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## **ionberg Submerged Hollow Fiber MBR Membrane**

Membrane Bio Reactor (MBR) technique, a new method for wastewater treatment, integrates membrane separation and biotechnology, rejects activated sludge and macromolecular organic matter in aerobic tank/MBR tank with membrane separation plant, thus saving the use of secondary sedimentation tank. Consequently, the concentration of activated sludge rises greatly, the HRT and the SRT could be controlled separately, and difficult degraded matters are constantly degraded and reacting in reactor. Therefore, compared to traditional biological treatment methods, MBR technique greatly strengthens the function of the bioreactor with the using of membrane separation, it has advantages as follows: high biochemical efficiency, strong load impact resistance, stable effluent quality, smaller foot print, long period of sludge discharging, easily automatic control, etc.

MBR is the high effective combination with membrane separation and biological treatment instead of secondary sedimentation tank of activated sludge process to separate pollutants.

### **Advantage of MBR**

1. High pollutants removal rate , strong capacity of sludge bulking resistant , steady treated effluent quality , suspend solid (SS) in effluent near to zero.

2. Accomplish complete separation between hydraulic retention time (HRT) and sludge retention time(SRT) . Operation is simple and flexible.

3. Stop loss of activate organism by membrane mechanical interception. Keep high concentration of activated sludge in bioreactor so that enhance volume load largely and reduce sludge load.

Membrane reactor integrates traditional aeration tank and secondary sedimentation tank into one system and displaces all equipment after secondary sedimentation tank which in conventional process. Largely reduce foot print, and save investment of civil works.

4. Due to the function of membrane interception, SRT is prolonged, this process create good growing environment for microorganism( example: nitrobacteria) which grow slowly. It can enhance system nitrification ability. It will enhance efficiency of big molecular organism degradation. Lead them to degrade completely.

5. Due to very long SRT, membrane bioreactor can be role of “sludge nitrification tank” so that it’s remarkable to reduce sludge production, decrease disposal cost of sludge.

6. Activated sludge in bioreactor will not be lost during treated water production. Concentration of sludge will be along with organism concentration change to change, and reach a dynamic balance. So, the treated water quality is steady and the system has strong impact load tolerant capability.

7. The reactor special structure causes wastewater mix uniformly, so activated sludge has good dispersibility, largely increase sludge specific surface area. This is another reason of our system has good efficiency.

This is also the characteristic which conventional biological methods can not compare with it. Because conventional biological methods will easily cause larger bacteria& colloid bulk in the wastewater.

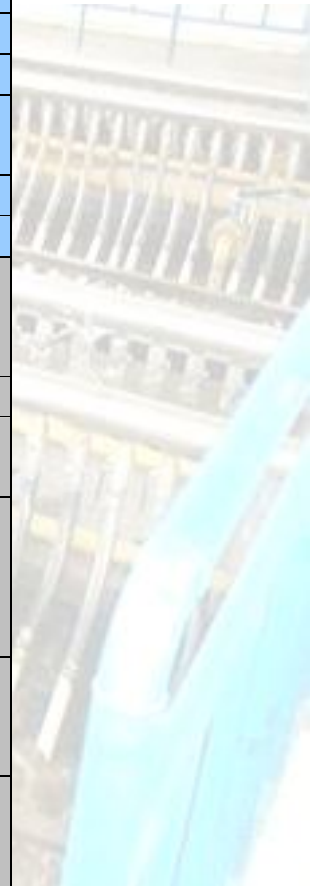
## Polypropylene (PP) Hollow Fiber Submerged Membrane

