HUAXIN
Innovation for water

HUA XIN Membrane

Refining Membrane Technology

PRODUCT MANUAL

XIN

CONTENTS

01 ABOUT HUA XIN

• Brand Vision

Leader of Next-Generation High-End Membrane Technology

• Brand Mission

Delivering high-end products with superior anti-fouling capability, durability, and energy efficiency to fulfill customers' core value needs, while establishing an interna-tional premium brand for global water resource circulation.

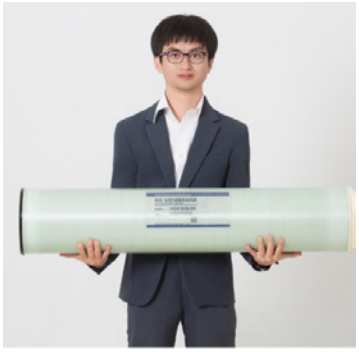
• Core Products

Reverse Osmosis (RO)/Nanofiltration (NF) Membrane Sheets
RO/NF Membrane Elements
Membrane Bioreactor (MBR) Modules
Column Ultrafiltration (UF)

Brand Introduction

HUAXIN Membrane is an international high-end separation membrane brand incubated by Tsinghua University x-lab, Tsinghua Tongfang, and Tsinghua Chuang+. Founded by a team of Tsinghua PhDs in collaboration with top R&D institutions in Europe, the Middle East, and beyond, the brand was established after decades of technological breakthroughs. Characterized by high-strength durability, high desalination rate, high flux, and low energy consumption, HUAXIN Membrane is widely applied in premium water treatment scenarios, including seawater desalination, zero-discharge treatment of high-concentration complex industrial wastewater, and high-quality drinking water production.


商标注册证



清華 空间 Tsinghua x-lab

清华同方 TSINGHUA TONGFANG

清華·创加 THU Startup Incubator

• Brand History

With decades of technological accumulation, HUAXIN Membrane was founded in 2023 by a Tsinghua PhD team in partnership with global top R&D institutions in Europe, the Middle East, etc. The brand has successfully achieved large-scale production of full-category RO/NF membrane products, including seawater desalination membranes, brackish water/anti-fouling membranes, high-quality drinking water membranes, and salt-splitting nanofiltration membranes. Through long-term application in challenging scenarios such as mine water treatment and industrial wastewater zero discharge, its products have gained high customer recognition for performance. In 2025, the Tsinghua PhD team established "Shandong Jinxin Membrane Technology Development Co., Ltd." in Jining, Shandong, and completed a high-end membrane sheet production line with independent intellectual property rights, achieving an annual production capacity of 10 million square meters.

— 2023

Decades of Technological Research

2023

Brand Creation Realization and Mass Production

2023–2025

Long-term Practical Use

2024–2025

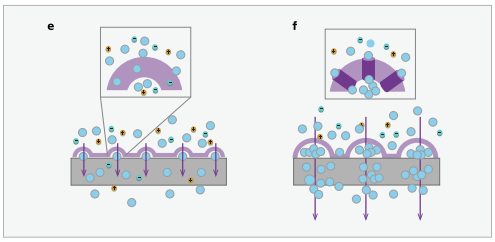
Landed in Jining, Shandong Province Scale Up Production

• Brand Honor


HICOOL
三等奖
获奖证书
第二届南通江海英才
创新创业大赛
三等奖
荣誉证书
二等奖
获奖证书
清华大学“创+”
创新创业支持孵化项目
项目名称：华信智膜
团队成员：黑生强、李祥等
一等奖
清华大学
Tsinghua University
荣誉证书
二等奖


荣誉证书
华信纳米团队：
种子组亚军
第八届清华校友三创大赛总决赛
新能源与新材料 — 种子组
华信智膜团队：
一等奖
荣誉证书
二等奖
浙江独山港经济开发区管理委员会
平湖市独山港镇人民政府
二〇二三年十月

02 CORE TECHNOLOGICAL ADVANTAGES



Professional Molecular/Nanoscale Formulation Optimization

Enables cutting-edge material and product innovation by precisely tuning the molecular or nanostructure to enhance the crosslinking degree of the polyamide functional layer, improving oxidation resistance and cleanability.

Advanced Membrane Post-Treatment Technology

Delivers exceptional performance and efficiency, ensuring long-term stability and superior functionality of our membranes.

Comprehensive and Tailored Product Optimization Solutions

We adopt an integrated membrane-grid-element optimization approach to ensure high reliability and quality across various application fields. This guarantees outstanding membrane performance with excellent anti-fouling capability and long-term durability.

- Product Lineup Complete
- Professional Customization Available
- Outstanding Durability
- Extremely high Dhemical Resistance
- Extremely high Resistance
- Excellent Performance Homogeneity

The performance of both the high-performance base membrane and the functional layer is closely tied to the manufacturing process. However, the presence of thousands of core process parameters makes it extremely challenging to identify the key factors that influence product performance and stability in large-scale production.

