epecousa

wastewater treatment & reuse

EP.MBR.*ffc*

Block A

Modular Membrane Bioreactors **MBR**
Modular Membrane Bioreactors

up to 500 m^3/day

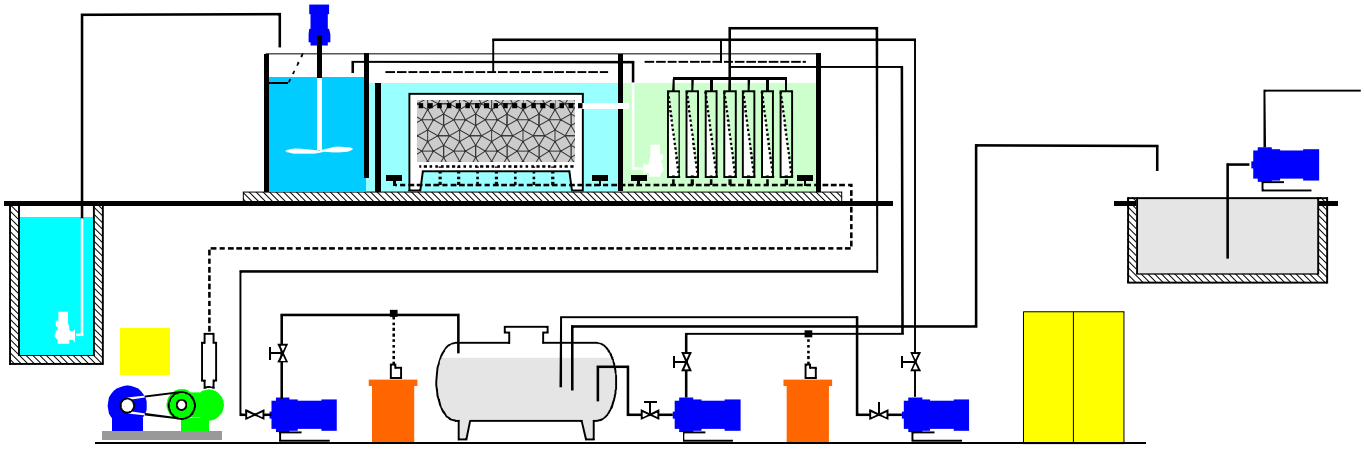
in steel structure for
above ground installation

for:

