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Experimental Investigation of HUASB Reactor for Treatment Characteristics of Leather Effluent with Varying of Different Operating Parameters

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Abstract: The anaerobic treatment is considered one of the most efficient methods for treating several types of effluents. This is due to its scope for treating high rate of simply biodegradable matters in the various effluents. Several researches have been widely conducted in order to enhance the performance of the anaerobic process. The up flow anaerobic sludge blanket (UASB) technology was considered as the most popular method in which the highest rate of organic materials can be removed. Nonetheless, the long start up interval of UASB reactor requires more understanding of the biological process inside the reactor. A pilot scale study was set up to investigate the principle design parameters of up flow anaerobic sludge blanket (UASB) reactors for treating waste water of small communities in the tropical regions of India. A steel pipe with a diameter of 7cm and a height of 65cm was used as the reactor in which a digestion and a three phase separator element have a volume of 2.157*10^3 respectively. During this study, which lasted for 70 days, two distinct phases were carried out according to the ambient temperature. The temperature of the waste water entering the reactor was naturally ranged from 260c to 300c and no heat exchanger was used. The hydraulic retention time including 2, 3, 4,5,6,7 & 8 hours with various loading rates of 56 to 197 mg of COD/lit/day were examined. On the basis of the results in optimal hydraulic retention time and organic loading rate BOD5, COD and TSS was removed respectively.
Keywords: Anaerobic process, HUASB Reactor, Ambient temperature, Hydraulic retention time (HRT), Organic loading rate (OLR).

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