### 1. Membrane Module



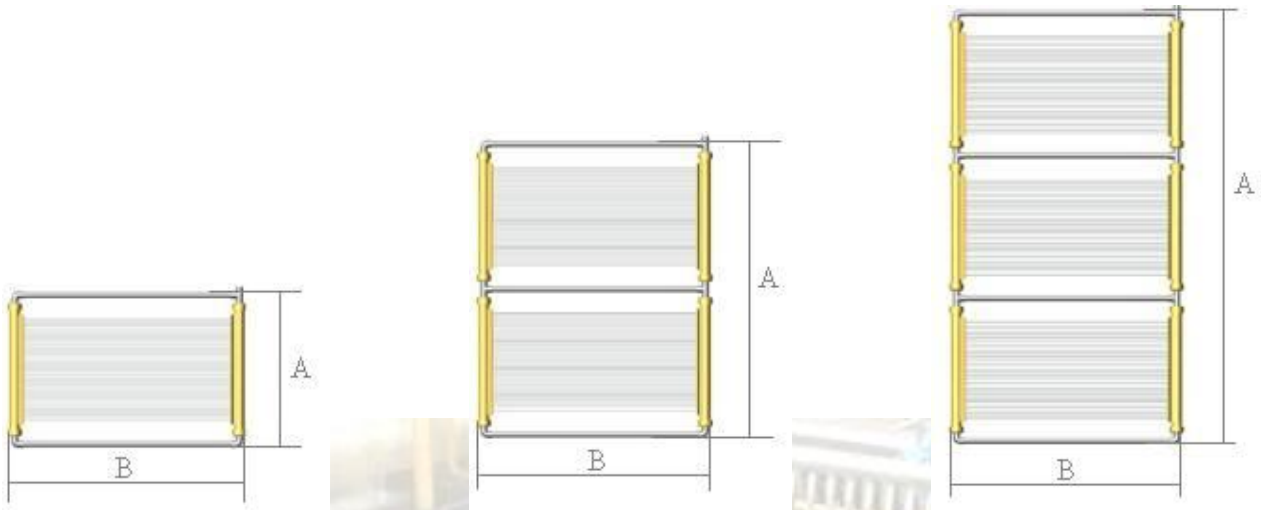
Specification	Module Type	ZCM-MBR-08	ZCM-MBR-16	ZCM-MBR-32
	Membrane Length	810 mm	1050 mm	1500 mm
	Membrane Width	525 mm	535 mm	535 mm
	Water Outlet Dia.	DN15	DN25	DN25

	Membrane Area	8 m <sup>2</sup>	16 m <sup>2</sup>	32 m <sup>2</sup>
	Dry Weight	1.2 kgs	2.0 kgs	2.5 kgs
	Wet Weight	1.6 kgs	3.0 kgs	4.5 kgs
Basic Parameters	Housing Materials	ABS/UPVC	ABS/UPVC	ABS/UPVC
	Hollow Fiber Materials	PP	PP	PP
	Pore Size	0.1 micron	0.1 micron	0.1 micron
	Fiber ID	0.3 mm	0.3 mm	0.3 mm
	Fiber OD	0.4 mm	0.4 mm	0.4 mm
	Effluent Turbidity	<1NTU	<1NTU	<1NTU
	Effluent SS	<1 mg/L	<1 mg/L	<1 mg/L
	Lifespan	2-5 years	2-5 years	3 years
Typical Working Conditions	Temperature	1-40 degree centigrade	1-40 degree centigrade	1-40 degree centigrade
	pH	1 to14	1 to14	1 to14
	Flow Rate	1.0-1.2 m <sup>3</sup> /d	2.0-2.5 m <sup>3</sup> /d	2.0-2.5 m <sup>3</sup> /d
	Max Transmembrane Pressure	-0.05MPa	-0.05MPa	-0.05MPa
	Water Production Way	Negative Pressure	Negative Pressure	Negative Pressure
	Water Production Period	work 12 minutes, stop 3 minutes	work 12 minutes, stop 3 minutes	work 12 minutes, stop 3 minutes



## 2. Module Dimension

Model	one membrane type B x A (mm)	two membranes type B x A(mm)	three membranes type B x A (mm)
ZCM-MBR-08	790x580	790x1120	790x1650
ZCM-MBR-16	1000x650	1000x1270	1000x1890

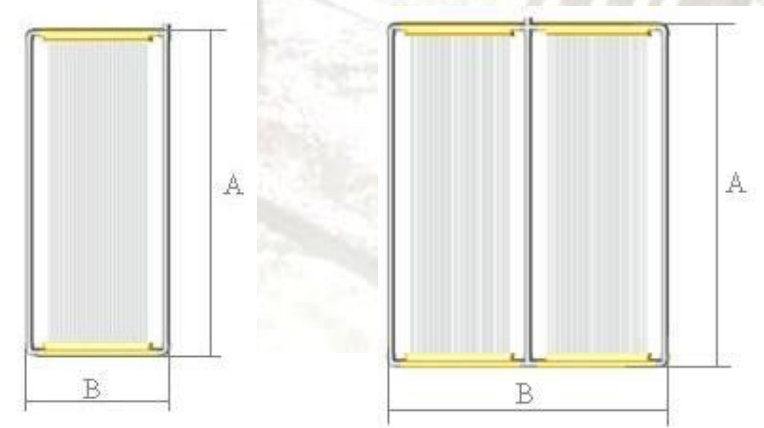


One Membrane Type

Two Membranes Type

Three Membranes Type

Model	one membrane type B x A (mm)	two membranes type B x A(mm)
ZCM-MBR-32	654x1550	1270x1550

