

MEMBRANE HITEC

DIVISION OF TITANIUM EQUIPMENT AND ANODE MANUFACTURING COMPANY LTD.
PES TECHNOLOGY and STATE OF THE ART

PIONEER IN MANUFACTURING STATE OF THE ART TECHNOLOGY

ULTRA FILTRATION MEMBRANE IN INDIA



MEMBRANE HITEC



TEAM

TITANIUM EQUIPMENT AND ANODE MANUFACTURING COMPANY LTD.

TEAM

Titanium Equipment and Anode Manufacturing Company Limited is a pioneering technology company set up in 1977, founded by well known technology entrepreneur Dr CH Krishnamurthi Rao. It handles welding and fabrication of high end metallurgy involving Titanium, Tantalum, Zirconium, Nickel and Copper. The company was a pioneer

in import substitution of technologies unavailable to India and count the Defence and Atomic Energy sectors as its customers. The pioneering spirit was extended by indigenous development of Anode Activation technology for Caustic Soda production replacing the energy intensive and environmentally Mercury Cell method.

WHO WE ARE - MEMBRANE HITEC

The group was the first to develop Sea Water Reverse Osmosis technology and a landmark Drinking water plant was set up on Chennai's Marina Beach. TEAM sachet water is fondly remembered by many who travelled by long distance train in the 80's & 90's as the first affordable, safe water easily available in public places.

Membrane Hitec visualized developing a technology for UF (Ultra Filtration), which is globally accepted and State of the Art. Looking at the post liberalization environment a decision was made to develop this UF technology in Singapore using the best of global competences. Dr. Rao Holdings Pte Ltd Singapore was set up by Team and the organization developed for UF capillary fibers.

The company set up Membrane Hitec in Chennai to commercialize this UF technology. Today Membrane Hitec is proud to be the first global class Indian producer of UF Membranes and has been in production for 12 years. In this time, many critical applications in core industries like Refining, Fertilizers, Steels, Power plants have used MHT membranes with excellent performance and long life.



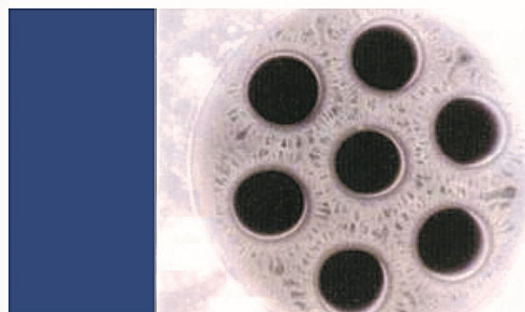
Ultra Filtration Membrane Application

Boiler Feed Water	- Colloidal Silica Removal
Pre-Treatment to R/O	- Reduction of SDI
Drinking Water	- Removal of Pathogens
Pre treatment to Desalination	- SDI Reduction
Cooling Tower	- Removal of Suspended Solids / Microbes
Treated Sewage	- TSS / Turbidity / SDI Reduction
Brine Clarification - Chlor - Alkali	- TSS / Turbidity Reduction
Process Effluent Recycling	- TSS / Turbidity / SDI Reduction

UF Membrane Types

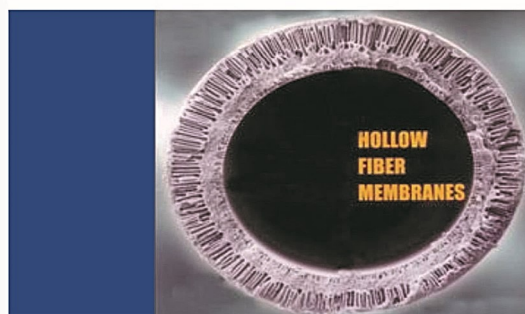
UF Membrane - MULTIBORE

Material	: Modified PES
Type	: In to out
MWCO	: 10 KD & 100 KD
Capillary Fibre ID	: 0.8 mm
Capillary Fibre OD	: 4 mm
Capillary Per Fibre	: 7 Nos.
Active Surface Area (M ²)	: 7.5 / 20 / 35 / 41 / 50 / 55 / 81 / 100 / 107 / 151



UF Membrane - SINGLEBORE

Material	: Modified PES
Type	: In to out
MWCO	: 100 KD
Capillary Fibre ID	: 0.9 mm
Capillary Fibre OD	: 1.5 mm
Capillary Per Fibre	: 1, One
Active Surface Area (M ²)	: 50 / 65 / 81 / 107