By combining computer simulation with extensive process engineering experiments, the Tsinghua PhD team successfully identified critical process parameters and established accurate correlations between processing conditions and membrane performance. This breakthrough effectively overcame technical barriers in the fabrication of both the base membrane and the functional layer. Through continuous optimization and upgrading of key equipment components, the precision of the slit extrusion process has been significantly enhanced. This has greatly improved the operational stability and yield of the membrane production line, providing strong support for the scalable manufacturing of high-end membrane formulations.

03 HUAXIN MEMBRANE APPLICATION FIELDS

• HUA XIN Membrane Application Fields

Zero Liquid Discharge (ZLD) of Industrial Wastewater

Development of RO membranes tailored to various industrial wastewater qualities, with a focus on anti-fouling, chemical cleaning resistance, and oxidation resistance.

High-Quality Drinking Wate

Membranes developed for different water sources, capable of removing hardness and micropollutants while retaining beneficial minerals to enhance taste.

Municipal Wastewater Reuse

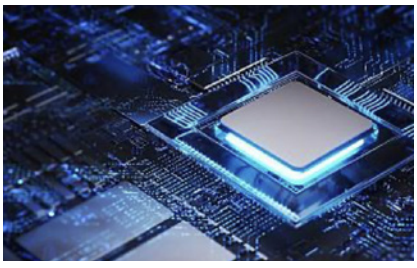
RO and NF membranes designed for various qualities of reclaimed municipal water, focusing on anti-fouling properties, high flux, and energy efficiency.

Seawater Desalination and Comprehensive Utilization

RO and NF membranes developed by HUAXIN for seawater desalination and extraction of high-value byproducts from seawater, with a strong emphasis on biofouling resistance.

Lithium Extraction from Salt Lakes

Customized reverse osmosis and nanofiltration membranes for different salt lake compositions, emphasizing high selectivity and reduced reliance on adsorbents or other auxiliary agents.



High-Purity Water for Industrial Use

HUAXIN RO membranes provide high-purity water for semiconductor, medical, and food industries, featuring high salt rejection, high flux, and low energy consumption.

04 PRODUCT SELECTION GUIDE

• HUA XIN-Selection Guidelines

Product Lineup

HX-XLP Extra Low Pressure RO Elements
HX-LP Low Pressure RO Elements
HX-BW Brackish Water RO Membranes Elements
HX-BWFR Anti-Fouling RO Membranes Elements
HX-SW Seawater Desalination RO Membranes Elements
HX-HQ High-Quality Drinking Water NF Elements
HX-BM Industrial Desalting NF Elements
HUAXIN Membrane Bioreactor (MBR)
HUAXIN Column Ultrafiltration (UF) Module

HX-BW - 8040 (4040)-400

Available Membrane Area Options
(square foot) 100、400、440

Element Sizes	Membrane Diameter(feet)	Membrane Length(inch)
8040	8.0	40
4040	4.0	40

Product Types
HX-XLP Extra Low Pressure RO Elements
HX-LP Low Pressure RO Elements
HX-BW Brackish Water RO Membranes Elements
HX-BWFR Anti-Fouling RO Membranes Elements
HX-SW Seawater Desalination RO Membranes Elements
HX-HQ High-Quality Drinking Water NF Elements
HX-BM Industrial Desalting NF Elements
HUAXIN Membrane Bioreactor (MBR)
HUAXIN Column Ultrafiltration (UF) Module

Brand Nam :HUA XIN

• HX-XLP Extra Low Pressure RO Membrane Element

Energy-Efficient, High-Flux Industrial Extra Low Pressure RO Membrane

Product Features

Delivers high permeate flow under ultra-low operating pressure, significantly reducing energy and system operation costs.

Main Applications

The XLP series RO membrane elements are suitable for feed water with salinity below 1,000 ppm, including: Food and beverage process water, Drinking water purification, Second-stage RO systems, Ultrapure water in electronics, Seawater and municipal water post-treatment.

Product Specifications

Category	Model	Effective Membrane AreaFt² (m^2)	Permeate flow GPD (m^3/d)	Stable salt rejection rate(%)
HX-XLP	XLP-4040-100	100 (9.3)	2200 (8.3)	99.0
	XLP-8040-400	400 (37.2)	9500 (35.9)	
	XLP-8040-440	440 (40.9)	10500 (39.7)	

1. Test conditions for permeate plow and salt rejection: 500 ppm NaCl, 100 psi (0.69 MPa), 77 °F (25 °C), 15% recovery, pH 7-8
2. The permeate flow rate of a single membrane element may vary within a range of ±20%.

