

Increase Capacity Without Expanding Footprint with the MBBR System

The innovative, moving bed bioreactor (MBBR) system from Siemens uses thousands of special suspended biomass carriers designed to create an enormous total surface area for biofilm growth – enhancing the biological wastewater treatment system without increasing plant footprint.

The MBBR system can be installed in existing plants, increasing capacity and nutrient removal without requiring additional tankage. Therefore, upgrade costs are reduced, project duration is shortened and space required for additional reactors is not required. The system can be successfully used for both BOD5 and nutrient removal, and is suitable for municipal and industrial wastewater treatment plants. The flexibility of the system also makes it a cost-effective solution for the construction of new plants.

The MBBR system can be installed either as an Integrated Fixed-film Activated Sludge (IFAS) system, or as a fixed-film system without activated sludge circulation. The system uses either fine or coarse bubble diffusers, to provide complete aeration basin mixing coupled with enhanced oxygen transfer capabilities.

The MBBR System Features:

- Spiral roll mixing pattern
- Fine or coarse bubble aeration system
- Non-clogging wedge-wire screens, retaining the biomass carriers in the reactor
- Biomass carriers, suspended in the aerobic zones of the reactor
- Stage partitions, creating cascading reactors with optimal reaction rate and optimized biomass inoculation
- Mechanically mixed denitrification reactor
- Aerobic reactors filled with biomass carriers



MBBR System Features & Benefits

Cost effective

Lower capital and operating costs than conventional alternatives.

Small footprint

No additional tankage required.

Durable

Heavy duty carriers have a life expectancy that can exceed 20 years, even under the intense mixing conditions of the reactor.

Flexible design

The MBBR system can fit into most existing activated sludge reactors. It may also be applied as a roughing filter for pre-treatment, or as a post treatment polishing reactor.

Expandable

Simple media addition to the system allows for easy plant expansion to accommodate population growth or other increased capacity needs.

Stable system

Toxic upsets and hydraulic "wash out" events will not affect the entire microbial population in the bio-film, making system recovery fast and smooth.

Intensive and low-temperature nitrification

The MBBR system enables quantitative nitrification, even at a low activated sludge age, by holding a separate population on the biomass carriers. And a biofilm rich with Autotrophs allows stable nitrification, even at low temperatures.

Reliable media retention

Efficient use of non-clogging "wedge wire" screens allows for reliable retention of the biomass carriers in the reactor.

Performance Capabilities

Siemens Water Technologies has nationally accredited analytical laboratory and test facilities, capable of conducting bench-scale as well as continuous flow pilot-scale studies, treatability testing, and wastewater characterization. Results of bench-scale testing are used to establish preliminary design criteria for a full-scale design, allowing for further evaluation of system economics. Continuous flow pilot studies can be performed under a wide range of operating conditions. Pilot

plant studies are done to optimize the design conditions for customized applications, produce representatively treated product for evaluation and further testing, and to give the customer a better understanding of the operating characteristics of the system.

Our engineering staff can provide complete engineering and design for a full-scale system. Certified welders and electricians work in our 25,000 square foot, ASME-certified manufacturing facilities.

Applications

- Wastewater treatment plant expansions (increase in capacity)
- Wastewater treatment plant upgrades (more stringent effluent requirements)
- Biological Nutrient Removal (BNR)
- Industrial wastewater pre-treatment



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