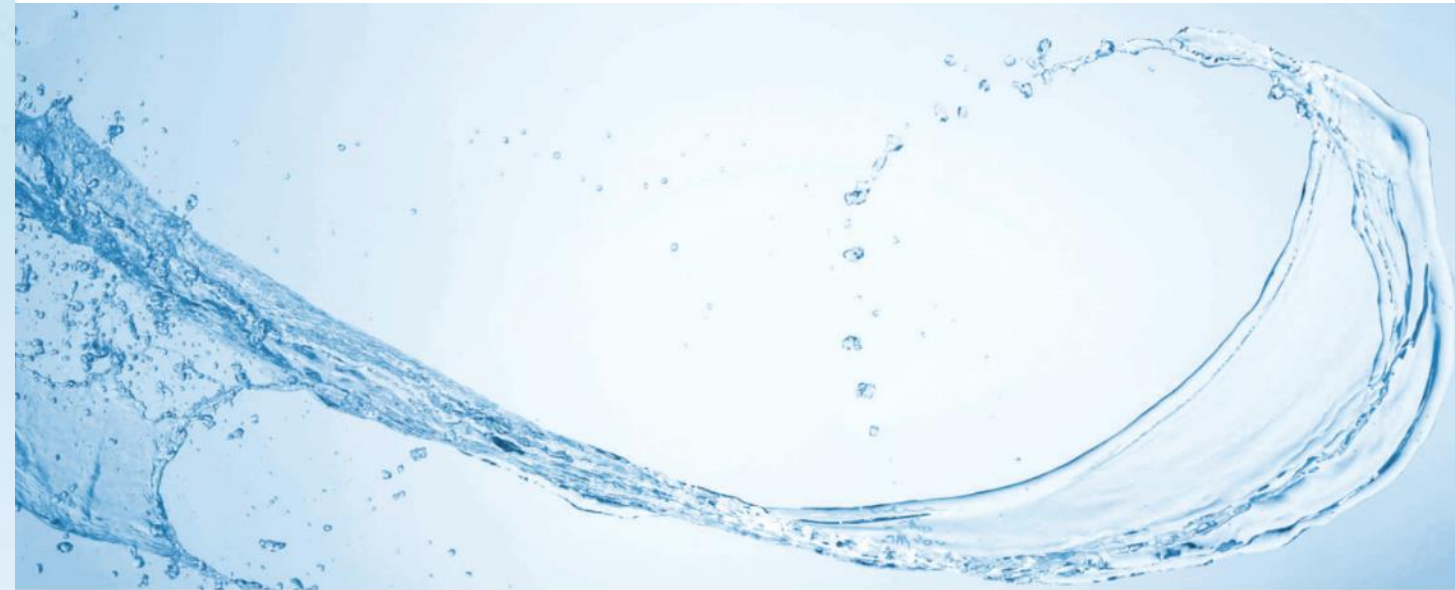




\* The specifications may be partially revised without prior notice in order to improve the exteriors and performance of products.  
Actual products may be different from the images shown in the catalogue.



## WATER TREATMENT SOLUTIONS

### MEMBRANE BIOREACTOR (MBR)

MBR A/E Series  
FLAT SHEET



Mahler Systems.

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Mahler Systems.



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- Protect our resources for the future generations

- Innovative Membrane Solutions

- High Performance

- Reduced Costs

**20** years' commitment to innovation & environment



**Mahler Systems** an innovative and high technology enterprise, specializes in the manufacturing of micro-filtration (MF) and ultra-filtration (UF) membranes.

Our membranes modules have been successfully used in the fields of surface water purification, pretreatment of desalination sea water, municipal & industrial wastewater treatment and fermentation broth clarification.

Meanwhile **we also gladly welcome OEM/ODM orders**. We have developed production partnerships with industrial clients for separation or concentration of biochemistry and pharmaceuticals, fruit juices, dairy, and car electrophoresis paint.

After many years of all our workers' hard work & dedication, our products have been sold to Europe, North & South America, Russia, Japan, and many South-East Asian countries.

