TEST CONDITIONS | 测试条件

序号 Serial number	元件类型 Component type	标准溶液 Standard solution	压力 Pressure		温度 Temperature	PH	回收率 Recovery rate	测试时间 Testing time
		PPM	PSI	MPa	℃		%	分钟后 Minutes later
1	苦咸水膜 Brackish water membrane	NaCl: 2000	225	1.55	25	6.5-8.5	15	30
2	低压节能膜 Low pressure energy saving membrane	NaCl: 1500	150	1.03	25	6.5-8.5	15	30
3	海水淡化膜 Sea water membrane	NaCl: 32800	800	5.5	25	6.5-7.0	8	30
4	N40膜 N40 membrane	NaCl、$MgSO_4$、$MgCl_2$: 500	73	0.5	25	6.5-7.0	15	30
5	N70膜 N70 membrane	NaCl、$MgSO_4$、$MgCl_2$: 500	109	0.75	25	6.5-7.0	15	30

COMPARISON OF DRY MEMBRANE ELEMENTS WITH WET MEMBRANE ELEMENTS 干式膜元件与湿式膜元件的对比

蓝星（杭州）膜工业有限公司生产的是干式膜元件，正常情况下，干膜出厂前100%进行性能测试后，才会变成湿膜。
Dry membrane component is the product of BHM. Under normal conditions, the dry membrane will turn into a wet membrane after 100% performance test.

	存储温度 Storage temperature	保护液要求 Protection fluid requirements	滋生微生物 Breeds microbes	包装与运输 Packaging and transportation
湿法生产的膜元件 Wet membrane production	0-45℃	1%SMBS/90天 1% SMBS / 90 days	保护液失效时容易滋生 Protection fluid failure is easy to breed	重、且有液体 Heavy, with liquid
干法生产的膜元件 Dry membrane production	< 45℃	无 No	真空环境不易滋生 Vacuum environment is not easy to breed	轻便 Light

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Web：www.bhmem.com
Production base：602 Shun Feng Road，Qianjiang Economic Development Zone, Hangzhou

BHM　Naviblue™

卷式膜元件产品册

ROLL MEMBRANE ELEMENT PRODUCT MANUAL

蓝星(杭州)膜工业有限公司
BLUESTAR(HANGZHOU)MEMBRANE INDUSTRIES CO.,LTD

关于我们

ABOUT US

专业研发与制造
液体分离膜系列产品

Professionally R & D and manufacturing liquid separation membrane products

蓝星（杭州）膜工业有限公司坐落于杭州余杭（钱江）经济开发区，依托杭州水处理技术研究开发中心有限公司技术背景，由中国化工蓝星集团公司出资成立，是我国海水淡化技术装备制造基地，专业从事液体分离膜及水处理装备研发生产。

BHM is located in Hangzhou Yuhang (Qianjiang) Economic Development Zone, relying on the technical background of Hangzhou Water Treatment Technology Development Center Co.,Ltd., funded by BlueStar Group of CHEMCHINA, possessing the biggest desalination manufacturing and integration base, specializing in R&D and production of liquid separation membrane and water treatment equipment.

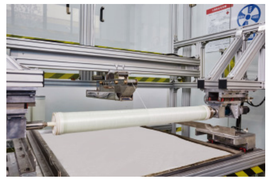
- 拥有超过三十年的膜研发及应用经验
- 拥有国内一流的膜技术专家团队
- 拥有近百项与膜相关的国内外发明及应用专利

- More than 3-decade experience in membrane research and application
- A domestic first-class membrane technology expert team
- Nearly 100 membrane patents of invention and applicationin home and abroad

MEMBRANE PRODUCT BRAND | 膜产品品牌

Naviblue™为BHM公司旗下所有工业膜产品的品牌。引进美国最先进全自动干式制膜生产线，对原有工艺包进行的升级，可最大程度的保证产品性能的长期稳定性；满足特殊项目的物流、存储等限制。

Naviblue™is the brand of all industrial membrane products owned by BHM. Introduced from US latest dry membrane production line, the original process package is updated. the performance and the long-term stability is guaranteed to the greatest extent,to meet the special items of logistics, storage and other restrictions.



