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ARDUINO BASED HOME AUTOMATION WITH ADDED SECURITIES TO AVOID DISASTERS OF HUMAN LIFE

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Abstract:In today's world, everyone seems to be busy in their own life that individuals rarely be sure of using resources effectively. We all know gas may be a useful component in environment. Some gases don't cause any harm if emitted in excess amount but some do. Gas like LPG is employed household purpose for cooking food. Not only in household purpose but also in hotels, restaurants, hospitals, etc. where there's human interaction. Also, we will see CNG operated vehicles. If there's any amount of leakage of those type gases it can cause an enormous loss to life and property.When LPG and CNG are burnt or mixed to the atmosphere, it leaves alkanes, alkenes and other hydrocarbon in the atmosphere. Which further causes difficulties in breathing, violent coughing of human beings. So, what if we get how to scale back or abandon the possibilities of this loss. In this paper a method of LPG sensing has been focus to save the life of household during the leakage of gas like LPG.

Key words: ***Arduino, Buzzer, LED,MQ-2 Gas Sensor***

1. INTRODUCTION

Liquefied Petroleum Gas (LPG) has become the major usable component for cooking food in every place. Some of the substituents of using LPG is also available in market but they have not achieved up to the mark. Almost in every family, LPG gas is one of the major components. LPG is not only limited to cook food but also globally it is used in vehicles to substitute the uses of petrol [1-2].Sometimes, due to low sense of smell, people can't respond on low concentration of gas leakage. In that case, high security systems become an essential to protect from gas leakage

accidents [3]. Bhopal, Chernobyl, Okishima gas tragedy was anexample of gas leakage accident in India, Russia and Japan [4].Gasdetection is not only important but stopping leakage is equally essential.In this paper a system which that detects LPG leakage and gives continuous Beep sound and LED Blink is presented.

2. LITERATURE SURVEY

To avoid disasters of human life from LPG gas leakage, various sensing technology has been developed by many researchers. Apeh et al. designed [5]"Design and Development of Kitchen Gas Leakage Detection and Automatic Gas Shut off System" which works only during the time only when a household is cooking with LPG cylinder then if any gas leakage happens then the supply of LPG will get shut down. T.Soundaryaet al. presented the cylinder LPG gas leakage detection system [6].Wireless and GSM technology [7] based gas detectors have also been proposed.This paper presents a LPG leakage detection and alert system to avoid fire accidents and to provide house safety. This paper provides a cost-effective accurate system.

3. MQ-2 SENSOR

The use of gas sensor supported microcontroller had been studied within the previous year by several researcher Al-Haijaet al., 2013; Jaladiet al., 2017; Bhattacharjeeet al., 2012; Abraham and Li, 2014. The air quality monitoring in indoor has also been studied by Yu and Lin, 2015; Kim et al 2015; Preethichandra, 2013 and a few other researchers has also been studied with wireless applications Putra et al., 2013; Oathmanet al., 2013.The MQ-2 is a flammable gas and smoke sensor that detects the concentrations of combustible gas within the air and outputs its reading as an analog voltage.

Figure 2 MQ-2 Gas Sensor

The sensor can measure concentrations of flammable gas of 300 to 10,000 pp. The MQ-2 gas sensor is sensitive to detect gases like LPG, i-butane, propane, methane, alcohol, Hydrogen and smoke. They're utilized in gas leakage detecting equipment in family and industry and in portable gas detector.

4. BLOCK DIAGRAM

The block diagram of the proposed system is presented in Figure 2. This system includes Arduino Uno, Buzzer, LED and MQ-2 Gas Sensor.

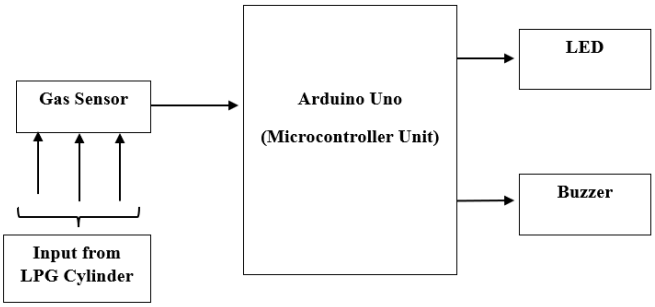


Figure 2 Block Diagram of the System

5. WORKING

Asthis sensor contains a detector, mainly aluminium oxide-based ceramic, coated with Tin dioxide, enclosed during a stainless-steel mesh. device has six connecting legs attached thereto. Two leads are accountable for heating the sensor, the opposite four are used for output signals. Oxygen gets adsorbed on the surface of sensing material when it's heated in air at warmth. Then donor electrons present in tin oxide are attracted towards this oxygen, thus preventing the present flow. When gases are present, these oxygen atoms react with thegases thereby decreasing the surface density of the adsorbed oxygen. Now current can flow through the sensor, which generated analogy voltage values. These voltage values are measured to grasp the concentration of gas. Voltage values are higher when the concentration of gas is high.The Circuit diagram is shown in figure 3. The prototype diagram is given in figure 4.

