

SINAP®



Member of Multilateral



Recognition Arrangement

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**The Leading Flat Sheet
Membrane Manufacturer in China**



www.sh-sinap.com

About Us

• Our promise:

Each SINAP membrane is passed strict integrity inspection to ensure quality and reliability
Each SINAP membrane is engraved with a unique identification code for facilitate tracking the products quality.
Each SINAP membrane is the perfect combination of Innovative technology and advanced technology.
Each SINAP membrane panel is made by new raw material. Never use recycled material.

• Enterprise profile

Shanghai SINAP Membrane Tech Co., Ltd. (Brand SINAP) is jointly established by Shanghai Filter Co., Ltd, Shanghai Institute of Applied Physics of Chinese Academy of Sciences and its main technical backbones. Supported by the technology from Chinese Academy of Science, it is a high-tech enterprise integrating membrane R & D, manufacturing, and services. The main products include flat-sheet membranes for Membrane Bioreactor (MBR), spiral UF membranes and several membranes of different cut-off molecular weight.

“Better membrane, Better water” is the pursuit of SINAP. Since its foundation, SINAP unremittingly committed to the research and development of Flat Sheet Membrane, the core product of MBR wastewater treatment technology. In 2002, SINAP produced the first submerged flat sheet membrane for MBR in China, filled the domestic gap, obtained the Chinese patent and became the first flat sheet membrane manufacturer for MBR in China. In 2008, SINAP updated the flat sheet membrane to the third generation. With a number of patents for invention, SINAP always leads the development of China’s flat sheet membrane with advanced technology.

Quality is fundamental. Each flat sheet membrane of SINAP is engraved with a unique identification code for facilitate tracking the products quality. SINAP conduct 100% integrity testing on every product with stringent standard, so it has established a reputation of high quality in the field.

Using excellent quality and good service to help customers to obtain good economic and social benefits, win-win has been achieved between SINAP and its partners. The flat sheet membranes of SINAP are not only popular in China, but also are exported to Europe, America, Southeast Asia and Taiwan area. Its high quality has been recognized by international buyers. The products are applied successfully in the field of emulsified oil wastewater treatment, landfill leachate treatment, domestic sewage treatment, laundry wastewater treatment, industrial wastewater treatment and etc.

SINAP membrane history

• 2002	• 2002 SINAP developed the first Flat sheet membrane in China filling this blank in China
• 2003	• 2003 SINAP first commerce application is built in Shanghai city hotel (laundry wastewater)
• 2008	• 2008 SINAP first use ultrasonic welding technology and CNC in China. This made the SINAP membrane reach international advanced level
• 2009	• 2009 SINAP first applied in thousand tons wastewater project: Shanghai BAOSTEEL emulsified oil wastewater 3840m³/d
• 2010	• 2010 Upgrade welding to whole welding process and began to bulk export SINAP got “national key environmental protection practical technology”
• 2011	• 2011 SINAP got “National key New Product”
• 2012	• 2012 The biggest export project of Flat sheet membrane in China “TOYOTA Thailand” 9000m² membrane area
• 2013	• 2013 HUIYUAN JUICE Beijing factory 4000m³/day industrial wastewater
• 2014	• 2014 SINAP become Standing director of Chinese membrane association
• 2015	• 2015 Total export amount Break 10 million USD
• 2016	• 2016 SINAP move into new manufacturer plant and upgrade to full automatic process.SINAP got the highest "AAA" Enterprise Creditevaluation

Structure and Characteristics of SINAP FS membrane



• SINAP Flat Sheet Membrane Elements

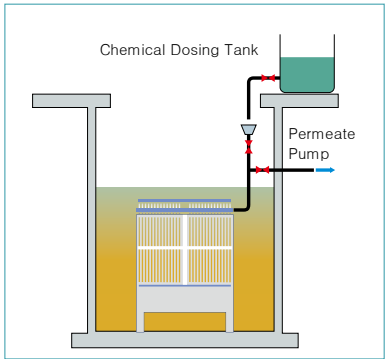
Membrane Elements Type	SINAP150	SINAP80	SINAP25	SINAP10
Effective Membrane Area(m ²)	1.50	0.80	0.25	0.10
Size:W*H*T (mm)	490×1750×7	490×1000×7	340×470×7	220×320×6
Weight (Kg)	5.5	3.2	0.8	0.4
Pore Diameter (μm)	< 0.10			
Membrane Material	Polyvinylidene Fluoride (PVDF)			
*Flux [Litre/ (Pc*Day)]	600~800	320~480	100~150	40~60
Aeration Volume [Litre/(Pc*Min)]	≥10	≥10	≥8	≥6
pH	3~12			
Effluent Turbidity [NTU]	< 1.0			
Effluent [SS]	≤5			

* Wastewater from different sources, flux may be distinguishing greatly, Adequate tests are necessary for different users, The parameters in the table is based on the test in MBR, with a single panel of membrane, is applied in the treatment of urban domestic wastewater at 25℃ and operation pressure -10KPa.

