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Gas Leakage Detector using Arduino UNO

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Abstract: *Advance system which follows a line until that line exists. Generally, the line is drawn on the work floor. It can be either black or white. The line canalso be normal visible colour or invisible magnetic field or electric field. The Arduino uno follows the line by using Infra-Red Ray (IR) sensors. There are five IR sensors which makes it an IR sensor array. These sensors read the line and send that reading to Arduino and then control the Arduino uno movement. Arduino uno follows path drawn on the floor. The line will be mainly black ona white surface. If it occurs any line break on its way, the Arduino uno will goforward. If it finds a cross line, the Arduino uno will stop this cross line is startand stop point of Arduino uno movement. Lines and Arduino uno movements can be changed by using programming code easily. If this Arduino uno senses any obstacle in its path, for example, at run time, anyemployee or any machine senses it on the predefined path of the Arduino uno, then the Arduino uno will either stop for a few seconds or avoid it, then resumeits running on an obstacle-free path.*

Key Word: *Arduino Uno, MQ-6 Gas Sensor, LCD, LPG, Stepper Motor Driver, Buzzer, GSM modem*

I.INTRODUCTION

The usage of the gas brings great problems in the domestic as well as working places. The inflammable gas such as Liquidized petroleum gas (LPG), which is excessively used in the house and at work places. The leakage of the gas causes destructible impact to the lives and as well as to the heritage of the people. So, by keeping it in the concept of the project we have determined to develop an examining system which finds the leak of LPG gas and protects the work places by taken correct precaution at correct time. This system provides the information such as when a gas leakage is noticed time. This system provides the information such as when a gas leakage is noticed, sensors of in the project are used to notice the gas leakage and immediately turns ON the buzzer for the danger indication.

II.MATERIAL AND METHODS

Software Requirements

Software that is required for this project is as follows:

1. Arduino IDE Software

Hardware Requirements

Hardware required for this system is as follows:

1. Arduino Uno
2. Laptop
3. MQ- 135 Sensor
4. VGA to HDMI cable
5. Buzzer
6. Mobile

III.LITERATURE SURVEY

The paper [1] mainly shows industrial security has been major issue in present scenario. The numbers of accidents are increasing day by day and we have seen many examples in our day life about those accidents that are being occurred due to combustible gases. In some situation many people have been injured severely and also several got dead because of explosion. So we are making this work for security and alerting peoplesor specially workers those working on that environment to save their lives.

In paper [2] the presence of hazardous gas leakage in a domestic, work place, also, stored gases container gaswhich exhibits ideal characteristic is use. For that sake, an alarm unit is used to vibrate an alarm which is buzzer. Buzzer gives an audible sign of the presence of LPG volume. The sensors are widely used to detect essence of propane, iso-butane, today's world. The number of accidents is rising every day, and we have seenseveral examples in our daily lives of accidents caused by flammable gases. Many individuals have been seriously hurt and others LPG and even smoke.

In paper [3] industrial security is a key concern in have died as a result of explosions in some cases. In addition to being facilitated, the world has become more vulnerable to big blunders and disasters as a result of new breakthroughs and technology.

