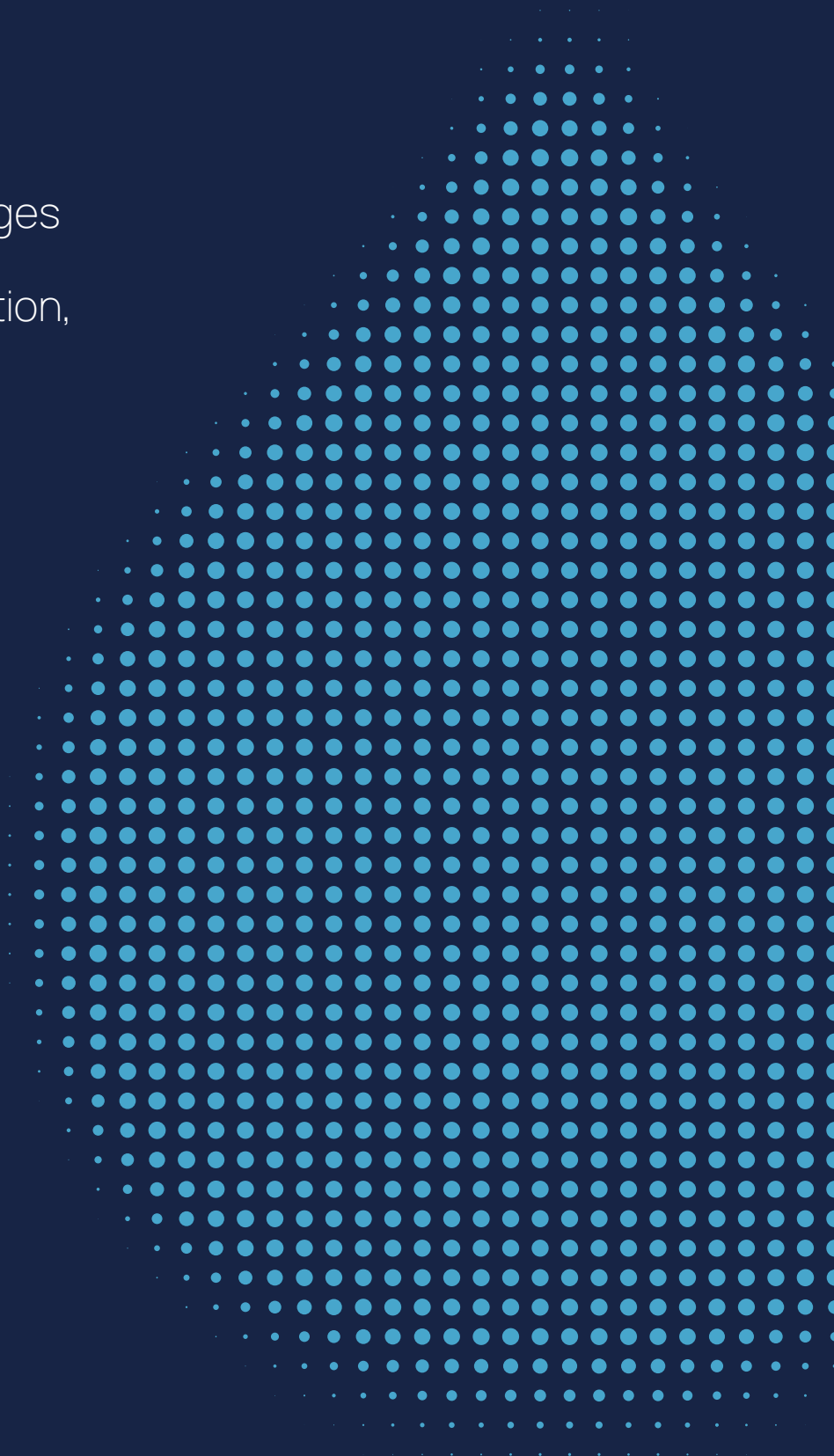
www.s-nano.com

Innovative Water Solutions: Redefining The Future Of Nanofiltration

Solving global challenges for purification, separation, conservation, & reuse



snano

SNANO PTE. LTD.
Advancing Water Technology

Revolutionizing global membrane technology through our breakthrough ceramic-based composite membranes, Snano redefines membrane separation with higher performance, lower environmental impact, and unrivaled durability.

MISSION
To make all water in the world trustworthy water.

