

ABSTRACT

Load Frequency Control (LFC) is a very important element in the power generation system. In the power generation system, the supply of energy produced must be of good quality, for that LFC is needed to stabilize the frequency in the power generation system. If the frequency produced by the power plant is unstable, it will affect equipment that uses electrical energy which can cause damage. The frequency of the energy itself is influenced by the rotational speed of the generator, if the load is high, the turbine generator will have a slow rotational speed. Conversely, if the resulting load is low, the turbine generator will have a fast rotating speed, causing frequency spikes that can damage electronic equipment that uses electrical energy. Therefore, Load Frequency Control (LFC) is the solution to this problem. By using PID auto tuning, the values of $K_p = 43.68$, $K_i = 55.02$, and $K_d = 8.552$, with a rise time of 0.406 seconds, settling time of 2.69 seconds, no overshoot, then a stable condition (steady state) at 5 seconds. Calculation of stability using Routh Hurwitz obtained stable results from the system that has been made using $K_p = 43.68$, $K_i = 55.02$, $K_d = 8.552$ which is recommended, based on PID auto tuning in Matlab. The calculated coefficient values meet the necessary requirements and are quite stable in accordance with the provisions of Routh Hurwitz.

Keywords: *load frequency control, frequency, power generation*