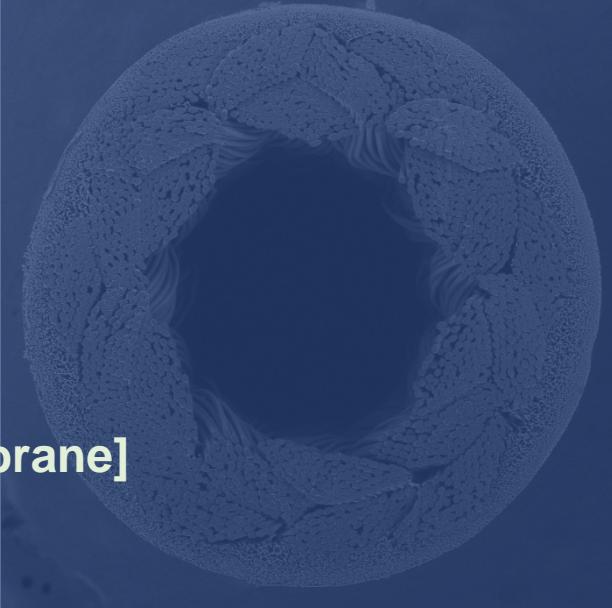


# PHILOS

## Megaflux-MBR

### [Reinforced Composite Membrane]



## Special feature of Megaflux-MBR

### Reinforced Composite Membrane

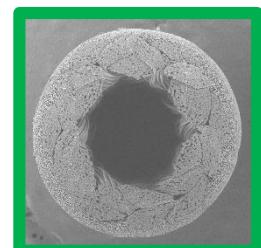
- ⇒ Non-breakable and high-strength composite membrane ensures stable water quality in conditions like high sludge concentration and strong air cleaning process of MBR.
- ⇒ The sponge structure of PVDF hollow fiber membrane exhibits excellent mechanical strength and chemical resistance, making it ideal for wastewater treatment as well as general sewage treatment.
- ⇒ Wide range of membrane pore size,  $0.1\mu\text{m}$ ,  $0.04\mu\text{m}$  and pore filled MF membrane



Tensile strength 30 kgf/fiber  
(40~50 times stronger than hollow fiber membrane)

Wide range of pore size  
MF( $0.1\mu\text{m}$ )/UF( $0.04\mu\text{m}$ )

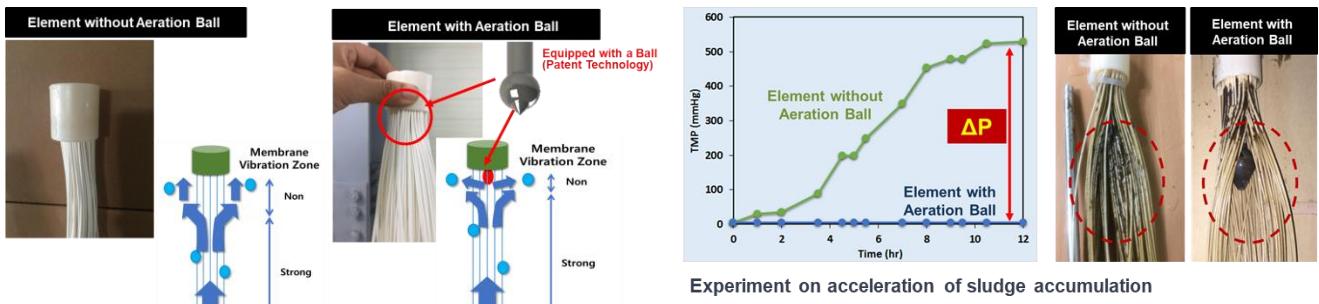
Application	Membranes	Membrane Modules
Water Treatment	<ul style="list-style-type: none"> <li>• Braid UF <math>0.04\mu\text{m}</math></li> <li>• Braid MF <math>0.1\mu\text{m}</math></li> <li>• Hollow fiber UF <math>0.02\mu\text{m}</math></li> <li>• Braid MF <math>5\mu\text{m}</math> / pore filling</li> <li>• Braid MF <math>0.1\mu\text{m}</math></li> <li>• Braid UF <math>0.04\mu\text{m}</math></li> <li>• Hollow fiber UF <math>10\text{K}, 30\text{K}, 60\text{K}, 100\text{K}</math></li> <li>• Braid UF <math>0.04, \text{MF } 0.1</math></li> <li>• PHILOS' UF, MF, Dehumidification membrane</li> <li>• Dehumidification, Humidification, Bioreactor</li> </ul>	<ul style="list-style-type: none"> <li>• Megaflux-CUF (External pressure driven)</li> <li>• SCAF(External pressure driven)</li> <li>• SCAF(External pressure driven)</li> <li>• Super-M(Gravity / external pressure driven)</li> <li>• Megaflux-MBR(Submerged, suction)</li> <li>• Master(Internal pressure driven)</li> <li>• i-MBR(External circulation, pressure reduced suction)</li> <li>• Wellspring(Gravity, External pressure driven)</li> <li>• Hollow fiber modules</li> </ul>
MBR		
Separation /Concentration		
Household		
Specialty		



