

CHAPTER 4

DESIGN ANALYSIS

4.1 Analysis

This project makes automatic fish feed equipment according to the schedule and dosage that is determined accurately.

In this project, the method for scheduling automatic fish feed is done with the specified time setting. RTC Module (Real Time Clock) is an IC chip that has the function of calculating the time starting from seconds, minutes, hours, days, dates, months, to years accurately. So it is very appropriate to be used for scheduling fish feeding.

Arduino UNO is used to operate automatic fish feed tools and the programming language used is Arduino.

4.2 Design

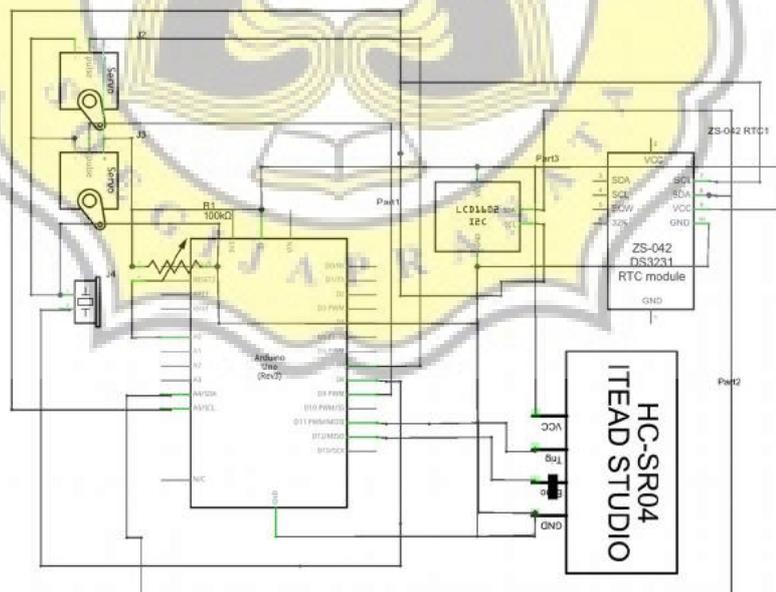


Illustration 4.1: Automatic Fish Feed Scheme

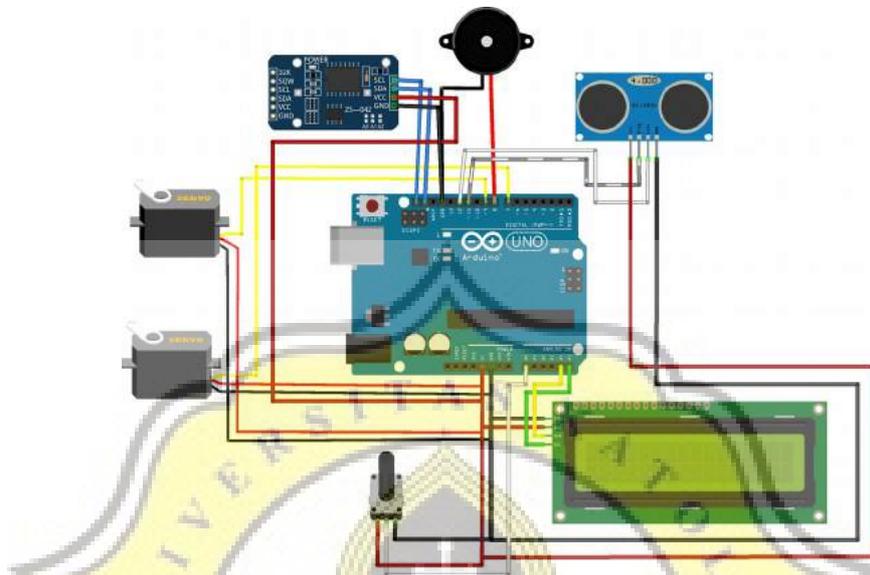


Illustration 4.2: Wiring Design of Automatic Fish Feeder

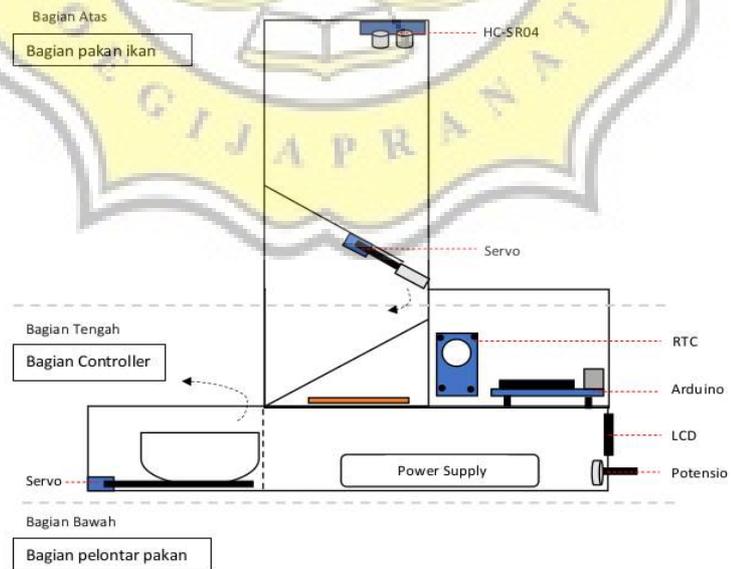
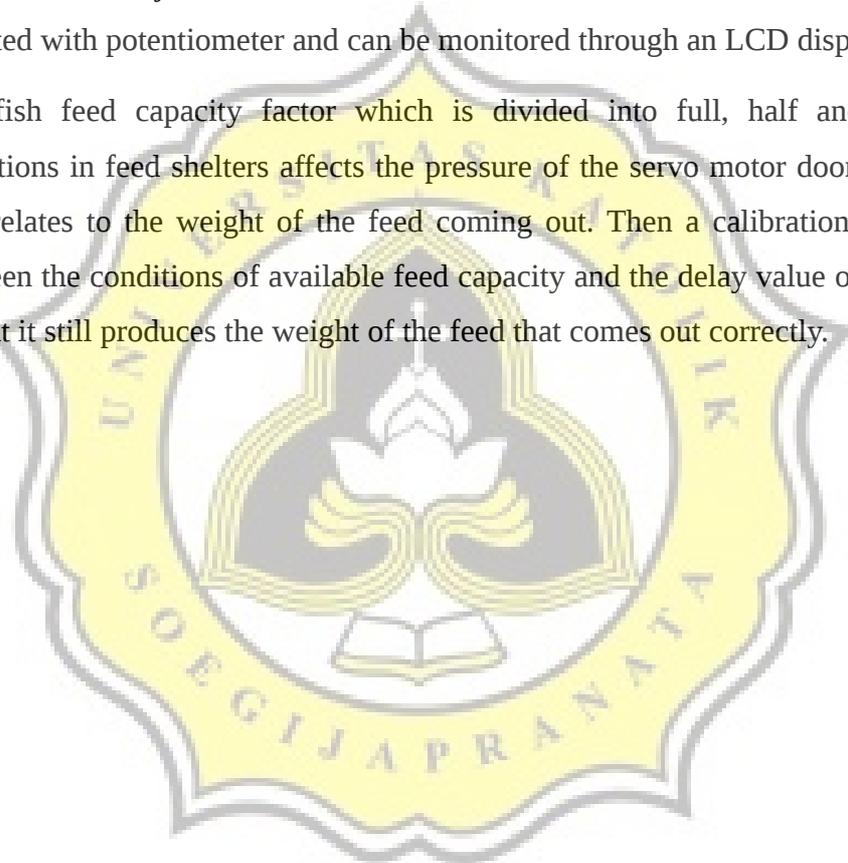


Illustration 4.3: Tools for the automatic fish feeder design

The design of an automatic fish feed tool consists of 3 parts, namely the top, the middle and the bottom. The upper part functions as a fish feed, the HC-SR04 sensor is used to detect available feed capacity and the servo for the open and close door as a way out for fish feed. The middle part is where the controller and module are located. The bottom there is a fish feed launcher towards the pond which is driven by a servo motor, there is a feed dose control section that can be adjusted with potentiometer and can be monitored through an LCD display.

The fish feed capacity factor which is divided into full, half and thinning conditions in feed shelters affects the pressure of the servo motor door, so that it also relates to the weight of the feed coming out. Then a calibration is needed between the conditions of available feed capacity and the delay value of the servo so that it still produces the weight of the feed that comes out correctly.



