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Automatic LPG Gas Booking and Detection System

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ABSTRACT: NOW a day's safety & time are major issues .we deal with this issues in our project. We all know the gas booking is time consuming task and also there can be problem of gas leakage . Most of the accident occur because of gas leakage. In these project we can identify the gas leakage, controlling it and also without any human interface gas booking is done.

KEYWORDS: safety, time, gas leakage, gas detection, gas booking.

I. INTRODUCTION

Now a day's every one want a facility which reduce their efforts, time and provide a way to do their work more easily. For cooking food we all uses LPG gas. It produced in 1910 by 'Dr. Walter Snelling'. LPG is a mixture of commercial propane and commercial butane having saturated as well as unsaturated hydrocarbons. LPG having versatile nature so its demand raise day by day. It mostly uses in domestic fuel, industrial fuel and automobile fuel.

In INDIA gas distributer uses IVRS, SMS or ONLINE booking for LPG which are time consuming methods in fast running life. We find uneducated people are not able to do these task and busy schedule people they haven't sufficient time to do all the activity. Also safety plays the important role. As we all know that many accident happens due to gas leakage.

So to avoid these difficulties we develop project. We design a project by considering a safety issues and also provide Easy way for LPG booking. In the project MQ-6 gas sensor is use to sense the leakage gas. After that leakage motor will close the regulator and through GSM message is send to the user.

II. EXITING SYSTEM

- A. IVRS
- B. SMS
- C. ONLINE BOOKING

IVRS was introduced due to the user's complaints regarding to the landline phones of the distributer's .Because they are not giving response to the users call or the call line is busy and also in the IVRS user required to follow the instructions according to their format which is very confusing process.

ONLINE BOOKING are the little time consuming process And it required some knowledge about the messaging and internet.All these task are difficult to the uneducated peoples and time consuming for busy schedule peoples. Mostly users are not able to guess the level of LPG gas in cylinder. So booking was not done within time and user required to wait for a new cylinder which creates a difficulties to the user.

For SMS required std code and distributer mobile no. SMS < IOC > to the same mobile number where booking is made .So IVRS, ONLINE BOOKING, SMS are time consuming processes for gas booking.

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III. PROPOSED SYSTEM

- A. LPG gas detection
- B. Auto gas booking

In LPG gas detection of leakage gas is done by gas sensor which is interfaced with ARM. When gas is detected motor will be turn on and it immediately turn off the gas regulator at the same time we inform the user about the gas leakage by sending the SMS, turning on the buzzer and also message displaying on LCD.

In auto gas booking we continuously measure the amount of gas which is present in the cylinder. When gas level goes below the set level then message will be send to the gas agency through GSM and confirmation message received by the user from gas agency. So user get cylinder within time.

IV. ALGORITHM

1. Load cell i.e pressure sensor is used to check the weight of the cylinder and that weight I displayed on lcd
2. If the cylinder weight is below the pre-defined threshold value then automatically send sms to the pre-defined number i.e to gas agency
3. The threshold value get fix into the Uc programming.
4. GSM modem is used to send and receive the message.
5. Message will be sent from user to gas refill officer and notification will get from the gas refill officer to user.
6. When gas leak is detected by the LPG sensor.
7. LPG sensor will send the signal to the Uc and buzzer will turn on through Uc and also motor get started to turn off the regulator switch.
8. LCD is used to display the LPG gas leak status i.e “LPG gas detected” display on LCD when gas leaked.

V. HARDWEAR DISCRIPTION

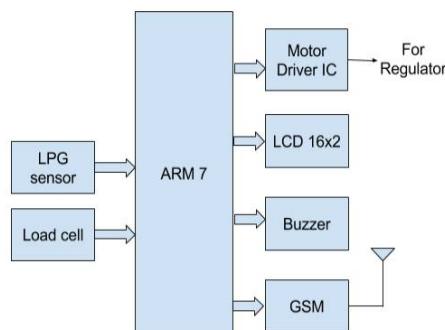


Fig. 1 Block dia. Of propose system

- A. **ARM CONTROLLER:** ARM7 is one of the widely used microcontroller family in embedded system application. ARM processors require fewer transistors than typical processors in average computers. LPC2148 microcontroller is selected for this system. The main task of microcontroller is to execute all the processes being involved. Low power consumption and tiny size are the key features to select the microcontroller.
- B. **LPG SENSOR:** MQ-6 sensor is a simple-to-use liquefied petroleum gas (LPG) sensor, suitable for sensing LPG concentrations in the air. The MQ-6 can detect gas concentrations anywhere from 200 to 10000 ppm. MQ-6 semiconductor sensor is Combustible Gas Sensitive. The MQ-6 gas sensor is made up of SnO₂ which has lower conductivity in clean air. Voltage variation secured which is 0.18volt in clean air and 2.3volt when leakage is detected. Long life and low cost are the key feature of MQ-6 sensor.



