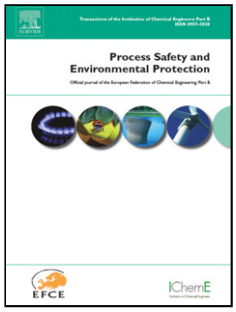

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EFFECT OF PROCESS CONTROL ON OPTIMIZATION OF PULP AND PAPER MILL WASTEWATER TREATMENT BY ELECTROCOAGULATION

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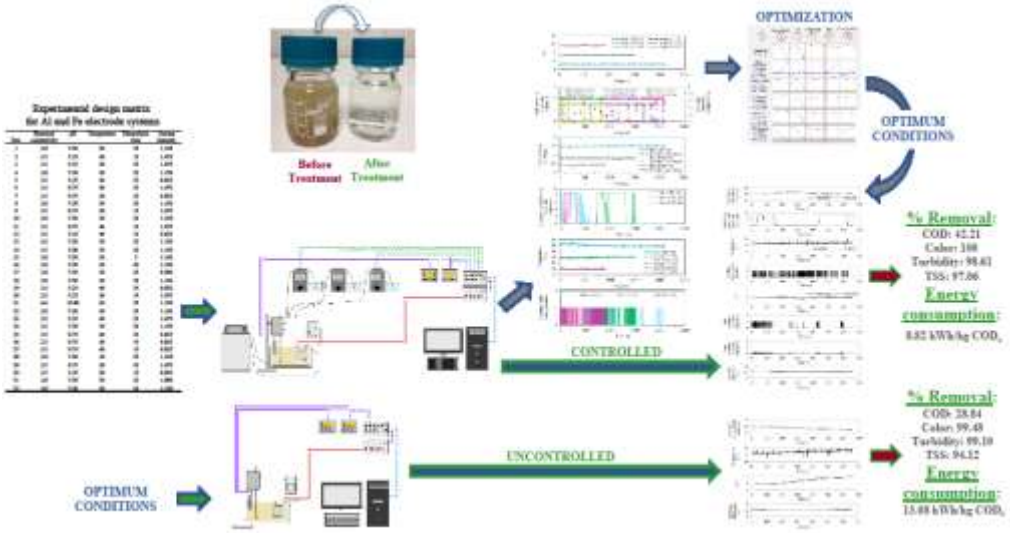
Graphicala abstract



HIGHLIGHTS

- Increase in pollutant removal by advanced control & comparison with traditional EC
- Optimization of operating parameters which were kept constant during treatment
- Coordinated pH control with acid and base flow rates as manipulated variables
- Simultaneous minimization of energy intake and maximization of pollutant removal
- Kinetics of electrocoagulation treatment process under controlled case

Abstract

The objective of this study was to determine the effect of electrical conductivity, pH and temperature which were kept constant during treatment via an advanced control strategy on chemical oxygen demand, color, turbidity and total suspended solids removal and energy consumption. Central Composite Design matrices were formed for aluminum and iron electrode systems separately with different combinations of 5 independent variables (electrical conductivity, pH, temperature, current intensity and electrolysis time). Obtained results revealed that aluminum electrode system was found to be more effective than iron electrode system under controlled conditions. Comparison of uncontrolled and controlled