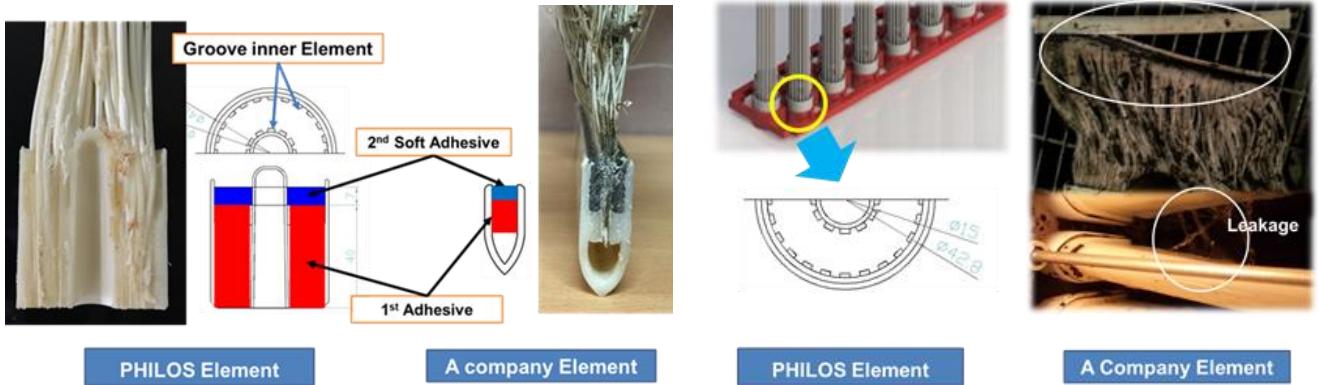
## Unique Structure of Element

**Anti-sludge accumulation technology by ball-shaped structure and aeration port (patented technology)**

- ⇒ Placement of ball like structure on the top of the element helps maintain a stable filter performance for a long time preventing sludge accumulation on top of the MBR.
- ⇒ Aeration nozzle placed in the central lower section of each MBR element maximizes the efficiency of aeration.
- ⇒ Higher water flux without any pressure drop is achieved with unique structures of each Megaflux-MBR element



- ⇒ Perfect mechanical strength by grooves inner element



## DIY Flexible module structure

- ⇒ Megaflux-MBR module is composed of elements. And three different sizes of elements are available, user can choose the size and dimension of the MBR depending on the loading condition, depth of reactor and waste water treatment capacity.
- ⇒ Users can also benefit from PHILOS' years of experience and expert's advice on choosing and designing suitable MBR system for different types of waters such as sewage, municipal or livestock wastewater.
- ⇒ Users can save a lot of added cost with PHILOS' MBR as it provides the flexibility to replace other company's membrane modules without modifying the guide rail. Moreover, it is also possible to manufacture a cassette frame of the same size as other product that is to be replaced.

