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REMOVAL OF DYE AND CHEMICAL OXYGEN DEMAND (COD) REDUCTION FROM TEXTILE INDUSTRIAL WASTEWATER USING HYBRID BIOREACTORS

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Abstract

A bench-scale anaerobic bioreactor for the anaerobic treatment of textile wastewater using anaerobic sludge was experimented. The Top and bottom of hybrid bioreactor were functioned with UAF (Up Flow Anaerobic Filter) and UASB (Up Flow Anaerobic Sludge Blanket), respectively. The effect of organic loading rate (OLR) and hydraulic retention time (HRT) on treatment of organic matters in the textile wastewater was investigated. The maximum removal of chemical oxygen demand (COD) and color was 94.8 and 84.4%, respectively. Biogas production and methane yields were determined. Maximum gas production rate of 36 L/d was achieved. The purity of biogas in terms of methane content was 79%. The ratio of Mixed Liquor Volatile Suspended Solids/Mixed Liquor Suspended Solids (MLVSS/MLSS) in the hybrid system was reduced from 0.72 to 0.61 during 180 days of operation.

Key words: anaerobic filter, COD, dye, hybrid bioreactor, textile wastewater

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