We look forward to starting a long lasting business partnership with your company.





## Mahler Systems core competence

- **Patented membrane technology**  
Mahler membrane technologies are engineered in cooperation with academic institutes & PhD researchers from China & Europe. Mahler continuously invests in R&D since 1999.
- **Advance membrane production**  
Excellent product stability, quality and supply capacity. Mahler can meet customers' membrane product requirements at any time.
- **Comprehensive membrane solutions**  
Flat Sheet MBR, Hollow Fiber MBR, Hollow Fiber Capilar series. We can provide customers with comprehensive membrane water treatment solutions, including process design, construction, operation and management.



## ■ Mahler Systems technical partners

After many years of R&D development and great dedication into the waste water treatment, Mahler Systems has established long lasting partnerships with Professors, PhDs & engineering companies in APAC, Europe and South America.

## ■ R&D & sales facilities



**Membrane lab & factory**  
Shanghai

**Headquarter**  
Barcelona

**International sales support**  
Barcelona

## ■ Strict quality control

During the manufacture, testing and transportation of membrane products, Mahler strictly abides by ISO quality control standards. All membrane products are quality tested. Mahler Systems is ISO 9001 certified.

# Mahler Membrane characteristics

Based on a proprietary high-strength PVDF (Polyvinylidene fluoride) material, Mahler membranes have permanent hydrophilic properties. The hydrophilic properties will not be lost regardless of light exposure, drying, weather variations.

PVDF exhibits superior physical strength and enhanced chemical stability.

## Permanent hydrophilic properties

Dry storage, engineering installation and maintenance do not require hydrophilization pretreatment. Reduces the cost of transportation, operation & maintenance.

## High flux & effluent quality (SDI < 2)

Uniform pore size ensures consistently high permeability with minimal clogging. Strong anti-fouling ability, and long service life.

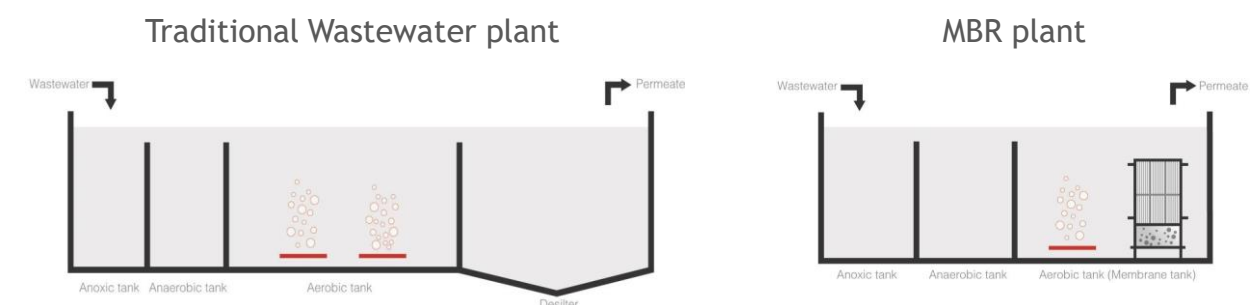
## Unique membrane structure

Numerous small-diameter pores are distributed throughout the membrane surface with a narrow diameter distribution. With this unique asymmetric structure ensures higher treated water quality and minimizes fouling and clogging for consistently high water permeability.

# Definition of MBR technology

Membrane Bioreactor (MBR) is an efficient and most advanced technology for municipal and industrial wastewater treatment process which combines high-efficiency membrane separation technology with conventional activated sludge process (CAS).

MBR combines the advantages of membrane filtration and biological treatment technology. It uses a membrane module instead of a secondary sedimentation tank in conventional activated sludge process. The filtration membrane greatly improves the solid-liquid separation ability of the system, producing higher permeate water quality and volume.



