Microbial analysis and parametric optimization of activated sludge process in paper and pulp mill effluent plant: a case study

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\textbf{ABSTRACT}

Environmental factors affecting the degradation efficiency of paper and pulp mill wastewater were identified and optimized in this study. An attempt has been made to design the thickening area of the secondary clarifier for paper and pulp mill wastewater to ensure critical loading condition by considering the initial concentration of mixed liquor suspended solids, recycling ratio, desired underflow concentration, and mean cell residence time. Natural coagulants, coagulant dose, and coagulant aid dose used in the coagulation-flocculation process were optimized using the design of experiment approach for turbidity and chemical oxygen demand reduction. Operational charts were developed for parameter adjustments in steady state process control.

\textit{Keywords:} Paper and pulp mill; Secondary clarifier; Grey relational analysis; Bioremediation; Coagulation-flocculation; Physiochemical parameters; ANN; Operational diagram

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