

ABSTRACT

The energy used to produce electricity is oriented towards fossil energy, while the use of non-fossil energy is still low and causes negative impacts on human life. The solution provided is the use of new energy such as Microbial Fuel Cell (MFC) technology. MFC is a bioelectrochemical-based device that converts chemical energy into electricity by utilizing organic compounds and utilizing enzymatic catalysts with the help of microorganisms. In this study, a dual chamber MFC design of 10x10x5 cm was used to determine the output current and voltage produced using a cement porous membrane with a diameter of 3 cm and a thickness of 0.5 cm with a mixture of Sodium Chloride (NaCl). The anode compartment uses a zinc (Zn) plate and the cathode uses a 5x3 cm copper (Cu) plate. The study used a ratio of 1:1 for variations of organic waste as substrate, tofu liquid waste and banana peel waste mixed with rice mud. From the measurement results, the maximum electricity production for 14 days on the tofu liquid waste substrate with 6 days incubation produces a voltage of 252 mV, a current of 2,5 mA, and a power of 390 mW. The results obtained at an incubation time of 3 days produced a voltage of 82 mV, a current of 0,8 mA, and a power of 68 mW on a solid banana peel waste substrate, and a voltage of 66 mV, a current of 0,6 mA, and a power of 43 mW on a banana peel waste substrate liquid.

Keywords: Current, Dual Chamber, Porous Membrane, Microbial Fuel Cell (MFC), Organic Waste, Voltage.