ABSTRACT

Efficient management of water distribution networks in metropolitan areas is crucial for ensuring sustainability and reducing water losses. This project presents an IoT-based Smart Water Leak Controller designed to detect leaks in metro water supply lines using two flow sensors and measure water quantity in tanks using an ultrasonic sensor. By integrating IoT technology and advanced sensors, the system aims to enhance leak detection accuracy, optimize water usage, and improve operational efficiency in urban water distribution networks.The Smart Water Leak Controller consists of multiple sensors strategically deployed along the water supply lines and within water tanks. Two flow sensors are installed in the supply lines to detect variations in flow rates, while an ultrasonic sensor is placed in tanks to measure water quantity. Real-time data from these sensors are transmitted to a central IoT gateway for analysis and control.The system identifies abnormal flow patterns and deviations in water levels, indicative of leaks. Upon detecting a potential leak, the system triggers control mechanisms to isolate the affected section of the pipeline and minimize water loss. Additionally, the system monitors water quantity in tanks, providing insights into usage patterns and facilitating efficient water management.