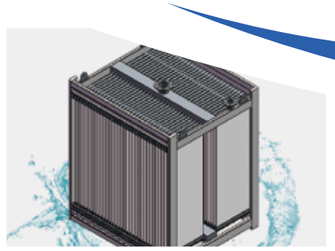
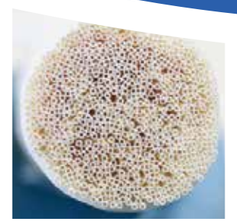
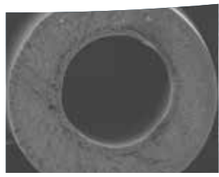
PRODUCT MANUAL

Owcycle Membrane Technology (Tianjin) Co., Ltd.







Owcycle Membrane Technology (Tianjin) Co., Ltd.

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Phone: +86-15302166300

Website: www.owcycle.cn

Professional production base for industrial water treatment membrane products

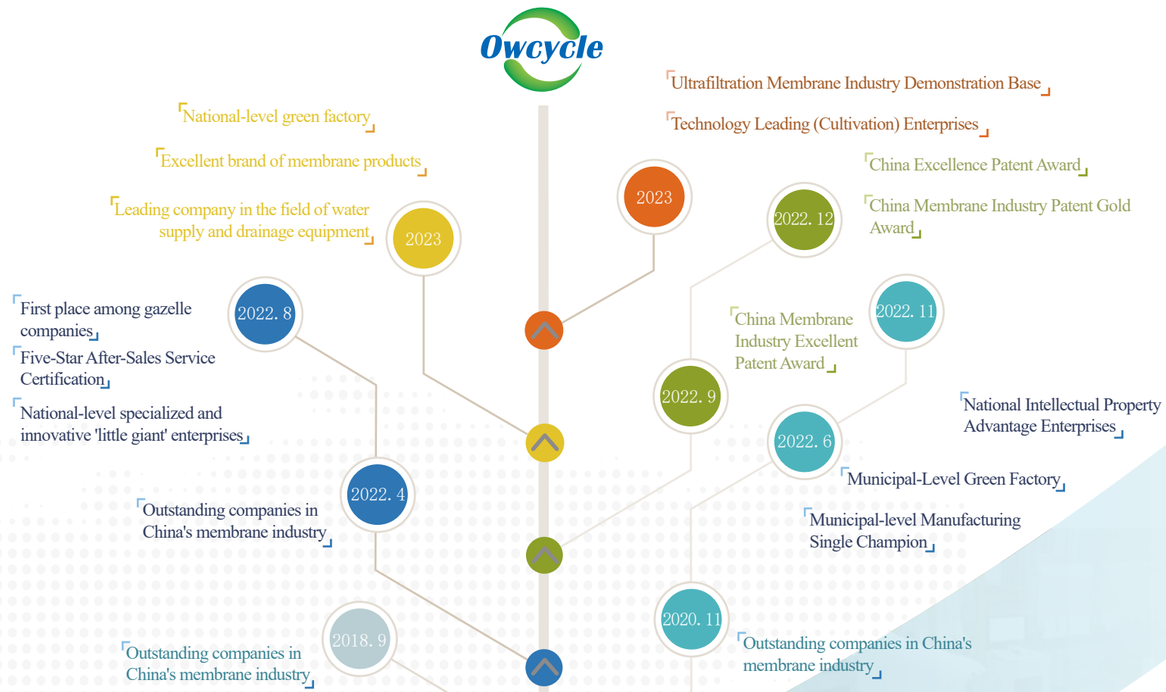
Production capacity:

MBR&UF:20 million m²/year

RO & NF :19 million m²/year

Owcycle leverages its strong capabilities to deeply develop standardized, intelligent, and internationalized industrial water treatment membrane products throughout the entire process of production, supply, and after-sales service. The company leads with its powerful product supply capacity, maximizing the satisfaction of the industrial market's wastewater treatment needs and making a significant contribution to the development of industrial wastewater treatment.

HONOR CERTIFICATION



Owcycle 奥赛科

Company Introduction

OWCYCLE Membrane Technology (Tianjin) Co., Ltd., a member of CCCG, was established in 2014 with a registered capital of 150 million yuan and covers an area of 90 acres. OWCYCE is devoted to R&D, comprehensive utilization, and industrialization of new MF/UF membrane materials for green and sustainable development. It actively carries out low-carbon green technology, and awards as National High-Tech Enterprise, National Specialized and Innovative 'Little Giant' Enterprise, Managing Director of MICA (Membrane Industry Association of China). It has developed more than 100 innovative products and technologies, and are widely used in petrochemical, coal chemical, electronics, new energy, animal husbandry, metallurgy and other industrial sewage treatment fields. It has developed into one of the world's first-class manufacturers and suppliers of water treatment membrane products.

- National Specialized and Innovative 'Little Giant' Enterprise
- MICA Patent Golden Award
- Tianjin Gazelle Enterprise
- Tianjin Science and Technology Leading (Cultivation) Enterprise
- Tianjin Manufacturing Industry Individual Champion
- Tianjin Top 100 Science and Technology Enterprises

Technology platform and R&D achievements

100+

Patents & Awards

Green and sustainable technology, R&D of advanced membrane materials

Since its establishment, OWCYCLE focuses on promoting the high-quality development of the membrane industry, continuously accelerates the research of original and leading membrane technologies, carrying out comprehensive utilization and industrialization of new UF membrane materials for green and sustainable development, with nearly 100 patented technologies and excellent R&D strength and innovation capabilities.

Meanwhile, OWCYCLE adopts advanced integrated production technology features in high degree of automation, and has a complete production, quality and application evaluation system, with an annual production capacity up to 20 million m2, and its market share ranks in the forefront of the industry.

30%

Increase in operating flux

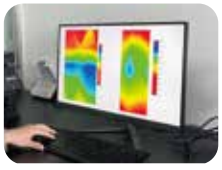
50%

Maintenance costs reduced

Upgradation brings efficient economy

OWCYCLE has successfully completed the technical upgrade of the core products in the mature technology by using "an RF membrane curtain forming equipment and preparation method". Meanwhile, based on the patented technology, it has launched a new generation of high-efficiency membrane unit, which the flux increases by 30% and maintenance cost reduces by 50%. It plays as an important role in improving the overall level and strength of membrane technology in China and even in the world.


Through a professional team and advanced equipment, from raw material selection to process analysis, we can solidly promote product innovation and process improvement.

Using rich project experience and computer simulation technology, from theory to practice, we continue to improve product performance and practicability.


Based on a number of pilot bases and intelligent data analysis systems across the country, we continue to explore new application scenarios from municipal to industrial.

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Curtain Typed MF Membrane Elements

Product Overview

OWCYCLE MBR curtain typed MF membrane modules adopt reinforced PVDF hollow fiber Microfiltration (MF) membrane, feature in high strength, large flux and strong adaptability. The elements utilize a new generation of fiber alignment technology, feature in highly fouling resistance. The membrane device systems have a high degree of integration, high filling density, stable water quality, and simple installation and use. The modules can be applied to municipal/industrial sewage treatment, high-concentration organic wastewater treatment and other fields.

