

OXIAMEMBRANE

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Partner:









OXIAMEMBRANE 中津科创(厦门)膜科技有限公司

Oxford Inspired Advanced Membrane



OXIAMEMBRANE Co., Ltd

Company profile

Oxiamembrane Co., Ltd. (OXIAMEM) was founded by the pioneers from Oxford university, Louvain university and Chinese Academy of Sciences in March, 2016. The core technologies originated from Oxford University, Chinese Academy of Sciences and Monash University. Fouling is still the bottleneck to the wider application of membrane bioreactors. OXIAMEM provide the integrative solution for membrane fouling via biogenic nanocomposite membranes with antifouling properties, bionic honeycomb flat sheet unit and slug bubbling FSMBR module system.

OXIAMEM dreams to be the finest flat sheet membrane company around the world. OXIAMEM focuses on the R&D, design, manufacturing and technical service of anti-fouling membrane materials and flat-sheet membrane unit, aiming at the growing up market of membrane bioreactors.



Application and service scope of OXIAMEM flat-sheet membrane module



(1) Biodegradability wastewater treatment (2) Increasing the capacity of the wastewater treatment plants(WWPTs) (3) Increasing the effluent quality of wastewater treatment plant (4) Pretreat of NF or RO system (5) Water reuse



(1) Provide the FSMBR module (2) Module selection & MBR system design (3) MBR module installation and commissioning (4) Training for FSMBR system design, operating and maintenance





2 Chemical Clean 3 Pump 4 Areation 5 PLC



The advantages of OXIAMEM flat-sheet membrane module

(1) Anti-fouling membrane

Due to the biogenic nanocomposite membrane with anti-fouling properties and asymmetry structure, OXIAMEM flat sheet membrane have lower fouling resistance.

Other flat-sheet membrane (after 2 months)



Biofouling take over the whole membrane surface





OXIAMEM anti-fouling membrane (after 2 months)



Few bacterial on OXIAMEM membrane surface



Very few dead bacteria and easily to flush



The advantages of OXIAMEM flat-sheet membrane module

(2) Innovation design of energy saving module

The OXIAMEM module assembly was optimized by CFD simulation and experimental test, optimized flow regime, effective membrane fouling control, and long life time was achieved. OXIAMEM module needs lower aeration density and lower energy consumption compared with the others.



(3) Controllable pore size and reliable quality

OXIAMEM is the master to control the pore size of membrane. It can provide series of membranes with the averaged pore size of 50nm, 100nm, 200nm, 400nm. Each flat sheet membrane unit was sealed by automatic welding line, and each of unit was checked by standardized program and could be traced back.







Oxford inspired Advanced Membrane (OXIAMEM)

	OXIAMEM165	OXIAMEM125	OXIAMEM80
Membrane area(m ²)	1.65 1.25 0.8		0.8
Dimension: L x H x W(mm)	500 x 1805 x 6 500 x 1405 x 6 500 x 10		500 x 1000 x 6
Pore size(nm)	50,100,200,400		
Membrane material	PVDF or PES ; Bio-nano-composite PVDF or PES		
MLSS(mg/I)	5,000~20,000 (9000-1500)		
Flux[L/(pcs·day)] ⁽¹⁾	700~1300	500~1000	300~600
Air flow[L/(min·pcs)] ⁽²⁾	8~10	6~8	6~8
рН	3~12 (6~9)		
NTU(effluent)	≤1.0		
SS(effluent)	≤5.0		

- (1) Conditions: Municipal wastewater, tested in Xiamen, at 25°C, -10kPa, flux depends on feed water quality and operating conditions.
- (2) The aeration density depends on feed water quality and SS concentration.

Turpo	Element	No.of elements	Membrane	Capacity	Air flow
туре		(Piece)	area (m²)	(m³/d)	(L/min)
OXIAMEM80-100	OXIAMEM80	100	80	40	1000
OXIAMEM125-100		100	125	62.5	1000
OXIAMEM125-120		120	150	75	1200
OXIAMEM125-160	OXIAMEM125	160	200	100	1600
OXIAMEM125-200		200	250	125	2000
OXIAMEM125-400		400	500	250	2400
OXIAMEM165-100		100	165	82.5	1000
OXIAMEM165-200	OXIAMEM165	200	330	165	2000
OXIAMEM165-400		400	660	330	4000