• In-Situ Chemical Cleaning

Longer cleaning cycle
more than **3** months

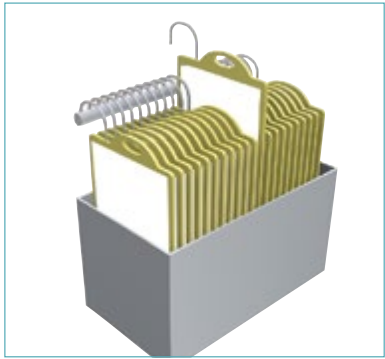
You can clean the membrane elements in-situ with chemicals such as sodium hypochlorite for organic fouling or oxalic acid for inorganic fouling.



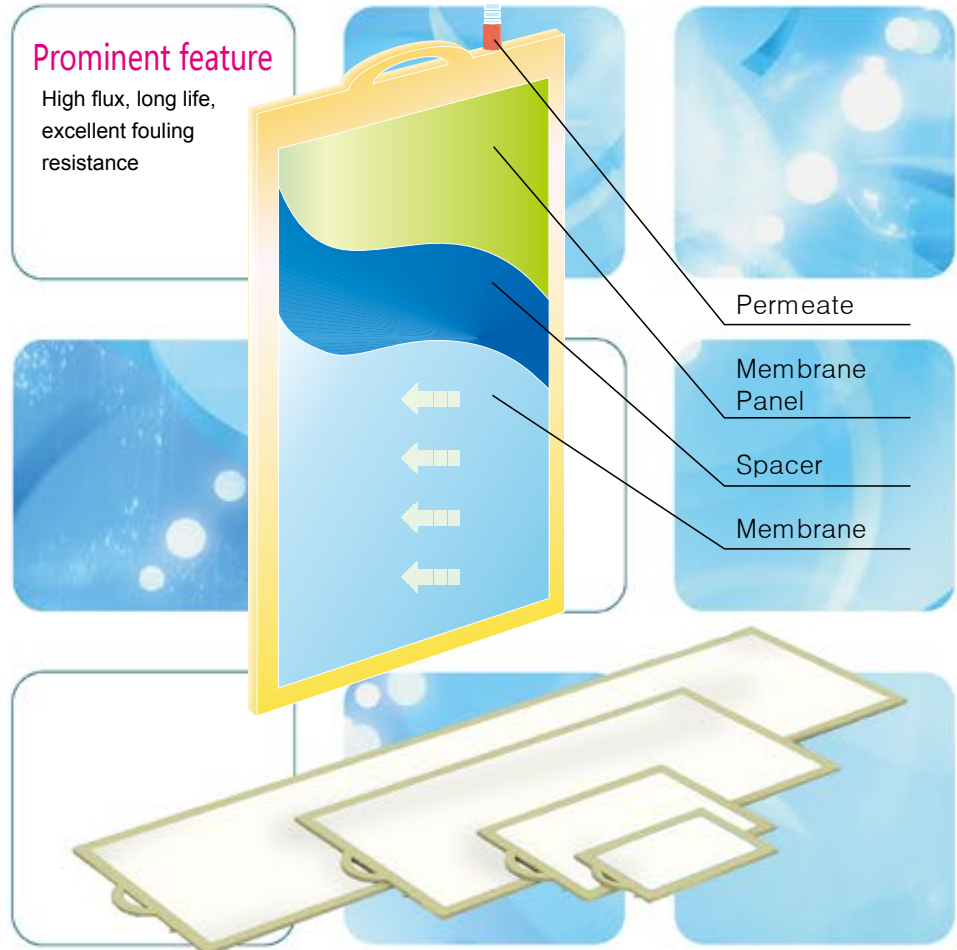
• Easy Inspection and Parts Exchange

Easy to replace
Replace the membrane
only need **15** minutes

You can replace the membrane elements easily. It makes your maintenance work easier and maintenance cost lower .