Stable performance:

PVDF has stable chemical properties, uniform pore size of fiber and unique root protection technology to ensure long-term stability.

Low energy consumption:

The operating pressure is smaller and the energy consumption is lower compared with UF membranes.

Long life service:

Adopt high-quality MF membrane fiber and advanced fiber alignment technology, reduce the risk of hollow fiber breakage, fouling resistance and long service life.

Wide range of application:

Widely used in municipal sewage, industrial sewage etc.

Representative case

An oil-containing wastewater treatment plant in Dongying, Shandong

- Processing capacity: 10,000 tons/day

A sewage treatment plant in Xining City

- Throughput: 100,000 tons/day

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Specifications and Parameters

Model		OM-E-11/17/22	OM-H-35	OM-G-35	OM-K-31.6/34.4/40	OM-J-35	OM-Q-45
Applicable range		Municipal sewage, industrial wastewater or other sewage treatment					
Type		Hollow fiber curtain typed					
Dimensions		535*45*1055 /1555/2055	825*42*2360	720*50*2152	844*49*2198	870*50*2223	867*50*2150
Membrane area (㎡)		11/17/22	35	35	31.6/34.4/40	35	45
Membrane pore size (um)		0.1					
Fiber diameters (mm)		1.0/2.0					
Material	Material	PVDF					
	Sealing	Polyurethane resin					
	Injection molded parts	ABS					
	Support bars						SUS304 /SUS316L
Operating condition	Average designed flux (LMH)	15-25					
	Recommended temperature (℃)	10-35					
	Max. pH tolerance range	2-12					
	Recommended pH range	6-9					

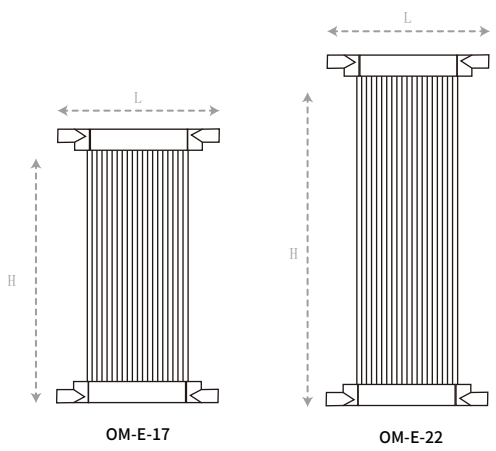
Note 1: Products can be designed according to customers' needs.

Note 2: The influence of environmental factors such as inlet water quality, operating process, and temperature need to be considered.

Product Packaging Information

Membrane module model	Single piece weight (kg)	External dimensions (L*W*H/mm)
OM-E-17	8	535*45*1555
OM-E-22	11	535*45*2055

Note: For specific details on other models, please consult sales.



OM-E-17 OM-E-22

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Submerged Curtain Typed UF Membrane Elements

Product Overview

The submerged curtain typed UF membrane element adopt reinforced PVDF hollow fiber Ultrafiltration (UF) membrane, controlling the micro-pore structure of the membrane finely with smaller pore size and higher precision, and further improves the quality of produced water. It can stably remove impurities, suspended solids, E. Coli, algae and other microorganisms in raw water.

High effluent quality:

High precision with 0.04μm small pore size, better interception performance, higher water quality.

Long life service:

Adopt high-quality UF membrane fiber and advanced fiber alignment technology, reduce the risk of hollow fiber breakage, fouling resistance and long service life.

Stable performance:

PVDF has stable chemical properties, uniform pore size of fiber and unique root protection technology to ensure long-term stability.

Wide range of application:

Widely used in municipal recycling water, industrial reclaimed water reuse and pre-treatment of RO etc.

Representative case

A coal mine water renovation and expansion project in Ningxia

- Processing volume: 10,000 tons/day

A water treatment plant of a coal-to-ene demonstration project in Inner Mongolia

- Processing volume: 108,800 tons/day

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Specifications and Parameters

Model		OU-E-11/17/22	OU-H-35	OU-G-35	0U-K-31.6/34.4/40
Parameters	Material	PVDF			
	Fiber diameters (mm)	1.0/2.0			
	Membrane area (m²/piece)	11/17/22	35	35	31.6/34.4/40
	Pore size (μm)	0.04			
Operating condition	System structure	Submerged curtain typed			
	Highest suction pressure (-kpa)	65			
	Max. temperature (℃)	35			
	pH Range	2-12			
Dimension (L*W*H)		535*45*1055/1555/2055	825*42*2360	720*50*2152	844*49*2198

Application Fields


Municipal sewage

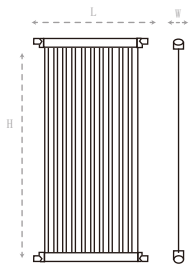

Reclaimed water


Reclaimed water reuse

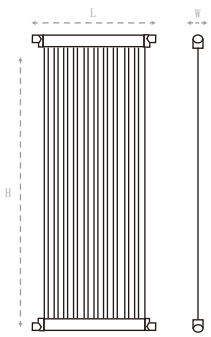

Reverse osmosis pretreatment

Product Packaging Information

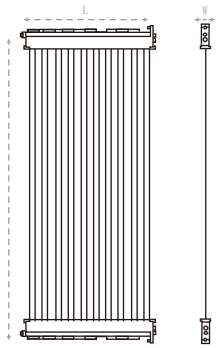
Membrane module model	OU-E-11	0U-G-35	OU-K-40
Size (mm)	535*45*1055	720*50*2152	844*49*2198
Single piece weight (kg)	28	28	32



0U-E-11



0U-H-35



0U-K-40

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Cylinder UF Membrane Modules

Product Overview

OWCYCLE ZC series cylinder UF membrane modules adopt a new generation of self-supporting PVDF hollow fiber membrane, feature in high flux and high hydrophilic. The modules utilize an external pressure structure, which can be operated at the dead end or cross-flow, and can be applied in high-quality water treatment fields such as drinking water treatment, industrial zero discharge, and seawater desalination.

Uniform pore size:

High-precision self-supporting PVDF fiber with small pore size, good uniformity and high quality of yield.

Wide range of products:

With a variety of product models, can adapt to different performance and size requirements.

Long life service:

High-mechanical membrane fiber withstand repeated air flow scrubbing, and has a long life service.

Wide range of application:

The structural characteristics let it adapt to the changes in raw water quality, and the water quality has a wide range of applications.

Representative case

Zero discharge project for iron phosphate production wastewater in Lubei.

- Processing capacity: 20,000 tons/day

The upgrade project of the water plant for drainage water in a certain mine.

