



epeco.usa

*wastewater treatment & reuse*

**EP.MBR.ffc**  
**Block B**

**Modular Membrane Bioreactors**  
up to 2000 m<sup>3</sup>/day



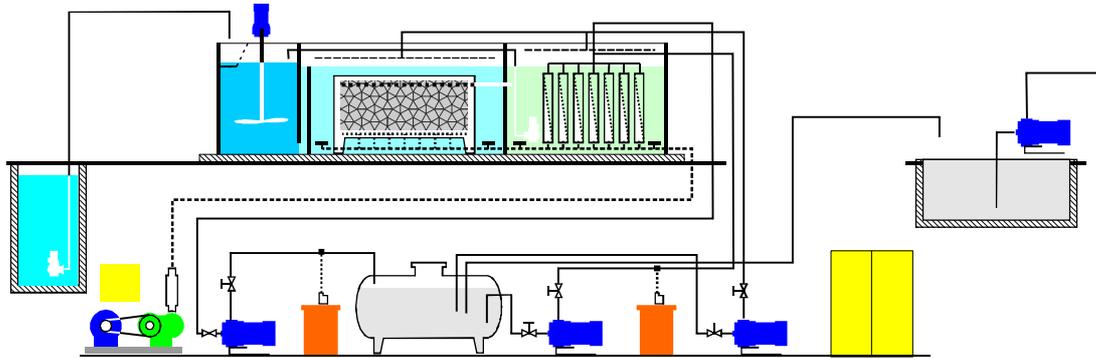
**in steel structure for  
above ground installation**

for:

- Villages
- Small Cities & Towns
- Housing Complexes
- Hotels & Resorts
- Camps
- Campuses & Universities
- Stadiums & Resort Centers
- Harbors
- Airports
- Industrial Plants

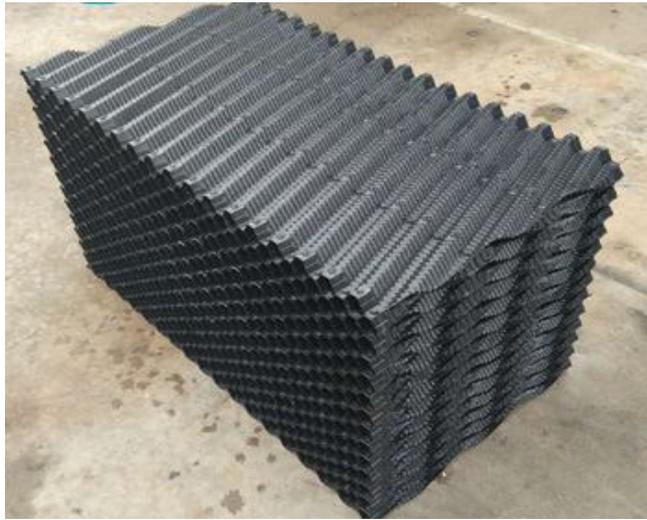
## EP.MBR *ffc*,.....the Technology

EP.MBR *ffc* wastewater treatment process is designed to allow for dual biological reaction contractors.



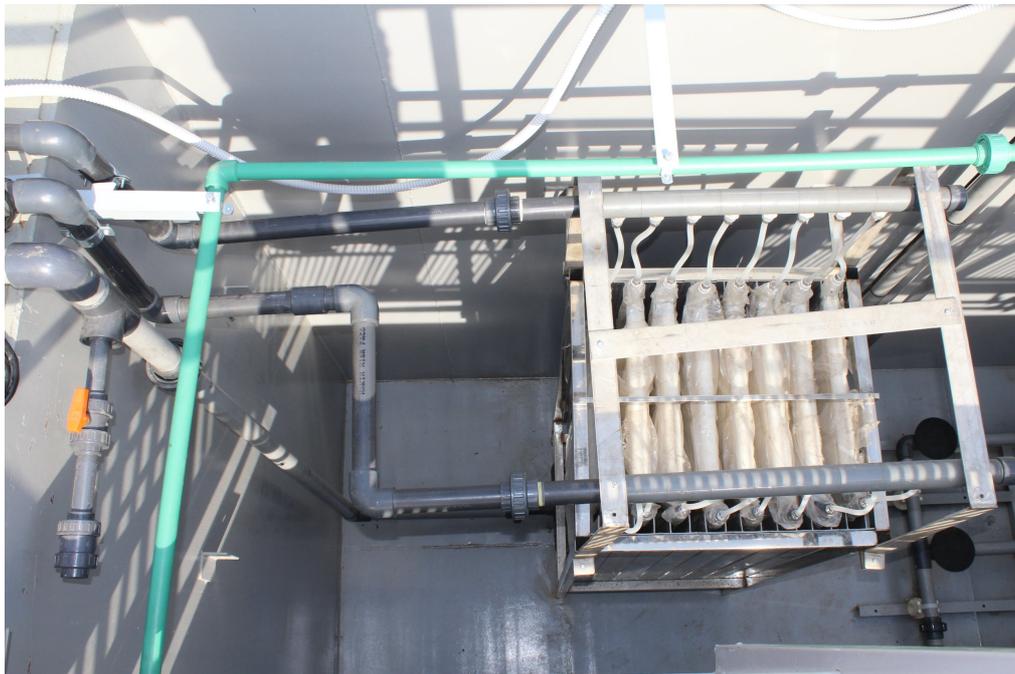
The phase [I] biological reactor is working on the Fixed Film Contractors **FFC** principle. The **FFC** Biological Reactor is an aerobic activated sludge wastewater treatment compartment where **FFC** provide a bed to support the biomass film that digests the bio-degradable waste material in the wastewater.