35 years' innovation create the best membrane



Membrane Elements

Structure and Characteristics of SINAP FS
membrane

• Excellent chemical stability

SINAP flat sheet membrane use PVDF as material which with very good chemical stability, fouling resistance and mechanical strength in nowadays membrane material. It is the most widely used membrane material in wastewater treatment in the world.

• Excellent permeate flux and permeate quality

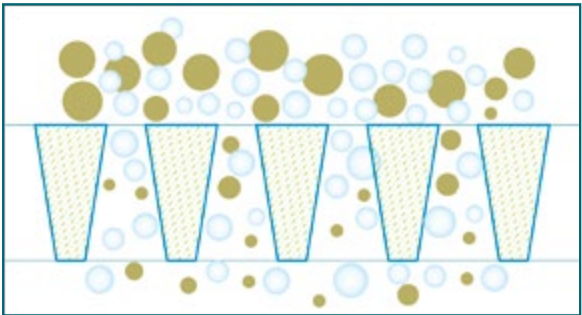
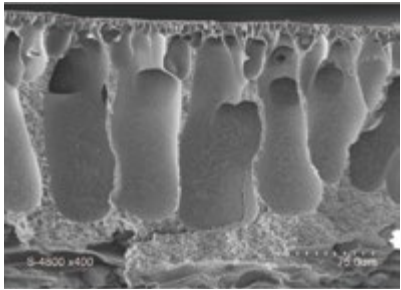
Pore size of SINAP flat sheet membrane is less than 0.1 microns, and with advanced membrane technology increase the effective orifice area of the membrane surface then lead to excellent permeate flux and permeate quality.

Membrane	Material	Pore Size	PWP,L/ (h•bar•m2)	WCA, °	ζ, mV
A well-known brand	Chlorinated-PE	0.4μm	336	78.4 ± 4.4	-13.6
SINAP	PVDF	0.1μm	515	74.1 ± 1.2	-4.0

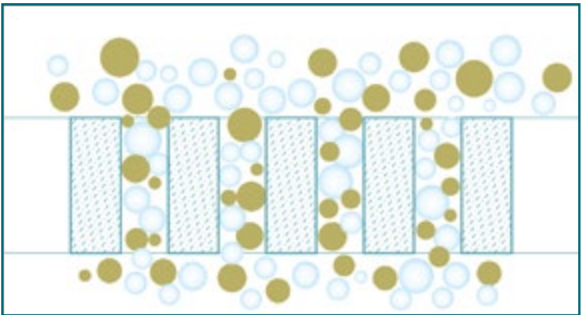
*Extract from the report of Lappeenranta University of Technology.

• Excellent fouling resistance

SINAP membrane is an Ultrafiltration-Microfiltration membrane with asymmetric structure. This structure has advantages of low membrane resistance, good fouling resistance. With the air scour, large particles of pollutants will not enter the membrane. Small particles get into the membrane will not be stranded in the membrane pore and quickly flow out of the membrane through the large holes.



SINAP asymmetric membrane structure



Normal symmetry membrane structure

• Pure water permeability reductions and contact angles of the membrane samples before and after an adsorption test

Membrane	PWP Reduction, %	WCA Before, °	WCA Before, °
A well-known brand	67.4	78.4 ± 4.4	86.8 ± 1.6
SINAP	28.5	74.1 ± 1.2	78.3 ± 2.4

*Extract from the report of Lappeenranta University of Technology.

• Comparison of Flat Sheet Membrane and Hollow Fiber

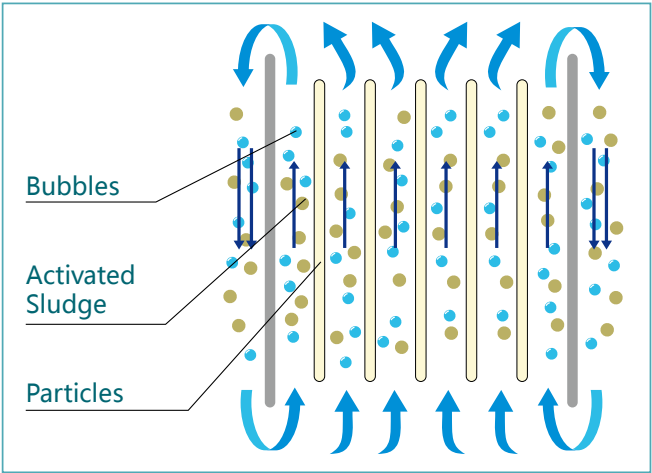
Adapt higher concentration of activated sludge (MLSS in range 8000-15000mg/L).

Membrane surface won't get clay lump and no lose of effective membrane area.