- Processing capacity: 50,000 tons/day

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Product Model

Model	Size	Membrane area/㎡	Transportation weight/KG
ZC-4007-A	Φ90*1225	7	15
ZC-6033-B	Φ160*1860	33	25
ZC-6038-S	Φ160*1800	38	25
ZC-6040-A	Φ160*1816	40	37
ZC-6050-A	Φ160*2330	50	45
ZC-6250-A	Φ165*2418	50	45
ZC-7055-A	Φ180*1919	55.7	40
ZC-7550-B	Φ200*1798	50	55
ZC-7870-B	Φ216*2130	70	55
ZC-7872-A	Φ216*2160	72	60
ZC-7890-A	Φ216*2160	90	60
ZC-1035-B	Φ250*965	35	40
ZC-1075-B	Φ250*1715	75	72
ZC-10105-B	Φ250*2215	105	90
ZC-1052-B(double-ended)	Φ250*1365	52	40
ZC-1078-B(double-ended)	Φ250*1833	78	72
ZC-10105-B(double-ended)	Φ250*2341	105	90
ZC-8051-B	Φ225*1860	51	48
ZC-8077-B	Φ225*2360	77	61

Specifications and Parameters

Fiber parameters	Pore size (μm)	0.03	Operating condition	Max. turbidity (NTU)	300
	Fiber diameters (mm)	0.6/1.1 or 0.7/1.3		Max. pressure (MPa)	0.30
Material	Material	PVDF		Max. temperature (℃)	40
	Sealing	epoxy resin		Average designed flux (LMH)	38-98
	Pipe material	UPVC		Max. pH tolerance range	2-12
				Operation mode	Cross-flow or dead-end filtering

Application Fields


Drinking Water Purification


Reclaimed water reuse


Seawater desalination pre-treatment


Industrial wastewater treatment

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Submerged Cylinder UF Membrane Modules

Product Overview

The submerged cyliner UF membrane modules utilize reinforced PVDF hollow fiber Ultrafiltration (UF) membrane. The elements adopt the "immersive negative suction" process, and design a uniform water and air channel, feature in strong fouling resistance, and are suitable for high-quality industrial water treatment, RO pretreatment etc.

Good stability:

Adopt high-strength enhanced fiber and fiber bunching technology, reduce the risk of hollow fiber breakage, fouling resistance and long service life to ensure long-term stability.

Modular design and easy installation:

Integrated structure of aeration and water collection. The pipeline is simplified, easy to disassemble and assemble, and it is convenient for the reconstruction and expansion for various large-scale water treatment projects.

High effluent quality:

High precision with 0.04μm small pore size, better interception performance, higher water quality.

Representative case

Ningxia coal wastewater immersion ultrafiltration membrane replacement project

- Processing capacity: 2200 tons/day

Ultrafiltration membrane element procurement project of a certain energy group in Xinjiang

- Processing capacity: 20,000 tons/day

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Specifications and Parameters

Model		DCJ-6050-II	DCJ-6050-III	DCJ-6035-IV	DCJ-6025-V
Membrane area (㎡)		50	50	35	25
Material	Hollow fiber membrane	Modification PVDF			
	Sealing resin	Epoxy resin			
	Flexible resins	Polyurethane			
	Membrane shells	ABS		UPVC	ABS
Fiber diameters (mm)		0.65/1.35		0.7/1.3	1.0/2.0
Membrane pore size (μm)		0.04			
Specifications (mm)		Φ170*2207	Φ170*2248	Φ160*1800	Φ170*2264
Transportation weight (kg)		30	30	25	20

Note: Other specifications of membrane products can be customized according to users' needs.

Operating Condition

Project	Unit	Reference range
Common flux range	L/m²·h	25-55
Operation mode	Negative suction	
Transmembrane pressure range	KPa	0-65
Highest transmembrane pressure	KPa	65
Permeate turbidity	NTU	<0.2
Water yield	≥90%	
Backwash method	Air-water backwash	
Backwash flux	L/m²·h	30-60
Backwash gas flow	Nm³/h	6-8 per element

Note: It is advisable to confirm the optimal membrane flux through experiments or consult our technical service department when selecting it for the treatment of industrial wastewater.

Application Fields

Deep treatment of wastewater

Industrial wastewater treatment

Tap water

Reverse Osmosis Pretreatment

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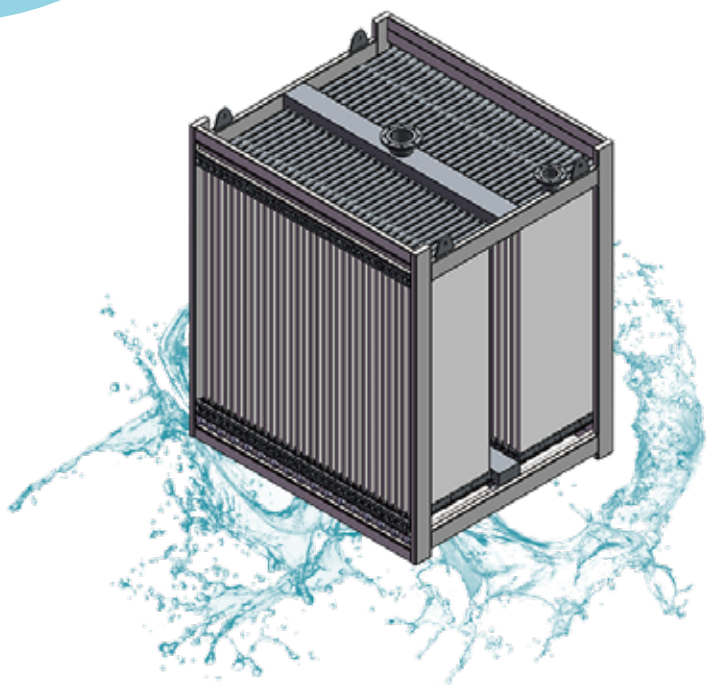
Membrane Bioreactor Unit (MBR)



Product Overview

The products adopt slot type gas collection pulse aeration technology and uniform water collection technology, result in low energy consumption. Uniform water distribution, large-scale circulation is not needed, interactive high-shear aeration structure features in strong fouling resistance; The units have the characteristics of high filling density, stable water quality and high flux, and are widely used in water treatment in different scales such as municipal and industrial industries.

Strong fouling resistance:

Automatic fiber alignment, no knot or obstructions between each fiber, which can effectively improve the fouling resistance.

Small land area:

High filling density of the membrane tank, and the retention time is less than 1h.

Long life service:

Adopt fiber-reinforced composite membrane technology, service life more than 5 years.

High effluent quality:

Uniform pore size distribution, high filtration accuracy, and effluent turbidity less than 1NTU.

Representative case

New construction project of a sewage treatment plant in Binhai New Area, Tianjin.

