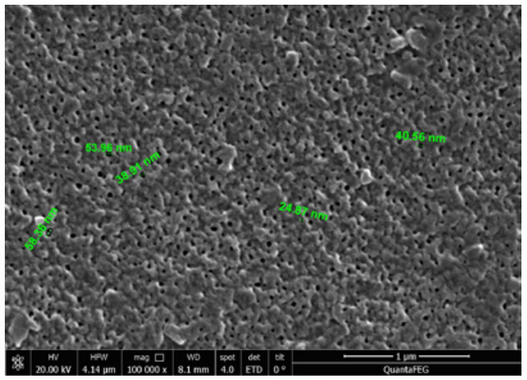
### 101/. Introduction

SUJING Reinforced Hollow Fiber Membrane, adopt state of the arts MBR making technology to make asymmetric micropore structure with 0.04μm pore size, which reduce filtration resistance and ensure high water flux. At same time, it has narrow pore distribution, which has high rejection coefficient for impurity filtration.

### SEM Images for Reinforced PVDF Hollow Fiber Membrane



Sponge structure * 200




Outside layer * 100000

### 102/. Features of Reinforced Hollow Fiber Membrane

- ◇Excellent hydrophilic and porosity;
- ◇Peel off strength>0.6MPa;
- ◇Strong anti-pollution capacity, great membrane wettability;
- ◇Breaking strength≥100N;
- ◇Great resistance to corrosion for acid base and chloride;
- ◇Pore size is 0.04μm and well distributied.



## Third Party Testing Certification of SUNING Reinforced Hollow Fiber Membrane


注意事项
NOTES


测试报告
Test Report
委托方信息/Applicant Information
样品信息/Sample Information


测试报告
Test Report
测试信息/Test Information


测试报告
Test Report


测试报告附件
Test Report Attachment
一、测试步骤/Test Procedure
二、注意事项/Test Note


测试报告附件
Test Report Attachment
三、样品照片/The Picture of Sample

# Submerged MBR Module

## 101/. SJ-BMBR-E

| Model | SJ-BMBR-E18 | SJ-BMBR-E24 |
|---|---|---|
| A | 538 | 538 |
| B | 450 | 450 |
| C | 1540 | 1950 |

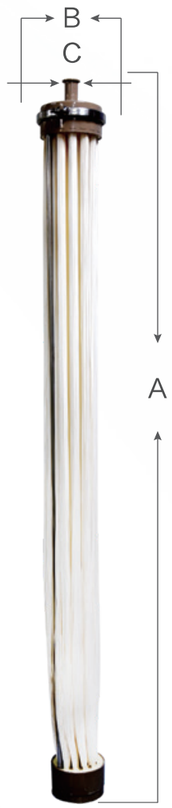
### Curtain Type MBR Module Specification


| | | SJ-BMBR-E18 | SJ-BMBR-E24 |
|---|---|---|---|
| Material | Dimension | 538*450*1540 | 538*450*1950 |
| | Filtration Method | Vacuum suction/ gravity | |
| | Material | Liner Reinforced PVDF Membrane | |
| | Membrane OD/ID | 2.0/1.0mm | |
| | Encapsulation Material | Epoxy Resins, polyurethane | |
| | Connector Material | ABS | |
| | Effective Membrane Area | 18m² | 24m² |
| | Pore Size | 0.04 μm | |
| Operation Condition | Back Wash Pressure Max | 0.1 MPa | |
| | Temperature Range | 5~40℃ | |
| | pH Range | Normal running pH 5.5~ 8.5 , Wash pH 1~12 | |
| | MLSS | 5000-8000 mg/L | |
| Operation Data | Oil | Vegetable oil<15 mg/L, Mineral Oil<3 mg/L | |
| | Design Flux | 8~60 L/h · m2(according to feed water condition) | |
| | Aeration | 0.2-0.4m³/m² · h | |
| | Max Pressure | <50 KPa | |
| | Chemical Wash Frequency | Once every 6-10days | |
| | Field Wash Frequency | Once every 3-12 month | |



