

## ABSTRACT

One of the causes low competition domestic sugar industry is inefficiency of sugar factory. Beside, the critical problem that need to be solved in sugar factory to improve factory efficiency is high break down time. Which is caused by the weakness of coordination between production workstation and less optimum of the process because there are no monitoring and controlling system. PG.Madukismo still doing the production process of crystal sugar in manually included of centrifugation station. Frequently, human error is the most constraint factor of unfulfilled system. It happened because of there is no system that can work smartly, automatically, and flexible yet. Therefore, in this final project will design the automation system for centrifugal machine based on Human Machine Interface (HMI) and Programmable Logic Controller (PLC) and also a design of a database for data collection process.

In constructing this system, there are few things that we can do to solve the problem above. It divides in 5 phases, i.e. initialization phase, information phase, creative phase, testing and design analysis phase, also conclusion and suggestion phase. Initialization phase includes the determination of problem and the purpose, the information phase is for literature and field study, then continued by analyzing existing system and make model project in creative phase. After model system had finished, the next process is testing phase and continue with the system analysis, whether the system that be built is already appropriate with the purpose or not and also whether this system is already suitable to be implemented or not. The final phase is conclusion and suggestion phase.

This research divides in some chapters, i.e. Chapter I concerns about the background, purpose of writing, the benefit of research, and the limitation of problem. Chapter II is consists of literature study about Programmable Logic Controller (PLC), Human Machine Interface (HMI), also information and database system. Chapter III is about conceptual design of the system and formulating problem of this paper. As a main discussion of this final project, Chapter IV concerns about the analyzing of existing system and the construction system that had been made then continued by the system analysis in Chapter V. The last chapter explain the conclusion of this final project and also the suggestion for next research or implementation.

From the result of the research that had already done, there is conclusion that as the implementation of automation system on centrifugal machine, user can monitor and controlling sets of equipment much easier, reduce human error, and also for the data collection in workstation.

Keyword : PLC, HMI, Monitoring, Controlling