

GAS LEVEL DETECTION AND AUTOMATIC BOOKING USING IOT

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ABSTRACT

Recent trend is the development of Smart homes all around the world. Home automation has become very affordable and many people, industries has started to automate daily routines like light, fans, setting the temperature, etc..While LPG is an essential need of every household, its leakage could lead to a disaster. To alert on LPG leakage and prevent any mis-happening there are various products to detect the leakage. Here we have developed an Arduino based LPG gas detector. If gas leakage occurs, this system detects it and makes an alert by showing it on an LCD attached with the circuit. We have used a LPG gas sensor module to detect LPG Gas. This type of equipment is used to detect a gas leak or other emissions and can interface with a control system so a process can be automatically make fan ON. The main objective of this design is to build a Gas leakage detector and monitoring using LPG gas sensor and also connect it with IoT using ESP module for safety and security.

Keywords— IOT,GSM,MQ6gassensor,Weightsensor.

1. INTRODUCTION

The Recent trend is to bring the technology into our home and office. By making the place smart, the day-to-day activities are becoming more and easier. The development of home automation has become mandatory in homes as people are moving towards to the smart home concepts. This is where 'Internet of things (IoT)' comes into picture. As the regular works has become smart, the things used are still the same like Gas cylinder in homes.Sometimes it may result on an accident. So there comes the need to bring in technology to prevent accidents. IoT is a fast-growing technology in Industries, Cars. The primary objective of the project is to detect the gas leakage of LPG cylinders, which are commonly used in Indian homes, and an alert to the user and the surrounding neighbourhood using IoT. The software has feature to connect with Arduino and can also connect the user's mobile and social media like twitter, to send notification. MQ6 LPG gas sensor is used for input. GSM Modules is used to send alert notification to user and helps in automatic booking of LPG.

LITERATURE SURVEY

LITERATURE SURVEY 1

CONCEPT USED

IOT Based Industrial Plant Safety Gas Leakage Detection System. Most of the fire-breakouts in industries are due to gas leaks. These cause dreadful damage to the equipment, human life leading to injuries, deaths, and environment. Currently available leakage detectors warn the people around using on-site alarms. So, this project proposes a leakage detector which sends the warning to the concerned people through SMS. This detector senses the presence of harmful gases particularly, LPG, Methane and Benzene. LPG and Methane gases catch fire easily

resulting in blasts. Benzene is carcinogen effecting the health of workers, if inhaled in higher concentrations. Hence, detection of these gases is essential.

LITERATURE SURVEY 2

CONCEPT USED

Pipeline Gas Leakage Detection And Location Identification System. Every diminutive task in this planetary is machine-controlled by cyberspace of belongings which makes our life easier. Now internet of things is used for safety purpose also. Nowadays outflow of gas in pipeline is the major difficulty. The chief mental object of this project is to detect the leakage of gases in the pipeline. Pipeline will be monitored with in an regular intervals using gas detection sensors. If there is any leakage in the pipeline then it will be detected and information such as name of the gas, pressure rate of the gas and its location where there is leakage of gases will be passed to the mobile phone, laptops, etc using IOT. The accurate location for the gas leakage will be detected using the GPS.

LITERATURE SURVEY 3

CONCEPT USED

Development of Smart Cooking Stove: Harvesting Energy from the Heat, Gas Leakage Detection and IoT Based Notification System. The design and implementation of smart cooking stove with safety features has been discussed in this paper. To increase the efficiency of the conventional cookingstove, an energy harvest system from cooking heat has also been proposed in this research work. Heat absorbing body and Thermoelectric Cooler (TEC) module are used for this purpose. Heat is absorbed to generate power by using seebeck effect through TEC module. Generated power can be stored in a battery which can be delivered to the load. Sensor based safety feature has been implemented which can detect the leakage of gas and notify the user through mobile message using an IoT server.

2.EXISTING SYSTEM

Presently wireless radio communication signal will be used to transmit the data from one place to another place. But Radio signal will affect the human health like Cardiac Stress, Impact in Fertility, Derails Brain Function, Affects Cell Growth. Voice and data transmission is done previously by using varies technologies like wireless communication protocols to transmit data, such as infrared, Bluetooth, and Wi-Fi. Also the voice and data transmission is done by LDR and Laser torch. The voice and data transmission is done most popular is using wireless LAN. The home/office automation is done using the web server's core that manages, controls, and monitors users' home. Also the home/office automation is done using GSM and Bluetooth.

