

# Studying Operation Parameters on Flat-Plate Membrane Bioreactor for Sewage Treatment

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## 1. Studying Operation Parameters on Flat-Plate Membrane Bioreactor for Sewage Treatment

The flat-plate membrane bioreactor is applied to the domestic sewage treatment, which has a high quality of effluent than the traditional activated sludge process, and decreasing the susceptible of hair entanglement with the hollow fiber membrane. It has become a priority for recent sewage treatment applications.

A flat-plate membrane bioreactor pilot plant with a reaction volume of 4 m<sup>3</sup> was installed in the existing sewage treatment plant. In this research, the parallel treatment of the same influent water quality and hydraulic retention time was carried out to compare the treatment efficiency between the MBR and traditional activated sludge process, and the operational effects of the membrane flux were discussed.

With one year of long-term research, the average removal efficiencies of MBR process, regardless of the COD, SS and E.coli were over 99%, which was better than the activated sludge process only 90~95%. Meanwhile, the optimal operation mode of the MBR was obtained in the study. The aeration flow rate in the system was adjusted to 10~13 NL/min per film, the effluent flux was controlled under 50% of the maximum recommended flux of membrane with 9-minute operation and 1 minute stop in a cycle, there is no significant change in operating flux and pressure. These operational mode of MBR can extend the life time of membrane and effectively improve the application of flat-plate MBR to domestic sewage treatment. It is suggested that, in view of water treatment and resource sustainability, the flat plate MBR technology is feasible, and can serve as a green guide to the sewage treatment.

Keywords: Membrane Bioreactor, Flat-Plate Membrane, Sewage