

iCMF (INTEGRATED CONTINUOUS MEMBRANE FILTRATION) SYSTEM

TriTech

The **TriTech® iCMF** (integrated continuous membrane filtration) system uses the state of the art membrane separation technique, cross-flow filtration method and on-line automated cleaning (gas, water flushing) technology. A series of automated membrane filtration operations are controlled by PLC. The design concept of modularization and integration of the system provides significant convenience to users and offer stable and high quality product water.



Integrated CMF

CHARACTERISTICS

High performance UF membrane module

iCMF system uses high performance TriTech® PoraMax™ UF membrane module which is developed by the TriTech group. This hollow fiber UF membrane with narrow pore size can effectively reject SS (suspended solids) and completely filter out pathogenic microorganisms. It provides stable and reliable high quality water production. High packing density of the PoraMax™ membrane module provides a higher membrane area per unit area. Therefore the footprint of the equipment can be reduced.

Modular system design

iCMF system uses a modular design concept to allow flexibility in the configuration of the number of PoraMax™ membrane modules to meet the water output capacity requirement. They can be preinstalled in the factory and shipped directly to job site for assembling, effectively avoiding the secondary pollution of system pipes. Each membrane module is independent and can be maintained or repaired without affecting the overall system.

On-line automatic clean and fault diagnosis

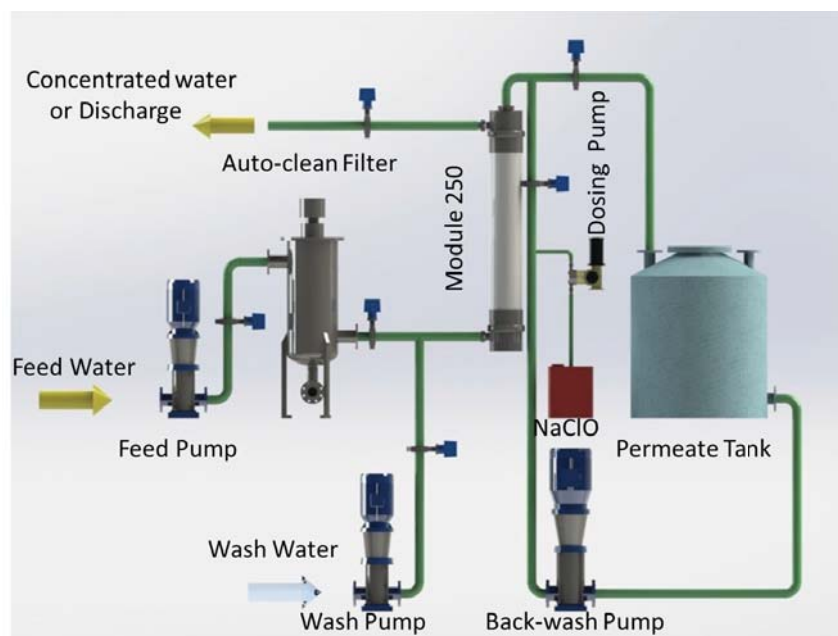
iCMF system has both backward flushing and water/gas mixed forward flushing process. With an automated on-line flushing and sterilizing agent replenishment system, it can be ensured that the UF filtration module and

the whole system are operational with minimum downtime. Fault diagnosis is built into the system to simplify troubleshooting.

PLC automatic monitoring

The normal operations of filtration, backward flushing and forward flushing are controlled by PLC, reducing the risk of manual intervention. The manpower requirement to operate this automated system is minimized with the aid of a simple operator interface with simple operational procedures.

PROCESS FLOW



iCMF

MODULAR SYSTEM DESIGN



FEATURES OF MEMBRANE FILTRATION SYSTEM

Standard Features	Water Purifier System
VSD Controlled Feed Pump	Cartridge filter
Automatic Water filter	High Pressure pump
Activated carbon filter	Pressure tank
UF Membrane	RO Membrane
Storage Tank	Control Panel including PLC
VSD Controlled Recycling pump	Fittings and valves
UV Lamp	Meters and sensors
Ozonator	System skid
Cartridge filter	

TECHNICAL SPECIFICATIONS

Input water turbidity	<250NTU
Ultrafiltration	≤0.1µm
Output water turbidity	<10 NTU
Output water TSS	<1mg/l
Output water SDI	<3
Total Chlorine	≥0.4mg/l
Humidity	5-95%
Output water temperature	5-45°C
Electrical voltage	240V AC, 50Hz

ADVANTAGES

- High quality product water due to high contaminant rejection.
- Much higher removal efficient in removing problematic pathogens such as Cryptosporidium and Giardia
- Consistent and stable water quality, less fluctuation due to changes in raw water quality
- High recovery, up to 96%
- Fully automated

MAIN APPLICATION FIELDS

- Pretreatment of water supply for large scale RO and desalination plant
- Treatment for large and medium sized drinking water plant
- Treatment for household and industrial wastewater
- Recovery of useful material from industrial wastewater
- Equipment for mineral water and purified water production
- Extraction, enrichment and separation for biomedical and F&B industries.