Applied Conditions

NO.	Item	Values	NO.	Item	Values
1	Maximum Operating Pressure	4.1 MPa	5	Maximum Free Chlorine Concentration in Feed	<0.1 ppm
2	Maximum Feed Flow Rate	16 gpm (3.6 m^3/h) (4040) 75 gpm (17.0 m^3/h) (8040)	6	Continuous Operating pH Range	2~11
3	Maximum Feed Water Temperature	45 ℃	7	pH Range for Short-term Cleaning (30 minutes)	1~13
4	Maximum Feed Water SDI (Silt Density Index)	5	8	Maximum Pressure Drop per Element	15 psi (0.10 MPa)

• HX-LP Low Pressure RO Membrane Element

Energy-Saving, High-Permeate Industrial Low Pressure RO Membrane

Product Features

Excellent chemical cleaning tolerance for repeated acid and alkali cleaning cycles. Long service life and significantly reduced energy consumption under low pressure operation.

Main Applications

The LP series RO membrane elements are suitable for feed water with salinity below 2,000 ppm, including: Low-salinity deep well water, Surface water, Boiler feedwater, Brackish water. They provide high permeate flow and salt rejection at low operating pressures.

Product Specifications

Category	Model	Effective Membrane AreaFt² (m^2)	Permeate flow GPD (m^3/d)	Stable salt rejection rate(%)
HX-LP	LP-4040-100	100 (9.3)	2400 (9.1)	99.3
	LP-8040-400	400 (37.2)	10500 (39.7)	
	LP-8040-440	440 (40.9)	11500 (43.5)	

1. Test conditions for permeate flow and salt Rejection: 1.500 ppm NaCl, 150 psi (1.03 MPa), 77 °F (25 °C), 15% recovery, pH 7-8.
2. The permeate flow rate of a single membrane element may vary within a range of ±20%.

Applied Conditions

NO.	Item	Values	NO.	Item	Values
1	Maximum Operating Pressure	4.1 MPa	5	Maximum Free Chlorine Concentration in Feed	<0.1 ppm
2	Maximum Feed Flow Rate	16 gpm (3.6 m^3/h) (4040) 75 gpm (17.0 m^3/h) (8040)	6	Continuous Operating pH Range	2~11
3	Maximum Feed Water Temperature	45 ℃	7	pH Range for Short-term Cleaning (30 minutes)	1~13
4	Maximum Feed Water SDI (Silt Density Index	5	8	Maximum Pressure Drop per Element	15 psi (0.10 MPa)

• HX-BW Brackish Water RO Membrane Element

High–Rejection and High–Performance Industrial–Grade Brackish Water RO Membrane

Product Features

Low operating pressure, high permeate flow, and excellent salt rejections.
Broad pH tolerance range, strong chemical resistance, easy and effective cleaning

Main Applications

The BW series brackish water RO membrane elements are designed for feed water with salinity below 5,000 ppm. Typical applications include treatment of moderately saline deep well water, surface water, boiler make–up water, and brackish water.

Product Specifications

Category	Model	Effective Membrane AreaFt² (m^2)	Permeate flow GPD (m^3/d)	Stable salt rejection rate(%)
HX–BW	BW–4040–100	100 (8.3)	2400 (9.1)	99.5
	BW–8040–400	400 (37.2)	10500 (39.7)	
	BW–8040–440	440 (40.9)	11500 (43.5)	

1. Test conditions for permeate flow and salt rejection: 2000 NaCl (ppm), 225 psi (15.5 bar), 77 °F (25°C), 15% recovery, pH 7–8.
2. The permeate flow rate of a single membrane element may vary within a range of ±20%.

NO.	Item	Values	NO.	Item	Values
1	Maximum Operating Pressure	4.1 MPa	5	Maximum Free Chlorine Concentration in Feed	<0.1 ppm
2	Maximum Feed Flow Rate	16 gpm (3.6 m^3/h) (4040) 75 gpm (17.0 m^3/h) (8040)	6	Continuous Operating pH Range	2~11
3	Maximum Feed Water Temperature	45 ℃	7	pH Range for Short–term Cleaning (30 minutes)	1~13
4	Maximum Feed Water SDI (Silt Density Index)	5	8	Maximum Pressure Drop per Element	15 psi (0.10 MPa)

• HX-BWFR Anti-fouling RO Membrane Element

High desalination and high performance industry standard contamination resistant reverse osmosis membrane elements.

Product Features

Low operating pressure, high pollution resistance, high water production and good desalination performance.
Broad pH tolerance, strong chemical resistance, and easy, effective cleaning.

Main Applications

The BWFR series brackish water RO membrane elements are suitable for treating feed water with salinity below 5,000 ppm, especially in high–fouling conditions such as mod–erately saline deep well water, surface water, boiler feedwater, and brackish water.

Product Specifications

Category	Model	Effective Membrane AreaFt² (m²)	Permeate flow GPD (m³/d)	Stable salt rejection rate(%)
HX–BWFR	BWFR–4040–100	100 (8.3)	2400 (9.1)	99.5
	BWFR–8040–400	400 (37.2)	10500 (39.7)	

1. Test conditions for permeate flow and salt rejection: 2000 NaCl (ppm), 225 psi (15.5 bar), 77 °F (25 °C), 15% recovery, pH 7–8.
2. The permeate flow rate of a single membrane element may vary within a range of ±20%.

