

# Megaflux- MBR



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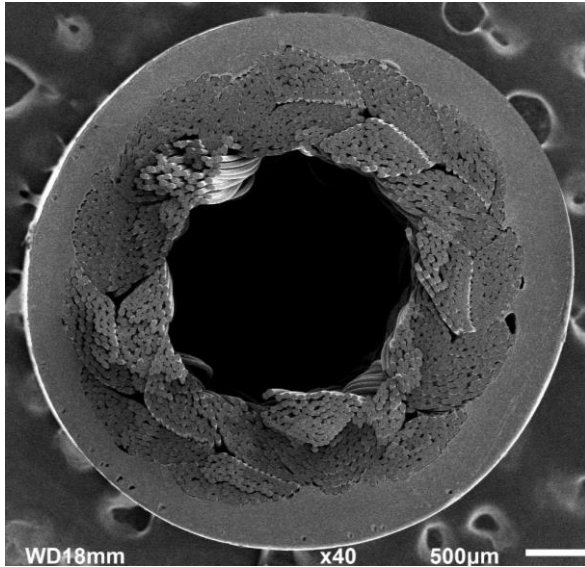
**PHILOS**

*Total Solution for Membrane Technology*

# 1. Core Technology

Patent No. 10-0666669

## Highly durable RCM (Reinforced Capillary Membrane)



**RCM**  
(Reinforced Capillary Membrane)

**01** Optimized membrane structure for suction filtration (Sponge structure)

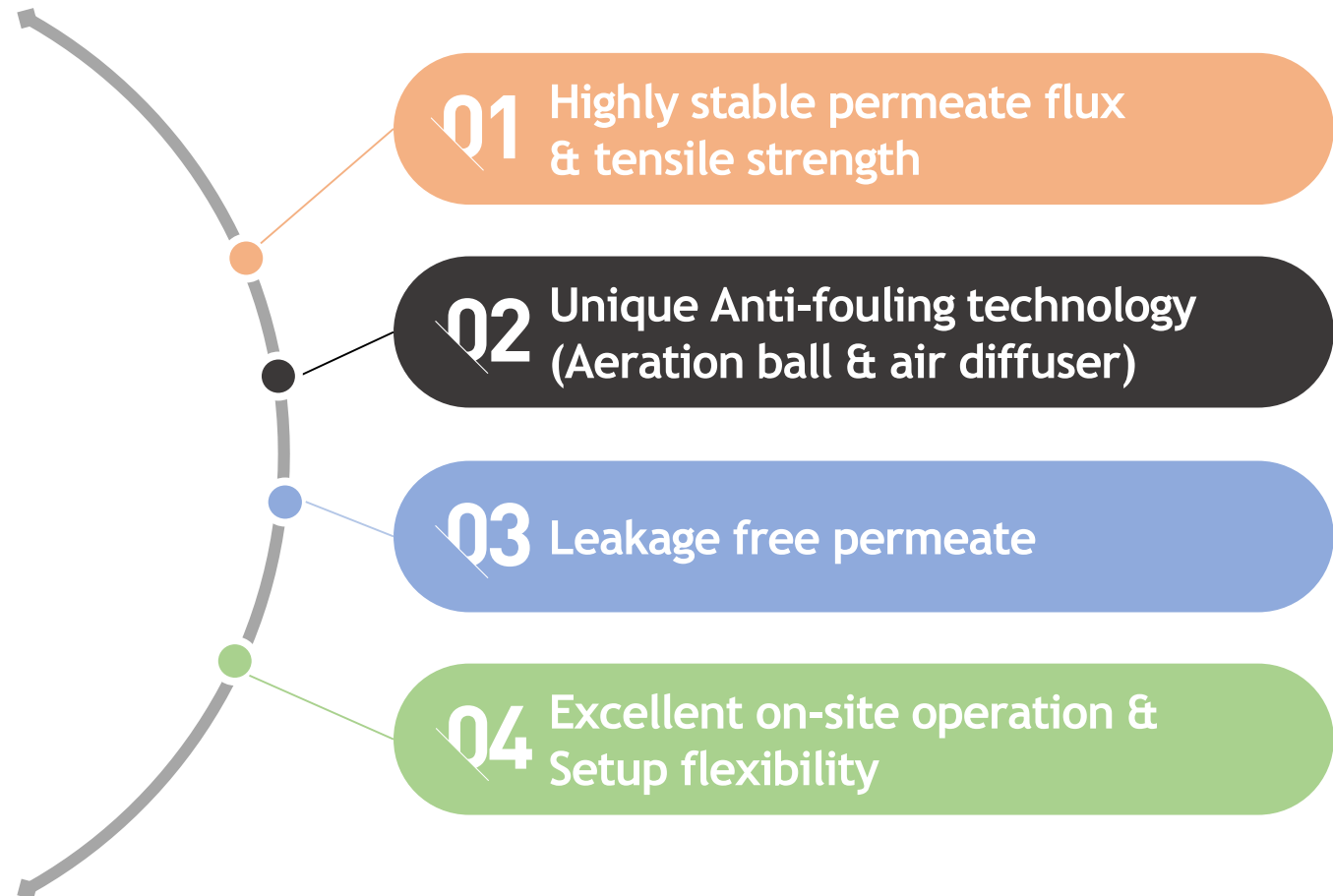
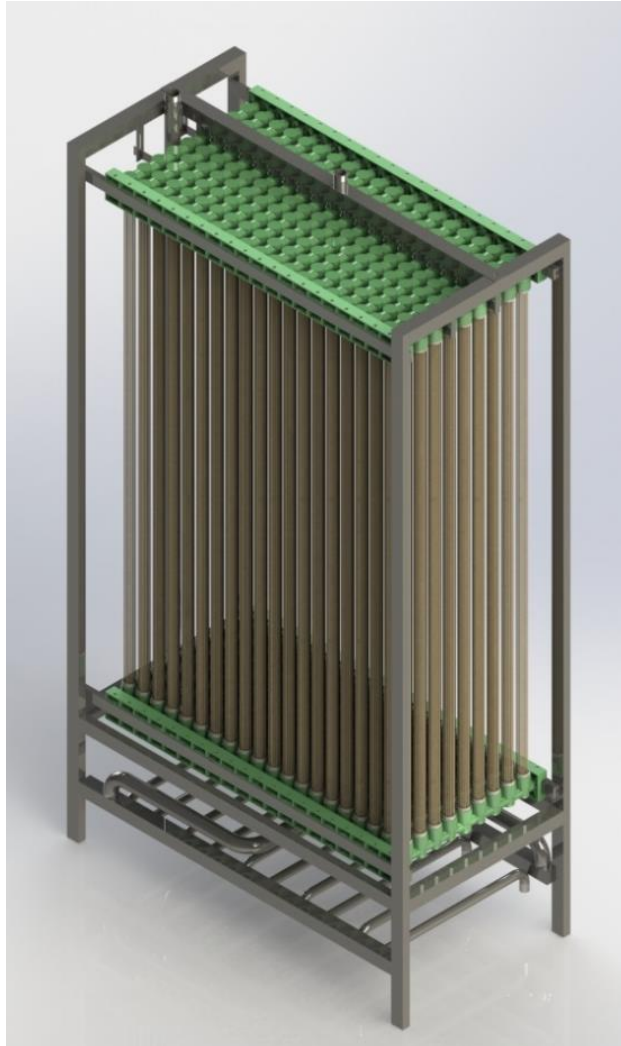
**02** Excellent chemical and fouling resistance (PVDF material)

