ABSTRACT

This research aims to evaluate the performance of a rice threshing machine with a capacity of 20 kg/hour powered by solar panel electricity. The background of this study is the farmers' need for post-harvest technology that is efficient, environmentally friendly, and reduces dependency on fossil fuels. The experimental method was carried out through direct field testing by observing several parameters, including electric motor power consumption, threshing drum speed, machine capacity, threshing efficiency, and the stability of the solar power system.

The results showed that the average electric motor power consumption was 186 W, consistent with the specification of a 1/4 HP motor, with a threshing drum speed of 878 rpm. The machine capacity was recorded at 20.4 kg/hour, which corresponds to the design target. The threshing efficiency reached 80.95%, while the solar power system operated stably with an average voltage of 19.4 V, current of 7.9 A, and output power of 154 W. Overall, the solar-powered rice threshing machine was able to operate effectively, environmentally friendly, and is feasible to be applied for small-scale farmers.

This research is expected to contribute to the development of energy-efficient and environmentally friendly agricultural mechanization technology, as well as to support the national program for renewable energy utilization.

Keywords: rice threshing machine, solar energy, electric motor, machine capacity, threshing efficiency.