Ovivo® MBBR Bioreactor
Highly Efficient and Compact Wastewater Treatment

Key features & benefits
- Wide industrial applications
- Treats high organic loads
- High performance biofilm carriers
- Resistant to toxic shocks
- Optimized MBBR aeration systems

How we create value
- Increases existing capacities
- Low cost for plant expansion
- Efficient mass transfer
- Rapid recovery and short shut-down times
Ovivo is one of the leading suppliers of industrial water treatment processes, and we are consolidating our position through resolute development and constant striving towards high quality. Our focus is on water treatment technology, ranging from fresh water treatment and process water treatment to the cleaning of effluents.

Ovivo has wide and long-term experience and expertise in different types of water treatment methods. One of our key technologies for biological water treatment is an advanced, high-loaded biological treatment system, called the Ovivo® MBBR (Moving Bed Biofilm Reactor).

**Main Features**
The Ovivo MBBR is a biological treatment process for municipal and industrial applications. The core of the Ovivo MBBR process is an advanced biofilm carrier element, combined with optimized EWT aeration and mixing, using continuous process control.

Micro-organisms form a biofilm on the surface of carriers that are suspended in the reactor and are efficiently mixed through aeration.

The Ovivo process can have one or several stages, in series or parallel. An existing process can be upgraded with Ovivo MBBR to function as a modern Ovivo BAS process. This is called Ovivo Rebuild process.

There are several methods used to clarify the effluent treated with Ovivo MBBR. These include, among others, microflotation, conventional sedimentation, and lamella sedimentation.

Part of the sludge can be recycled back to the Ovivo MBBR process, improving the running and stability of the process. The rest of the sludge is dewatered further.

Ovivo® MBBR Bioreactor

Ovivo® MBBR process built into circular steel tanks.

Most of the microbes grow attached as a biofilm on the surface of the freely moving biofilm carrier elements.

Full scale test unit for onsite testing. The Ovivo® MBBR III Multi-Stage pilot equipment is a compact process built into a standard container and has been developed especially for onsite trials. The process is fully automated.
**The Ovivo® MBBR Carrier Family**

The Ovivo MBBR biofilm carriers have an open structure, enabling a higher inventory of biomass and improving mass transfer efficiency.

Biofilm carriers’ durable structure makes them tolerant against mechanical abrasion, resulting in low maintenance costs. The design of the Ovivo MBBR is flexible for each application. The filling ratio of biofilm carriers can therefore be adjusted according to flow, load and environmental requirements.

- Large surface area
- Open, strong and durable structure
- Low maintenance costs
- High mass transfer efficiency
- Low blocking tendency
- Biofilm is favorable to nitrifying organisms

Today all industrial plants are taking full responsibility for the way process waters affect production and the environment. Fresh water taken from nature is cleaned, utilized and recycled carefully within the processes. When returned to nature, the water has to meet the highest possible standards. These targets can be achieved by Ovivo MBBR based biological treatment solutions.

**Benefits**

- Low space requirements
- Easy to operate
- Quick start-up and restart
- Stable for water quality and quantity fluctuations
- High treatment efficiency
- High consistency excess sludge
- No backwashing needed

**Enhanced Ovivo® MBBR Aeration**

Biological oxygen need and mixing of the process are performed by an improved bottom aeration system. The Ovivo MBBR aeration system covers the entire bottom area, guaranteeing an efficient use of capacity.

There are two efficient alternatives for the aeration: Plastic Diffuser Aeration and Perforated Steel Pipe Aeration. The aeration system is tailor made for each application.

Plastic diffusers provide energy savings through more efficient oxidation

Steel diffusers are normally used when mixing is a limiting factor

Aeration systems can be built into both new and existing basins. The Ovivo aeration is a non-clogging and practically service free system. High prefabrication degree provides excellent quality and significantly shortens the onsite installation time.
Ovivo® Process Solutions

Ovivo® DAF
Due to its easy operation and high treatment capacity, the Ovivo MBBR is an excellent treatment method for industrial effluents. It utilizes the benefits of conventional activated sludge and biofilm processes. It is able to tolerate variation in flow and organic load, while still having very high treatment efficiency. The Ovivo DAF is a combination of the Ovivo MBBR and the state-of-the-art Ovivo DAF Microflotation. It is a compact, proven and efficient treatment system for industrial effluents.

Ovivo® BAS
The combination of a high-load bioreactor process and a low-load activated sludge plant is an efficient and stable solution for larger scale industrial effluent treatment. The Ovivo BAS process has already proven its efficiency in several successful full-scale applications. With the Ovivo BAS process, the load peaks are efficiently cut off and an extremely stable load and function in the activated sludge plant is enabled.

Ovivo® Rebuild
In cases where the capacity of the effluent treatment plant needs to be increased, the existing process can be upgraded to function as a modern Ovivo BAS process with Ovivo Rebuild. The need for operation and control of the process will consequently decrease dramatically.

Ovivo® MBBR Nitrogen Removal
Nitrification is a common challenge with biological nitrogen removal. In conventional suspended growth processes, large tank volumes are needed in order to maintain sufficient biomass levels inside the process. Ovivo’s space efficient solution for nitrogen removal is the Ovivo MBBR Process. In the Ovivo Process, most of the bacteria grow attached on the surface of floating biofilm carrier elements. Plastic biofilm carriers have been developed with a large effective surface area and an open structure. This design is a result of extensive research and development work, as well as the knowledge attained through several full scale projects.

Ovivo MBBR solution has been chosen for several types of applications. A delivery from Ovivo ensures close cooperation with our clients. Starting from evaluation of the best technical solution to installation and start-up, we take pride in supplying complete processes for every client’s need.

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