ABSTRACT

In an era of increasingly sophisticated technology as it is now, the need for tools to facilitate human activity is needed. One is like a cocoa beans dryer. Requirements for this tool is triggered by weather conditions in a tropical country that has a relatively high rainfall such as in Indonesia. The weather conditions can make the process of cocoa beans drying fail because it takes a long time when dried directly over the sun, and can't be sold when the water content contained in the seed is not as expected, ie 7% - 8% wet basis.

In this thesis, cocoa beans dryer will be designed using a Arduino UNO microcontroller with fuzzy logic implement and its inference method is using Mamdani models. This tool is equipped with temperature and humidity sensors to detect the temperature and humidity inside the drying chamber. Temperature and humidity data will be detected and processed in the microcontroller, then will be forwarded to the relay circuit and TRIAC circuit to control a DC motor and heater in the dryer which is a component of the tool.

From the test results, the system show the output voltage of the heater is varied in accordance with temperature and humidity in the drying chamber. The system is seen trying to stabilize the temperature of $50^{o}C$ to $60^{o}C$ and relative humidity of 7%RH to 8%RH in the drying chamber. In general, it can be concluded that by using this system, the water content of cocoa beans can be lowered 7% to 8% wet basis when dried for a minimum of 46 hours.

Keywords : *Cocoa Beans Dryer, Arduino UNO, TRIAC, Fuzzy Logic, Mamdani, SHT1x*