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LPG Gas Detected

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ABSTRACT

Home fires have been taking place frequently and the threat to human lives and properties is growing in recent years. Liquid petroleum gas (LPG) is highly inflammable and can burn even at some distance from the source of leakage. Most fire accidents are caused because of a poor-quality rubber tube or the regulator is not turned off when not in use. Therefore, developing the gas leakage alert system is very essential. Hence, this paper presents a gas leakage alert system to detect the gas leakage and to alarm the people onboard..

Keywords:IOT, Ardunio, LPG, Sensors, : IOT, Node MCU, LPG, Sensors, Liquid petroleum gas, Gas sensor, Leakage.

INTRODUCTION

Gas leakage leads to various accidents resulting in both material loss and human injuries. The risk of explosion, firing, suffocation are based on their physical properties such toxicity, flammability, etc. The number of deaths due to explosion of gas cylinders has been increasing in recent years. The reason for such explosion is due to substandard cylinders, old valves, worn out regulators and lack of awareness in handling gas cylinders. The LPG or propane is a flammable mixture of hydrocarbon gases used as fuel in many applications like homes, hostels, industries, automobiles, vehicles because of its desirable properties which include high calorific value, less smoke, less soot, and meager harm to the environment. Natural gas is another widely used fuel in homes. Both gases burns to produce clean energy, however there is a 1096 E. JebamalarLeavline. et al serious problem of their leakage. Being heavier than air, these gases do not disperse easily. It may lead to suffocation when inhaled and may lead to explosion [1]. Due to the explosion of LPG, the number of deaths has been increased in recent years. To avoid this problem there is a need for a system to detect the leakage of LPG. Gas leak detection is the process of identifying potentially hazardous gas leaks by means of various sensors [2]. Several designs of LPG detection and alert system have been proposed in the literature. Apeh et al. designed kitchen gas leakage detection and automatic gas shut off system [3]. T.Soundaryaet al. presented the cylinder LPG gas leakage detection system [4]. Wireless and GSM technology [5] 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. The rest of the paper is organized as follows. Section 2 presents the LPG leakage detection and alert system and Section 3 concludes the paper. 2. LPG LE

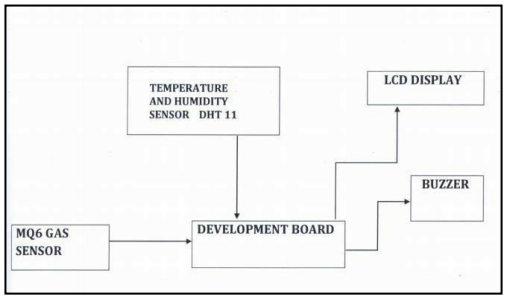
LITERATURE SURVEY

In the proposed system we have designed “IOT based Smart Gas Monitoring System”. This proposed system aims to detect the economic fuels like petroleum, liquid petroleum gas, alcohol etc and allows a provision for controlling the gas leakage by closing the valve automatically. The next feature of the topic is to ensure the booking of gas cylinder from gas agency. The sensors detect the leaked gas and send the signal to the internet ; thereafter the programme on the internet, directs the android app using the signal for switching off gas valve from a distant place. So it redirects again to the internet and closes the gas cylinder valve through IOT. The problem of gas wastage could also be avoided using this system. Sometimes if the burner is left on by mistake, the consumer could be alerted about the problem. If the burner is on and there is no vessel on top of it, an alarm goes off.

SYSTEM ARCHITECTURE

Humans cannot detect the presence of natural gases as fast as the sensor does. Thus, the gas sensing mechanism is hugely needed to give real-time

monitoring of the gas system. As we know its leak may lead to a disaster. Here we have developed associate NodeMCU primarily based LPG gas detector alarm. If gas outpouring happens, this technique detects it, raises an alert by droning the buzzer connected with the circuit. This technique is simple to create and anyone who has some information of physics and programming, will build it



SYSTEM ANALYSIS AND DESIGN.

