



epeco

epMBR-s

membrane bioreactor (MBR)
wastewater treatment & reuse systems

up to 100 m³/day



for
residential complexes,
camps, schools, universities,
hotels, factories,
and.....more

treated effluent*
is suitable for:

landscape &
forestry irrigation,
fire suppressant water,
recycling to lakes,
and aquifer recharge,.

* depending on local regulations

MBR systems are rapidly replacing aging conventional treatment systems in small communities and are also increasingly installed to service land development projects such as growing residential developments, hotels, resorts, shopping centers, office buildings, airports and campgrounds.

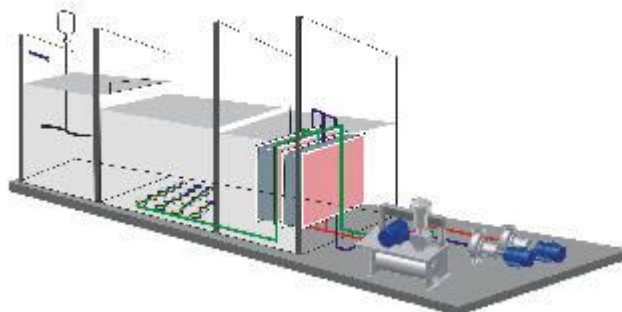
MBR technology, Why?

- * Accepts high and fluctuating organic and hydraulic loading while keeping consistent product quality with no sacrifice of performance.
- * Reduce at least 35% of the space required for conventional wastewater treatment plant installation.
- * No chemicals used for regular operation.
- * No attendance required to operate the plant.
- * Lower power consumption.

In MBR systems, UF membrane are immersed directly into the mixed liquor and draw treated effluent into the fiber using a gentle suction.

Because sludge settling is not required, MBR system can operate at much higher mixed liquor suspended solids concentrations, typically in the range of 8,000 to 20,000 mg/l. This enables the MBR to function with relatively small bioreactor volume, and considerably reduces capital and operating costs because less land, fewer components and a smaller physical plant is required.

MBR systems produce tertiary quality effluent that has very low levels of BOD, COD, nitrogen, phosphorus, suspended solids and microbial contamination.

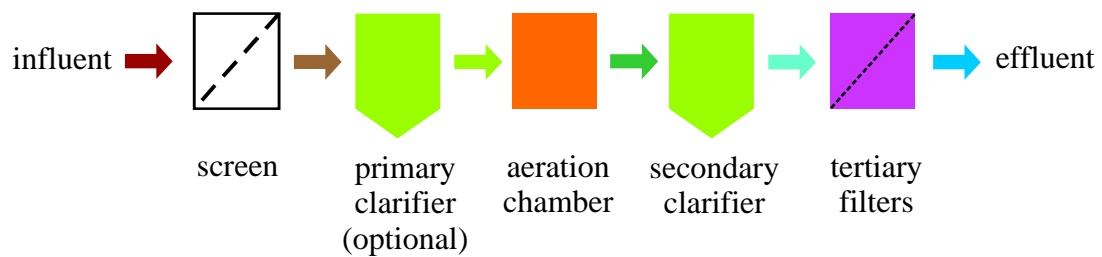


epMBR-s vs. Conventional WWTP?

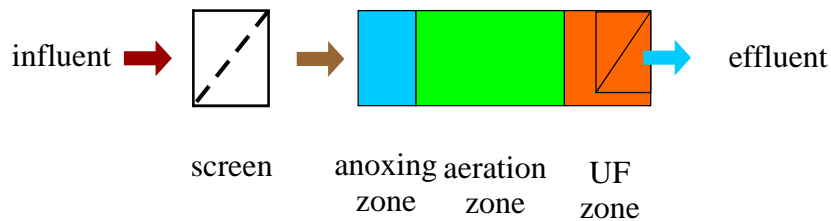
		Raw Water	epMBR s	Convent. WWTP
BOD ₅ (Biochemical Oxygen Demand)	mg/l	250-400	<5	>20
COD (Chemical Oxygen Demand)	mg/l	250-500	<10	>20
TSS (Total Suspended Solids)	mg/l	250-500	<5	>20
Turbidity	NTU	60	<2	>10
TN (Total Nitrogen)	mg/l	30	<5	>10
TP (Total Phosphorous)	mg/l	10	<0.3	<0.5
CFU (Coliform)	MPN [*] /ml	3.0 x 10 ⁵	N.D ^{**}	N.D
E.Coli	MPN [*] /100 ml	2.0 x 10 ⁵	N.D ^{**}	2.0x10 ²

* Maximum Propable Number
 ** Not Detectable

epMBR-s, the compactness, simplicity & economics?



