

Smart Liquefied Petroleum Gas (LPG) Level Monitoring System with Gas Leakage Detection System

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This paper presents the development and implementation of a comprehensive gas monitoring and leakage detection system for Liquefied Petroleum Gas (LPG) cylinders, aimed at enhancing safety and efficiency in gas usage. The system integrates load cell technology for precise weight measurements, MQ2 gas sensors for effective leakage detection, and the Blynk application for real-time remote monitoring and alerts. Key achievements include accurate gas level monitoring, timely detection of gas leaks, and seamless remote access, demonstrating significant improvements in gas safety management. Challenges encountered during the project included high costs of electrical components, calibration of the load cell, component failures, and the need for self-taught coding skills. Despite these hurdles, the project successfully achieved its objectives, providing valuable insights into electronic component integration, coding proficiency, and critical problem-solving skills. The report also addresses limitations such as the limited range of the MQ2 gas sensor, the accuracy constraints of the load cell, the need for an external power source, and the structural reliability of wood. Future work is proposed to enhance the system's capabilities, including improved sensor accuracy, expanded detection range, battery-powered operation, and the use of more durable materials. The project's significance lies in its potential to be scaled and customized for commercial use, offering a robust solution for gas safety in various settings. The system's ability to provide real-time monitoring and immediate alerts ensures proactive measures, contributing to safer and more efficient gas usage.

Keywords: *IOT gas monitoring, LPG leak detection, real-time monitoring, MQ2 gas sensor, load cell*