CORE VALUES
Responsible for every drop of water, responsible for every generation.

VISION
To become the guardian of the global water cycle, to become the promoter of water resource regeneration.



ORIGINS

Founded under the Singapore-China Joint Flagship Project Call for International Cooperation in Science and Technology Innovation (2023), Snano embodies the spirit of cross-border scientific collaboration.

MILESTONES

APRIL 2023

Official project signing witnessed by both Prime Ministers of Singapore and China.

October 2024

Launch of industrialization for ceramic-based composite nanofiltration membranes.

May 2025

Authorized Kunshan subsidiary for China market commercialization—a breakthrough from "0 to 1" innovation.



GOVERNMENT & RESEARCH SUPPORT

SNANO benefits from world-class research collaboration through Nanyang Technological University (NTU) and the Singapore Membrane Technology Centre (SMTC).

LEADERSHIP EXCELLENCE



Prof. Rong Wang

CSO/Co-founder

- President's Chair Professor, NTU;Executive Director, NEWRI
- Editor-in-Chief, Journal of Membrane Science
- Recipient of Singapore President's Technology Award (2022)

Dr. Dongfei Li

CEO

- 40+ years in membrane R&D and commercialization
- 11 patents, 30+ publications
- Pioneer in asymmetric membrane morphology studies





Dr. Lei Shi

CTO

- Expert in forward osmosis membrane technology
- Developer of world's first hollow-fiber composite FO membranes

TECHNOLOGY BREAKTHROUGH

Traditional organic membranes suffer from PFAS contamination, microplastic release, and high carbon footprints.
SNANO's ceramic-based composite membrane eliminates these issues through a unique integration of ceramic durability and organic selectivity.

KEY INNOVATIONS

- Cross-material interfacial polymerization for seamless ceramic–organic bonding
- Nanoscale surface modification for enhanced strength and stability
- PFAS-free, microplastic-free, low-carbon footprint

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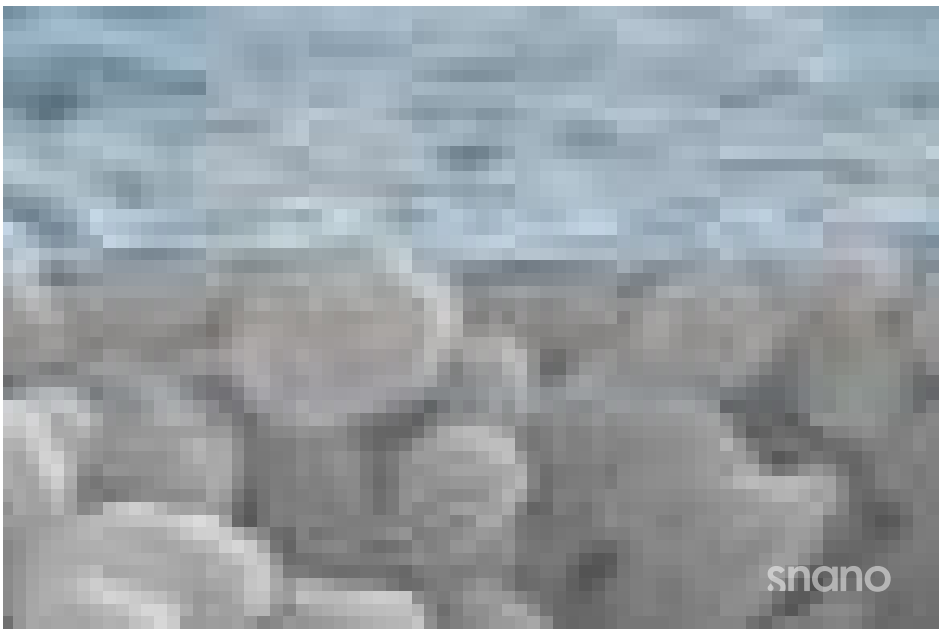


SYSTEM COMPARISON

Comparison Item	Traditional Dual Membrane (UF+NF)	Ceramic-Based Composite Single Membrane	Improvement
System Complexity	High (two membrane systems)	Low (one membrane system)	50% Simplification
Footprint	Large	Compact	30-40% Smaller
Energy Use	High	Low	25-35% reduction
O&M Costs	High	Low	40-50% Savings
Treatment Efficiency	Good	Excellent	10-15% Better

Characteristic Indicators	Organic Nanofiltration Membrane	Inorganic Nanofiltration Membrane	SNANO Ceramic Based Composite Nanofiltration Membrane
Separation Precision	High but degrading	Low	High and long-term stable
Anti-fouling Properties	Poor	Poor	Excellent, adjustable charge
Oxidation Resistance	Poor	Excellent	Easy
Service Life	Short, aging-prone	Long, non-regenerable	Regenerable
Safety	PFAS + microplastic risks	Safe	No PFAS, no microplastic

FOUR CORE ADVANTAGES



1.PRECISION + COST BALANCE

High performance without ceramic cost overheads.

