

ABSTRACT

Seen how much lumber factories spread across the country of Indonesia and also the wastes generated, a lot of factories that utilize wood the wastes are to be used as supplementary material or fuel, primarily wood powder. However, there are many factories that use manual methods (human assistance) to collect the waste wood dust, making it less practical and also time consuming. Therefore, in line with technological developments, expected by the Electronics assistance in collecting wood dust can increase the efficiency of wood dust collection time.

In this final project , author designed a system that uses vacuum sawdust 1 phase induction motor on a vacuum cleaner and some sensors which used to detect sawdust , the sensors includes SRF05 ultrasonic sensors and photodiode sensors which connected to the microcontroller as the data's input , ultrasonic sensor itself serves as a detector layout sawdust while photodiode sensor functioning as a height sawdust detector, author uses ATMEGA 32 microcontroller which serves as the brain of a tool that can execute and take orders from the incoming data based on the sensor used . Sensor readings will be displayed on a 16x2 LCD . using TRIAC as the motor driver, TRIAC here used as “gate” which will trigger the voltage into the vacuum motors . Author using “Fuzzy Logic Controller” method to control the system , this method is used as a determinant of output of existing microcontroller based on available input . Expected by using this method , changes in the motor rotation is more subtle .

From the results of control system 1-phase induction motor use the method of fuzzy logic controller for the application to vacuum waste sawdust, it was found that the motor can be set according to input from sensors, it shown that the error reaches 0,077% and the power efficiency reaches 37,8%. However, changes in the speed of the motor isn't stable, there are harmonics in the output signal and the size of the tools still not appropriate to throw the waste generated by the tool, so that the waste can not reach as far as 0.65 meters

Keywords: Induction Motor, Fuzzy Logic, Wood, Vacuum