## MBR Advantages

- ✓ Higher permeate quality for discharge or reuse
- ✓ No impact from feed water's fluctuation
- ✓ Longer sludge retention time (SRT): Less sludge
- ✓ Reduced footprint - 1/2 to 1/4 of a CAS plant.
- ✓ High MLSS sludge concentrations: 4 to 18 g/l (Flat Sheet MBR)
- ✓ Biological removal of ammonia by nitrification process
- ✓ No clarifiers (no bulking and sludge rising problems)

Mahler FMBR is assembled as a complete filtration module. It consists of a stainless-steel cage or skid made up of several elements including flat sheet membranes MAHLER FMBR-A/P Series.

The hollow fiber membranes are made in proprietary permanently hydrophilic PVDF material by MAHLER SYSTEMS, designed for MBR plants and Tertiary Treatments.



Membrane made by:  
**MAHLER**  
SYSTEMS

FMBR Module Components



H-PVDF membrane  
(permanently hydrophilic)



PVDF Membrane Element (MVE)  
(0.25 to 1.5m<sup>2</sup>)



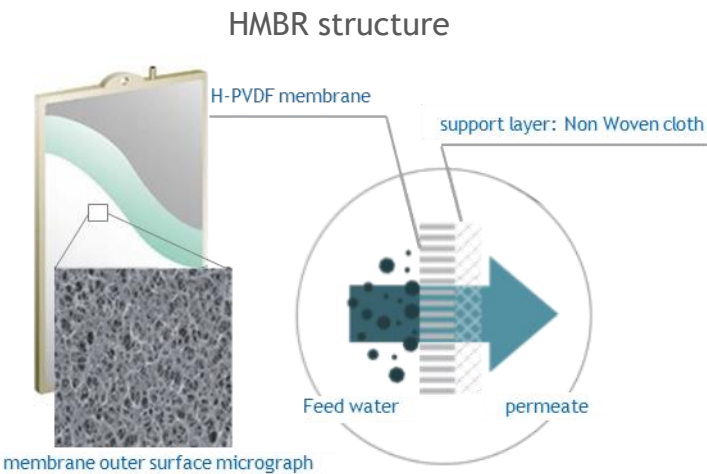
Air Diffuser (MVD)  
SS AISI304 or AISI316



Cage and pipes (MVC)  
SS AISI304 or AISI316

Mahler FMBR membranes have a microporous structure in the membrane's surface of 0.1µm for optimal microfiltration. PVDF material delivers high strength & durability.

MAHLER FMBR membranes are made of a strong non-woven cloth and coated with a functional layer of our proprietary permanently hydrophilic PVDF membrane.



HMBR filtration range

Size		Target	Separation method & Industrial use	
Ion - low molecular area	0.1nm	H <sub>2</sub> O	RO	Desalination
	0.2nm	Na <sup>+</sup>		Ultrapure water
	0.5nm	Ca <sup>2+</sup>		
		Cl <sup>-</sup>		
Colloid area	2nm	Isozym	NF	Remove molecular substance
	5nm	Serum Albumin		
	0.01µm	Y-globulin	UF	Process water
	0.02µm	Infantile paralysis virus		Food industry
	0.05µm	Japanese encephalitis virus		
	0.1µm	Pseudomonas diminuta		
	0.2µm		MF	Membrane Bioreactor
	0.4µm			Drinking water
Suspended solids	0.5µm	Latex emulsion	Sedimentation	Removal molecule
	1µm	Vibrio cholerae		Pretreatment RO
	2µm	Bacillus		Pretreatment on exchange
	5µm	E-Coli		
	10µm	Staphylococci		
		Cryptosporidium		

PVDF Material Features

- ✓ Permanently hydrophilic
- ✓ Enhanced durability tensile strength
- ✓ High permeability
- ✓ Excellent chemical resistance



# FMBR-A Panel

Compact, permanent hydrophilic, high anti-fouling capabilities, easy to clean, and long lasting. The F-MBR is extremely resistant and with excellent filtration capabilities in a smaller footprint than hollow fiber membranes.

