

24.- BioBooster Pressurised Biofilm Reactor and Membrane Bioreactor

Title and name of product or technology
Grundfos BioBooster PBR (Pressurised Biofilm Reactor) Grundfos BioBooster MBR (Membrane Bioreactor)
Abstract
<p>Grundfos BioBooster's revolutionary technology is marking a new paradigm in decentralised wastewater treatment with its compact, scalable and movable treatment plant.</p> <p>The BioBooster technology enables process industries or municipal WWTPs to treat their wastewater on site with direct discharge to receiving waters or reuse the water for service purposes.</p>
Description including main features/advantages
<p>BioBooster's value drivers – apart from enabling wastewater treatment at the point source of pollution – are a reduction of water consumption by reuse of wastewater, a significant reduction of infrastructure investment, accelerated implementation time, flexibility for both industry and municipality to grow or move, and an overall reduction in wastewater treatment costs.</p> <p>The system is compact and has a minimal foot-print, fitting within very limited space requirements.</p> <p>The system is modular which means that there is no need to plan for extra capacity; when production volumes are increased, additional components can be added much to the principle of plug-and-play. Also, the system is odourless and the treatment plant can therefore be located in residential areas.</p> <p>The system is delivered in standard building blocks of 20" containers. This enables industrial manufacturing while ensuring the quality of the solution and minimising the risk of prolonged implementation period. Implementation time is therefore limited to a few months and remote monitoring ensures stable operations and constant documentation of wastewater data.</p> <p>The system is movable which means that when the production site is shutting down the plant can be moved to another location. Alternatively, it can be moved about at the manufacturer's premises, thereby ensuring the vested capital.</p>
Innovative aspects
<p>Technological advancements in both PBR and MBR translate into a compact system uniquely designed with CIP functions that allow for continuous treatment. The enclosed reactors ensure an odour-free environment outside. Furthermore:</p> <p>PBR: compactness achieved by a unique cycloidal rotation of a disc system, which allow for biofilm growth to reduce the COD content in the wastewater. A rasping effect prevent blockage of the discs. The sheer number of discs in each reactor covers an area of 190 m², thereby contributing to the compactness of the system.</p> <p>MBR: Ultra filtration via a unique combination of ceramic discs and cross flow impellers. These prevent fouling of the discs and ensure bacteria free permeate. The high concentration of biomass reduces the required process volume and the fact that the reactor is pressurised result in high flux leading to the compactness of the reactors.</p>
Current and potential industrial users/domains of application
<ul style="list-style-type: none"> • Various process industries within the following segments: food and beverage,

<ul style="list-style-type: none"> pulp and paper, pharmacy, textile, laundry industry Municipal wastewater treatment plants in the small to medium size range
Current state of development
<p>The BioBooster treatment plant is fully commercialised with several turn-key installations both in Denmark and abroad.</p> <p>Development is carried out with our R&D team in cooperation with universities and Grundfos' in-house development capacities.</p>

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