

ABSTRACT

Energy is a vital necessity for human life, with demand increasing with the times. This project aims to develop a prototype earth battery as an environmentally friendly and cost-effective alternative energy source for small household appliances. The earth battery uses a combination of electrodes and soil as an electrolyte solution, which is expected to be a solution to environmental problems due to the use of fossil energy.

This research uses a prototype development method with several stages, including literature study, mathematical model design, electrode material selection, testing various types of soil, and series-parallel circuit configuration. The electrodes used were copper (Cu) as the cathode and zinc (Zn) as the anode. Tests were conducted using voltage and current sensors to monitor battery performance in real-time. The soil used was tested from various types, namely humus, sand, and peat soil.

The results showed that the earth battery with Cu-Zn electrode combination can produce maximum voltage at 9.9 V with a total of 26 cells. This earth battery was tested by turning on a 4V 3W lamp. Although the lamp can be lit, the brightness level is not maximized. This is because the current generated by the earth battery is still relatively low, so it has not been able to provide enough power to power the lamp with optimal brightness. This prototype shows great potential as a sustainable alternative energy solution, as well as making a positive contribution to efforts to reduce dependence on fossil energy.

Keywords: *Alternative energy, Electrode, Ground, Voltage*