

ABSTRACT

A combination of biological external membrane processes is developed to reduce ammonia and to improve the quality of effluent. This study is focused to examine the influenced of silane agent, mother liquor suspended solids (MLSS), and powdered activated carbon (PAC) to biology and filtration performance of MBR. In this study, PES – Zeolite membrane was used to treat synthetic wastewater. Dynasylan Ameo (DA) silane agent was used to reduce interface between polymer and inorganic membrane. In this study is also used commercial membrane for comparison. Results showed that silane agent has capacity to remove sludge efficiently. The efficiency N-NH₃ removal for the MBR - MMM varied from 93.33 to 95.73% for NH₃-N; 94.22 to 94.73% for turbidity. In the other hands, MBR – commercial membrane showed that removal efficiencies ranged from 94.11 to 95.67% for NH₃-N; 97.83 – 98.07% for turbidity. Flux of the effluent was declined and trans-membrane pressure (TMP) of membrane was increased. pH of the effluent was increased compared with pH of the influent but it was not exceeded the effluent discharge standards to Indonesian inland waters (pH range from 6.0 to 9.0). This study also investigated the effect of silane agent for mixed matrix membrane performances.

Keywords: membrane bioreactor, mixed matrix membrane, ammonia