

## **ABSTRACT**

*Garbage is a problem faced by all countries, not only in developing countries, but also in developed countries. On average, big cities in Indonesia produce tens of tonnes of waste every day. One solution to overcome this problem is the use of Black Soldier Fly Larvae (BSFL). However, Black Soldier Fly (BSF) adults only live for about a week. In its short life span, the fly will find a mate, mate, and lay eggs (for females). BSF is easily dehydrated with a humidity range of [30-90% RH] and a temperature of 27.5°-37.5°C, the effect of temperature and humidity that is not in accordance with these provisions is the life span of the BSF. The solution to this problem is to design a monitoring and humidity temperature control system to optimise the BSF breeding phase. In this research, the concept of a device that can monitor and control humidity temperature has been designed, namely using ESP32 as a microcontroller and WiFi module, using the blynk platform as monitoring from the internet, using LCD I2C (Liquid Crystal Display Inter-Integrated Circuit) as local monitoring, using LED (Light Emitting Diode) as actuator condition notification, using DHT-22 sensors to measure temperature and humidity, using 2 channel relays as switches connecting current sources and actuators, using atomizing humidifiers and halogen lamps as temperature and humidity control actuators, using 12V fans as humid air direction. The accuracy of the DHT-22 Sensor on the temperature parameter is good and sensitive to temperature changes with a percentage accuracy of 92.03% but the humidity accuracy is very poor because the percentage accuracy of this parameter is 38.77%. QoS (Quality of Service) parameter testing shows that the delay when sending and receiving data has a delay of 1.366 seconds.*

**Keywords:** *Garbage, Black Soldier Fly larvae, Breeding phase, Monitoring system, Control system, Accuracy of DHT-22 censor, QoS.*