- Processing capacity: 10,000 tons/day

Wuhai Raw Water Pretreatment Project

- Processing capacity: 20,000 tons/day

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Specifications and Parameters

Material	PVDF	Element type	Hollow fiber curtain typed
Fiber diameters	1.0/2.0mm	Pore size	0.1μm
Breaking stress	>130N	Permeate turbidity	<1NTU
Average designed flux	15-25LMH	Purge air-to-water ratio	(6-8):1
Recommended temperature	10-35℃	Recommended MLSS	8-12g/L
Max.pH tolerance range	2-12	Recommended pH range	6-9
Max. TMP	45KPa	TMP limit	65KPa
Recommended maintenance chemical cleaning intervals	Once a week	Recommended restorative chemical cleaning intervals	Once a year

Note: The designed flux and chemical cleaning cycle are determined according to the water temperature and water quality conditions.

Product Model

Model		MBRU-OM72S-H-35-CA	MBRU-OM60S-E3-22-CA	MBRU-OM60S-E3-17-CA	MBRU-OM60S-E4-22-CA
Processing Volume (m^3/d)		1200	650	500	650
Number of element (piece)		72	60	60	60
Membrane area (m^2/piece)		2520	1320	1020	1320
Dimensions	With frame (mm)	3005*1773*3020	2425*1260*2660	2425*1260*2160	2425*1320*2660
	Without frame (mm)	2675*1773*3020	2145*1260*2660	2145*1260*2160	2145*1320*2660
Material		SUS304/SUS316L			

Note: The main material of the membrane unit is SUS304; Special specifications can be customized according to users' needs.

Application Fields

Urban wastewater treatment and resource recovery

Industrial wastewater treatment

Rural sewage treatment

Hospital wastewater treatment

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Compact MBR Wastewater Treatment Devices

Product Overview

Compact MBR wastewater treatment devices (MWD) core with advanced membrane bioreactor (MBR) technology, combine bio-degradation and membrane separation together to ensure efficient purification of wastewater. The equipments have low energy consumption, excellent effluent quality, and stably meets the first-class A standard of 'Pollutant Discharge Standard for Urban Sewage Treatment Plants' (GB 18918-2002), and can be directly reused for greening, washing and other purposes. The compact design facilitate transportation and is flexibly applicable to decentralized wastewater treatment scenarios, making an ideal solution for point-source pollution control in rural areas, communities, industrial parks etc.

Stable performance:

Excellent and stable effluent quality, strong impact load resistance

Small land area:

Highly integrated take a small land area, and convenient transportation

Intelligent:

Intelligent control on APP, remote monitoring (optional)

Modular installation, rapid deployment:

Modular structure can be combined at will, easy to install

Representative case

Expansion project of a wastewater treatment plant in Lujiang, Hefei

- Throughput: 2 sets of 500 tons/day MWD equipment

Ningjin certain wastewater treatment project

- Processing capacity: 2 sets of 500 tons/day, 1 set of 2400 tons/day underground MWD equipment.

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Ground Series-Specification and Parameters

Model	Sewage treatment capacity (t/d)	Dimensions (m)	Model	Sewage treatment capacity (t/d)	Dimensions (m)
MWD-A-10	10	2.4*1.3*2.3	MWD-A-100	100	5.9*2.5*3.0
MWD-A-20	20	3.0*1.5*2.3	MWD-A-200	200	10.8*2.5*3.0
MWD-A-30	30	3.5*2.0*2.3	MWD-A-300	300	8.1*2.5*3.0*2 sets
MWD-A-50	50	4.2*2.0*3.0	MWD-A-500	500	13.4*2.5*3.0*2 sets

Underground Series-Specification and Parameters

Model	Sewage treatment capacity (t/d)	Dimensions (m)	Model	Sewage treatment capacity (t/d)	Dimensions (m)
MWD-A-10 (U)	10	1.7*1.3*2.3 2.1*1.2*1.2	MWD-A-100 (U)	100	5.0*2.5*3.0 3.3*1.2*1.7
MWD-A-20 (U)	20	2.4*1.5*2.3 2.5*1.2*1.3	MWD-A-200 (U)	200	10.0*2.5*3.0 2.0*2.0*2.1
MWD-A-30 (U)	30	2.8*2.0*2.3 2.5*1.2*1.3	MWD-A-300 (U)	300	8.2*2.5*3.0 6.6*2.5*3.0 2.0*2.0*2.1
MWD-A-50 (U)	50	3.0*2.0*3.0 3.1*1.2*1.5	MWD-A-500 (U)	500	13.7*2.5*3.0 11.0*2.5*3.0 2.0*2.0*2.2

Inlet and Outlet Water Quality

Indicators	CODcr(mg/L)	BOD5(mg/L)	TN(mg/L)	NH3-N(mg/L)	TP(mg/L)	SS(mg/L)
Inlet	320	120	40	30	3	180
Outlet	50	10	15	5 (8)	0.5	10

Note: (1) The boundary conditions of the water quality outside the brackets are control indicators of water temperature >12°C, and the control indicators of water temperature < 12°C in brackets.
(2) Phosphorus removal system is optional.

Application Fields

Village/Town/Villa/Residential Community/Tourist Attraction

Scenic area / Ecological park

School/Office building/ Public institution

Treatment of polluted/ odorous water bodies/organic wastewater

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Applications

Seawater desalination
- FLM-SW4040-HR
- FLM-SW8040-HF (400)
- FLM-SW8040-HF (440)
- FLM-SW8040-HR (400)
- FLM-SW8040-HR (440)

Brackish water
- FLM-BW8040-FR (400)
- FLM-BW8040-FRB (400)
- FLM-BW8040-LD (400)
- FLM-BW8040-PRO (440)

ZLD liquid
- FLM-ZD-N
- FLM-ZD-FR
- FLM-ZD-HP7
- FLM-ZD-NHP

Electronics water
- FLM-BW8040-SC (400)
- FLM-BW8040-SC (440)
- FLM-ULP8040-SCLE (400)
- FLM-ULP8040-SCLE (440)

RO membrane

Low pressure
- FLM-LP4040-HR
- FLM-LP8040-HR (400)
- FLM-LP8040-HR (440)
- FLM-BW8040-LPB (400)
- FLM-BW8040-LPB (440)

Ultra-low pressure
- FLM-ULP4040-FR
- FLM-ULP4040-CHR
- FLM-ULP4040-CHF
- FLM-ULP8040-FR (400)
- FLM-ULP8040-FR (440)
- FLM-ULP8040-HR (400)
- FLM-ULP8040-HR (440)
- FLM-ULP8040-LD (400)

Extremely-low pressure
- FLM-XLP4040-HR
- FLM-XLP8040-HR (400)
- FLM-XLP8040-HR (440)
- FLM-XLP8040-HF (400)
- FLM-XLP8040-HF (440)

NF membrane

High salt rejection
- FLM-NF90-4040
- FLM-NF90-8040 (400)
- FLM-NF90-8040 (440)
- FLM-NF90G-8040 (400)

Salt separation
- FLM-NF60-4040
- FLM-NF60-8040 (400)
- FLM-NF60G-4040
- FLM-NF60G-8040 (400)
- FLM-NF60G-4040FR
- FLM-NF60G-8040FR (400)
- FLM-NF60G-8040ED (400)