膜片类型 Diaphragm type

- BH30是蓝星膜公司推出的第三代复合膜片，仍由聚酯材料的增强无纺布、聚砜材料的多孔中间支撑层、聚酰胺材料的超薄分离层组成。每一层均根据其功能要求分别优化设计与制造，可分为全芳香高交联度聚酰胺复合膜片和哌嗪类复合膜片。
- 全芳香高交联度聚酰胺复合膜片，因其结构使其具备高度的化学物理稳定性和耐久性，能够承受强烈的化学清洗；高密度的亲水性酰胺基团则使其具有高产水量和高脱盐率的综合性能。
- 通过精密界面聚合技术及对基础层的分子设计，既可提供多样性的产品，又能提高分离功能层多元结构的稳定性。用于反渗透和N90纳滤膜。
- 哌嗪类复合膜片，用于其余各类纳滤膜。通过微量的添加剂、控制分离层聚合体中哌嗪的解离程度，可以调节其对一价或二价离子的截流能力，制造出对不同盐类或溶质有选择性截流的纳滤膜，以达到选择性分离的目的。

- BH30 is the third generation of composite membrane introduced by Bluestar membrane, which is still composed of reinforced nonwoven fabric of polyester material, porous intermediate support layer of polysulfone material and ultra-thin separation layer of polyamide material. Each layer is optimized according to its funcional requirements design and manufacturing, can be divided into full aromatic high cross-linked polyamide composite membrane and piperazine composite membrane.
- All-aromatic high cross-linking polyamide composite membrane, because of its structure to have a high degree of chemical and physical stability and durability, can withstand a strong chemical cleaning; high-density hydrophilic amide group is to have high water production And high desalination rate of the overall performance.
- Through the precision interface polymerization technology and the molecular design of the base layer, can provide a variety of products, but also improve the separation of functional layer structure of the stability. For reverse osmosis and N90 nanofiltration membranes.
- Piperazine composite membrane for the rest of the various types of nanofiltration membrane. The dissociation degree of piperazine in the separation layer polymer can be controlled by the trace additive, and its ability to cut off the monovalent or divalent ion can be adjusted to produce a nanofiltration membrane with selective blocking of different salts or solutes. To achieve the purpose of selective separation.

卷式膜产品类型 Roll membrane product type

反渗透、纳滤、超滤等

Reverse osmosis, nanofiltration and so on

PRODUCT DESCRIPTION | 产品介绍

反渗透膜产品系列

ULP系列 超低压复合反渗透膜元件

能在超低的操作压力下达到和常规低压膜同样的水通量和脱盐率。运行压力约为常规低压复合膜运行压力的1/2，脱盐率大于98%。

BW系列 低压复合反渗透膜元件

主要用于苦咸水脱盐，对溶解盐、TOC、SiO_2等具有很高的去除性。低的操作压力、高的回收率和脱盐率特别适合制备高纯水，如电子、电力等行业。

SW系列 海水淡化复合反渗透膜元件

一级反渗透即可从海水中获取淡水用于饮用。具有脱盐率高、性能稳定的特点。

纳滤膜产品系列

截流分子量为150-300道尔顿（以中性分子计算），对二价和多价离子优先截流，对单价离子的截留率大小与料液的浓度和组成有关。因单价离子可以透过膜，不会产生渗透压，所以操作压力小于反渗透膜。适用于特定物质进行有选择的分离，特别是单价离子和二价离子的分离。

纳滤膜产品按截留率分类，有N90、N70和N40。

N40系列 复合纳滤40膜元件

N70系列 复合纳滤70膜元件

Reverse osmosis membrane product line

ULP Ultra low pressure composite reverse osmosis membrane components

Can achieve the same water flux and desalination rate as the conventional low-pressure membrane at very low operating pressure. Operating pressure is about 1/2 of the operating pressure of conventional low pressure composite membrane, and the desalination rate is more than 98%.

BW Low pressure composite reverse osmosis membrane element

Mainly used for brackish water desalination, the dissolved salt, TOC, SiO2 and so have a high removal. Low operating pressure, high recovery rate and desalination rate are particularly suitable for the preparation of high purity water, such as electronics, electricity and other industries.

SW Seawater desalination compound reverse osmosis membrane element

A reverse osmosis can get fresh water from the sea for drinking. With a high desalination rate, stable performance characteristics.