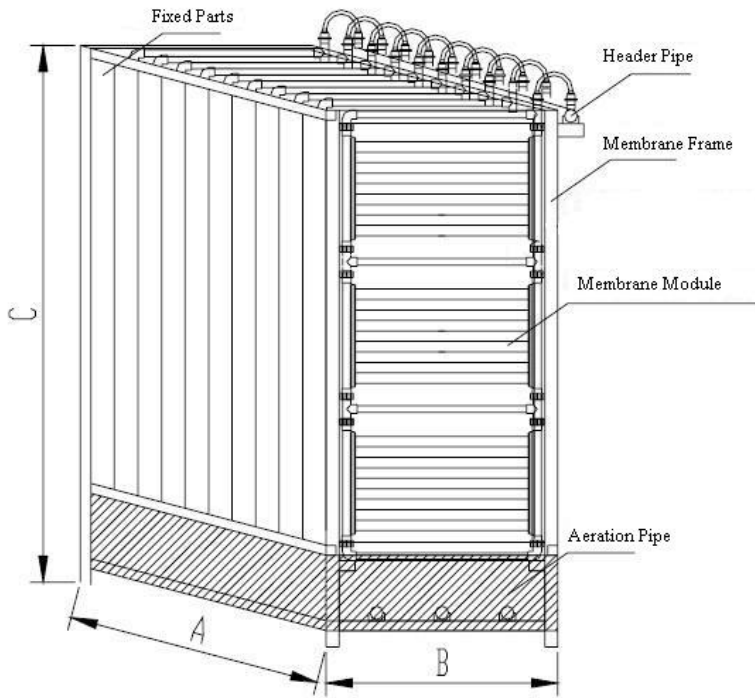


One Membrane Type

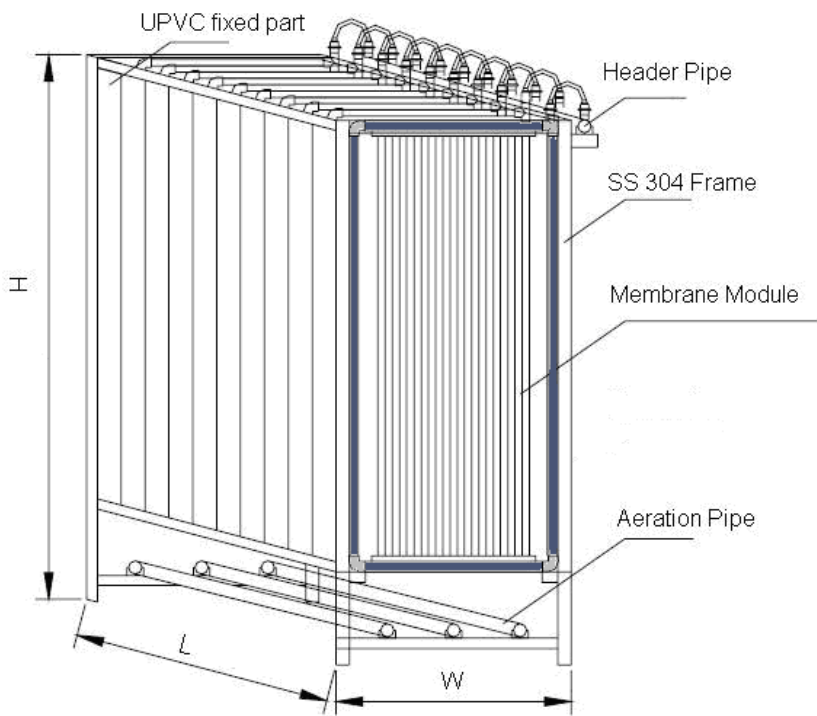
Two Membranes Type

**3. Membrane Unit Configuration**