## 102/. SJ-CMBR-E

| Model | SJ-CMBR-E15 |
|---|---|
| A | 2045 |
| B | 195 |
| C | Ø32 |




### Column MBR Module Specification

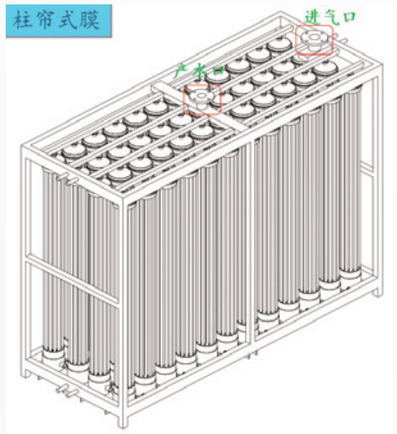
| | | SJ-CMBR-E15 |
|---|---|---|
| Material | Dimension | Ø195*2045* Ø32 |
| | Filtration Method | Vacuum suction/ gravity |
| | Material | Liner Reinforced PVDF Membrane |
| | Membrane OD/ID | 2.0/1.0mm |
| | Encapsulation Material | Epoxy Resins, polyurethane |
| | Connector Material | ABS |
| | Effective Membrane Area | 15m² |
| | Pore Size | 0.04 μm |
| Operation Condition | Back Wash Pressure Max | 0.1 MPa |
| | Temperature Range | 5~40℃ |
| | pH Range | Normal running pH 5.5~ 8.5 , Wash pH 1~12 |
| | MLSS | Normal 5000-12000 mg/L, Max14000mg/L |
| | Oil | Vegetable Oil<15mg/L, Mineral Oil <3mg/L |
| Operation Data | Design Flux | 0.15-0.3m³/m² · h |
| | Aeration | 8~60 L/h · m² |
| | Max Pressure | <50KPa |
| | Chemical Wash Frequency | Once every 6-10days |
| | Field Wash Frequency | Once every 6-12 month |

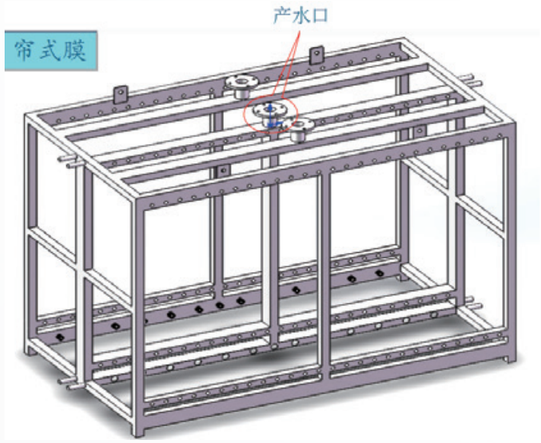
## Features of Column Type MBR

1.Uniform Aeration. Uniformly distributed aeration system under every column type submerged MBR, which improve oxygen utilization rate and scrubbing efficiency, avoiding sludge adhere to membrane, and prolong service life.
2.Zero Membrane Broken. Adopt polyurethane 40A to protect membrane foot, ensure membrane nor broken in swing movement.
3.High MLSS. Excellent hydrophilic and special design, which could improve MLSS, reduce MBR pollution and ensure output water quality.
4.Bottom Skeleton Design. Skeleton design of MBR module bottom, which could avoid sludge settled under MBR bottom to block aerator. So that it could ensure aeration pipe clean and aeration uniformly.
5.Save Space. It has high effective membrane area, which could save footprint of MBR module and save civil cost.

## Installation

Smart design for column type MBR, MBR output is connected to frame by SS304 clamp. Simple installation, can be handled quickly and easily in emergency.







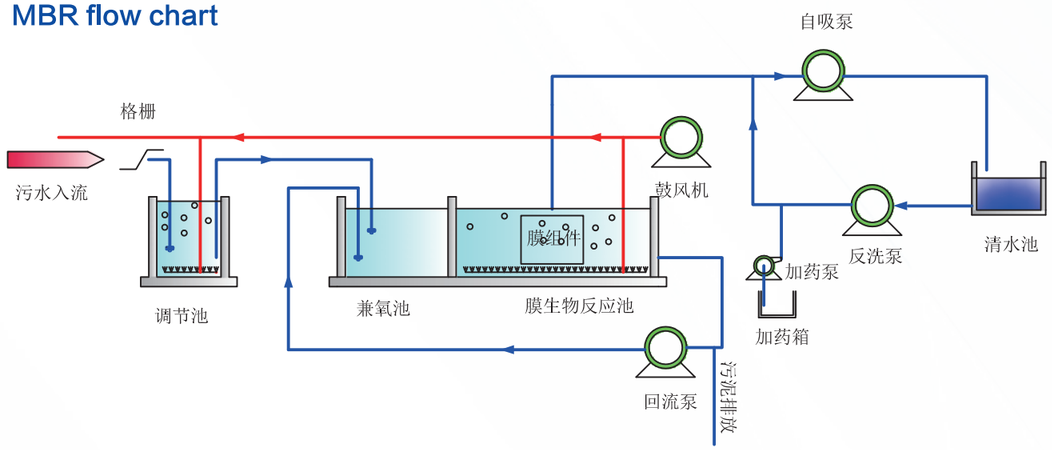

# MBR Application

Membrane Bio-Reactor, MBR is a new wastewater treatment technology, which combine membrane separation technology and bio treatment technology. Membrane module could replace second sedimentation tank. In MBR, high MLSS could help to improve organic load, reduce footprint of whole wwtp, and also reduce excess sludge. MBR module submerged in aeration tank to intercept active sludge and macromolecular organics. MLSS in MBR could reach 8000~10000mg/L, SRT could extend to 30 days.
Because of its effective interception effect, the MBR can retain microorganisms with a long generation cycle, which can realize the deep purification of sewage. At the same time, nitrifying bacteria can fully reproduce in the system, which plays good nitrification performance, and helps to deep phosphorus and nitrogen removal.

