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Gas Leakage Detection with Automatic Booking & Valve Bypass

Vinayak V. Mane[1], Shreyas S.Madhekar[2], Anand S.Kulkarni[3], Prof. Vishal Katekar[4]

[1,2,3] Students, Department of Electronics & Telecommunication Engineering, Dr D Y Patil School of Engineering & Technology, Charoli (BK), via Lohegaon, Pune-411015, Maharashtra, INDIA
[4]Professor, Department of Electronics & Telecommunication Engineering, Dr D Y Patil School of Engineering & Technology, Charoli (BK), via Lohegaon, Pune-411015, Maharashtra, INDIA

Abstract- *A Cost effective, automatic liquefied petroleum gas (LPG) booking, leakage detection and real time gas leakage detection system. In this system, the LPG leakage is detected through the sensor and information is sent to the user by short message service (SMS) and simultaneously alerts the customer using GSM module. If these gasses exceed normal level then alarm is generated immediately. In this system MQ-6 gas sensor used to sense poisonous gas and has high sensitivity to LPG and also response to natural gas. This work modifies the existing safety model installed in industries. 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 weight sensor (load cell).*

Key Words: **LPG automatic Booking, LPG leakage detection, Real Time Information, GSM (Global System for mobile communications).**

1. INTRODUCTION

In India the supply of LPG through pipelines is not possible due to shortage of LPG production. As technology being improved many gas agencies or distributors have implemented IVRS these days although due to daily busy schedules, customer finds very difficult to book new cylinder, and also it is very dangerous when a LPG gas leakage occurs in any domes-tic usage, chemical industry or in any other applications. This paper provides automatic booking of LPG cylinder and to overcome the problem of LPG leakage. IVRS system was borne from general complaints of consumers that landline phones of their distributors were either busy or no one answered the call promptly. With this system, a consumer can approach the gas agency by dialing a toll-free (or non-free) number and later will have to follow the interactive directions. Finally, the system will announce the customer number and confirms the customer number and also confirms the refill of cylinder by pressing 1. Here with most people who are illiterate find it difficult in handling call or unable to use the higher end technology. So our proposal is to completely automate the process of refill booking without human intervention that accordingly will help consumer against foul play.

Our system is also intended to help consumers to upgrade their safety standards, act in accordance with statutory requirements on environmental commitments and most importantly the basic function being prevented by accidents and protect life and property from disasters.

The primary objective of our project is to measure the gas present in the cylinder when weight of the cylinder reached below the fixed load, using the pervasive sensors. The gas retailer gets the order for a new cylinder and the house owner (consumer) receives the message about the same and the details about the booking proceedings. The secondary objective is to provide any malfunction in gas system in order to prevent damage or explosion of LPG. And third objective is if gas detection sensor MQ-6 detects some gas leakage then it will automatically turn off the valve of cylinder & it will trigger the alarm as well as the exhaust fan will be turned on to clear the gas.

1.1 Current System

GSM based gas leakage detection system in year 2014. International Journal of Technical Research and Applications by- Ashish Shrivastava, Ratnesh Prabhaker, Rajeev Kumar and Rahul Verma. The paper focus on Real time gas monitoring system, LPG Gas detection and prevantation of leakage gas in year 2014. International Journal for Research in Applied Science & Engineering Technology. LPG Gas Weight and Leakage Detection System device will help to book the new cylinder by using GSM module. We came to know that it has use GSM & leakage detection.

LPG gas weight and leakage detection system using GSM has applicable in home, restaurants, hotels as well as industries. This project is used to continuously monitor the weight of the LPG gas cylinder. Many times we observes that in our home whenever LPG gas cylinder is empty, then we give request for new cylinder at the office of LPG gas provider. Many times it happens that because of shortage of LPG gas cylinder, there is delay in providing gas cylinder. Main reason behind this is delay in booking /informing to the gas provider. The use of the LPG gas is in the home or restaurant for the cooking purpose and it also useful in industries for the cutting or welding purpose. In these place if the LPG gas in the gas cutters are empty at that time request for new gas cylinder are sent to the storage departments and if there is shortage of gas cylinders in the storage department then there is delay in providing LPG gas cylinder. To avoid all such situations, we are implementing a project which is "LPG Gas Weight and Leakage Detection System Using GSM". When our 20% gas is remaining then a lower priority MSG is send to the owner of the gas cylinder and when the 5% gas is remaining then the higher priority MSG is send to the owner of the gas cylinder.

