

KOLON membrane technologies



We can Challenge the Global Top 10 Water Treatment Company in Our Outstanding Technologies.

KOLON has developed the product that can be applied to various fields such as industrial, Purifier, fuel cell, and bio pharmaceutical of membrane technology more than 25 years and from the development of processes and systems to the operation and management for water and wastewater treatment.

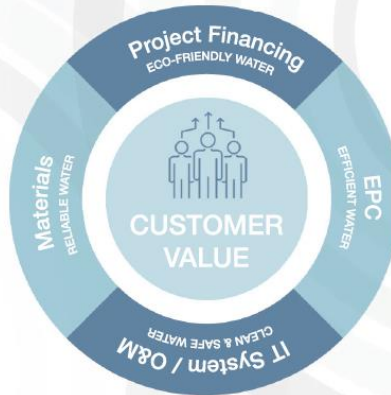
KOLON provides total water solution based on the unique membrane technology and up to the reuse of water integer, wastewater, the field of application are diverse.

KOLON will continue to innovate with passion and unremitting efforts in order to leap into the world leader as a primary domestic leader.

Promote Synergy between KOLON Companies to Provide Total and Integrated Service.

Membrane

KOLON Industries
Cleanfil™-S Membrane



KOLON Global

Sewage / Wastewater / Drinking water treatment plant



IT System



KOLON BENIT

Monitoring System Cleanfil-M : Package System



Engineering & Equipment



KOLON Environmental Service
Membrane water treatment



KOLON e Eng.
DF, Plant water treatment



KOLON Fjord Processing
Oil / Gas plant eng.

Chemical



KOLON Life Science
Water treatment coagulant

Company Specializing in Membrane Technology

- Since the beginning of research on ultrafiltration in 1989, we have accumulated the related technologies for 29 years.
- Water purifier, bio-pharmaceutical, water treatment (drinking, wastewater), humidifier

Cleanfil™-S

WT/WWT, Reclamation and desalination(pre-treatment)
Long-term durability(Braid reinforced)

Cleanfil™

Water Purifier
Perfect removal of micro-particles and microorganisms

BioPuri™

Pharmaceutical and Bio-researching Products
Special grades of separation

Ecomate™

Humidifier and MEA Stack
Hydrogen fuel cell for vehicles & stationary generators



BioPuri bundle



Cleanfil™-S module



Ecomate module



Cleanfil™-S20H



Module	S20H-20C	S20H-20D
Pore size	0.1µm	0.04µm
Surface Area	20m ²	
Width	1,185mm	
Length	105mm	
Height	626mm	
Case material	ABS	
Dry weight	13.8kg	

SKID	S20H-20CE041	S20H-20CE101	S20H-20CE082	S20H-20CE202	S20H-20CE123	S20H-20CE303
Number of Modules	4EA	10EA	8EA	20EA	12EA	30EA
Surface Area	80m ²	200m ²	160m ²	400m ²	240m ²	600m ²
Width	555mm	1,185mm	555mm	1,185mm	555mm	1,185mm
Length	1,250mm	1,250mm	1,250mm	1,250mm	1,250mm	1,250mm
Height	1,354mm	1,354mm	1,947mm	1,947mm	2,540mm	2,540mm
SKID Frame material	STS 304					
Diffuser	Included					

*THE SKID specifications can be modified according to the site conditions.
□: C = S20H-20C, D = S20H-20D

Cleanfil™-S30V



Module	S30V-36B	S30V-36C
Pore size	0.1µm	0.04µm
Surface Area	36m ²	
Width	1,070mm	
Length	49.5mm	
Height	2,380mm	
Case material	PVC	
Dry weight	15kg	

SKID	S30V-36□F121	S30V-36□F201
Number of Modules	12EA	20EA
Surface Area	430m ²	720m ²
Width	1,111mm	1,687mm
Length	1,288mm	1,288mm
Height	2,837mm	2,837mm
SKID Frame material	STS 304	
Diffuser	Included	

*THE SKID specifications can be modified according to the site conditions.
□: B = S30V-36B, D = S30V-36C

Cleanfil™-S40V



Module	S40V-22A	S40V-22B
Pore size	0.1µm	0.04µm
Surface Area	22m ²	
Width	698.5mm	
Length	50.5mm	
Height	2,345mm	
Case material	PVC	
Dry weight	9.2kg	

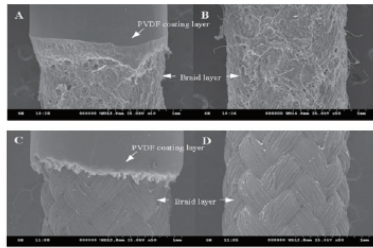
SKID	S40V-22□A382	S40V-22□A702
Number of Modules	38EA	70EA
Surface Area	836m ²	1,540m ²
Width	1,510mm	1,526mm
Length	1,250mm	2,100mm
Height	2,774mm	2,794mm
SKID Frame material	STS 304	
Diffuser	Included	

*THE SKID specifications can be modified according to the site conditions.
□: A=S40V-22A, B=S40V-22B

Cleanfil™-S Reinforced Membrane Properties

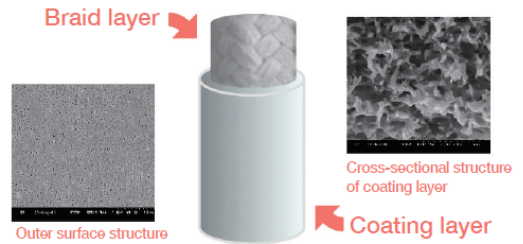
- High-strength composite hollow fiber membrane developed by KOLON's own technology
- Coating layer : PVDF of sponge like structure with membrane function
- Peeling strength : Fibrous support layer with high mechanical properties

➔ Excellent strength compared to competitors.



