

ABSTRACT

Hydroponics is a modern agricultural method where plants are grown without the use of soil. Instead, hydroponic systems use nutrient-rich solutions that contain essential elements for plant growth. Plants can be placed in inert substrates such as sand, gravel, coconut fiber, or even without any substrate, merely being submerged in nutrient solutions that are regularly circulated.

This Final Project is designed with a web-based monitoring system to visualize data from hydroponic and solar panel sensors. The system utilizes a cloud database to identify and store data in real-time, allowing for easy access via the internet. Sensor data received through ESP32 is displayed on the dashboard.

Based on the design, testing, and analysis that has been carried out, it can be concluded that the implementation of the Web-Based Indoor Hydroponic Monitoring System operates successfully. All website functions have been tested and proven to display data correctly. The website is successfully integrated with the sensors and database, facilitating users in monitoring the condition of hydroponic plants. This monitoring system displays data on two separate dashboards, one for the Hydroponic Rack and the other for the Solar Panel. The first dashboard displays data from the Hydroponic Rack, such as water temperature, TDS, pH, DO, room temperature, and humidity, while the second dashboard shows data from the Solar Panel, such as water temperature, voltage, power, and panel temperature. Although there were some sensor issues, overall, the system works well without significant disruptions in connecting the sensors to the database, linking the database to the website, and retrieving and displaying data on the website. These results indicate that the web-based hydroponic monitoring system is effective and useful in its application.

Keywords: *Hydroponic, System monitoring, website monitoring, monitoring software.*