Applied Conditions

NO.	Item	Values	NO.	Item	Values
1	Maximum Operating Pressure	4.1 MPa	5	Maximum Free Chlorine Concentration in Feed	<0.1 ppm
2	Maximum Feed Flow Rate	16 gpm (3.6 m³/h) (4040) 75 gpm (17.0 m³/h) (8040)	6	Continuous Operating pH Range	2~11
3	Maximum Feed Water Temperature	45 ℃	7	pH Range for Short–term Cleaning (30 minutes)	1~13
4	Maximum Feed Water SDI (Silt Density Index)	5	8	Maximum Pressure Drop per Element	15 psi (0.10 MPa)

• HX SW Seawater Desalination RO Membrane Element

High-Rejection, High-Flux, and Durable Seawater Desalination RO Membrane

Product Features

1. High salt rejection, high boron rejection, and high flux.
2. Unlike many other membrane manufacturers, no oxidative post-treatment is used to artificially boost initial performance, ensuring consistently high performance over long-term operation.
3. Effective chemical cleaning over a wide pH range (1—13).

Main Applications

The SW series seawater desalination RO membrane elements are designed for feed water with salinity above 10,000 ppm, including high-salinity deep well water, industrial brine, and seawater.

Product Specifications

Category	Model	Effective Membrane AreaFt^2 (m^2)	Permeate flow GPD (m^3/d)	Stable salt rejection rate(%)
HX-SW	SW-4040-100	100 (9.3)	1800 (6.8)	99.7
	SW-8040-400	400 (37.2)	7500 (28.4)	
	SW-8040-440	440 (40.9)	8200 (31.0)	

1. Test conditions for permeate flow and salt rejection: 32000 NaCl (ppm), 800 psi (5.5 MPa), 77 °F (25°C), 8% recovery, pH 7-8.
2. The permeate flow rate of a single membrane element may vary within a range of ±20%.

Applied Conditions

NO.	Item	Values	NO.	Item	Values
1	Maximum Operating Pressure	8.0 MPa	5	Maximum Free Chlorine Concentration in Feed	<0.1 ppm
2	Maximum Feed Flow Rate	16 gpm (3.6 m^3/h) (4040) 75 gpm (17.0 m^3/h) (8040)	6	Continuous Operating pH Range	2~11
3	Maximum Feed Water Temperature	45 ℃	7	pH Range for Short-term Cleaning (30 minutes)	1~13
4	Maximum Feed Water SDI (Silt Density Index)	5	8	Maximum Pressure Drop per Element	15 psi (0.10 MPa)

• HX-HQ High-Quality Drinking Water NF Membrane Element

High–Flux Nanofiltration Membrane for Superior Drinking Water Quality

Product Features

Effectively removes trace organic micropollutants, bacteria, and viruses from source water. Retains beneficial minerals like silica and strontium, enhancing taste and delivering premium drinking water.

Main Applications

HQ series nanofiltration membrane elements are suitable for deep purification of municipal water sourced from surface or well water, including: Hardness softening, Color and odor removal, Taste improvement.

Category	Model	Effective Membrane AreaFt² (m^2)	Permeate flow GPD (m^3/d)	Stable salt rejection rate (%)	
				NaCl	$MgSO_4$
HX–HQ	HQ–4040–100	100 (9.3)	2200 (9.1)	>90	
	HQ–8040–400	400 (37.2)	10500 (39.7)		
	HQ–8040–440	440 (40.9)	11500 (43.5)		

1. Test conditions for permeate flow and salt rejection: 2000 NaCl (ppm), 100 psi (6.9 bar), 77 ºF (25ºC), 15% recovery, pH 7–8.
2. The permeate flow rate of a single membrane element may vary within a range of ±20%.

Applied Conditions

NO.	Item	Values	NO.	Item	Values
1	Maximum Operating Pressure	4.1 MPa	5	Maximum Free Chlorine Concentration in Feed	<0.1 ppm
2	Maximum Feed Flow Rate	16 gpm (3.6 m^3/h) (4040) 75 gpm (17.0 m^3/h) (8040)	6	Continuous Operating pH Range	2~11
3	Maximum Feed Water Temperature	45 ℃	7	pH Range for Short–term Cleaning (30 minutes)	1~13
4	Maximum Feed Water SDI (Silt Density Index)	5	8	Maximum Pressure Drop per Element	15 psi (0.10 MPa)

• HX-BM Industrial Salt Separation NF Membrane Elements

High-Selectivity Nanofiltration for Salt Separation and Organic Concentration

Product Features

Retains organic compounds with molecular weight above 200 Da and divalent salts. Allows partial passage of monovalent salts, enabling precise separation.

Main Applications

The BM series nanofiltration membrane elements are ideal for applications such as: Salt and organic compound separation, Concentration of valuable solutes, Recovery of specific components in industrial processes.