CLEANFIL™-S

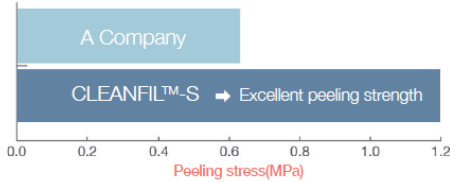
A Company



- High permeability and stable rejection
- Excellent strength and durability

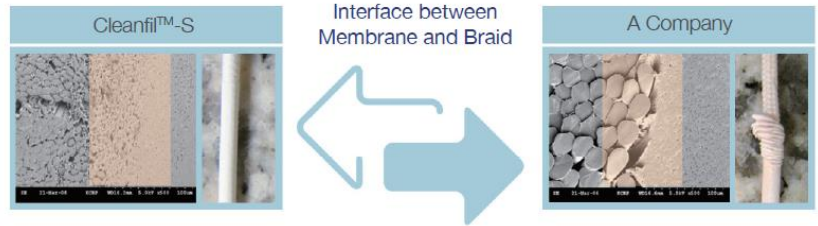
Membrane property

Membrane material	Braid material	ID / OD	Pore size	Pure permeability	Tensile strength
PVDF	PET	0.8/2.0 mm	0.1, 0.04 μ m	1080LMH at-100mmHg	>30 kg./fiber



Mechanical Strength of Cleanfil™-S

- Achieving the best anti-peeling strength in the world through effective diffusion of braid layer and membrane layer
- The possibility of water quality accident caused by separation of the membrane layer is 0%.

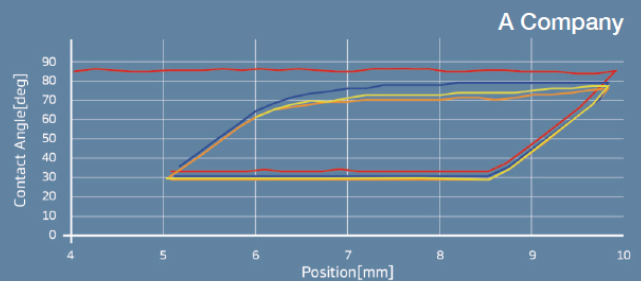
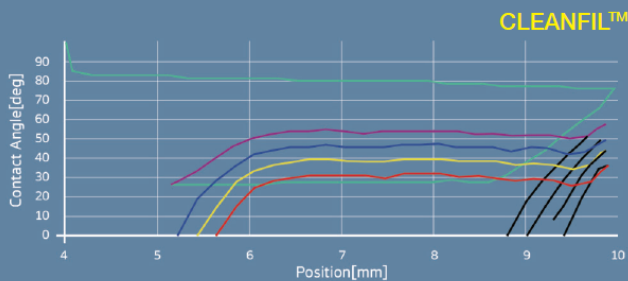


Wetting Agent Free Property

- Easy handling because no wetting agent is used
- Even used membrane can be stored in dry condition for up to 6 months after simple cleaning.

Sample	Permeability(LMH/bar)		
	Dry	Wet	Dry/Wet
Cleanfil™-S	900	1,080	83%
Third party	24	720	3%

- Contact angle analysis of KOLON membrane showed that more than 90% of hydrophilization was restored within 5 minutes : 50° ➔ 30°
- No change in contact angle analysis for third-party membranes.

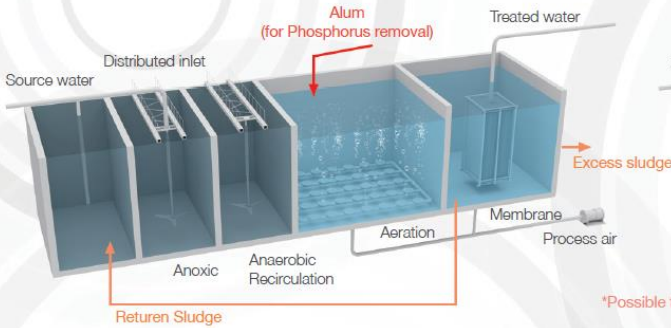


KOLON Membrane Process

KOLON membrane products compose of reinforced hollow fiber membrane made with PVDF (Polyvinylidene Fluoride) that has excellent fouling resistance, chemical resistance and mechanical strength. The membrane also has outstanding water permeability and regular removal performance. Accordingly, it can be applied to various water treatment system.