Low separation
- FLM-NF30-4040
- FLM-NF30-8040 (400)
- FLM-NF30G-8040 (400)

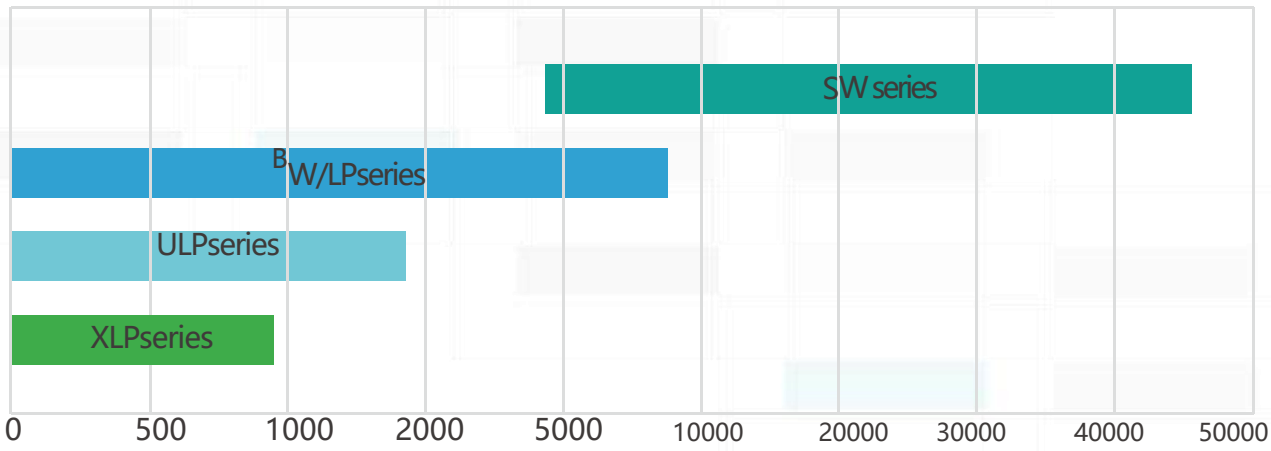
Quality Management System

Environment Management System

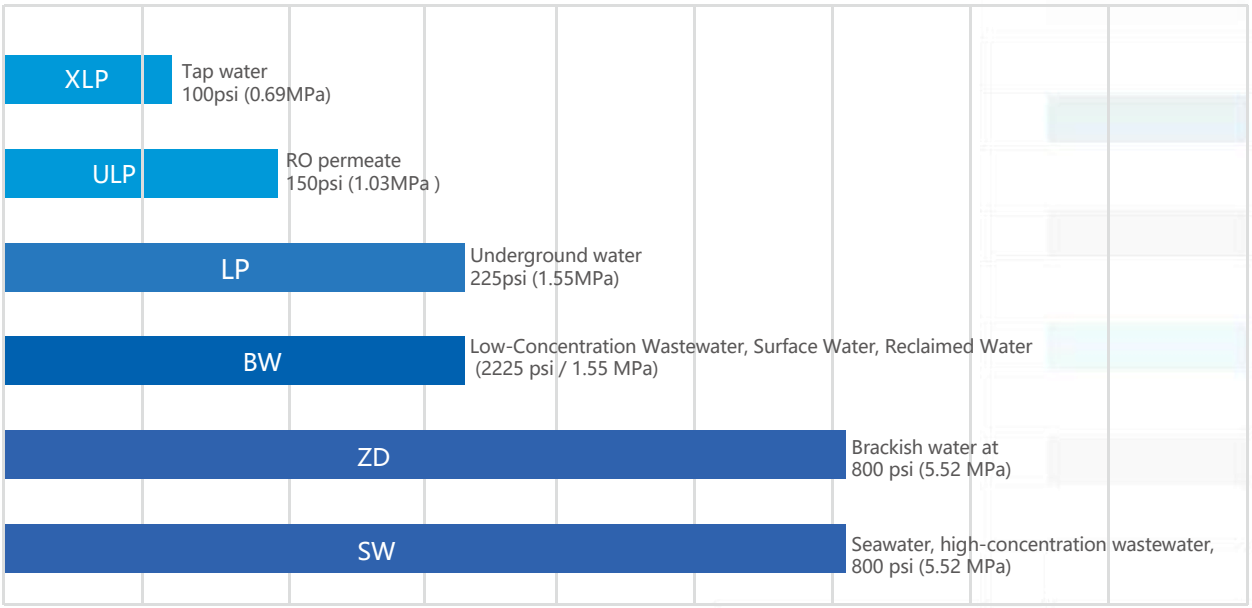
Occupational Health and Safety Management System

WOA

Selection According to Total Dissolved Solids (TDS) of Feedwater



Selection According to Feedwater Type



Highly concentrated wastewater (10,000 ppm+)

Operation Limit

Maximum Operation Pressure	1200psi (8.3MPa)
Highest Feeding Water Temperature	113°F (45°C)
Maximum Feeding Water SDI_{15}	5
Free Chloride Concentration of Feeding Wate	< 0.1 ppm
pH (feeding water in continuous operation)	2 - 11
pH (chemical clean)	1 - 13
Maximum continuous operating temperature (pH ≥ 10)	95°F (35°C)
Single Element Maximum Pressure Loss	15psi (0.1MPa)

Model	Average Permeate GPD(m^3/d)	Stable Salt Rejection /%	Effective Membrane Area/ft^2(m^2)	Boron removal rate/%	Spacer /mil
FLM-SW4040-HR	1450(5.5)	99.80	85(8)	/	28
FLM-SW8040-HF(400)	9000(34.0)	99.80	400(37)	91	34
FLM-SW8040-HF(440)	9900(37.5)	99.80	440(41)	91	28
FLM-SW8040-HR(400)	7000(26.5)	99.82	400(37)	93	34
FLM-SW8040-HR(440)	7700(29.1)	99.82	440(41)	93	28

1.Note：Individual dlement permeate productivity may vary ±15%;
2.Standard Test Conditions:
Pressure: 800psi(5.52MPa)、temperature:25℃、32000ppmNaCl、 recovery rate:8%、 pH7.5-8.0。

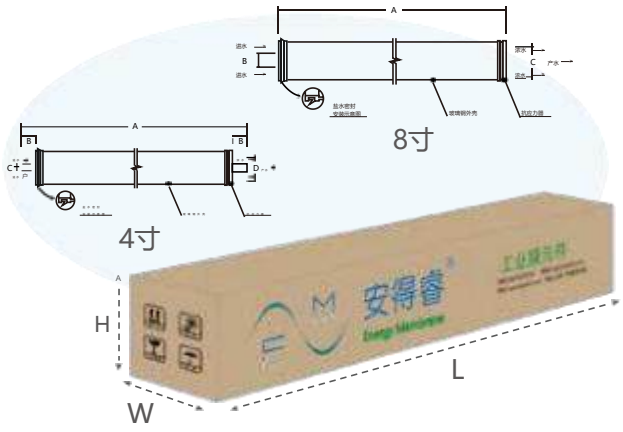
Applications

Dongjiakou seawater desalination plant capacity: 100000t/d

Shandong Lubei seawater desalination plant capacity: 100000t/d

Details

Element size （mm）	4″	A:1016 B:26.7 C:19 D：99
	8″	A:1016 B:29 C:201
Package size （mm）	4″	L:1075 W:116 H:116
	8″	L:1100 W:220 H:240



