

ABSTRACT

Photovoltaic is a device that can convert solar energy into DC electrical energy. The potential for generating electricity from photovoltaics is very high so that it can light a load. The use of photovoltaics has been widely used in various sectors, one of which is in agriculture. Indonesia is known as a country where most of the population has a livelihood in the field of agriculture or farming [3]. And farming is never separated from water for plant growth. The majority of people still use oil-fired water pumps to drain water from reservoirs to plants. Farmers have to pay additional costs to buy fuel oil which tends to be expensive and unstable.

Use of photovoltaic water pumps with batteries tested and see if there are alternatives for farmers to water their crops. Where the following photovoltaic water pumps have a time scheduling innovation and battery charging time at the same time as turning on the pump where farmers can determine how long they want to water their crops, in this experiment time scheduling is carried out on 11V battery voltage where when the battery voltage is $<11V$ the pump will die. and in this experiment the average pump runs for 10 hours / day where it is sufficient to water the plants. And the water discharge test in this study uses two water containers that are placed at a distance of 1.2 meters so that there will be water repetition from a high place to lower.

The results obtained on the discharge of water released are directly proportional to the battery in the charger which is able to turn on the pump for 10 hours / day, where photovoltaic plays an important role in charging the battery. In the Techno-Economic Analysis of Photovoltaic Water Pumps with Batteries using levelized cost analysis for solar energy, the price obtained in this system is Rp. 2.707 / kWh.

Key words: photovoltaic, dc water pump, battery, scheduling time, cost analysis