ABSTRACT

Some of the tools in use this day do not have enough good stability of speed control or efficiency. This deficiency makes a bad result for the project. The chainsaws is useful tools for cutting something like wood. This chainsaw has become a major machine that determine the production process in the workshop that uses wood as a main source. In the other hand, handsaw has been used for simple crafting in low production number. For the tasks with high accuracy and a good precision than it takes a special chainsaw that works automatically.

It requires a timber cutting tools that can work with the stability control system. the chainsaw is designed to control the speed of motor, it produced lumber neat and perfect. With the rotation of the motor control system's stability, it is expected that better efficiency and least error on timber cutting. This system uses ATMega32 microcontroller with implementing Fuzzy Logic method uses a Photodioda sensor to control the rotation speed chainsaw where the set point of the system is determined according to the needs. By using this ATMega32 microcontroller input data from the sensors is processed to control the voltage regulator circuit blocks using TRIAC. TRIAC is used as driver circuit to regulate the output voltage of the AC motor. Setting the speed of the motor is done by the microcontroller by providing ignition angle alpha / TRIAC trigger circuit based on the input of the circuit Zero Cross Detector.

From the results of research and testing, this system has been shown to have made a difference in the value of the chainsaw motor voltage. This is a great result on the outcome of several kinds of wood by cutting the chain saw. Programming system designed strive to maintain the stability of rotation of the motor in accordance with a predetermined set point. In general it can be concluded that by using this system, the timber results are neat pieces and have a same texture from the beginning to the end of the piece of wood is cut.

Keywords : Fuzzy Logic, Microcontrollers, Set point, TRIAC, ignition angle α.