

Abstract

Grape plants, which originate from subtropical environments with cool climates, face challenges in growing in tropical areas that tend to be hot and dry. This study focuses on the implementation of the Internet of Things (IoT) and Wireless Sensor Network (WSN) in monitoring and controlling temperature and humidity in the greenhouse of Telkom University Surabaya. This study uses two DHT22 sensors and one Hygrometer as sensor calibration for real-time monitoring and control at 09.00, 11.00, 13.00, 14.00, in a room measuring 5m × 1.3m × 3m in the grape greenhouse area. These sensors are connected via WSN, sending data to a processing unit that applies a fuzzy logic method to automatically control the duration of the water spray actuator. The main goal is to achieve and maintain ideal temperature and humidity conditions in the greenhouse. This study also examines the performance of the from morning to evening to assess its accuracy. The results of the system implementation show that the calibrated sensor difference values are 1.96% for temperature and 7.25% for humidity, with a pump duration difference value of 7.47%. Data fuzzified by the transmitter node sent via the receiver processing node's radio frequency (RF) signal and displayed on the website in real-time allow for more optimal monitoring and control.

Keywords : *Grape plants, internet of things(IoT), air temperature humidity, wireless sensor network (WSN), fuzzy logic*