ECOVE

WASTEWATER MANAGEMENT

50%
MORE
EFFECTIVE

SEWAGE MANAGEMENT

MBBR Technology

Moving bed biofilm reactor (MBBR)Technology is Japan's National Standard for non-municipal sewage treatment.

Over 10 million MBBR plants have been installed around the world over the last 30 years in Japan, USA, Australia, Indonesia, China, India, Algeria, Nigeria and many more countries to treat both black and grey water.

MBBR Plants

MBBR wastewater treatment plants used all over Japan. The system is made for buildings that are off the municipal sewer system.

It is a compact, plug-and-play, fiber reinforced plastic tank that comes is varying sizes with sewage processing capacity from 1m3 to 2000m3. It allows for modular installation to increase processing capacity over time for growing populations.

The unit is a fiber-reinforced plastic tank and contains five functional chambers (sedimentation, anaerobic, aeration, sedimentation and disinfection) in a tank. Such an anaerobic and aerobic combined biological process with high efficiency has been commonly employed as an onsite wastewater treatment system for over 30 years in Japan.

Plants work well for both domestic and commercial developments of all sizes.

The fact that treated effluent empties directly into Japan's public water bodies without resulting in contamination is a testimony to the high degree of treatment achieved by MBBR technology.

Item	Unit	Influent Water Quality	Effluent Water Quality
BOD	mg/l	150-250	≤ 10
COD	mg/l	300-350	≤ 50
Suspended Solids	mg/l	150-300	≤ 10
Ammonia nitrogen	mg/l	30-50	≤ 5
Total nitrogen	mg/l	50	≤ 15
Total phosphorus	mg/l	3	≤ 0.5
pH	S	6-9	6-9

The table above summarizes our plant influent and effluent characteristics:

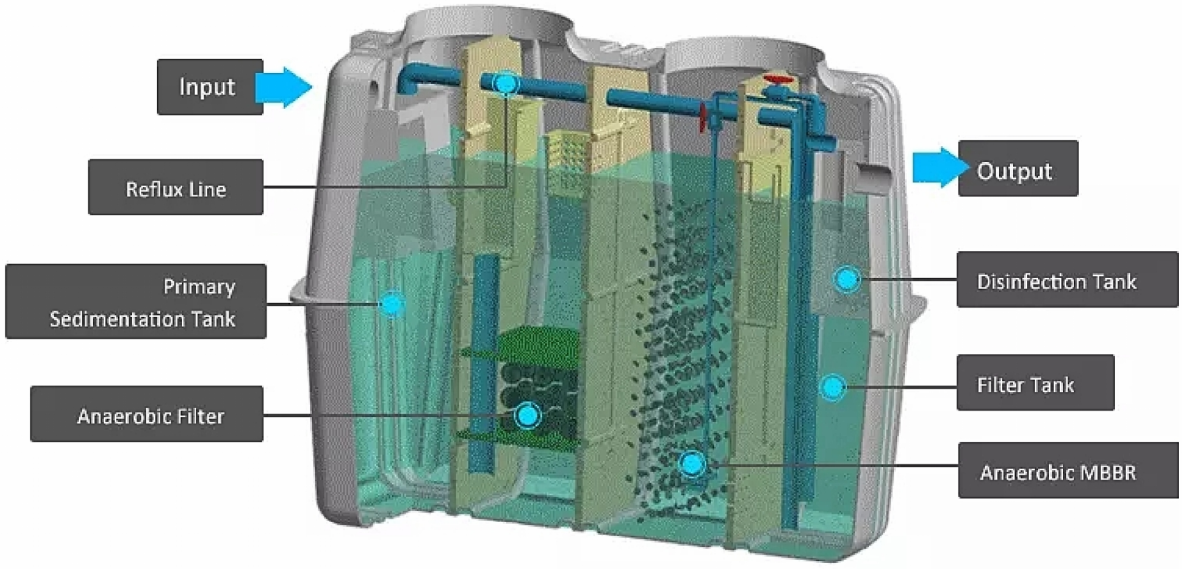
Efficiency

- Sewage is processed through five different chambers with no pumps, no smell, no sound, and no underground seepage.
- Sludge is stored in high concentrations within a separation chamber and desludging is only necessary once a year.
- The Plant is compact and is easily installed into new and existing buildings.
- In summary, sewage management efficiency leads to increased property value and stabilized rental income.

Savings

- Over 98% savings on sewage exhausting costs for buildings that yield large volumes of sewage.
- Clients implementing this solution for large volumes of wastewater treatment typically see:
  - 50%-75% energy and chemical savings for wastewater treatment compared to other systems
  - 25% - 50% savings in water costs through recycling treated wastewater for non- potable reuse

Domestic Sewage Treatment Plant



Treatment Process

The first compartment is a **SEDIMENTATION** chamber where raw wastewater settles into distinct sludge and scum layers under anaerobic conditions. The relatively clear effluent flows through twin baffles into the next chamber.

This second chamber is the largest in the unit, providing retention time for the slow process of **ANAEROBIC** biodegradation. **In** *contrast to a standard septic tank*, the anaerobic treatment process in the Plants is enhanced with the use of filter media. Retained in the bottom half of the chamber, these media are designed to provide a large surface area optimized for biofilm development. The result is a biologically rich activated sludge blanket through which organic matter in wastewater is decomposed faster and more efficiently. From this unit, water is baffled again as it flows into a third chamber.

The third chamber is the site of **AEROBIC** treatment. Air, supplied by a linear compressor, travels through a perforated piping system called a diffuser and escapes into a column of smaller propylene media. These contact media are also designed for optimal biofilm formation. They provide a surface for aerobic microorganisms to attach and grow. The action of the air constantly circulates the media in the top two-thirds of the chamber, creating a fluidized bed with sufficient air. Aerobic bacteria thrive in this rich, oxygenated environment, resulting in a high degree of treatment. The organic matter in the wastewater is further broken-down into simpler products due to the progressive decomposition. In this case, the organic matter is converted to new cells, carbon dioxide and water. The new cells are then precipitated together resulting in sludge which is suspended in the treated water.

The fourth chamber, which is the site for the second sedimentation, allows for settlement of sludge resulting from the aeration process. The settled sludge is then recirculated to the head of the system through an air-lift pump (powered by the compressor). The recirculation process also allows a specific amount of treated water into the head of the system for denitrification and flow equalization.
Finally, the treated water is disinfected as it flows past a tablet chlorinator, before being discharged to a storm sewer, a nearby body of water or recycled for irrigation.

INSTALLATION WARRANTY MAINTENANCE

Warranty subject to maintenance agreement with Authorized Service. For more information please contact Distributor in your Country.