EXCITATION SYSTEM MODELING FOR INTEGRATED GENERATOR ON LOAD FLUCTUATION USING MATLAB AT PLTA IN KEDUNGOMBO

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ABSTRAK

The increasing demand for electrical energy encourages the increase in the provision of adequate electrical energy generation. The generator is one of the main equipment in an electric power plant. The generator used by PLTA Kedungombo has a capacity of 28600kVA, 11kV using a synchronous generator or also known as an alternator, which is an electric engine. The generator requires an excitation system, which is a system for the flow of direct current electricity supply to strengthen the electric generator. In this study, the excitation system used MATLAB Simulink R2018b software by adjusting the load given to the generator and in the simulation experiment using full load, namely P = 22MW, Q = 18MVAR, the results of the study were to obtain a nominal voltage of 11kV at alpha angle $80{,}65^0$ and alpha angle setting$80{,}65^0$ can only obtain a voltage that is close to the nominal value of the synchronous generator voltage at a load of P = 22 MW, Q = 11 MVAR with an output voltage value of 11.03 kV. At the load of P = 12.90 MW, Q = 1 MVAR, the resulting voltage is 11.21 kV, the excitation current obtained at the Kedungombo hydropower plant is 404.18 A and the simulation results get 711 A and calculation obtained value 15176,25 A.

Keywords: Synchronous Generator, Excitation System, Excitation Current, Output Voltage