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Abstract

A membrane bioreactor and two hybrid moving bed biofilm reactor-membrane bioreactor systems were operated for the treatment of wastewater with tidal salinity fluctuations under hydraulic retention times of 6, 9.5 and 12 h, and operational solids concentrations of around 2500 and 3500 mg L^{-1}. The three configurations were studied in terms of carbon and nitrogen removal, heterotrophic and autotrophic kinetics, and bacterial community structure. The performance of the systems was good in terms of organic matter removal -between 85-100% and 95-100% for COD and BOD_5, respectively, showing higher efficiencies at higher solids concentration and hydraulic retention times. Nitrogen removal obtained was in the range of 30-50%. The bacterial community structure of the suspended and attached biomass in the systems was more influenced by the operational solids (80% clustering cutoff) and hydraulic retention time (60% clustering cutoff) than by technological configuration (40% clustering