

# GAS LEVEL DETECTION AND AUTOMATIC BOOKING USING IOT

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**Abstract**-LPG is widely used for cooking in many countries for economic reasons, for convenience or because it is the preferred fuel source. This paper focuses on the application of the IoT which is used for measuring and displaying the gasoline content present in household LPG cylinder and this is helpful in automatic booking of new LPG cylinder and also detect the gas leakage. Usually the capacity of LPG in Cylinder is not determined, so we are going to display the level of LPG. The level of LPG is measured using load sensor (SEN-10245). The output of the sensor is connected with Arduino Board. By use of GSM Module, the information is sent to user by SMS (short messaging service) and also automatic booking is done by dialing the registered gas booking number. Then the gas leakage is detected by gas sensor (MQ-6). By using this, we can detect the current LPG level and it is continuously displayed on the LCD. We can know the validity of LPG usage from the date of initialization. By use of IOT the user is alerted by giving the message to their mobile phone when the LPG level is critically low (below 20%). Automatic booking of new LPG by auto dialing of gas booking number and by this we prevent pre-booking and late booking. Then by detecting the gas leakage we can prevent the LPG gas burst accidents in the home.

**Key Words:** LPG, GSM, LCD, MQ-6, SMS, mobile phone

## 1. INTRODUCTION

In human day to day life, the LPG cylinder plays a major role. The main application of the LPG is that it is used in the place of chloroform carbon which causes great damage to the ozone layer. Though it's one in all the foremost normally used fuels, it's associate explosive vary of 1.8%–9.5% the volume of gas in the air. It's packed into three classes per the burden of the LPG within the cylinder: social unit, business, and Industrial. The social unit class of the LPG cylinder contains 14.2 kilo LPG within the cylinder. Similarly, the business and Industrial classes of LPG cylinders contain nineteen and thirty-five kilo of LPG severally. With the rising demand for LPG, users have to be compelled to pre-book their LPG cylinder a minimum of a month before the delivery of the new LPG cylinder. Most of the days, users find it difficult to figure out what quantity of LPG has left at intervals the cylinder and this causes tons of bothering to them. In such a state of affairs, associate degree efficient technique to watch the amount of LPG within the cylinder is needed, so the users have tuned in to the LPG level at intervals the cylinder. This paper deals with the detection of the gas leakage and the level of gas in the cylinder and automatic booking of the new LPG cylinder. The sensor used in this has high sensitivity and fast response time. The gas

sensor detects other gases including cigarette smoke. When the gas has detected the output of the sensor is sent to the microcontroller and the buzzer is turned on and when the weight measured using the load sensor becomes critically low, the alert is sent to the user and the new LPG cylinder is booked. The main application of this proposed system is to overcome the shortcomings such as delay and pre-booking of the LPG cylinder by the consumers.

## 2. LITERATURE SURVEY

IOT Based Industrial Plant Safety Gas Leakage Detection System. Most of the fire-breakouts in industries are due to gas leaks. These cause dreadful damage to the equipment, human life leading to injuries, deaths, and environment. Currently available leakage detectors warn the people around using on-site alarms. So, this project proposes a leakage detector which sends the warning to the concerned people through SMS. This detector senses the presence of harmful gases particularly, LPG, Methane and Benzene. LPG and Methane gases catch fire easily resulting in blasts. Benzene is carcinogen effecting the health of workers, if inhaled in higher concentrations. Hence, detection of these gases is essential.

Pipeline Gas Leakage Detection And Location Identification System. Every diminutive task in this planetary is machine-controlled by cyberspace of belongings which makes our life easier. Now internet of things is used for safety purpose also. Nowadays outflow of gas in pipeline is the major difficulty. The chief mental object of this project is to detect the leakage of gases in the pipeline. Pipeline will be monitored with in a regular intervals using gas detection sensors. If there is any leakage in the pipeline then it will be detected and information such as name of the gas, pressure rate of the gas and its location where there is leakage of gases will be passed to the mobile phone, laptops, etc using IOT. The accurate location for the gas leakage will be detected using the GPS.

Development of Smart Cooking Stove: Harvesting Energy from the Heat, Gas Leakage Detection and IoT Based Notification System. The design and implementation of smart cooking stove with safety features has been discussed in this paper. To increase the efficiency of the conventional cooking stove, an energy harvest system from cooking heat has also been proposed in this research work. Heat absorbing body and Thermoelectric Cooler (TEC) module are used for this purpose. Heat is absorbed to generate power by using seebeck effect through TEC module. Generated power can be

stored in a battery which can be delivered to the load. Sensor based safety feature has been implemented which can detect the leakage of gas and notify the user through mobile message using an IoT server.