MEMBRANE USED

TriTech® PoraMax™ Ultrafiltration hollow fiber membrane module



BROAD RANGE OF APPLICATION FOR THE TREATMENT OF WATER AND WASTEWATER

- Pretreatment for seawater RO or NF desalination
- Drinking water purification
- Surface water purification
- Ground water purification
- Municipal wastewater/effluent water purification and reuse
- Industrial wastewater treatment
- Water recycling and resource recovery

PRODUCT FEATURES AND BENEFITS

Excellent quality product water:

- PVDF membrane
- Nominal pore size of 0.08µm
- Product water of reliable and consistent quality

Compact design and low energy consumption:

- Small footprint
- Low filtration resistance

Ease of maintenance:

- Minimal maintenance personnel required
- Full automation for backwash and CIP

PORAMAX™ MEMBRANE SPECIFICATIONS

		Module Type	STMUF0909/O	STMUF1615/O	STMUF2215/O	STMUF2220/O	STMUF2515/O
Membrane	Membrane Area, Inside-Out Configuration [^]	m ²	6.5	25	33	45	40
	Membrane Area, Outside-In Configuration [^]	m ²	8	30	40	55	48
	Pore Size	µm	0.01 – 0.08 (depending on membrane material and customer requirement)				
Operating Condition	Filtration Mode		Inside-Out / Outside-In				
	Designed Flux, Inside-Out Configuration*	m ³ /d	4.5-14	18-55	24-75	32-102	29-92
	Designed Flux, Outside-In Configuration*	m ³ /d	3-21	11-82	15-113	20-153	17-138
	Max. Transmembrane Pressure (TMP)	kPa	300				
	Operation Temperature	°C	10 - 40				
	pH Range **		1 - 12				
Material	Membrane Material		PVDF , PS , PVC , PAN				
	Module Material		uPVC				
	Potting Material		Epoxy/Polyurethane Resin				
Connection	Pipe Connection		DN25	DN40, Air inlet G3/8			

[^] Please refer to individual specification sheet or contact TriTech Water for further information.

* Designed flux varies depending on feed water quality or system design basis. Please consult TriTech Water for further information.

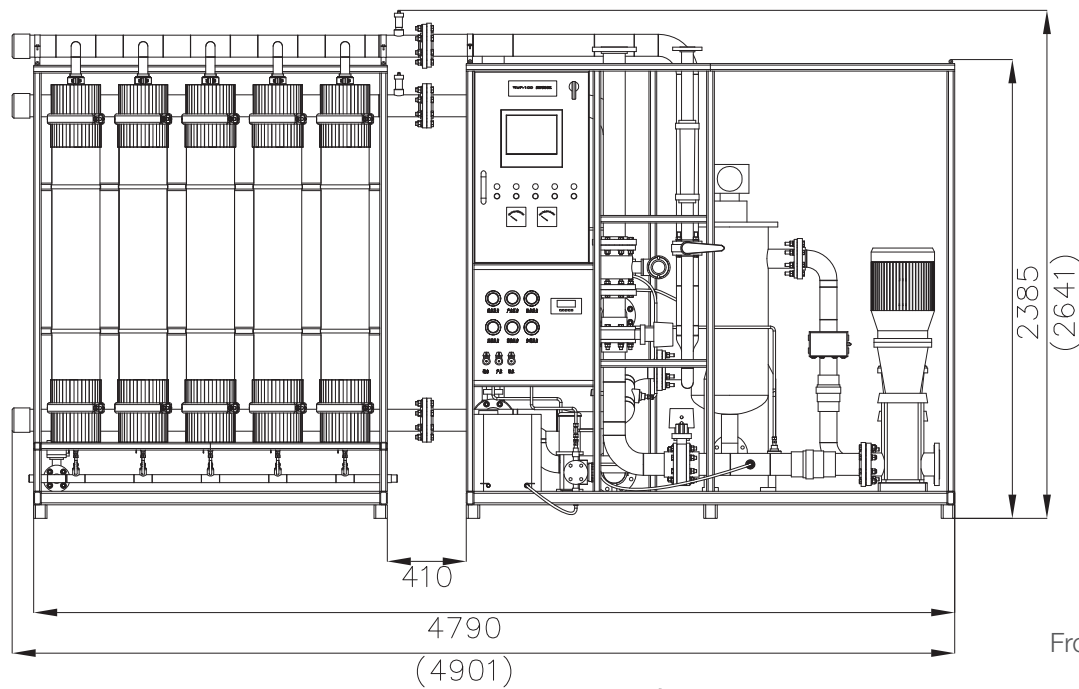
**Above specified pH range may be exceeded during chemical cleaning. Please refer to operation manual for further information.

PRODUCT RANGE FOR TRITECH® INTEGRATED CMF SYSTEM

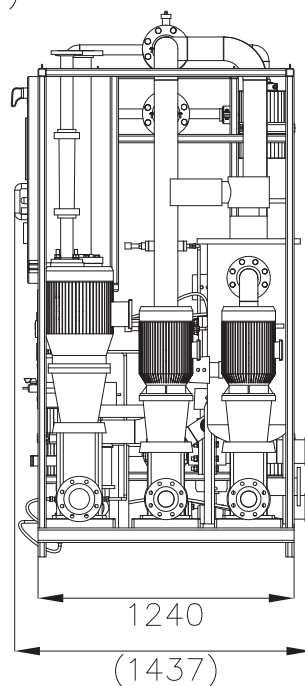
Pre-engineered Package Plants are cost effective and compact solutions for water treatment

Model No	Production Volume (m ³ /d)	Size (L*W*H) (mm)	Power source	PoraMax™ Membrane module model
iCMF-02	20	1000*1300*2650	220V	STMUF0909
iCMF-05	50	1500*1300*2650	220V	STMUF0909
iCMF-10	100	1500*1300*2650	380V	STMUF1615
iCMF-30	300	2000*1300*2650	380V	STMUF1615
iCMF-50	500	4000*1300*2650	380V	STMUF2215
iCMF-100	1000	4900*1300*2650	380V	STMUF2515
iCMF-150	1500	5500*1300*2650	380V	STMUF2515

MECHANICAL DRAWINGS OF iCMF SYSTEM



Front view of iCMF system



Side view of iCMF system