Advantages MHT UF Membranes

- State of the Art PES Technology
- High Reliability - Designed Based on Proprietary Manufacturing Know - How
- Low Operating Pressure
- High Performance Anti Fouling Characteristics
- Dead End / Cross Flow Mode Operation
- MWCO Range 10KD & 100KD
- Same UF Feed Pump used for forward Flush A & B
- Reduces Foot print with 400 mm dia, first in the world
- Lower Power Consumption
- Technically Skilled Service Backup



Advantages of IN TO OUT Membranes

DESCRIPTION	IN TO OUT
Operation	Inside to outside
Cleaning	More Efficient
Forward flushing	Very Effective
Back washing	More effective & Fibre lumen completely cleaned
Sludge accumulation	Low and only in lumen
Chemical use frequency	Less
Air Scoring	Not Necessary
Filtration surface	In every B/W the filtration area will be cleaned
Recovery	High

Typical Operation Philosophy

Cycle	Mode	Duration
Filtration	In to Out	15-60 min
FFA	In	15 to 45 sec
B/W	Out to In	30 to 60 sec
FFB	In	15 to 45 sec

Product Specification



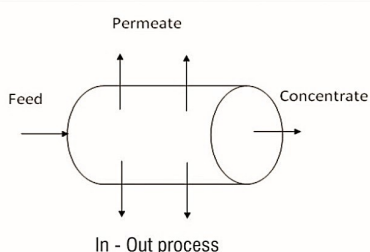
Model No.	MWCO	MOC	AREA (IN M ²)	DIA (IN MM)	LENGTH (IN MM)	CAPILLARY
RDMT-EM-7.5XVI-MBM/100KD	100 KD	PES	7.5	110	1530	MULTI BORE
RDMT-EM-20XVI-MBM/100KD	100 KD	PES	20	200	900	MULTI BORE
RDMT-EM-35XVI-MBM-100KD	100 KD	PES	35	200	1530	MULTI BORE
RDMT-EM-35XVI-MBM-10KD	10 KD	PES	35	200	1530	MULTI BORE
RDMT-EM-41XVI-MBM-100KD	100 KD	PES	41	200	1530	MULTI BORE
RDMT-EM-41XVI-MBM-10KD	10 KD	PES	41	200	1530	MULTI BORE
RDMT-EM-50XVI-SBM-100KD	100 KD	PES	50	225	1500	SINGLE BORE
RDMT-EM-50XVI-MBM-100KD	100 KD	PES	50	225	1500	MULTIBORE
RDMT-EM-55XVI-MBM-100KD	100 KD	PES	55	225	1830	MULTIBORE
RDMT-EM-65XVI-SBM-100KD	100 KD	PES	65	225	1830	SINGLE BORE
RDMT-EM-81XVI-SBM-100KD	100 KD	PES	81	280	1830	SINGLE BORE
RDMT-EM-81XVI-MBM-100KD	100 KD	PES	81	280	1830	MULTIBORE
RDMT-EM-81XVI-MBM-10KD	10 KD	PES	81	280	1830	MULTIBORE
RDMT-EM-100XVI-MBM-100KD	100 KD	PES	100	400	1530	MULTIBORE
RDMT-EM-100XVI-MBM-10KD	10 KD	PES	100	400	1530	MULTIBORE
RDMT-EM-107XVI-SBM -100KD	100 KD	PES	107	315	1830	SINGLE BORE
RDMT-EM-107XVI-MBM -100KD	100 KD	PES	107	315	1830	MULTIBORE
RDMT-EM-151XVI-MBM-100KD	100 KD	PES	151	400	1530	MULTIBORE

UF Membrane Filtrate Quality

PARAMETERS	UNIT	INLET	OUTLET
TURBIDITY	NTU	< 10	< 0.5
TOTAL SUSPENDEED SOLIDS	PPM	< 10	< 1.0
SLIT DENSITY INDEX (SDI)			< 3
MICRO-ORGANISM, BACTERIA, PSUEDOMONAS DIMINUTA, E.COLI, ETC	LOG REDUCTION		> 4



In to out flow direction



Inside to outside flow direction is suitable for high performance. It provides consistent filtrate quality ensures through membrane cleaning while maintaining low energy consumption and low operating cost .