Air water scour membrane surface remove the dirt rapidly.



Hollow Fiber



Flat Sheet Membrane

Because the membrane is firmly welded on high-intensity support plate, some membrane broken as hollow fibers will not happened. So permeate water quality is stable. This is especially important when have subsequent process like deep NF or RO.



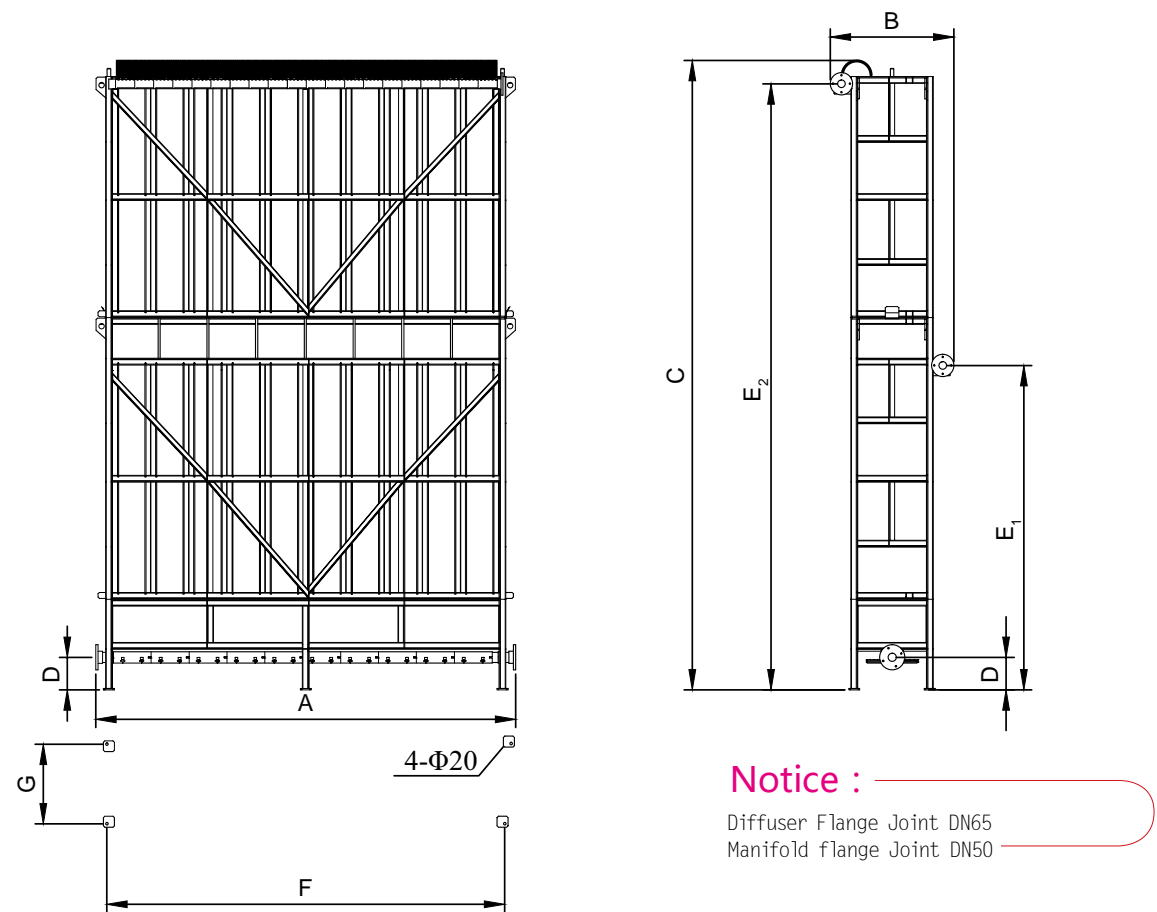
Flat Sheet Membrane



Hollow Fiber

Specification of SINAP Double Deck Moudle

SINAP®



Membrane Module	Membrane area (m ²)	Capacity (m ³ /d)	A (mm)	B (mm)	C (mm)	D (mm)	E ₁ /E ₂ (mm)	F (mm)	G (mm)	Net Weight (kg)	Air Supply (L/min)
SINAP80-100D	160	64-96	1658	760	3215	240	1615/2915	1494	588	1070	1600
SINAP80-150D	240	96-144	2368					2204		1620	2400
SINAP80-200D	320	128-192	3102					2938		2200	3200
SINAP150-100D	300	120-180	1658					1494		1420	1600
SINAP150-150D	450	180-270	2368	760	4775	240	2395/4475	2204	588	2200	2400
SINAP150-200D	600	240-360	3102					2938		3030	3200

⊙ The aeration case standard high is 700mm, can be adjust as requirement. The size in table is for reference. Actual szie accroding to real prodcuts.