Category	Model	Effective Membrane AreaFt² (m^2)	Permeate flow GPD (m^3/d)	Stable salt rejection rate (%)	
				NaCl	$MgSO_4$
HX-BM	BM-4040-100	100 (9.3)	2400 (9.1)	5~30	98
	BM-8040-400	400 (37.2)	9500 (35.9)		
	BM-8040-440	440 (40.9)	10500 (39.7)		

1. Test conditions for permeate flow and salt rejection: 2000 ppm NaCl/$MgSO_4$, 100 psi (6.9 bar), 77 °F (25°C), 15% recovery, pH 7-8.
2. The amount of water produced by a single element may vary, but will not be more than 15% lower than the value given.

Applied Conditions

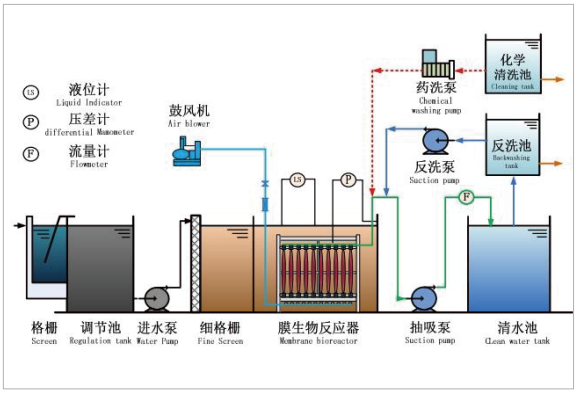
NO.	Item	Values	NO.	Item	Values
1	Maximum Operating Pressure	4.1 MPa	5	Maximum Free Chlorine Concentration in Feed	<0.1 ppm
2	Maximum Feed Flow Rate	16 gpm (3.6 m^3/h) (4040) 75 gpm (17.0 m^3/h) (8040)	6	Continuous Operating pH Range	2~11
3	Maximum Feed Water Temperature	45 ℃	7	pH Range for Short-term Cleaning (30 minutes)	1~13
4	Maximum Feed Water SDI (Silt Density Index)	5	8	Maximum Pressure Drop per Element	15 psi (0.10 MPa)

• HUAXIN Membrane Bioreactor (MBR)

HUAXIN's new MBR module uses a stainless steel frame instead of traditional plastic pipes. The spacing between membrane sheets is over 100 mm, allowing smooth backwash airflow to the top fibers, reducing fiber tangling and cleaning frequency.

Applications Fields

1. Municipal Wastewater Biological Treatment
2. Industrial Wastewater Biological Treatment



HUAXIN MBR membrane module model parameters

Treatment Capacity (m^3/d)	MBR Membrane Module Model	MBR Membrane Module Dimensions L×W×H (mm)	Number of Membranes (Piece)	Membrane Area (m^2)	
				2.0 mm outer diameter	1.0 mm outer diameter
150	HX-MBR-2020	2180×580×2400	20	400	600
200	HX-MBR-2028	2800×580×2400	28	560	480
250	HX-MBR-2034	1780×1380×2400	34	680	1020
300	HX-MBR-2042	2180×1380×2400	42	840	1260
350	HX-MBR-2048	2500×1380×2400	48	960	1440
400	HX-MBR-2054	2800×1380×2400	54	1080	1620

• HUAXIN Column Ultrafiltration Module

HUAXIN Column Ultrafiltration Features

1. Hollow Fiber Structure

High specific surface area improves membrane flux.

2. PVDF Membrane Material

Excellent chemical resistance, excellent resistance.

Application Fields

HUAXIN Column Ultrafiltration Features

Item	Unit	Specification			
		HX-UF-90	HX-UF-160	HX-UF-200	HX-UF-250
Length	mm	1192	1500	2100	1715
Shell Diameter	mm	90	160	200	250
Membrane Materia		PVDF			
Fabrication Method		NIPS			
Pore Size	nm	< 30			
Bubble Point Pressure	kPa	> 30			
Fiber Inner/Outer Diameter	mm	Inner Diameter 0.8 mm、Outer Diameter 1.2 mm			
Membrane Area		10	40	60	90
Shell Material		UPVC			
Operation Parameter	**Unit**	**Recommended Range**			
Initial Permeate Flow	t/h	≥3.0	≥5.0	≥8.0	≥10.0
Design Flux	t/h	1-2	2-3	3-4	4-5
Operating Temperature	℃	5-45			
Applied pH Range		1-14			
Full-Flow Filtration or Cross-Flow Filtration		Operating mode			

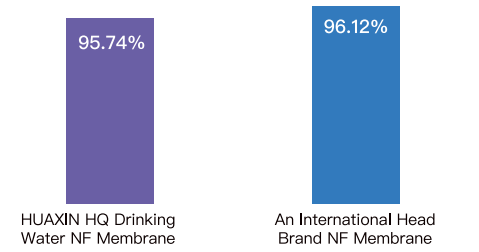
05 CLASSIC CASE

• Field Test Cases

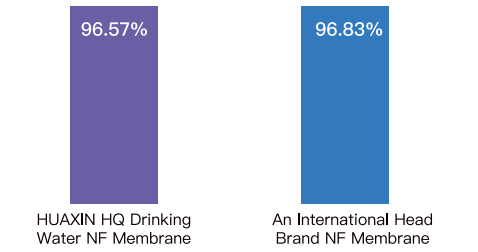
Case 1

Scenario: Highly saline groundwater in a coastal area of the Middle Eastern, with a conductivity of 6, 450 μs/cm