<p><b>LENGTH SELECTION / PRODUCTION ACCORDING TO SITE CONDITION</b></p> <p>R4 – applicable to small size MBR site R3 – applicable to small – mid size MBR site R2 – applicable to large size MBR sites</p>	
<p><b>DIVERSE ELEMENT ORGANIZATION ACCORDING TO CUSTOMERS' NEED</b></p> <p>Module production using elements of different sizes Various forms of modules according to customers' requests and Site conditions</p>	
<p><b>EXPANDABILITY ACCORDING TO TREATMENT CAPACITY</b></p> <p>Frame production by installing modules of various sizes Various forms of frames according to customers' requests and Site conditions</p> <p><b>CUSTOM MADE PRODUCTION</b></p> <p>Custom made production possible without guide modification or Construction when replacing submergeble membranes</p>	

## Cassette frame

The lower part of the cassette frame is equipped with aerating device, which has a special structure to ensure that there is no blockage due to sludge.

Also, all the materials are stainless steel 304, which is resistant to corrosion and can be used for a long time due to its excellent durability .



### Braid MF reinforced submergible module for water treatment

Possession of high efficiency and impregnated MBR technology

Highly durable braid is used as membrane support and displays high durability (0.1/m, 0.05/m)

Block type for convenient expansion and assembly → membrane is replaceable

Optimal sponge like membrane structure allows small compaction and restoration quality allows high flux



#### CONVENIENT CUSTOMIZATION ACCORDING TO SITES AND SIMPLE ASSEMBLY AND DISASSEMBLY WITH BLOCK STRUCTURE

Customized production where no guide installation is required during replacement



#### APPLICATION OF FLUORORESIN BRAID REINFORCED MEMBRANE

High mechanical strength and maintains outstanding water quality since no breakage of membrane occurs during operation



#### MEMBRANE WITH OPTICAL SPONGE STRUCTURE OF HYDROPHILIC MATERIAL APPLIED

High performance recovery allow stable flux



#### ELEMENT STRUCTURE FOR EFFECTIVE AERATION

Element structure with separate diffuser for minimization of membrane fouling during operation



#### SLUDGE DISCHARGING DIFFUSER STRUCTURE

Blockage problem solved by open type diffuser for sludge discharge



## Element



[ 3 types of Megaflux-MBR Element ]

Element Type	Specification	Weight (kg/element, Dry)	Application
R4	$\Phi 46 \times H 935\text{mm}$	0.425	small capacity
R3	$\Phi 46 \times H 1,290\text{mm}$	0.47	small ~ medium capacity
R2	$\Phi 46 \times H 1,810\text{mm}$	0.67	large capacity

[ Element Specification ]

## Module

 1,000mm	 1,270mm	 2,070mm	 Cassette Frame
R4-7 Module	R3-7 Module	R2-7 Module	Cassette Frame

[ 3 types of Megaflux-MBR Module ]

## Module Specification

Item	Membrane Material	Pore Size ( $\mu\text{m}$ )	Membrane Area ( $\text{m}^2$ )	Capacity <sup>2)</sup> ( $\text{m}^3/\text{day}\cdot\text{module}$ )	Module Dimension (W x L x H, mm)
R4-7	Hydrophilic P VDF	0.1 <sup>1)</sup> (0.04)	3.85	1.5 ~ 1.9	62 x 528 x 1,068
R3-7			5.49	2.2 ~ 2.7	62 x 528 x 1,478
R2-7			8.26	3.3 ~ 4.1	62 x 528 x 2,078

- 1) Major pore size of MBR is basically  $0.1\mu\text{m}$ . However we can also offer  $0.04\mu\text{m}$  membrane for the purpose of RO pretreatment or any other applications  
 2) Sewage treatment standard in MBR process  
 3) For industrial wastewater treatment, the module quantity should be applied 1.5~2 times more than sewage treatment.  
 4) For livestock wastewater treatment, the module quantity should be applied 3~4 times more than sewage treatment.

