

# Gas Leakage Automatic Alerting System with Monitoring

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## ABSTRACT

One of the biggest problems in a person's life is a gas leak. If the leakage is not discovered at this point, it may also have many negative effects, including property loss and human loss. Everyone must be aware of leaking priority in order to prevent these losses. Our task is to implement a protective device for leak detection. Using sensors and sounds, we can identify leaks when they occur. Buzzer with LCD display alerts candidates and family members who are lawfully present, and if the leakage intensity increases, it also alerts the fire station and the neighborhood, together with Buzzer sound and LCD display, for rescue. Gas leaks can be dangerous and even fatal if they go unnoticed. We have created a gas leakage system using IOT, which comprises database logging, prediction, and

smart alerting methods that involve text message delivery to the relevant authority. By using the XAMPP server to save the sensor values in the database, database logging is carried out. For prediction, the Naive Bayes method is utilized.

**Keywords:** - Node MCU, ESP8266 WIFI module, Buzzer, GSM module, MQ6 Sensor, LPG.

## 1. INTRODUCTION

Gas is a common fuel in today's modern world, especially gas, which is utilized widely in everything from homes to restaurants to enterprises. The gas is extremely significant to life. Thus, a situation arises where gas utilization is likely to

leak. If the user does not notice it in time, they are forced to breathe in a lot of gas, which can be harmful to their health or, in the worst case, result in death if they are in a closed space. In addition, there is a substantial risk of fire if gas leaks in an area that is near flammable materials or tiny sparks. The Internet of Things (IoT) is a global network in which electronic parts, software, sensors, and actuators are integrated in furniture, automobiles, buildings, and other equipment.

These gadgets can gather and transmit data if they are connected to a network. IoT applications are being used more frequently to monitor residential appliances. By automating all of the small tasks associated with a person's daily life, the internet of things aims to make life simpler and faster. Due to technological advancements like the Internet of Things, everything is becoming more sophisticated today. IOT is useful for automating tasks, but it also has a lot of potential benefits for enhancing practical security measures.

While developing homes, buildings, enterprises, and communities, security is a key consideration. As the increased concentration of some gases in the atmosphere can be quite dangerous, everyone now wants a facility that requires less time and effort and expects their work to be as simple as possible. Cooking is one such area where man wants the labour to be done more quickly and easily. According to Dr. Walter Snelling's theory, LPG is most frequently used for cooking. It is a mixture of propane and butane, as well as soaked material and unsaturated hydrocarbon material. Due to today's quick pace and intense competition, individuals are searching for more intelligent alternatives to monotonous, mechanical, and manual routines. Due to a hectic schedule and a lack of time, it has therefore become common for people to put off or forget making a gas reservation. Gas leaks are typically the source of most disasters in homes and businesses, which result in numerous accidents and also take human lives.

## 2. LITERATURE SURVEY

In this approach [1] Gas leakage detection and Gas refilling is done using the MQ5 sensor, GSM, Load sensor, Raspberry pi, Aurdino. MQ detects the LPG frequently whether the flow of gas is normal or abnormal, if it is abnormal, sends notification to user via GSM. If there is no response, the system automatically turns off

In this approach [2] the data such as humidity, temperature, pressure, gas detection, sound detection is acquired by using sensors. The sensors used are DHT22/AM2302, TMP006, BMP180, MQ6, ZigBee is a wireless communication technology used to create small personal area network

This approach[3] gives a system for monitoring the LPG gas leaks in the presence of air. The methods used here are Wireless Sensor Network, Sensor Node, Remote monitoring and controlling, LabVIEW, VISA

Designed[4] a gas leakage automatic detection and processing device by using Fujitsu MB95204K. Gases such as methane and carbon monoxide will automatically detect and alarm

In this system[5] when gas leakage is detected by Gas sensor it makes the WeMOS known about this, which transfers signal to Raspberry Pi and it appries the user immediately through GSM module. PIR sensors (Passive Infrared) that automatically perceives whether there is any weight over the burner through the button module and if no then the system will turn off the stove In this approach[6] they have used IoT, GSM, MQ2 sensor, ARM processor. The gas leakage is sensed by MQ2 sensor which sends a high pulse to Mc which in turn updates it in the IoT system, and the buzzer will be heard in the RFRx kit

### 3. OBJECTIVES OF SYSTEM

To use a gas detection sensor to find gas leaks in hotels, residences, and other domestic settings. Based on the level of the leakage, it will detect it, sound an alarm, display an LCD, and send a message to pre-programmed cell numbers to inform people.

To use machine learning techniques to forecast the outcome, see item to implement IoT Base System, allowing for remote system monitoring.

### 4. EXISTING SYSTEM

Gas sensing technology is utilized in the current procedure. The semiconductor sensor finds the LPG leakage. Gas leaks can be caused by human error, erroneous chemical reactions, or improper maintenance of the gas valve. The current method uses a gas sensor to find gas leaks. When a leak occurs, exhaust fans are employed to remove the gases.

### 5. IMPLEMENTATION DETAILS OF MODULE

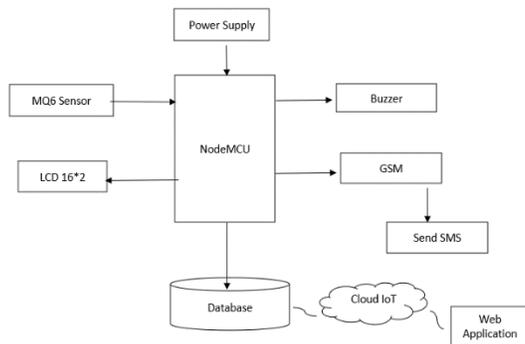


Fig: - System Architecture

This system's functionality is the detection of LPG leakage. Here, we made use of gas sensors that may be positioned close to a gas cylinder. The sensor's conductivity increases as a result of the sensor's reduced resistance when a gas leakage occurs. The microcontroller receives the signal from the sensor. controlling the leak of LPG gas as soon as the

microcontroller receives the signal from the sensors. Gas leakage in this system is separated into two categories, LOW and HIGH. When a sensor close to a cylinder detects a leak, the level is LOW; when a sensor far from the cylinder detects a leak, the level is HIGH. Although a High-level leakage message is sent to the fire department and neighbors, a LOW level leakage message is sent to the user and activates the buzzer and LCD. The data is even sent to an IoT platform. A standard webpage is displayed to the user. It displays the sensor data from the database. Additionally, it shows the user's prediction for the values they have entered.

### 6. CONCLUSION

At the end of our investigation, we came to the conclusion that gas leaks in homes and businesses cause risks to people's lives and property. So, our objective will provide a technique to prevent such mishaps by sending notifications to pre-programmed mobile numbers and turning on the LCD display and buzzer. In essence, it is a good project.

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