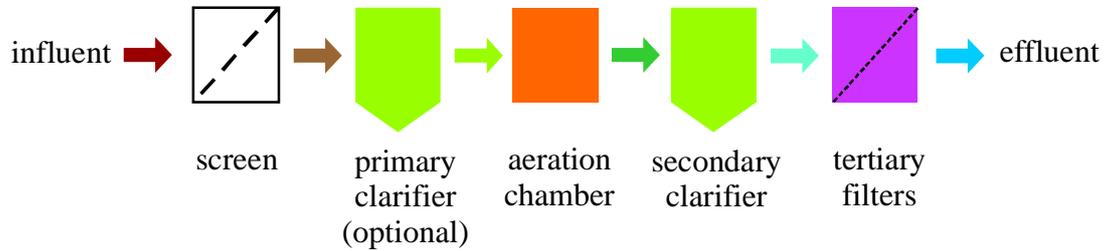
EPECO.USA designs a wide range of **FFC** media and configurations. **FFC** are built in a monoblock of honeycomb media (or equal hexagonal or corrugated sheets), arranged to allow for opened channels with the maximum contact area for the volume. **FFC** media is static and fully submerged in the wastewater and exposed to the diffused air. **M** A film adhering to the **FFC**, containing aerobic bacteria will be formed.

Bacteria exposed to diffused air and the biomass will be activated and the aerobic digestion will take place.

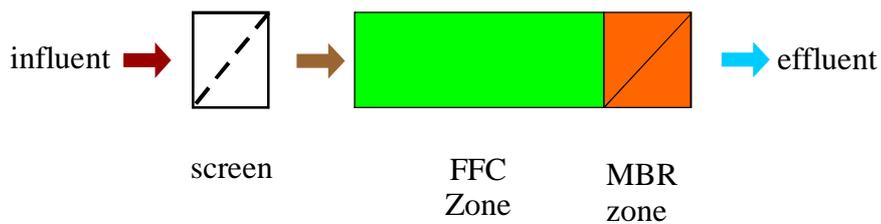


The phase [II] Biological Reactor is working on the Membrane Bioreactors **MBR** principle which combines the conventional biological activated sludge treatment process with the membrane filtration. Membrane modules are directly immersed in the activated sludge. The activated sludge is separated from membrane modules. Conventional sedimentation processes are not required as the small pores of an ultra filtration membrane separate suspended matter, bacteria, and viruses (pathogens) from the process

## EP.MBR,, compactness, simplicity & economics?



*Conventional WWTP Compartments*



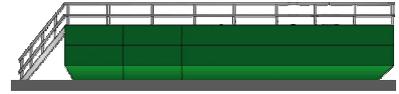
*epMBR.fjc Compartments*

## EP.MBR, vs. conventional aerobic wastewater treatment

			Raw Wastewater	Convent. WWTP	MBR WWTP
Biochemical Oxygen Demand	BOD	mg/l	250	30	<5
Chemical Oxygen Demand	COD	mg/l	400	50	<10
Total Suspended Solids	TSS	mg/l	250	30	<1
Total Nitrogen	TN	mg/l	40	5	<1
Total Phosphorous	TP	mg/l	10	5	<1