## Cassette Frame

Cassette Frame	Capacity ( $\text{m}^3/\text{d}$ )	Weight (kg, Dry)	Aeration <sup>1)</sup> ( $\text{Nm}^3/\text{min}$ )	Cassette Frame Dimension (W x L x H, mm)
Megaflux-MBR 10	10	45	0.38	593 x 508 x 1,340
Megaflux-MBR 20	20	74	0.61	593 x 818 x 1,340
Megaflux-MBR 30	30	97	0.79	593 x 1,066 x 1,340
Megaflux-MBR 40	40	121	1.01	719 x 1,128 x 1,340
Megaflux-MBR 50	50	149	1.24	719 x 1,376 x 1,340
Megaflux-MBR 60	60	136	1.07	719 x 1,190 x 1,750
Megaflux-MBR 70	70	139	0.88	593 x 1,190 x 2,350
Megaflux-MBR 80	80	148	0.96	719 x 1,066 x 2,350
Megaflux-MBR 90	90	166	1.07	719 x 1,190 x 2,350
Megaflux-MBR 100	100	185	1.18	719 x 1440 x 2,350
Megaflux-MBR 200	200	385	2.40	1,438 x 1,438 x 2,350

B-1210, 60 Haan-ro, Gwangmyeong-si, Gyeonggi-do, Korea 14322  
 Tel. +82-2-859-3456

email. [mbrwater@pmbr.co.kr](mailto:mbrwater@pmbr.co.kr)  
[www.pmbr.co.kr](http://www.pmbr.co.kr)    [www.pmems.co.kr](http://www.pmems.co.kr)

# About PHILOS

Established in 2002, PHILOS is a leading membrane manufacturing company in Korea offering varieties of products such as; membrane modules(UF, MF and MBR), membrane systems for separation and concentration, and even membrane evaluation and manufacturing systems(MEMS). It has also been commercializing and distributing portable membrane water purifiers as appropriate technologies to underserved community ([www.wellspring.kr](http://www.wellspring.kr)). PHILOS is a research-oriented professional company who can offer specified designs and solutions to researchers as far as membrane technology. PHILOS has been recognized as Innobiz certified company by the government of Korea. It also has secured two ISO certification; ISO 9001 and ISO 14001 certifications for specializing in developing parts and materials.



The visionary leader and CEO of PHILOS; Dr. Jeong-Hak Kim, has always challenged and pushed the company's boundary to strive for better and brighter tomorrow. Besides handling the company, Dr. Kim has been also leading and guiding 2500 corporate members of KISTI (Korea Institute of Science and Technology Information) as a chairman. He is also the current vice president of The Membrane Society of Korea, and the Scientists and Engineers Without Borders (SEWB) which shows his dedication, passion, experience and leadership in the field of Science and engineering.

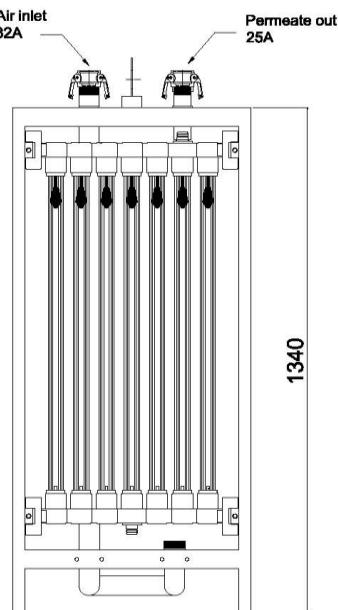
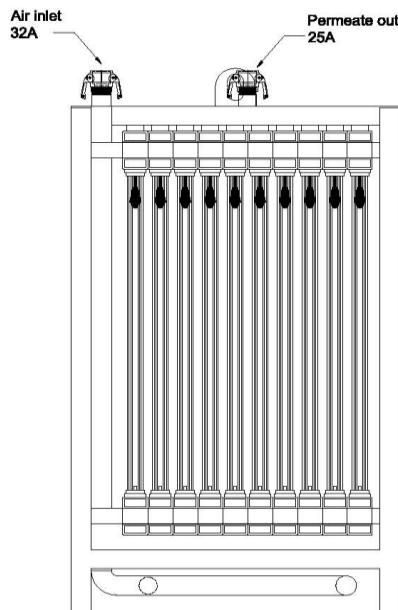
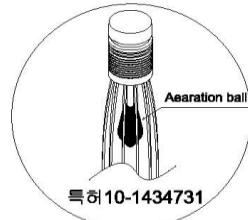
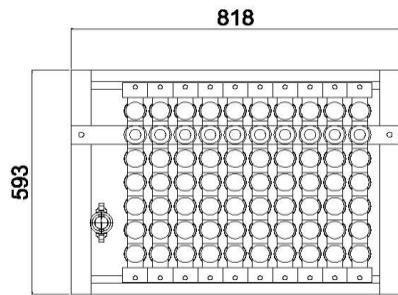


