

# “LPG Leakage Detection and Smart Gas Booking System”

Purva Duggal<sup>1</sup>, Akshay Pawar<sup>2</sup>, Poorva Kalkatte<sup>3</sup>, Prof. Rushikesh Bhalerao<sup>4</sup>

<sup>1,2,3</sup>Students, B.E. Information Technology, Sir Visvesvaraya Institute of Technology, Nashik, Maharashtra, India

<sup>4</sup>Professor, Information Technology, Sir Visvesvaraya Institute of Technology, Nashik, Maharashtra, India

\*\*\*

**Abstract** - In recent years there has been rapid development in technology which has made human life easier in several aspects. LPG is a need of every household but many accidents happen every year due to domestic gas leakage, so it should be used carefully. As safety and security is the most important factor we have proposed a LPG leakage detection and smart gas booking system. In our daily life, we don't know exactly the status of LPG gas completion which leads to inconvenience. Along with the leakage detection we also designed feature of sending message to user about the cylinder requirement. In this system MQ-2 is gas sensor used to sense the LPG leakage gas and has high sensitivity to LPG and also response to natural gas. It offers quick response time and accurate detection. The additional advantage of the system is that it continuously monitors the level of the LPG present in the cylinder using level sensors and reduces the work load of gas agency.

**Key Words:** Arduino Mega, Gas Sensor, LPG automatic Booking, LPG leakage, detection, Security, MQ-2 sensors, Android application

## 1. INTRODUCTION

Android is a linux primarily based operating system it's designed primarily for touch screen mobile devices like smart phones and tablet computers. The android is a specialized OS that supports sizable amount of sensible phone applications. The android is an open source OS implies that it's free and anybody can use it. The android has numerous apps available that can assist you managing your life one or different approach and it's out there low price in market at that reasons android is incredibly popular. The smart phones aren't only used for business purpose however they need innumerable uses and may be used as a Camera, Music player, Tablet PC, T.V, web browser etc. With the use of latest technologies, new software package and operative systems are needed. Gas Detectors are within the marketplace for a really very long time and are immensely used. The applications of android apps are often found in industrial plants, refineries, pharmaceutical producing, paper pulp mills, craft and ship-building facilities, sewer water treatment facilities, vehicles, indoor air quality testing and houses. Various standards have been implemented for the gas leakage detection system. There are many existing systems which can detect leakage using different gas sensors.

## 2. PROPOSED SOLUTION

- Automatic gas booking:

In LPG gas detection the leakage gas detection is done by gas sensor which is interfaced with Android application. Proposed system is made such that it detects the level of LPG gas in the cylinder. When the level of gas level reduces under certain level the notification is sent in the android application to user. The user verifies if he/she want to book the cylinder. The automatic gas booking and management of records is done by the android application on holder records. And thus user gets all the information about the delivery of gas cylinder.

- LPG Leakage detection:

In leakage detection module the leakage in pipe is detected using the MQ-2 sensor which is interfaced with the android application. User gets the notification when leakage is detected in pipe and respected actions can be taken.

## 3. NEED OF SYSTEM

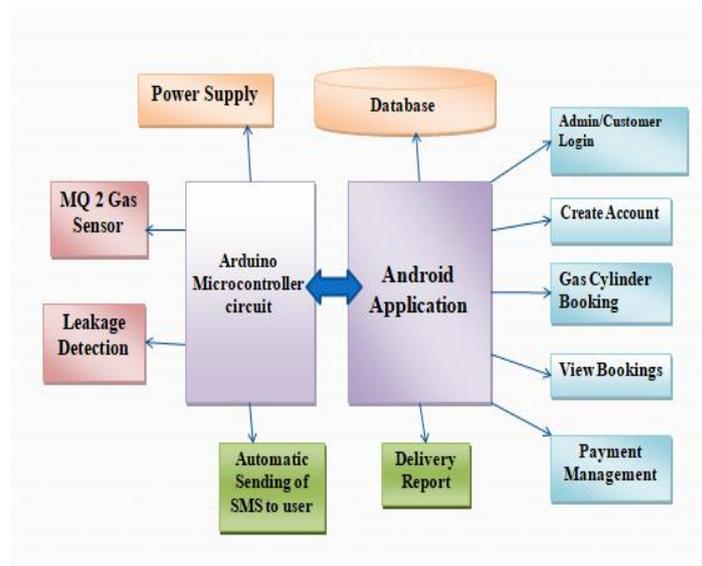
There are several existing systems which can discover leakage using completely different gas sensors. Developed systems have used arduino mega, MQ-2 gas device, and some alternative parts. Systems developed until date has either a gas detection module or automatic cylinder booking module. We've got developed a paradigm that has both the options that are of leakage detection and gas booking. The system detects the escape of the LPG using MQ-2 gas sensor and alerts the consumer regarding the gas escape by sending SMS. Once the system identifies that LPG concentration within the air reaches the specified level then it alert the consumer by sending SMS to registered mobile phone and blinks the light. It should additionally enable the service supplier to look at all such requests and to notify the users once their requests are met. The system should be cheap enough so it may be easily scaled and deployed at varied places.. Users don't need to enter any info manually as all the desired

info is stored. So by using this Application, user cultivates the method that is utilized to automatize many ways present under registering the service application by various users and making it terribly responsible and simply permitted. This will enable end costumers to apply for assistances without wasting their time. In India the availability of LPG through pipeline isn't possible because of shortage of LPG production. As technology being improved several gas agencies or distributors have implemented IVRS these days though because of daily busy schedule, customer finds very troublesome to book new cylinder, and also it's very dangerous once a LPG gas leakage occur in any domestic usage, industry or in the other applications. IVRS system was born from general complaint of consumers that landline phones of their distributors were busy or nobody answered the decision. With this method, a consumer will approach the gas agency by dialing a toll-free (or non-free) number and later can have to follow the interactive direction. Finally, the system can announce the customer number and also confirm the booking of cylinder by pressing one technologies. Therefore our proposal is to completely automatic the method of refill booking while not human Our system is additionally meant to assist consumers to upgrade their safety standards, act in accordance with statutory necessities on environmental commitment and most significantly the fundamental operate being prevented by accidents and defend life and property from disasters.