35 years' innovation create the best membrane



Membrane Modules

35 years' innovation create
the best membrane

SINAP®

SINAP Membrane Module

Hose

Connect the membrane and permeate manifold.

Rubbers and covers

Fix membrane elements, prevent the vibration and floating.

Manifold

Collect the permeate water from each membrane element.

Flat sheet membrane element

Core product of SINAP, every membrane element is engraved with a unique identification code to facilitate tracking the quality of our products.

Guide plate

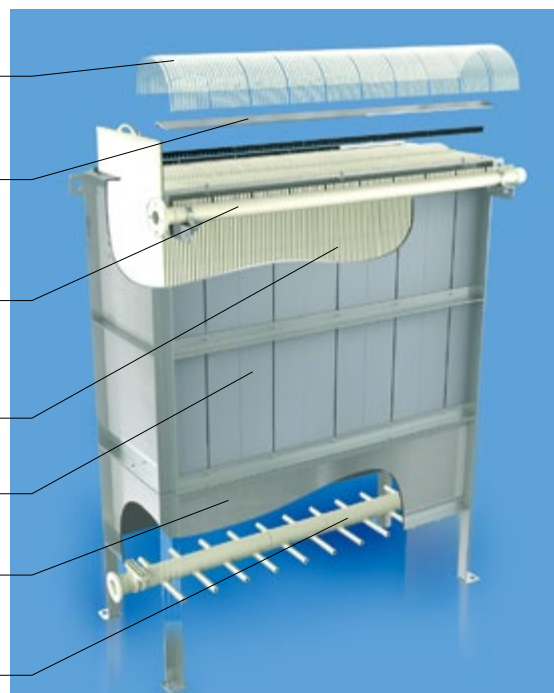
Fix the membrane element equidistance.

Diffuser case

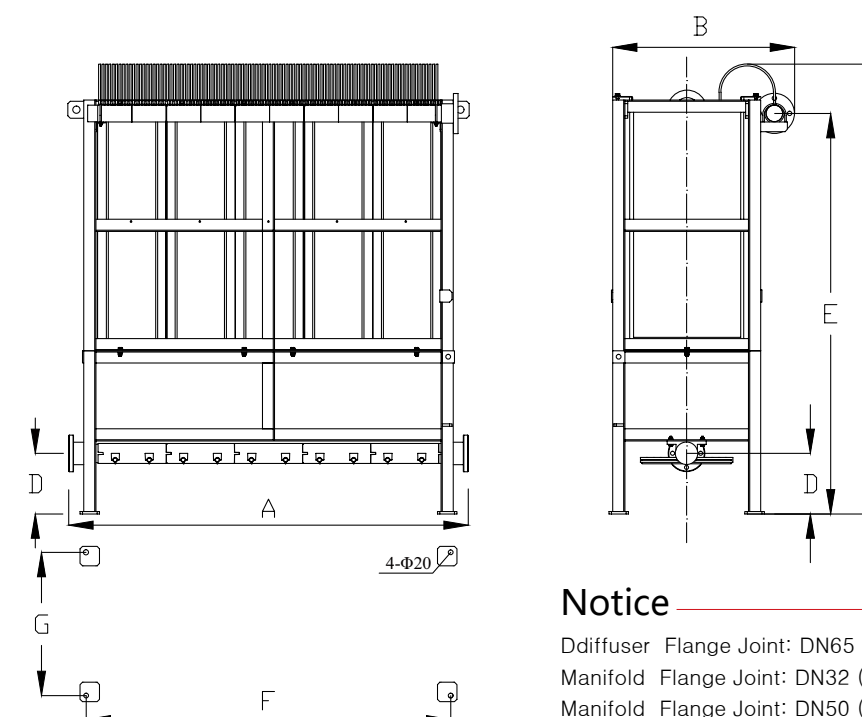
Mix the air and water, make the aeration uniform

Diffuser

Prevent membrane fouling and provide oxygen for the biochemical reactions.



