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Zenith Water

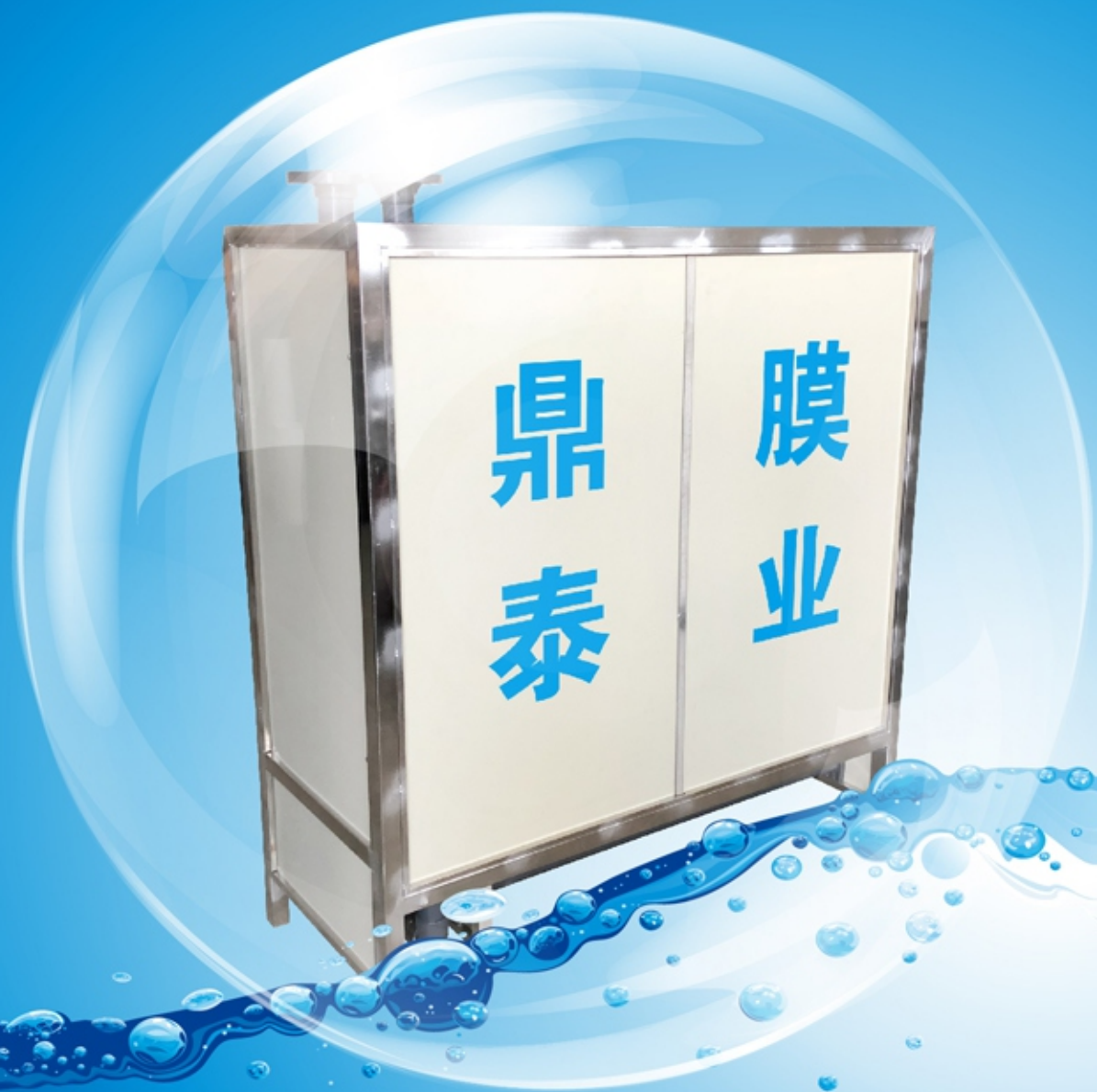
DINGTAI

MBR平板软片膜创导者

MBR Film Membrane Founder

I P U F

净水让环境更美好!



湖州鼎泰软片膜科技有限公司

Huzhou Dingtai Film Membrane Technology CO.,Ltd.

地址：浙江省湖州市吴兴区工业路1号 高新区科创园9号
标准厂房西侧四层

电话：0572-2282178 传真：0572-2262199

网址：www.dingtaiwater.com

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企业精神 ■

持续改善是企业的精髓

迎接变化，勇于创新

Enterprise spirit

Continuous improvement is the essence of enterprise
welcome change,innovation

企业宗旨 ■

诚信为本 专业执着 勇攀高峰 精益求精

Enterprise tenet

Honesty,professional dedication,be bold in scaling heights,
always endeavoring to do still better

企业理念 ■

立足新起点 开创新局面

Enterprise idea

Take a New Starting Poin,create a new situation

企业简介

Huzhou Dingtai Film Membrane Technology CO.,Ltd.

COMPANY PROFILE

湖州鼎泰软片膜科技有限公司一家专业从事MBR膜研发与生产的高科技企业，在国内率先打破MBR用膜格局，开发了具有自主知识产权的IPUF软片膜。在与浙大、浙工大及东华大学的长期合作下，特别在德国公司专家的指导下，IPUF-Ⅲ产品于2016年6月推向市场，新款产品使用至今，用户的满意度达到了100%。

目前该产品已取得国家发明专利3项，其他专利9项。新申报已受理发明专利2项，受理号201710213900.8和201710200856.7。

“注重用后名，不图眼前利”，公司秉承这一理念，建立了两个实验室，一个污水现场中试平台，一套曝气实验装置，并不惜成本建立了一个1000-1200T/D的印染废水MBR全自动运行样板工程，以保证优秀的产品更优，性价比更高。

让客户买的实惠，用的放心，是我们的最大希望；更好的“服务于环保事业，贡献于社会”，是我们最终的目标。

Huzhou Dingtai Film Membrane technology Co.,Ltd.is a high-tech enterprises,professional engaged in MBR membrane research & development and production.The first one to break the MBR film usage pattern in China,develop a proprietary intellectual property rights IPUF film.in the long term cooperation with Zhejiang University,Zhejiang University of Technology and Donghua University,especially under the guidance of Germany experts,IPUF-Ⅲ products push to the market in June 2016.Until now,the new product's customer satisfaction reached 100%.

The product has achieved 3 national invention patents,9 other patents.And 2 of new declaration invention patents the acceptance numbers are 201710213900.8 and 201710200856.7.

"Emphasize the fame of after use, no immediate benefits", the company adhering to this philosophy, established two laboratory test platform for a sewage field, an aeration experiment device, and set a 1000-1200T/D printing and dyeing wastewater project through MBR automatic operation model, to ensure the excellent products more better & cost-effective.

let customers buy affordable,use assured,is our greatest hope; "service to environmental protection, contributing to society" is our ultimate goal.



IPUF平板软片膜-III

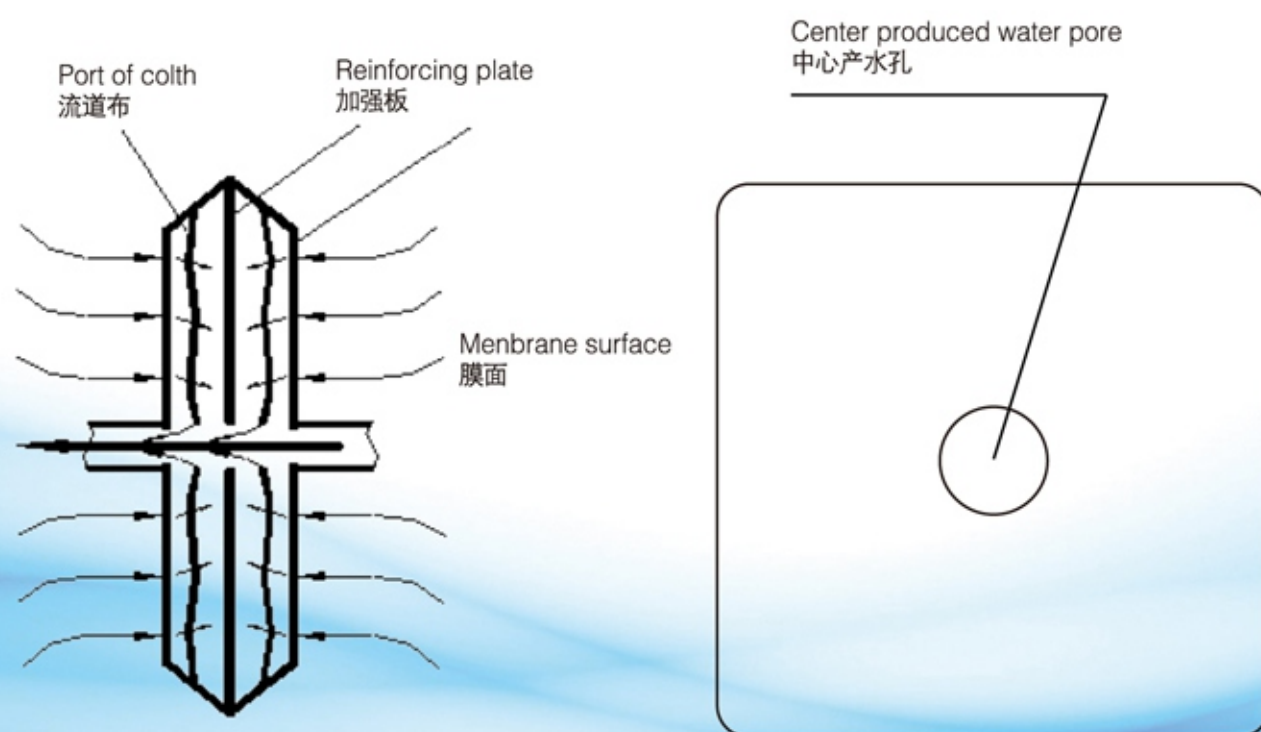
IPUF Film Membrane-III

Huzhou Dingtai Film Membrane Technology Co., Ltd.