Nanofiltration membrane product line

The molecular weight of the shutoff is 150-300 daltons (calculated as a neutral molecule), and the intermittent rate of monovalent ions is related to the concentration and composition of the feedstock. Because the monovalent ion can pass through the membrane, does not produce osmotic pressure, so the operating pressure is less than the reverse osmosis membrane. Suitable for selective separation of specific substances, especially monovalent ions and divalent ions.

The nanofiltration products are classified according to the rejection rate, with N90, N70 and N40.

N40 Composite nanofiltration 40 membrane components

N70 Composite nanofiltration 70 membrane element

卷膜产品的命名及编号规则 The naming and numbering rules of roll membrane products

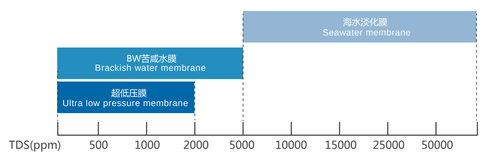
膜元件及编号规则

Membrane elements and numbering rules

选型指南 Selection Guide

成熟的反渗透膜产品，具备同类产品的相同特性，可以简单的根据进水TDS选择。

Mature reverse osmosis membrane products, with the same characteristics of similar products, can be simply selected according to the water TDS.



功能层改性技术 提升纳滤膜元件性能

Functional layer modification technology Improve the performance of nanofiltration membrane components

针对纳滤膜片涂层增性的国家课题，已通过验收。BH30纳滤膜片对涂层配组的优化，热处理工艺的改进，明显提升了膜元件性能，特别是N40。

For the national issues of nano-membrane coating of national issues, has passed the acceptance. BH30 nanofiltration membrane on the coating with the group optimization, heat treatment process improvement, significantly improved the performance of membrane components, especially the N40.

PRODUCT BASE PERFORMANCE PARAMETERS | 产品基础性能参数

反渗透系列产品性能 Reverse osmosis product performance

超低压膜 ULP

产品名称 Product name	型号 Model	尺寸 Diameter	产水量 Water purpose			脱盐率 Desalination rate		有效膜面积 Effective membrane area	
			gpd	m³/d	误差 Error	标准% Standard%	最低% Lowest%	ft²	m²
超低压膜 ULP	B-ULP-4040-2	4"	2600	9.8	±15%	99.2	98	80	7.4
	B-ULP-8040-4	8"	9500	36				400	37

苦咸水膜 BW

产品名称 Product name	型号 Model	尺寸 Diameter	产水量 Water purpose			脱盐率 Desalination rate		有效膜面积 Effective membrane area	
			gpd	m³/d	误差 Error	标准% Standard%	最低% Lowest%	ft²	m²
苦咸水膜 BW	B-BW-4040-1	4"	1900	7.4	±15%	99.5	99	75	7
	B-BW-8040-3	8"	9500	36				365	35
	B-BW-8040-4		10000	38				400	37

海水淡化膜 SW

产品名称 Product name	型号 Model	尺寸 Diameter	产水量 Water purpose			脱盐率 Desalination rate		有效膜面积 Effective membrane area	
			gpd	m³/d	误差 Error	标准% Standard%	最低% Lowest%	ft²	m²
海水淡化膜 SW	B-SW-4040-2	4"	1950	7.4	±15%	99.7	99.5	80	7.4
	B-SW-8040-3	8"	9000	34				365	35
	B-SW-8040-4		9500	36				400	37

纳滤系列产品性能 Nanofiltration series of product performance

N40（聚哌嗪类复合膜）N40 (NF)

产品名称 Product name	型号 Model	尺寸 Diameter	产水量 Water purpose			脱盐率 Desalination rate			有效膜面积 Effective membrane area	
			gpd	m³/d	误差 Error	NaCl	$MgSO_4$	$MgCl_2$	ft²	m²
聚哌嗪类复合膜 Piperazine composite membrane	B-N40-4040-2	4"	2200	8.4	±15%	40-50	>97	20-40	80	7.4
	B-N40-8040-3	8"	9500	36					365	35
	B-N40-8040-4		10500	40					400	37

N70（聚哌嗪类复合膜）N70 (NF)