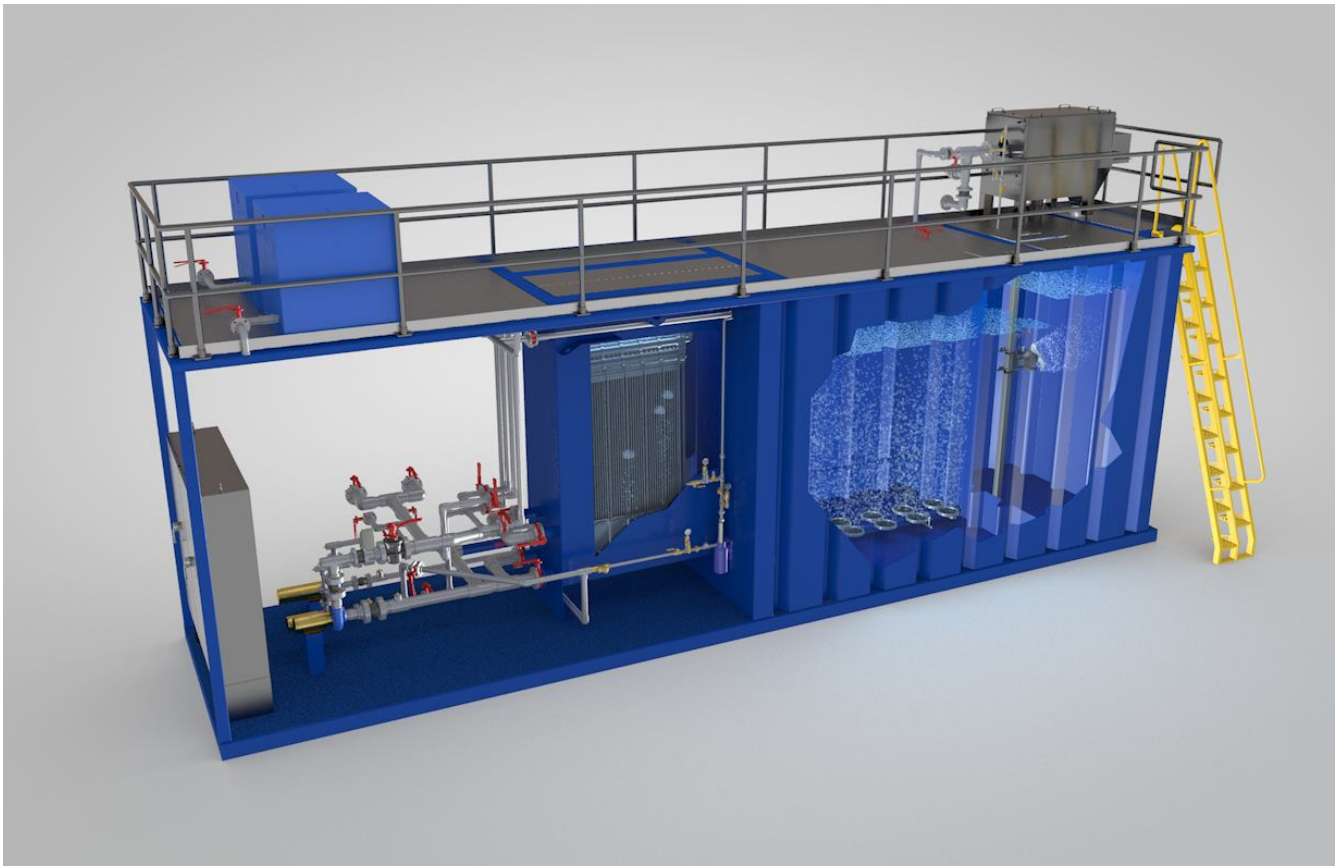
- ○ Villages
- ○ Small Cities & Towns
- ○ Housing Complexes
- ○ Hotels & Resorts
- ○ Camps
- ○ Campuses & Universities
- ○ Stadiums & Resort Centers
- ○ Harbors
- ○ Airports
- ○ Industrial Plants