MAIN PRODUCTS

◎ 平板软片膜单元介绍/Membrane unit introduction

膜元件的结构形式/The structural form of a film element



膜单元特点/Film membrane features

小方形：膜的利用率高。

中间产水：水流距离短、产水效率高、通量大（每平方）、流道短、跨膜压差低、能耗优势明显。

用薄片做支撑：保持了膜的平整度，又能在曝气充分的状态下，大幅度摆动而不易折断。

Small square: high utilization of membrane.

Intermediate water production: short flow distance, high water production efficiency, large flux (per square meter), short flow passage, low transmembrane pressure and obvious energy consumption.

With thin slices to support: to maintain the smoothness of the diaphragm, but also in aeration fully state, swing large and not easy to break.

性能参数/Performance parameter

材质 material	PVDF PTFE
孔径 aperture	0.1-0.2μm
形状 shape	方型圆角 Square fillet
中心产水孔 Central producing water pore	Φ50
运行方式 Operation mode	抽吸式（外进内出、中心圆周产水） Suction (outside, inside, out of the center)
组成 Form	2层导流布+2层膜布+软片 2 layer flow guide+2 layer film cloth+film
焊接方式 Welding method	超声波焊接密封 Ultrasonic welding seal

MBR平板软片膜

Huzhou Dingtai Film Membrane Technology Co.,Ltd.

MAIN PRODUCTS

◎ 平板软片膜组件介绍/Film membrane product introduction

组成/Form

膜组件由膜单元、中心产水管、密封胶片、两端端板、压紧密封罩，锁紧螺母及4道O型密封圈组成。

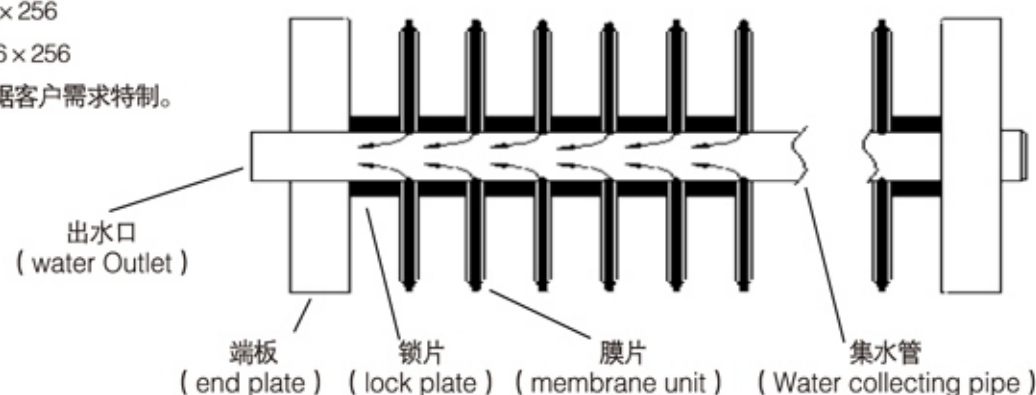
膜组件规格：常用规格为两种

6.25m²和12.5m²

6.25m²规格为707 × 256 × 256

12.5m²规格为1221 × 256 × 256

备注：特殊规格，可根据客户需求特制。



The membrane unit is composed of a membrane element, a central water producing pipe, a sealing lock sheet, two end plates, a pressure tight sealing cover, a locking nut and 4 O type sealing rings.

Membrane assembly specifications: commonly used specifications for two kinds

6.25m² and 12.5m²

6.25m² specifications are 707 × 256 × 256

12.5m² specifications are 1221 × 256 × 256

Remark: special specifications can be made according to customers' requirements.



特点/Characteristic

- 1、可长可短，可用于特殊场合，应用空间广泛无比。
- 2、专利锁片的设置，提供了合理的进水宽流道，为膜的反洗达到效果提供了保障。
- 3、两端端板的巧妙设计，作用如下：
 - a、为膜支提供支撑作用；
 - b、使膜堆形成封闭空间，替代膜曝气封板，提升曝气效果。
- 4、一旦膜片有损可单片更换，而且拆卸方便快捷。

- 1、It can be long or short. It can be used in special occasions and has wide application space.
- 2、The setting of the patent lock plate provides a reasonable water inlet wide flow passage, which provides a guarantee for the backwash of the membrane to achieve the effect.
- 3、The ingenious design of two end-plates, the function is as follows.
 - A provides the supporting role for the membrane branches;
 - B makes the membrane pile form a closed space, and replaces the membrane aeration plate to enhance the aeration effect.
- 4、once the diaphragm is damaged, can be replaced by a single piece, and the demolition is convenient and fast.

膜堆组成/Stack composition

膜堆由膜组件、外框架、曝气管、产水管、起吊环和封气挡板组成（压膜螺丝）。

The stack is composed of a membrane module, an outer frame, aeration pipe, water supply pipe, sealing rings and a baffle plate (pressing screw).

常规软片膜堆/Conventional film stack

膜堆由膜组件、外框架、曝气管、产水管、起吊环和封气挡板组成（压膜螺丝）。

2 × 6排列为150m²

4 × 6排列为300m²

4 × 8排列为400m²

备注：膜堆规格也可根据工程实际用膜情况而定。

The stack is composed of a membrane module, an outer frame, aeration pipe, water supply pipe, sealing rings and a baffle plate (pressing screw).

2 × 6 is arranged as 150m²

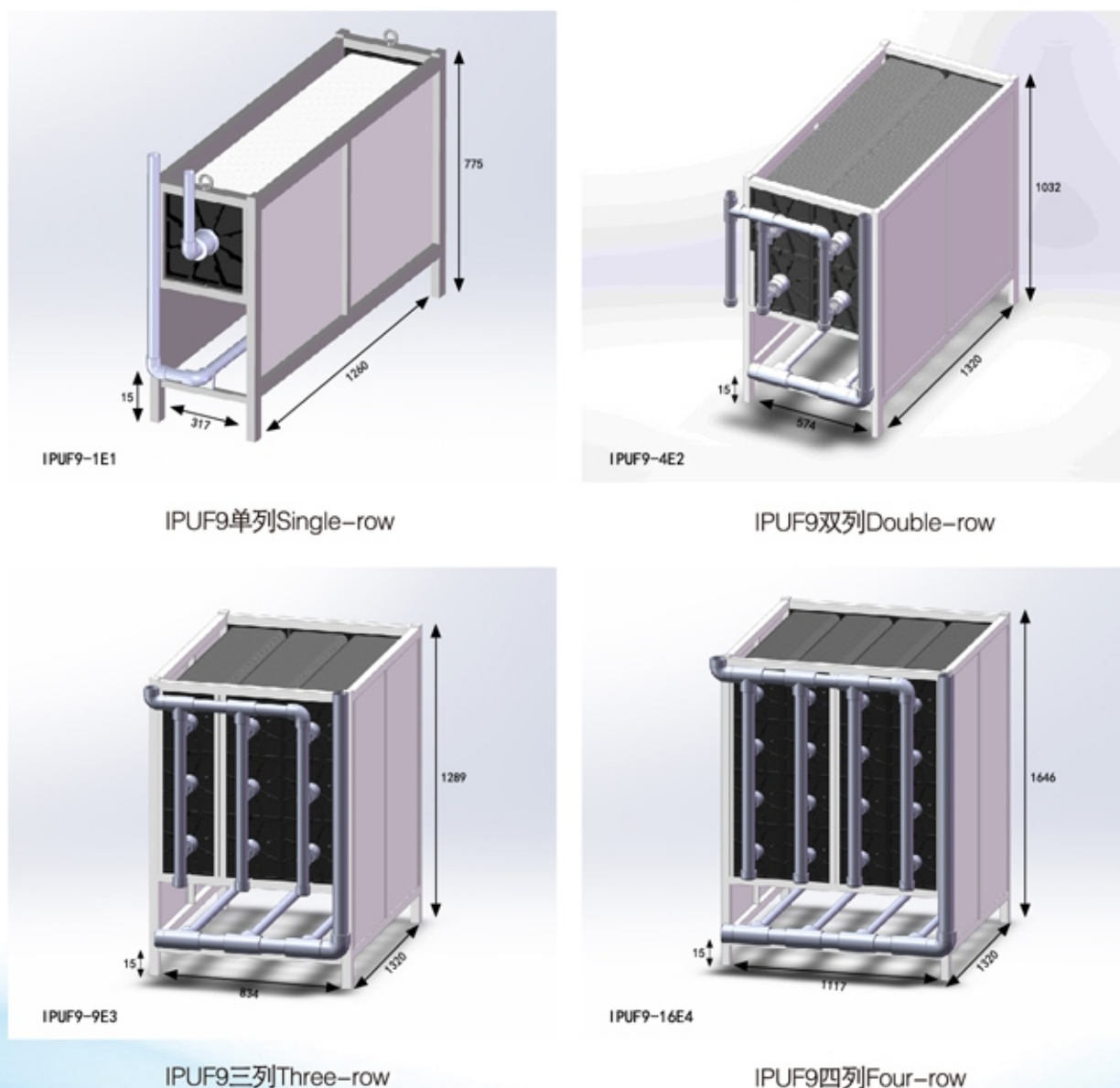
4 × 6 is arranged as 300m²

4 × 8 is arranged as 400m²

Remark: the specifications of the membrane stack can also be determined according to the actual conditions of the membrane.

