Figura 1: KLEF university

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Gas leakage detection by sms alert

Your project title

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Indice

Abstract of project

The Gas Leakage Detection with SMS Alert project is designed to enhance safety and prevent hazards related to gas leaks in residential, commercial, and industrial settings. This system employs gas sensors to continuously monitor the presence of harmful gases such as methane, propane, or carbon monoxide in the environment. When the sensor detects a concentration of gas above a predefined threshold, it triggers an alert mechanism. This alert is sent as an SMS notification to designate users, such as homeowners or facility managers, using GSM (Global System for Mobile Communications) technology. The system aims to provide early warning for gas leakage, enabling timely intervention and reducing the risk of accidents such as fires, explosions, or poisoning. The project integrates hardware components like gas sensors, microcontrollers, and GSM modules, and focuses on real-time detection and communication, ensuring both reliability and convenience. This system can be deployed in various environments to safeguard lives and property by providing immediate notifications of potential gas hazards.

1 Introduction

Gas leaks represent a significant safety concern in both residential and industrial settings. The consequences of undetected gas leaks can be disastrous, leading to fires, explosions, or poisoning, which often result in loss of life, injuries, and substantial property damage. In many cases, gas leaks go unnoticed until it is too late, primarily due to a lack of real-time monitoring or immediate notification systems. Traditional detection methods, which rely on manual inspection or the presence of basic alarms, often fail to offer the rapid response needed to prevent serious incidents. This project aims to address the critical need for an automated, real-time gas leakage detection system. The solution involves using an Arduino-based microcontroller, combined with a gas sensor and a GSM module, to create a low-cost, efficient system capable of continuously monitoring the air for harmful gases ..

2 components

GSM module LCD I2C MQ 2 Male to Female Jumper wires Bread Board USB to Micro USB Cable for NodeMCU

3 Simulation and Results

SIMULATION: The simulation of the gas leakage detection system involves setting up a gas sensor (like MQ-2) to monitor the environment for potential gas leaks. The sensor continuously sends analog signals to a microcontroller, which processes the data and compares it to a predefined threshold. If the detected gas concentration exceeds this threshold, the microcontroller activates a GSM module to send an SMS alert . RESULTS: In the test scenario where no gas leakage is present, the system will show normal gas readings on the LCD and no SMS alert will be triggered. When the gas level exceeds the threshold (e.g., 300), the system sends an SMS alert such as "ALERT: Gas

leakage detected!" to the specified phone number. The LCD also displays the current gas concentration.

4   Conclusion

The gas leakage detection and SMS alert system successfully monitors gas concentration levels in real time using a gas sensor (such as MQ-2 or MQ-5). When the gas concentration exceeds a predefined threshold, the system triggers the GSM module to send an SMS alert to a specified phone number. The system is easy to implement with commonly available components like Arduino, gas sensors, and GSM modules, making it a reliable solution for detecting gas leaks in environments such as kitchens, laboratories, or industrial areas. The optional LCD display provides additional convenience by showing real-time gas levels and status.