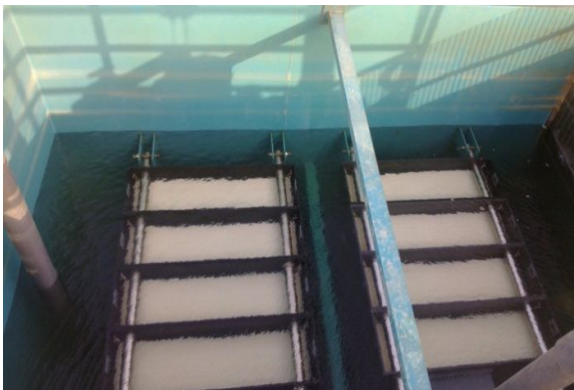


WATER MBR

“Containerized Wastewater Treatment Plant based on Membrane Bioreactor (MBR) Technology”



Containerized MBR Technology WTP



Submerged BC 416 MBR MODULES

Compact MBR Wastewater Systems

1

Effluent Quality for Toilet Flushing
and other Cleaning Operations

2

Recycle and Reuse water for
Irrigation and Recreation

3

Save Water, Energy, Money and
Conserve the Environment

4

MBR Wastewater Treatment Plants
Compact yet Complete and Affordable

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Possible Application

- Labor Camps
- Small Industries
- Residential Areas
- Hotels and Resorts
- Construction Sites
- Universities

EARTHCAD ENVIRONMENT – MBR STP

Earthcad Environment Packaged iWater MBR Treatment Systems are state of the art yet affordable plants which are capable of giving excellent quality treated sewage on a small footprint.

Membrane bioreactor (MBR) is the combination of a membrane process like microfiltration or ultrafiltration and comes under the category of suspended growth activated sludge process system that utilizes microporous membranes for solid/liquid separation in lieu of secondary clarifiers.

At the Heart of these MBR Plants are the MICRODYN NADIR Bio Cell Membrane Modules which guarantees bacteria and solid free effluent.

Design Basis

PH	7.0-8.5
BOD (mg/l)	300-350 mg/l
COD (mg/l)	400-600 mg/l
Suspended solids (mg/l)	300-400 mg/l
Ammonical Nitrogen	40-50 mg/l

Treated Effluent Quality

PH	7.0-8.5
BOD	< 5 mg/l
COD	< 50 mg/l
Suspended solids	< 1 mg/l
Ammonical Nitrogen	< 1 mg/l

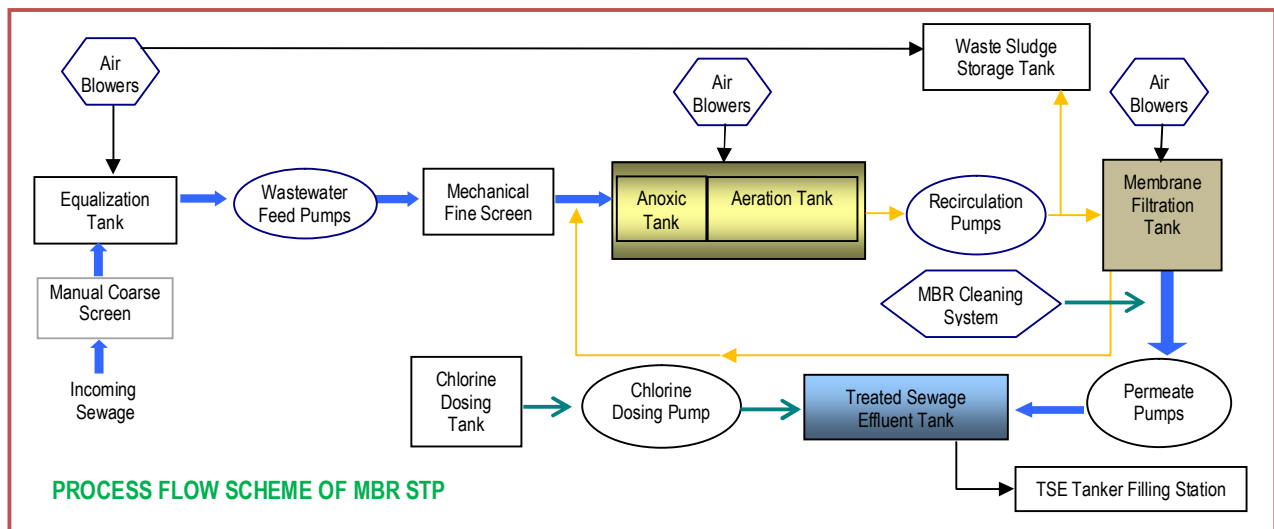
Process Flow Scheme

- Raw Wastewater Feed Pumps
- Electromagnetic Flow Meters at Inlet of STP
- Mechanical Fine Screen
- Anoxic Tank with Nitrification Mixer
- Aeration Tanks with Fine Bubble Diffusers and Air Piping
- Air Blowers for Aeration Tanks
- Sludge Recirculation Pumps
- Membrane Filtration Tank
- Ultrafiltration Membrane Filtration Units with Back flush