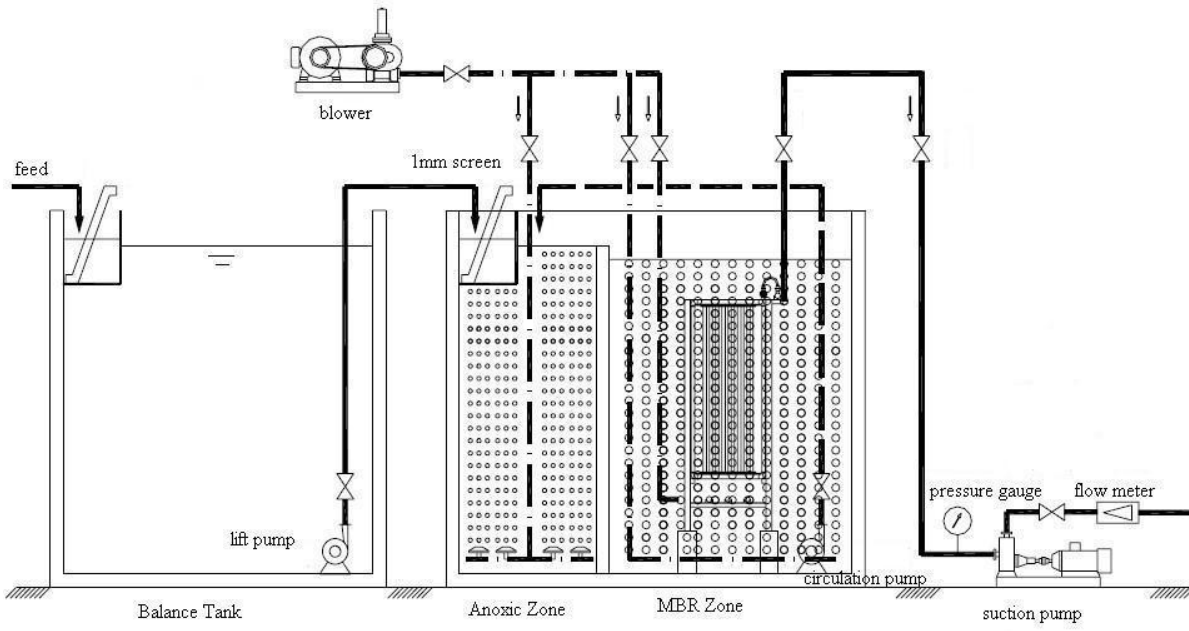
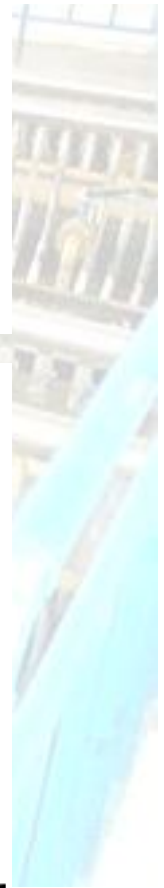
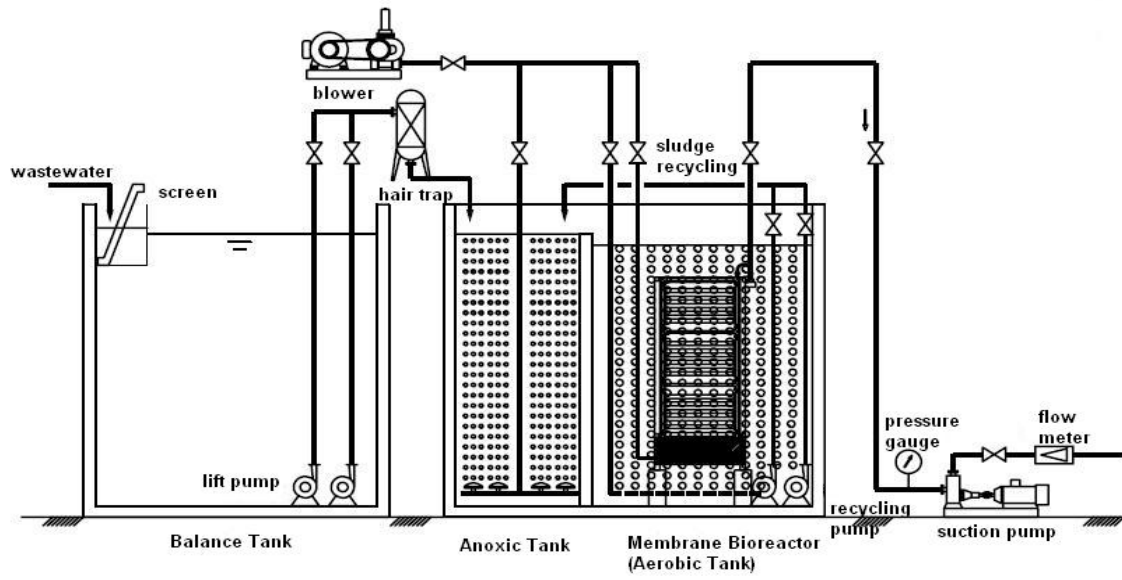
8m<sup>2</sup> / 16m<sup>2</sup>