Specifications of SINAP FS Membrane Module



Notice

Ddiffuser Flange Joint: DN65

Manifold Flange Joint: DN32 (membrane area≤90m²)

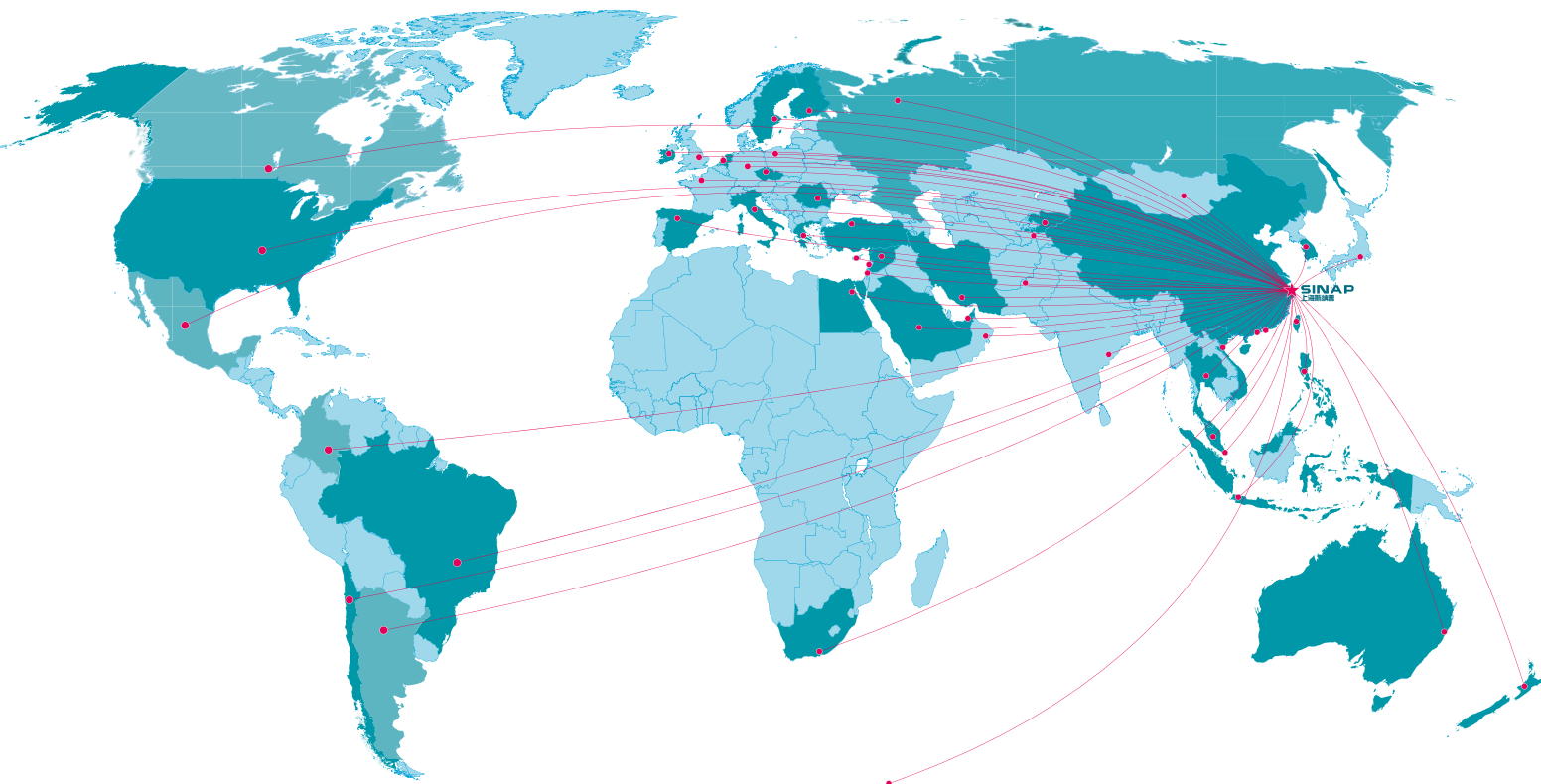
Manifold Flange Joint: DN50 (membrane area>90m²)

