

# ***AUTOMATIC WATERING SYSTEM AT MUSHROOM OYSTERS CULTIVATION HOUSE USING SOIL MOISTURE, TEMPERATURE, AND HUMIDITY SENSORS BASED ON FUZZY LOGIC***

**Banu Mahardika**

*Electrical Engineering Study Program, Faculty of Science & Technology*

*University of Technology Yogyakarta*

*Jl. Ringroad Utara Jombor Sleman Yogyakarta*

*E-mail : [banumahardhika123@gmail.com](mailto:banumahardhika123@gmail.com)*

## **ABSTRACT**

*In oyster mushroom cultivation, environmental temperature and humidity are important factors for mushroom growth because they affect mushroom growth. Cultivators generally spray/condense water to stabilize the temperature and humidity of the mushroom habitat. In addition, the oyster mushroom media also needs to be considered. Much of the condensation process is still done manually and is based on estimates. Therefore, an automatic condensation and monitoring system is deemed necessary to be implemented in order to maximize the oyster mushroom production process. The application of Fuzzy Logic Controller can be an alternative technology in automatic mushroom condensation. In this study, the mushroom cultivation house was made in the form of a prototype measuring 40 cm x 25 cm x 50 cm. Electronic systems as temperature and humidity control devices are made using ESP-32, DHT22, soil moisture sensors, fans, humidifiers and incandescent lamps. The control system is made in manual mode and also in automatic mode. Based on the test results, it is known that notifications are successfully displayed on Blynk with a success rate of 100% through 11 test scenarios. In manual mode functional testing, a success rate of 100% was obtained through 7 test scenarios. In testing the output of the Fuzzy Logic Controller, the percentage of output similarities between the ESP-32 and the Fuzzy Logic Controller design was obtained at 99.99% through 30 data sampling. In the automatic mode test, a 100% success rate is obtained through 5 test scenarios. The prototype made has also been able to control the humidity and temperature of the mushroom cultivation house in accordance with the limits set at Blynk even though it has different levels of adjustment time caused by external factors.*

**Keywords:** *Mushroom Cultivation House, Fuzzy Logic Controller, Temperature and Humidity*