Comparison: HUAXIN HQ drinking water nanofiltration membrane **VS.** A leading international nanofiltration membrane brand



Comparison of desalination rate (10 bar)

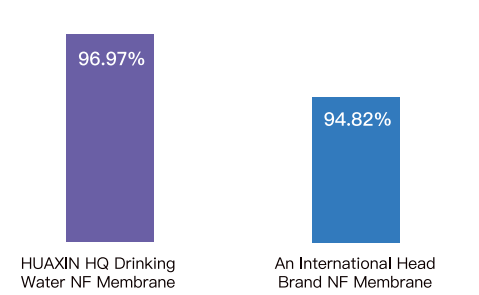


Comparison of desalination rate (15 bar)

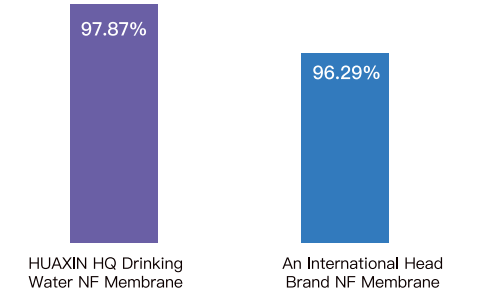
Case 2

Scenario: Groundwater in a Middle Eastern, with a conductivity of 1,998 μs/cm

Comparison: HUAXIN HQ drinking water nanofiltration membrane **VS.** A leading international nanofiltration membrane brand



Comparison of desalination rate (5 bar)

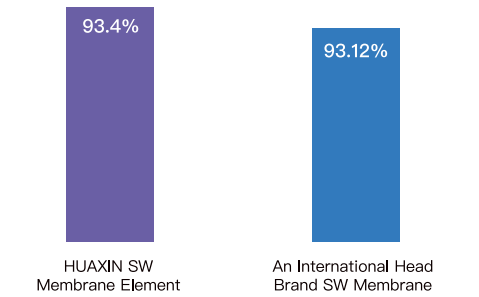


Comparison of desalination rate (10 bar)

Case 3

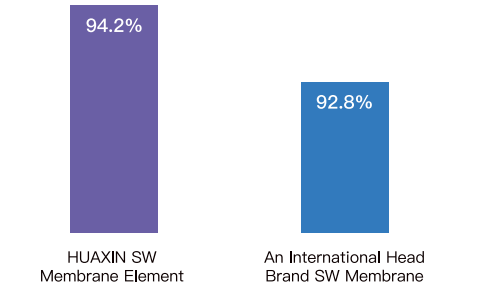
Scenario: A zero-liquid discharge system treating highly challenging landfill leachate

Comparison: HUAXIN seawater desalination RO membrane element (HX-SW-8040-400) **VS.** A leading international seawater RO membrane brand



Comparison of desalination rate

(First-stage System, Influent Conductivity: 20700 μs/cm)



Comparison of desalination rate

(Second-stage System, Influent Conductivity: 41250 μs/cm)

• Case ——Long-term Operation

High-salinity, high-hardness mine water

Zero discharge of high-salt, high-organic, and high-hardness industrial wastewater

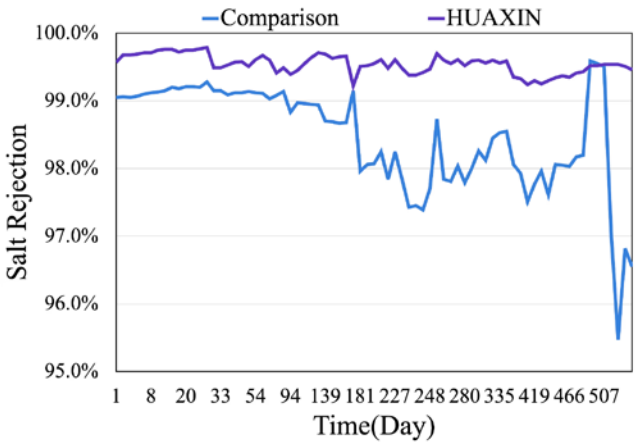



• Case 1: HUAXIN Membranes for High -Salinity Mine Water Reuse

Customer: Phase I RO System, a Mine Water Reuse Plant in Ningdong, Ningxia

Membrane Model: HUAXIN Brackish Water Anti–Pollution Membrane (HX–BWFR–8040–400)

