

Development of an Integrated Remote Monitoring and Control System for Efficient Operation of Water Pumping Stations with Safety Features

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Abstract: Water conservation and management is very much essential in achieving sustainable living. Thus, this paper details out the Development of an Integrated Remote Monitoring and Control System for Efficient Operation of Water Pumping Stations with Safety Features that automates regulation of water level in overhead tanks. A motor can be operated by an ultrasonic sensor which constantly checks the water level and triggers the motor to keep the water level at the desired level. Motor protection is also ensured by a current sensor (due to dry running and overload conditions). A turbidity sensor also monitors water quality and, if needed, it commences an automated tank cleaning mechanism. A local monitoring system is created such that it incorporates an LCD display to deliver real time status updates to water levels, motor operation, and cleaning alerts. Based on IoT, the use of Blynk app allows users to be notified on real time, as well as being able to remotely control operations. By integrating smart automation, IoT connectivity and local display of the tank hygiene, the system not only optimizes the water usage but also prolongs motor life and maintaining tank hygiene for efficient water management.

Keywords: IoT, smart water pump, ultrasonic sensor, motor safety, turbidity monitoring, automated cleaning, remote monitoring