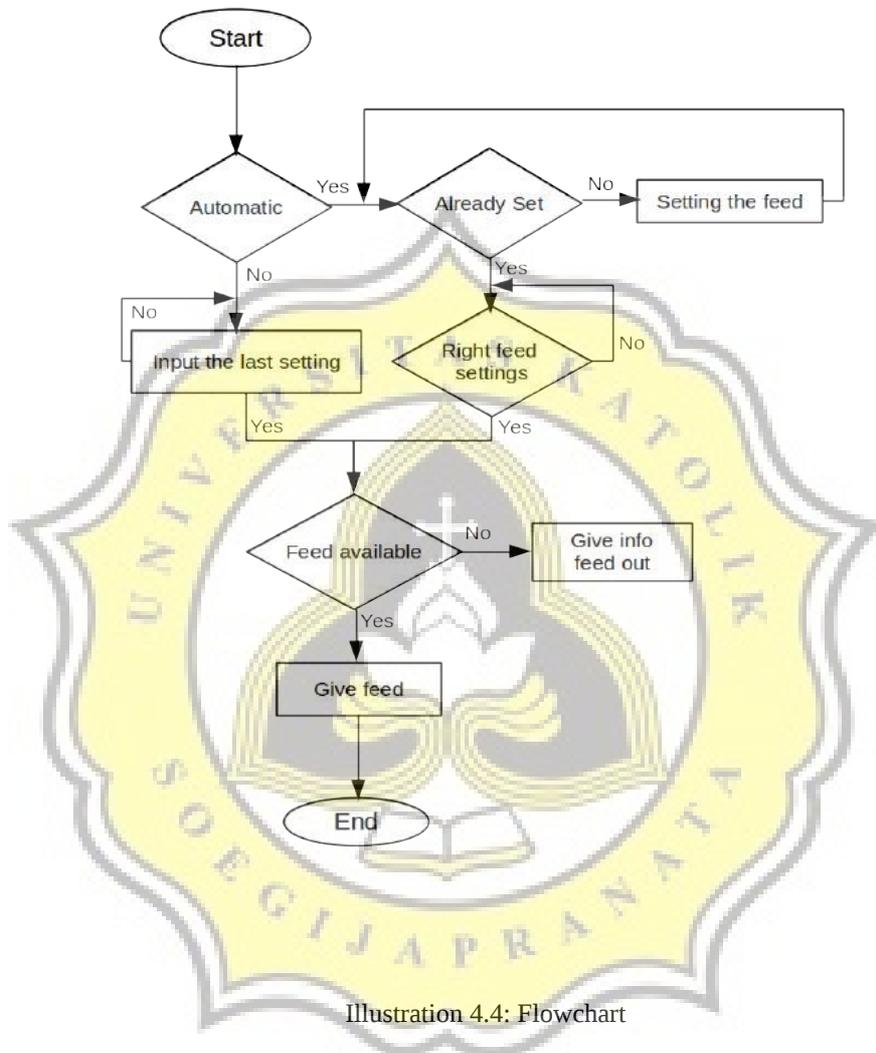


Illustration 4.4: Flowchart

The HC-SR04 sensor is placed at the top of the fish feed reservoir, in order to detect the value of available fish feed capacity. In this case it has something to do with the weight of the feed released.

The flowchart above explains how the automatic fish feed system works. Fish feed tool works automatically, when the device is on then the time will automatically run and displayed on the LCD display. Followed by setting the feed dose that you want to remove every time. Feed dosage settings are regulated with

potentios, where the value of the potentiometer determines the amount of feed released. If we do not adjust the feed dosage, the tool can still work removing the amount of feed according to the value printed on the LCD display screen.

HC-SR04 sensor detects the presence or absence of large fish feed capacity available, the working principle is given a certain value scale, in this tool given a scale range of 1-14 the greater the number sent from the HC-SR04 sensor shows the magnitude of ultrasonic reflection distance, in the sense other fish feed shelters are empty, but on the contrary if the value sent from the HC-SR04 sensor tends to be small, it is detected that the feed condition is available / full. In this full condition, the fish feed tool will work.

If the sensor detects available feed capacity under thinning conditions it will automatically send information in the form of sound or writing on the LCD screen that the feed has run out.