3.PROPOSED SYSTEM

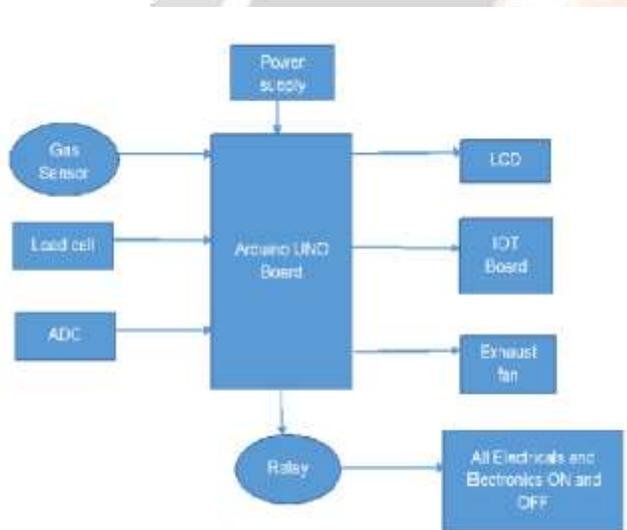
In this proposed system, the gas leakage is detected by MQ 6 sensor which is interfaced by arduino and automatic booking is designed and this device will be a single system with multiple applications for LPG consumers. If the gas leakage is detected by LPG gas sensor the device gets on with buzzer alarm and displaying alert message in LCD display simultaneously switch on the exhaust fan and start the stepper motor, external coupling is made to turn off the gas regulator. PIR sensor also placed in the home to notify about the human presence. If no person, automatically power off at the same time the notification will be sent to user through mobile by warning calls and SMS. Load cell which is also known as pressure sensor is used to detect the weight of the gas and the result will be displayed through LCD display. If the weight of the cylinder is below the threshold level automatically the new cylinder will be booked and the delivery information send to the consumer through GSM module.

4.ALGORITHM

- Scan Gas & Display in LCD After activation, the device will continuously scan gas and show the result in the LCD display. If there is no gas, then the display will show - 'No Gas Leaking'. If there is any gas found, the display will show - 'Gas leaking'.
- Detection of Gas: If there is presence of any gas the display shows 'Gas Alert'.
- When the sensor finds any gas leakage in room or where the device is installed, it immediately activates the Exhaust fan.
- Stop Alert & Reset: If the gas sensor cannot find any gas leakage, then it shows that there is no gas leaking and keeps on scanning for gas. when gas level becomes low it makes automatic booking to the registered refilling centre.

5.WORKING PRINCIPLE:

There are two flow charts for gas leakage detection and automatic gas booking which explain the methodology of the operation as follows:



METHODOLOGY:

➤ GAS LEAKAGE DETECTION

In this model, gas spillage recognition has been given a most elevated need. MQ6 set in the region of the gas chamber. In the appearance of spillage, the obstruction of the sensor diminishes expanding its conductivity. Relating beat is sustained to microcontroller and at the same time switches on the ringer and fumes fan which we can reset by a manual reset switch. Additionally a rationale high heartbeat (+5 V) is given as a hinder to INT0 stick of Microcontroller. Microcontroller communicates something specific "EMERGENCY ALERT: LPG gas spillage found in your home" to required mailid by means of GSM module and a similar will be shown on LCD.

➤ AUTOMATIC GAS BOOKING

In programmed Gas booking framework, L6D ceaselessly screens the heaviness of the gas in chamber and shows it on seven section show. At the point when the heaviness of the gas is ≤ 150 ml, a rationale high heartbeat is encouraged to a port stick of microcontroller. As this stick goes high, microcontroller will send a booking message to wholesaler of organization, "REG_yyyyyyy_12345". In the meantime, the message will be given to the mail id.

6.CONCLUSION

The main advantage of this simple gas leak detector is its simplicity and its ability to warn its users about the leakage of the LPG gas. The future aspects of this detector include the gsm module and a tripper circuit which increases the efficiency of the system and provides more safety to the users. The other advantage of this system includes its visual warning systems. This detector is implemented successfully and is easy to use and also a low cost product. Another advantage of this device is that even though if no one is there in the house and then gas leaks occurs, GSM module is there to send immediate messages to the users regarding the gas leak and thus it lowers the intensity of accidents. GSM module in this device ensures better safety regarding the gas leaks.

7.REFERENCES

- [1] J.Ding, J.Wang, N.Yuan, and Q.Pan, "The Monitoring System of Leakage Accidents in Crude Oil Pipeline based on Zigbee Technology", IEEE Changzhou University, 2011.
- [2] Rakesh, M., Dagadi, S., "Implementation of Wireless Gas Leakage Detection System", Proceedings of the International Conference on Sensing Technology, ICST, art. no. 6461747 , pp. 583-588.2012.
- [3] H.Yang, Y.Qin, G.Feng, and H.Ci, "Online Monitoring of Geological CO₂ Storage and Leakage Based on Wireless Sensor Networks.", IEEE BEE Sensors Journal, 2013.
- [4] Huan Hui Yan, Yusnita Rahayu "Design and Development of Gas Leakage Monitoring System using Arduino and ZigBee", International Conference on Electrical Engineering, Computer Science and Informatics (EECSI 2014), Yogyakarta, Indonesia, 20- 21 August 2014.
- [5] Badri Narayan Mohapatra, Aishwarya Dash, Dhiraj Kumar Chaubey, "LPG Gas Auto Booking By GSM and Leakage Detection with Auto Switchable Exhaust Fan" International Journal of Science, Engineering and Technology Research (IJSETR) Volume 6, Issue 3, March 2017, ISSN: 2278 -7798.
- [6] Scott, Stuart L., and Maria A. Barrufet " Worldwide assessment of industry leak detection capabilities for single & multiphase pipelines" College Station: Offshore Technology Research Center, 2003