### 3. EXISTING SYSTEM

The basic principles behind this technique is that the modification in concentration of the LPG is detected associated is activates on audio visual alarm once it exceeds an explicit threshold worth. Future it send another alarm message through a radio frequency system (RF) to the receiver module. The receiver module can be a mobile unit that will be placed anywhere among the premises of the house therefore the alarm area unit typically detected and detected at the distance from the place of gas outflow. The microcontroller reads the voltage from the detector and it use to modification in concentration. The gas detector is sensitive to many gases and actually gas kind can't be determined. Instead during this work it absolutely was assumed that the gas sensing element has the identical sensitive for LPG and CH4 which may be though about a sound assumption.

#### Disadvantages:

- The existing system in gas leakage detection is done using microcontroller.
- This system contains only few application like gas leakage detection and producing an alarm signal whenever gas leakage is detected.

### 4. PROPOSED SYSTEM

Gas level detection and automatic booking is designed with various features which are implemented using arduino and some advanced sensors which are the single system with the multiple applications for the LPG customers. The device monitor the load of the gas if the gas level and displays its within the alphanumeric display incessantly. It also detect the gas leakage from the gas sensors. This includes a new additional features of booking the new LPG gas cylinder when the has level become the critical low. Then it send a alert to the register mobile number through SMS by the help of GSM module and the alert data are displayed in the system monitor.

#### Advantages:

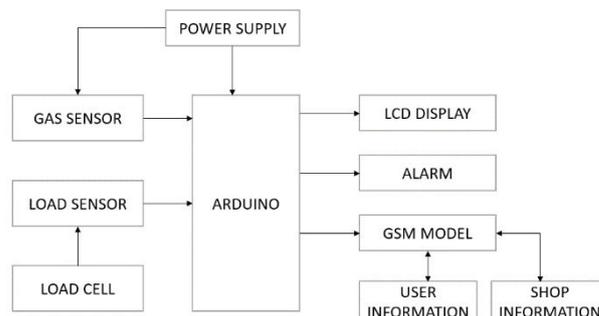
- System provides security by sensing leakage of gas.
- Useful for use in house as well as in industry.
- Saves time and also it is helpful for data analysis about how much gas consumes in certain period of time.
- Measure the gas present in the cylinder when weight of the cylinder is below the particular level. Prevent damage or explosion of LPG.

### 5. ALGORITHM

- Scan Gas & Display in LCD After activation, the device will continuously scan gas and show the result in the LCD display. If there is no gas, then the display will show - 'No Gas Leaking'. If there is any gas found, the display will show - 'Gas leaking'.
- Detection of Gas: If there is presence of any gas the display shows 'Gas Alert'.
- When the sensor finds any gas leakage in room or where the device is installed, it immediately activates the Exhaust fan.
- Stop Alert & Reset: If the gas sensor cannot find any gas leakage, then it shows that there is no gas leaking and keeps on scanning for gas. when gas level becomes low it makes automatic booking to the registered refilling centre.

### 6. WORKING PRINCIPLE

There are two flow charts for gas leakage detection and automatic gas booking which explain the methodology of the operation as follows:



#### METHODOLOGY:

##### ➤ GAS LEAKAGE DETECTION

In this model, gas spillage recognition has been given a most elevated need. MQ6 set in the region of the gas chamber. In the appearance of spillage, the obstruction of the sensor diminishes expanding its conductivity. Relating beat is sustained to microcontroller and at the same time switches on the ringer and fumes fan which we can reset by a manual reset switch. Additionally a rationale high heartbeat (+5 V) is given as a hinder to INTO stick of Microcontroller. Microcontroller communicates something specific "EMERGENCY ALERT: LPG gas spillage found in your home" to required mailid by means of GSM module and a similar will be shown on LCD.

##### ➤ AUTOMATIC GAS BOOKING

In programmed Gas booking framework, L6D ceaselessly screens the heaviness of the gas in chamber and shows it on seven section show. At the point when the heaviness of the gas is  $\leq 150$  ml, a rationale high heartbeat is encouraged to a port stick of microcontroller. As this stick goes high, microcontroller will send a booking message to wholesaler of organization, "REG\_yyyyyyy\_12345". In the meantime, the message will be given to the mail id.

## 7. CONCLUSIONS

The main advantage of this simple gas leak detector is its simplicity and its ability to warn its users about the leakage of the LPG gas. The future aspects of this detector include the gsm module and a tripper circuit which increases the efficiency of the system and provides more safety to the users. The other advantage of this system includes its visual warning systems. This detector is implemented successfully and is easy to use and also a low cost product. Another advantage of this device is that even though if no one is there in the house and then gas leaks occurs, GSM module is there to send immediate messages to the users regarding the gas leak and thus it lowers the intensity of accidents. GSM module in this device ensures better safety regarding the gas leaks.

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