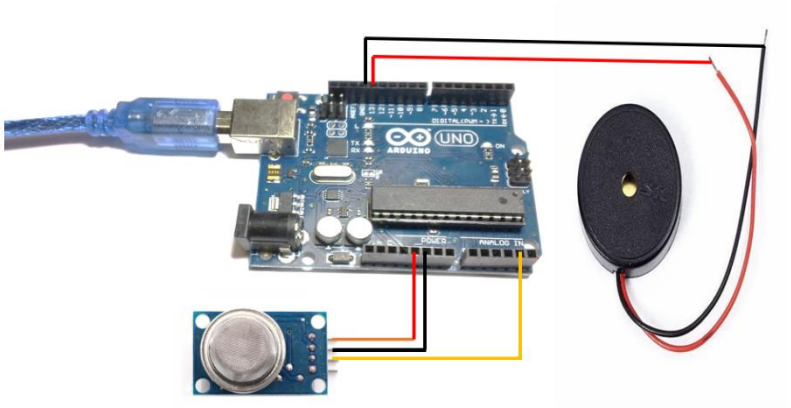
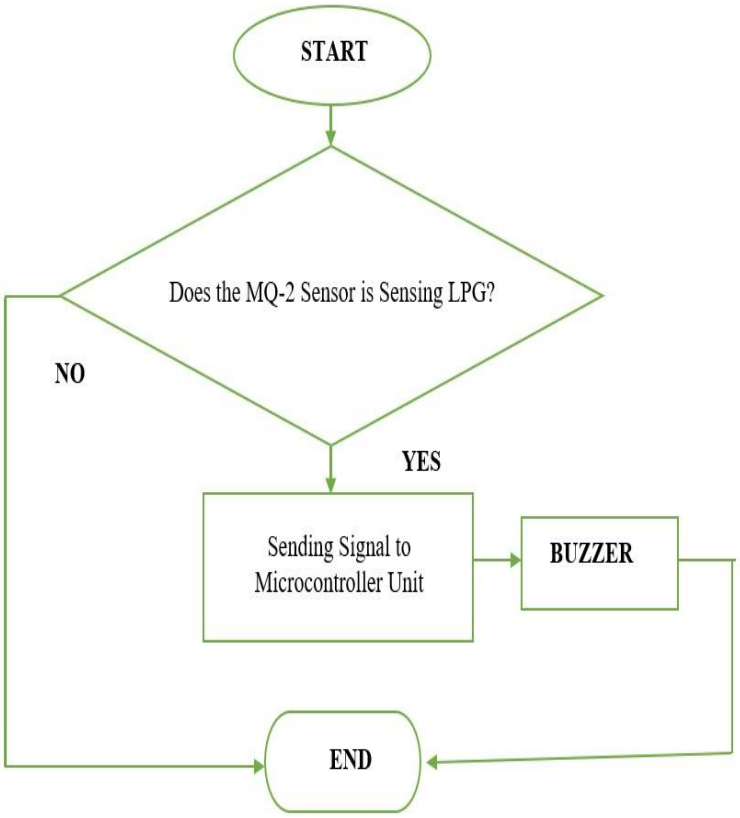


Figure 3 Circuit Diagram of the System Components

6. FLOWCHART



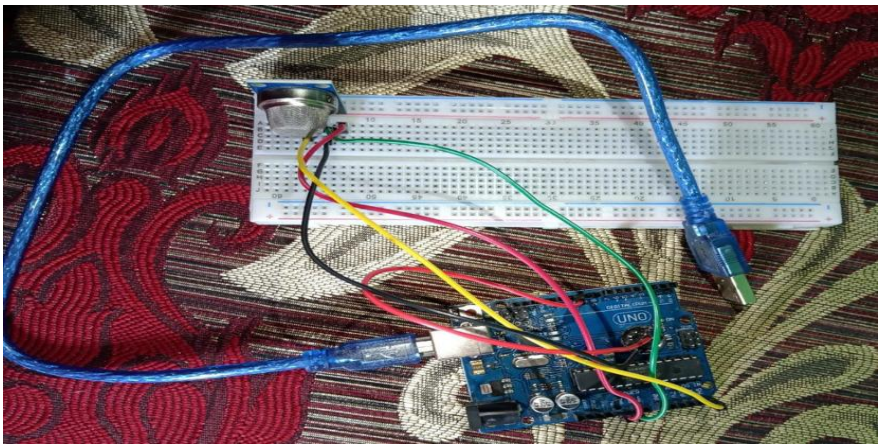


Figure 4 Hardware Interface

6. CONCLUSION

Thus, the conclusion is that we will bear in mind of any danger which will be caused by gas leakage and further catching fire and causing more damage and danger. Its SMS technique may be used with GSM technology to send messages to emergency services. we can also use it to detect various other gases apart from LPG and CNG. It'll be helpful publicly places like Mall's, hospitals, hotel's etc. In such places there's a large rush of individuals, women and tiny children.

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