IPUF9系列膜堆不同排列图纸

IPUF9 series of membrane stack different arrangement drawings



每层增减尺寸为256mm
 The size of each floor is 256mm

膜堆规格	长	宽	高
1×1	1260	317	775
2×2	1320	574	1032
3×3	1320	834	1289
4×4	1320	1117	1646

IPUF平板软片膜运行工艺参数 The Operation Parameters Design

IPUF9系列运行参数 IPUF9 series operation parameters	
单支膜面积 Single membrane area	12.5m ²
设计通量 Design flux	15-25L/m ² .H
单支膜尺寸 Single membrane size	256 × 256 × 1221
膜材质 Membrane materials	PVDF PTFE
膜孔径 Membrane pore size	0.1-0.2um
出水SDI Water SDI	≤3
曝气量 membrane air	6-10L/m ² .min
曝气压力 Aeration pressure	>45Kpa
MLSS	最高可达Maximum reach 20000mg/L
最大跨膜压差 The largest transmembrane pressure difference	0.04Mpa
温度 temperature	2-45℃
PH	2-11
油脂含量 Oil content	<10mg/L
耐氯 Chlorine-resistant	最大耐氯能力10万ppm, 短时间耐氯浓度200ppm, 长时间连续耐氯浓度5ppm maximum(100thousand ppm) short time(200ppm) long time continuous(5ppm)
操作程序 Operational program	运行6-10分钟; 停运1-2分钟 Run 6-10minutes, stop 1-2 minutes
灌注药液位差 Perfusion liquid head	0.5-1m
化学清洗 Chemical cleaning	方式: 在线, 跨膜压差大于0.04Mpa或3-6个月 On-line, transmembrane pressure difference > 0.04Mpa or 3-6 months

IPUF9平板软片膜堆 IPUF 9 flat film membrane stack

型号Model	规格Specifications	起吊重量Lifting weight(Kg)	水管 Water pipe	气管 Air pipe
IPUF9-8E2	8支(module)100m²	125	φ 40	φ 50
IPUF9-10E2	10支(module)125m²	151	φ 40	φ 50
IPUF9-12E2	12支(module)150m²	180	φ 50	φ 63
IPUF9-9E3	9支(module)112.5m²	131	φ 40	φ 50
IPUF9-12E3	12支(module)150m²	169	φ 50	φ 63
IPUF9-15E3	15支(module)187.5m²	206	φ 50	φ 63
IPUF9-18E3	18支(module)225m²	246	φ 63	φ 75
IPUF9-16E4	16支(module)200m²	213	φ 50	φ 63
IPUF9-20E4	20支(module)250m²	261	φ 50	φ 63
IPUF9-24E4	24支(module)300m²	311	φ 50	φ 63
IPUF9-32E4	32支(module)400m²	436	φ 63	φ 75

◎平板软片膜堆的安装方式/Installation method of film stack

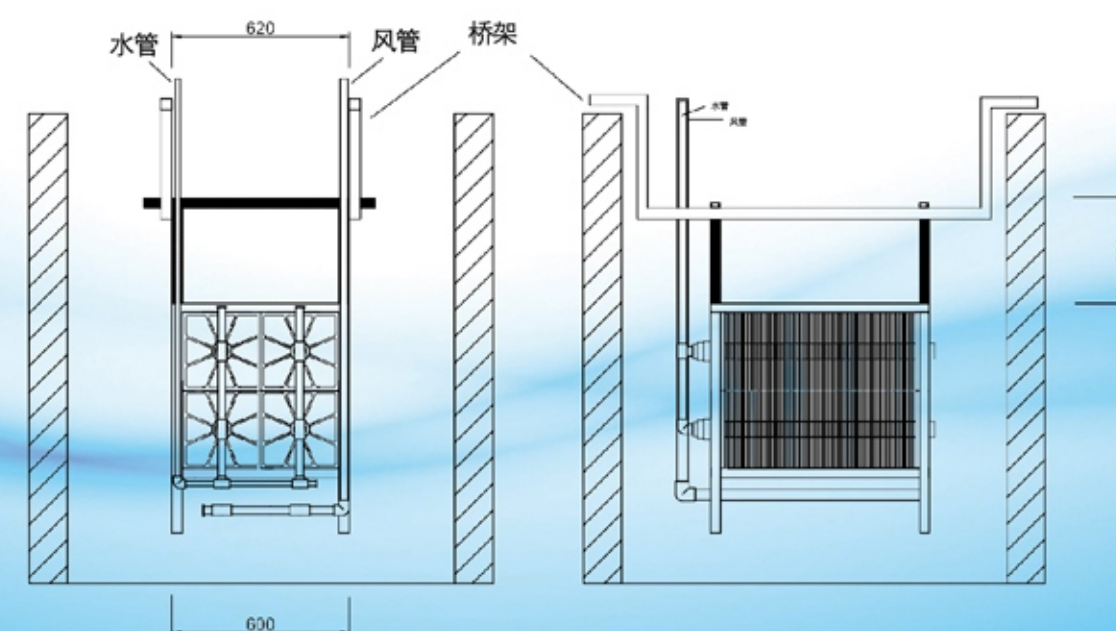
桥架式安装/Bridge type installation

以池面架桥形式，将膜堆上方挑梁，架于桥面，并固定，整个膜堆悬于水中运行的方法。

对于正在使用的生化池做膜池，通常不便于将池水排掉，可用8号或10号槽钢焊接而成的桥架，架设在膜池池面上方，作为膜堆的固定支架，每组桥架之间的宽度比设定膜堆挑梁宽出2公分。膜堆与挑梁应高于膜面60公分以上，当膜堆安装就位后，挑梁与桥架应没于水面以不影响膜堆固定即可。

In the form of a bridge deck, the top of the membrane stack is placed on the bridge deck, and the whole membrane stack is suspended in the water.

In the case of a biochemical pool in use as a membrane pool, it is generally not convenient to drain the water from the pool. A bridge which is made by channel steel NO.8 or No.10 may be placed above the surface of the membrane pool to serve as a fixed support for the membrane stack. The width between each group of bridges is 2 CM wider than that of the fixed membrane stack cantilever beam. The membrane stack and the cantilever beam should be about 60CM higher than the membrane surface. When the membrane stack is finished installation, fix the cantilever beam and the bridge frame



轨道式安装/Rail mounting

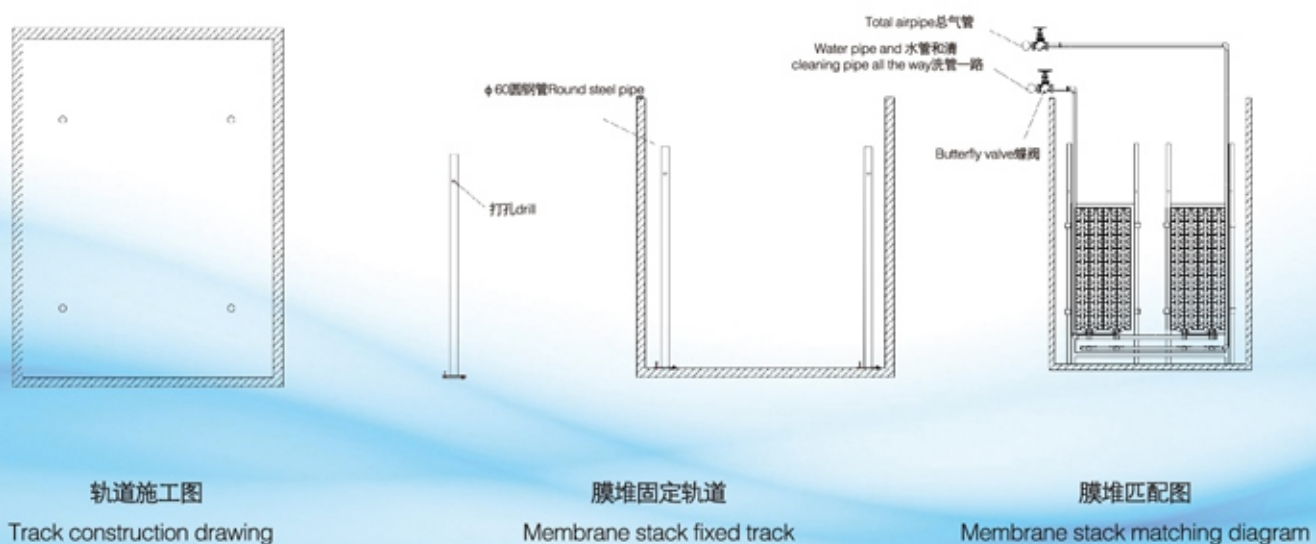
一、一般工程采用轨道式安装膜堆

General project, membrane stack using rail type installation.