Operation Limit

Maximum Operation Pressure	600psi (4.1MPa)
Highest Feeding Water Temperature	113°F (45°C)
Maximum Feeding Water SDI_{15}	5
Free Chloride Concentration of Feeding Wate	< 0.1 ppm
pH (feeding water in continuous operation)	2 - 11
pH (chemical clean)	1 - 13
Maximum continuous operating temperature (pH ≥ 10)	95°F (35°C)
Single Element Maximum Pressure Loss	15psi (0.1MPa)

Model	Average Permeate GPD(m^3/d)	Stable Salt Rejection /%	Effective Membrane Area/ft^2(m^2)	Spacer /mil
FLM-BW8040-FR(400)	11000(41.6)	99 .75	400(37)	34
FLM-BW8040-FRB(400)	10500(39.7)	99.50	400(37)	34
FLM-BW8040-LD(400)	11000(41.6)	99.80	400(37)	34-LD
FLM-BW8040-PRO(440)	12650(47.9)	99.65	440(41)	28-LD

1.Note：Individual dlement permeate productivity may vary ±15%;
2.Standard Test Conditions:
Pressure: 800psi(5.52MPa)、temperature:25℃、32000ppmNaCl、 recovery rate:8%、 pH7.5-8.0。
FLM-BW8040-PRO(440) Pressure:150psi(1.03MPa)。

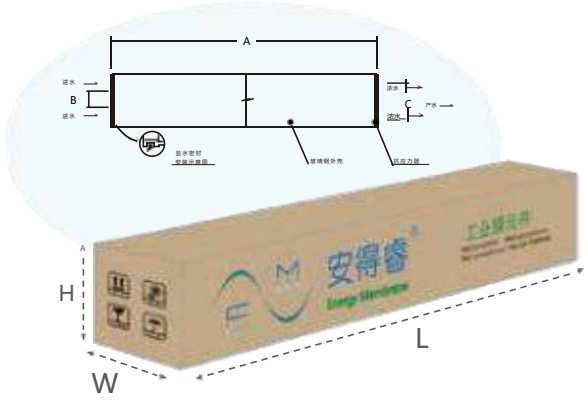
Applications

Xinjiang Coal-to-Gas Recycling Project Capacity: 36,000 m^3/d

Water Treatment Project for a Power Plant in Shanxi Province, Capacity:25,000 m^3/d

Details

Element size （mm）	8″ A:1016 B:29 C:201
Package size （mm）	8″ L:1100 W:220 H:240



Product Features

Selectivity

- greatly removes endocrine disturbance, antibiotics, disinfection by-products and other MOPs with appropriate desalination and retention of minerals;

High system recovery rate

- can be as high as 80-90%;

Low operating pressures

- between 0.3 - 0.5 Pa, 30% less than conventional membranes;

Lower operation cost

- better permeability, low desalination rate, less chemical consumption andlow operation energy consumption.

Operation Limit

Maximum Operation Pressure	365psi (2.5MPa)
Highest Feeding Water Temperature	113°F (45°C)
Maximum Feeding Water SDI_{15}	5
Free Chloride Concentration of Feeding Wate	< 0.1 ppm
pH (feeding water in continuous operation)	3 - 10
pH (chemical clean)	2 - 12
Maximum continuous operating temperature (pH ≥ 10)	95°F (35°C)
Single Element Maximum Pressure Loss	15psi (0.1MPa)

1.Note: FLM-NF30G-8040(400)
Maximum Operation Pressure: 600psi(4.1MPa)。

Model	Average Permeate GPD(m^3/d)	Stable Salt Rejection /%	Effective Membrane Area/ft^2(m^2)	Spacer /mil
FLM-NF30-4040	1900(7.2)	97.00	85(8)	31
FLM-NF30-8040 (400)	9000(34.0)	97.00	400(37)	31
FLM-NF30G-8040 (400)	9000(34.0)	97.00	400(37)	31-LD

1.Note: Individual dlement permeate productivity may vary±20%;
2.Standard Test Conditions: Pressure: 70psi(0.48MPa)、temperature:25°C、2000ppmMgS04、recovery rate:15%、pH7.5-8.0。

Applications

Beijing Cuihu New Water Source Plant Project
Capacity:20,000 m^3/d

Jiangsu Taicang Water Treatment Plant Project - Capacity:50,000 m^3/d

Operation Limit

Maximum Operation Pressure	600psi (4.1MPa)
Highest Feeding Water Temperature	113°F (45°C)
Maximum Feeding Water SDI_{15}	5
Free Chloride Concentration of Feeding Wate	< 0.1 ppm
pH (feeding water in continuous operation)	3 - 10
pH (chemical clean)	2 - 12
Maximum continuous operating temperature (pH ≥ 10)	95°F (35°C)
Single Element Maximum Pressure Loss	15psi (0.1MPa)

1.Note:FLM-NF60-4040和FLM-NF60-8040(400): Maximum Operation Pressure:365psi(2.5MPa)。

Model	AveragePermeate GPD(m^3/d)	Stable Salt Rejection /%	Effective Membrane Area/ft^2(m^2)	Spacer/mil
FLM-NF60-4040	1500(5.7)	97.50	85(8.0)	31
FLM-NF60-8040(400)	7000(26.5)	97.50	400(37)	34
FLM-NF60G-4040	1300(4.9)	98.00	80(7.4)	34
FLM-NF60G-8040(400)	6500(24.6)	98.00	400(37)	34
FLM-NF60G-4040FR	1800(6.8)	98.50	80(7.4)	34
FLM-NF60G-8040FR(400)	8000(30.3)	98.50	400(37)	34
FLM-NF60G-8040ED(400)	4800(18.2)	99.00	400(37)	31-LD

1.Note: Individual dlement permeate productivity may vary±20%;
2.2.Standard Test Conditions: Pressure: 70psi(0.48MPa)、temperature:25℃、2000ppmMgS04、 recovery rate:15%、pH7.5-8.0。
FLM-NF60G-4040FR&FLM-NF60G-8040FR(400) Pressure:110psi(0.76MPa)。

Exclusive chemical system and advanced coating technology; membrane sheet performance exhibits uniformity and stability, along with high resistance to fouling, compaction, abrasion, and chemical cleaning.

