

Study of water characteristics and power generation from waste water by Microbial Fuel Cells

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Abstract

The tremendous increase in the population recently has governed the way to industrial revolution and revealed the secrets of energy sources which are at the exhaust stage. In order to moderate the power consumption and utilization, scientific community has opted for several alternate technologies to minimize Solid waste disposal, liquid waste disposal and to utilize them for producing alternate power.

Industrial wastewater benevolences a potential peril to natural water system. It contains organic matter, which is lethal to the various life forms of the system. Industrial wastewater contains complex mixture of chemicals whose behavior towards biotic system can be different. Treatment of these wastes is therefore of utmost importance. This study was designed for waste water treatment plant with an aim at minimizing and removing of Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD) and toxic compounds, before it releases into a water body. In this present study efficiency of Microbial Fuel Cells (MFC) in removing contaminants was determined. It was found that MFC is much effective and cheaper method for treating waste water and for the removal of Total Dissolved Solids, Total Suspended Solids, BOD, COD, Sulphates and Chlorides.

The scope of this project is to see MFC as a viable treatment option in case of different waste waters from different regions in Guntur district. Experiments are performed in batch wise for optimized conditions. The waste water degradation has been investigated in terms of reduction in COD. Various process parameters like pH, TSS, TDS, BOD, Sulphates and Chlorides were analyzed. The results obtained were quite appreciable as it reduced COD to 58% (KPW), 72 % (KLW), 66 % (NCW) & 67 % (UPW) and a small amount of Voltage ($\approx 583\text{mV}$).

The result shows that it could be used as efficient, cheaper process for maximum removal of COD and enhances the reuse of waste water.

Keywords: MFCs, pH, TSS, TDS, BOD, COD, Sulphates and Chlorides.