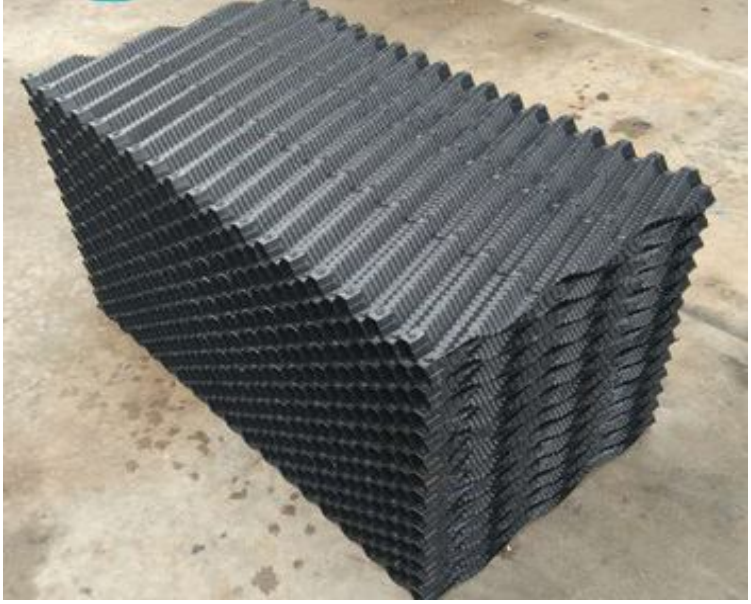
EP.MBR *ffc*,.....*the Technology*

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

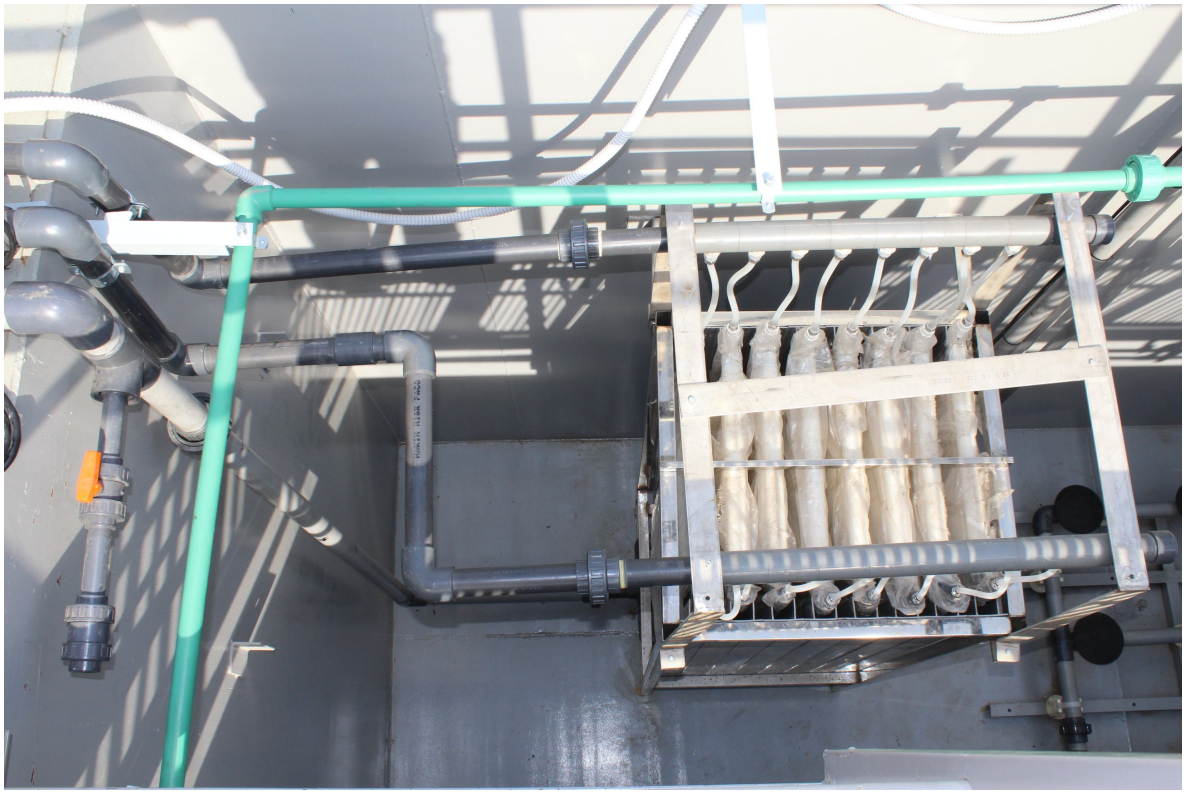


The phase [I] biological reactor is working on the Fixed Film Contractors **FFC** principle. The **FFC** Biological Reactor is an aerobic activated sludge wastewater treatment compartment where **FFC** provide a bed to support the biomass film that digests the bio-degradable waste material in the wastewater.



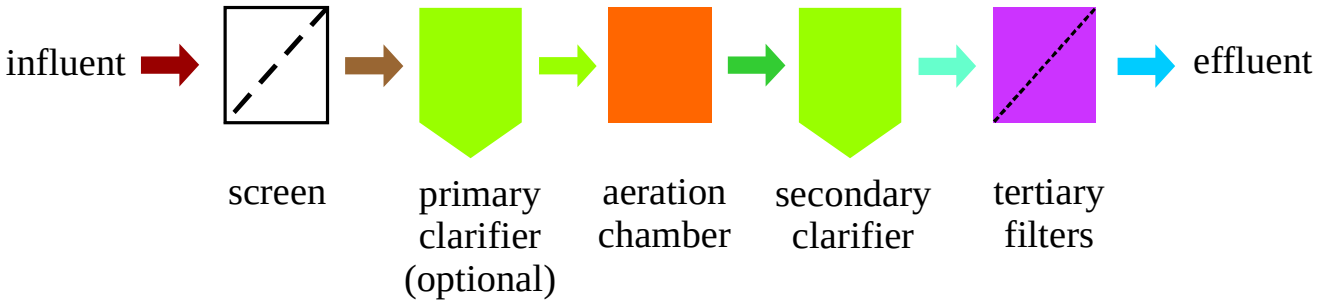


EPECO.USA designs a wide range of **FFC** media and configurations FFC are built in a monoblock of honeycomb media (or equal hexagonal or corrugated sheets), arranged to allow for opened channels with the maximum contact area for the volume. **FFC** media is static and fully submersed in the wastewater 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.