For more inquiries on business of PHILOS, please refer to [www.pmbr.co.kr](http://www.pmbr.co.kr).

# Appendix



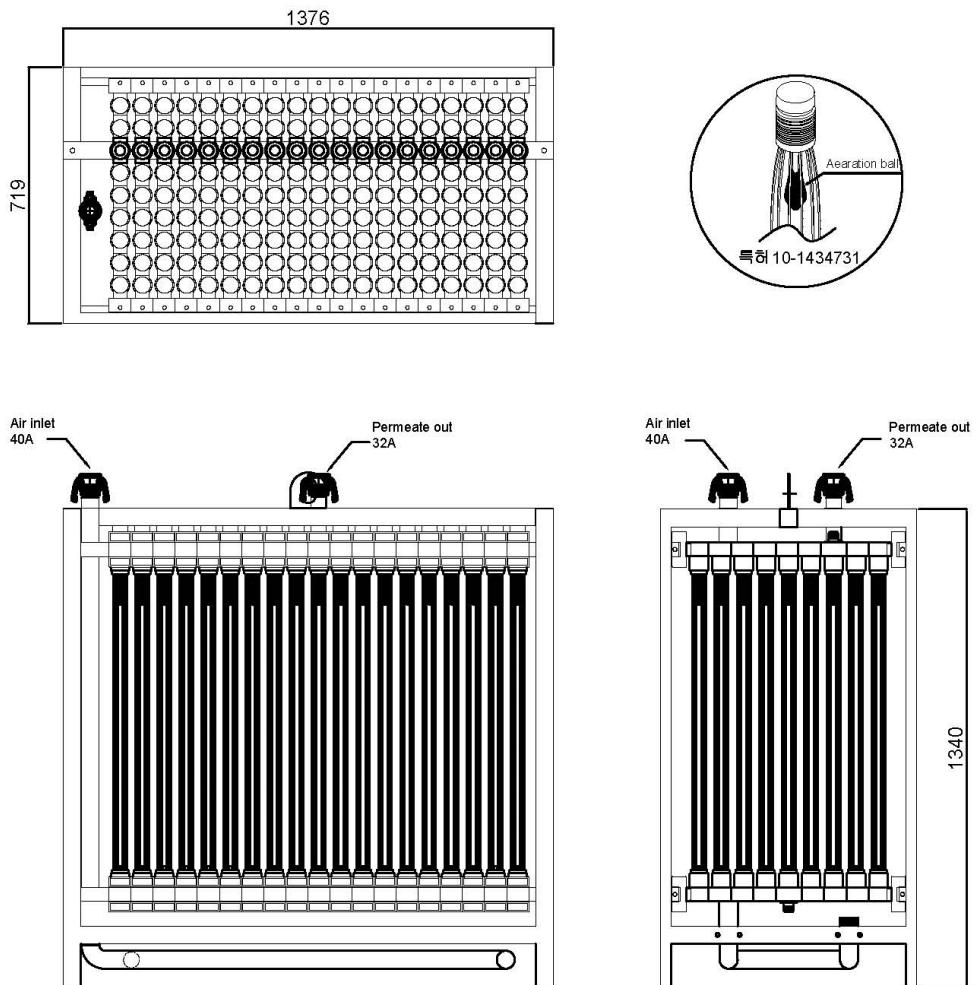
# Megaflux-MBR 20



REV.	DATE	DESCRIPTION	DRW. DGN. CHK. APP.
CLIENT		TITLE	
PROJECT NAME		Module Assembly	
WORKS NO.	DRAWING NO.		
	DWG. FILE NO.		REV.
SAMPLE PARTNO#	UNIT IN (mm)	SCALE 1:100 M.F. NO. -	SIZE A3
PHILOS Co., Ltd.		Korea 439-795	
PHILOS		6100 6 block Gyeonggi Techpark, 1501 Bahn-dong, Gwangmyeong-si, Gyeonggi-do, Korea 439-795	

