Membrane Bioreactor Technology (MBR)

Meeting Global and Local Challenges in Sewage and Wastewater Treatment

- Municipal Wastewater Treatment
- Hotel Resorts and Golf Courses
- Residential Developments
- Institutional Buildings, Airports and Stadiums
- Industrial Wastewater
- Storm Water run-off

Ionics Freshwater Limited has a proven capability of installing and operating wastewater treatment facilities in the Caribbean region

- New installations
- Retrofits of existing biological treatment plant

Concealed MBR Plant at a Caribbean Hotel

MBR Protecting the Environment in Tobago

- There were concerns regarding the odour and the impact on the marine environment due to wastewater discharge from an existing sewage treatment plant
- A decision was made by the government of Trinidad and Tobago to solve the problem using a Membrane Bioreactor
- Ionics Freshwater Limited quickly and cost effectively retrofitted the existing treatment facility
- MBR treated wastewater from the 30,000 gpd plant is now safely discharged to the ocean
- The plant has been in operation since 2003

Submerged MBR Module at the Retrofitted WWTP at Bon Accord, Tobago

IONICS Freshwater Ltd.

Trust Us! .... for the design, installation and operation of 'state of the art' Membrane Technology solutions in the Caribbean Region....

- Membrane Bioreactor Systems (MBR)
- Desalination/Reverse Osmosis Plant (RO)
- Build, Own, Operate/ BOOT Contracts
- O&M Contracts and Operator Training

For further information on wastewater treatment and reuse options to satisfy the needs of:

√ Municipalities
√ Engineering Consultants
√ Property Developers
√ Industry

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Membrane Bioreactor Technology (MBR)

Solutions for Wastewater Treatment and Water Re-use in the Caribbean

IONICS Freshwater Ltd.

Global Expertise... Regional Focus... Local Presence

Introducing Ionics Freshwater Limited

Supplying Advanced Wastewater Treatment Solutions in the Caribbean

Ionics Freshwater Limited is a Barbadian company specialising in design, installation and operation of Membrane Bioreactor technology (MBR) for wastewater treatment. We also install and operate potable desalination /Reverse osmosis plant.

Our focus is in the Caribbean market where our geographical position enables us to provide optimum levels of service and on-site support to our many clients in the region.

Our Capabilities:

- Cost Effective Retrofits/Upgrades
- Design and Build
- Operations and Maintenance

Domestic or Industrial Waste Water

There is growing global demand to treat and reuse wastewater due to:

- drought / effects of climate change increasing water scarcity and water supply costs
- the need to minimise mains water consumption
- pressures to augment water supplies

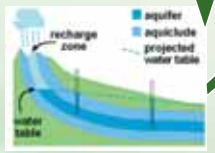
Membrane Module

Irrigation

RO Plant

MBR:
Proven and Reliable Technology for a Sustainable Future

An innovative system for the treatment and re-use of wastewater and sewage.



Aquifer Recharge

Options for Non Potable Water Re-use:

- Landscaping
- Re-injection into the aquifer
- Safe discharge into the marine environment
- Industrial processes

Membrane Bioreactor Technology (MBR)

Providing sound wastewater management practices for the 21st Century

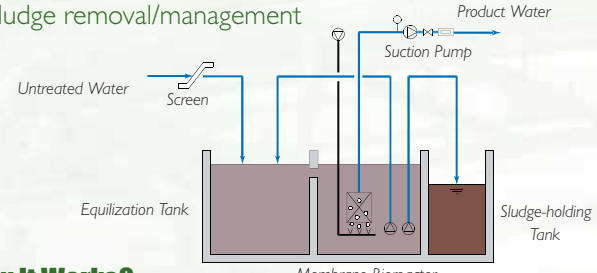
The MBR Process

A biological process utilising a semi-permeable membrane as the final filtration barrier.

Treatment Steps:

- Prescreening
- Aerobic chamber – aeration
- Membrane filtration
- Sludge removal/management

Membrane Bioreactor (MBR) Process



How It Works?

Step 1: Wastewater is screened to remove particulate matter

Step2: Screened wastewater is pumped from the holding tank to an aeration tank which houses the submerged membrane module. Biological degradation of the sewage by micro-organisms occurs. Air is introduced into the system by blowers to aid this biological process. A vacuum pump is then used to pull the clear treated water though the hollow fibre membranes. The bio-mass (sludge) from the degradation process falls to the bottom of the aeration tank

Step 3: Transfer sludge to holding tank. Transfer to sludge handling facility.

Benefits:

- Removes harmful micro-organisms
- Compact modular design
- Less sludge produced and shorter residence time than conventional treatment
- Minimal Maintenance
- The best economic choice when consistent high quality effluent is required
- Proven and approved technology for waste water re-use

Why Choose MBR?

Ensure that you meet stringent effluent treatment standards and environmental legislation

- Consistent Quality
- Compact
- Expandable
- Reliable
- Cost Effective

Typical MBR Effluent Quality Suitable for Re-use

Biochemical Oxygen Demand BOD_5	<10mg/l
Suspended Solids	<10 mg/l
Faecal coliforms	<2 per 100 ml
Total coliforms	<2 per 100ml
Feacal streptococcus	<2 per 100ml
Residual Chlorine	<0.5ppm (range 0.2 to 1.5)
Total N	<5 mg/l
Total P	<1 mg/l

*Phosphorous and Nitrogen reduction may require an additional treatment step dependant on influent quality

An additional Reverse Osmosis (RO) polishing step and UV Disinfection is required if MBR treated water is to be used for indirect potable use.