"DEVELOPMENT AND FABRICATION OF A MICROBIAL FUEL CELL TO TREAT DAIRY WASTEWATER AND ELECTRICITY GENERATION"

PROJECT REPORT

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CERTIFICATE

Certified that the project work "DEVELOPMENT AND FABRICATION OF A MICROBIAL FUEL CELL TO TREAT DAIRY WASTEWATER AND ELECTRICITY GENERATION" is a bonafide work carried out by

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Are bonafide students of Department of Civil Engineering of Alva's Institute of Engineering and Technology in partial fulfilment for the award of BACHELOR OF ENGINEERING in CIVIL ENGINEERING of the VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI during the year 2019-2020. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

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ABSTRACT

Microbial Fuel Cell (MFC) is feasible to use as an alternative to conventional dairy wastewater treatment techniques. Energy need has been increasing worldwide exponentially. At present global energy requirements are mostly dependent on the fossil fuels, which eventually lead to foreseeable depletion of limited fossil energy sources. In this context, regeneration of the brewery spent wash is one of the better possibilities. Now a days, countries like India in progressing towards harnessing new energy sources. Microbial Fuel cells (MFC) have been thoroughly investigated by many researchers in the past and concluded that MFC could be applied for the treatment of dairy wastewater and also in generation of electricity.

The aim of the project is to treat dairy wastewater and electric generation. Higher percentage of COD and BOD removal and significant electricity generation using MFC can be achieved. Thus the combination of dairy wastewater treatment along with the bio-electricity production may help in income generation.

For all the trials conducted in the laboratory, considerable reduction in Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD) and Total Dissolved Solids (TDS) has been achieved. The removal efficiencies ranged between 86.26% to 95.50% for BOD, 83.24% to 94.21% for COD and 79.84% to 94.00% for TDS. The maximum electricity generated was 377mV. Hence the overall reactor efficiency is very encouraging and could be scaled up easily in the near future.

Key words: Microbial fuel cell, Dairy wastewater, Wastewater treatment, Electricity generation