## FMBR Series

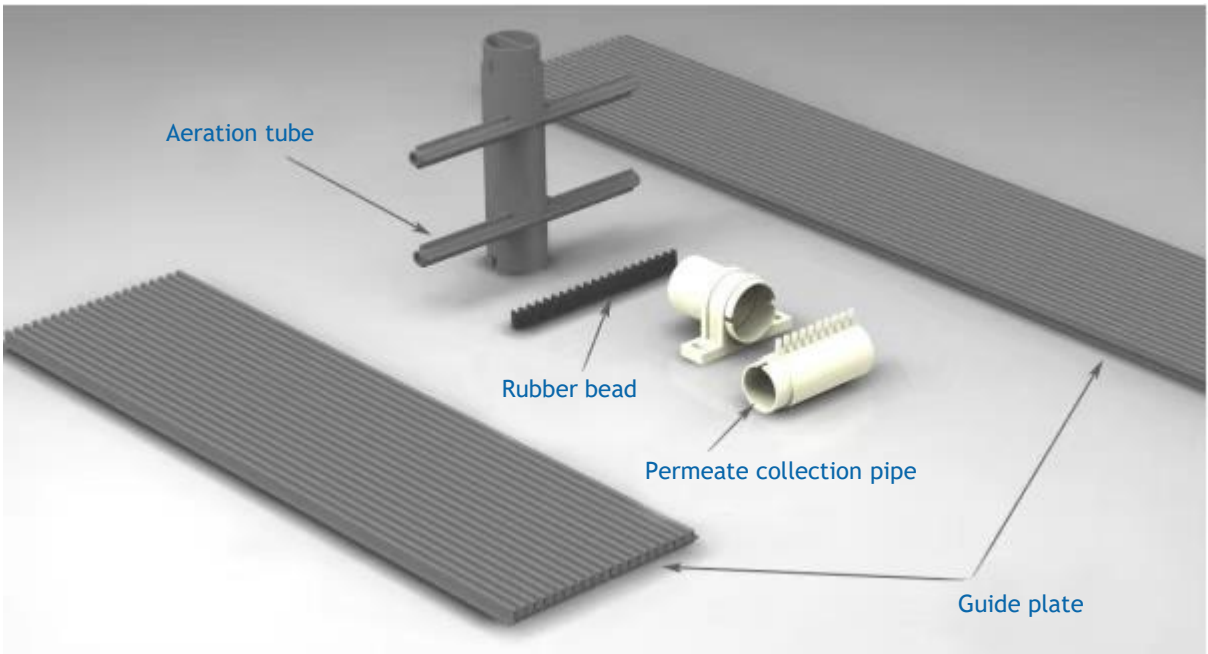


Model (Panel)	FMBR-80	FMBR-100	FMBR-150
Effective membrane area (m <sup>2</sup> )	0.8	1	1.5
Dimensions w×h×t (mm)	490x1000x7	490x1200x7	490x1750x7
Weight (Kg)	2.8	3.5	5.6
Permeate flux (Litre/Panel/Day)	350~480	400~540	600~800
Aeration rate (LMH)	≥8	≥8	≥12
Membrane pore size (µm)		0.1	
Membrane material		PVDF	
Reinforcement frame		ABS	
pH range		3~12	
Permeate turbidity (NTU)		< 1.0	
Permeate suspended Solid (SS)		≤ 5	
Design flux (LMH)		20~25	

# FMBR-A Module

MAHLER HMBR panel have a microporous structure in the membrane's surface of nominal pore size 0.1µm.

