ABSTRACT

Microbial Fuel Cell (MFC) is one of the renewable energy sources that uses microorganisms to produce electric current with an oxidation reduction process. This study aims to analyze the results of MFC on changes in temperature that vary between 28-30 ° C. This system of MFC uses a dual-chambers type reactor with a size of 5 x 5 x 10 cm which becomes the anode and cathode compartment. The anode compartment is filled with mud substrate and corn maize as food ingredients for microorganisms and the anode compartment is filled with distilled water electrolytes. In the anode compartment a larger container is provided to become a container for the heat source which gives heat to the anode. The electrodes used in this study were zinc and copper. Electric current in the form of electrons is transferred from the anode to the cathode and the proton is flowed through a salt bridge made of stove wick which is immersed in NaCl (1M) solution. The results of this study indicate that the energy that can be generated from the MFC scheme of this study is able to reach 6046.54 mJ at a temperature of 30 ºC, and a power of 0.4199 mW at a temperature of 30 ºC. Whereas for voltage and current strength measurements there is no significant difference with the highest voltage of 0.9059 V at a temperature of 30 ºC and the highest current strength of 0.4679 mA at a temperature of 30 ºC. Based on the results of this study, it can be concluded that the production of electrical energy is not too influential on temperature changes that are less significant and the best temperature is produced with a temperature of 30ºC.

Keywords: Microbial Fuel Cells, mud, control, temperature