Rancang Bangun *Automatic Transfer Switch* (ATS) pada Simulator Pembangkit Listrik Tenaga Hibrid Berbasis Mikrokontroler (*Design an Automatic Transfer Switch (ATS) on a Microcontroller-Based Hybrid Power Plant Simulator*)

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ABSTRACT

Automatic Transfer Switch (ATS) Simulator on Hybrid Power Plant with 100 Wp Solar Panel and 1000 Watt DC Wind Turbine uses Solid State Relay, which functions as a control system to change the voltage source in order to charge the battery. The method in this study is by designing tools and testing, then measuring the system as a whole and analyzing data. The simulator tool uses voltage and current sensors where the readings are forwarded to the microcontroller, the readings will be forwarded to the SSR (switch and contactor) as a controller for battery charging. Wind Power Plant variation when the wind speed is 4.7 m/s and the turbine voltage is 18.97V. Solar Power Plant variation currently irradiated 874.1 W/m^2 and Panel Voltage 13.34V. The highest variation of the combination of Solar Power Plant and Wind Power Plant with wind speed of 4.8 m/s, turbine voltage of 18.92V, irradiation of 964.5 W/m^2 and panel voltage of 13.45V. The lowest values were with wind speed of 2.4 m/s, turbine voltage of 10.76V, irradiation of 456.7 W/m^2 and panel voltage of 11.51V. The combination system of Solar Power Plant with Wind Power using SSR Fotek DD40 functions as designed, where when the voltage is at a value of 12V or more, the SSR is automatically On according to the voltage source. There are conditions where the voltage value of Solar Power Plant and Wind Power are both below 12V or above 12V, then automatically SSR will be On at the input voltage of Wind Power Plant in accordance with the initial design.

Keywords: *Automatic Transfer Switch, Solar Panel, SSR, Wind Turbine*