



EnviQ[™]

Submerged Ultrafiltration Membranes



The diagram illustrates a submerged ultrafiltration membrane system. It features a central vertical stack of seven parallel membranes. On either side of this stack are two vertical columns of small circles, representing air spargers or diffusers. The entire system is set against a background of water with bubbles, and the bottom of the image is decorated with white wavy lines representing the water surface.

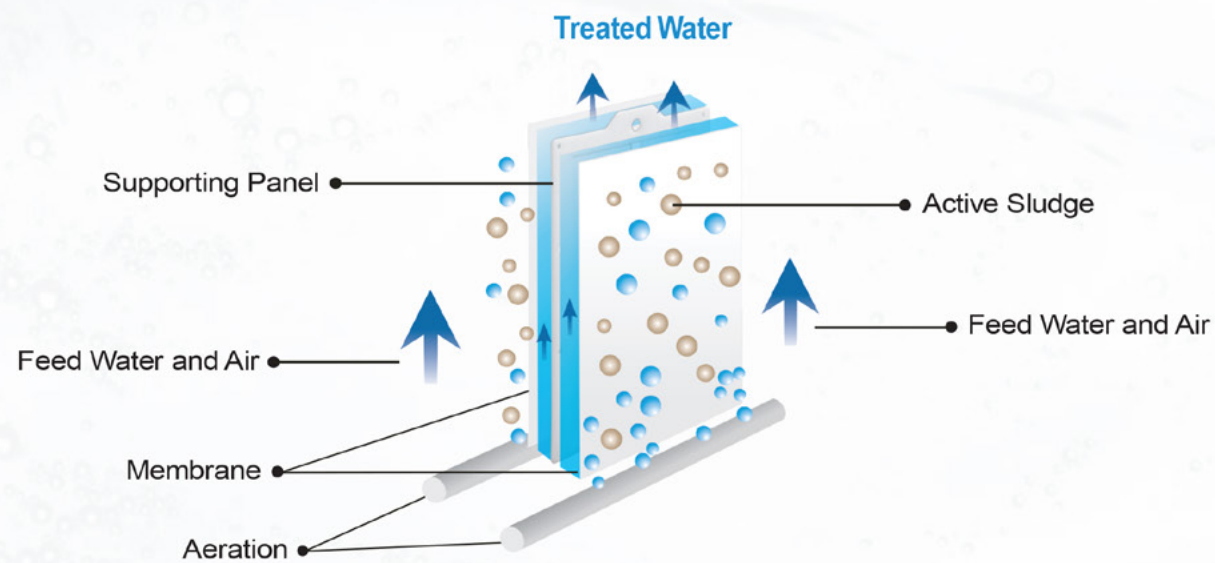
EnviQ Makes MBR Easy

The Separation Quality Of Hollow Fiber With The Ruggedness Of Flat Sheet Design

QUA's EnviQ membranes have been specially developed to improve the ease of operation and maintenance of MBR facilities. EnviQ's innovative design offers ultrafiltration quality product water with a stronger and more rugged PVDF flat sheet membrane. EnviQ's unique features such as reverse diffusion and specially designed air diffusers maximize scrubbing efficiency resulting in reduced cleaning.

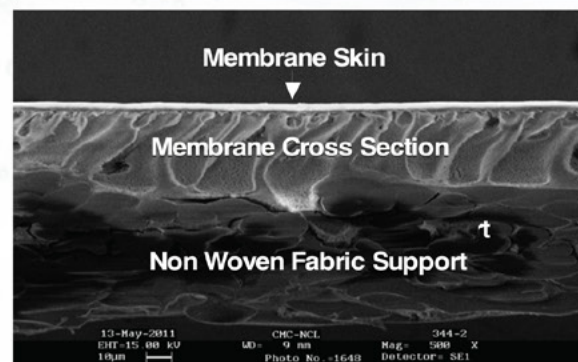
HOW EnviQ WORKS

The EnviQ membrane has billions of microscopic pores on the surface that form a barrier to impurities, allowing clean water to pass. Water is drawn through the pores by using gentle suction. EnviQ provides more consistent and higher quality effluent using an advanced membrane and proprietary diffuser system. The proprietary air diffuser design in EnviQ maintains a continuous flow of air bubbles of a correct size, which prevents solids from settling at the tank bottom or sticking to the membrane surface, eliminating septic conditions.



SUPERIOR MEMBRANE TECHNOLOGY

EnviQ flat sheet membranes are made up of specially formulated hydrophilic PVDF material reinforced with PP non-woven fabric. The EnviQ ultrafiltration membrane has a pore size of 0.04 microns, which provides excellent solids rejection and sustainable performance.