**03** High filtration flux  
(Max.  $0.7\text{m}^3/\text{m}^2 \cdot \text{day}$ )

**04** Various pore size  
( $0.4\mu\text{m}$ ,  $0.1\mu\text{m}$ ,  $0.04\mu\text{m}$ )

## 2. Special Feature

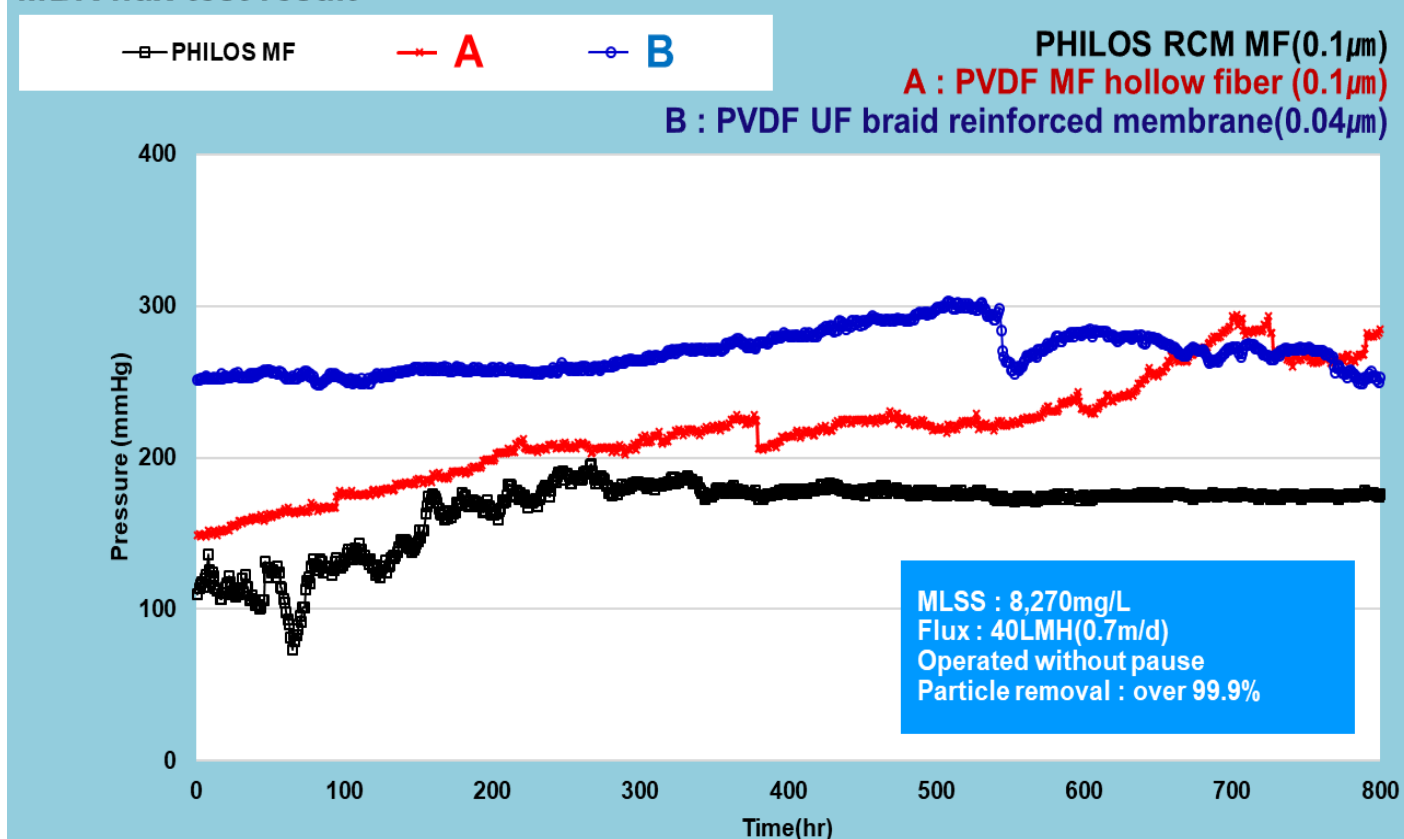
Patent No. 10-0666669



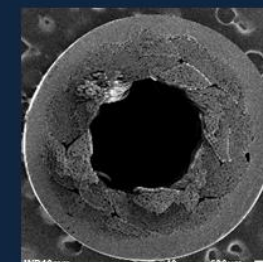
## 2.1 Highly stable permeate flux

Stable performance through optimal membrane structure and long-term use

MBR flux test result