Desalination



Client : M/S. PT Wilmar Nabati Indonesia
Application : Sea Water Plant
Capacity : 9 MLD - UF Membrane

Raw Water



Client : M/S. ITC Limited.
Application : Pre - Treatment to RO
Capacity : 3 MLD - UF Membrane

Cooling Tower Blow Down

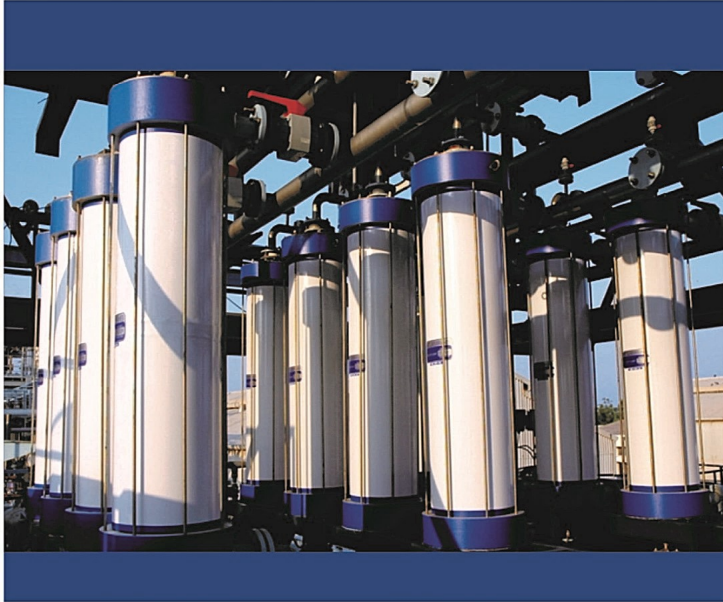


Client : M/S. Rajwest Power Limited - Barmer
Application : CTBD
Capacity : 9 MLD - UF Membrane



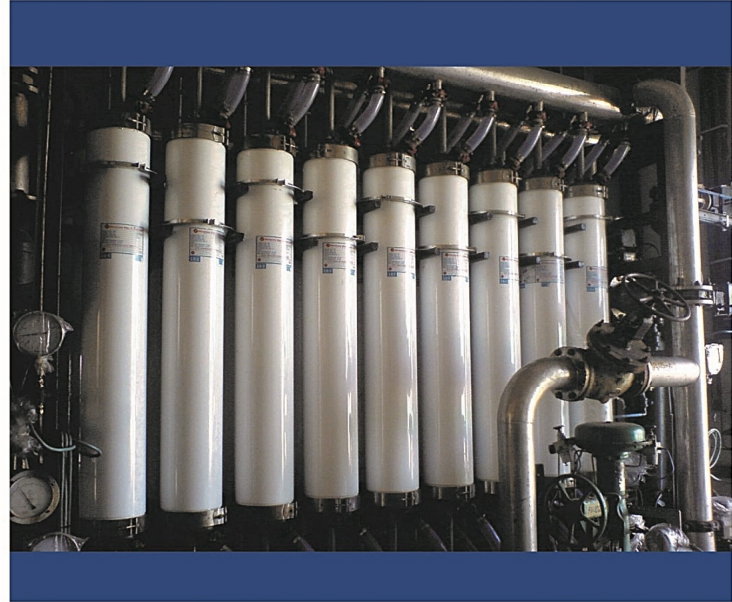
Client : M/S. L & T - Nabha Power Limited, Rajpura
Application : CTBD
Capacity : 9 MLD - UF Membrane

Brine Purification



Client : M/S. Chemfab Alkalies Ltd.
Application : Chlor - Alkali - Brine Purification
Capacity : 1 MLD - UF Membrane

Sewage Recycling Plant



Client : M/S. Chennai Petroleum Corporation Ltd.
Application : SRP 1 / Treated Sewage
Capacity : 12 MLD - UF Membrane

Post DM Application



Client : M/S. Lanco Amarkantak Power Pvt Ltd - Korba
Application : Post DM
Capacity : 4 MLD - UF Membrane

Sewage Treatment Plant



Client : M/S. Melmaruvathur Adhiparasakthi Institution
Application : Treated Sewage
Capacity : 3 MLD - UF Membrane

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