32m<sup>2</sup>



#### 4. Typical Flow Sheet



# PVDF Hollow Fiber Submerged Membrane

Our hollow fiber submerged modules is designed by compact structure, it integrates hollow membrane fibers, air inlet pipe, water outlet pipe and air aeration pipe together into one module.

## 1. Advantages

### 1) High Strength

Inside and outside double dense layer surface structures and network structure formed by special Nano material make membrane fibers have high strength, overcome defect of weak strength of conventional PVDF membrane.

### 2) Strong Antifouling Capability

Due to its so smooth membrane surface, and electric charge performance, it has strong antifouling capability.

### 3) Large Flow Rate

Special Nano network structure make membrane have high porosity and flow rate.

### 4) Good Cutoff performance

Double dense layer surface make membrane have good membrane cutoff performance to retain pollutants.

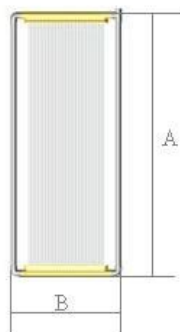
### 5) High Flow Rate Recovery after Cleaning

Due to double dense layer surface structure, it make pollutants only retained by outside surface of membrane, and can not reach to inside, so it's easy for cleaning, and get good recovery of flow rate.

### 6) Modularization Design

The membrane module designed compactly. Small foot print, easy to assemble together.

## 2. Membrane Modules



Specification	Module Type	12.5	20	25
	Module Length(A)	1050 mm	1550mm	1550mm
	Module Width (B)	654 mm	654 mm	654 mm
	Water Outlet Dia.	DN32	DN32	DN32
	Air Inlet Dia.	Nil/DN32	Nil/DN32	Nil/DN32
	Membrane Area	12.5m <sup>2</sup>	20 m <sup>2</sup>	25 m <sup>2</sup>
	Weight	4kg	6kg	8kg
Basic Parameters	Housing Materials	ABS/UPVC	ABS/UPVC	ABS/UPVC
	Hollow Fiber Materials	PVDF	PVDF	PVDF
	Pore Size	0.1 micron	0.1 micron	0.1 micron
	Fiber ID	0.9mm	0.9mm	0.9mm
	Fiber OD	1.5mm	1.5mm	1.5mm
	Effluent Turbidity	<1NTU	<1NTU	<1NTU
	Effluent SS	<1 mg/L	<1 mg/L	<1 mg/L
Lifespan	3-5 years	3-5 years	3-5 years	
Typical Working Conditions	Temperature	1-40 degree centigrade	1-40 degree centigrade	1-40 degree centigrade
	pH	2 to13	2 to13	2 to13
	Flow Rate	2.0-3.0m <sup>3</sup> /d	3.5-5.0m <sup>3</sup> /d	4.0-6.0m <sup>3</sup> /d
	Max Transmembrane Pressure	-0.03MPa	-0.03MPa	-0.03MPa
	Water Production Way	Negative Pressure	Negative Pressure	Negative Pressure
	Water Production Period	work 8 minutes, stop 2 minutes	work 8 minutes, stop 2 minutes	work 8 minutes, stop 2 minutes
	Sterilization Chemical	sodium hypochlorite	sodium hypochlorite	sodium hypochlorite
	Chemical Cleaning Period	6-12 months	6-12 months	6-12 months
	Cleaning Chemical	citric acid,sodium hydroxide	citric acid,sodium hydroxide	citric acid,sodium hydroxide



### 3. Process Flow Diagram