2.ENHANCED DURABILITY

Stable under pH 3–11, resistant to heat and corrosion

3.GREEN & SAFE

Zero PFAS, zero microplastics, lower carbon footprint

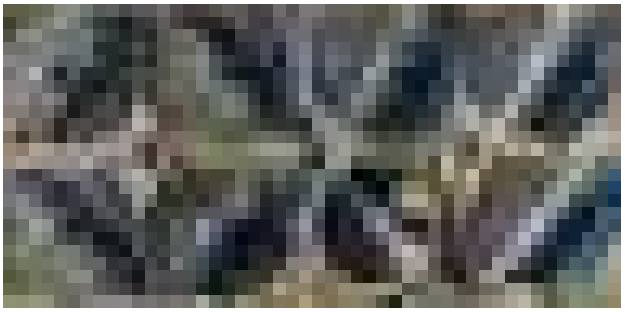
4.SIMPLIFIED PROCESS

ONE FOR TWO
Innovative Snano Ceramic NF outperforms UF+NF combo with superior energy efficiency

PROPRIETARY CHARGE EFFECT TECHNOLOGY

Each SNANO membrane features a nanoscale organic coating with adjustable surface charge, optimizing pollutant rejection for different industrial environments—achieving both high precision and long-term stability.

HIGH-VALUE APPLICATIONS



- **Industrial waste water treatment**

  Petrochemical: oily wastewater treatment
  Textile: dye recovery and water reuse
  Semiconductor: high-salinity wastewater (ZLD-ready)



- **Resource Recovery & Reuse**

  Concentration and purification in food, pharma, and chemical production



- **Municipal & Emergency Supply**

  High-quality drinking water production,
  Modular water supply for remote areas

MeMagic

Challenges in Traditional Systems

- LONG CUSTOMIZATION CYCLES
- HIGH MAINTENANCE COMPLEXITY
- HIGH EQUIPMENT COST

Snano Solution

Robust, anti-fouling, easy-to-clean systems needing no backwash — enabling rapid deployment through design-free, integrated modules.



COMPETITIVE STRENGTHS

Technology Leadership
The only company with scalable ceramic-based composite membrane production.

Cost Efficiency
Lower lifecycle cost via proprietary low-carbon manufacturing.

Ecosystem Position
Synergizing upstream and downstream partners across the membrane industry.

MARKET MOMENTUM

25%

Global Water Scarcity

25% of cities face water shortages

ZLD

ZLD Demand

Rapid growth in wastewater resource recovery.

ESG

ESG Drivers

Stricter standards pushing greener tech adoption

PARTNERSHIP OPPORTUNITIES

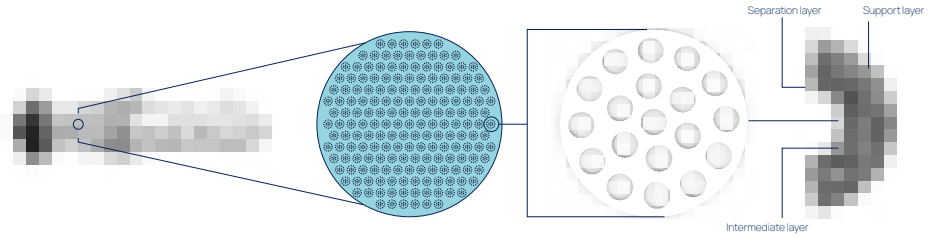
SNANO empowers partners through technology licensing, joint development, and co-innovation, enabling transformation across ceramic substrates, module design, and coating processes.

TOWARDS A SUSTAINABLE FUTURE

SNANO is redefining water treatment—from filtration to full resource recovery.
With clean technology that eliminates PFAS and microplastics, reduces carbon emissions, and extends system lifespan, we're building the foundation for a sustainable, circular water economy.