Membrane Module	Membrane Element	Nos.of Mem Brane Element (piece)	embrane Area (m²)	Standard Capacity (m³/d)	Maximal Capacity (m³/d)	Net Weight (Kg)	Air Supply (L/min)
SINAP80-50	SINAP80	50	40	20	40	340	500
SINAP80-60		60	48	24	48	380	600
SINAP80-80		80	64	32	64	470	800
SINAP80-100		100	80	40	80	560	1000
SINAP80-120		120	96	48	96	660	1200
SINAP80-140		140	112	56	112	770	1400
SINAP80-150		150	120	60	120	830	1500
SINAP80-160		160	128	64	128	900	1600
SINAP80-180		180	144	72	144	1000	1800
SINAP80-200		200	160	80	160	1140	2000
SINAP150-50	SINAP150	50	75	37.5	75	420	500
SINAP150-60		60	90	45	90	510	600
SINAP150-80		80	120	60	120	670	800
SINAP150-100		100	150	75	150	730	1000
SINAP150-120		120	180	90	180	890	1200
SINAP150-140		140	210	105	210	1050	1400
SINAP150-150		150	225	112.5	225	1140	1500
SINAP150-160		160	240	120	240	1230	1600
SINAP150-180		180	270	135	270	1400	1800
SINAP150-200		200	300	150	300	1550	2000

Membrane Module	Area (m ²)	Capacity (m ³ /d)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	
SINAP 80-50	40	16-24	965	720	1860	240	1633	794	588	
SINAP 80-60	48	19-28	1090					930		
SINAP 80-80	64	25-38	1385					1212		
SINAP 80-100	80	32-48	1670	760	1868		1645	1494		
SINAP 80-120	96	38-57	1950					1776		
SINAP 80-140	112	44-67	2230					2058		
SINAP 80-150	120	48-72	2375					2204		
SINAP 80-160	128	51-76	2530					2374		
SINAP 80-180	144	58-86	2838					2674		
SINAP 80-200	160	64-96	3100					2938		
SINAP150-50	75	30-45	958	720	2560	240		2383	794	588
SINAP150-60	90	36-54	1094						930	
SINAP150-80	120	48-72	1376						1212	
SINAP150-100	150	60-90	1658	760	2568		2395	1494		
SINAP150-120	180	72-108	1940					1776		
SINAP150-140	210	84-126	2222					2058		
SINAP150-150	225	90-135	2368					2204		
SINAP150-160	240	96-144	2538					2374		
SINAP150-180	270	108-162	2838					2674		
SINAP150-200	300	120-180	3102							

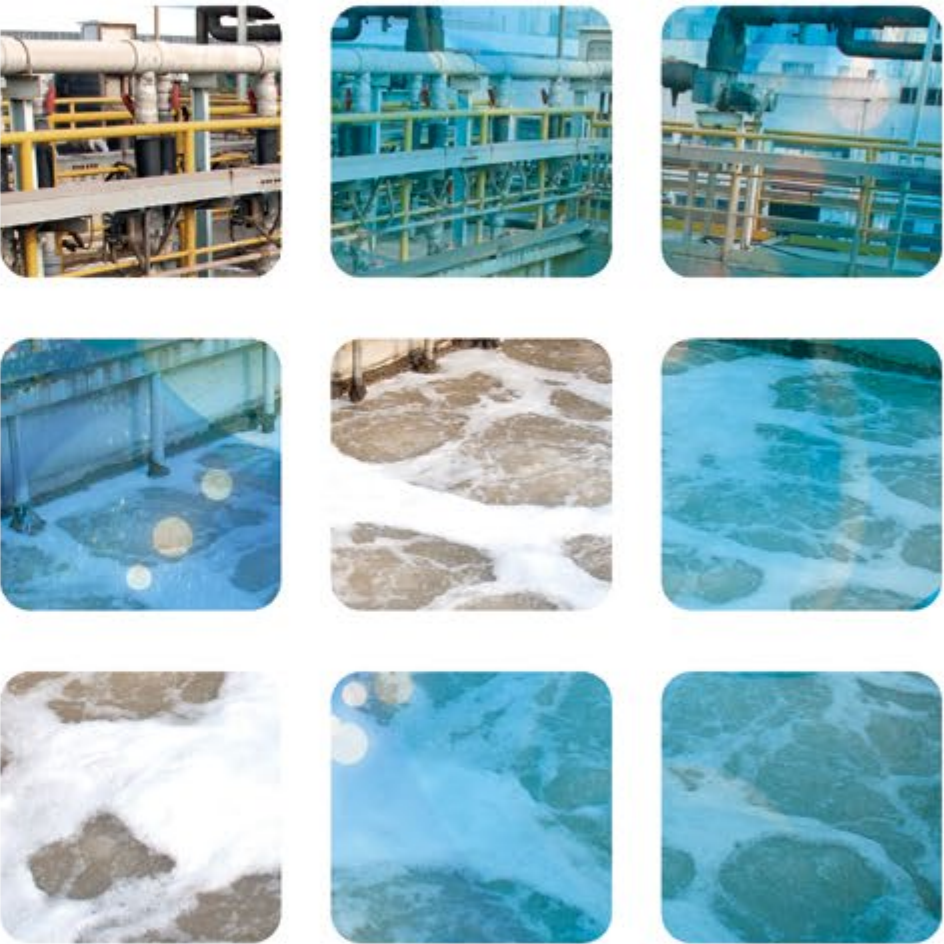
© The aeration case standard high is 700mm, can be adjust as requirement. The size in table is for reference. Actual size according to real products.