The primary objective of our project is to live the gas present in the cylinder once level of the cylinder reached below the fixed load, using the pervasive sensors. The gas distributor gets the order for a replacement cylinder and therefore the house owner (consumer) receives the message regarding a similar and the details info regarding the booking proceedings. And the secondary objective is to provide any malfunction in gas system in order to stop damage or explosion of LPG.

#### 4. SYSTEM ARCHITECTURE

To design a Automatic LPG gas booking and leakage detection system for use in Home and Industry. These monitoring system can be used to automatically LPG gas booking and Leakage detection. Here we can use the mechanical instrument like MQ 2 sensor for measuring the gas cylinder level. The gas level drops below certain threshold level. MQ-6/ MQ2 gas sensor is used in system, When the LPG leakage is detected by the sensor and information is sent to the user by notification on android application developed and simultaneously alerts.



#### 4.1 Modules

- DATABASE

The data are well classified to model relevant aspects of reality in a means that supports processes requiring this information.

- ADMIN

They will be managing the complete system. He responds to request created by the user. Maintains and updates the information in the database. Keeps the data updated.

- DEALERS

Dealer represents the gas company to a selected set of customers. They are the intermediate between the admin of the company and therefore the customers.

- CUSTOMERS

Customer views the information about the gas such as its availability and books gas cylinder.

- SERVERS

The server can store all the information updated by the admin. It will have the log in details of all the activities happening within the system users. The user will be directed to the home page if authentication is successful.

- CUSTOMER MODIFICATION MODULE

The admin will add new client by filling the personal details of customer the admin can even delete the customer account.

#### 4.2 Objective

- Detection of LPG gas level within the cylinder and sending the notification by SMS to user.
- Real time gas observation system.
- Automatically book the Gas cylinder.
- LPG leak is detected through the sensor and information is sent to the user by SMS.
- Users don't need to enter any info manually as all the specified information is stored.
- To offer security for home, hotels, industries, etc.

### 5. LITERATURE SURVEY

#### 5.1 Study of Existing System

| Paper Title and Author  | Method  | Merits  | Demerits  |
|---|---|---|---|
| International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS-2017) Smart Gas Cylinder : Leakage Alert and Automatic Booking | This system will monitor the quantity of gas level in the cylinder, when gas level reaches below the threshold limit of around 2kg it sends SMS to user by sending SMS on registered mobile number.   | System provides security by sensing leakage of gas.<br><br>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. | Inter-communication among users are not available.<br><br>Server may be crashed often                         |
| International Research Journal of Engineering and Technology (IRJET) "SMART LPG MONITORING & AUTOMATIC GAS BOOKING SYSTEM"                                  | A system continues monitors the leakage of LPG gas and alerts user. When temperature goes above threshold detects fire and takes necessary actions like opening window, turning on exhaust fan. Sending SMS to the user for the booking of cylinder is added. | Help customers to upgrade their safety from reputed Accidents.<br>Measure the gas present in the cylinder when weight of the cylinder is below the particular level.<br>Prevent damage or explosion of LPG.           | High implementation and maintenance cost<br>May be misused<br>May consume time                                |
| Automatic System For LPG Refill Booking And Leakage Detection, IJARIE-ISSN(O)-2395-4396   | Pervasive sensors and LPG leakage detection. MQ-6 is gas sensors.<br><br>Weight stand (load cell).  | Daily Order Placed Reports.<br>Daily Delivered of LPG Gas Reports.<br>Daily Cancelled Order Reports.  | We need to search the record. Cannot maintain the database. Need to keep tract franchise, dealers and owners. |

## 6. CONCLUSION

The proposed gas leakage detector is promising within the field of safety. The attempt whereas creating this paradigm has been to bring a revolution within the field of safety against the leak of harmful and toxic gases to minimize and thus nullify any major or minor hazard being caused due to them. Our system is reasoned to assist customers to upgrade their safety norms, act in consequently with minimum needs on environmental problems and largely the basic function being prevented by major disasters and protect life and property from reputed Accidents. The objective of our project is to measure the gas present within the cylinder once weight of the cylinder is below the actual level, this will be done using the load sensors. The gas distributor gets the order for a new cylinder and the house owner (consumer) receives the message regarding the status and the secondary objective is to provide any malfunction in gas coupling system so as to stop harm or explosion of LPG.

The future work would create it additional adaptable and additional responsive for any application it must be updated often. In future the system can be modified with the voice recognition system.

## REFERENCES

- [1] Gas Leakage Detection And Smart Alerting And Prediction Using Iot" Asmita Varma, Prabhakar S, Kayalvizhi Jayavel.
- [2] International Journal of Advanced Research In Computer Engineering & Technology (Ijarcet) Volume 5, Issue 11, November 2016 2653 "E-Gas Seva Using Smartphone" Mrs.A. Dyanaa, Assistant Professor, Department Of Information Technology, Rajalakshmi Engineering College.
- [3] "Smart Lpg Monitoring & Automatic Gas Booking System" Shashi Kumar<sup>1</sup>, Pranita Padole<sup>2</sup>, Shweta Salve<sup>3</sup>, Aditya Sachdev<sup>4</sup>, Prof. M.P. Wankhade<sup>5</sup>
- [4] "Automatic System For Lpg Refill Booking And Leakage Detection" Ijariie-Issn(O)-2395-4396.