产品名称 Product name	型号 Model	尺寸 Diameter	产水量 Water purpose			脱盐率 Desalination rate			有效膜面积 Effective membrane area	
			gpd	m³/d	误差 Error	NaCl	$MgSO_4$	$MgCl_2$	ft²	m²
聚哌嗪类复合膜 Piperazine composite membrane	B-N70-4040-2	4"	2200	8.4	±15%	65-75	>98	50-70	80	7.4
	B-N70-8040-3	8"	9500	36					365	35
	B-N70-8040-4		10500	40					400	37

CASE SHOW | 案例展示

A

GUANGDONG PROVINCE, A WATER REUSE PROJECT IN FOSHAN

广东佛山某中水回用项目

项目信息

- 设计处理水量：60000m³/d
- 超滤膜：PVDF-1808 ×68支/桶门单元×10桶门单元 =680支

PROJECT INFORMATION

- Designed to handle water: 60000m³ / d
- Ultrafiltration membrane: PVDF-1808 × 68 / valve unit × 10 valve unit = 680 support

工艺路线 Routing

二沉池出水 Two sinks of water → 臭氧 ozone → 砂滤 Sand filter → 超滤 Ultrafiltration → 反渗透 Reverse osmosis → 回用 Reuse

B

HEBEI QINHUANGDAO A BOILER SUPPLY WATER PROJECT

河北秦皇岛某锅炉补给水项目

项目信息

- 处理水量：3200m³/d
- 数量：PVDF-1808 ×22支/桶门单元×2桶门单元=44支

PROJECT INFORMATION

- Treatment of water: 3200m³ / d
- Quantity: PVDF-1808 ×22 pcs / valve unit × 2 valve unit = 44 pieces

工艺路线 Routing

自来水 Tap water → 机械过滤器 Mechanical filter → 超滤 Ultrafiltration → 中间水池 Intermediate pool → RO膜 membrane → 回用 Reuse

C

A DESALINATION PROJECT IN SURABAYA, INDONESIA

印尼泗水某海水淡化项目

项目信息

- 设计处理水量：24000m³/d
- 超滤膜：PVDF-1808×48支/桶门单元×6桶门单元=288支

PROJECT INFORMATION

- Designed to handle water: 24000m³ / d
- Ultrafiltration membrane: PVDF-1808 × 48 / valve unit × 6 valve unit = 288

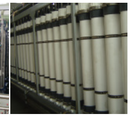
工艺路线 Routing

海水 Seawater → 絮凝沉淀 Flocculation & sedimentation → 多介质过滤器 Multi-media filter → 超滤 Ultrafiltration → 反渗透 Reverse osmosis

D

SHANDONG SHOUGUANG A PAPER WASTE WATER REUSE PROJECT

山东寿光某造纸废水回用项目



项目信息

- 设计处理水量：78000m³/d
- 超滤膜：PVDF-1508 ×84支/桶门单元× 20个桶门单元 =1680支

PROJECT INFORMATION

- Designed to handle water: 78000m³ / d
- Ultrafiltration membrane: PVDF-1508 × 84 / valve unit × 20 valve unit = 1680

工艺路线 Routing

二沉池出水 Two sinks of water → 接触氧化 Contact oxidation → 絮凝沉淀 Flocculation and sedimentation → 均质滤料 Homogeneous filter → 超滤 Ultrafiltration → 反渗透 Reverse osmosis → 回用 Reuse

BHM网站二维码

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Web：www.bhmem.com
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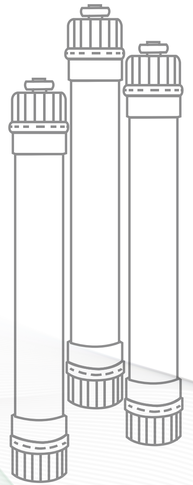
Naviblue™

BHM

中空超滤产品册

HOLLOW ULTRAFILTRATION PRODUCT MANUAL



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- A domestic first-class membrane technology expert team
- Nearly 100 membrane patents of invention and applicationin home and abroad

PRODUCT DESCRIPTION | 产品介绍

Naviblue™ PVDF系列超滤膜是一种独特的外压式中空纤维超滤膜，采用低温热致相制膜工艺(L-TIPS)，膜截留孔径为0.03微米，采用聚偏氟乙烯(PVDF)为膜丝制作原材料，具有超强的物理化学耐受性。为了满足不同水质和规模的需求，BHM可以提供3款不同级别的超滤膜产品，产品 分别为:PVDF-1508、PVDF-1808、PVDF=1808(II)。

BHM是膜法水处理领域内，经验最丰富的膜生产厂商之一，我们已经在该领域拥有超过30年的制造使用经验。

Naviblue™ PVDF series ultrafiltration membrane is a unique external pressure hollow fiber ultrafiltration membrane, using low temperature thermally induced phase film process (L-TIPS), membrane retention pore size of 0.03 microns, the use of polyvinylidene fluoride (PVDF) Silk production of raw materials, with a strong physical and chemical tolerance. In order to meet the needs of different water quality and scale, BHM can provide three different levels of ultrafiltration membrane products, products are: PVDF-1508, PVDF-1808, PVDF = 1808 (II).