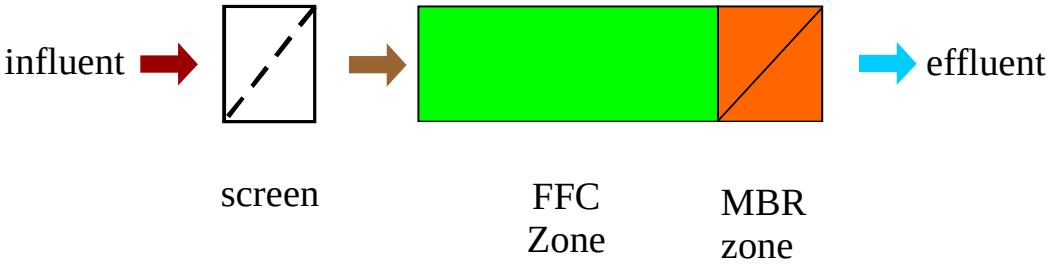


The phase [II] Biological Reactor is working on the Membrane Bioreactors **MBR** principle which combines the conventional biological activated sludge treatment process with the membrane filtration. Membrane modules are directly immersed in the activated sludge. The activated sludge is separated from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

EP.MBR.*ffc*, compactness, simplicity & economics?



Conventional WWTP Compartments



epMBR.ffc Compartments

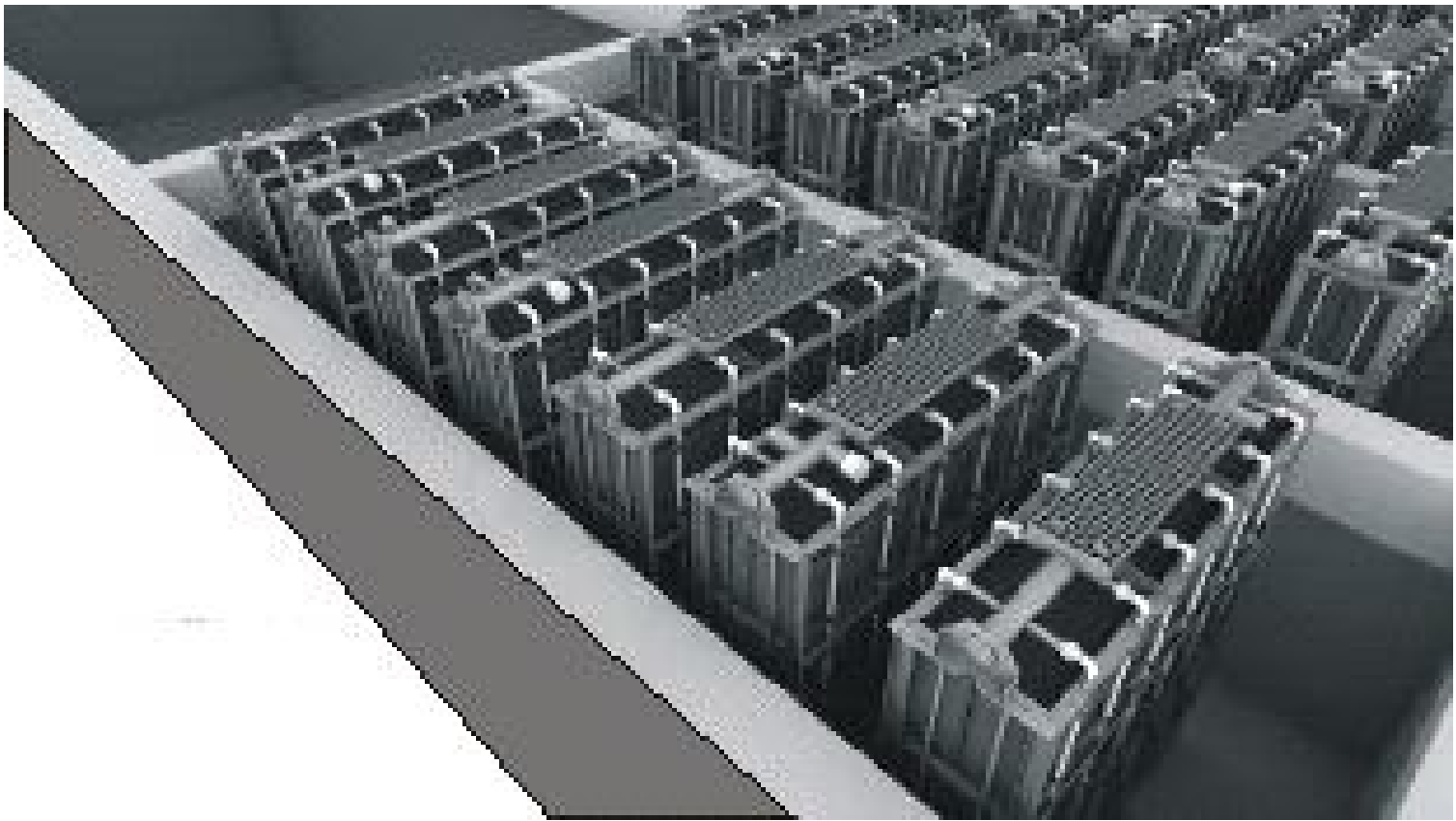
EP.MBR, *vs. conventional aerobic wastewater treatment*