1.2 Objectives

1. Booking gas process is automatically.

2. We can Detect Gas leakage instantly.

3. LPG leakage is detected through the sensor and information is sent to the user by SMS and also automatically turned off the nobe.

4. To real time gas monitoring system.

5. To provide security for home, hotels, industries, etc.

2. SYSTEM DEVELOPMENT

System development is the process of defining ,designing, testing, and implementing a new software application or program. It could include the internal development of system. It is also referred to as software development, software engineering or application development. System development in our project is the process in which the internal description of every component is given along with schematic representation i.e. block diagram along with its working. For example in block diagram the controller is shown which is interfaced with the various sensor and the display unit i.e.16*2 rows and columns. In this, each component along with its features and technical specifications is depicted.

3. BLOCK DIAGRAM

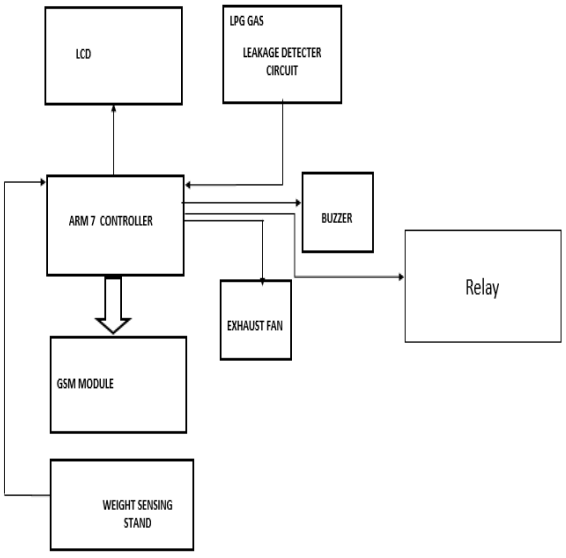

Fig -1: Block Diagram

3.1 Block Diagram Description

Microcontroller:

We are using LPC2138 as ARM controller, which is heart of our project.

Gas sensor:

We are use MQ-6 sensor for detection leakage of gas.

Load cell:

We are use load cell for weight sense of gas cylinder.

Buzzer:

Buzzers are used as cheap, dependable device to generate an alarm tone in electronic circuits.

GSM:

We can send the information through GSM system.

LCD DISPLAY:

We are use LCD display for displaying leakage of gas and booking status.

EXHAUST FAN:

We are use exhaust fan for cleaning the leakage gas area.

RELAY:
Here we use relay as a switch. Which is used to turned off the gas nobe automatically when gas is leaked .

4. CONCLUSION

In our country we have more number of people who don't know how to work with LPG gas this system will provide them safety to their lives. Also by using this system we will be able to control the damage if there any.

REFERENCES

[1] Digambar Surse, Swati Talekar, Tejal Suryawanshi, Prof. M. R. Gaikar. "Smart Gas Booking System & Leakage Detection", International Journal of Innovative Research in Computer and Communication Engineering (An ISO 3297: 2007 Certified Organization) Vol. 4, Issue 3, March 2016.

[2] Ashish Shrivastava, Ratnesh Prabhaker, Rajeev Kumar and Rahul Verma."GSM based gas leakage detection system", International Journal of Technical Research and Applications e-ISSN: 2320-8163. Volume 1, Issue 2 (may-june 2013).

[3] Mr.Sameer Jagtap, Prajkta Bhosale, Priyanka Zanzane, Jyoti Ghogare."LPG Gas Weight and leakage detection system using GSM", International Journal for Research in Applied Science & Engineering Technology (IJRASET) Volume 4 Issue III, March 2016.