

Performance of an Anaerobic Baffled Reactor (ABR) during Start-Up Period

Authors : D. M. Bassuney, W. A. Ibrahim, Medhat A. E. Moustafa

Abstract : Appropriate start-up of an anaerobic baffled reactor (ABR) is considered to be the most delicate and important issue in the anaerobic process, and depends on several factors such as wastewater composition, reactor configuration, inoculum and operating conditions. In this work, the start-up performance of an ABR with working volume of 30 liters, fed continuously with synthetic food industrial wastewater along with semi-batch study to measure the methanogenic activity by specific methanogenic activity (SMA) test were carried out at various organic loading rates (OLRs) to determine the best OLR used to start up the reactor. The comparison was based on COD removal efficiencies, start-up time, pH stability and methane production. An OLR of 1.8 Kg COD/m³d (5400 gCOD/m³ and 3 days HRT) showed best overall performance with COD removal efficiency of 94.44% after four days from the feeding and methane production of 3802 ml/L with an overall SMA of 0.36 gCH₄-COD/gVS.d

Keywords : anaerobic baffled reactor, anaerobic reactor start-up, food industrial wastewater, specific methanogenic activity

Conference Title : ICEME 2014 : International Conference on Environmental Management and Engineering

Conference Location : Zurich, Switzerland

Conference Dates : July 30-31, 2014