A ceramic-based composite membrane (CBcM) is fabricated using ceramic membranes as the substrate through specialized coating processes. It exhibits high water flux, excellent ion selectivity, and superior durability. This membrane technology enables water treatment systems to achieve efficient water recovery and contaminant reduction, serving as an ideal solution for industrial zero liquid discharge (ZLD) and resource recirculation applications.



SUPERIOR PERFORMANCE CHARACTERISTICS

The composite membrane architecture exhibits remarkable monovalent/divalent cation discrimination capabilities, enabling selective ion separation processes that yield high-purity concentrated brines whilst substantially reducing the volume of concentrate streams requiring thermal treatment. This selective permeation characteristic significantly diminishes downstream processing costs and energy requirements.

The optimised membrane configuration incorporates professionally engineered pore structures that confer superior mechanical integrity and extended operational lifespan. The membrane modules deliver exceptionally high water flux rates, thereby enabling operators to achieve enhanced water recovery ratios or reduce specific energy consumption at equivalent recovery rates.

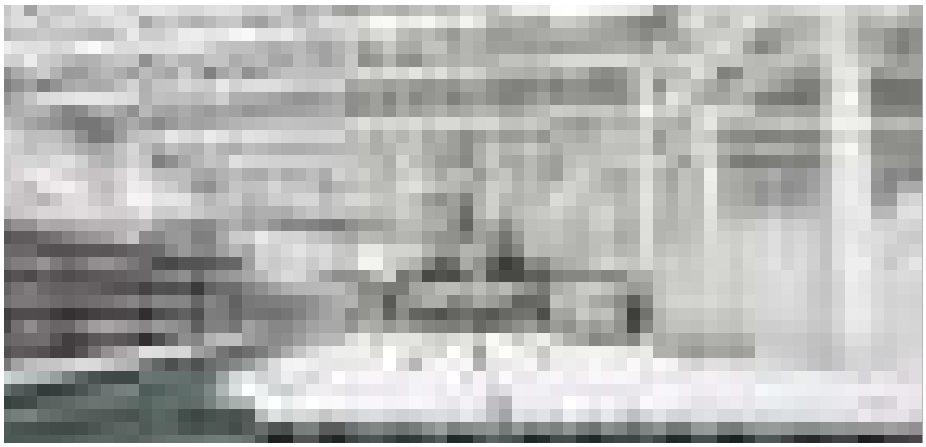
This performance enhancement directly contributes to improved process economics and resource utilisation efficiency. The CCM-cNF9040 and CCM-cNF6040 provide effective membrane areas of up to 25 m^2 and 9 m^2 respectively, reducing both system investment and ongoing operating costs.

EXTENSIVE APPLICATION FIELDS

In industrial minimal liquid discharge (MLD) systems, it enables industrial enterprises to significantly reduce pollutant emissions and achieve green manufacturing. In high water-consuming industries such as textile dyeing, steel production, and petrochemicals, the membrane can be utilized for industrial resource recovery and reuse, achieving water recirculation and helping enterprises reduce costs while improving efficiency.

Additionally, it can be applied in water softening processes to enhance industrial water quality, ensuring stable operation of production equipment and reducing maintenance costs. In the chlor-alkali industry, this membrane module optimizes production processes, improving product quality and production efficiency.

In landfill leachate treatment applications, particularly in decolorization processes, it effectively purifies leachate, addresses environmental pollution challenges, and achieves harmless leachate treatment.





MEMBRANE PERFORMANCE PARAMETERS

Near-neutrally / negatively charged nanofiltration membrane				
"X"	LMH@1bar Pure water permeability	$MgSO_4$ Rejection	NaCl Rejection	6K dextran Rejection
10	40-50	10%	--	≥95%
30	For more information, please contact us.			
50				
70				
90	15 (Max20)	>80% (Max95%)	<10%	---

