

COUPLING A2O/SBR PROCESS WITH MEMBRANE FILTRATION: COMPARISON OF BIOLOGICAL NUTRIENT REMOVAL PERFORMANCE AND EFFLUENT REUSE POTENTIAL

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Laboratory-scale anaerobic/anoxic/oxic (A2O) process and sequencing batch reactor (SBR) process were operated to compare their treatment efficiencies on nutrients removal from synthetic wastewater. In addition, the reuse potential of effluent from each reactor after coupled with membrane filtration (MF) was assessed. After both A2O and SBR processes were optimized under different operational parameters, the effects of such important factors as influent C/N ratio, C/P ratio, and Cl⁻ concentration were evaluated. Results showed that as high as 95% and 85% of chemical oxygen demand (COD) and total nitrogen (TN), respectively, were removed from the influent wastewater for both reactors. However, the A2O process was shown with higher phosphorus removal efficiency probably due to the different reactor structures. In terms of the reuse potential, both A2O-MF and SBR-MF combined systems were shown with an excellent performance on the removal of suspended solids (SS) and turbidity (nearly 100%). The combined systems were also shown capable of removing COD, color, TN, and total phosphorus (TP). The final effluent could meet all the quality goals for various regional reuse purposes.

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