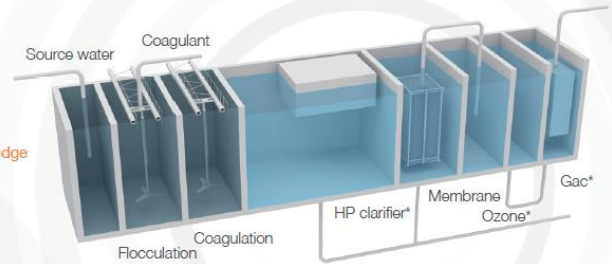
Wastewater Treatment Process

- Small footprint, easy operation, long SRT operation
- Stable water treatment



Drinking Water Process

- Resistant to water quality & quantity fluctuation
- Stable water treatment is possible even with the introduction of specific substances



*Possible to alter according to source water characteristic and the objective quality of treated water

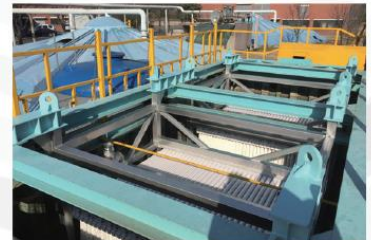
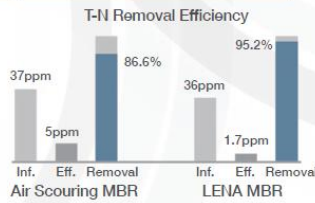
LENA (Less Energy No Aeration)

Higher Operating Flux

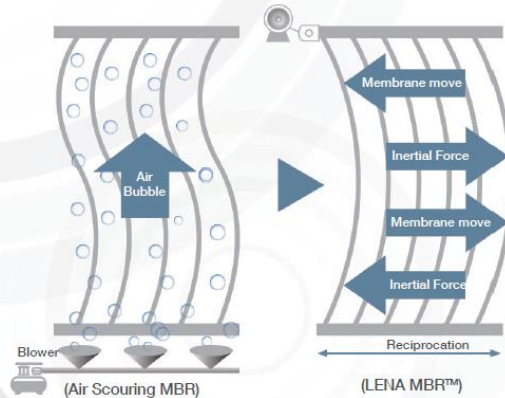
Power Consumption up to 75% saving

Improved Nitrogen Removal

20~40LMH Operating Flux



How It works



Basic Engineering Data

Item	Value	
Design Flux	15~40LMH	
Maintenance cleaning (Organic)	Chemical type	Sodium Hypochlorite
	Concentration	200~500mg/L
Maintenance cleaning (Inorganic)	Chemical type	Citric Acid, Oxalic Acid
	Concentration	200~1,000mg/L

Item	Value	
Cleaning Air	0.003~0.01Nm ³ /min•m ²	
Recovery cleaning (Organic)	Chemical type	Sodium Hypochlorite
	Concentration	2,000~3,000mg/L
Recovery cleaning (Inorganic)	Chemical type	Citric Acid, Oxalic Acid
	Concentration	3,000~15,000mg/L

Typical Performances

Sewage water



**Guri I³ System
Sewage Treatment Plant**
Client ----- Guri City
Capacity ----- 26,250m³/day



**Siheung Mokgam
Sewage Treatment Plant**
Client ----- Siheung City
Capacity ----- 13,000m³/day



**Sejong City
Sewage Treatment Plant**
Client ----- Sejong City
Capacity ----- 80,000m³/day

Drinking water



**Yeongdeungpo Drinking Water
Treatment Plant in Seoul**
Client ----- Seoul City
Capacity ----- 25,000m³/day



**Gongsan Drinking Water
Treatment Plant in Daegu**
Client ----- Daegu City
Capacity ----- 40,000m³/day



**Drinking Water Treatment Plant
in Nongfu, China**
Client ----- Nongfu Spring co., China
Capacity ----- 6,720m³/day

Industrial Wastewater



**Gumi K Factory
Wastewater Treatment Plant**
Client ----- K company
Capacity ----- 10,000m³/day



**Jeungpyeong Industrial Complex
Wastewater Treatment Plant**
Client ----- Jeungpyeong City
Capacity ----- 2,500m³/day



Jeonbuk Innovation City
Client ----- Jeonbuk City
Capacity ----- 15,000m³/day

Total Cumulative Sales Volume : 500,000m³/day (400 sites)

Year	Field name	Volume	Module qty	Type of raw
2010	Kolon waste water disposal	10,000	800EA	Industrial Wastewater
2011	Terminal disposal plant of sewage in Changwon	6,000	400EA	Sewage
2011	Chungju, Innovation City	5,500	480EA	Sewage
2012	Jeonnam, Innovation City	10,000	800EA	Sewage
2014	Jeonbuk, Innovation City	15,000	1,300EA	Sewage
2015	Happy City, Water Quality Restoration Center (B-1)	30,000	2,160EA	Sewage
Under construction	Happy City, Water Quality Restoration Center (A-2)	50,000	3,200EA	Sewage
Under construction	Waste water from Jeonbuk Iksan	10,000	800EA	Industrial Wastewater

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