ABSTRACT

Automation technology is widely used in manufacturing world to perform control and monitoring of a production process or machine work process. Automation technology can be applied in various fields, including industrial manufacture of pasteurization milk. Field conditions in manufacturing industry including manufacturing industry in which there is milk pasteurization, consisting of equipment that is located far apart, currently plant control at factory still use cable as a conduit between operator and plant. The disadvantage of using cables is in the event of cable breakage, operators will be hard to find and to identify the damaged cable, this is due to the fact that the cables contained in plant factories will be very complex. The operator will result in wasted too much time, so the factory production will be increasingly hampered. The growth of using cable, will surely take place, so it is not impossible that require special room for the wires that lead to the emergence of rental costs. Therefore, in this final project will be design automation based on wireless for pasteurization milk process in PT XYZ There are 3 plant that controlled such as mixing and cooking plant, bottling plant, and packaging plant. PLC Omron CP1E N30 is used as controller by using wireless as a data transfer communication by utilizing ethernet module and access point with the configuration of the IP Address as addressing between receiver with transmitter.

In designing of automation system, troubleshooting is done by divided into five phases, namely the initial study phase, initialization phase, implementation phase, creative design and analysis as well as the stage of conclusion and suggestions. The initial stage is the stage of problem identification and the determination of the objectives to be achieved in this research. On stage initialization done literature study and fieldwork. Next step is the creative stage, which is stage of the process of designing, manufacture wireless configuration program to the PLC (Programmable Logic Controller) and the integration of PLC and Human Machine Interface. To determine whether the results of the design has been in accordance with the research objectives are to be achieved then the creative stage is carried out after the implementation phase of the design and analysis. The final stage is the conclusion and suggestions for future research.

From the results of research conducted obtained the conclusion that designing a wireless network configuration on Omron PLC with ethernet module CP1E CP1W-CIF41 have been successfully designed, so that the control process can be done without using a cable that connected to the PC, PLC program design on PLC Omron CP1E N30 on the process of mixing and cooking plant, bottling plant, and packaging plant has successfully designed, so the process goes in accordance with the scenario, and the design of the plant simulator on mixing and cooking plant, bottling plant, and packaging plant has successfully designed.

Keywords: PLC Omron CP1E-N30, pasteurization, Wonderware Intouch, Wireless data communication.