SEM Image of EnviQ Membrane

ADVANTAGES

- **Reverse diffusion** with clean water ensures consistently low Transmembrane Pressure (TMP)
- **Simple rack type modular design** allows easy removal and maintenance of membrane cartridge
- No external frame provides a **"membrane only" surface** to minimize biofouling
- **Proprietary air diffuser** design optimizes power consumption and reduces cleaning requirement

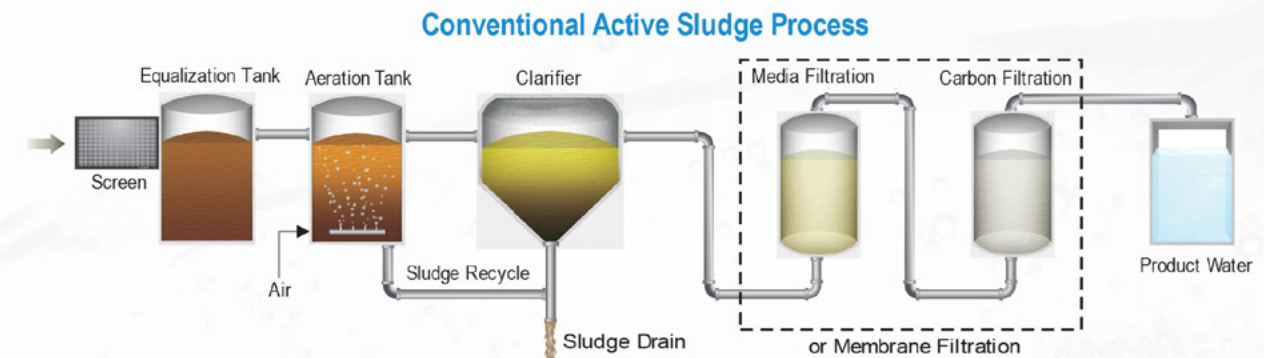
FEATURES

- Consistent high permeability
- Low Transmembrane Pressure (TMP)
- High solid loading
- High tolerance to chlorine/oxidative compounds
- Superior treated water quality with high rejection of bacteria and viruses

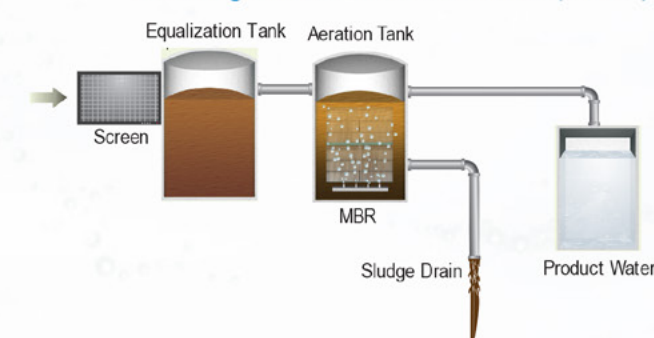
EnviQ MAKES MBR THE TECHNOLOGY OF CHOICE

In addition to simpler operations, EnviQ lowers the total installed cost of biological wastewater treatment and recycle systems as compared to conventional activated sludge processes with tertiary filtration. EnviQ facilitates increased MBR adoption, resulting in more efficient bio treatment, smaller footprint and high quality effluent.

MBR combines conventional activated sludge technology with membrane filtration. MBR can be designed at a much higher Mixed Liquor Suspended Solids (MLSS) concentration compared to conventional processes, giving advantages of lower Hydraulic Retention Time (HRT) and higher Sludge Retention Time (SRT). This reduces the footprint of the overall wastewater treatment. In addition, MBR replaces clarifier/sedimentation tank as well as media and membrane filtration. The treated water is highly superior and can be used directly, or as feed to a reverse osmosis unit. EnviQ is available in modular construction. This ensures the ease of design as well as maintenance.



Submerged Membrane Bioreactor (SMBR)



SMBR has a smaller footprint compared to a conventional activated sludge process followed by UF

SMBR ADVANTAGES

- Smaller footprint
- Superior quality product water
- Lower total installed cost

EnviQ RECOMMENDED OPERATING CONDITION

Parameter	Unit	Range
MLSS	mg / l	5,000 - 15,000
Permeate Water Flux (Typical)	lmh (gfd)	10 to 30 (6 - 18)
Scouring Air Flow	lit / m ² / hour (scfm)	300 - 800 (0.17 - 0.47)
Maximum Transmembrane Pressure	kPa (psi)	50 (7.25)
Temperature	degree °C (°F)	5 - 40 (41 - 104)
pH Range		2 - 10

EnviQ MODULE SPECIFICATION



EnviQ Model		Unit	E8C	E16C	E32C
Number of Membrane Cartridges			8	16	32
Total Membrane Area		m ² (ft ²)	80 (861)	160 (1722)	320 (3444)
Nominal Pore Size		micron	0.04		
Membrane Material			PVDF		
Flow Path			Outside - In		
Surface Property			Non Ionic / Hydrophilic		
Product Flow (Average)		m ³ / day (us gpd)	38.4 (10144)	76.8 (20288)	153.6 (40576)
Dimensions	Width	mm (in)	520 (20.47)	680 (26.77)	990 (38.97)
	Length	mm (in)	660 (25.48)	990 (38.97)	1262 (49.68)
	Height	mm (in)	2315 (91.14)	2315 (91.14)	2315 (91.14)
Module Weight (Dry)		kg (lbs)	306 (675)	532 (1173)	979 (2159)
Accessories Material	Outer frame		CS with FRP resin coating / Option SS		
	Permeate header		PVC		
	Air diffuser		EPDM		

Note: The above values are based on our standard sizing. Custom sizing can be done to suit site specific conditions.



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