			Raw Wastewater	Convent. WWTP	MBR WWTP
Biohcemical Oxygen Demand	BOD	mg/l	250	30	<5
Cemical Oxygen Demand	COD	mg/l	400	50	<10
Total Suspended Solids	TSS	mg/l	250	30	<1
Total Nitrogen	TN	mg/l	80	10	<2
Total Phosphorous	TP	mg/l	20	5	<1

EP.MBR.*ffc* Block B-**Technical Data**

model	Average Daily Flow Capacity m_2/day	personal equivalent persons	Power * rating kw
EP.MBR.50 *A*	50	200	5
EP.MBR.100 *A*	100	400	7*1/2*
EP.MBR.150 *A*	150	600	11
EP.MBR.200 *A*	200	800	15
EP.MBR.250 *A*	250	1000	20
EP.MBR.300 *A*	300	1200	25
EP.MBR.400 *A*	400	1600	30
EP.MBR.500 *A*	500	2000	35

* Excluding Lifting, Balancing & Irrigation Pumps



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.

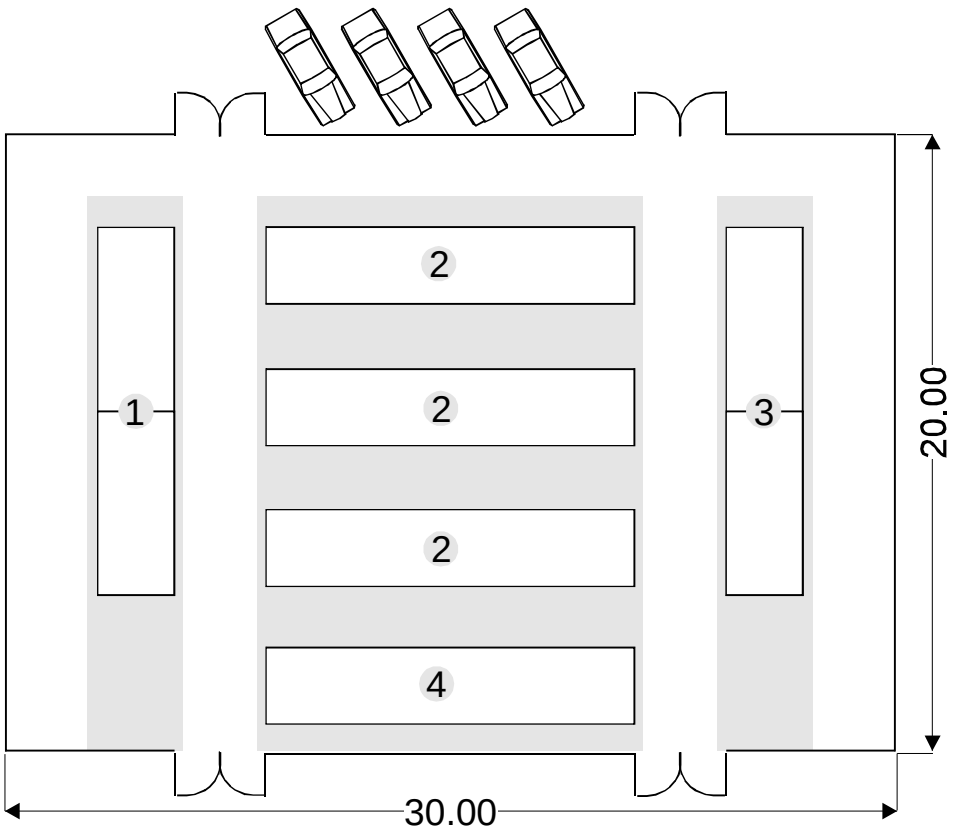
Compactness...much smaller aeration volume, eliminated clarifier, sludge holding tank and tertiary treatment filtration allows for a small foot print plant that saves at least 50% of the necessary area required for the conventional plants.

