

## **ABSTRACT**

*Utilization of technology is needed in every sector. Several tools are required to meet these needs. DC motor is a motor that is easy to apply, widely used in industry and households. In the application of a DC motor, one of the problems in its use is the unstable speed. Then made a DC motor control system by applying the PID method as a controller that controls the speed of the DC motor. The PID method has a working principle by processing the control variable  $K_p$ ,  $K_i$ , and  $K_d$  to get the desired setpoint value. To be able to control the speed of a DC motor with a PID controller, the Chien-Hrones-Reswick method is used. In this study, the variable to be controlled is speed in the form of RPM. In this Design NI-DAQ USB 600B as a data processing tool, L298N drivers as motor rotation controllers, optocoupler sensor is used to read DC motor speed, for programming and processing data using Labview. In finding the PID controller parameter values, using results of the responses from open loop system which then obtained the tuning value based on the Chien-Hrones-Reswick method, in the testing process 11 scenarios were carried out based on the results of the tuning calculations. From the test results obtained the best response from the system without using a load and using a load, with parameter value  $K_p = 1,4$  and  $T_i = 2,5$ . Based on the time response analysis, they have a steady state error value of 1,92%, overshoot 28,84%, time rise 1 ms, time peak 2ms, time settling 8ms for the system without using a load, for a load system it has a error steady state 1,92%, overshoot 34,61%, time rise 1,5 ms, time peak 2 ms, and time settling 11 ms.*

*Keyword : DC motor, Labview, PID*