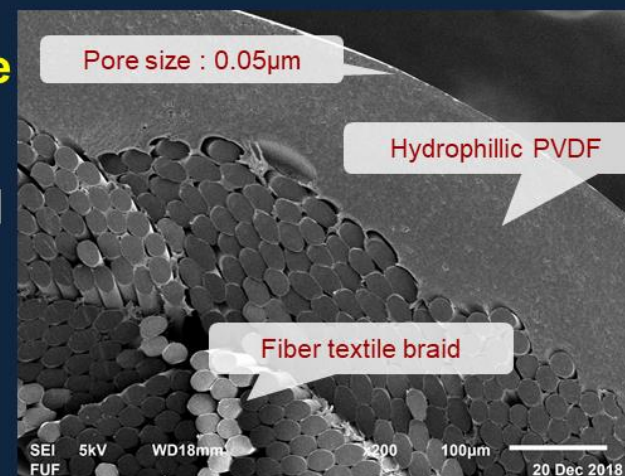


RCM UF SEM Image



Sponge

Braid

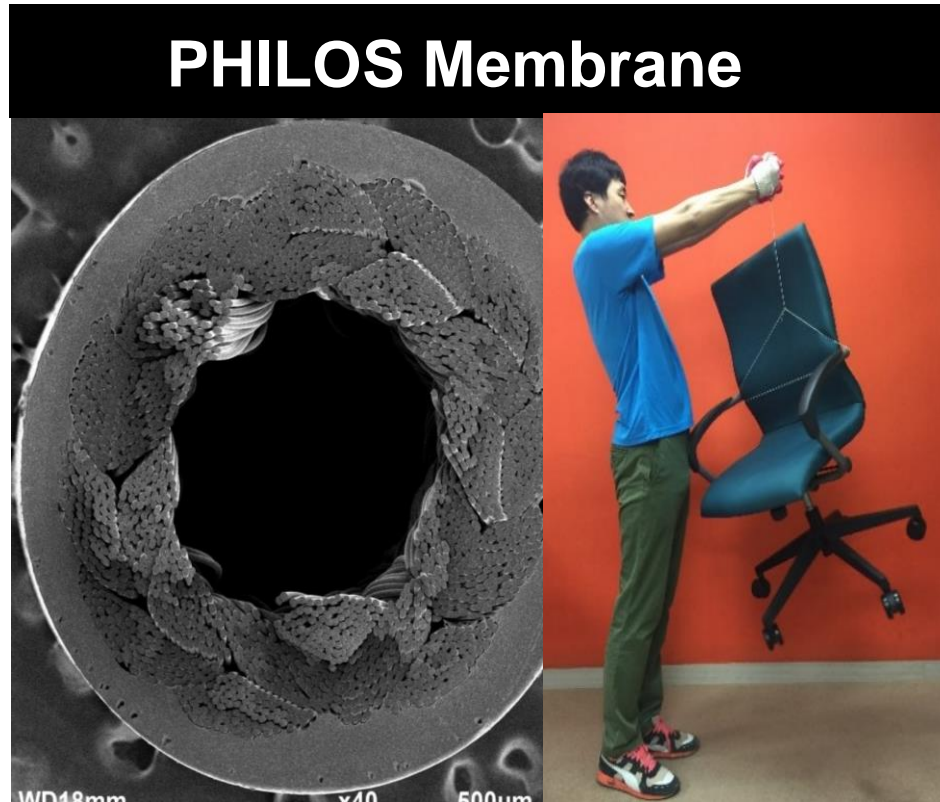


Membrane cross section detail

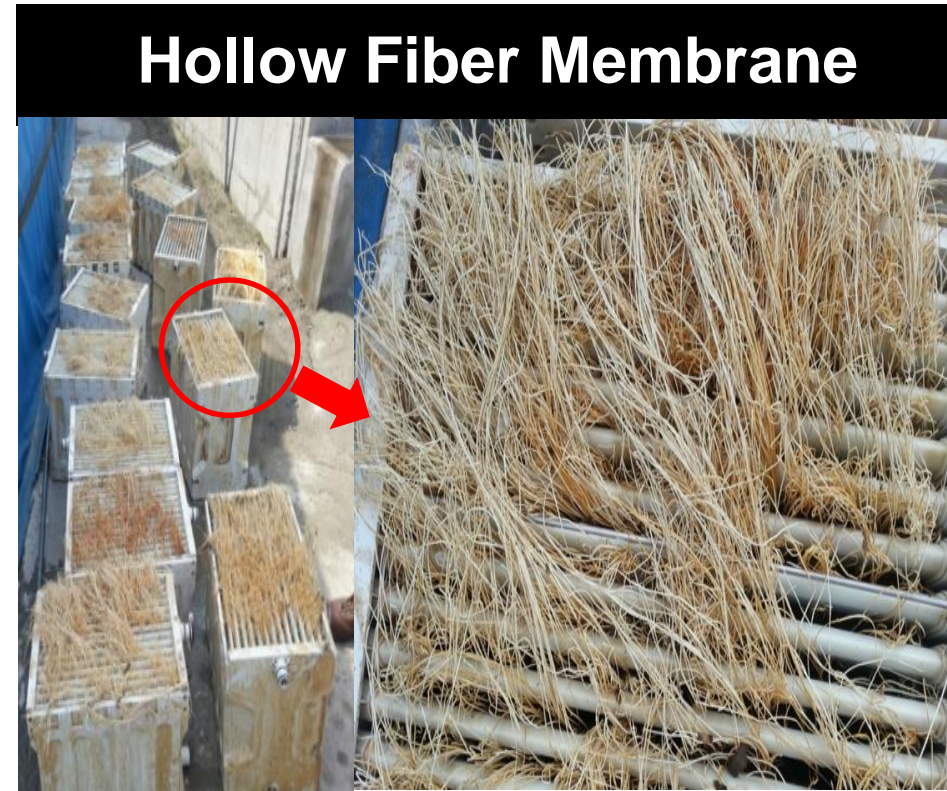


## 2.1 Durability of product with high tensile strength RCM

The high tensile strength makes the membrane unbreakable even in harsh conditions;  
high-tactness and strong air cleaning



- Tensile strength 40~50 kgf/fiber  
