Flootech

Creating value by cleaning water

FlooBed® MBBR

Flootech's Moving Bed Biofilm Reactor

Key FlooBed MBBR features

- Wide range of wastewater treatment applications in different market sectors

  Pulp & Paper
  Oil & Gas, Petrochemical
  Chemical
  Food & Beverage
  Mining
  Pharmaceutical
  Municipal wastewater treatment

- Capable of treating high organic loadings in varying process conditions
- High performance biofilm carriers

  Open and robust FlooBed carriers enable excellent mass transfer to biofilm

  Long lifetime of carriers
- Resistant to toxic shocks of different wastewaters
- Continuous process, no backwashing needed
- FlooBed® MBBR can be built to existing basins with different shapes

Efficient & Compact Biological Wastewater Treatment

Flootech has long experience in different types of water treatment methods. One of our key technologies for biological water treatment is an advanced and high-loaded biological treatment, called FlooBed® MBBR, which been launched to the market over 20 years ago.

FlooBed® MBBR Main Features

The FlooBed® MBBR, Moving Bed Biofilm Reactor, is a biological treatment process for industrial and municipal applications. The core of the process is an advanced biofilm carrier element combined with optimized, energy efficient aeration and mixing, using continuous process control.

Micro-organisms form a biofilm on the surface of plastic carriers that are suspended in the reactor and are constantly mixed through FlooBed® MBBR aeration system.

The FlooBed® process can have one or several stages which can be operated in series and parallel. An existing conventional process can be upgraded with FlooBed® MBBR to function as a modern FlooBed® BAS process.

Several methods can be used to clarify the effluent treated with FlooBed® MBBR. These include DAF, MBR, conventional sedimentation and lamella sedimentation.

The efficiency of the FlooBed® MBBR can be further increased by recycling part of the separated sludge back to MBBR in certain applications. With returning sludge it is possible to further improve the stability of the MBBR process and increase the biomass diversity and thus achieve a process which is exceptionally stabile biological process with extremely high treatment efficiency.

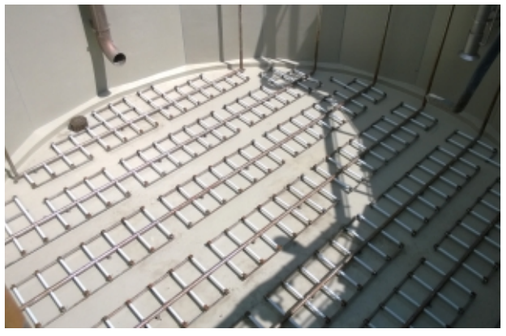
Flootech develops FlooBed® MBBR technology continuously to meet more and more demanding needs of our clients. Our FlooBed® MBBR is protected by patents.

Small footprint MBBR process built inside tight industrial area.

FlooBed® MBBR process built into circular concrete tanks.

Benefits

- Small footprint
  i.e. Low space requirement
- Optimized investment cost
- Easy to operate
- Quick start-up and restart
- The most efficient MBBR aeration system. FlooBed® MBBR aeration improves energy efficiency by > 25 %
- Stable for water quality and quantity fluctuations
- High treatment efficiency
- Easy to expand and increase capacity



FlooBed® MBBR Aeration

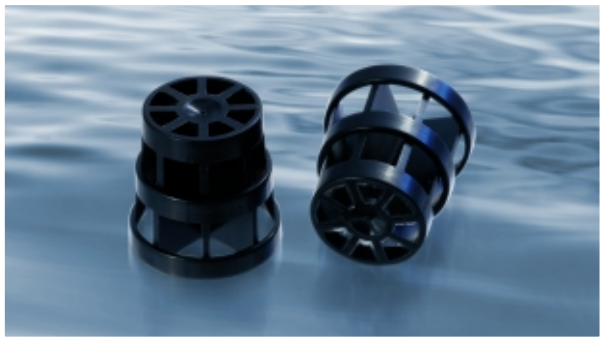
Biological oxygen need and mixing of the process are performed by an improved FlooBed® MBBR bottom aeration system. The aeration system covers the entire bottom area, guaranteeing an efficient use of the whole reactor.

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.

FlooBed® MBBR aeration system is designed so that it can be installed also inside existing basins. Thus we can easily use old and existing basis to build new MBBR. The aeration is a non-clogging and requires only a minimum amount of maintenance work.

High prefabrication degree provides excellent quality and significantly shortens the installation time.

FlooBed® biofilm carrier 438



FlooBed® biofilm carrier 127

The FlooBed® MBBR Carrier Family

FlooBed biofilm carriers have open structure which improves mass transfer efficiency to and from the biofilm and enables a higher amount of biomass on the carrier element.

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

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

Microbes grow on carrier surface as a biofilm.

Multiple FlooBed® MBBR Based Process Solutions

- FlooBed® and DAF
- FlooBed® and Activated Sludge
- FlooBed® and MBR
- FlooBed® MBBR Ammonium removal
- Total Nitrogen removal with FlooBed® MBBR Post Denitrification
- Total Nitrogen removal with FlooBed® MBBR Pre Denitrification
- FlooBed® Rebuild/Upgrade

FlooBed® MBBR has been chosen for several types of applications. A delivery from Flootech ensures close cooperation with our client, starting from evaluation of the best technical solution to installation and startup. We take pride in supplying complete and optimum process for every client's needs.

Full scale test unit for onsite testing. The FlooBed® Multi-Stage pilot is a compact process built into a standard container and has been developed especially for onsite trials. The process is fully automated.

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