## EP.MBR.S B-Technical Data

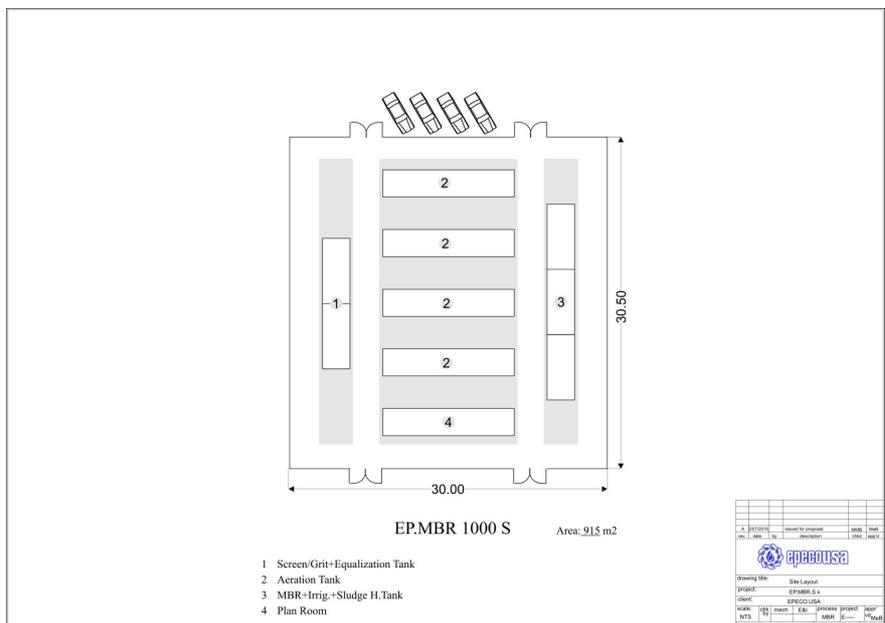
model	capacity (average) m <sup>3</sup> /day	personal equivalent persons	Power* rating kw
EP.MBR.S 750 B	750	3000	20
EP.MBR.S 1000 B	1000	4000	25
EP.MBR.S 1500 B	1500	6000	35
EP.MBR.S 2000 B	2000	8000	45



\* Excluding Balancing & Irrigation Pumps

## Dimensions

Tanks	Quantity				Length	Width	Height
	750	1000	1500	2000			
Balancing Tank							
Screening Tank	1	1	1	1½	12.0	2.5	5.0
Grit Removal Tank							
Aeration Tanks	3	4	6	8	12.0	2.5	5.0
Irrigation Water Tank	½	½	½	½	12.0	2.5	5.0
MBR Tank	1	1	1	1	12.0	2.5	5.0
Sludge Holding Tanks	½	½	½	½	12.0	2.5	5.0
Plant Room	1	1½	1½	2	12.0	2.5	2.5



## **EP.MBR.*ffc*,.....*why***

Performance...**EP.MBR.*ffc*** plants are built to produce treated effluent quality that supersedes any conventional plants. the Biological Oxygen demand **BOD** is consistently less the 5 mg/l or better. The Suspended Solids **SS** are always less than 1 mg/l.

Quality....**EP.MBR.*ffc*** plants are manufactured ex **EPECO.USA** works, which allows for high fabrication quality control with multi phases monitoring. Even for concrete tank **EP.MBR.*ffc***, all equipment are delivered to site, pre assembled, tested and ready for quick commissioning and start-up.

Reliability....**EP.MBR.*ffc***plants are designed to handle highly fluctuating hydraulic & contaminant loading. By design, **EP.MBR.*ffc*** plants will always produce, efficiently same treated effluent regardless the influent quality and/or rate.

Efficiency...**EP.MBR.*ffc***plants are designed to work at highest energy efficiency. The energy consumption per cubic meters of treated effluent is at least 30% lower that the conventional plants.

Compactness...much smaller aeration volume, eliminated clarifier, sludge holding tank and tertiary treatment filtration allows for a small foot print plant that saves at least 50% of the necessary area required for the conventional plants.

Flexibility...**EP.MBR.*ffc***are designed in standard modules that can be integrated to form larger plants, virtually meet all customer capacity demands. All **EP.MBR.*ffc*** plants are built in steel or fiberglass structure for above ground installation. It can also be built in concrete structure for above or under ground installation.