IV.METHODOLOGY

Proposed Work-

1. Flowchart of proposed work

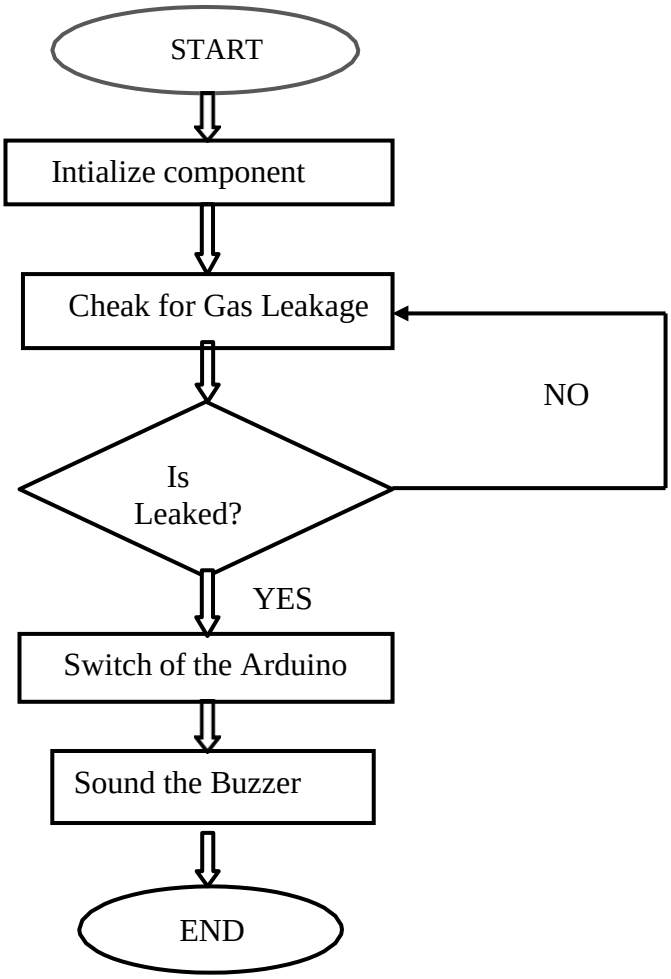

Figure – Flowchart of Dataflow Diagram

The figure shows the flow of system and how it's works firstly start the processes of detection. If S3 sensor areused to sense the obstacle and IR Sensor 3 input IR sensor 3 are used to give the input If the obstacle sensor sense the some obstacle theit stop the moving but the obstacle are not in the front of the detector the it move forword and follow the line .The input IR sensor 1 and sensor 2 are used for line following it true the move forword but any one is fail in line following mode then it again go to first step.

2. Existing system model-

Fig. Arduino UNO

Arduino UNO is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and the chip for a few dollars and start over again. "Uno" means one in Italian and was chosen to mark the release of Arduino Software (IDE) 1.0.

Fig. Buzzer

Buzzer is used for the indication state of the slot. When the buzzer beeps the slot is occupied and when the buzzerdoes not beeps, the slot is empty.

Fig. MQ -135

MQ-135 gas sensor is used in this system. The module version of this sensor comes with a Digital Pin which makes it to operate even without a microcontroller and that comes in handy when you are only trying to detect one particular gas

Model Description -

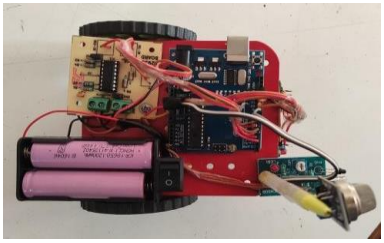

Figure- Connection of Hardware

This technique has been tested by leak of gas almost about sensors, MQ2 gas sensor sends the signal to the Arduino UNO after detecting the gas leakage. Arduino to other externally connected device such as LCD, buzzer and vigorous signals. In practice, results for are noticed bythe people surrounding by the area are displayed in the LCD and buzzer sound indicate the dangerto the people by making beep sound. First we have to apply 5v de to the Vcc pin of the microcontroller. The reset pin is used to clear all the values of temporary register of microcontroller.

Advantages of the project

[1] The gas detectors can be used for the detection of combustible, flammable and poisonousgases and for loss of oxygen, and also to detected a gas leak or other pollutants.
[2] Gas detection and monitoring systems are used as safety devices to alert workers of thepotential danger of poisoning by toxic gas exposure gases.
[3] We will avoid the fire accident and its dangerous effects on human life and nature.
[4] By using alarm the people can be alert and prevent the accident.
[5] This is real time alert gas presence in atmosphere .This detector system is very easy to useand less expensive.
[6] By using this project we can detect the gas and stop gas leakage automatically.

V.RESULT

This device is detect the gas and avoid the harmful accidents .It is device is useful in many places like Industries, Hospitals, Hotels and Home, etc .This device detect gas as well as smoke and fire.

VI.CONCLUSION

The proposed model detects the gas detection which causes gas accident .The device modeled with sensors is sense gas with different environmental conditions and finds application in differentfield. The system provides frequent warning into if the gas can be leaked. The goal to make this model has always been to introduce a revolution on safety to reduce and therefore eliminate any large or little risk that may arise from the leaking of toxic and hazardous gases. One such application area is monitoring of gas reservations and gas leakages for both household and industrial applications.

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