

ABSTRACT

Vany Suryaningsih, S1 Physic Engineering Program, Faculty of Engineering, Telkom University, in Februari 2014, *Speed Control Of Brushless DC Motor Using PID Method*, Supervisor : Mamat Rokhmat, M.Si. as The First Supervising Lecturer and Reza Fauzi Iskandar, M.T. as The Second Supervising Lecturer.

The more advanced industrial development, the more important the need of control system which able to improve system performance and production quality. Thus a system control is needed to manage the whole system automatically in order to produce expected output so that any error can be reduced. System ability to chase speed in order to achieve reference value when motor starts spinning becomes a very crucial factor as a performance measurement of motor speed controller, thus there are many researches aim to improve that motor performance. In this research, PID control will be implemented at spinning speed motor DC brushless controller device application, while motor driver used is PWM method (Pulse Width Modulation), output result is spinning speed DC brushless motor which will be censored by speed censor (*optocoupler*) which will be used as feedback in the control system. Method used is root locus method.

PID control value used is $K_p = 0,96$, $K_i = 0,58$, and $K_d = 0,10$. This PID control test conducted by putting 8 various reference values into the system. By applying PID control, error steady state average value is 2,00 RPM for 8 reference values which are given.

PID control is still able to give a good performance criteria when it is given a disturbance which has 0,93 kg until 0,98 kg in weight because it still produces error steady state rate which is relatively small that is 3,06 RPM. But when it is given a disturbance with 1,03 kg in weight, error steady state rate is getting bigger that is 7,25 RPM.

Key words - DC brushless motor, optocoupler, PID control