

GAS LEVEL DETECTION AND AUTOMATIC BOOKING NOTIFICATION

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Abstract - Gas booking is a major requirement in every individual life. The need of this project is to save time while booking of gas. When we call the gas agent our request may not be recorded or call cannot be connected. These are all waste of the person's time. If we have not noted the completion of gas, we need to book it in black for money. By this project the level of the gas will be monitored at all the time and we get alert when gas is about to complete or critically low. In this project we would like to introduce a Arduino based system in which the load cell used to discover the weight of the gas present inside the cylinder. The gas sensor is used to measure or detect the gas leakage in the system. The sensor has the proper sensitivity and the brief reaction time at fewer prices. If gas completion is identified message to the lawful candidate or family member it alerts the lawful candidate or family member by sending the notification to refill the cylinder.

Key Words: Gas Booking, Gas Sensors, Monitoring Level of Gas Cylinder, Arduino.

1. INTRODUCTION

In our day-to-day life, LPG place in vital role in the field of cooking. LPG is preferable for our daily use as they are economical less cost when compared to other fuels. The main application of LPG is that is it replaces chlorofluorocarbon which damage the ozone layer. The composition of LPG is made up of butane (55%) and propane (45%) with some traces of isopentane and olefins. The LPG is stored in the form of liquid inside the cylinder. LPG is lighter than water. LPG burns proportion of LPG-air mixture is between 1.8% and 9.5%. The LPG may be available from 4kgs to 450kgs. With the rising demand for LPG uses have to be compelled to prebook their LPG cylinder a minimum before the month or the user books the cylinder after when the gas level is empty. In our daily use it is difficult to find the level of the gas inside the cylinder hence we propose an efficient method to watch the amount of LPG within the cylinder and avoid prebooking and late booking of cylinder.

2. Literature Survey

[1]: Automatic Gas Leakage Detection Using IOT.

The objective of the project is to create a system that can detect the leakage of LPG. The device would also send an SMS to the appropriate authority via the GSM module, to investigate the leakage, alert the people in the house via Buzzer.

[2]: IOT Based Smart Gas Leakage Detection and Alert System.

This proposed system provides a way to detect leaks using a gas sensor MQ6 the detection system. And alert neighbor by turning buzzer and exhaust fan on.

[3]: Gas Level Detection And Automatic Booking Using IOT.

Gas level sensing and automatic booking are created with a variety of features that are implemented using NodeMCU, and this device will serve as a single system with different applications for LPG consumers.

[4]: Automatic Monitoring of Gas Leakage Detection And Gas Booking Alert System For Smart Home Using IOT.

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 and start the alarm.

[5]: Gas Level Detection And Automatic Booking Using Iot.

In this system, the gas leakage is detected by MQ 6 sensor which is interfaced by Arduino and automatic booking is designed and this device will be a single system with multiple applications for LPG consumers.

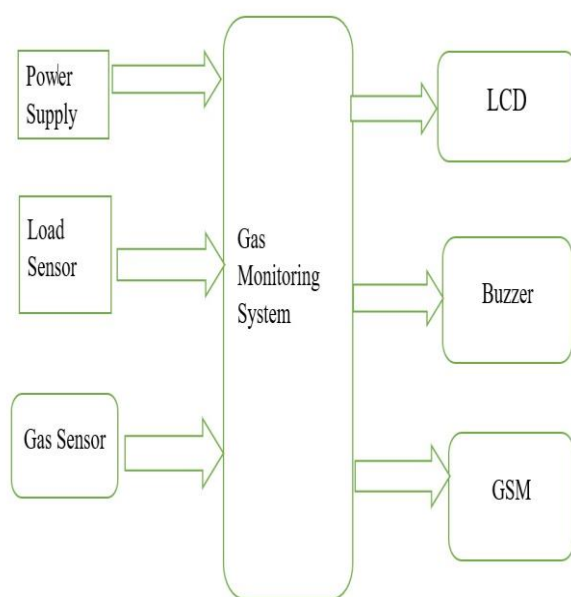
[6]: LPG Gas Auto Booking by GSM And Leakage Detection With Auto Switchable Exhaust Fan.

The main objective of this research is automatic protection from the LPG also providing an automatic gas booking facility.

3. Proposed System

Gas level detection and automatic booking are designed with various features that are implemented using Arduino and this device will be a single system with multiple applications for LPG consumers. The device monitors the load if the gas level and displays it within the alphanumeric display incessantly. It also detects the gas leakage by gas sensor. Then it sends an alert to the registered mobile number by an SMS with the help of the GSM module.

4. System Architecture



5. DESCRIPTION OF COMPONENTS

• Arduino

The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.



• LCD (LIQUID CRYSTAL DISPLAY):

Liquid Crystal Display also called as LCD is very helpful in providing user interface.



• GAS SENSOR

The MQ-2 gas sensor senses the gases like ammonia, nitrogen, oxygen, alcohols, aromatic compounds, sulfide and smoke. The operating voltage of this gas sensor is from 2.5V to 5.0V.



• GSM

GSM modem is connected to a computer, this allows the computer to use the GSM modem to communicate over the mobile network.



• BUZZER

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers.



• LOAD CELL

Load cells are used to measure weight

6. Working

The general working process of our proposed system:

- Gas Level Monitoring:
 - The gas level monitoring begins by reading the output from a gas level sensor connected to the Arduino.
 - The Arduino processes the sensor data and calculates the current gas level.
 - The calculated gas level is then displayed on the alphanumeric display.
- Gas Leakage Detection:
 - The gas sensor continuously monitors for any signs of gas leakage.
 - If a gas leak is detected, the Arduino triggers an appropriate response, such as sounding an alarm or shutting off the gas supply (if applicable).
- Automatic Cylinder Booking:
 - The Arduino regularly checks the gas level.
 - When the gas level falls below a critical threshold, the Arduino initiates the process to book a new LPG cylinder.
 - This could involve interacting with an online booking system or triggering an automated phone call to the gas provider.
- Alert System:
 - When the gas level is critically low or a gas leak is detected, the Arduino activates the GSM module.
 - The GSM module sends an alert message to the registered mobile number via SMS.
- User Interface:
 - The alphanumeric display continuously updates to show the current gas level.
 - The system monitor displays the alert database, providing a comprehensive view of gas levels and any detected issues.
- Integration with GSM Module:
 - The GSM module is integrated into the system and configured with the necessary communication settings.
 - When triggered, the GSM module communicates with the mobile network to send SMS alerts.
- System Integration:
 - All components are integrated on the Arduino platform, ensuring seamless communication between sensors, displays, and the GSM module.
 - The system operates as a unified entity with the ability to perform multiple tasks concurrently.
- Safety Measures:
 - In the event of a gas leak, the system responds quickly to mitigate the risk by triggering alarms or shutting off the gas supply.

7. Conclusion

Hence, a cost effective gas level detection system is proposed, designed and implemented successfully, the system explains a fully automated approach towards the booking of the gas and alert the user when any gas leakage is detected and also when the gas level is critically

low . The level of the cylinder measured from load cell and the gas leakage in system is displayed on the 16*2 LCD display, the iot modem sends a to the user when there is any leakage detected in the system or the gas level is critically low. The cost involved in developing the system is low when compare to other gas monitoring systems available in the market.

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