Benchmark: A well–known domestic membrane brand



Feed Water Quality

Parameters	Concentrations (mg/L)
Ca^{2+}	1510
Mg^{2+}	1440
Na^{+}	3500
SO_4^{2-}	7300
Cl^{-}	4900
pH	7.95
TDS	14047

Operating Conditions

Parameters	Concentrations
Daily Permeate Volume	30000 tons/day
Recovery Rate	60%
First–stage RO Operating Pressure in Summer	29.1 kg
First–stage RO Operating Pressure in Winter	35.1 kg

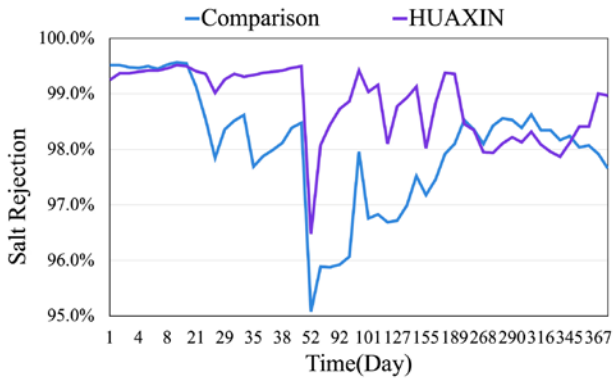
Under identical long–term operating conditions, the HUAXIN brackish water reverse osmosis membrane element (HXBW–8040–400) consistently maintained a stable salt rejection rate of approximately 99.62%, significantly higher than the 99.10% achieved by the comparative membrane during its stable performance period. During extended operation, the comparative membrane exhibited a noticeable decline in salt rejection to below 99% after high–intensity alkaline cleaning and prolonged use. In contrast, the HUAXIN membrane consistently retained high performance and stability throughout. This demonstrates the superior long–term durability and performance stability of the Huaxin membrane in harsh conditions characterized by high salinity, high hardness, severe fouling, and frequent high–intensity cleaning.

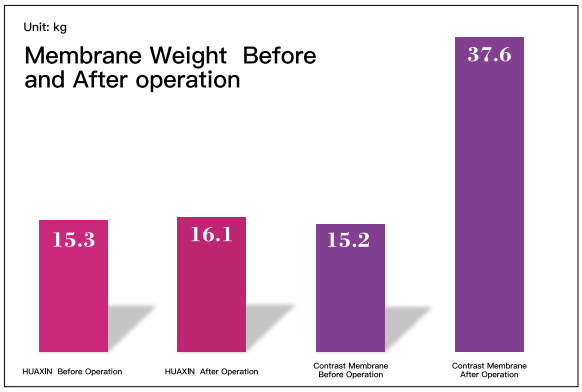
• Case 2: HUAXIN Membranes for High -Salinity Mine Water Reuse

Customer: Phase II RO System, a Mine Water Reuse Plant in Ningdong, Ningxia

Membrane Model: HUAXIN Seawater Desalination RO Membrane (HXSW–8040–400)

Comparison: a well–known Sino–American joint venture brand





In field operation using the HUAXIN seawater desalination reverse osmosis membrane element (HX–SW–8040–400), a salt rejection rate greater than 99.3% was consistently achieved under challenging conditions, including a feedwater conductivity of 40,000 μs/cm, Ca^{2+} 2,516 mg/L, Mg^{2+} 2,400 mg/L, SO_4^{2-} 12,160 mg/L, and an operating pressure of 30—35 bar. During extended operation, the Huaxin membrane demonstrated superior per–formance and stability compared to a well–known Sino–American joint venture brand. Even after multiple cycles of intensive acid and alkaline cleanings, the HUAXIN membrane main–tained high rejection and operational stability, with no significant increase in membrane weight over time. In contrast, the comparative membrane experienced continuous perfor–mance degradation and a noticeable increase in membrane weight under the same condi–tions. These results highlight the exceptional durability and long–term stability of the Huaxin membrane in harsh environments characterized by high salinity, high hardness, severe foul–ing, and frequent high–intensity chemical cleaning.

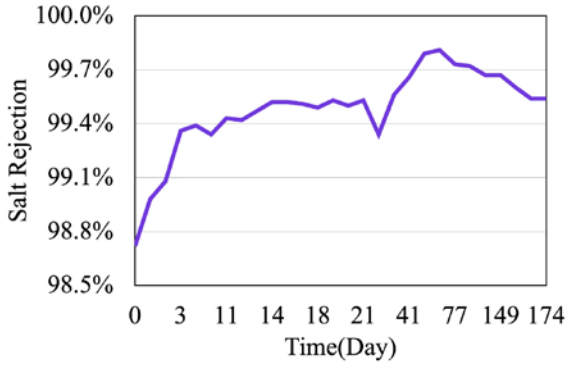
• Case 3: HUAXIN Membranes for High -Salinity Mine Water Reuse