(40 ~50 times stronger than hollow fiber membrane)
- Wide range of pore size  
MF( $0.1\mu\text{m}$ ,  $0.4\mu\text{m}$ ) / UF( $0.05\mu\text{m}$ )



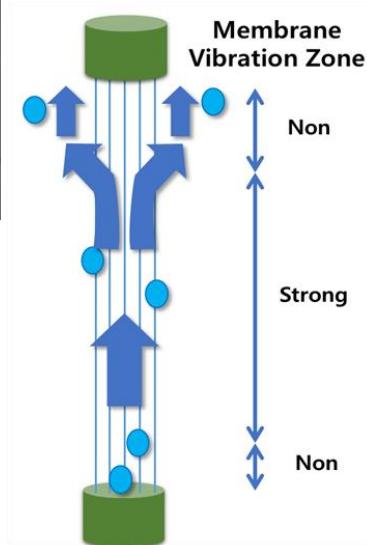
- Frequent breakage
- Leakage of turbidity during operation

## 2.2 Anti fouling property with installation of aeration ball

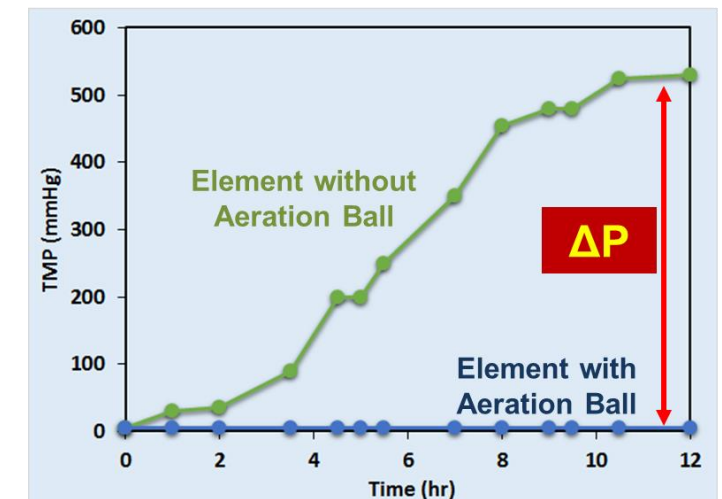
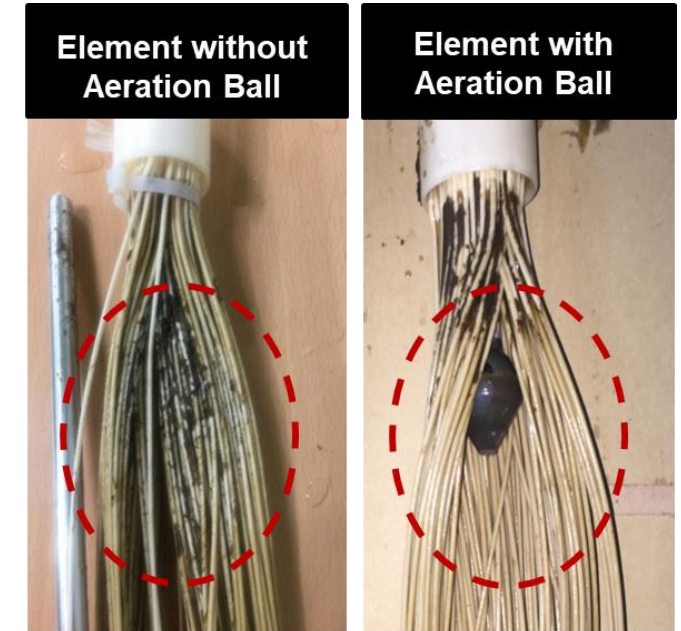
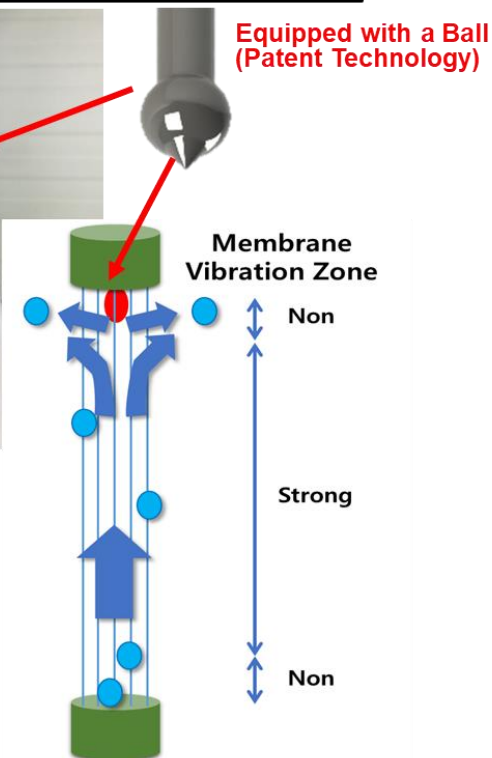
Patent No. 10-143431

