



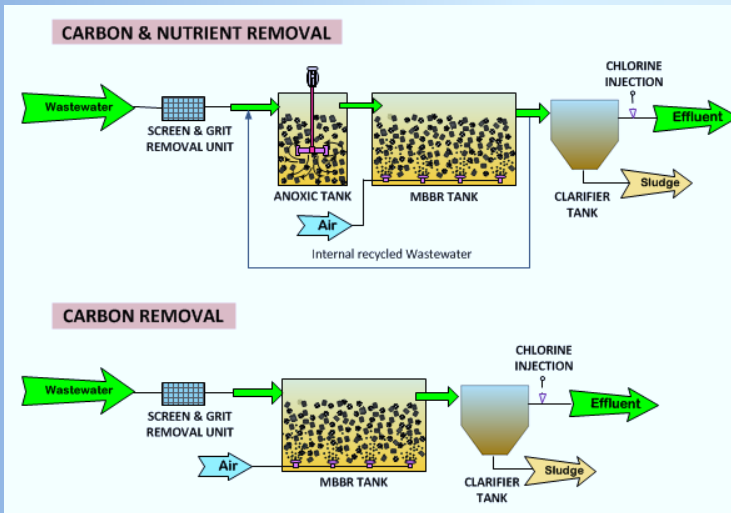
PARGAS PETRO AB Co.

**Water and Wastewater Treatment plant
EPC contractor**

**Wastewater treatment packages by
MBBR method**

Introduction of MBBR system

Moving Bed Biofilm Reactor (MBBR) is one of the biological wastewater treatment process. In this system, microorganisms convert the organic materials and substances to gas and new bacteria cell and attached to the MBBR media. This biofilm, which is provide the surface for growing of microorganisms, are suspended by aeration and/or mixer in the tank. Combination of suspended and attached growth are implemented to reduce sludge, increase efficiency and reduce the require surface. Generally, this systems are used to biological removal of N and BOD. The MBBR systems operated in continues-flow and minimum control and repair supervision .



Advantages of MBBR

- Shorter retention time and reaction.
- More efficiency for N, COD and BOD removal in small-scale.
- Resistance to flow in the time of pick flow and/or rainfall.
- Construction in both of concrete and portable metal packages.
- Better oxygen transfer rate and less sludge production.
- Ideal for optimizing the old facilities with new advancements in technology.
- Quick installation after leaving the service.
- Simple operation due to no need of sludge return and sludge control.

Main equipment:

Selectable options:

- Anaerobic tank made of carbon-coated steel.
- Anoxic tank made of carbon-coated steel.
- Submersible mixer made in western Europe for anaerobic and anoxic tank..
- Filtration unit .
- Sludge dewatering system along with the preparation and injection of polyelectrolyte made in Western Europe.

- MBBR metal tanks made of carbon-coated steel.
- Plastic media with high specific surface area (500 square meters per cubic meter) resistant to sunlight.
- Aeration blower made in western Europe.
- Aeration diffusers made in western Europe or America.
- Lamella metal tank made of carbon-coated steel.
- Lamella plates made of GRP.
- Wastewater return pump made in western Europe .
- Chlorine disinfection system involves the injection of chlorine.
- Chlorine contact tank made of carbon-coated steel.
- Valves and piping.
- Instruments.
- Central control panel.

MBBR packages of A.S.CO

1. Denitrification occurs during the anoxic phase. This stage needed only when that, nitrogen removal is required. Consists of movable media and a mixer, which is selected depending on the capacity of the package and type of mixer installation (e.g. vertically or submerged).
2. Aeration process designed to BOD removal and NH_4^+ nitrification. The design of A.S.CO, for this unit, is in a two- tank, if nitrification be considered along with removal of organic matter. Approximately, 30-55% of these tanks is filled by the packing media. Aeration blower considered to air supply for microorganisms and hanging the MBBR media. The air supply is distributed by diffusers installed at the bottom of the tanks. special strainers are designed to keep the media in the oxidation tanks.
3. In this MBBR, suspended particle removed by lamella on sedimentation tank.