根据膜堆尺寸, 设计膜池及安装垂直轨道。一般用 $\phi 60$ 的钢管, 底部与池底固定即可, 此类工程水量一般都不大, 对膜堆在水中的冲击力也不大, 故轨道上部无需固定, 轨道高于膜堆2公分处打上插销眼, 眼大于插销3-4毫米即可。

According to the size of the membrane stack, design the membrane pool and install the vertical rail. Generally with $\phi 60$ steel pipe, fixed the bottom with the pool bottom. This kind of project water yield is generally not big, the impact of the membrane stack in the water is not big, so the upper rail don't need to be fixed, just place a bolt hole on 2 cm higher than the membrane stack, the diameter of hole should be 3-4mm bigger than the bolt.

以下图为例: Example as the following figure



二、大工程, 采用轨道式安装膜堆

Large project, membrane stack using rail type installation

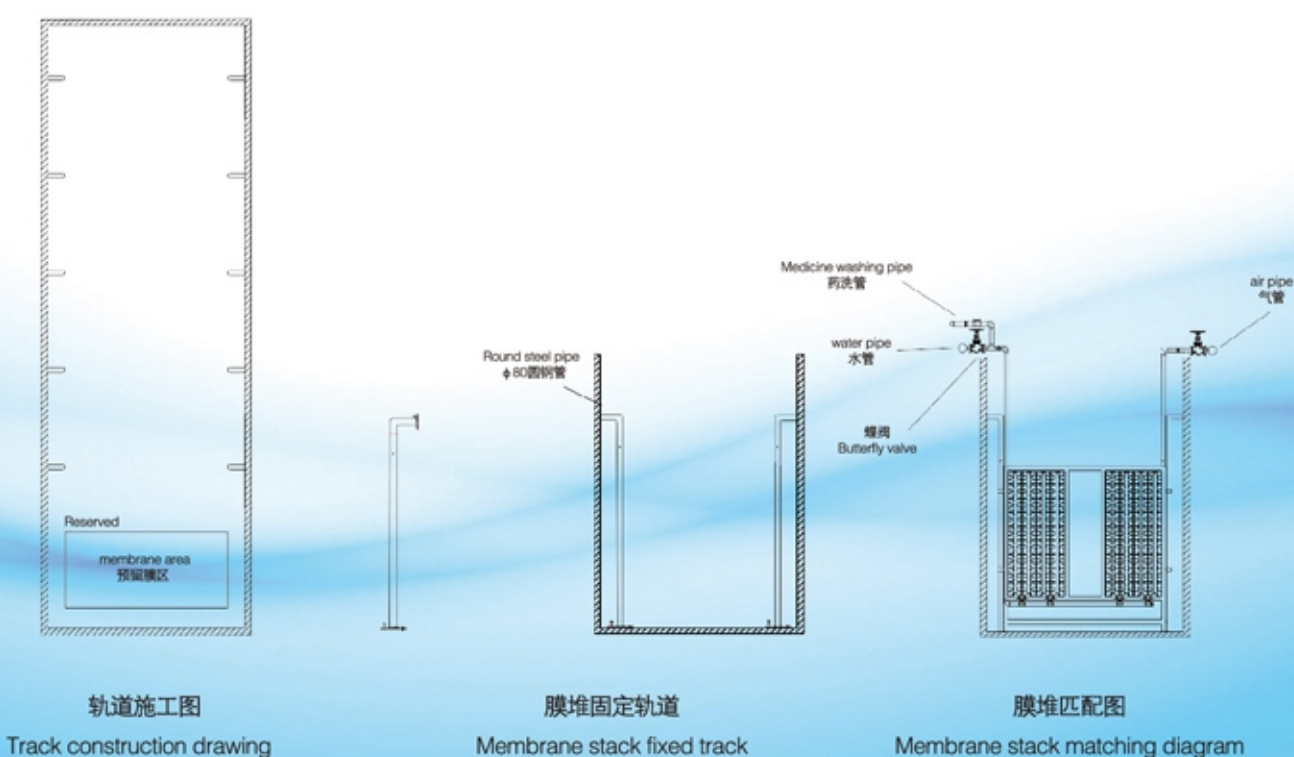
根据已建膜池尺寸, 在池壁两端安装垂直轨道, 可分别用 $\phi 60$ 或 $\phi 80$ 的钢管, 底部与池底固定, 上部经弯管连接与池壁固定, 轨道与池壁距离30公分以内, 轨道高度应高出水面10-20公分, 轨道高于膜堆2公分处打上插销眼, 插销与眼的比例, 尽量放宽一些, 如10mm的插销, 打14mm的眼, 或更大一些, 预防初期使用时, 膜内因空气未抽完, 而在曝气的状态下, 出现膜堆上浮而损坏管路, 故用插销将膜堆固定。

Accord to the size of the built membrane pool, vertical rails are arranged at two ends of the pool wall, $\phi 60$ and $\phi 80$ steel pipes can be respectively used, the bottom is fixed with the pool bottom, the upper part is connected with the pool wall through an elbow and fixed with the pool wall.

The distance between the rail and the wall should be within 30cm. The rail is 10 to 20 CM higher than the water surface, place a bolt hole on 2 cm place higher than the membrane stack, the diameter of hole should be 4 mm bigger than the bolt.

Such as 10 mm bolt, 14 mm hole is punched, or larger. Using the bolt to fix the membrane stacks in the beginning period, to avoid the pipe damaged due to the membrane stack float. In the state of aeration, but the air not being exhausted.

以下图为例: Example as the following figure



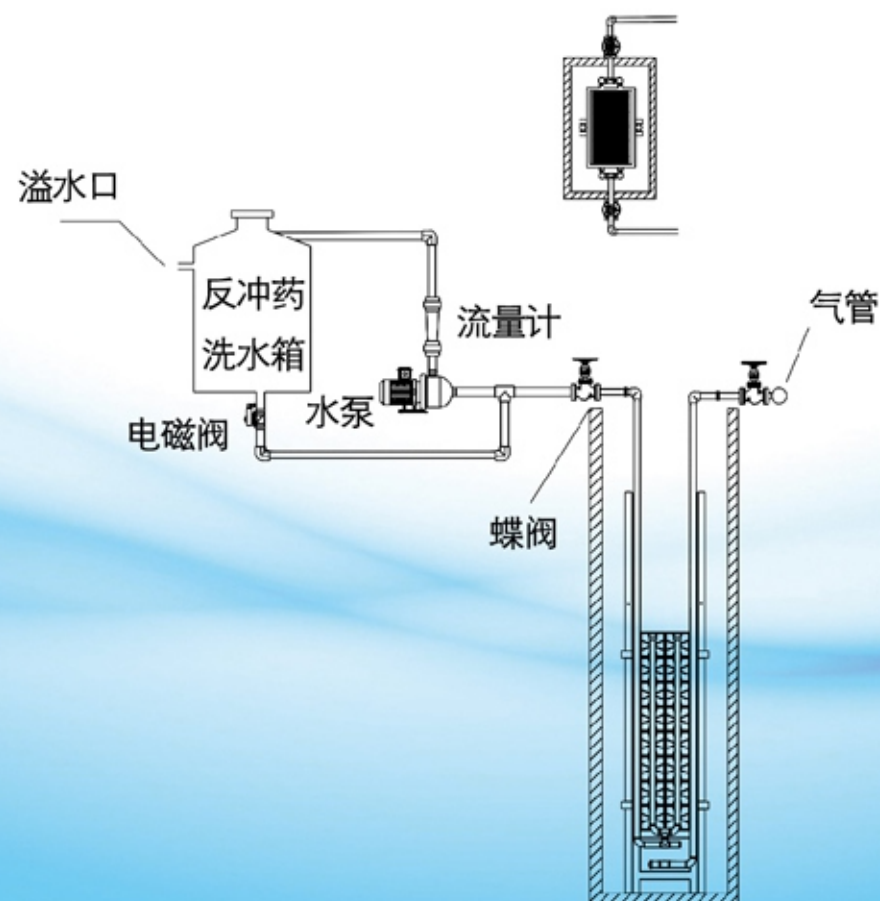
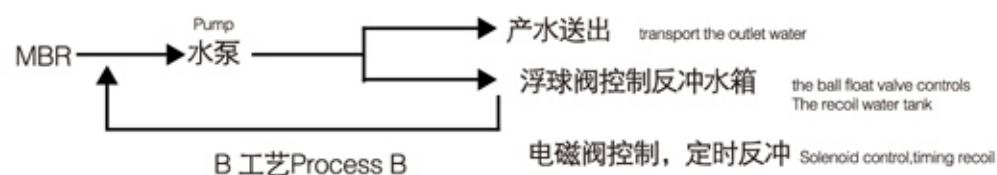
◎ 管路的设计与安装/Design and installation of piping

