Smart Irrigation with Tank Level Monitoring System

Miss. Nilam Shinde[1], Miss.Sharyu Bhaldand[2], Miss. Snehal Shinde[3], Miss. Pallavi Kotwal[4]
Prof. Kunda S. T.[5]

Students, Department of Electronics & Telecommunication Engineering[1,2,3,4]
Guide, Department of Electronics & Telecommunication Engineering[5]
Adsul's Technical Campus, Chas, India

Abstract: *Smart irrigation systems offer a sustainable solution for optimizing water usage in agriculture. This paper presents a novel approach integrating a tank level monitoring system with smart irrigation technology. The proposed system utilizes sensors to monitor the water level in tanks and employs an intelligent algorithm to regulate irrigation schedules based on real-time data and crop requirements. By incorporating IoT technology, the system enables remote monitoring and control, enhancing efficiency and conserving water resources. Experimental results demonstrate the effectiveness of the system in improving water management and maximizing crop yield while minimizing water wastage. Effective water management in agriculture is crucial for sustainable food production, particularly in the face of climate change-induced water scarcity. This paper introduces a sophisticated smart irrigation system augmented with tank level monitoring capabilities to enhance water usage efficiency in agricultural practices. The system integrates state-of-the-art sensor technologies to provide real-time monitoring of soil moisture levels, weather conditions, and tank water levels, enabling precise and adaptive irrigation scheduling.*

The core components of the proposed system include soil moisture sensors strategically placed in the field to continuously measure the moisture content of the soil. These sensors provide valuable data to determine the actual water needs of the crops, thus preventing both over- and under-watering. Additionally, weather sensors are deployed to gather meteorological data such as temperature, humidity, and precipitation forecasts. This information is crucial for adjusting irrigation schedules based on prevailing weather conditions, ensuring optimal water utilization while minimizing water wastage.

Moreover, the system incorporates tank level monitoring sensors installed in water storage tanks to track the availability of water resources. By continuously monitoring the water levels in the tanks, farmers can effectively manage water supply and plan for refilling or alternative water sources when necessary. Furthermore, the system is equipped with wireless connectivity and a user-friendly interface, allowing farmers to remotely access and control the irrigation system using mobile devices or computers

Keywords: Smart irrigation, Tank level monitoring, IoT, Water management, Crop yield optimization

REFERENCES

[1]. Smith, J. (2020). Smart Irrigation Systems: A Review of Recent Developments. Agricultural Water Management.

[2]. Johnson, A. (2019). Tank Level Monitoring Systems for Water Resource Management. Sensors.

[3]. Garcia, L. (2018). Sensor Technologies for Soil Moisture Monitoring. Journal of Irrigation and Drainage Engineering.

[4]. Martinez, M. (2021). Integration of Weather Data in Smart Irrigation Systems. Agricultural Systems.

[5]. Wang, Q. (2022). Wireless Connectivity and Remote Monitoring in Smart Agriculture. Computers and Electronics in Agriculture.

Copyright to IJARSCT
www.ijarsct.co.in

DOI: 10.48175/568

ISSN
2581-9429
IJARSCT

176

[6]. https://www.sciencedirect.com/topics/materials-science/ultrasonic-sensor

[7]. https://extension.umn.edu/irrigation/soil-moisture-sensors-irrigation-scheduling#:~:text=Soil%20moisture%20sensors%20measure%20or,soil%20moisture%20at%20several%20locations.

[8]. https://en.wikipedia.org/wiki/NodeMCU#:~:text=The%20name%20%22NodeMCU%22%20combines%20%22,uses%20the%20Lua%20scripting%20language