[ Megaflux-MBR 20 Cassette Frame ]

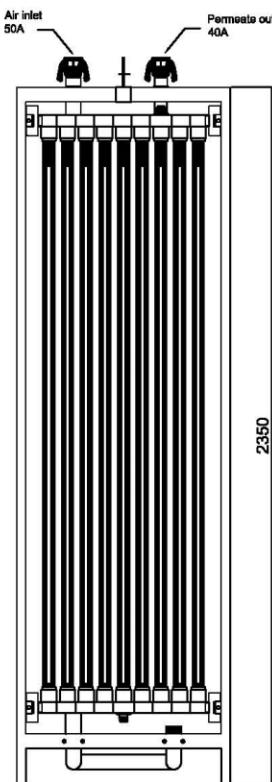
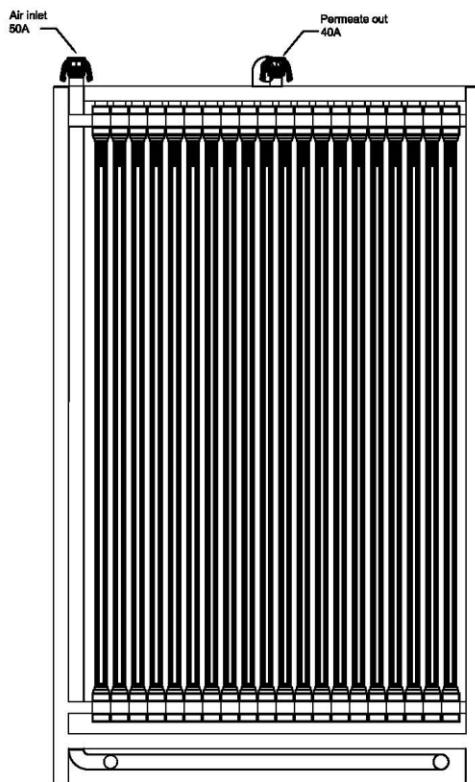
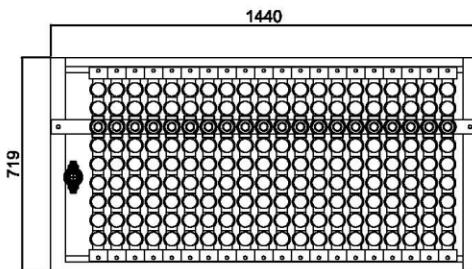
# Megaflux-MBR 50



REV	DATE	DESCRIPTION	DRW	DGN	CHE	APP
CLIENT			TITLE			
PROJECT NAME			Module Assembly			
WORKS NO.	DRAWING NO.		DWG. FILE NO.			REV
UNIT IN	SCALE	REF NO.		SIZE	A5	A
PHILOS Co., Ltd.	● 833-1 Abol Gwanggyo-ro 1345 Toki-eup Gwanggyo-eup, Gyeonggi-do, Korea 422-795	PHILOS				

[ Megaflux-MBR 50 Cassette Frame ]

# Megaflux-MBR 100



REV.	DATE	DESCRIPTION	DIN	DIN APP
CLIENT		TITLE		
PROJECT NAME		Module Assembly		
WORKS NO.	DRAWING NO.			
Safety Drawing	UNIT	SCALE	REV.	
		AS DRAWN	M.F. NO.	- SIZE AS
				PHILOS Co., Ltd.
				PHILOS ©2010 H Mech Comprence Techno's 1545 Seo-dong, Gwangmyeong-si, Gyeonggi-do, Korea 423-705

[ Megaflux-MBR 100 Cassette Frame ]