Applications

An oil platform project
Quantity: 1000 m^3/d per unit

A lactic acid purification project in Hubei
Quantity: 500 m^3/batch

Product Features

b High retention rate

对high removal rate of heavy metal ions and exceeding ions (such as Br-、NO3 -、SO42 -) inwater body with micro-pollutants;

b Strong fouling resistance performance

membrane surface is coated by special technological process to bemore hydrophilic;

b Low operation pressure

0.4 - 0.7MPa, 30% less than conventional membrane.

Operation Limit

Maximum Operation Pressure	365psi (2.5MPa)
Highest Feeding Water Temperature	113°F (45°C)
Maximum Feeding Water SDI_{15}	5
Free Chloride Concentration of Feeding Wate	< 0.1 ppm
pH (feeding water in continuous operation)	3 - 10
pH (chemical clean)	2 - 12
Maximum continuous operating temperature (pH ≥ 10)	95°F (35°C)
Single Element Maximum Pressure Loss	15psi (0.1MPa)

1.Note:FLM-NF90G-8040(400): Maximum Operation Pressure:600psi(4.1MPa)。

Model	Average Permeate GPD(m^3/d)	Stable Salt Rejection /%	Effective Membrane Area/ft^2(m^2)	Spacer /mil
FLM-NF90-4040	1600(6.0)	99.00	85(8)	28
FLM-NF90-8040(400)	8000(30.3)	99.00	400(37)	28
FLM-NF90-8040(440)	8800(33.3)	99	440(41)	28
FLM-NF90G-8040(400)	8000(30.3)	99.00	400(37)	31-LD

1.Note: Individual dlement permeate productivity may vary±20%;

2.Standard Test Conditions:
Pressure: 70psi(0.48MPa)、temperature:25℃、2000 ppmMgS04、 recovery rate:15%、 pH7.5-8.0。

Applications

Shandong Province High-Quality Drinking Water Project 600 m^3/d

Nantong water project: 50,000 m^3/d

Product Features

b High Permeate Flow

High effective membrane area, high permeate flow at low operating pressure;

▶ High Salt Rejection Rate

High cross-linking degree of aromatic polyamide, dense desalting layer, and the use of automated membrane winding technology ensure high salt rejection efficiency;

b Strong Cleaning Resistance

Capable of multiple acid and alkaline cleanings, resulting in a long service life.

Operation Limit

Maximum Operation Pressure	600psi (4.1MPa)
Highest Feeding Water Temperature	113°F (45°C)
Maximum Feeding Water SDI_{15}	5
Free Chloride Concentration of Feeding Wate	< 0.1 ppm
pH (feeding water in continuous operation)	2 - 11
pH (chemical clean)	1 - 13
Maximum continuous operating temperature (pH ≥ 10)	95°F (35°C)
Single Element Maximum Pressure Loss	15psi (0.1MPa)

Model	Average Permeate GPD(m^3/d)	Stable Salt Rejection/%	Effective Membrane area/ft^2(m^2)	Spacer/mil
FLM-LP4040-HR	2400(9.1)	99.50	85(8)	31
FLM-LP8040-HR(400)	10500(39.7)	99.70	400(37)	31
FLM-LP8040-HR(440)	11500(43.5)	99.70	440(41)	28
FLM-BW8040-LPB(400)	10500(39.7)	99.50	400(37)	31
FLM-BW8040-LPB(440)	11500(43.5)	99.50	440(41)	28

1.Note: Individual dlement permeate productivity may vary ±15%;
2.Standard Test Conditions: Pressure: 225psi(1.55MPa)、temperature:25℃、2000ppmNaCl、 recovery rate:15%、 pH7.5-8.0
。

Applications

Dongjiakou seawater desalination plant capacity: 100000t/d

Shandong Lubei seawater desalination plant capacity: 50000t/d

Operation Limit

Maximum Operation Pressure	600psi (4.1MPa)
Highest Feeding Water Temperature	113°F (45°C)
Maximum Feeding Water SDI_{15}	5
Free Chloride Concentration of Feeding Wate	< 0.1 ppm
pH (feeding water in continuous operation)	2 - 11
pH (chemical clean)	1 - 13
Maximum continuous operating temperature (pH ≥ 10)	95°F (35°C)
Single Element Maximum Pressure Loss	15psi (0.1MPa)

Model	Average Permeate GPD(m^3/d)	Stable Salt Rejection /%	Effective membrane Area/ft^2(m)	Spacer/mil
FLM-ULP4040-FR	2600(9.8)	99.50	85(8)	28
FLM-ULP4040-CHR	2600(9.8)	99.00	80(7.4)	34
FLM-ULP4040-CHF	2600(9.8)	99.00	76(7.2)	34
FLM-ULP8040-FR (400)	10500(39.7)	99.50	400(37)	31-LD
FLM-ULP8040-FR (440)	11500(43.5)	99.50	440(41)	28-LD
FLM-ULP8040-HR (400)	10500(39.7)	99.50	400(37)	31
FLM-ULP8040-HR (440)	11500(43.5)	99.50	440(41)	28
FLM-ULP8040-LD (400)	10500(39.7)	99.60	400(37)	31-LD

1.Standard Test Conditions: Pressure: 150psi(1.03MPa)、temperature:25℃、1500ppmNaCl、 recovery rate:15%、 pH7.5-8.0。

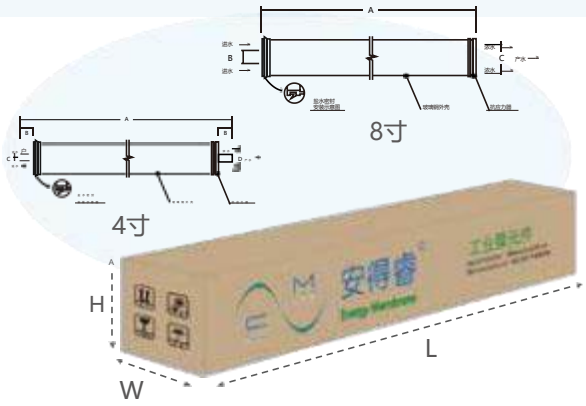
Applications

An electricity power project in Hebei 1200 m^3/d

A thermal power project in 1200 m^3/d

Details

Element size (mm)	4″ A:1016 B:26.7 C:19 D: 99 8″ A:1016 B:29 C:201
Package size (mm)	4″ L:1075 W:116 H:116 8″ L:1100 W:220 H:240



Product Features

b Exter-High Permeate

Delivers very high permeate flow even under extremely low operating pressure, saving water treatment plants equipment footprint and costs;

b Low Operating Costs

Energy saving and consumption reduction, significantly lowering system operating expenses;

b Drinking Water Safety

Ensures drinking water safety, suitable for surface water and tap water advanced treatment。

