

# Smart Lpg Gas Monitoring And Automatic Cylinder Reservation System

M.Anitha, A.Reethika Shree, R.Manjula devi

**Abstract:** Rapid technological progress has affected human life in a number of ways because of this fast growth in various fields, still there is a need to incorporate this skill so that we can change life easier for human beings. It is not possible to supply each and every home with LPG through Pipes in our country as construction of LPG is very small. Currently there is a Development LPG cylinder program reservation via IVRS or online that is greatest tough for the uneducated and busy schedulers to book the LPG cylinder beforehand. Next main issue facing users of LPG cylinder is "They are unaware of the status of completing LPG gas" which makes booking the cylinder much more time-consuming, which is mostly inconvenient. For this reason, most of the alphabets are unable to complete the booking, and usually, these phone line telephones are moreover not reachable because of the overcrowded calls or else telephones that are not functioning because of about procedural problems. The advises a program that is automate full LPG cylinder reservation technique without hominoid interference. The device endlessly monitors the heaviness of the cylinder and will automatically send notification to the approved LPG Manager once it exceeds the minimum threshold so that they perhaps distribute the LPG cylinder in step. In conjunction through the Automatic Cylinder Reservation, we have developed a safety measures for the user in which it continually tracks LPG gas leak [1] and warns consumer about it.

**Keywords :** Mode MCU, Load cell, HX711 Driver Board, LCD, MQ Gas Sensor.

## I. INTRODUCTION

There are about 30 crores of LPG handlers in the nation where the majority of the population is 40 percent. The gas leakage detection system has introduced many requirements. The gas leakage recognition system has incorporated the Several Requirements. The standing structures provide an alarm scheme [2] for detecting gas outflow in the household and marketable properties. The use of the planned scheme is to calculate the mass of the tube continuously, and the instant it ranges the lowest verge it will robotically send an SMS warning to the consumer along with an Official LPG representative therefore that they can act consequently. This machine was also designed for the detection of LPG gases like propane and butane. The acceptable butane level above which it is considered high is 600 ppm and creates a risk. cylinder weight at limit point is used for automatic booking of cylinder. The important purpose of this development is to track LPG outflow in order to sidestep major fire accidents and likewise to encourage care precautions where safety was an significant issue and automatic cylinder reservation without human intervention. This device uses a gas

indicator to track the LPG leakage and, by transmitting an SMS, will signal the smoke leakage to the user.

## II. MATERIALS USED

### A. NODE MCU

Node MCU (Node Micro Controller Unit) is an ecosystem built around a very inexpensive system-- (SoC), called the ESP8266, for open source software and hardware development. The ESP8266, developed and manufactured by Espressif Systems, provides all the main elements of modern computers: CPU, RAM, networking (Wi fi), and also a standard software and sdk

### B. MQ-2 GAS DETECTOR

MQ series of gas detectors use an electro-chemical sensor inside a simple radiator. SnO<sub>2</sub>, a weak electrically conductive material in clean air, is the gas-sensitive material used in the MQ-2 gas detector

### C. HX711 DRIVER BOARD

HX711 Load Cell Amplifier Module uses an integrated 128 internal programmable advance amplifier with 24 high-precision ADC converter chip hx711, designed for high-precision electronic scale and configuration, with 2 analog input channels. The HX711 communicates on two wire interfaces (Clock and Data).

### D. LOAD CELL

Load cell is characterized as a "weight measuring unit necessary for displaying heaviness in digits on an electronic scale." Strain-gage load cells convert the load acting on them into electrical signals. So the measurement is carried out using very limited patterns of resistor recognized strain gages-thin, elastic circuit boards effectively.

### E. LCD Display

Liquid Crystal Display stands for LCD. Through specifically eliminating the use of the Cathode Ray Tube they have become very popular with industry. CRT consumes more power than LCD, is heavier and larger.

