

The effect of operating parameters on ultrafiltration and reverse osmosis of palm oil mill effluent for reclamation and reuse of water.

ABSTRACT

An attempt was made to reclaim and recover palm oil mill effluent (POME) for water reuse using tubular ultrafiltration (UF) and reverse osmosis (RO) membranes. The reclaimed water was compared with the final discharged water of the local mill. The raw POME was first subjected to a physical pre-treatment process to remove the content of organic matter and suspended solids. The pre-treatment process was coupled with membrane technology (UF and RO) to reclaim the clean water from POME. From the combined techniques of UF (5 bar) and RO (30 bar) the results showed that the turbidity and BOD₅ were reduced by 99% and 98.9%, respectively. Compared to the final discharged POME, this suggested method gives a significant difference in BOD₅ and turbidity. The final permeate of RO was found to comply with the standards for water reuse. Therefore, the combined UF and RO method is a viable alternative and has a great potential for use in the palm oil industry.

Keyword: Palm oil mill effluent; Tubular ultrafiltration; Reverse osmosis; Water reuse