International Journal of Interdisciplinary Innovative Research &Development (IJIIRD)
ISSN: 2456-236X
Vol. **05** Special Issue **01** | **2020**

Smart LPG Analyzer

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ABSTRACT

There is a rapid development in technology which influencing the human life in several aspects thanks to rapid development in several fields but we still got to adopt that technology such that we can make human life more easy to live. In our Country it's impossible to provide LPG through Pipes to every and each home as production of LPG is just too short. The primary objects of this project are to supply a completely unique means for safely detecting any malfunction of a pressurized facility so as to guard accumulation of combustible gases so that damage and explosion due to such an accumulation of gases is prevented. Another objective of this invention is to supply a completely unique safety means for detecting the leakage of LPG gas into the world of an appliance when the appliance is suddenly shut down due to wind and any other reason. Yet another object of this invention is to supply a completely unique gas detection and monitoring system for boats or the likes of which are normally dependent upon a stored supply of pressurized gas.

Keywords: ***-LPG, Leakage Detection, MIT App Inventor.***

1. INTRODUCTION

There are approximately 30crore LPG users within the country during which mostly 40% of the population.[1] The Several standards have been implemented for the gas leakage detection system. The existing systems provides an alarm system which is mainly meant to detect an Gas leakage in the house and commercial premises This system helps you to protect your safety standards in day to day life, compulsory requirements on environmental commitments, most vital basic function being prevent accidents and protect day to day life.

The proposed system is used to take an automatic control action after the detection of 0.001% LPG leakage by MQ5 sensor, detecting the level of LPG with the help of measuring system and booking a replacement cylinder from mobile app automatically. The mobile app will be for android and IOS. It requires Internet connection to send information to mobile phone. Because there's poor connectivity in India But Leakage stop System doesn't require internet to figure.

2. LITERATURE SURVEY

There is a rapid development in technology which influencing the human life in several aspects thanks to rapid development in several fields but we still got to adopt that technology such that we can make human life more easier to live. Safety plays a serious role in today's world and it's necessary that good safety systems are to be implemented in places of education and work. A cost-effective, p automatic Liquefied Petroleum Gas (LPG) Programmed Liquefied Petroleum Gas (LPG) booking, spillage location and continuous gas checking framework is proposed during this paper. This work modifies the existing safety model used in homes. The main objective of the work is design in microcontroller detecting and alerting system. [2] The gases like LPG and propane were sensed and displayed each and every second in the LCD display. When it exceed the normal level then an alert message (SMS) issent to the authorized person. The another important feature is automatic cylinder booking by noticing the present expenditure of LPG gas in our lifestyle. These projects alert the user by sending message to mobile through SMS in three conditions. [3] When the LPG gas exceed its peak value. When the temperature exceed more than room temperature. These project gives alert message by buzzing the buzzer and trough SMS to the house holders.

3. WORKING OF THE SYSTEM

3.1 Gas level Indicator

During this feature, an electronic gas level indicator is made , which can sense the extent of gas left in cylinder by measuring its weight and displays on the mobile application. User are going to be ready to set the min value of level of gas, when reached it'll send a push notification on user's smartphone to book gas or can be automatically booked.

3.2 Automatic knob controller

In this feature, the timer are often setup a bit like an alarm within the mobile app which automatically close up the gas knob because the timer attains the set value. Also by using the mobile Bluetooth app we will switch OFF and switch ON the gas knob. If gas is detected by the MQ5 sensor then also the knob of cylinder automatically closed

3.3 Protection

When leakage will occur it'll be sensed by gas sensor which can give signal to microcontroller. After that it'll give signal to a servomotor connected to the valve handle of regulator of cylinder. Servo will rotate the knob of regulator and can close up the regulator handle thus cutting the gas supply preventing the leakage of gas. The microcontroller will also give a signal to relays/ solenoids that are attached to main MCB of house.. A battery powered exhaust fan will also get powered on thus helping to decrease the concentration of gas within the particular room. When leakage will occur then at that point power supply gets automatically close, and for throwing gas outside window will open and also fan will get activate and buzzer start beeping for alerting people this may also send and alert notification to user on its mobile application.

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4. COMPONENT DESCRIPTION

4.1 MQ-5 Sensor

Fig -1: MQ-5 Sensor

A gas detector may be a device that detects the presence of gases in a neighbourhood, often as a part of a security system. Gas Sensor (MQ5) module is beneficial for gas leakage detection (in home and industry). [5] Due to its high sensitivity and fast reaction time, measurements are often taken as soon as possible. The sensitivity of the sensor are often adjusted by using the potentiometer.

4.2 Load cell

Fig -2: Load Cell

Strain gauge load cells are the foremost common in industry. These load cells are particularly stiff, have excellent resonance values, and have a tendency to possess long life cycles in application. Strain gauge load cells work on the principle that the strain gauge deforms/stretches/contracts when the material of the load cells deforms appropriately. These values are extremely small and are relational to the strain and/or strain that the fabric load cell is undergoing at the time. The change in resistance of the strain gage provides an electrical value change that's calibrated to the load placed on the load cell.

4.2 Bluetooth Module

Fig -3: Bluetooth Module

Bluetooth works by the straightforward principle of sending and receiving data within the sort of radio waves. Every Bluetooth enabled device features a card-like attachment referred to as the Bluetooth adapter. It receives and transmit the data using wirelessely. UART communication. It has 5 pins. From this 5 pins we used 2 pins to transmit and receive the data.

4.3 MIT App Inventor

We made our application by using Mit App inventor. It is very easy for begginers who wants to build andriod app for projects. Just we have to attach blocks in the Mit app inventor site. MIT App Inventor is an intuitive, visual programming environment that permits everyone even children to create fully functional apps for smartphones and tablets. Those new MIT App Inventor can have an easy first app up and running in but half-hour.

Fig -4: Android Application

5. CONCLUSION

In our modern era, the use of LPG has increased in a very high level. As a result of this, the damages caused by the leakage of gas are increasing day by day. So as to eradicate these problems we are introducing highly advanced system known as IOT Based Smart LPG monitoring System. It can be used in large number of applications in homes as well as industries and introducing a vast scope to the future. The proposed system is more effective and ecofriendly because it not only gas but also turns off the valve. So it is mainly designed for the safety of people and property. Using IOT it indicates us to book a cylinder when the weight of the cylinder goes below a threshold value. Thus people can manage their time effectively. In our invention the kit is connected to the web and gas level is displayed on the mobile application. We can activate and switch off the gas regulator knob from the mobile application by touching the button on mobile screen from any where within the world where internet is present.We can schedule time to automatically close up the gas knob from the mobile application a bit like an alarm. Which will close up the gas regulator on the predefined time and can also give push notification on mobile. At the time of leakage gas regulator knob will close up automatically by giving push notification on mobile.

6. REFERENCES

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