

## ABSTRACT

In daily life, maintaining and cultivating decorative fish usually needs a system to monitor the aquarium. Moreover, the problem that often occurs in the aquarium is the owner forgets to monitor the aquarium frequently. So the water in aquarium becomes cloudy, the water level decreases, and the temperature in the aquarium is not stable which causes fish to die. But designing a system to monitor the aquarium has not been much realized and only makes the lights as mere lighting. With this system, anyone who wants to monitor the aquarium does not need to worry about fish in the aquarium.

The final project purpose is to design and experiment systems that produce a device in an aquarium lighting lamp (LED light) as a sender and light to voltage sensor as a receiver in an aquarium condition monitoring system whose data comes from several sensors. This system is equipped with sensors that show data input in the form of temperature, water level, and turbidity of water. The design is made to facilitate the maintenance of fish in an aquarium with water conditions that are always monitored by utilizing the Underwater Visible Light Communication (UVLC) system.

Each test is carried out on each side of the aquarium when the room is dark and bright. The aquarium condition monitoring system is measured using a ruler at a distance of 5 cm – 50 cm by comparison with an empty aquarium container and an aquarium container filled with water at a height of 25 cm. From the results of testing and measurement, it has been observed that this system has a different light propagation in receiving data. The output of this final project is a trial of an aquarium condition monitoring system that can monitor temperature, water level and turbidity of water in an aquarium with an LCD display that obtains data from Underwater VLC.

**Keywords:** *Aquarium Condition Monitoring System, Underwater VLC, LED, Light to Voltage Sensor, LCD*