Turne	Membrane	А	В	С	D	Е	Flange	
туре	area(m ²)	(mm)	(mm)	(mm)	(mm)	(mm)	Air	Permeate
OXIAMEM80-100	80	1482	608	1630	268.5	1571.5	DN50	DN40
OXIAMEM125-100	125	1482	608	2030	268.5	1971.5	DN50	DN45
OXIAMEM125-120	150	1762	608	2030	268.5	1971.5	DN50	DN45
OXIAMEM125-160	200	2322	608	2030	268.5	1971.5	DN65	DN50
OXIAMEM125-200	250	2882	608	2030	268.5	1971.5	DN65	DN65
OXIAMEM125-400	500	2882	608	3630	368.5	3571.5	DN65	DN65
OXIAMEM165-100	165	1332	608	2430	268.5	2371.5	DN50	DN50
OXIAMEM165-200	330	2582	608	2430	268.5	2371.5	DN65	DN65
OXIAMEM165-400	660	2582	1516	2530	368.5	2471.5	DN65	DN65



Oxford inspired Advanced Membrane (OXIAMEM)





The advantages of MBR application

Membrane bioreactors (MBR) which combined with membrane separation and conventional activated sludge (CAS) process, was proved to be the best available technology in wastewater industry in the past decade. However fouling is still the bottleneck limited its wider applications. For flat sheet membrane, energy consumption for aeration is higher than others. OXIAMEM offers the integrative solutions for fouling control by antifouling membrane and optimized slug bubbling system to energy saving.



Traditional Active Sludge Process



MBR Process

Case



200CMD Sewage water treatment in Guizhou



600CMD Sewage water treatment in Beijing



80CMD Sewage water treatment in Zhejiang





40CMD Sewage water treatment in Xiamen



5CMD Sewage water treatment in Jiangsu



Oilfield wastewater treatment



No.	Parameters		Calculation & Result
1	Net flux F _N		0.5 m³/m²·d
2	Opera	tion cycle	10 min, operate 8 min , release 2 min
3	Desig	n flow F _G	$F_{G}=F_{N}X10/8=0.625 \text{ m}^{3}/\text{m}^{2}.\text{d}$
4	Membrane area(Calculation)		A _N =Q/F _N =1000/0.5=2000 m ²
F	Losteture	OXIAMEM125-200	Nos. of module=2000/250=8(pcs) 8 OXIAMEM125-200 module
5	Leciolype	OXIAMEM165-200	Nos. of module=2000/330=6.1(pcs) 7 OXIAMEM165-200 module
6	Actual mombrane area	OXIAMEM125-200	A=250x8=2000 m ²
0	Actual membrane area	OXIAMEM165-200	A=330x7=2310 m ²
7	Actual flow	OXIAMEM125-200	F=Q/A=1000/2000=0.5 m ³ /m ² ·d
1	Actual liow	OXIAMEM165-200	F=Q/A=1000/2310=0.43 m ³ /m ² ·d
Q	Plawor	OXIAMEM125-200	Q _A =200x8x10=16000L/min=96 m ³ /h
0	DIOWEI	OXIAMEM165-200	Q _A =200x7x10=14000L/min=84 m ³ /h
0	Suction nump	OXIAMEM125-200	QP=F _G xA/24=0.625x2000/24=52 m ³ /h
5	Sucion pump	OXIAMEM165-200	QP=F _G xA/24=0.625x2310/24=60 m ³ /h
10	Pressure sensor		-100~100 kPa
11	Liquid meter		0~5 m
12	CIP tank		Depend on chemical consumption
13	NTU sensor		0~100 NTU
14	Water flowmeter		10~200 m ³ /h

Note	
 The climate and food habits should be considered, the feed quality Industrial wastewater should be pilot test. 	y is
Depend on the operating conditions	
The flow show on the flow meter	
The membrane area based on net flux	
Lectotype principle: 1.Use the same type module in one MBR system 2.Footprint, dimension of MBR tank should be considered 3.The MBR tanks should contain the same numbers modu le in one 4.Please contact the technical engineer.	ME
Actual membrane area based on the module type and quantity	
Actual flow based on the plant capacity and actual membrane area	
 200 : Nos. of elements for per module 8&7 : Nos. of modules 10 : Air flow for per element , L/min The effective water depth and the pressure loss must be considered system should be set up alone and set the frequency conventer. 1. The capacity of suction pump depend on design flow and the actu 2. Frequency conventer must be set up 3. One pump for one MBR tank 	d for ual
Measure negative pressure, installation on permeate pipe	
Liquid level meter for MBR tank	
The chemical consumption please contact OXIAMEMBRANE Co., I	_td.
Measure the NTU of effluent, installation on permeate pipe	
Measure the flow of effluent installation on permeate nine	



is required.
MBR system
for air pressure. The blower for MBR
al membrane area
td.

OXIAMEM Calculation Case(Municipal wastewater

treatment, Capacity Q=1000CMD)