## Features of MBR System

- High Biological Efficiency;
- Save land (about 1/3-2/3 of traditional technical);
- Stable output water quality;
- Low energy consumption;
- Less sludge;
- Low operation and maintenance cost

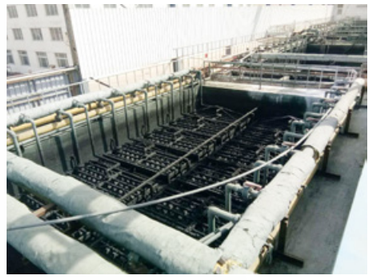
## MBR flow chart



# SUJING MBR Application

## 101/. Textile Dyeing Wastewater Recycling Treatment Projects

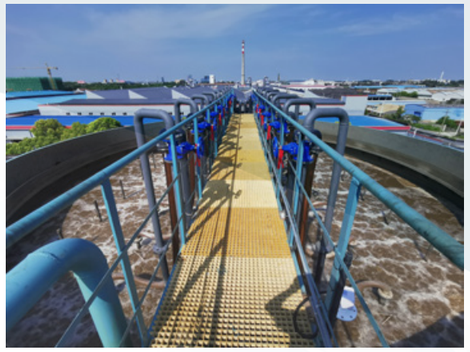
- A Textile Dyeing Factory in Shandong
  - Capacity: 22000t/d
  - Water: Dyeing Wastewater
  - Usage: Pretreated for RO + Discharge



- A Textile Dyeing Factory in Jiaxing
  - Capacity: 12000t/d
  - Water: Dyeing Wastewater
  - Usage: Pretreated for RO + Discharge

- A Textile Dyeing Factory in Shaoxing
  - Capacity: 6000t/d
  - Water: Dyeing Wastewater
  - Usage: Pretreated for RO + Discharge





- A Textile Dyeing Factory in Yancheng
  - Capacity: 5000t/d
  - Water: Dyeing Wastewater
  - Usage: Pretreated for RO + Discharge

- A Textile Dyeing Factory in Tongxiang, Zhejiang
  - Capacity: 4400t/d
  - Water: Dyeing Wastewater
  - Usage: Pretreated for RO + Discharge

- A Textile Dyeing Factory in Zhejiang
  - Capacity: 3000t/d
  - Water: Dyeing Wastewater
  - Usage: Pretreated for RO + Discharge

## 02/. Electron Industry

- A Electron Factory in Wuxi
  - Capacity: 16000t/d
  - Water: Electron Wastewater
  - Usage: Recycling + Discharge

- A Electron Factory in Chengdu
  - Capacity:  6000t/d
  - Water: Electron Wastewater
  - Usage: Recycling + Discharge

- A Electron Factory in Xiamen
  - Capacity: 1000t/d
  - Water: Electron Wastewater
  - Usage: Recycling + Discharge

## 03/. Municipal Sewage Industry

- A Municipal Sewage Recycling Treatment Project in Eerduosi
  - Capacity: 20000t/d
  - Water: Municipal Sewage
  - Usage: Recycling + Discharge

- A Municipal Sewage Recycling Treatment Project in Sichuan
  - Capacity: 10000t/d
  - Water: Municipal Sewage + Industry Wastewater
  - Usage: Recycling + Discharge

## 104/. Landfill Leachate Treatment

- A Landfill Leachate Treatment project in Fujian

- Capacity: 150t/d
- Water: Landfill Leachate
- Usage: Discharge

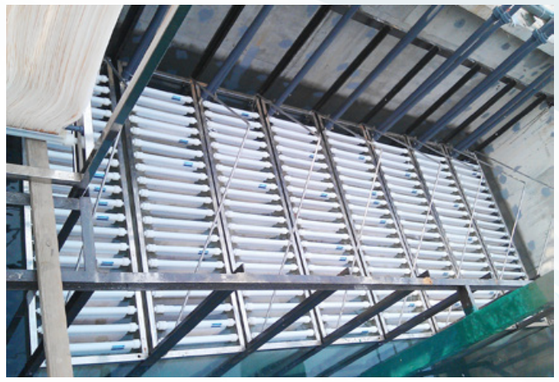
## 105/. Cosmetics Industry

- A Cosmetics Wastewater Recycling Treatment Project in Changshu

- Capacity: 800t/d
- Water: Cosmetics Wastewater
- Usage: Recycling + Discharge



## 106/. Chemical Industry



- A Chemical Wastewater Recycling Treatment Project in Jiangsu

- Capacity: 1000t/d
- Water: Chemical Wastewater
- Usage: Recycling

## 107/. Electroplating Industry

- A electroplating Wastewater Recycling Treatment Project in Nanjing

- Capacity: 500t/d
- Water: Electroplating Wastewater
- Usage: Recycling + Discharge