## FMBR Module - Parts

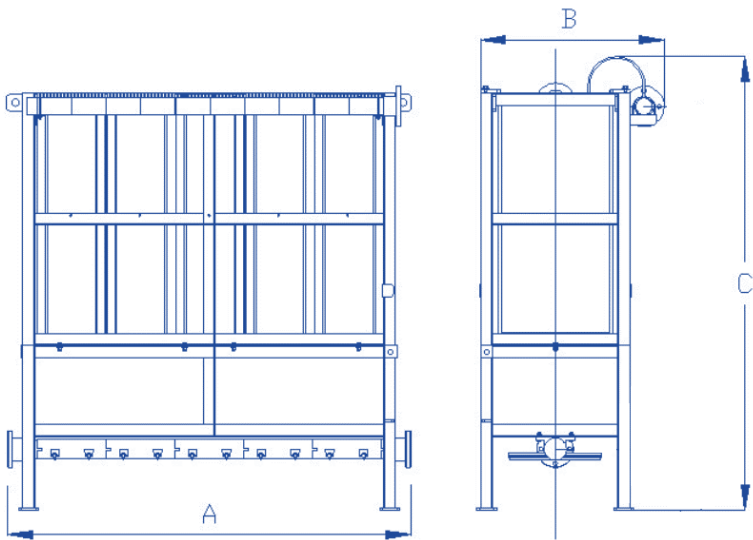


FMBR Series



FMBR Module - Technical design

Technical design



Typical Operating Conditions

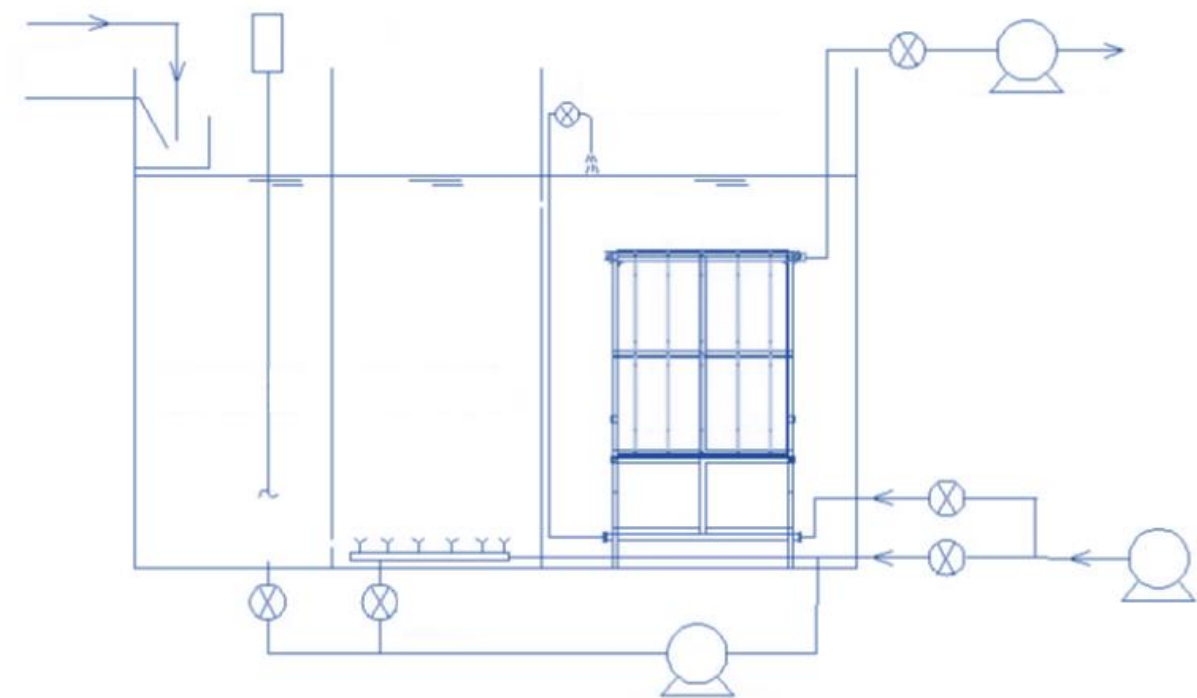
Model No.	Element Model	No. of Elements	Surface Area	Module		
				Depth	Width	Height
		(pcs)	(m <sup>2</sup> )	A	B	C
FMBR 80-50	FMBR 80	50	40	965	720	1715
FMBR 80-100		100	80	1670		
FMBR 80-150		150	120	2375		
FMBR 80-200		200	160	3100		
FMBR 100-50	FMBR 100	50	50	965		1830
FMBR 100-100		100	100	1670		
FMBR 100-150		150	150	2375		
FMBR 100-200		200	200	3100		
FMBR 150-50	FMBR 150	50	75	965		2465
FMBR 150-100		100	150	1670		
FMBR 150-150		150	225	2375		
FMBR 150-200		200	300	3100		