While LPG is a vital would like of each house, its outpouring could lead on to a disaster. To alert on LPG outpouring and forestall any miss happening therearea unit numerous product to notice the outpouring. Here we've got developed associate Arduino primarily based LPG gas detector alarm. If gas outpouring happens, this technique detects it associated makes an alert by droning the buzzer connected with the circuit. This technique is simple to create and anyone WHO have some information of physics and programming, will build it. As shown within the schematic diagram higher than, it contains Arduino board, LPG GAS device Module, buzzer and 16x2 liquid crystal display module. Arduino controls the complete method of this technique like reading LPG Gas device module output, causation message to liquid crystal display and activating buzzer. We are able to set sensitivity of this device module by intrinsic potentiometer placed on that. The functioning of the circuit once the device is supercharged ON. Initial the microcontroller initializes the show LCD digital display alphanumeric display and starts reading the analog voltage from the MQ-6 device. The MQ5 device gas module has four pins. 2 pins area unit used for interfacing with development board and different 2 pins area unit VCC and ground. Out of 2 interfacing pins one pin is analog output and different is digital pin. The analog output pin of the module is employed for detective work concentration level of gas outpouring and interfaced with the A0 analog input pin of the Arduino board. The analog voltage from the device is digitized victimization the in-built ADC channel and keep in a very variable as a 10-bit worth. The 16X2 show LCD digital show| alphanumeric display} display is employed to display the worth of gas concentration. It is connected to the Arduino board by connecting its knowledge pins to pins 4to7 of the Arduino board. The RS and E pins of the liquid crystal display area unit connected to D2 and D3 pins of the Arduino UNO severally. The RW pin of the liquid crystal display is connected to the bottom. The device worth is compared with a label threshold and if the device worth exceeds that worth, the buzzer gets activated. The buzzer is connected to the weight unit pin of the Arduino

COMPONENTSOFSYSTEMARCHITECTURE

1. NodeMCU
2. LPG Gassensor Module
3. Connectingwires
4. JumperWires
5. Buzzer
6. Connectingwires

EXISTING SYSTEM

Existing approaches to sentiment analysis can be grouped into three main categories: knowledge-based techniques, statistical methods, and hybrid approaches. Knowledge-based techniques classify text by affect categories based on the presence of unambiguous affect words such as happy, sad, afraid, and bored. Some knowledge bases not only list obvious affect words, but also assign arbitrary words a probable "affinity" to particular emotions. Statistical methods leverage elements from machine learning such as latent semantic analysis, support vector machines, "bag of words", "Pointwise Mutual Information" for Semantic Orientation, and deep learning. More sophisticated methods try to detect the holder of a sentiment (i.e., the person who maintains that affective state) and the target (i.e., the entity about which the affect is felt). To mine the opinion in context and get the feature about which the speaker has opined, the grammatical relationships of words are used. Grammatical dependency relations are obtained by deep parsing of the text. Hybrid approaches leverage both machine learning and elements from knowledge representation such as ontologies and semantic networks in order to detect semantics that are expressed in a subtle manner, e.g., through the analysis of concepts that do not explicitly convey relevant information, but which are implicitly linked to other concepts that do so.

PROPOSED SYSTEM

Here we have adapted new technology IOT (Internet of Things) to get fastest notification of gas leakage. We shall use a stepper motor to OFF the knob of cylinder regulator to avoid the accidental cases due to gas leakage. We will also use a website or application under the IOT technology to get fastest response from the module. The other modules used in this project areGSM module, microcontroller, exhaust fan, LED for indication, a buzzer to notify local peoples. And MQ 5 or MQ 6 gas sensor module to sense the gas leakage. The main advantage of this work is that it can determine the leakage and send the data over to a website, where it can be monitored and corrective actions can be taken. If appropriate measures are taken quickly after it is reported over the IOT, it can help in saving the loss of life and property.

LPGLEAKAGEDETECTION ANDALERT SYSTEM

The LPG leakage detection and alert system presented in this section is a simple asshown in Figure 1, yet reliable. It is battery operated and hence portable. It is designedin such a way that it can also be operated with ac power supply. To support the lattercase, it has a bridge rectifier with a capacitor filter. This is followed by a regulatordesignedwithIC7805which provides+5Vregulatedpower supply. TodetecttheLPG,MQ-6gassensorisemployed.Thissensorcanbeoperatedat +5V.Thesensitivityofthissensorisveryhighandithasquickresponsetime.Itcan detect the LPG concentration in the range of 200-10000ppm. The gas sensing layer ofthis sensor is made of Tin Dioxide (SnO_2) and gold (Au) electrodes. The output of thegas sensor is given to LM358 dual operational amplifier where it is compared with thethreshold value for gas density which is set using preset potentiometers and amplified.If the sensed voltage is greater than the preset threshold voltage, the operationalamplifier output fires the driver circuit for

LED and Buzzer. As a result, the LED willglowand thebuzzer starts to producealarm sound.

CONCLUSIONS

Gas escape could result in severe accidents which ends in material losses and human injuries. Gas escape happens chiefly because of poor maintenance of apparatus and inadequate awareness of the individuals. Thus LPG escape detection is useful to stop accidents and to avoid wasting human lives. This paper presents a LPG escape detection and alert system. This technique triggers buzzer and displays the severity of the escape to alert individuals once LPG escape is detected. This technique is incredibly straightforward nevertheless reliable. It leaves with the additional scope of improvement. Battery utilized in this technique is of 5V and in future improvement a much bigger, reversible one could be used , which may sustain the gas detection module for an extended amount of time, with alert whenever battery runs out. With additional improvement like detection of Gas Concentration and changes in style the system will be more handy and price effective for the users.

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