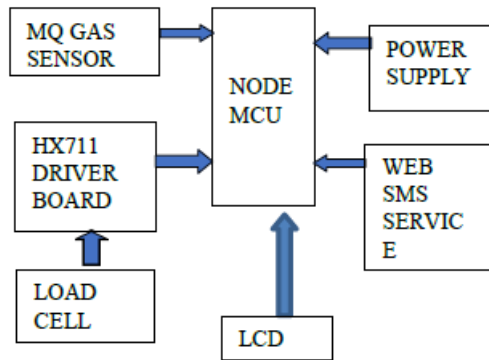
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III. PROPOSED SYSTEM



3. Block diagram of proposed system

3.1 The Circuit connection of our project

3. Block diagram of proposed system

All advanced technology’s working process are focused on microcontroller .In our methodology Arduino uno perform as conditional change . It performs two set of actions depends on the situation .It activates the signal and display the message as “GAS LEAK “ in LCD display when any gas leak[3 ] .Another action is LCD will display there is “ NO GAS LEAK” .The basic Arduino uno microcontroller needs the power supply ranging 7 to 12volts which is build by using various elements like rectifier, step-down transformer regulator, these all are readily accessible as adapters these existences .The Load Cell is a transducer .it which converts the force into an electrical signal, that is used to calculate the weight and alert the consumer about the completion of LPG. The gas detector[5 ]is used to detect the outflow of fume so that the consumer be aware of leakage in the gas. LCD is used to demonstrate the results output in various sensor values. Here we are using GSM Module (web SMS service ) to aware the handler about the completion of LPG gas and leakage[4 ]it operates at either 800MHZ or 1800MHZ frequency band . The main motive of the outline is to constantly calculate the mass of the cylinder. Once it reaches its cutoff level then it.



3.1 The Circuit connection of our project

IV. RESULT

In smart LPG gas monitoring and programmed cylinder reservation system we have used Mode MCU, Load cell, HX711 Driver Board, LCD, MQ Gas Sensor[6] to endlessly monitor the heaviness of the cylinder and that will automatically send notification to the gas company agent when it exceeds the minimum threshold value[7 ],this helps in delivering cylinder in time. We have also included a safety measure for the user which tracts the gas leakage too.

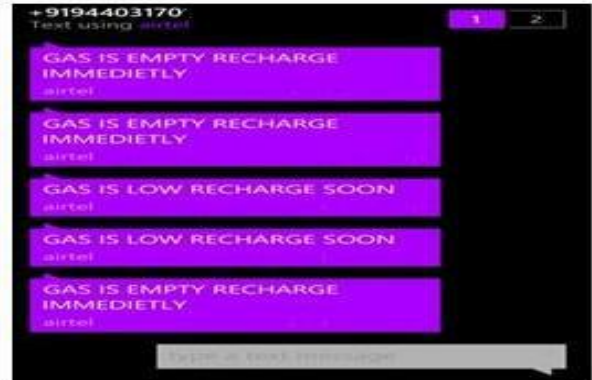


Fig 4. Example Of Sms Received

The above figure signifies message to the user’s mobile phone which is show by GSM module for various kind of input reaction .[8 ] This message “GAS IS LOW RECHARGE SOON” is sent to the user when the LPG gas touches to least edge level ,So the user arises to know when to reserve the cylinder to avoid suspension in delivering cylinder. The message “GAS IS EMPTY RECHARGE IMMEDIETLY” is sent when the weight of the gas is fully empty.

V. CONCLUSION

As we shortened the problems faced by consumers of LPG gas, we found some solution to meet the few requirements, as we finished our structure fully mechanize the refill reservation process[9 ] without any human intervention. our program is also designed to help consumers to upgrade their safety standards, comply with minimum specifications on environmental issues[10 ] and, most of all, avoid major disaster and protect life and property from responsible incidents.[11]

FUTURE SCOPE

1. GSM-based LPG mass and LPG leakage finding system can include voice feedback system. Consumer will obtain warning through pre-recorded audio message such as gas mass Cylinder is ABC kg.

2. Using Ethernet in place Bluetooth module, this monitoring system can be further improved to work from anywhere, that provisions the other present application. Computer can be advanced in industrial purposes to finding multiple concentrations of gases and fire. We can also be used as a pressure sensor instead of a load cell sensor that finds the quantity of fume in the cylinder and also finding gas compression in the cylinder tubing, warning the owner through call and nursing using Android technology from any isolated area.

3. Through installing a servo motor and DC motor, this system can be further developed through switching on the exhaust fans and opening the windows to ensure the safety when detecting leakage.

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