ABSTRACT

PT. Perkebunan Nusantara VIII is a part of BUMN that produce several of earth-product, such as tea. However, the quality of PT. Perkebunan Nusantara VIII tea is still poor, this can be seen by its low price in international market. The quality of tea is related to the production process. Up until this moment, PT. Perkebunan Nusantara VIII still uses old semi-automatic machine in producing their tea. This becomes the obstacle for PT. Perkebunan Nusantara VII to overcome in order to raise their tea production's quantity and quality.

Drying process, which is the most critical process in producing tea, aims at stopping the fermentation process, producing the stabilized and easy-to-handle product, and composing the desirable properties. To fulfill the aim, the temperature in drying machine must be stable. But however, the drying machine in PT. Perkebunan Nusantara VII is still semi-automatic, where the monitoring and controlling activities of drying process is still done in manual. This is causing unstable temperature in drying machine, and hence lowering the tea quality.

This research gives a solution alternative to solve the obstacle of PT. Perkebunan Nusantara VIII by designing the automation process for drying workstation using Programmable Logic Controller (PLC) and Human Machine Interface (HMI). The first step of designing the automation system is analyzing the existing of drying system. Then the following step is designing the automation system, which consist of designing the process scenario, database, PLC programming, and constructing the HMI.

The result of this research is the Supervisory Control and Data Acquisition (SCADA) system for drying process of PT. Perkebunan Nusantara VIII. This SCADA system helps operator in operating the production process, monitoring and controlling system, and reporting the production's result. As in addition, the SCADA system, which integrates the mechanism of drying process with PLC and HMI, triggers the stabilization of drying machine's temperature and hence the improvement of tea quality in PT. Perkebunan Nusantara VIII.

Keywords: Programmable Logic Controller (PLC), Human Machine Interface (HMI), Supervisory Control and Data Acquisition (SCADA), automation, production quality improvements.