Journal of the Taiwan Institute of Chemical Engineers, vol. 45(3), 2014, pages 896–900

Methane gas production from palm oil wastewater - An anaerobic methanogenic degradation process in continuous stirrer suspended closed anaerobic reactor

Abstract

Methane gas (CH4) production from the anaerobic methanogenesis degradation of palm oil wastewater was carried out in laboratory continuous stirrer suspended closed anaerobic reactor (SCAR) at mesophilic temperature of 35 °C. The reactor was operated at different feed flow-rates of 375 mL, 450 mL, 560 mL, 750 mL and 1125 mL of palm oil wastewater per day which correspond to hydraulic retention time (HRT) of 12, 10, 8, 6 and 4 days. The anaerobic degradation variables such as pH, effluent concentration of chemical oxygen demand (COD), COD removal efficiency, biogas production rate and composition were investigated. The result showed that the SCAR methanogenesis anaerobic degradation can achieve COD reduction of 66.09%, methane composition of 48.05% and attain of 532.06 mL CH4/day of methane production rate at HRT of 12 days.

Keywords

Anaerobic treatment; Biogas production; High strength organic wastewater; Anaerobic degradation variables