INDUSTRIAL ANAEROBIC TREATMENT OF BREWERY WASTEWATER IN A TROPICAL CLIMATE USING A FULL-SCALE USABLE REACTOR SEEDED WITH ACTIVATED SLUDGE: A CASE STUDY OF EFFLUENT TREATMENT PLANT AT UGANDA BREWERIES LIMITED

BY

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Abstract

The performance of the effluent treatment plant at Uganda Breweries Limited was studied to evaluate the performance of the anaerobic digester installed with an Up flow Activated Sludge Blanket (UASB) reactor. The study assessed the removal efficiencies of Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS). COD/BOD is a measure used to determine the organic content in the waste water and it is the amount of oxygen required for microbial metabolism of organic compounds in water.

The influent parameters showed greater variations which is a true picture of what happens in the brewery plant during each period and discontinuous discharges of the brewery's departments. The average TSS, COD and BOD in the equalization tank were 729mg/I, 3795 mg/I, and1897 mg/I respectively while in the anaerobic reactor they were; 352 mg/I, 563 mg/I and 187 mg/I for TSS, COD and BOD respectively.

The average removal efficiencies for COD, BOD and TSS were 84%, 89.5% and 44.5% respectively.

While there was a general increasing removal trend for COD (0.32) and BOD (0.21), TSS showed a general decline in removal trend (-1.21) as a result of bio-solids leaving the reactor. The results indicate the performance of the anaerobic digester at Uganda Breweries had room for improvement especially in terms of TSS removal.