

# Gas Leakage Detector with GSM

Pranali Nimbalkar<sup>1</sup> Akshata Tadge<sup>2</sup>

<sup>1,2</sup>Student

<sup>1,2</sup>Department of Information & Technology

<sup>1,2</sup>B. K. Birla College, Kalyan, India

**Abstract**— Gas leakages become serious problem in household and other areas where household gas is handled and used. Gas leakage is Hazardous problem it leads to various accidents financial loss as well as health injuries. The aim of this work is to designing a system that detects gas leakage and alert these through message and status display besides turning off the gas supply valve as a primary safety measure. This work will minimize the occasioned losses by explosions due to gas leakages and improve safety of life.

**Keywords:** Liquid Petroleum Gas, Gas Sensor, Leakage

## I. INTRODUCTION

Arduino based LPG leakage detector with SMS indication using GSM modem project detects the LPG gas run. If the LPG gas level crosses threshold level then it sends SMS to the user using GSM modem. Arduino has inbuilt Analog to Digital converter so we need not to connect any external ADC IC. We have connected LPG sensor directly to the Analog pins of the Arduino Uno board.

This project really helpful when there is nobody in house which has LPG gas cylinder in it. Due to some negligence there may be LPG gas leak which can cause measure accidents. GSM based Arduino LPG detector can help by sending an alert SMS to the owner.

## II. DESCRIPTION

As we know that various Arduino based projects for Engineering student helps to avoid various accidents. The project is one of them. Following are the components of this project:

### A. Arduino:

Important and most useful part of the system is Arduino Uno. All the output devices are controlled by Arduino. At the same times it reads and manipulates the input from sensor. LCD display receives various messages from Arduino.

### B. LPG Sensor:

This sensor detects the LPG gas molecules in the air. And gives respective voltage output to the Arduino.

### C. Modem:

User receives SMS indication with the help of GSM modem connected to the Arduino Uno board.

### D. LCD Display:

This can be used to show various informative messages to the user like sending SMS.

### E. Relay:

We have used 12volt relay in this system. Arduino cannot turn on a 12volt relay so we have used a relay driver circuit to turn on this relay. We can control any AC or DC device with the help of this relay.

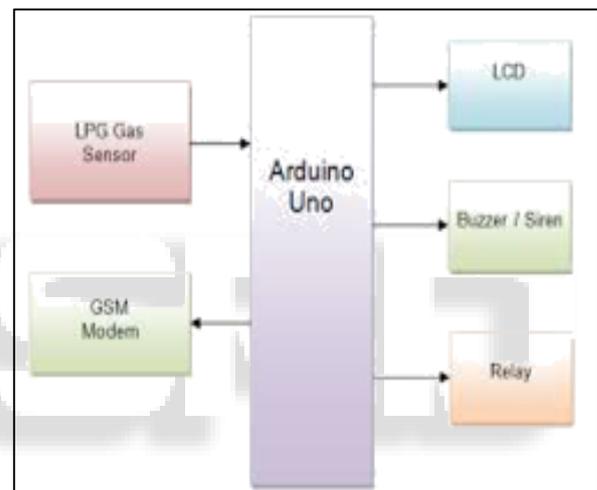
## III. ADVANTAGES

Arduino Uno based LPG detector system gives remote indication to the user about LPG leakage with the help of SMS indication.

## IV. DISADVANTAGE

- Continuous power supply will be required.
- Distance from the leaking site should be very small.
- Suitable for indoor use only.

## V. BLOCK DIAGRAM



## VI. WORKING OF THE CIRCUIT

The functioning of the circuit when the device is powered on. First microcontroller initializes LCD display and starts reading the Analog voltage from MQ-5 sensor. The MQ-5 sensor has four pins i.e. two pins are used for interfacing with development board and other two for VCC ground. Out of two interfacing pins one is Analog pin and other is digital pin. Analog output pin is used for detecting concentration of leakage and interfaced with AO Analog input pin of the Arduino board. The 16x2 LCD display is used to display the value of gas concentration. It is connected to Arduino board by connecting its data pins to pins 4 to 7 of the Arduino board. RS and E pins are connected to D2 and D3 pins of Arduino board. The RW pin of LCD is connected to the ground. The sensor value is compared with a calibrated threshold and the sensor value exceeds that value, the system gets activated and sends SMS.

## VII. DIAGRAM DESCRIPTION

Arduino primarily based LPG leakage detector with SMS indication using GSM modem project detects the LPG gas leakage. If the LPG gas level crosses threshold level then it sends SMS to the user using GSM modem. Arduino has in-

built Analog to digital converter so we need not to connect any external IC. We have connected LPG device directly to the Analog input pins of the Arduino Uno board.

This project proves really helpful in cases when there is nobody in house which has LPG gas cylinder in it. Due to some negligence there may be LPG gas leak which might cause measure accidents. GSM based mostly Arduino LPG detector can avoid such things by sending AN alert SMS to the owner.

#### VIII. FUTURE SCOPE

- We can add GPS modem to this system.
- We can alert through buzzer.
- Trigger LED and alert people to avoid accidents.
- Automatic closure of gas source using solenoid controller.

#### IX. PURPOSE

Basic purpose behind choosing this project is to get more and more information about sensitive components and get know how they actually works. This is our first project. Before choosing this project, we met some people to get information about components and its availability. Later On we found some shops from where we got all the materials and project components. We purchased these components from Lamington Road (CST). Then we started working on project on the other hand we started researching on the project.

#### X. CONCLUSION

A device that may observe such leakages and shuts off the gas offer to the burner from the cylinder was designed and developed. It was discovered that when the LPG device was tested by inserting it at totally different distances from the gas supply, the interval of the LPG system cut as the distance from the gas source increased and vice versa. The gas sensor's varied temperature while the reference voltage remained constant over time. This device can be deployed anywhere cooking place or in kitchen.

This system will ensure that explosions resulting from leakages of cooking gas from cylinders are averted.

#### REFERENCES

- [1] <https://www.irjet.net/archives/V5/i4/IRJET-V5I4470.pdf>
- [2] <https://www.ijtra.com>
- [3] MATJOURNALS2016
- [4] <https://www.researchtrend.net>
- [5] <https://www.ijitee.org>
- [6] <https://www.projectsof8051.com>