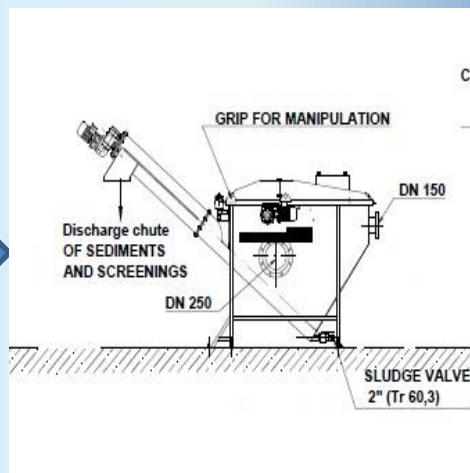
The packages designed (MBBR package) by A.S.CO are with different flow (100-1200 m³/d). Design basics of as follow:

Influent:

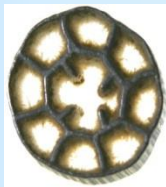
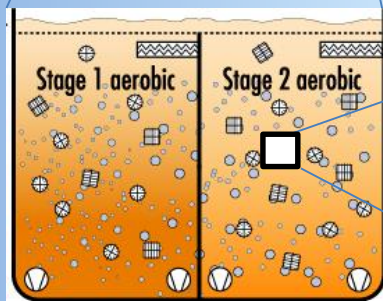
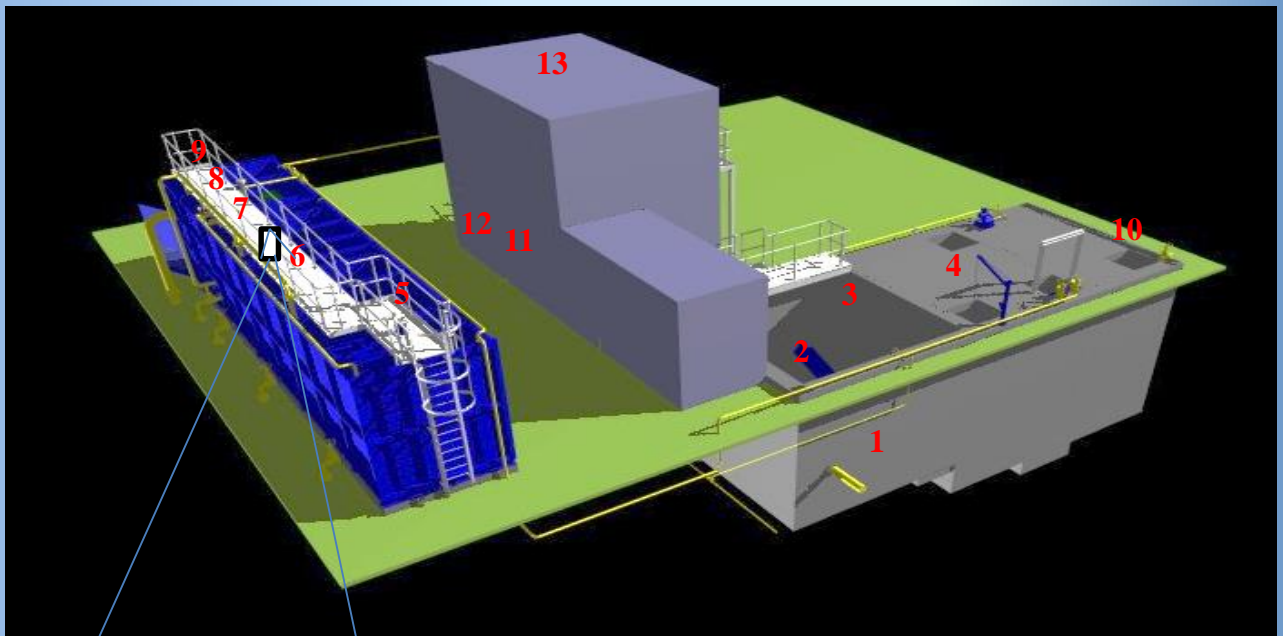
- ✓ BOD: 250 mg/lit
- ✓ COD: 500 mg/lit
- ✓ TSS: 330 mg/lit

Outlet:

- ✓ BOD: 30 mg/lit
- ✓ COD: 50 mg/lit
- ✓ TSS: 40 mg/lit



Schematic of MBBR package



- 1- Raw wastewater
- 2- Screen
- 3- Pre-treatment unit
- 4- Equalization tank and Pump station
- 5- Anoxic unit
- 6- MBBR unit
- 7- Phosphorus removal unit
- 8- Clarification unit
- 9- Effluent
- 10- Sludge storage tank
- 11- Electrical panel unit
- 12- Chemical preparation unit
- 13- Official building

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