Customer: Phase II RO System, a Mine Water Reuse Plant in Ningdong, Ningxia

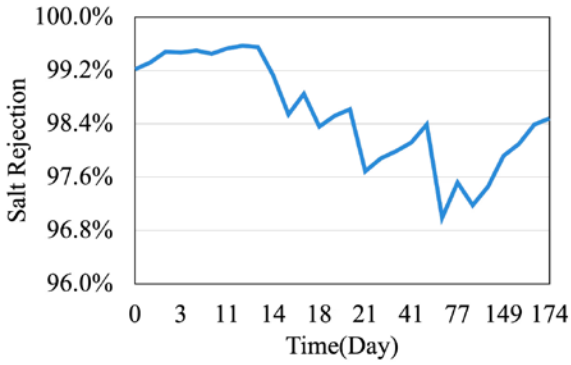
Membrane Model: HUAXIN Seawater Desalination RO Membrane (HXSW-8040-400)

Comparison: a well-known Sino-American joint venture brand

After the long-term use and highly recognized by customers, further large-scale replacement for Huaxin Membrane



HUAXIN Membrane(HXSW-8040-400)



A famous Chinese-American joint venture brand

In field operation using the HUAXIN seawater desalination reverse osmosis membrane element (HX-SW-8040-400), a salt rejection rate greater than 99.3% was consistently achieved under challenging conditions, including a feedwater conductivity of 40,000 μs/cm, Ca^{2+} 2,516 mg/L, Mg^{2+} 2,400 mg/L, SO_4^{2-} 12,160 mg/L, and an operating pressure of 30—35 bar. During extended operation, the Huaxin membrane demonstrated superior performance and stability compared to a well-known Sino-American joint venture brand. Even after multiple cycles of intensive acid and alkaline cleanings, the HUAXIN membrane maintained high rejection and operational stability, with no significant increase in membrane weight over time. In contrast, the comparative membrane experienced continuous performance degradation and a noticeable increase in membrane weight under the same conditions. These results highlight the exceptional durability and long-term stability of the HUAXIN membrane in harsh environments characterized by high salinity, high hardness, severe fouling, and frequent high-intensity chemical cleaning.

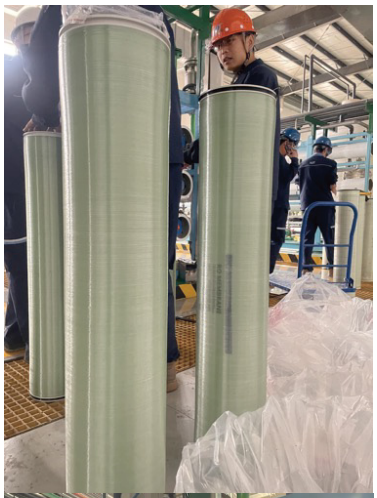
• Case 4: HUAXIN Membranes for Industrial Zero-Liquid Discharge

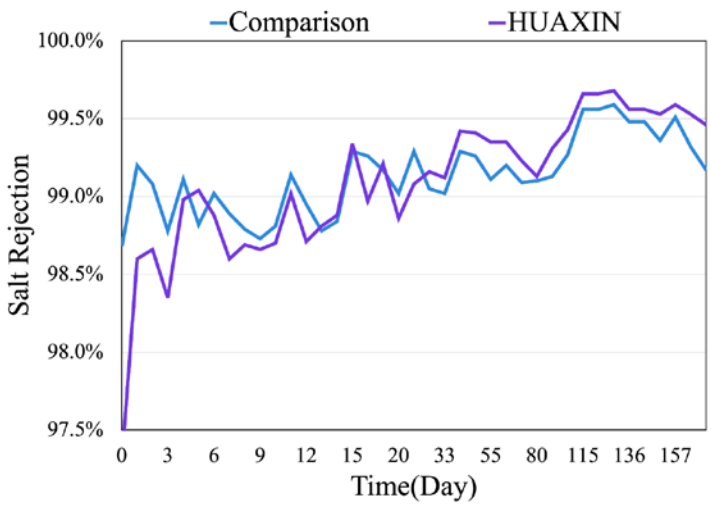
Customer: A Zero–Discharge Industrial Water Treatment Plant in Ningxia

Membrane Model: HUAXIN Seawater Desalination RO Membrane (HXSW–8040–400)

Feedwater Conductivity: ~23,000 μs/cm

Comparison: a top international brand seawater desalination membrane element





运行结论：华信膜（HXSW8040-400）[illegible]在生产运行过程中表现稳定，华信膜（HXSW8040-400）平均脱盐率为99.36%，[illegible]稳定脱盐率为99.02%，性能更优。

In field operation using the HUAXIN seawater desalination reverse osmosis membrane element (HX–SW–8040–400), under feedwater conductivity of approximately 23,000 μs/cm and operating pressure above 30 bar, the HUAXIN membrane demonstrated pro–gressively improved performance compared to a leading international brand seawater desalination membrane element. With increasing operating duration, its salt rejection rate has stabilized at a level consistently higher than that of the comparative product. These results indicate that the HUAXIN membrane performs on par with the leading international brand and even shows certain advantages in long–term use.

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