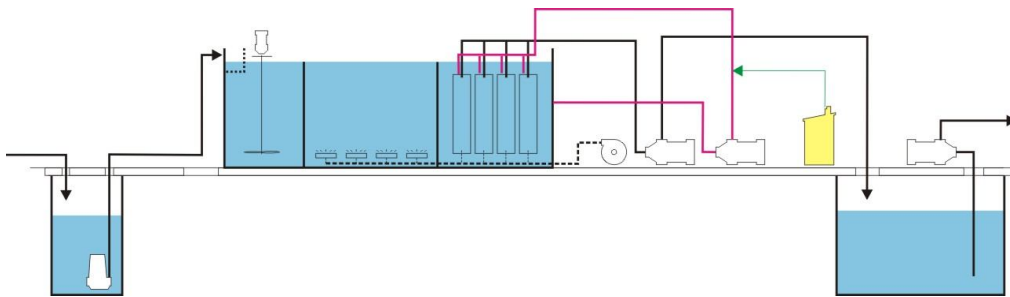
Conventional WWTP Compartments



epMBR-s WWTP Compartments

epMBR-s

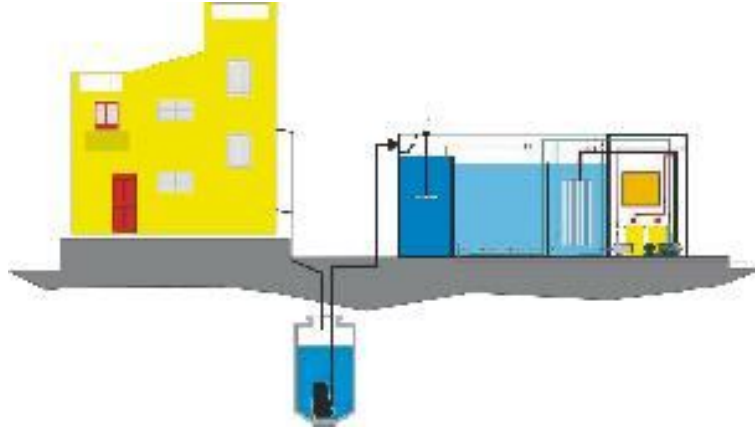
epMBR-s wastewater treatment & reuse plant process



Raw wastewater > Fine/Coarse Screens > Denitrification (Anoxic) > Aeration > Ultrafiltration > Permeate

Typical MBR s Process Flow Diagram is shown above. Raw wastewater passes through coarse and fine screens to remove particles that might affect the downstream equipment . In the anoxic zone, full mixing of liquor under anaerobic condition will cause total nitrogen reduction “denitrification”. Oxygenation of mixed liquor in the next compartment, by adding diffused air will ”nitrificate” the liquor in full digestion. Recirculating part of the aerated sludge into the anoxic zone may be required for excess nitrogen nutrient removal.

epMBR-s, alternatives



ep MBR-s plants are delivered to the site, in steel structure for above ground installation. They are factory built, tested and ready for quick installation, commissioning and start-up.