Parameter	Recommended Operating Conditions
Pretreat fine screen (mm)	<3
MLSS (mg/L)	8,000~15,000
Sludge viscosity (MPa*s)	<250
Dissolved oxygen concentration (DO) (mg/L)	>1.0
Recommend pH range	6~8
Water temperature (°C)	5~40
Design flux (LMH)	16-25
Operating pressure (MPa)	-0.01~0 (max -0.03)
Standard time chart	8 minutes filtration, 2 minutes release
Aeration per m <sup>2</sup> (l/min)	12
TMP (kPa)	<0.02
HRT (hour)	6
SRT (day)	10

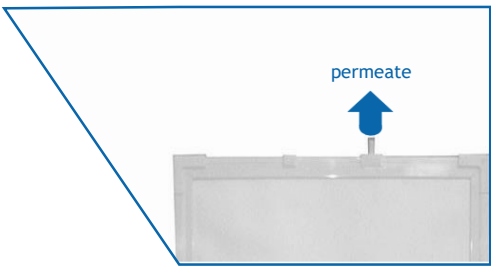
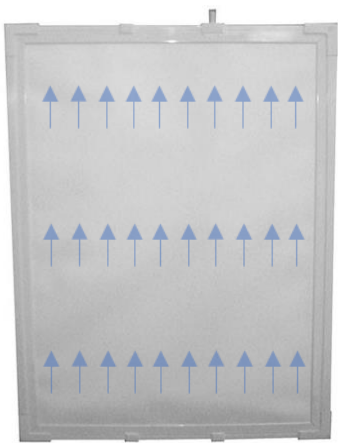


# Cleaning Conditions

Fouling material	Chemical name	Chemical liquid concentration	Injection quantity of chemical liquid	Soak time
Organics	NaClO & NaOH	2000-5000mg/l NaClO & 1000mg/l NaOH solution (effective chlorine density)	5L/membrane element	1 hour
Inorganic	Oxalic acid	1000mg/l	5L/membrane element	1 to 2 hours
Inorganic	Citric acid	2500mg/l	5L/membrane element	1 to 2 hours



## FMBR-E Series



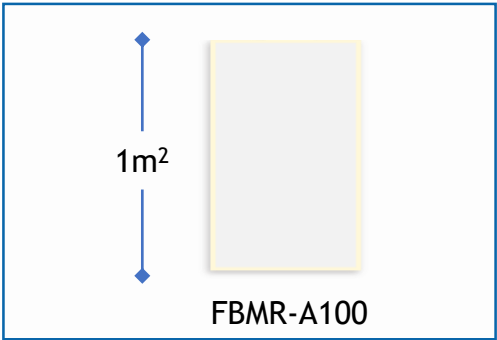
Manufactured by:



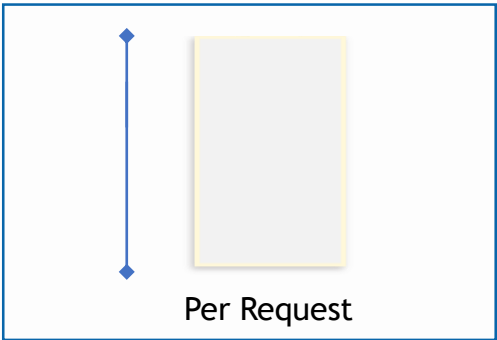
## FMBR-E Features

- ✓ High fouling resistance
- ✓ Dry storage
- ✓ Economical
- ✓ Modular line-up

## FMBR Panel Line Up



FMBR-A100



Per Request