Model	Average Permeate GPD(m^3/d)	Stable Salt Rejection /%	Effective Membrane Area/ft^2(m^2)	Spacer/mil
FLM-XLP4040-HR	2600(9.8)	99.20	85(8)	28
FLM-XLP8040-HF(400)	12000(45.4)	99.00	400(37)	31
FLM-XLP8040-HF(440)	13200(50.0)	99.00	440(41)	28
FLM-XLP8040-HR(400)	11000(41.6)	99.20	400(37)	31
FLM-XLP8040-HR(440)	12100(45.8)	99.20	440(41)	28

1.Note: Individual dlement permeate productivity may vary±15%;

2.Standard Test Conditions: Pressure:100psi(0.69MPa)、temperature:25℃、500ppmNaCl、 recovery rate:15%、 pH7.5-8.0。

Operation Limit

Maximum Operation Pressure	600psi (4.1MPa)
Highest Feeding Water Temperature	113°F (45°C)
Maximum Feeding Water SDI_{15}	5
Free Chloride Concentration of Feeding Wate	< 0.1 ppm
pH (feeding water in continuous operation)	2 - 11
pH (chemical clean)	1 - 13
Maximum continuous operating temperature (pH ≥ 10)	95°F (35°C)
Single Element Maximum Pressure Loss	15psi (0.1MPa)

Applications

Shanxi coal-fired power project

1000 m^3/d

A power plant project

1800 m^3/d

Operation Limit

Model	FLM-ZD-FR/HP7	FLM-ZD-N/NHP
Highest Feeding Water Temperature	113°F (45°C)	113°F (45°C)
Maximum Feeding Water SDI15	5	5
Free Chloride Concentration of Feeding Wate	< 0.1 ppm	< 0.1 ppm
pH (feeding water in continuous operation)	2 - 11	3 - 10
pH (chemical clean)	1 - 13	2 - 12
Maximum continuous operating temperature (pH ≥ 10))	95°F (35°C)	95°F (35°C)
Single Element Maximum Pressure Loss	15psi (0.1MPa)	15psi (0.1MPa)

1.Note: Maximum Operation Pressure FLM-ZD-FR/N:600psi(4.1MPa), FLM-ZD-HP7/NHP:1200psi(8.3MPa)

Model	Average Permeate GPD(m^3/d)	Stable Salt Rejection/%	Effective membrane Area/ft^2(m^2)	Spacer/mil
FLM-ZD-FR	11000(41.6)	99.70	400(37)	34-LD
FLM-ZD-HP7	8800(33.3)	99.75	400(37)	34-LD
FLM-ZD-N	7000(26.5)	98.00	400(37)	34-LD
FLM-ZD-NHP	8000(30.3)	98.50	400(37)	34-LD

1.Note: FLM-ZD-FR & FLM-ZD-HP7 Individual dlement permeate productivity may vary±15%;
FLM-ZD-N & FLM-ZD-NHP Individual dlement permeate productivity may vary±20%;

2.Standard Test Conditions:

FLM-ZD-FR 225psi(1.55MPa) 2000ppmNaCl recovery rate:15% pH7.5-8.0 、temperature:25℃。

FLM-ZD-HP7 800psi(5.52MPa) 32000ppmNaCl recovery rate:8% pH7.5-8.0 、temperature:25℃。

FLM-ZD-N 70psi(0.48MPa) 2000ppmMgSO4 recovery rate:15% pH7.5-8.0 、temperature:25℃。

FLM-ZD-NHP 110psi(0.76MPa) 2000ppmMgSO4 recovery rate:15% pH7.5-8.0 、temperature:25℃。

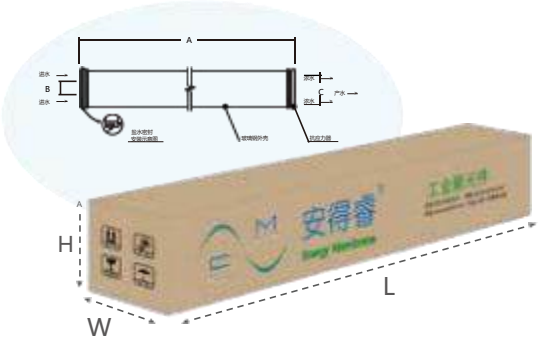
Applications

A coal-to-synthetic natural gas circulating water replenishment project 36000 m^3/d

water reuse project 50000 m^3/d

Details

Element size (mm)	8″ A:1016 B:29 C:201
Package size (mm)	8″ L:1100 W:220 H:240



Operation Limit

Maximum Operation Pressure	600psi (4.1MPa)
Highest Feeding Water Temperature	113°F (45°C)
Maximum Feeding Water SDI_{15}	5
Free Chloride Concentration of Feeding Wate	< 0.1 ppm
pH (feeding water in continuous operation)	2 -1 1
pH (chemical clean)	1 - 13
Maximum continuous operating temperature (pH ≥ 10)	95°F (35°C)
Single Element Maximum Pressure Loss	15psi (0.1MPa)

Model	Average Permeate GPD(m^3/d)	Stable Salt Rejection/%	TOC removal rate /%	Effective membrane Area/ft^2(m^2)	Spacer/mil
FLM-BW8040-SC(400)	11500(43.5)	99.60	≥95	400(37)	34-LD
FLM-BW8040-SC(440)	12000(45.4)	99.60	≥95	440(41)	28-LD
FLM-ULP8040-SCLE(400)	11000(41.6)	99.50	≥90.5	400(37)	34-LD
FLM-ULP8040-SCLE(440)	12000(45.4)	99.50	≥90.5	440(41)	28-LD

1.Note： Individual dlement permeate productivity may vary±15;

2.Standard Test Conditions:

FLM-BW8040-SC (400) FLM-BW8040-SC (440) 225psi(1.55MPa) 2000ppmNaCl 100mg/Lisopropyl alcohol，recovery rate:15% pH 7.5-8.0 25℃;

FLM-ULP8040-SCLE (400) FLM-ULP8040-SCLE(440) 150psi(1.03MPa) 1500ppmNaCl 100mg/Lisopropyl alcohol，recovery rate:15% pH 7.5-8.0 25℃。

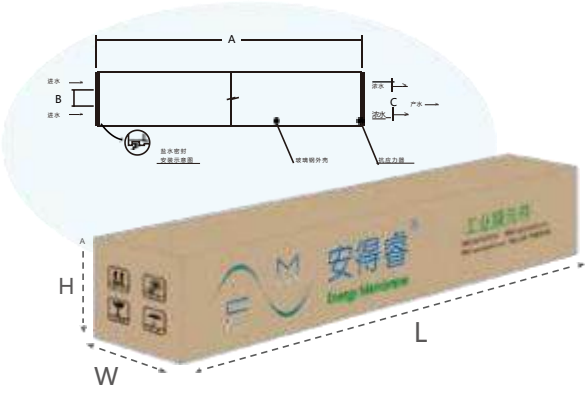
Applications

Anelectronic industry water supply
5000 m^3/d

A semiconductor company water supply project
8000 m^3/d

Details

Element size （mm）	8″ A:1016 B:29 C:201
Package size （mm）	8″ L:1100 W:220 H:240



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