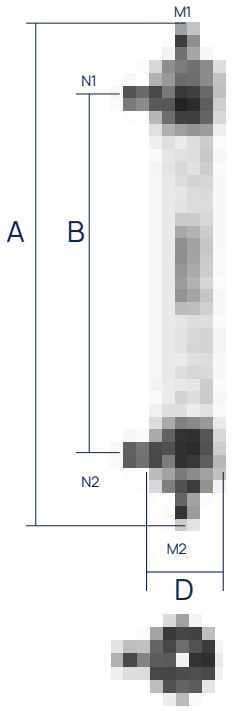
Positively charged nanofiltration membrane				
"X"	LMH@1bar Pure water permeability	$MgCl_2$ Rejection	NaCl Rejection	Notes
90+	15-20 (Max20)	>80% (Max95)	<10%	Max

pH-stable nanofiltration membrane				
"X"	LMH@1bar Pure water permeability	$CaCl_2/MgCl_2$ Max Rejection	P element Max Rejection (pH=1)	Notes
90AB+	15-20 (Max20)	>90%	<10%	pH stable

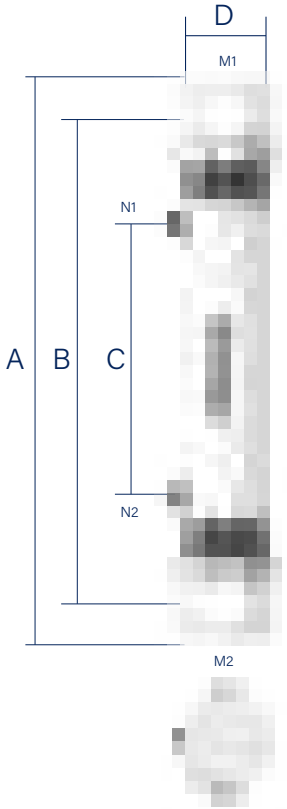
●Salt rejection and flux are based on the following standard test conditions: 1,000 ppm $MgSO_4$, 2 bar, 25°C, 50% recovery rate. ●Salt passage= The salt concentration in the permeate divided by the average salt concentration at the inlet and outlet of the concentrate.●Permeate flow rates of individual membrane module may vary within a range of +/-15%.●The above specifications are nominal values. Be sure to follow Snano's design guidelines when operating the system.●'X' represents the rejection rate for magnesium sulfate.●"AB" represents acid and alkali resistance.●"+" represents the positive charge.

LEADERSHIP EXCELLENCE

uPVC (Membrane housing)			
Model	CCM-CNF6010-2.5-uPVC-X	CCM-CNF6020-4.5-uPVC-X	CCM-CNF6040-09-uPVC-X
Dimensions	A:555mm(±5mm) B: 190mm(±0.3mm) D:ϕ160mm(±3mm)	A:755mm(±5mm) B: 390mm(±0.3mm) D:ϕ160mm(±3mm)	A:1255mm(±5mm) B: 890mm(±0.3mm) D:ϕ160mm(±3mm)
Feed inlet (M1/M2)	Size:DN32 Connection: Adhesive bonding		
Permeate Outlet (N1/N2)	Size:DN32 Connection: Adhesive bonding		
Effective Membrane Area	2.5m²	4.5m²	9m²
Flow Channel Dimensions	ϕ1.6mm (Circular flow channel)	ϕ1.6mm (Circular flow channel)	ϕ1.6mm (Circular flow channel)
Weight	Net weight : 8kg (±2kg) Shipping weight: 13kg+2kg	Net weight: 14kg(+2kg) shipping weight: 22kg+2kg	Net weight. 25kg (+3kg) Shippingweight: 41kg+2kg
Housing material	uPVC	uPVC	uPVC
Installation Configuration	Both vertical/horizontal installation		
Module Configuration	Supports single or series operation		



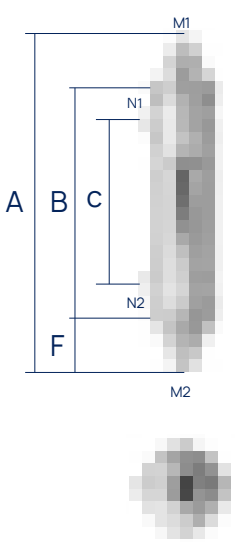
PVC (Membrane housing)	
Model	CCM-cUF9040-16-uPVC
Dimensions	A: 1480mm (±2mm) B：1279mm (±2mm) C: 700mm (±1mm) D： φ280mm
Feed inlet (M1/M2)	Size:DN100 Connection method: Coupling connection
Permeate Outlet (N1/N2)	Size:DN50 Connection method: Coupling connection
Effective Membrane Area	16m²
Flow Channel Dimensions	ϕ1.6mm (Circular flow channel)
Weight	Net weight : 50kg (±5kg) Shipping weight: 90kg(±5kg)
Housing Materia	uPVC
Installation Configuration	Both vertical and horizontal installation
Module Configuration	Supports single or series operation

