

Effects of mixed liquor suspended solid concentrations on membrane bioreactor efficiency for treatment of food industry wastewater

ABSTRACT

This study investigated the impact of mixed liquor suspended solid (MLSS) concentrations on the performance of a membrane bioreactor for treating food industry wastewater. The membrane bioreactor was mainly made up of an activated sludge reactor and microfiltration hollow-fibre membrane. Two experimental procedures consisting of low and high MLSS concentrations were set up. The process at low MLSS concentrations provided a higher degree of treatment in terms of suspended solids (99.2%) and turbidity (99.73%) removals. The mean flux value of process at low MLSS concentrations (5.03 L/m².h) was found higher than those at high MLSS concentrations (2.27 L/m².h). Furthermore, the effectiveness of MLSS concentrations was greatly influenced by the position of the membrane modules. Higher turbidity and suspended solids removals and higher flux values were obtained with a horizontally positioned membrane module compared to a vertically placed membrane module.

Keyword: Membrane bioreactor; Activated sludge; Wastewater treatment; MLSS; Mixed liquor suspended solids; Microfiltration