SINAP Global Partnership



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Application Reference

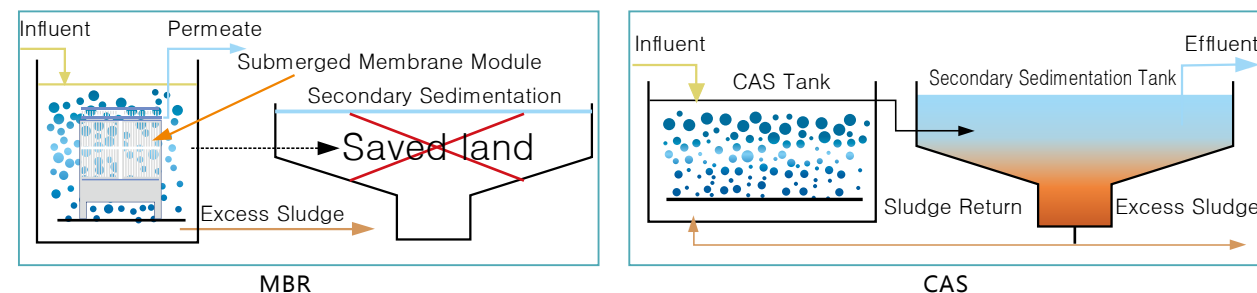


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Advantages of MBR and its Application Fields

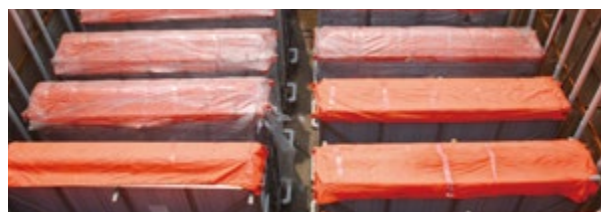
Combining with membrane separation technology and conventional activated sludge(CAS) process, membrane bioreactor(MBR) is a new and efficient wastewater treatment technology. By replacing the secondary sedimentation with membrane module in CAS, the MBR could greatly improve the solid-liquid separation, which would improve both volume loading and effluent quality of system, to meet the requirement of grey water reuse.

MBR has already become one of the most advanced wastewater treatment technologies in the 21st century. Membrane separation system removes not only SS(Suspended Solid) but substances difficult to biodegrade such as detergent, by taking advantage of its longer SRT(Sludge Retention Time). Nutrients such as nitrogen and phosphorus can also be treated. This enables the treated water to be reused as grey water.



Project: Beijing HUIYUAN juice 4000m³/d industrial wastewater

water quality	COD (mg/L)	BOD (mg/L)	SS (mg/L)	NH3-N (mg/L)	TN (mg/L)	TP (mg/L)	Turbidity (mg/L)	pH (NTU)
Influent	≤3000	≤1200	≤400	≤20	ND	ND	ND	4~5
effluent	<50	<15	<10	<5	<20	<0.5	<1	6~9



Project: Zhejiang wool spinning group 3000m³/d textile dyeing wastewater

water quality	COD (mg/L)	BOD (mg/L)	SS (mg/L)	NH3-N (mg/L)	TN (mg/L)	TP (mg/L)	Turbidity (mg/L)	pH (NTU)
Influent	≤1000	≤165	≤120	≤11	6	ND	ND	4~5
effluent	<50	<20	<10	<10	<7	<1	<1	6~9



Classic Applications of SINAP Membrane



Kazakhstan 2000m³/d municipal sewage



TOYOTA Thailand 3000m³/d industrial wastewater



Malaysia 500m³/d Palm oil production wastewater



Indonesia 60m³/d~1000m³/d hospital wastewater



Shanghai Baosteel 3840m³/d Emulsified oil wastewater



Xinjiang 3000m³/d petroleum industry wastewater



Shanghai songjiang 150m³/d landfill leachate



Kunming airport 100m³/d mobile systems (sewage)



South pole Zhongshan Station 30m³/d sewage



Shanghai city hotel 30m³/d laundry wastewater