ABSTRACT

Aquascape plants are an important component in making an aquascape ecosystem. The failure of plant growth is caused by unmet plant needs in water. This failure is caused by several factors, namely the duration of lighting, temperature, nutrient levels and CO_2 in the water that are not in accordance with plant needs. The design of a control and monitoring system based on the Internet of Things in real time to assist and facilitate hobbyists in controlling the needs of aquascape plants.

Water conditions are very influential in the survival of aquascape plants. Ideally the temperature conditions in the water are temperatures between 20^oC - 28^oC, lighting for plant photosynthesis between 5-12 hours, CO_2 levels between low to moderate, and nutrients depending on the number of plants in the aquarium or 70 ppm - 320 ppm. Plant needs that are not met can result in plants not growing fertile and experiencing stunting.

From the results of the tests that have been carried out, it is known that this system can work well. The level of accuracy in each test of the sensors used is quite good, which is above 96%. Quality of Service testing for sending data from the device to the database obtained an overall average delay value of 98 milliseconds, an overall average throughput of 17901 bps, and an overall average packet loss of 0%. Then the Quality of Service Test for sending data from the database to the application obtained an overall average delay value of 244 milliseconds, an overall average throughput of 4290 bps, and an overall average packet loss of 0%. Then the features on the android application work fine. Then the plants used in the test by being given a control can thrive..

Keywords: *Aquascape, Sensor, Realtime, Internet of Things, Firebase.*