根据出水需用膜堆的情况，管路设计分为两种：

According to the water outlet of the membrane stack, pipeline design is divided into two kinds

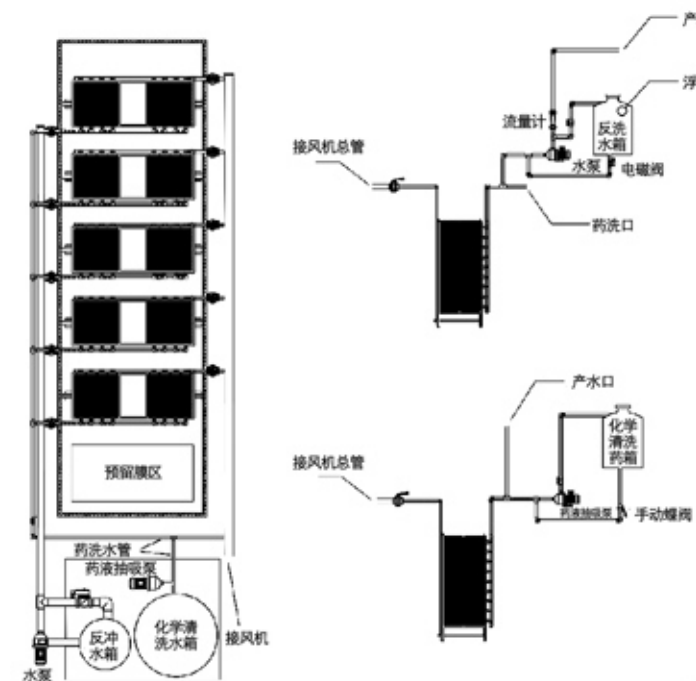
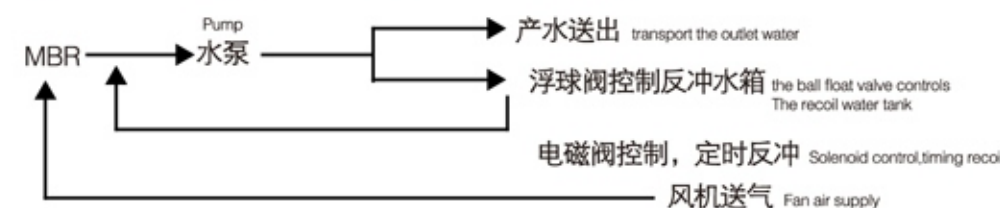
一、一般小工程，可将产水管与化学清洗管合用，无需单独设置，工艺路线为A，化学洗膜时，反冲水箱也可以用作化学清洗药箱。B，化学清洗时，单独设置化学清洗水箱。

General small project, can share produce water pipe and chemical cleaning pipe, do not need to be set up alone. We call it process A, in this case, when the chemical membrane washing, backwash tank can also be used as a chemical cleaning medicine cabinet.



中大型工程，设计必须分三路，即气管、水管和化学清洗管。这样便于逐个对膜堆进行在线化学清洗，而不影响水泵正常产水，清洗药液又可重复使用。

Large and medium-sized projects, the design must be divided into three ways, namely the air pipe, water pipe and chemical cleaning pipe. The membrane stacks can be on-line chemical cleaning one by one without affect the pump's water production, also the cleaning liquid medicine can be reused.



管径设计参数/Pipe diameter design parameter

IPUF软片膜管径设计要求：1、气管，根据风机出口管径，如管路较长的，应放大一个规格以减损管道压力；2、水管，根据所选水泵的水量要求，按1-2米/秒计算；化学清洗管，按产水总管直径的1/2

IPUF film membrane pipe diameter design requirements: 1. Air pipe, according to the fan outlet pipe diameter, such as pipeline is larger, should enlarge a specification to reduce the pipeline pressure; 2. Water pipe, according to the requirements of the selected water pump, according to 1-2 meters/second calculation; Chemical cleaning pipe, according to 1/2 of the diameter of the main water outlet.

◎水泵、风机及管道选型/Selection of pumps,fans and pipes

以下数据供工程购买辅件时参考:

a、产水泵:根据每小时实际产水量÷0.7(因水泵所标流量通常是在无阻力情况下的流量,软片膜负压抽吸,透膜阻力在泵前,因此必须考虑流量的阻力系数)。

b、风机:根据所需的膜面积和污水类别来选型(6层膜高为例,高于6层可适当减少)。

生活污水:8L.m².min;

一般工业污水:9L.m².min;

污染较严重的如印染废水:9.5L.m².min;

高浓度的污水如医药、煤化工废水:10L.m².min;

风机压力以选0.5公斤或50kpa以上比较合理。

c、清洗泵:原液输送泵,每小时3T左右,扬程10米以上;清洗液抽吸泵10T以上,吸程5米以上。

The following data are for reference when purchasing accessories:

A:according to the actual production water pump:water production per hour/0.7(due to pump flow is usually marked in the absence of resistance under the condition of film flow,negative pressure suction, membrane resistance in front of the pump,we must consider the flow resistance coefficient).

B:Fan:according to the required membrane area and sewage type selection(6 film height as an example)

Domestic sewage :8L.m².min;

General industrial wastewater:9L.m².min;

More serious pollution,such as printing and dyeing wastewater:9.5L.m².min;

High concentrations of sewage,such as pharmaceuticals,coal chemical waste water:10L.m².min;

Fan pressure to choose 0.5 kilograms or more 50kpa more reasonable.

C,Cleaning pump:liquid delivery pump,about 3T per hour,the head more than 10 meters;cleaning liquid suction pump 10T above,more than 5 meters head.

◎自控系统/Automatic control system

软片膜采用自动运行模式,根据水中污泥浓度不同而合理设置开停时间比:

生活污水和一般工业污水:开8分钟停1分钟,在停吸的1分钟内设置3-5秒反洗时间(采用电磁阀或气动阀进行控制)。

复杂污水(指污泥浓度SV30在60%以上):开6分钟停1分钟,在停吸的1分钟内设置3-5秒反洗时间(采用电磁阀或气动阀进行控制);或开4停1,3-5秒反洗(电磁阀或气动阀控制)。

附工程膜面积的计算:一般按每天20小时运行计算

The film adopts automatic operation mode,according to the different sludge concentration in the water,the reasonable setting and stopping time ratio is set:

Domestic sewage and general industrial sewage:open 8 minutes,stop for 1 minutes,set up 3-5 seconds backwashing time in the 1 minutes of stopping suction(controlled by solenoid valve or pneumatic valve).

(of a complex sewage sludge concentration of SV30 in more than 60%):6 minutes 1 minutes to stop,stop smoking in the setting of 1minutes 3-5 seconds(backwash time using the solenoid valve or pneumatic control valve);or 4 stop 1,3-5 seconds(backwashing valve control solenoid valve or gas).

The calculation of the area covered by the engineering membrane(usually calculated by 20 hours per day)

◎膜堆的在线反洗及在线化学清洗

On line backwashing and on-line chemical cleaning of membrane reactor

IPUF软片膜的流道宽度与软片外径及焊接内径之间的合理科学设计,加之膜在水中内外压的平衡关系,完全达到在线清洗的条件,比离线清洗的效果还好。

在线自动反洗和手动化学清洗,均采用高低压差向膜内灌入,切忌用泵直接打入膜内。反洗用电磁阀或气动阀控制。反洗:在产水泵前用三通接一路水管进反洗水箱,用手动阀门控制流量,管径可配总管的2/3大小。反洗水箱采用浮球开关,当反冲水箱满时,自动关闭,需补水时自动打开。

The IPUF film membrane flow channel width,reasonable scientific design of film outside diameter and welding inside diameter,combined with the membrane in the water inside and outside pressure balance relations,fully meet the conditions of the online cleaning,the effect is better than offline cleaning

On line automatic backwashing and manual chemical cleaning,all use high and low pressure differential film grouting,and avoid using pump directly into the membrane.Backwashing is controlled by solenoid valves or pneumatic valves.

Backwashing:at the outlet of the water pump,three pipes are connected into the backwash tank,and the flow is controlled by manual valves.The pipe diameter can be matched with the 2/3 size of the main pipe.

The backwash tank adopts float switch,when the recoil tank is full,it closes automatically and automatically opens when the water is filled.

