

Compression MBR VS MBBR VS FBBR

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Technology	MBR	MBBR	FBBR	Cost relation
Process Diagram	Screeing Less than 3mm Buffer Arivated SludgeBuffer Filtration Sludge Tank	Normal Screen Buffer Activated Sludge By Moving Bed Media Lemella Sludge Tank	Normal Screen	MBR Less Space but more Area for Good Screen
Screening - Grease Requirement	MBR Requires Excellent Screening Grit Grease Removal and Automatic Sizes 2-3 mm. An Important Factor	Normal Screening. Can be Manual Can be Above 3 mm	Normal Screening. Can be Manual Can be Above 3 mm	MBR MORE COST FOR SCREENING SYSTEM
Process of Treatment	Mechanical - Physical Separation for the Impurities by Ultra Filtration. Remove up to the separation of Germs. The Fresh Sewage go first to Screening, Than Aeration for Sludge Activation	The Bio impurities attached to the Suspended Materials and form biofilm. The Biomass degrade the Biomass to an Acceptable Levels	The Bio impurities attached to the Fixed Bed Materials and form biofilm. The Biomass degrade the Biomass to an Acceptable Levels	MBR is Physical Process and Biofilm is 100% Biological
PRESSURE	Requires Negative Pressure for the Filtration	Not Needed	Not Needed	MBR HIGHER ENERGY
BACKWASH	Requires Backwash for Cleaning	Not Needed	Not Needed	MBR HIGHER ENERGY
Aeration	Buffer Mixing Activated Sludge than filtration	Buffer - Bioreactor	Buffer Bio reactor	
Sludge Settlement	Not Required	Lamella	Lamella	ADVANTAGE MBR LAMELLA TECHNOLOGY REQUIRES

				MUCH LESS
				SPACE
Sludge	More	Less	Less	The Biofilm
Production				Feeding on
				the Biomass
Trained	Constant and Trained			HIGHER COST
Service	Service			
Sludge Return	The Activated Young			Higher Energy
	Sludge Return to the			, Pumping
	Aeration Tank, to			Sludge
	contribute to the Active			require
	Biomass			Maintenance
Spare Parts	Costly - Periodic	Cheaper and Long	Cheaper and Long	Small Scratch
Spare Faits				MBR Flement
		Lasting	Lasting	than No Fix
				Need to
				Change
				BIOFIL is
				Sturdy and
				Replaceable
				at cheap cost
Quality of	Superior	Accentable for	Accentable for	MBR BEST
Quality of Treated	Superior	Acceptable for	Acceptable for	MBR BEST TSE QUALITY
Quality of Treated Sewage	Superior	Acceptable for Irrigation	Acceptable for Irrigation	MBR BEST TSE QUALITY
Quality of Treated Sewage Effluent TSE	Superior	Acceptable for Irrigation	Acceptable for Irrigation	MBR BEST TSE QUALITY
Quality of Treated Sewage Effluent TSE Over All Cost	Superior Service - Energy- Parts and	Acceptable for Irrigation Less	Acceptable for Irrigation Best	MBR BEST TSE QUALITY FBBR BEST
Quality of Treated Sewage Effluent TSE Over All Cost	Superior Service - Energy- Parts and Cost of Plant	Acceptable for Irrigation Less	Acceptable for Irrigation Best	MBR BEST TSE QUALITY FBBR BEST COST OVER 5
Quality of Treated Sewage Effluent TSE Over All Cost	Superior Service - Energy- Parts and Cost of Plant	Acceptable for Irrigation Less	Acceptable for Irrigation Best	MBR BEST TSE QUALITY FBBR BEST COST OVER 5 YEARS
Quality of Treated Sewage Effluent TSE Over All Cost Energy	Superior Service - Energy- Parts and Cost of Plant The Highest	Acceptable for Irrigation Less Middle	Acceptable for Irrigation Best Lowest	MBR BEST TSE QUALITY FBBR BEST COST OVER 5 YEARS FBBR the
Quality of Treated Sewage Effluent TSE Over All Cost Energy	Superior Service - Energy- Parts and Cost of Plant The Highest	Acceptable for Irrigation Less Middle	Acceptable for Irrigation Best Lowest	MBR BEST TSE QUALITY FBBR BEST COST OVER 5 YEARS FBBR the Materials not
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Quality of Treated Sewage Effluent TSE Over All Cost Energy	Superior Service - Energy- Parts and Cost of Plant The Highest Can Hold 24Hours	Acceptable for Irrigation Less Middle	Acceptable for Irrigation Best Lowest	MBR BEST TSE QUALITY FBBR BEST COST OVER 5 YEARS FBBR the Materials not Need to Move, it is Fixed ADEVANTAGE
Quality of Treated Sewage Effluent TSE Over All Cost Energy Electrical Shut Down	Superior Service - Energy- Parts and Cost of Plant The Highest Can Hold 24Hours	Acceptable for Irrigation Less Middle Form Bio Cakes if Electricity is Down	Acceptable for Irrigation Best Lowest No Cakes Formed the Biomass	MBR BEST TSE QUALITY FBBR BEST COST OVER 5 YEARS FBBR the Materials not Need to Move, it is Fixed ADEVANTAGE FBBR
Quality of Treated Sewage Effluent TSE Over All Cost Energy Electrical Shut Down	Superior Service - Energy- Parts and Cost of Plant The Highest Can Hold 24Hours	Acceptable for Irrigation Less Middle Form Bio Cakes if Electricity is Down more than 10 Hours	Acceptable for Irrigation Best Lowest No Cakes Formed the Biomass stationary	MBR BEST TSE QUALITY FBBR BEST COST OVER 5 YEARS FBBR the Materials not Need to Move, it is Fixed ADEVANTAGE FBBR
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Quality of Treated Sewage Effluent TSE Over All Cost Energy Electrical Shut Down Grease Leak	Superior Service - Energy- Parts and Cost of Plant The Highest Can Hold 24Hours BIG PROBLEM Membrane Need to Be cleaned well and Can be	Acceptable for Irrigation Less Middle Form Bio Cakes if Electricity is Down more than 10 Hours. This Will require Change Materials, Clean Take and 10 Dats Start Up BIG PROPBLEM MATEROALS TO CHANGE AND 10	Acceptable for Irrigation Best Lowest No Cakes Formed the Biomass stationary The Oil leaked will stay on the top, easy to remove	MBR BEST TSE QUALITY FBBR BEST COST OVER 5 YEARS FBBR the Materials not Need to Move, it is Fixed ADEVANTAGE FBBR