

Water Leakage, Unauthorized Connection and Prevent Illegal Water Siphoning

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Abstract: *Water distribution systems face significant challenges due to leakage, unauthorized connections, and illegal water siphoning, leading to resource wastage and financial losses. This paper presents an IoT-enabled system that integrates flow, pressure, acoustic, and current sensors with cloud-based machine learning analytics for real-time detection and monitoring. The system uses ESP32 microcontrollers for sensor interfacing, MQTT for efficient data transmission, and Things Board for visualization. A Random Forest-based model is employed to analyze sensor data, enabling accurate detection of anomalies such as leaks, illegal motor siphoning, and unauthorized connections. The system also monitors pressure levels at the tail end of the distribution network to prevent supply inefficiencies. Experimental results demonstrate high detection accuracy and real-time anomaly alerts, making this solution cost-effective and scalable.*

Keywords: Water distribution