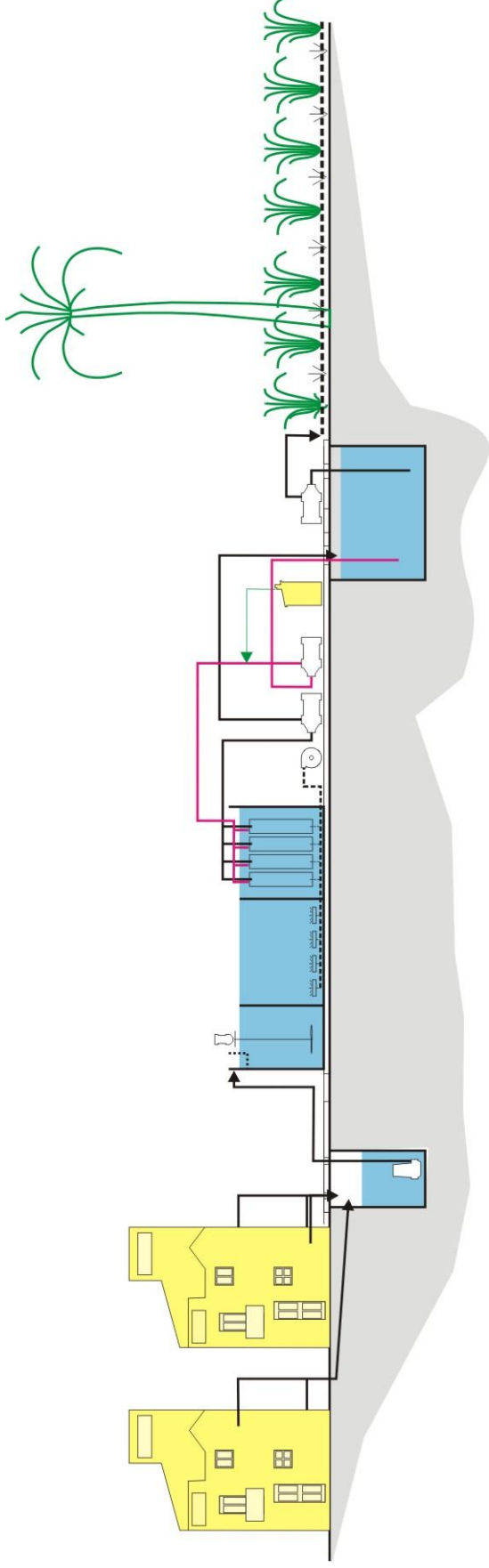
ep MBR-s plants are also available for under ground installation- in concrete structure



epMBR-S

MBR wastewater treatment & reuse

installation



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technical data

model	personal equivalent persons	capacity (average) m ³ /day	height x width ⁽¹⁾ x length mm	Power rating kw	Weight ⁽²⁾	
					(dry) kg	(Wet) kg
epMBR 15 s	60	15	2500 x 3000 x 3000	4 ½	3500	30000
epMBR 20 s	80	20	2500 x 3000 x 6000	5 ½	4000	37500
epMBR 30 s	120	30	2500 x 3000 x 7500	7 ½	4500	50000
epMBR 50 s⁽³⁾	200	50	2500 x 3000 x 12500	10	6700	78500
epMBR 75 s⁽⁴⁾	300	75	2500 x 3000 x 20000	12 ½	9000	112000
epMBR 100 s⁽⁵⁾	400	100	2500 x 3000 x 25000	15	12500	162000

(1) excluding power supply equalization tank, clarifier or sludge disposal.

(2) based on steel structure.

(3) delivered to site in 2 pieces.

(4) delivered to site in 3 pieces.

(5) delivered to site in 4 pieces.

power supply: 380-415v/3ph/50hz

Performance Performance

		influent	effluent
BOD5 (Biochemical Oxygen Demand)	mg/l	=250	<5
COD (Chemical Oxygen Demand)	mg/l	=150	<5
TSS (Total Suspended Solids)	mg/l	=250	<5
Turbidity	NTU	=10	<1
TN (Total Nitrogen)	mg/l	=30	<5
TP (Total Phosphorous)	mg/l	=10	<0.5
CFU (Coliform)	MPN/ml	=3.0 x 10 ⁵	N.D ^{**}
E.Coli	MPN/100 ml	=2.0 x 10 ⁵	N.D

optional

fibreglass structure.

treated effluent post sterilization.

* Maximum Propable Number

** Not Detectable