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- C. **BUZZER:** Buzzer is used to indicate that gas leakage has occurred and also indicate that whole cylinder is empty.
- D. **MOTOR DRIVER IC:** Motor drive IC is used to drive the motor in bidirectional way. Here we use L293D IC. When leakage gas is sensed by the gas sensor then drive IC activates the motor to turn off the regulator.
- E. **LOADCELL:** A load cell is a transducer that is used to convert a force into electrical signal. Mostly cantilever or bending type load cell is used. Here we measure a weight of the cylinder by placing the cylinder on load cell arrangement. Actually Load cell consists of four strain gauges in a Wheatstone bridge configuration. Firstly by using mechanical arrangement the force being sensed deforms a strain gauge and then strain gauge measures the deformation as an electrical signal, because the strain changes the effective electrical resistance of the wire. Out of the bridge is due to the applied pressure or force of the cylinder.
- F. **GSM:** Global system for mobile communication is a device which modulates and demodulates signals as required to meet the communication requirements. Here we are continuously checking the weight of the cylinder and leakage gas. If weight goes below the set value and leakage is detected then through GSM message will be sent to the gas agency and the user respectively.
- G. **LCD DISPLAY:** Here we use a 16x2 LCD display for displaying the status of the cylinder i.e. leakage of gas if occurred and weight of the cylinder continuously.

VI. RESULT

Gas leakage detected by the gas sensor to control these leakage motor get started and turn off gas regulator. Load cell is continuously measuring weight of the gas cylinder. When gas level goes below the set level, message is sent to the gas agency for booking purpose.



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Fig. 2 displaying result on LCD

VII. CONCLUSION

By implementing this project we help the people to save their time by providing automatic gas booking . It can provides the security to people by sensing the leakage of gas. It is very useful for domestic purpose as well as for the industrial purpose. The programming used for this project is very simple and can be easily understood as we have used C language. Ease of use of this system makes the project user friendly.

REFERENCES

1. A CheSoh, M K Hassan, and A J Ishak “Vehicle Gas Leakage Detector”.
2. ATMega 16 Datasheet; www.atmel.com
3. D M Han and J H Lim (2010), “Smart Home Energy Management System Using IEEE 802.15.4 and Zigbee”, IEEE Trans. on Consumer Electronics, Vol. 56, No. 3, pp. 1403-1410.
4. Fraiwan L, Lweesy K, Bani-Salma, A Mani N (2011), “A Wireless Home Safety Gas Leakage Detection System”, Proc. of 1st Middle East, Conference on Biomedical Engineering, pp.11-14.
5. P MinakshiVidya, S A Binaya , G GeethaRajeshwari , N Guna , “Automatic LPG leakage detection and Hazard prevention for home security”, proceeding of 5th National conference on VLSI , Embedded and communication & Networks on April 7, 2014.
6. Yogesh A C, AshwiniP ,Shruti B P, “Automated unified system for LPG refill booking and leakage detection : A pervasive approach” , International journal of Advanced Technology and Engineering Research, May 2013.
7. S Shyamaladevi , V G Rajaramya, P Rajshekhar, P Sebastin Ashok, “ARM 7 based automated high performance system for LPG refill booking & Leakage detection”, International journal of Engineering research and science &Technology, volume 3 , No 2 , May 2014.
8. Rasika S Ransing ,Manita Rajput, “Smart home for elderly care, based on wireless sensor network” , 2015 International conference on Nascent Technologies in the Engineering field (ICNET-2015).
9. Miss Snehal Kumar Patil, Prof Mrs A S Patil, “Automated LPG billing and security system using wireless sensor Networks” ,International journal of Engineering sciences & Research Technology, June 2014 .
10. RakeshM ,ShivrajDagadi , “Implementation of wireless gas leakage detecting system”, 2012sixth international conference on sensing technology(ICST).