DETERMINATION OF KINETIC PARAMETERS IN INTEGRATED FIXED FILM ACTIVATED SLUDGE FOR AMOL'S INDUSTRIAL PARK WASTEWATER TREATMENT PLANT

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Abstract

Amol industrial park treatment plant (WWTP) collecting the effluent from a number of industries such as fruit juice and meat processes plant, poultry processing plant, glass industrial unit, paperboard factory, tomato cannery, dairy farm harvest and many more small plants. The wastewater treatment plant was monitored for a period of six months (Winter 2012 and Spring 2013). The aim of the present study was to demonstrate how effectively a well monitored Integrated Fixed Film Activated Sludge (IFAS) system can be operated. The value obtained for the COD removal efficiency range was between 98 to 99 percent. The data obtained were fitted by the kinetic models described in this paper and also the kinetic coefficients such as the endogenous decay coefficient (Kd), the growth rate constant (KS), rate constant (k) and yield coefficient (Y) range were determined between 0.062-0.121 d^{-1} , 54.7-215.2 mg/l, 2.6-10.3 d^{-1} and 0.419-0.502 mg/mg, respectively. Results showed that except Ks other coefficient were in the normal range. There is a direct relationship between the variation of Kd and Ks with effluent substrate concentration. But, the relationship between K and effluent substrate is reversed. Finally, the effect of sludge retention time (SRT) on COD removal and sensitivity analysis was conducted.

Keywords

Attached Growth, Integrated Fixed Film Activated Sludge, Kinetic Coefficients, COD Removal.