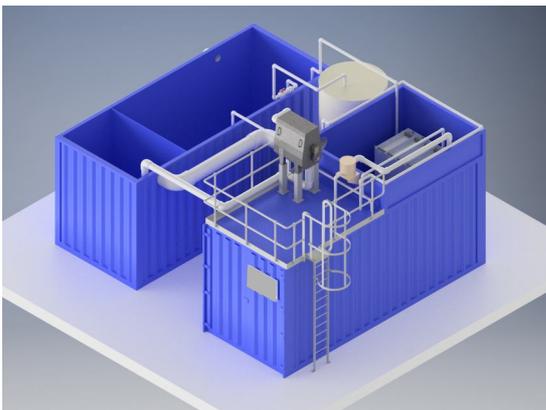


## EP.MBR.S. *ffc*, installation

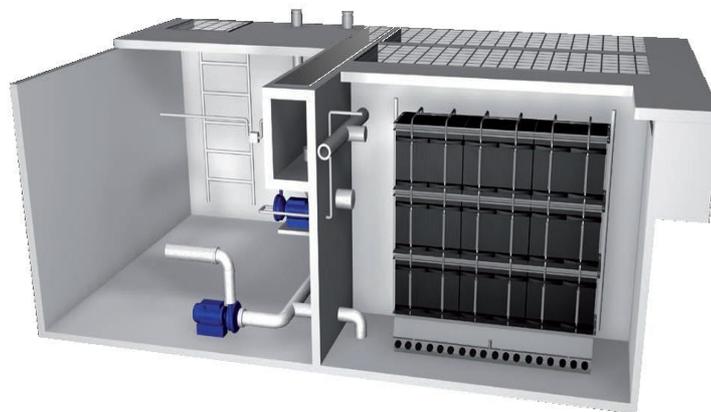
EP.MBR.S. *ffc* , plants are delivered to site, factory built, tested and ready for quick installation, commissioning and start-up.



EP.MBR.S. *ffc* , plants, can be built in multiple modules for larger capacities. Vertical stacking is also available for reducing the total plant area.



**EP.MBR**.*ffc* Block B plants, can be OPTIONALLY built in Concrete Structure for semi burried or underground installations.





**Other EP.MBR Products.....the EP.MBR marine**



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# EPECO.USA the Total Capabilities

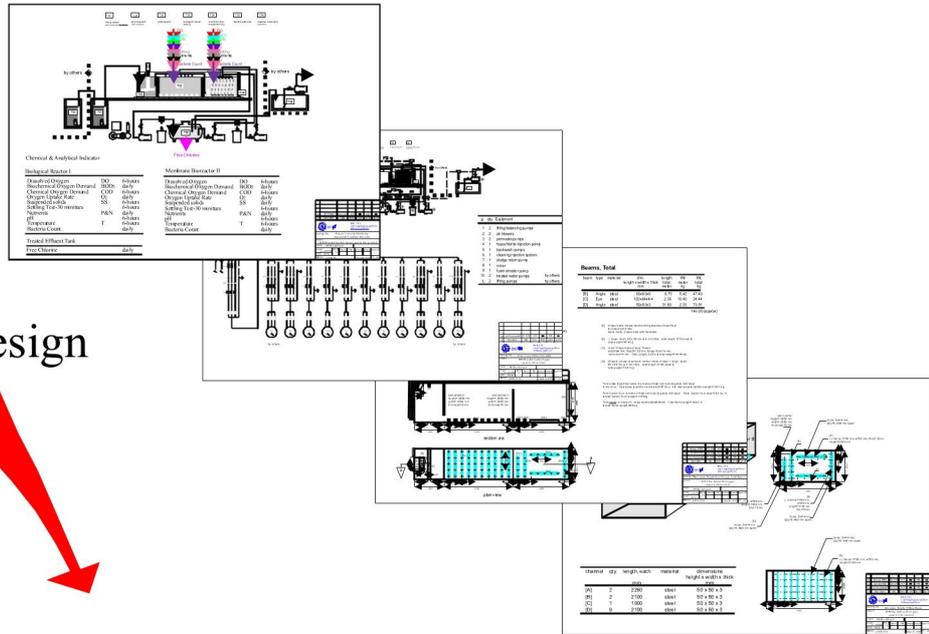
from .....design



to.....fabrication



up to.....  
.....final inastallation





**EPECO.USA**

**Middle East & North Africa Division**

Mailing Address: P.O.Box 8052, Cairo 11371, Egypt

Street Address: 10, Tayaran Str., Raba'a al Adawia, Nasr City, Cairo 11371, Egypt

Tel: : +20 2 2401 6636 Mobil:+20 12 2210150,

e.mail:info@epecousa.com www:epecousa.com