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.*ffc* Block A- **Dimensions**

In Rectangular Steel or Fiberglass Tanks for Above GroundInstallation

model	personal equivalent	No. of Units	Tank[1]&[3] Dim.	Tank[2]Dim.	Plant Room [4] Dim.
	persons		L x W x H meter	L x W x H meter	L x W x H meter
EP.MBR.50 *A*	200	1	n/a	[1]6.2 x 2.5 x 3*(1)	n/a
EP.MBR.100 *A*	400	2	n/a	[1]12 x 2.5 x 3*(2)	[1]6.2 x 3 x 3
EP.MBR.150 *A*	600	2	n/a	[1]12 x 2.5 x 3*(2)	[1]6.2 x 3 x 3
EP.MBR.200 *A*	800	3	n/a	[2]12 x 2.5 x 3	[1]6.2 x 3 x 3
EP.MBR.250 *A*	1000	4	[2]6.2 x 2.5 x 3	[1]12 x 2.5 x 3	[1]6.2 x 3 x 3
EP.MBR.300 *A*	1200	5	[2]6.2 x 2.5 x 3	[2]12 x 2.5 x 3	[1]6.2 x 3 x 3
EP.MBR.400 *A*	1600	5	[2]6.2 x 2.5 x 3	[2]12 x 2.5 x 3	[1]6.2 x 3 x 3
EP.MBR.500 *A*	2000	6	[2]12 x 2.5 x 3	[3]12 x 2.5 x 3	[1]12 x 3 x 3



EP.MBR 500 S

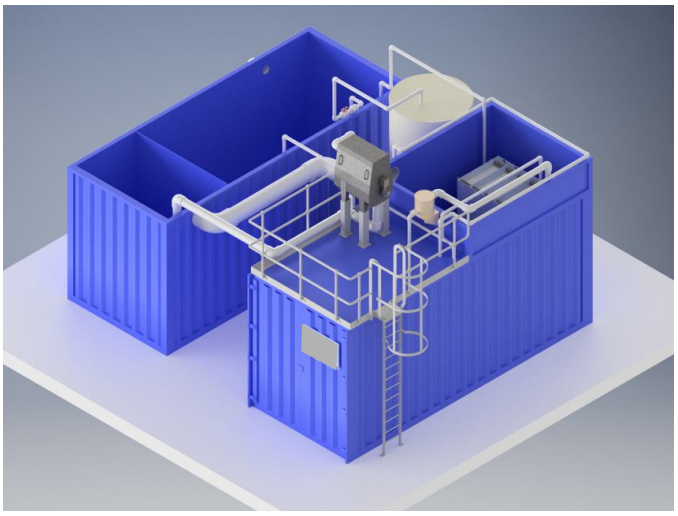
1 Screen/Grit+Equalization Tank
2 Aeration Tank
3 MBR+Irrig.+Sludge H.Tank
4 Plan Room

