ABSTRACT

Along with the development of the conveyor used as material transportation, more and more innovations are needed to be able to design two-way conveyor belts to be more effective and efficient in the material delivery process. Therefore, this final project research aims to design a two-way conveyor belt speed control system using the IoT-based fuzzy logic method.

Two-Ways Conveyor Belt Speed Control System is designed so that its speed can be monitored via the IoT (Internet of Things) platform, Thinger.IO. This Two-Ways Conveyor Belt is also equipped with a weight sensor that is used to detect the weight of the material, so the conveyor will only run if the weight sensor detects the weight of the material on the conveyor belt. In the Two-Ways Conveyor Belt, an optocoupler sensor is also needed to detect the speed on the conveyor. The method used to control the speed of this system uses Sugeno's Fuzzy Logic method.

In this final project, the results obtained from fuzzy logic control show that the conveyor can reach a steady state speed in an average time of 17.5 seconds with PWM speed set points and carrying different loads. The conveyor will be active when the load cell detects a load on the belt. The accuracy of the load cell in reading the weight value reaches 97.28%. The conveyor will stop if the ultrasonic sensor can detect objects that are above the belt with a maximum distance of 50 cm and a minimum of 10 cm with an accuracy level of 99.7%. This system can also send data sent via NodeMCu to Thinger.Io with an average delay of 0.24 seconds .

Keywords: speed control, Two-ways conveyor belt, optocoupler, Fuzzy Logic Method, IoT (Internet of Things).