

RDESIGN AND CONSTRUCTION OF SOLAR CELL-BASED STANDBY LUGGAGE FOR DISASTER EMERGENCY CONDITIONS

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ABSTRACT

Lighting and clean water sources are important human needs. Where in the process this is closely related to electrical energy, such as the use of lights in the lighting process and distribution of clean water sources. Meanwhile, when in a disaster emergency, PLN often turns off electricity. So we need an alternative energy source that can replace electrical energy from PLN. In this study, a solar cell-based standby bag was designed for lighting at a capacity of 12V 7Ah, a solar charge controller, an LED light and a water pump designed to be portable in a suitcase. Then after the tool is designed, the performance of the tool is tested to determine the efficiency value of the tool. This tool utilizes the sun's energy source as its energy source and uses photovoltaic technology to convert solar energy into a source of electrical energy. From the test results, this tool has an average efficiency value of 94.83% in the battery charging process, an average of 96.30% in the load supplying process, and an average of 79.98% from the battery charging process to the load supply process. The efficiency value is a comparison between the total energy output and the total energy input in each test. For example, the battery charging test has an average efficiency value of 94.83%, meaning that the total energy at the output is 94.83% of the total input energy.

Keywords: *photovoltaic, electric energy, water pump and LED lamp*