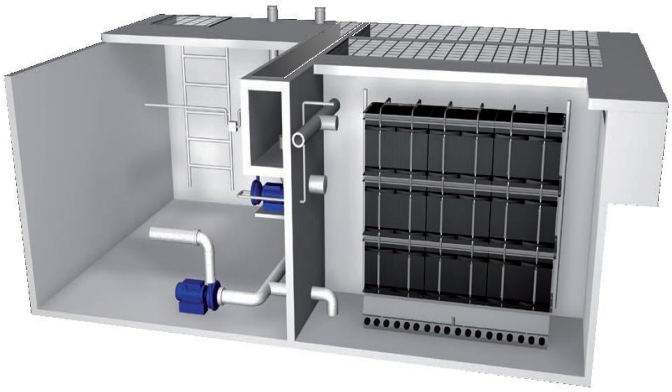
Area: 600 m2

EP.MBR.*ffc* Block A- I**nstallation**

EP.MBR.*ffc* Block A **,** plants <u>as standard</u>, are delivered to site, factory built, tested and ready for quick installation, commissioning and start-up.

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

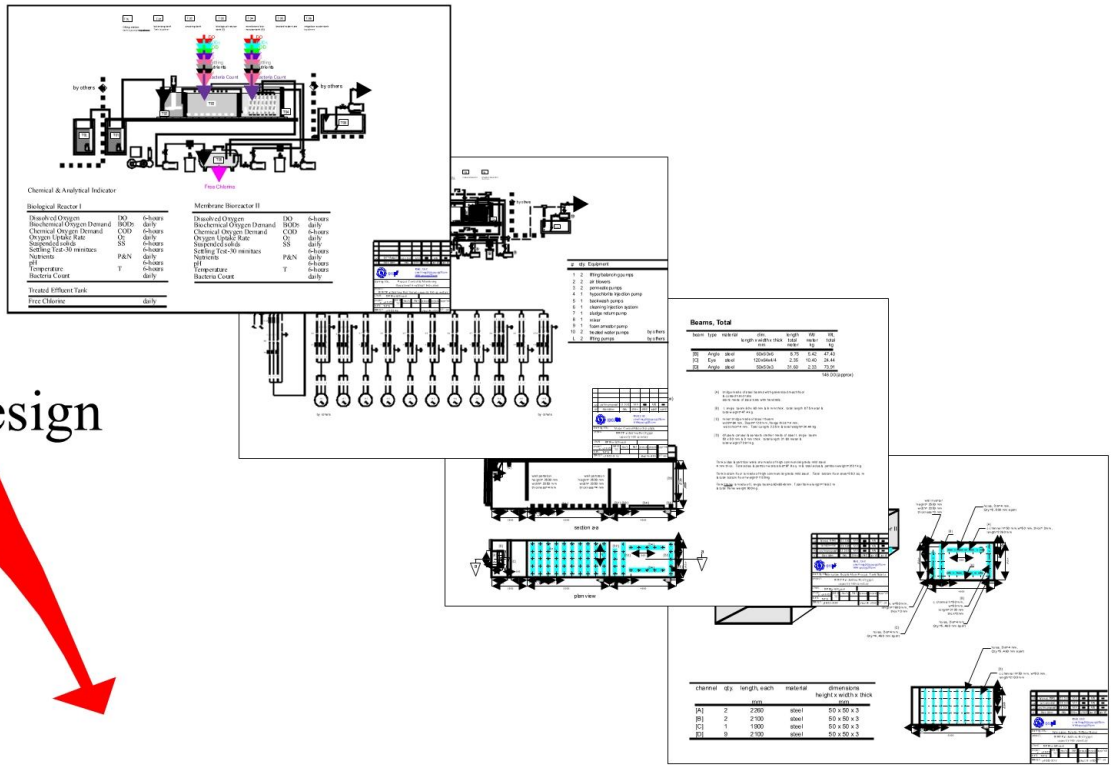




EP.MBR.*ffc* Block A plants, can be OPTIONALLY built in Concrete Structure for semi burried or underground installations.

EPECO.USA the Total Capabilities

from .....design



to.....fabrication

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

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

epecousa

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Middle East & North Africa Division

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