在线化学清洗; On-line chemical cleaning

1、清洗条件(达到任一要求时):

- a、连续运行三个月;
- b、出水压力达到0.04Mpa;

2、清洗药剂及配制:

a、对于有机物污染的情形:一般用1-2%浓度的次氯酸钠溶液,市场买的浓度在8-10%,也就是按1:7或1:3.5来配置;

b、对于无机物污染的情形:需配置用1%-5%的柠檬酸或草酸溶液进行清洗。

污染严重时,还需进行先酸洗再碱洗。对于膜面积垢的,用盐酸清洗最佳,按3-5%配置。

3、清洗方法:

- a、根据欲清洗膜堆的膜面积按6-8L/m²在化学清洗水箱中配制好所需药剂;
- b、关闭欲清洗膜堆的产水阀和曝气阀,打开化学清洗阀门,让药液自流进入膜堆,待药液不会往下流动为止;
- c、浸泡2个半小时;
- d、然后抽回50%的药液,开启曝气30分钟;
- e、再抽回45%的药液,关闭清洗阀门;打开产水阀;
- f、清洗结束,开始正常产水操作。

备注:

- a、若清洗效果未达预期,则可延长浸泡时间或提高清洗药剂浓度。
- b、对膜堆进行分组清洗时,未清洗的膜堆依然可以进行产水操作。

1、cleaning conditions(to meet any requirement):

- A,continuous operation for three months;
- B,The outlet water pressure reached 0.04 Mpa;

2、cleaning agents and preparations:

A,for organic contamination:typically,the sodium hypochlorite solution at 1-2% concentration is sold at 8-10%,i.e., by 1:7 or 1:3.5;

B,for inorganic contamination:1%-5% citric acid or oxalic acid solution should be used for cleaning.

When the pollution is serious,it needs to be washed first and then washed.For membrane fouling,rinse with hydrochloric acid is the best,according to 3-5% preparation.

3、cleaning method:

A,according to the membrane area to clean the membrane,according to 6-8L/m² in the chemical cleaning tank prepared by the required chemicals;

B,closed to clean the membrane stack of production valve and aeration valve,open the chemical cleaning valve, let the liquid self flow into the membrane pile,wait until the liquid will not flow down;

C,soak for 2 hours first to see if the desired cleaning effect has been achieved;

D,and then take back 50% of the liquid,open the aeration for 30 minutes;

E,Redraw 45% of the liquid,close the cleaning valve;Open water production valve;

F,wash out,start normal water production operation.

Remarks:

- A,if the cleaning effect is not expected,it can extend the soaking time or improve the concentration of cleaning agents.
- When the B and the membrane stack are divided into groups,the cleaned film stack can still perform water production.

◎膜堆运行工艺/Operation process of membrane reactor

1、原水通过泵输送或自流进入膜池,通过膜片的拦截作用,污泥被膜片截留,清水在水泵的抽吸作用下透过膜片进行负压抽吸输出。

2、膜池底部设置排污回流泵,由于膜片对污泥的高效拦截作用,随着系统的运行,污泥浓度越来越高,故此需定期进行排泥。

3、系统运行时,曝气不能停止。

4、本系统设置水箱,小项目为1个,反冲水箱和化学清洗箱共用。大项目设置2个,一个为在线反冲水箱,在系统停吸的时间里设置3-5s的反冲时间,可以减缓膜面污堵,通过电磁阀或气动阀进行自动控制;另外一个为在线化学清洗水箱,当产水压力达到0.04Mpa或连续运行三个月,需对膜进行在线化学清洗,及时恢复通量。对膜堆进行化学清洗时,必需停止曝气。

5、水箱平台设计:直接架在膜池上即可,可通过高低液位压差向膜内注入药剂。

6、集水箱、药剂配制箱根据实际操作方便的需要决定是否另行设置。

7、洗膜后,药剂需抽回药剂配制箱存储,以供下次继续使用。

1.raw water by pumping or flowing into the film pool,through the interception of the diaphragm,the sludge was blocked by the diaphragm,clear water in the pumping role of suction through the diaphragm negative suction pumping water.

2.Discharge recirculation pump at the bottom of the membrane pool,because of the diaphragm to the efficient interception of sludge,with the operation of the system,the sludge concentration is higher and higher,so we need regular sludge discharge.

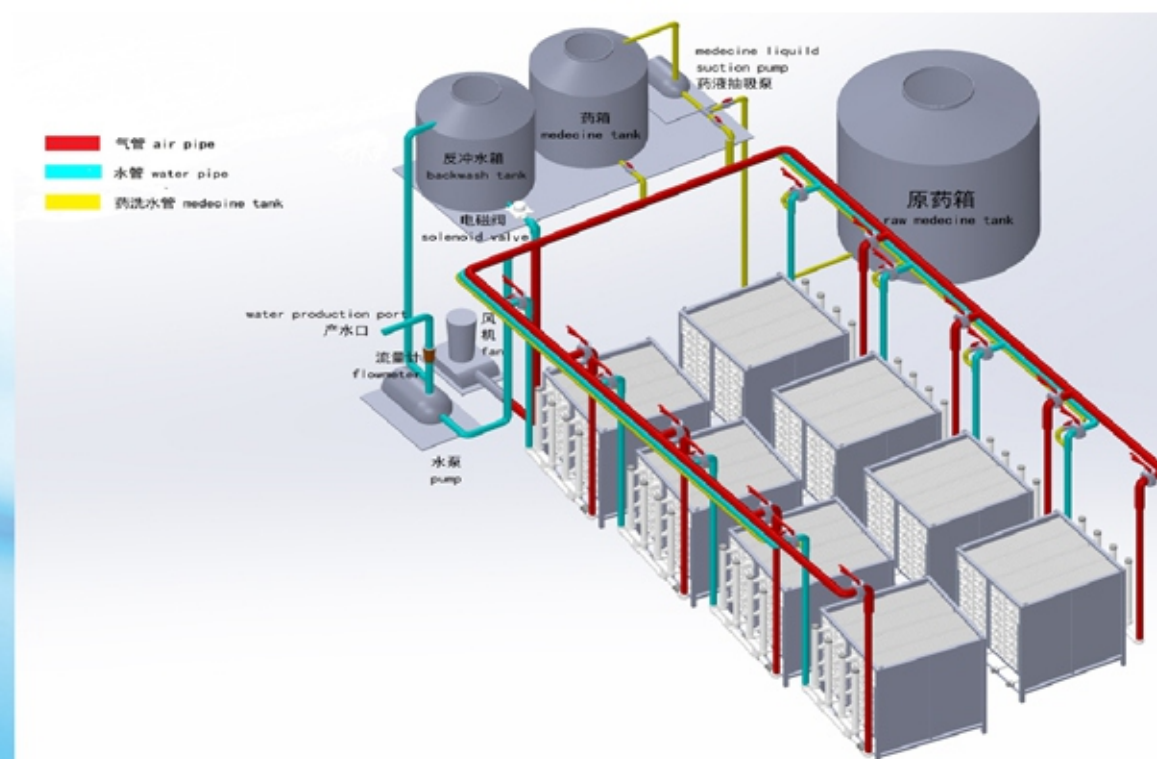
3,when the system is running,the aeration can not stop.

4.The system set up tank.Small project set 1 tank,backwash and chemical cleaning share the one.Large project set 2 tanks.One is online backwash tank,time set 3-5 seconds in the system of stopping time,can slow down the membrane fouling,through the automatic control of the solenoid valve or pneumatic valve.The other is online chemical cleaning tank,When the water pressure reaches 0.04 Mpa,or runs for three months continuously,the membrane stack should be online chemical cleaning,timely recovery flux.When online chemical is running,the aeration must be stopped.

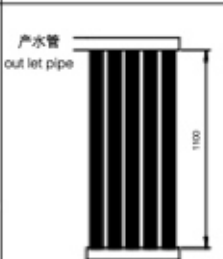
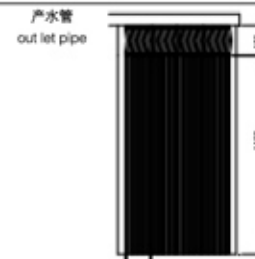

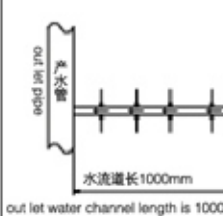
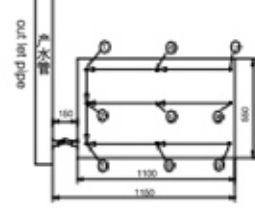
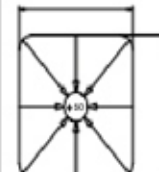
5,Water tank platform design:it can be directly placed on the membrane pool,inject the drug into the membrane through high and low pressure difference.

6,The collection tank and the medicament preparation box are decided according to the actual operation convenience.

7,After wathing the film,the medicament needs to be pumped back into the medicament preparation box for storage and can be used again next time.