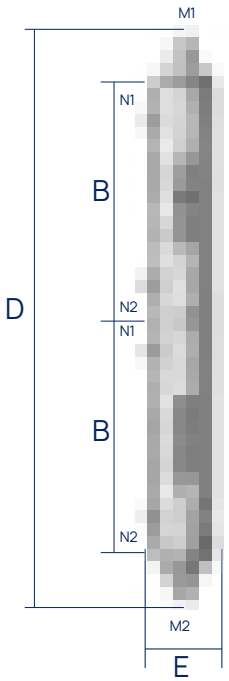


*The membrane module is engineered for versatility in industrial applications, offering flexible installation orientations (vertical or horizontal) and array configurations (single element or multi-element series operation) to accommodate water treatment systems of different capacities and specifications. Membrane housings are available in various materials (SUS304/316L/uPVC), allowing selection based on specific corrosive environments and operating requirements to ensure dependable performance in demanding service conditions.

LEADERSHIP EXCELLENCE

SUS304/316L(Membrane housing)		
Model	CCM-CNF9040-25-304-X	CCM-CNF9040-50-304-X
Dimensions	A:1488mm(±5mm) B:1000mm(±0.3mm) C:720mm(±0.5mm)	D:2500mm(±3mm) E:ϕ305mm(±0.1mm)
Feed inlet (M1/M2)	Size: DN100 Flanged connection	
Permeate Outlet (N1/N2)	Size: DN65 Coupling connection	
Effective Membrane Area	25m²	50m²
Flow Channel Dimensions	ϕ1.6mm (Circular flowchannel)	
Weight	Net weight: 130kg (±5kg) Shipping weight:180kg±5kg	Net weight: 270kg (±5kg) Shipping weight: 360kg±5kg
Housing Materia	SUS304/316L	
Installation Configuration	Both vertical/horizontal installation	
Module Configuration	Supports single or series operation	



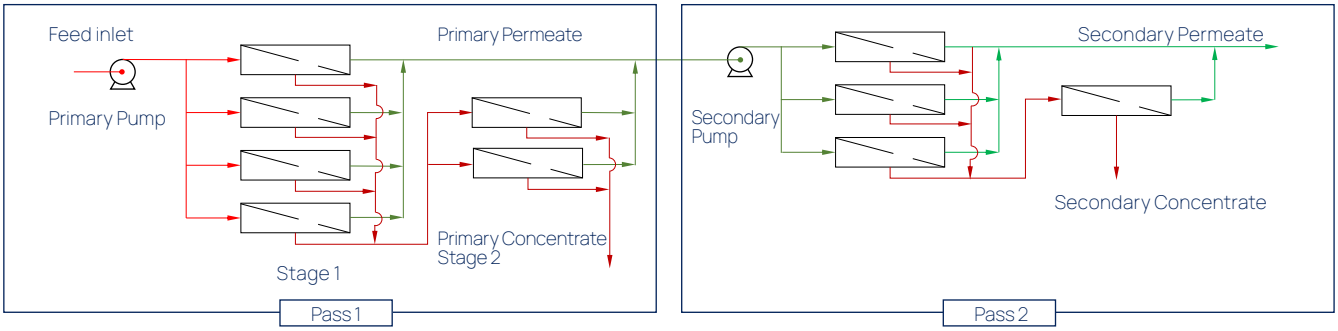


SUS304/316L(Membrane housing)			
Model	CCM-CNF6010-2.5-304-X	CCM-CNF6020-4.5-304-X	CCM-CNF6040-09-304-X
Dimensions	A: 455mm (±5mm) B:205mm(±2mm) D: ϕ160mm(±3mm)	A:705mm(±5mm) B:205mm(±2mm) D:ϕ160mm(±3mm)	A: 1205mm(±5mm) B:205mm(±2mm) D:ϕ160mm(±3mm)
Feed inlet (M1/M2)	Size: DN25 Connection: Quick coupling		
Permeate Outlet (N1)	Size: DN25 Connection: Quick coupling		
Effective Membrane Area	2.5m²	4.5m²	9m²
Flow Channel Dimensions	ϕ1.6mm (Circular flowchannel)	ϕ1.6mm (Circular flowchannel)	ϕ1.6mm (Circular flowchannel)
Weight	Net weight: 15kg(±2kg) Shipping weight : 20kg+2kg	Net weight: 22kg (+2kg) Shipping weight: 30kg+2kg	Net weight: 35kg (+3kg) Shipping weight: 50kg+2kg
Housing Materia	SUS304/316L	SUS304/316L	SUS304/316L
Installation Configuration	Both vertical/horizontal installation		
Module Configuration	Supports single or series operation		