BHM is one of the most experienced membrane manufacturers in the field of membrane water treatment, and we have more than 30 years of manufacturing experience in this field.

PRODUCT BASE PERFORMANCE PARAMETERS | 产品基础性能参数

产品型号 Product number	PVDF -1808	PVDF-1508	PVDF-1808Ⅱ
膜组件 Membrane modulee			
膜组膜丝材质件 Membrane membrane material	PVDF（聚偏氟乙烯） PVDF (polyvinylidene fluoride)		
制膜工艺 Membrane making process	L-TIPS（低温热致相） L-TIPS (low temperature thermally induced phase)		
膜丝内外径(内径/外径) Inner and outer diameter (inner diameter / outer diameter)	0.7 / 1.3 mm	0.7 / 1.3 mm	0.7 / 1.3 mm
膜组件面积 Membrane module area	61 m^2	50 m^2	61 m^2
性能 Performance			
公称孔径 Nominal aperture	0.03 μm		
使用材质 Use material			
膜壳材料 Membrane shell material	白色UPVC White UPVC	白色UPVC White UPVC	白色UPVC White UPVC
端盖材料 End cap material	蓝色UPVC Blue UPVC	灰色UPVC Gray UPVC	灰色UPVC Gray UPVC
使用条件 Conditions of Use			
设计产水量 Design water production	2.0-7.3 m^3/h	1.5-6.0m^3/h	2.0-7.3 m^3/h
最大进水压力 Maximum water pressure	0.3 MPa	0.3 MPa	0.3 MPa
最大跨膜压差 Maximum transmembrane pressure difference	0.15 MPa	0.15 MPa	0.15 MPa
产水方式 Water production	外压，双端出水 External pressure, double-ended water	外压，单端出水 External pressure, double-ended water	外压，双端出水 External pressure, double-ended water
使用温度 Operating temperature	5-45 ℃	5-45 ℃	5-45 ℃
常用pH范围 Common pH range	3-10	3-10	3-10
组件重量（湿重） Component weight (wet weight)	53kg	53kg	61kg

备注: PVDF-1808II和PVDF-1808的虽然膜面积、产水模式相同，但是两款膜的布水结构完全不同，前者更适用于上水领域及替换膜市场的应用，后者更适用于中水领域。

Note: PVDF-1808II and PVDF-1808 Although the membrane area, water production patterns are the same, but the two Membranes of the cloth water structure is completely different, the former is more suitable for the application of the field of water and replacement film market, which is more suitable for the Water field.

