A SURVEY ON LPG LEAKAGE DETECTION AND ALERT NOTIFICATION USING IOT

Mr.Selvakumar. M

Professor, Department of Computer Science and Engineering

Coimbatore Institute of Engineering and Technology, Coimbatore, Tamil Nadu, India

Ashok J, Abinesh S, Agil M, Christ Teran Dhas C

Students**,** Department of Computer Science and Engineering

Coimbatore Institute of Engineering and Technology, Coimbatore, Tamil Nadu, India

Abstract —Accidental explosions in the home are not uncommon which may be associated with gas leakage. In the modern world, human adopted to LPG (Liquid Petroleum Gas) supply system for cooking. During the usage of the LPG system, number of occurence that will happen around us that may cause death of human beings. To prevent from gas leakage incident by knowingly or unknowingly, this paper gives the details of existing methods to prevent the reason for causing damage due to leakage of LPG cylinders in particular areas like kitchen.

Key words: LPG, Leakage, Sensor, Stepper motor, Aleart.

1. INTRODUCTION

Liquefied Petroleum Gas (LPG) is widely used in rural and urban areas to take place in conventional fuels because of more economy and pollution free. Sometime these harmless looking cylinders can be so dangerous. LPG cylinders can cause leakage which leads severe damage to human health and property. Due to lack of proper maintenance and safety provision there could also be incidence of gas explosions and fire hazards with mortality of human lives. The number of death happens from imperfect rubber tubing, faulty regulator fitting and poor handling of gas tools.The smallest spark can ignite the fire and cause an accident of gas explosion. This paper is to presents a LPG leakage detection and alert notification to avoid from fire accidents and to provide house safety.

2. COMPARISON STUDY

Survey 1: (Luay Fraiwan, et al., (2011)) proposed "**Wireless Home Safety Gas Leakage Detection System**".This method has the design built with detection and transmission modules for gas concentration in household devices like Gas and heaters. From this paper, we learn that depending on the sensor values showing the variation in the gas concentration measurements and audiovisual alarms were activated.

Survey 2: (Rahul Verma and et al., (2013)) proposed "**GSM Based Gas Leakage Detection System**". This system continuously monitor leakage level of LPG gas by using MQ6 sensor. If the gas level increase beyond threshold value then this system turn on the alarm, sends SMS to the user by GSM module and turn of the main power supply.

Survey 3: (R.Naresh Naik, et al., (2016)) proposed "**Arduino Based LPG gas Monitoring and Automatic Cylinder Booking with Alert System**". This system continuously monitor LPG gas leakage by MQ4 sensor and room temperature by LM-35 sensor. If the sensor value increase beyond threshold value the system alert user by sending SMS by GSM module , turn on the alarm, and open the room window and door by DC motor.In addition, load cell sensor monitor weight of the cylinder. If the weight is less than specific value the system send booking SMS to the LPG agent.

Survey 4: (Kumar Keshamoni, et al., 2017)) proposed "**Smart Gas Leakage Monitoring Booking and Gas Leakage Detector over IoT**". This System identifies the emptiness of GAS container by creating awareness to the user, with the continuous weight measurement of the container integrated with the principle of piezo electric sensor which is interfaced with a microcontroller. The system is designed with an MQ-2(gas sensor) and LM-35 (temperature sensor), which will detect the surrounding environment for any chance of error.

Survey 5: (Shruthi Unnikrishnan, et al., (2017)) proposed "**LPG Monitoring and Leakage Detection system**" focuses on the issue of the monitoring the gas left out and leakage detection and alert the preferred user about the leakage of the gas by alerting with the buzzer and appropriate message. We have come to know how the system makes sure that the user let know the intended amount of LPG remaining in the gas. How the user can be notified about the gas leakage so that he can take preventive measures to avoid the explosion. The user gets alert buzzer whenever a small LPG gas is brought near the MQ-6 gas sensor.

Survey 6: (Ajay Kumar, et al., (2016)) proposed "**Designing and Implementation of Smart LPG Trolley with Home Safety**". This method is defined for LPG leakage detection, and then alerting the user through a message by switching off the main power supply and turn off the cylinder Regulator.

Survey 7: (Arijit Banik, et al., (2017)) proposed "**Microcontroller based low cost gas leakage detector with SMS alert**" that can automatically detect and stop gas leakages in those permeable areas. Leakage detection is done with a gas sensor. The system then alerts the customer by sending an SMS to the specified mobilephone.

Survey 8: (Shashi Kumar, et al., (2018)) proposed "**Smart LPG Monitoring and Automatic Gas Booking System**". This system focused on the gas leakout, temperator and continuous weight measurement of container by load cell sensor. The system designed with an MQ2 gas sensor, LM-35 temperature sensor, which will monitor the environment for any change of error. Blutooth module is used to connect android device and the Microcontroller.

3. OVERVIEW

All existing system mainly provides the solution for the leakage detection and concerned with monitoring of the gas left out so that it prevent the user from the hazardous situations by finding the LPG level in gas container and turn off the knob after sensing the LPG gas smell using DC motor, using sensor and microcontroller later buzzer can be alarmed and exhaust fan can be made on, and notify using SMS by switching on exhaust fan.

4. CONCLUSION

In this paper we discussed the different methods used for identifying the leakages and drawbacks of the proposed system that provide precautions in the form of alert signals or indications whenever there is a leakage. Also, we have proposed a method that can automatically close the valve of the gas regulator using Stepper Motor and update sensor data in android app using wifi module.

5. REFERENCES

1) Kumar Keshamoni and Sabbani Hemanth,"Smart Gas Level Monitoring, Booking & Gas Leakage Detector over IoT", 2017 IEEE 7th International Advance Computing Conference, 2017.

2) Shruthi Unnikrishnan,Mohammed Razil, Joshua Benny, Shelvin Varghese, "LPG Monitoring and Leakage Detection System", Presented at the IEEE WiSPNET 2017 conference, 2017.

3) Ajay Kumar and Mukesh Kumar and Balwinder Singh, "Designing and Implementation of Smart LPG Trolley with Home Safety", presented at 2nd International Conference on Next Generation Computing Technologies, 2016.

4) Arijit Banik, Bodhayan Aich and Suman Ghosh, "Micro-controller Based Low Cost Gas Leakage Detector with SMS Alert", presented at the IEEE Conference, 2017.

5) Luay Fraiwan, Khaldon L weesy, Aya Bani-Salma, Nour Mani, "A Wireless Home Safety Gas Leakage Detection System", Presented at the IEEE Conference, 2011.

6) Shashi kumar, Pranita Padole, Shweta Salve, Aditya Sachdev,"Smart LPG Monitoring & Awutomatic Gas Booking System", Presented at the IRJET Conference, 2018.

7) R.NareshNaik, P.Siva Nagendra Reddy ,S.NandaKishore and K.Tharun Kumar Reddy, "Arduino Based LPG gas Monitoring & Automatic Cylinder booking with Alert System", Presented at the IOSR-JECE,2016.

8) Abhishek Kumar Sahu, P Bhaskar, Rahul Kumar Sharma, SK Inzamam Ul Haque, Sudhir Kumar and Richa Shrivastava, "Gas Monitoring Using GSM",Presented at the IJRASET, 2017.