

**Still Using
MBBR??**

Sewage Treatment What Is Best & Latest



Summary-

Over the last decade, the technologies for sewage treatment has seen the changes which are eventually helping the environment by treating the sewage and getting the consistent water quality to reuse while meeting the statutory norms as well.

The conventional technologies such as ASP, SBR, MBBR, MBBR+UF were used for sewage treatment predominantly before many of us started using the MBR technology. Which is considered as the best technology but at the premium cost.

Yes, it has been a revolution where the better water quality to use is the requirement and people started looking for reducing the fresh water intake/consumption.

Now many times it has been witnessed the understanding with advanced technology as MBR vs the Conventional treatment schemes is one of the deciding factors while selection.

We believe this article will put light on the understanding of difference while selecting the right solution in sewage treatment for recycle.

What is Membrane Bioreactor Technology?

The Membrane Bioreactor technology is one of the wastewater treatment technologies which is a combination of the Suspended growth biological treatment process along with membrane filtration.

The technology is used in Municipal as well as industrial wastewater treatment processes. It is an advanced technology that produces consistent high-quality water for reuse at a competitive cost.

- Highest water recovery >95-98%
- Consistency in meeting Statutory Compliances
- Performance Meeting BOD norms
- Minimal Footprint – less area requirement
- Operates at High MLSS-Highly stabilized

SPECIFICATIONS	TREATMENT SCHEMES		
	Activated Sludge Process (SBR)	MBBR (Moving Bed Bioreactor)	MBR (Membrane Bio Reactor)
Process Type	Suspended Growth	Attached Growth	Biological +Filtration
Area Footprint	Maximum	Moderate	Minimal
Treatment Efficiency (COD,BOD,TSS)	80 – 90 % (Reduction)	90- 95 % (Reduction)	98% (Reduction)
Water quality & Consistency	Low quality & Consistency	Moderate quality & Consistency	Excellent quality with high consistency
Required level of manual intervention	Medium	High	Low
Electro-Mechanical & Civil Cost	High	High	Moderate
Maintenance	Difficult	Difficult	Easy
Water Recovery	75– 80 %	>85 %	>95 %
Electrical Consumption	Medium	Moderate	Moderate
Sludge handling	Required periodic sludge wasting, Intern frequent sludge handling, equipment usage.	Required periodic sludge wasting, Intern frequent sludge handling, equipment usage.	Highly stabilized sludge reduces sludge handling equipment footprint

Table-1 Above Table explains the comparative understanding between conventional treatment technologies with the MBR technology

Ex- Design Case for Comparison of 150 KLD STP with MBBR+UF and MBR Technology

Table-2

Sr No.	Description	UOM	Outlet Parameters		
			Design Basis	MBR	MBBR+UF
1	Flow	KLD	150	150	150
2	Recovery	%	>95	> 95	~ 90-95
3	pH	-	7.5 – 8.0	7.5 – 8.0	7.5 – 8.0
4	Total Suspended Solids	ppm	250-350	< 5	~ 5-10
5	BOD	ppm	250-400	< 5	~ 5-10
6	COD	ppm	300-600	< 30	~ 30
7	TURBIDITY	NTU	-	<1	<1

Table-2 Describes the design basis condition & results in comparison of MBBR+UF & MBR

Table-3

Sr. No.	Description	UOM	MBR	MBBR + UF
1	Capacity	KLD	150	150
1.2	Electro-Mechanical Cost	INR	4037000	3925000
1.3	Appx Civil Cost	INR	3600000	4500000
1.4	Total Capex Cost for STP	INR	7638000	8425000
2	Electricity Consumption			
2.1	Connected Load	KWH	29.5	36.4
2.2	Operating Load	KWH	16	19.2
3	Chemical Consumption			
3.1	Sodium Hypochlorite	Kgs/day	7	10
3.2	Citric Acid	Kgs/day	5	5
3.3	Alum	Kgs/day	Not required	1.5
3.4	Polymer	Kgs/day	0.8	0.8
3.5	DAP	Kgs/day	Not required	Intermediate Usage
3.6	UREA	Kgs/day	Not required	Intermediate Usage
3.7	Jaggery	Kgs/day	Not required	Intermediate Usage
4	Treatment Cost			
	Operating Cost per day for STP			
4.1	(Only Electricity, Chemical Consumption)	INR/Day	834	934.6
	Treatment Cost per m3			
4.2	(Only Electricity, Chemical Consumption Considered)	INR/m3	5.64	6.23
5	Maintenance of the plant		Easy	Tedious
6	Space Requirement (Lx W)	Sq.mtr	13.5 x 6	18.5 x 6

Table-3 Illustrative working in comparison of MBBR+UF & MBR with technical design, sizing's, power, chemical and commercial indication including civil

Solution-For the MBR Treatment scheme, the capital cost is less in number if compared with MBBR + UF technology due to its less area requirement (compact system) which in turn reduces the civil construction cost. The MBR technology is greener as it has fewer chemical requirements & low electrical usage. The major advantage of the system is, it delivers consistency in output throughout the operation cycle. Maintenance of the MBBR system is found to be a tedious process as it is difficult to handle sludge. Sludge aging, Bulking are the common phenomenon faced during Operations.

Table-4



Table-4 Represents how MBR technology helps in reducing the area footprint. Secondary Settling tank (Tube settler) & further tertiary treatment gets eliminated as Separation of solids & Filtration happens in the Membrane Bioreactor Tank itself.

Note-This case study for MBBR + UF V/Ss MBR of capacity 150 KLD with standard calculation & our assumptions based on experience.

OUR NEW LAUNCH

“STP INBOX”



What Is STP INBOX

Aquacare's MBR STP In Box system is a packaged/containerised system, compact energy optimised solution includes high performance MBR technology for sewage treatment produces clear water to reuse. MBR STP In Box system consists of biological treatment, MBR for filtration sludge handling system and disinfection. Tanks, piping's, pump & blowers designed to suits the sewage application.

Operation

Aquacare's MBR STP In Box system is designed to provide biological and filtration system to treat sewage. The system can achieve 96% recovery with treated water quality of BOD <10ppm, TSS<5 ppm and Turbidity <1 NTU.

Treatment Capacity-Aquacare's MBR STP In Box system is available in capacities as 5 KLD, 10KLD, 20 KLD & 30 KLD Box Size- 20-40 Ft



Key Features & Benefits

- Compacts System
- Plug & Play
- Suitable - Fixed & Temporary usage
- Meets Regulatory Requirements
- Cost efficient in Capex & Opex
- Robust Design - with minimal maintenance
- Easy to change in location as per requirements

Advantages

- Environment Friendly - Meeting discharge norms
- Less Time for Installation - Ready to USE
- Handling emergencies
- Low Maintenance & Operating costs

Applications

- Commercial IT Parks
- Residential complexes, Towers
- Hotel & Restaurants, Hostels, Institutions, etc
- Shopping malls, airports.
- Hospitals & healthcare centers
- Industries

Membrane Bioreactor Technology is Cost Effective option delivering consistent water quality & meeting stringent PCB /NGT norms. It is very helpful in Space constraint assignments & projects.

Reach Out to Us to Build your Contribution to Environment Success Story

M/s **AQUACARE SOLUTION ENVIRO ENGINEERS**

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