- Membrane Cleaning Process (MCP) with SS Sieve, Tube Diffuser and PP Granules
- Air Blowers for Membrane Modules
- Chemical Dosing System for Membrane Cleaning including Citric Acid and Sodium Hypochlorite
- Permeate Pumps with Reverse rotation
- Motorized Valves for Sludge Wasting and Backwash operation
- Electromagnetic Flow Meter for Permeate Line
- Online instrumentation such as DO Meter, Pressure Sensor etc
- Sodium Hypochlorite Disinfection System
- Electrical Control Panel with PLC Automation Control
- Internal and external Interconnecting Piping and accessories
- Electrical Power and Instrumentation Cables with all fittings, Cable Trays , clamps and accessories



Membrane Modules of Microdyn-Nadir, Germany



Salient Features

- Factory made plug and play system with small footprint and all units of internal make on a duty standby basis
- Safe SRT and HRT enabling stable and sustainable Biology and better Aeration and Nitrification.
- Plant operating on very conservative flux rate thereby ensuring long life of the membrane modules and little effect of shock loads to the system.
- MBR Modules incorporates all the advantages of Flat sheet and Hollow fiber membranes
- MBR Modules using Ultrafiltration Technology removing particles upto the size of 0.04 micron
- Backwash system in every filtration cycle preventing Organic and Inorganic MBR fouling.
- Membrane Cleaning Process (MCP) reduces chemical consumption and Operation and Maintenance Costs
- MCP also improves the operational efficiency of the plant by having a sustained flux rate and set permeate output
- MBR Modules placed in separate tank thereby making STP operation much simpler and helps maintaining constant level which is very essential for the MBR Modules.
- Less Cross Air Flow Requirements for MBR Air Blowers thereby saving energy.
- MSEP Tank structurally very stable and fabricated in such a way that there is no bulging
- Tube type fine bubble diffusers with Silicon membrane to have a longer life



MBR Tank with Degassing Vessel



Aeration Positive Displacement Blowers

Model No.	*Capacity (m3/d)	Population (persons)	Inlet (BOD/TSS)	Outlet (BOD/TSS)	Power Working Load (KW)	Flux Rate (LMH)
IWATER MBR 100	100	500	300/400	5/1	18.60	10.42
IWATER MBR 150	150	750	300/400	5/1	23.10	15.63
IWATER MBR 200	200	1000	300/400	5/1	29.60	10.42
IWATER MBR 250	250	1250	300/400	5/1	33.60	13.10
IWATER MBR 300	300	1500	300/400	5/1	33.60	15.63
IWATER MBR 400	400	2000	300/400	5/1	50.70	13.89
IWATER MBR 500	500	2500	300/400	5/1	51.70	17.36

*Calculations are based on discharge of 200 liters of Wastewater per person per day.

If bigger capacity is required than the standard modules can be added in parallel



iWater MBR STP Raw Sewage and TSE Sample



Top View of STP showing Blowers, Aeration Tanks, Control Panel & Operations Room

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STATUS			
DESCRIPTION	Values	Unit	RESET
Permeate Flow	7.97	m3/hr	
Dissolved Oxygen	3.99	mg	
Trans Membrane Pressure	-12.7	mBar	
Flow Totalizer	121.33	m3	Stop/Reset
Daily Flow	66.97	m3	Daily Flow Reset Time hr min sec
DESCRIPTION	RUN HOUR	DESCRIPTION	RUN HOUR
Sewage Feed Pump - P01A	14	Air Blower - ABO1A	10
Sewage Feed Pump - P01B	2	Air Blower - ABO1B	0
Recirculation Pump-P02A	16	Air Blower - ABO2A	17
Recirculation Pump-P02B	0	Air Blower - ABO2B	0
Permeate Pump - P03A	13	Air Blower - ABO3A	0
Permeate Pump - P03B	0	Air Blower - ABO3B	1
NaOH Dosing Pump - DP01	0	Anoxic Tk Mixer - DM01	18
Chlorine Dosing Pump-DP02	0	Screen - SC01	15

iWater Clear MBR STP SCADA System



Rotary Lobe Type Permeate/Backwash Pump