The fixed Aeration Ball within the membrane element help secure long-term performance of the membrane by preventing sludge accumulation.

Element without Aeration Ball



Element with Aeration Ball

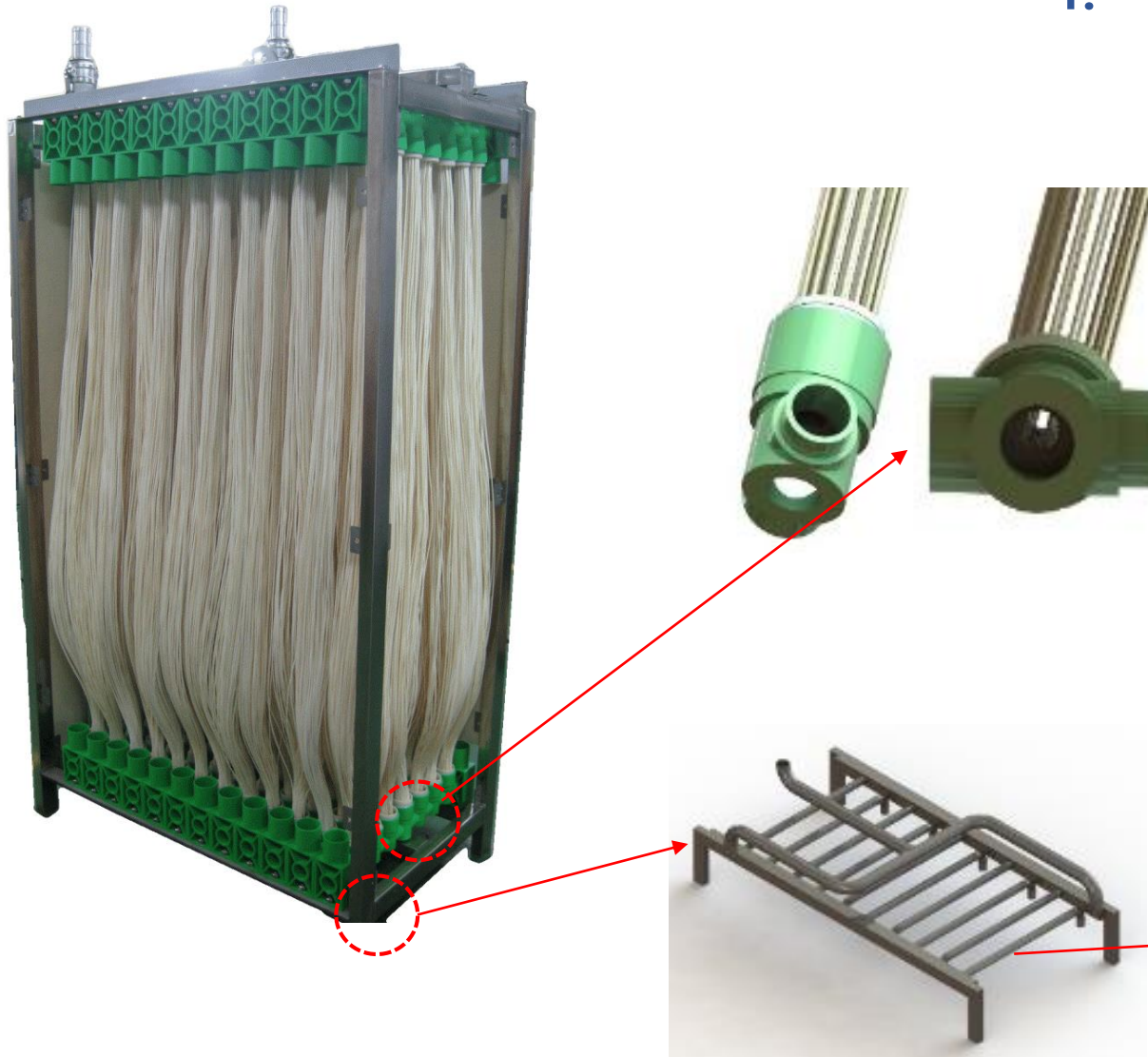


Experiment on acceleration of sludge accumulation

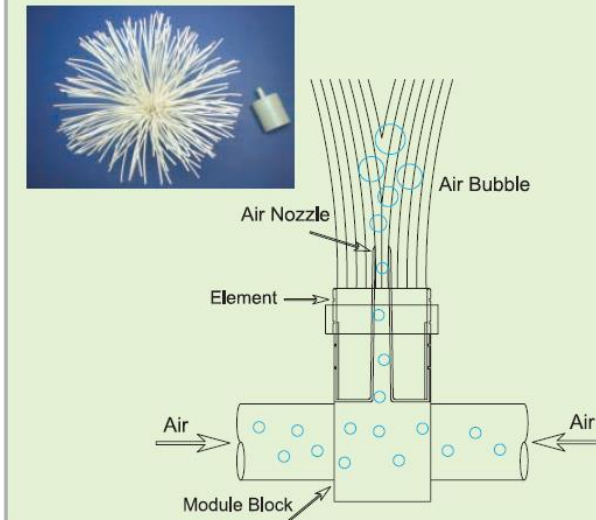


## 2.2 Anti fouling property with air nozzles and diffuser

1. Internally integrated air nozzles at the bottom of each membrane element help prevent membrane fouling



