

# **APPLICATION OF MEMBRANE AERATED BIOREACTORS (MABR) FOR LOW ENERGY WASTEWATER TREATMENT**

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Conventional aerobic wastewater treatment is an energy intensive process. A large portion of a wastewater treatment plant's operational cost is spent on energy for aeration. The second most costly operational cost component for most wastewater treatment plants is sludge disposal. Together these two components account for approximately 75% of a wastewater treatment plant's operational costs. Treatment technologies that can reduce one or both of these components are, therefore, very attractive and significant research and development is being conducted worldwide to develop such technologies.

Membrane Aerated Biofilm Reactors (MABR) have recently been introduced to the general wastewater treatment market after decades of research and development. Fluence's MABR dramatically reduces energy consumption as well as sludge disposal costs through its unique approach to wastewater treatment. In cases where nitrogen limits are low, the Fluence MABR enables compliance with simple operation and less addition of an external carbon source.

The primary benefits of the Fluence MABR are:

- Up to 90% less energy required for aeration
- Inherent simultaneous nitrification and de-nitrification, requiring less operator attention and less external carbon addition  
Inherent bio-P removal
- Modular design, enabling short construction time, gradual implementation, and easier expansion
- Encapsulated design, reducing odor and noise
- Simple operation and maintenance
- Remotely controlled

The presentation will describe in detail how Fluence's MABR works to achieve the above benefits. A typical Fluence MABR plant design will be presented and discussed. In addition, the presentation will highlight several case studies where the Fluence MABR has been successfully installed, including data on treatment performance and energy savings.