ABSTRACT

This research focuses on developing an innovative Internet of Things (IoT)-based water pipe leak detection system. The system utilizes a YF-B5 water flow sensor to monitor water flow, a NodeMCU ESP8266 as the microcontroller, a solenoid valve to control water flow, and the Blynk platform for user interface and remote monitoring. The water flow sensor accurately measures the inflow and outflow of water in the system, enabling early leak detection by comparing the two values. Upon leak detection, the solenoid valve automatically diverts the water flow to a bypass pipe, preventing further water loss. Test results demonstrate the system's effectiveness in detecting leaks at various flow rates, achieving an accuracy of 94.44% for medium and large leaks. This system offers a practical solution to address common water pipe leak issues, contributing to more efficient and sustainable water resource management.

Keywords: Water, water pipe leak detection, water distribution pipes, Internet of Things, NodeMCU, sensors, BLYNK, solenoid valve.