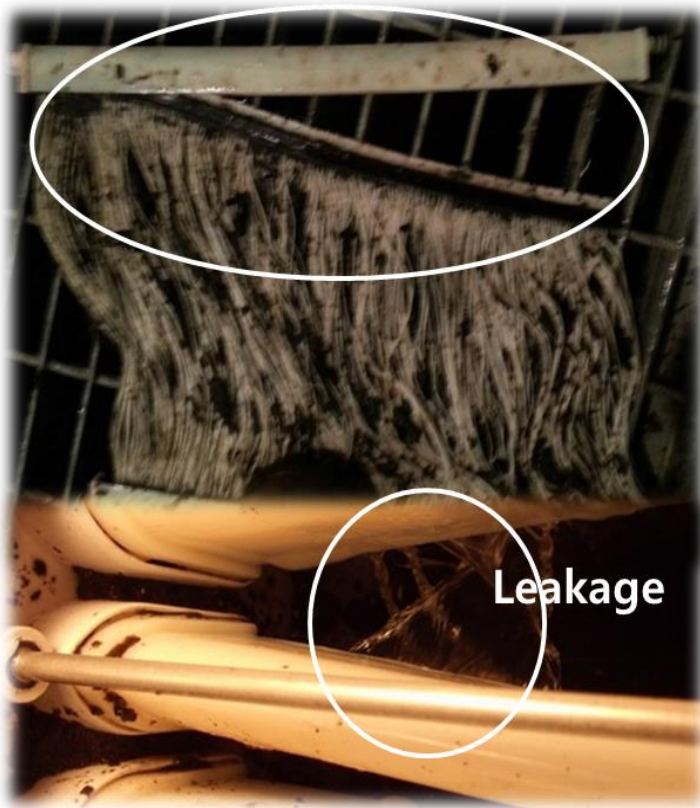
Membrane element combined with aeration nozzle



2. Frame air diffuser also provides anti fouling property by preventing blockage of air holes brought by the sludge

## 2.3 Leakage free permeate with excellent adhesive element structure

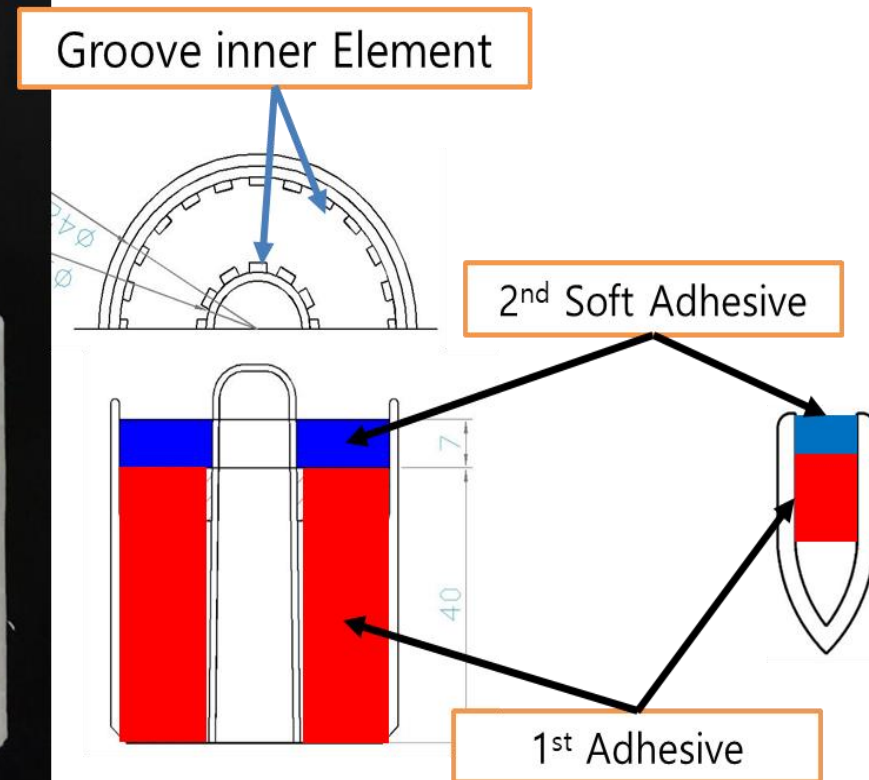
Strong adhesive technology between individual membrane and extrusion helps prevent leakage of permeate



