

## An influence of experimental parameters in the treatment of anaerobically treated distillery spent wash by using ozone assisted electrocoagulation

Manoj P. Wagh<sup>a,\*</sup>, P.D. Nemade<sup>b</sup>

<sup>a</sup>Department of Civil Engineering, D.Y. Patil College of Engineering and Technology Pimpri, Pune, Savitribai Phule Pune University, Pune, Maharashtra, India, Tel. +91 9762863588, email: profmpwagh@gmail.com (M.P. Wagh)

<sup>b</sup>Department of Civil Engineering, S.B. Patil College of Engineering, Indapur, Savitribai Phule Pune University, Pune, Maharashtra, India, Tel. +91 9423975240, email: pravin.nemade@gmail.com (P.D. Nemade)

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### ABSTRACT

In the present study post treatment of anaerobically treated distillery spent wash having residual BOD (5000–15000 mg l<sup>-1</sup>) and COD (6000–43000 mg l<sup>-1</sup>) was further treated with electrocoagulation [EC] which was further investigated in the presence of aeration by using a pair of the aluminum plate. Ozone assisted electrocoagulation has been implemented to study the effect of different parameters such as pH, voltage, and electrolysis time on the COD and colour removal efficiency. Oxidation of organic components present in the effluent and sludge were analyzed by using Fourier transform infrared spectroscopy (FTIR). Ozone assisted electrocoagulation process achieved maximum decolourization 92% and COD removal 72% at current density 9.75 A cm<sup>-2</sup>, initial COD concentration 3875 mg l<sup>-1</sup> having initial pH 7.4 and ozone gas flow rate 2 gm h<sup>-1</sup>. Carbon-carbon double bond of melanoidin structure started to cleavage due to combined effect of oxidation and ozonolysis which result into reduction in organic compounds. During the process technology energy consumption increased from 0.31 to 8.39 kWh m<sup>-3</sup> and electrode consumption increased from 0.0146 to 0.1503 kg Al m<sup>-3</sup>. The first-order kinetic was studied based up on COD removal and consumption of electrode.

*Keywords:* Distillery spent wash; Chemical oxidation demand (COD); Anaerobic treatment; Electrocoagulation [EC]; Ozonolysis; Melanoidin

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\*Corresponding author.