Design and Build Charging Controller Horizontal Axis Wind Turbine Using Buck Converter

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ABSTRACT

A common problem in wind power plants (PLTB) is the characteristics of the wind itself which has the nature of not always being there and also the speed is not constant / stable so that the electrical energy produced from the wind turbine generator is always fluctuating directly proportional to the received wind energy that cannot be used for battery charging. Core circuit Buck Converter (DC-DC step-down) as a voltage reducer, with a MOSFET component as a switching frequency height regulated by the PWM signal from the microcontroller Arduino UNO R3. Design stage and manufacture of Charge Control Wind Turbine consists of literature study, electrical design (hardware), program design (software), manufacture of sub-systems, functional testing the whole system. Performance tests were carried out using a wind tunnel and a blower as a wind source. The performance results of the tools that have been made can reduce the generator voltage fluctuates to ±13 Volts. Generates 0.1362 Watts of power at 1k Ohm and 14.11 Watts at 10 Ohm resistance. Lack of tools that have been made, system errors still occur voltage input above 24 Volts the system will restart itself and occur repeatedly until voltage input below 24 Volts, must be re-checked and also power supply.

Keywords: *charging, buck converter, MOSFET, microcontroller, wind tunnel.*