A company Element



PHILOS Element

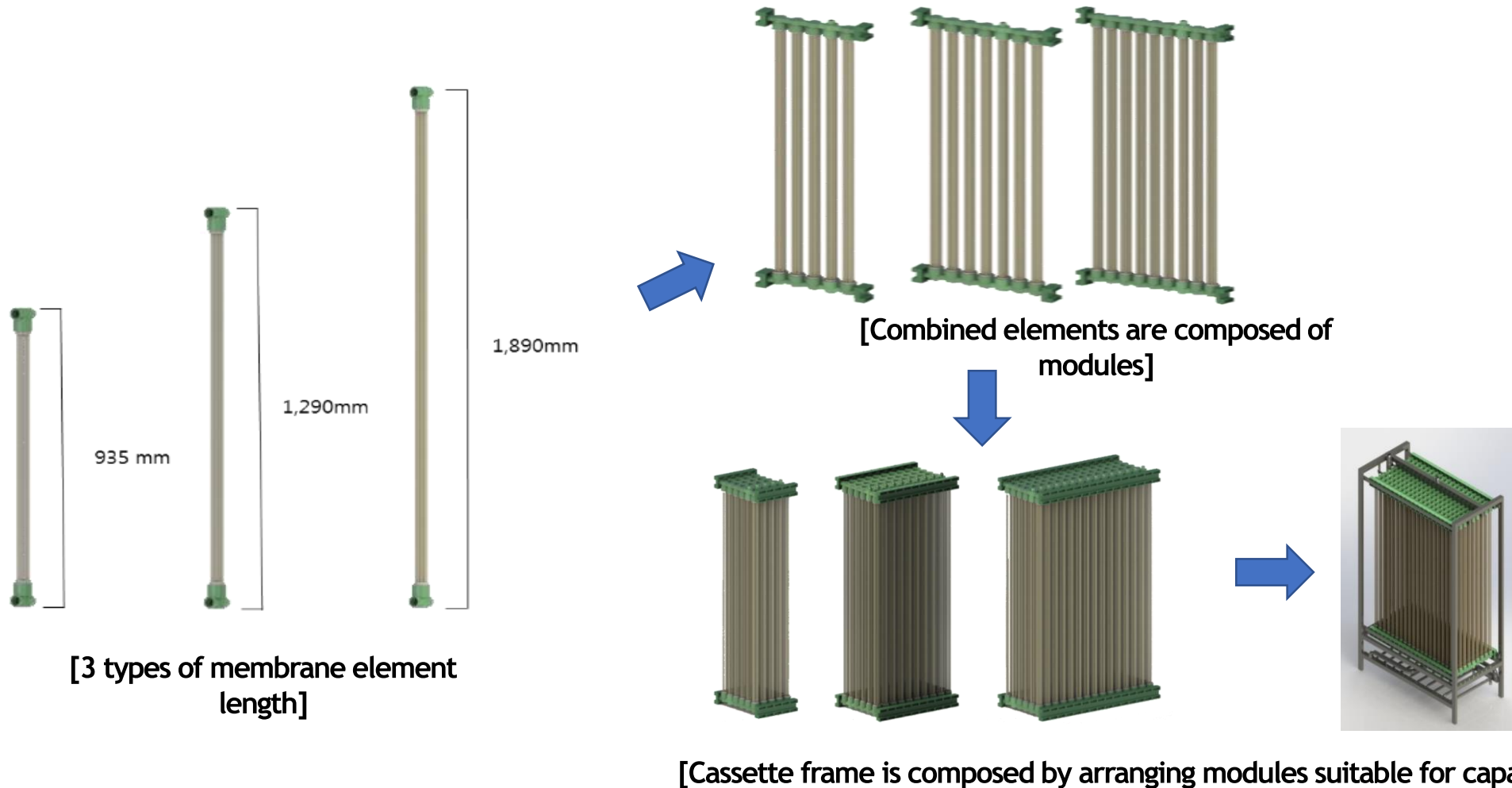


A company Element



## 2.4 Excellent on-site operation & setup flexibility

Availability of various cassette frame gives PHILOS's MBR greater flexibility for onsite MBR setup, replacement and operation without the need of additional construction (Customized product)



### 3. Range of Applications



**Public sewage/village/building  
sewage treatment plant**



**Water reuse**



**Livestock wastewater treatment**



**Food/Milk and Meat production  
Industry**



**Laboratory/Hospital/Laundry  
wastewater**



**Landfill Leachate wastewater**

# 4. Technical Specification

Parameters		Specification
Membrane	Membrane Polymer	PVDF
	Support Material	Reinforced Capillary Membrane by Braid Polyester
	Pore Size	0.1μm
	Fiber Dimensions	ID 0.039" (1.0mm), OD 0.08" (2.0mm)
	Tensile Strength	15 kgf/fiber
Operating Condition	Max. TMP	< 400 mmHg
	Normal pressure	50 ~ 200 mmHg(normal)
	Max. temp.	40 °C
	pH range	5 ~
	Filtration cycle	5 ~ 7 min. on, 1 ~ 5 min. off ( 10~14min. On, 0.5~1min Backwash )
	Chemical cleaning	In-line Cleaning : NaOCl 300 ~ 500 ppm, twice a day Recovery Clean : NaOCl 3000 ppm, once 2~6 month



