

OPTIMIZATION OF ROTOR TYPE MECHANICAL AERATOR FOR TREATMENT OF WASTE WATER USING COMPUTATIONAL FLUID DYNAMICS

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Abstract

Oxidation Ditch (O. D.) is used for treatment of municipal and domestic wastewater. The untreated water generates foully smell and hazardous bacteria, which are harmful for public health. Water contains the different organics and bioorganic bacteria. For life they need the oxygen and food. In their life time they are eating the biomass present in the water and keeping the water clean. Same time consuming the oxygen from the water. For the life oxygen should be transfer from the atmosphere to the water and this is done by O. D. process.

This research paper aims at analysis of O. D. using CFD simulation technique. And finds the optimum rotor and speed of rotor for optimum oxygen transfer coefficient ($K_L a$). The detail analysis done shows that, the CFD simulation model thus developed is with in good agreement of the experimental model established in the laboratory.