ABSTRACT

Energy is human needs to help them do daily activities everyday. An excessive use, surely can effect the depletion of existing energy supplies. Human's dependencies to conventional energy which could be running off any time, constrain them to searching for innovation and developing a renewal energy to replace the conventional one. One of the inovation of renewal energy is Microbial Fuel Cell (MFC). Microbial Fuel Cell is a technology to produce electricity with reduction and oxidation (red-ox) process assisted with substrates and organics. The goal of this research is to analyze electricity production from the substrate of field's mud and banana peels wastes. MFC sediments with single chamber which contains 1000 mL will be the system to do this research. This system consist of two compartments, namely anodes and cathodes, where anodes will be placed on sediments or mud's precipitate with zinc (Zn) plate electrode material meanwhile the cathode will be placed on the water's surface with copper (Cu) electrode material. Banana peels wastes will be mixed to the sediments of mud as the fuel to provide bacteria's metabolism. Both electrodes will be connected to logger data and ardiuno uno as the recorder of the current and voltage. This research consist of 6 reactors with many variants of used substrate's component, specifically 800 mL of mud only in the first reactor, 400 mL of mud and 400 mL of banana peels in the second reactor, 600 mL of mud and 200 mL of banana peels in the third reactor, 200 mL of mud and 600 mL of banana peels in the fourth reactor, 400 mL of mud and 100 mL of banana peels in the fifth reactor, then only 800 ml of banana peels in the sixth reactor. Observation will take with a certain period to looking for reactor with most productive to produce electricity. The result shows that currence, voltage, and power density mostly produced at the 4^{th} reactor in the 4^{th} day with average currency of 1,412 mA, voltage of 25,45 mV, and power density of 14413,67 $mW/(m^2)$.

Keyword: *Microbial Fuel Cell Sediment, Rice Field Mud, Banana Peels*