*The membrane module is engineered for versatility in industrial applications, offering flexible installation orientations (vertical or horizontal) and array configurations (single element or multi-element series operation) to accommodate water treatment systems of different capacities and specifications. Membrane housings are available in various materials (SUS304/316L/uPVC), allowing selection based on specific corrosive environments and operating requirements to ensure dependable performance in demanding service conditions.

SYSTEM COMPOSITION



*Pass-Number of permeation cycles *Stage - Number of concentrate flow cycles

OPERATING PRECAUTIONS AND MAINTENANCE RECOMMENDATIONS

Initial Startup

After initial wetting, the membrane must remain wet at all times. The permeate obtained during the first hour of operation should be discharged.
Caution: All operations must comply with the guidelines provided in the technical data on operating conditions and limitations for SNANO ceramic-based composite nanofiltration membranes to ensure the safe and stable operation of the system.

Operation Management

Avoid back pressure on the permeate side at all times, as this may damage the membrane. Users are responsible for the effects of using incompatible chemicals and lubricants on the membranes. Please ensure that all chemicals in contact with the membranes are within the allowed range. Proper operation and regular maintenance of the system are key factors in ensuring the quality of the produced water.

Shutdown Preservation

During extended shutdowns, microbial growth may occur inside the system. To prevent contamination, immerse the membranes in a recommended preservation solution. Before restarting, flush and calibrate the system according to the operation manual to ensure stable performance. Regularly monitor key system parameters and address any irregularities promptly to maximize membrane lifespan.

CCM-cNF9040-25 and CCM-cNF6040 ceramic-based composite nanofiltration membrane modules may be subject to drinking water application restrictions in certain countries. Users should verify local regulatory requirements before use and sale. For additional technical support and application guidance, please contact SNANO Membrane Technology (Kunshan) Co., Ltd.

No. 200, Central Avenue, Kunshan City, Suzhou, Jiangsu Province

OPERATING PARAMETERS

Model X	Operating pH Range	Filtration Flux Test condition:25°C	Operating Temperature Range	Maximum Operating Pressure
X=10*	3-10	45 LMH/1 bar	5~75 °C	>10 bar
X=90*	3-10	15 LMH/1 bar		
X=90AB+	For more information, please contact us.	15-20 LMH/1 bar	IFor more linformation, please lcontact us.	>10 bar
X=90+	3-10	15-20(Max20) LMH/1 bar	5~75° °C	>10 bar

'X' represents the rejection rate for magnesium sulfate.

X=10

High- flux nanofiltration membrane, specifically designed for selective organic retention with controllable permeability to monovalent and divalent ions.

X=90

High-retention-rate nanofiltration membrane, featuring 90% retention capacity for divalent salts and exceptional removal efficiency for metal ions, pesticide residues, and dissolved organic carbon.

CLEANING PARAMETERS

Model X	pH Range 50°C Maximum temperature	pH Range 25-45°C Maximum temperature	Approved Cleaning Chemicals
X=10*	not recommended	2-11	Citric acid Sodium hydroxide
X=90*			
X=90AB+			
X=90+			

'X' represents the rejection rate for magnesium sulfate.

X=10

High- flux nanofiltration membrane, specifically designed for selective organic retention with controllable permeability to monovalent and divalent ions.

X=90

High-retention-rate nanofiltration membrane, featuring 90% retention capacity for divalent salts and exceptional removal efficiency for metal ions, pesticide residues, and dissolved organic carbon.

Important Notice:

This information was accurate at the time of publication, but product specifications and data are subject to change without prior notice.

Customers are solely responsible for:

•Evaluating whether our products and information are suitable for their specific applications•Ensuring their operations and disposal methods comply with all applicable local, regional, and national laws and regulations•Please note that products featured in this documentation may not be available for purchase in all geographic regions where SNANO operates. Additionally, product claims and certifications may vary by country and have not been approved for use in all markets.

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