AQUARIUS™ H2O Dynamics

BIOCROSS® MBR

Sculpt Wastewater to it's Origin

Certified Company

ISO 9001:2015

www.aquariush2odynamics.in

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# Biocross® MBR

## Horizontal Tubular Membrane configuration

Greater attention and ongoing development work is happening in wast Water and particularly in MBRs. Hollow fiber , sheet and tubular are three types of configuration are available in market now a days. The process combines mixed liquor activated sludge, operating at high concentration, with ultrafilter membranes for biomass separation. Initially the process was limited to small wastewater flows where high quality treated effluent is required, due to high capital cost. With the awareness and ever increasing demands for higher effluent quality, MBRs are very much in demand and being applied in larger municipal sewage treatment plants as well as Industrial sectors now.

Tubular membranes configurations were developed in Netherlands, Germany and USA for use in MBRs and other processes respectively. The tubular membranes is most robust amongst other two membranes like hollow fiber and flat sheet membranes. Due to its life ,durability and economy it is being popular now a days and in much demand. BioLift® MBR is placed outside tank so easy for maintenance. Longer life and easy maintenance had made tubular membranes as most desirable alternative

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## Unique Membrane Arrangement

By placing the tubular modules horizontally, and passing the Biomass through tubes at certain velocity from 1.5 mt/sec to 2.5 mt/sec, sequentially from 1 module till 8 modules we can generate from 1.5 $M^3$/Hr to 15 $M^3$/Hr product by Cross flow velocity without cleaning and backwash for a longer period. The helix inside the membranes will not allow to formation of cake inside the tubes and more flux is achieved than other membranes in market. It had proven that membrane flux is stable and fouling is less.

The flux is higher than submerged product system. High applied pressure and extremely high trans-membranes pressure (TMP) minimizes the amount and density of the solids boundary layer on the membrane surface.

This produces very stable flux and low fouling rates Flux Stability is enhanced due to helix configuration . Crossflow with back washable mode also can be provided for power savings if required. Less automation required and very simple operation by unskilled persons also. Cleaning is done or soaking cleaning solutions through the membrane module or soaking cleaning solutions through the membrane modules. This effectively keeps the membrane flux at high levels.

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# The Aquarius H2O Dynamics Difference

## Significant Benefits

- Allows 12000 to 25000 MLSS in Bio aeration .
- Biocross® MBR is much toughest and efficient MBRs.
- Robust Tubular membranes increases life.
- Replaces Submerged MBR with low capital cost.
- External Cleaning with CIP system.

## Applications

- All Industrial sectors.
- Sewage Treatment Plants.
- Decentralized sectors.
- Commercial Complexes.
- Retrofits increases existing plant capacities.
- External skid put along with Tank.

## Technology

- 5.2 / 8.0 mm Helix PVDF tubular bore membranes
- PLC/Manual based controls
- Prefabricated skids minimize time and installation cost.
- MBR Produces consistently high quality Effluents.
- 65 to 95 LMH operating flux range based on Biology.
- 1.6 to 2.2 Kw power/$M^3$ of Product generated.
- Average 5 to 6 year life cycle cost or more than it.
- Less cleaning and no backwash needed like others.

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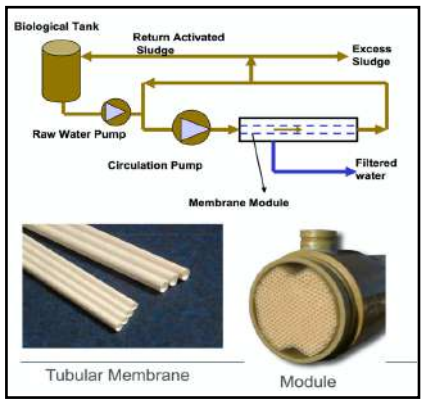
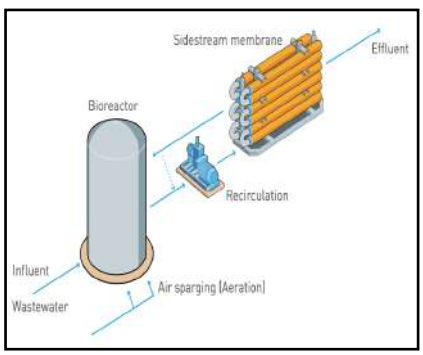
## System Operation

The system operates on a continuous basis by controlling the rate of permeate flow from the membrane modules. A recirculation pump feeds mixed liquor from the bioreactor to the bottom of each module where air is injected. This, in effect, acts as an airlift pump increasing the velocity that aids scouring inside the membranes. The scouring mixers discharges from the top of each module and is returned to the bioreactor (or the anoxic zone for de-nitrification). Back-flushing with initiated on a time cycle to each bank of modules. This removes any cake formed on the inside of the membrane tubes, thus maintaining flux rates



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# Biocross® System

## Advantages :

- Robust tubular membranes are more durable and require less frequent replacement. Membranes are double supported by a rigid backing that ensures no breakage or rupture.
- Effluent integrity is assured since membrane rupture or breakage is not an issue.
- Higher power requirements comparable with submerged hollow fiber and flat sheet systems.
- Minimizes operator exposure to waste water and potential health impacts.
- Lower installed capital cost since no additional tanks, sludge, recycle or permeate pumps, hoist or trolleys are required.
- Less lifetime operating cost due to lower power costs, membrane replacements & labor costs.
- Compact footprints does not require additional tanks.
- Forty-year proven reliability of the Pentair (Norit) tubular product.
- Safer working environment for the operator since maintenance cleaning does not require moving the membranes with hoist and trolleys.
- Resistant to chemical degradation due to the use of high strength PVDF membrane chemistry.
- Minimizes operator exposer to wastewater and potential health impacts.

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