ABSTRACT

Rapid developments of technology nowadays makes all human's activity could be ease with a system that could do several task at once.For example is the crane, which serve as a system that could lift and replace things, also known as heavy equipment system Crane is equipment which uses electrical motor that can lift and replace things, while electrical motor is a toll that converts electrical energy into mechanical energy. Due to changing weight that cranes have to lift, crane's electrical motor usually gives unstable output, this could cause loss of efficiency and discomfort to the user because the motor have an unstable speed. That condition based the use of fuzzy logic to make a stabilized system.

In this final project, author has already made a crane model that works automatically according to given weigh. A speed sensor that could detect a specific motor rotation with an adapted placement is designed in this system.This sensor will act as an input of the microcontroller. Microcontroller used is the ATMega16 which will also give an output from the sensor input on a 16x2 LCD. Actuators in this system model are two servo motors. To get a control system that meets the Fuzzy Logic Controller and Interpolation methods, fuzzy logic serve as an output from the speed sensor input a stabilized system is expected from this method.While, interpolation is used to control a position sensor will determine the servo angle.

In this tool design, motor movement is controlled by Fuzzy Logic Controller and Interpolation methods.In the fuzzy logic method, it's found that the motor could be controlled from the speed sensor and potition sensor input.Even though motor's movement hasn't been at its full capacity, the overall system is already stabilized enough with the displayed PWM as reference. The results obtained in the design of this tool is, to lift the duty cycle of the PWM results obtained value as follows, that is 0gr = 7.5% = 8.5% 10gr, 20gr = 9.5% = 10.5% 30gr, 40gr = 11%, and 50gr = 12.5%. While in power sliding on the PWM duty cycle results obtained the following values, that is the angle 0° = 2.5%, 36° = 4.5%, 108° = 6.5%, 144° = 10.5%, and 180° = 12, 5%.

***Keywords** : Crane, Fuzzy Logic, Interpolation, Servo Motor, Speed Sensor.*