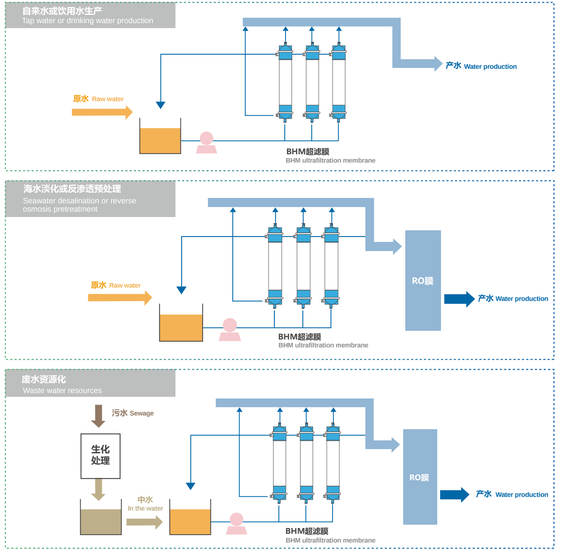
FEATURES | 产品特点

- **产水通量高**
  采用新开发的膜制造技术，有非常高的产水通量和抗污染能力。
- **使用寿命长**
  聚偏氟乙烯材质制造的膜丝，有非常高的抗酸碱性和拉伸强度。正常使用过程中，无需考虑膜材料自身引起的劣化、腐蚀引起的膜丝破裂。
- **孔径分布均匀，截留率高**
  膜丝的孔径分布均匀，不管进水水质如何波动，产水浊度可稳定维持在0.01NTU以下。
- **安装维护方便**
  PVDF系列膜组件，其合理的结构设计，可由2个人进行安装，无需其他机械辅助。
- **High water production**
  The use of newly developed membrane manufacturing technology, there is a very high water production capacity and anti-pollution ability
- **Use long life**
  Polyvinylidene fluoride film made of film, has a very high acid and alkali resistance and tensile strength. Normal use of the process, without regard to the film itself caused by the deterioration of corrosion caused by the film wire rupture.
- **Uniform pore size distribution, high rejection rate**
  The uniformity of the pore size of the filaments is stable, and the turbidity of the water can be maintained at 0.01 NTU.
- **Easy installation and maintenance**
  PVDF series membrane module, its reasonable structural design, can be installed by two individuals, no other mechanical assistance.

APPLICATION AREAS | 应用领域

PVDF系列超滤膜适用于各种用途的水处理

PVDF series of ultrafiltration membrane for a variety of uses of water treatment



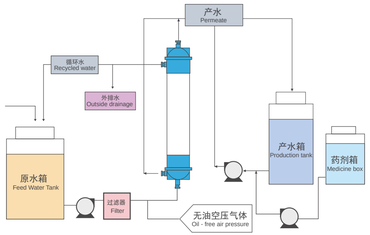
Naviblue™超滤系统应用特点

- 高品质的产水水质，产水水质稳定，不含SS和细菌，可提高RO系统的运行稳定性。
- 适用于更广泛的原水，预处理无需投加药剂，可处理更广泛、更复杂的原水。
- 维护运行简单，自动化运行程度高，维护更简单。
- 占地面积小、运行成本低、使用寿命长、耐腐蚀性强。

Naviblue™Application characteristics of ultrafiltration system

- High-quality water quality, water quality and stability, without SS and bacteria, can improve the stability of RO system operation.
- Applicable to a wider range of raw water, pretreatment without the need for dosing, can handle a wider, more complex raw water.
- Maintenance is simple to run, the operation of a high degree of automation, maintenance easier.
- Small footprint, low operating costs, long service life, strong corrosion resistance.

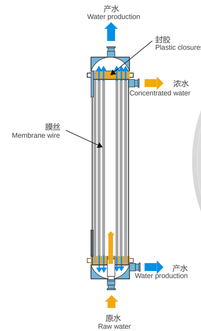
FLOW CHART | 工艺流程图



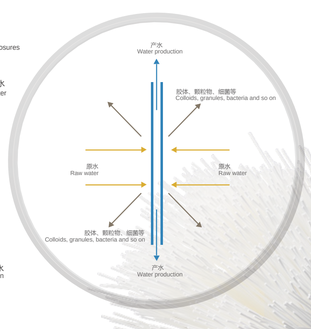
CMF应用介绍

- 连续膜过滤系统（CMF）是以中空纤维超滤膜为核心，被处理液体以一定的流速通过膜表面，水分子以及部分可溶性物质透过膜，细菌、微生物和悬浮物等杂质被膜截留，从而达到净化和分离的目的。CMF系统除了高性能的中空纤维超滤膜以外，结合独特的气水双洗工艺技术，配以特殊的管路阀门设计，形成一个闭路的连续膜过滤操作系统。
- Continuous membrane filtration system (CMF) is the hollow fiber ultrafiltration membrane as the core, the treated liquid at a certain flow rate through the membrane surface, water molecules and some soluble substances through the membrane, bacteria, microorganisms and suspended matter and other impurities deposited, so To achieve the purpose of purification and separation.CMF system in addition to high-performance hollow fiber ultrafiltration membrane, combined with a unique gas-water double wash technology, coupled with a special pipeline valve design, the formation of a closed-circuit continuous membrane filtration operating system.

PRODUCT WORK DIAGRAM | 产品工作示意图



过滤示意图
Filter schematic



膜丝过滤示意图
Filtration of membrane wire