**Membrane**  
RCM 0.1 μm / 0.4 μm  
**Element**  
Air diffuser all-in-one type  
**Frame**  
Block assembly for easy to expand and assemble



# Reference List : Examples

## Semiconductor plant wastewater treatment

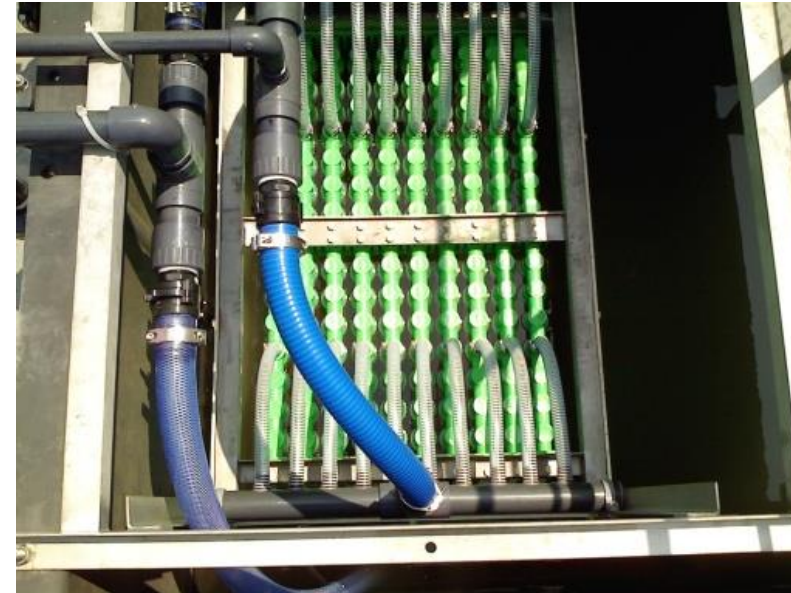
- Capacity : 4,000 m<sup>3</sup>/day
- Membrane : 0.1μm Braid reinforced hollow fiber membrane
- No. of Cassette : 96 cassette
- Total Membrane Surface Area : 16,700m<sup>2</sup>
- Designed flux : 0.24m<sup>3</sup>/m<sup>2</sup>·day
- CEBW : Once a day(w/NaOCl or Citric acid)
- CIP : Once a month(w/NaOCl or Citric acid)
- Filtered water quality : SS < 10ppm(BOD and COD are below the standard value)



# Reference List: Examples

## RO pretreatment for seawater desalination

- Capacity : 300 m<sup>3</sup>/day
- Membrane : 0.04μm Braid reinforced hollow fiber membrane
- No. of Cassette : 2 cassette
- Total Membrane Surface Area : 1,000m<sup>2</sup>
- Designed flux : 0.3m<sup>3</sup>/m<sup>2</sup>·day
- CEBW : Once a day(w/NaOCl or Citric acid)
- CIP : Once a month(w/NaOCl or Citric acid)
- Filtered water quality : SDI < 5

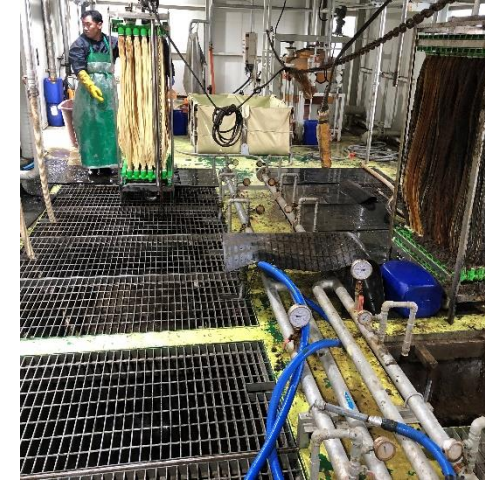




# Reference List: Examples

## Food processing wastewater treatment

- Capacity : 200 m<sup>3</sup>/day
- Membrane : 0.1μm Braid reinforced hollow fiber membrane
- No. of Cassette : 10 cassette
- Total Membrane Surface Area : 1,000m<sup>2</sup>
- Designed flux : 0.2m<sup>3</sup>/m<sup>2</sup>·day
- CEBW : Once a week(w/NaOCl or Citric acid)
- CIP : Once every three months(w/NaOCl or Citric acid)
- Filtered water quality : SS < 10ppm(BOD and COD are below the standard value)





# Reference List: Examples

## Wafer grinding wastewater treatment

- Capacity : 50 m<sup>3</sup>/day
- Membrane : 0.04μm Braid reinforced hollow fiber membrane
- No. of Cassette : 1 cassette
- Total Membrane Surface Area : 330m<sup>2</sup>
- Designed flux : 0.15m<sup>3</sup>/m<sup>2</sup>·day
- CEBW : Once a day(w/NaOCl or Citric acid)
- CIP : Once every two months(w/NaOCl or Citric acid)
- Filtered water quality : SS < 10ppm