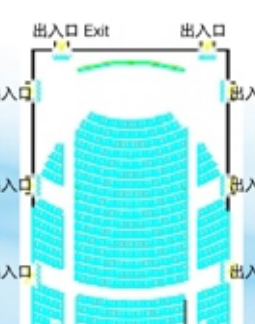



◎ IPUF平板软片膜与其它膜的结构分析 Structures analysis of IPUF film membrane and others

名称Name	中空纤维膜 Hollow fiber membrane	普通平板膜 Flat plant membrane	IPUF平板软片膜 IPUF film membrane
总示意图 General sketch map			
膜单元集 水产水图 Channel sketch map			

备注：把电影院比作平板膜，人流比作水流进行对比。

Remark: Compare the membrane as a cinema, Stream of people as water flow

名称 Name	中空纤维膜 Hollow fiber membrane	普通平板膜 Flat plant membrane	IPUF平板软片膜 IPUF film membrane
示意图例 Sketch map			
次数 Frequency	(假设每个出口每次能出入4人) 1000 ÷ 4 = 250轮次 Let's say each exit can get 4 people at a time 1000 people should 250 times	(假设每个出口能出入4人) 1000 ÷ 8 ÷ 4 = 32轮次 Let's say each exit can get 4 people at a time 1000 people should 32 times	远小于32轮次 Less than 32 times

◎ 中试实验基地/Pilot test base



浙江大港印染厂生化好氧池

Biochemical and aerobic pool of Zhejiang Dagang printing and dyeing factory

中空纤维膜，普通平板膜，鼎泰IPUF平板软片膜
在印染废水MBR运行参数记录

Comparison of hollow curtain membrane, ordinary flat film and Ding Tai IPUF film membrane in printing and dyeing wastewater MBR

	普通平板膜 Flat plant	IPUF平板软片膜 IPUF film	中空纤维膜 Hollow fiber	平板膜和中空纤维膜均采用开8停2运行模式，软片膜为开8停1，停时设置5S反冲 The flat membrane and the hollow fiber are operated with 8s running and 2s stops, IPUF film membrane is operated with 8s running and 1s stop, and set 5s back wash when stopping.
膜面积 Membrane area	30m ²	30m ²	30m ²	水量、压力、SV30由本公司专人负责记录，前三个月每天记录1次，后续采用间断记录 water yield, pressure, sv30 are recorded every day in the first 3 months and then record intermittently
膜产地 Membrane Place of origin	江苏 宜兴 Jiangsu Yixing	湖州 鼎泰 HuZhou Dingtai	浙江 杭州 Zhejiang Hangzhou	委托湖州市环保局检测站检测 Commissioned by the Huzhou Environmental Protection Agency monitoring station testing
设计流量 Design flow	15L/m ² .h	20L/m ² .h	10L/m ² .h	2016-01-14至2016-05-30
曝气量 aeration rate	22m ³ /h	17m ³ /h	6m ³ /h	水泵、流量计、负压表、产水管统一规格型号，风机公用并用气体流量计控制曝气量 The water pump, flowmeter, negative pressure meter and water supply pipe are of unified specification and model. The fan is common and the gas flow meter is used to control the aeration rate

◎运行数据汇总/Run data summary

运行数据分析

A、流量计与实测日产水量误差

平板膜: $-10 \times 19.2 = -192\text{L}$ (开8停2)
中空丝膜: $-10 \times 19.2 = -192\text{L}$ (开8停2)
IPUF平板软片膜: $0.16 \times 21.33 = 3.4\text{L}$ (开8停1)

B、实际日产水量计算

平板膜: $453.5 \times 19.2\text{h} - 192 = 8515\text{L}$
中空丝膜: $286.75 \times 19.2\text{h} - 192 = 5313.6\text{L}$
IPUF平板软片膜: $575.5\text{L} + 3.4\text{L} \times 21.33 - 4 \times 160\text{次} = 11697\text{L}$

C、测算 m^3/h 平均通量为

平板膜: $8516 \div 30 \div 24 = 11.83\text{L}$
中空丝膜: $5313.6 \div 30 \div 24 = 7.38\text{L}$
IPUF平板软片膜: $11697 \div 30 \div 24 = 16.25\text{L}$

D、曝气风量计算

平板膜: $22\text{m}^3/\text{h} \div 60\text{min} \div 30\text{m}^2 \times 1000 = 12.22\text{L}/\text{min}$
中空丝膜: $6\text{m}^3/\text{h} \div 60\text{min} \div 30\text{m}^2 \times 1000 = 3.33\text{L}/\text{min}$
IPUF平板软片膜: $17\text{m}^3/\text{h} \div 60\text{min} \div 30\text{m}^2 \times 1000 = 9.44\text{L}/\text{min}$

Operational data analysis

A, the balance of flowmeter data and actual daily output

Flat film: $-10 \times 19.2 = -192\text{L}$ (open 8 stop 2)
Curtain membrane: $-10 \times 19.2 = -192\text{L}$ (open 8 stop 2)
IPUF film membrane: $0.16 \times 21.33 = 3.4\text{L}$ (open 8 stop 1)

B, actual daily output

Flat membrane: $453.5 \times 19.2\text{h} - 192 = 8515\text{L}$
Hollow fiber membrane: $286.75 \times 19.2\text{h} - 192 = 5313.6\text{L}$
IPUF film membrane: $575.5\text{L} + 3.4\text{L} \times 21.33 - 4 \times 160 = 11697\text{L}$

C, The average flux of $1 \text{ m}^3/\text{h}$

Flat membrane: $8516/30/24 = 11.83\text{L}$
Hollow fiber membrane: $5313.6/30/24 = 7.38\text{L}$
IPUF film membrane: $11697 \div 30 \div 24 = 16.25\text{L}$

D, Aeration volume

Flat membrane: $22\text{m}^3/\text{h} \div 60\text{min} \div 30\text{m}^2 \times 1000 = 12.22\text{L}/\text{min}$
Hollow fiber membrane: $6\text{m}^3/\text{h} \div 60\text{min} \div 30\text{m}^2 \times 1000 = 3.33\text{L}/\text{min}$
IPUF film membrane: $17\text{m}^3/\text{h} \div 60\text{min} \div 30\text{m}^2 \times 1000 = 9.44\text{L}/\text{min}$

◎运行47日后的废水MBR运行污染对比

Pollution comparison of MBR wastewater treatment(after 47days operation)



某公司中空纤维膜
Hollow fiber membrane of a company

某公司平板膜
Flat film of a company

鼎泰IPUF平板软片膜
IPUF Film membrane

以中试数据为参考, 10000T/D废水处理三种膜对比

Based on pilot data, the cost performance of three kinds of membranes in 10000T/D printing and dyeing wastewater

项目名称	膜面积 m^2	使用寿命	风机曝气量 $\text{m}^3/\text{m}^2 \cdot \text{min}$	膜池占地面积	清洗池	吊膜设备	清洗时间	洗膜药液	单次洗膜少产水	人工
中空膜	56460		188	1单位	2只	要	6-7小时/次		3-4小时	5-6人
平板膜	34010		416.7	2单位	2只	要	6-7小时/次		3-4小时	5-6人
软片膜	25640	5-8年	242	0.5单位	无	不要	3小时/次	反复使用 洗膜药液即可	无	2人

备注:

- 1.以10000T平均每天洗二个膜堆。冲洗用水至少10T, 冲水进入膜池重复处理, 即为20T。以中空膜1000平米为1个膜堆。每小时应产水 $7.38\text{T} \times 3\text{小时} \times 2\text{个} = 44.28\text{T}$, 加冲水损耗20T。每天按设计正常产水少64.28T。全年为 $64.28 \times 360 = 15940\text{T}$ 。
- 2.人工按4000元/月计算, 多付人工工资 $4000 \times 12\text{个月} \times 2.5\text{倍} = 120000\text{元}$ 。
- 3.软片膜在线清洗, 药液可反复回用, T水洗膜药剂费不到0.01元。实现清洁生产。
- 4.离线清洗, 每次都要拆卸和重新安装管道, 行吊启动移位, 意想不到之事难免发生。在线清洗一次安装, 一直不动, 膜堆始终稳定, 没有意外之事发生。

工程典型案例

◎ 生活污水/市政污水

处理规模: 50-500T/D

产水用途: 达GB18918-2002中一级A

处理效果: 达到排放标准

Source of water: domestic sewage

Processing scale: 50-500T/D

Water production use: The first level A in GB 18918-2002



处理流量: 10000T/D

工艺流程:

原水→格栅→兼氧→耗氧→MBR→达标排放



工程典型案例

◎ 化工废水

处理规模: 7200T/D

处理效果: 产水回用

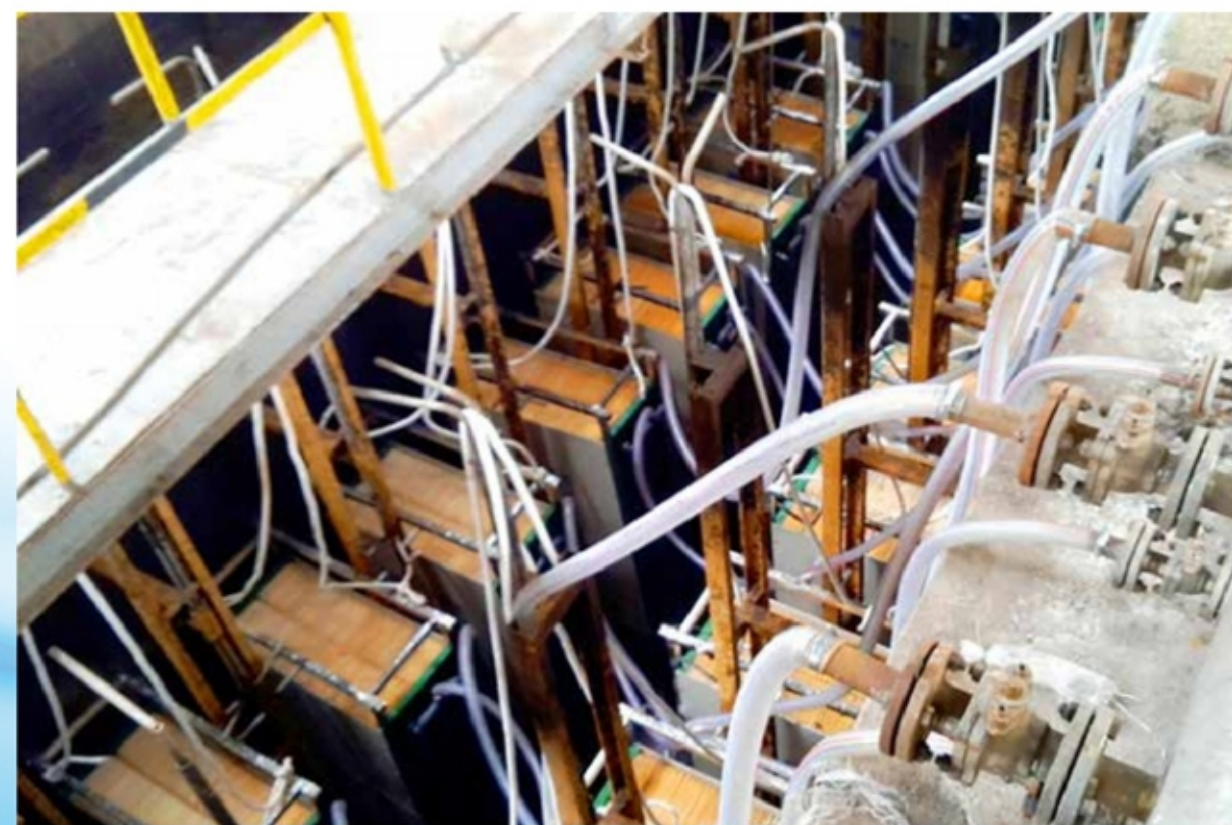
处理工艺: 格栅+除油+物化+AO+MBR+回用

Source of water: Coal chemical wastewater

Processing scale: 7200T/D

Water production use: Reuse of water

Treatment process: Grating+Oil removal+AO+MBR



工程典型案例

◎ 电镀废水

处理规模: 7000T/D

处理效果: 达到排放标准

处理工艺: 调节池+混凝反应+膜过滤

Source of water: Electroplating wastewater

Processing scale: 7000T/D

Water production use: Meet emission standards

Treatment process: Regulating pool+Coagulation reaction+membrane filtration



工程典型案例

◎ 养殖废水

处理规模: 400T/D

处理效果: 达标排放

处理工艺: 工艺流程格栅—调节—厌氧—好氧—MBR

Source of water: aquaculture wastewater

Processing scale: 400T/D

Water production use: Meet emission standards

Treatment process: Regulating pool+Coagulation reaction+membrane filtration



工程典型案例

◎ 垃圾渗透液

处理规模: 300T/D

处理效果: 达到排放标准

处理工艺: 格栅+调节+AO+MBR

Source of water:waste leachate

Processing scale:300T/D

Water production use:Meet emission standards

Treatment process:Grating+Regulating pool+AO+MBR



工程典型案例

◎ 印染废水

处理规模: 2000T/D

处理效果: 回用

处理工艺: 调节池+水解酸化+接触氧化池+MBR+回用

Source of water:Printing and dyeing wastewater

Processing scale:2000T/D

Water production use:Reuse

Treatment process:Regulating pool+Hydrolytic acidification+Contact oxidation+MBR



工程典型案例

◎ 医药废水

处理规模: 500T/D

处理效果: 达标排放

处理工艺: 调节池+UASB反应器+AO+MBR+排放

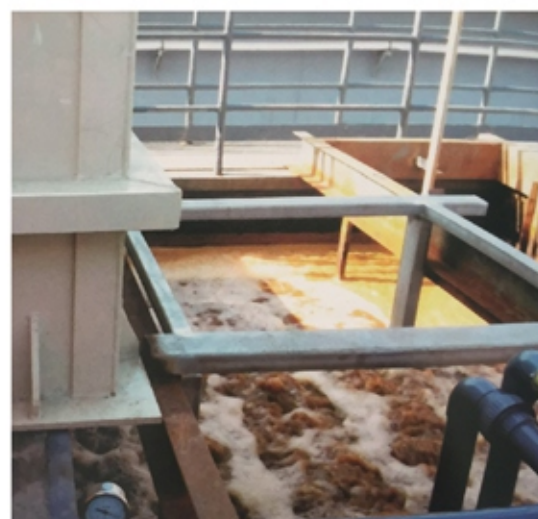
Source of water: Pharmaceutical wastewater

Processing scale: 500T/D

Water production use: Meet emission standards

Treatment process: Regulating pool+UASB

Reactor+AO+MBR



附: MBR软片膜流量设计参考值(一般按照每天20小时运行计算)

MBR film membrane design flow(usually calculated according to 20 hours working per day)

污水类型Sewage type	通量设计Design Flow(L/D/m ²)
生活污水Domestic sewage	500-600
一般污水General sewage	360-400
印染废水Printing and dyeing wastewater	300-360
医药废水Medical wastewater	200-300
高浓度废水High concentration wastewater	150-200

备注: 以上所给参考数据是指污水的前期生化处理已符合国家环境保护标准HJ2010-2011规定的进膜处理的条件, 否则会造成膜通量达不到设计要求。

Remarks: the above reference data refer to the prophase biochemical treatment of sewage, which has met the requirements of the national environmental protection standard HJ2010-2011 for membrane treatment. Otherwise, the membrane flow will not meet the design requirements.

◎ 其它部分工程应用 Other engineering case

使用单位名称 Customer name	使用单位地址 Address	使用膜面积 Use membrane area	日产水量 Water yield per day	应用工艺 (MBR/超滤SMF) Applied process	污水类型 Sewage type
广汉某垃圾填埋场 A landfill in Guanghan	四川广汉 Sichuan, Guanghan	900m ²	120T/D	MBR	垃圾渗透液 Waste leachate
湖北随州某垃圾填埋场 A landfill in Hubei Suizhou	湖北随州 Hubei, Suizhou	1350m ²	220T/D	MBR	垃圾渗透液 Waste leachate
成都逸名环保	成都宜宾	1250m ²	200T/D	MBR	垃圾渗透液 Waste leachate
外蒙古某旅游景区 A tourist attraction outside Mongolia	外蒙古 Outer Mongolia	187.5m ²	80T/D	MBR	生活污水 Domestic sewage
广州某电镀废水 Guangzhou electroplating factory	广东惠州 Guangdong, Huizhou	3762.5m ²	1600T/D	超滤	电镀废水 Electroplating wastewater
浙江衢州永和氟化工 Yonghe Chemical Co., Zhejiang, Quzhou	浙江衢州 Zhejiang, Quzhou	2400m ²	2000T/D	超滤	化工废水 Chemical wastewater
四川高通环保	四川江油	21500m ²	12000T/D	MBR	市政污水 Municipal Sewage
浙江弘晨印染	浙江长兴	3125m ²	1000T/D	超滤	印染废水 Application in printing and dyeing
浙江金牛印染	浙江织里	3750m ²	1200T/D	MBR	印染废水 Application in printing and dyeing
浙江三友印染	浙江湖州	4688m ²	1500T/D	MBR	印染废水 Application in printing and dyeing
浙江台州皮革厂	浙江台州	2000m ²	600T/D	MBR	皮革废水 Leather wastewater
浙江银江环保	浙江安吉	275m ²	100T/D	MBR	农家乐废水 Agritainment wastewater
江西梦湖山庄	江西九江	250m ²	100T/D	MBR	旅游景点废水 Tourist attractions wastewater
浙江永港	云南	几十家旅游景点MBR一体化装置			

IPUF软片膜部分客户Some IPUF Film membrane customers

福建环亚食品有限公司	四川大学	云南格普环境工程有限公司
浙江青草地环境科技有限公司	四川诺宜生药业有限公司	成都科航环保机电技术研究所
上海晨奕环保科技有限公司	云南简澜环保科技有限公司	无锡中天固废处置有限公司
四川省阳子森环保设备有限公司	厦门中湛环境设备有限公司	四川遂宁好川油脂厂
棉遂高速遂宁东服务区	云南大理双廊客栈	四川江油某卫生院污水
北京博汇特环保科技有限公司	上海艾格环境工程有限公司	成都森矾商贸有限公司
广州恒德环保	江苏金润环保	晋中康正环保
昆明金泽环保	深圳大中环保	宜兴碧水环保
浙江永湛	杭州吉宇环保	江苏微水
南京清元景和	湖州圆融	江苏威达
厦门国净环保	浙江佳美	长沙沃恩环保
浙江埃克态环保	青岛思普润	四川逸名环保
扬州市建设安装	珠海绿水环保	兰州凯萨诺

企业愿景

Huzhou Dingtai Film Membrane Technology Co.,Ltd.

ENTERPRISE VISION

净水让环境更美好！

Better Water, Better Environment

