

ABSTRACT

The PV-Wind Turbine Hybrid System is a renewable energy power plant that uses wind and sun as sources to produce electricity. Wind and sun are intermittent energies that change and cannot be controlled. Intermittency also affects the health of the battery because the energy cannot be controlled which causes charge discharge in the battery. To overcome this intermittent problem, a hybrid technique is used to overcome it. Hybrid technique is a technique that combines two or more generators, in the designed system the combined generators are PV and Wind Turbine.

In designing a PV-Wind Turbine hybrid system there are requirements that must be met, namely the system can monitor the power output from the PV-Wind Turbine and battery health, create a power management system for the PV-Wind Turbine hybrid system, and the PV-Wind Turbine hybrid system can become emergency supply equipment by utilizing renewable energy. To meet these needs, there are five specifications that will be met, namely the tool can measure the power output of the PV-Wind Turbine with an accuracy of 90%, the tool can monitor the power output and battery health once every 1 hour, the tool has charging control to maintain battery health at a minimum capacity 20% and a maximum of 80% of capacity using fuzzy logic, the tool is able to increase reliability and power distribution to the load by at least 5%. The tool has sufficient storage sources to supply a maximum of 150 watts for a maximum of 10 hours.

Keywords: Hybrid, PV, Wind Turbine, Fuzzy Logic, Intermittent, Battery