GAS LEAKAGE MONITORING AND ALERTING SYSTEM

Abstract - Safety plays a major role in today's world and it is necessary that good safety systems are to be implemented in places of education and work. This work modifies the existing safety model installed in industries and this system also be used in homes and offices.   The main objective of the work is designing microcontroller based toxic gas detecting and alerting system. The hazardous gases like LPG and propane were sensed and displayed and notify each and every second in the LCD display. If these gases exceed the normal level then an alarm is generated immediately and also an alert message (Email) is sent to the authorized person through the INTERNET and used ARM development board. The advantage of this automated detection and alerting system over the manual method is that it offers quick response time and accurate detection of an emergency and in turn leading faster diffusion of the critical situation.

Keywords- Air pollution Monitoring, gas sensors, Raspberry pi or texas module, wireless networks.

1.Introduction

The Internet of Things is an emerging topic of technical, social, and economic significance. Consumer products, durable goods, cars and trucks, industrial and utility components, sensors, and other everyday objects are being combined with Internet connectivity and powerful data analytic capabilities that promise to transform the way we work, live, and play. Projections for the impact of IoT on the Internet and economy are impressive, with some anticipating as many as 100 billion connected IoT devices and a global economic impact of more than $11 trillion by 2025. The Internet of Things (IoT) is an important topic in technology industry, policy, and engineering circles. This technology is embodied in a wide spectrum of networked products, systems, and sensors, which take advantage of advancements in computing power, electronics miniaturization, and network interconnections to offer new capabilities. The large-scale implementation of IoT devices promises to transform many aspects of the way we live. For consumers, new IoT products like Internet-enabled appliances, home automation components, and energy management devices are moving us toward IoT systems like networked vehicles, intelligent traffic systems, and sensors embedded in roads and bridges move us closer to the transform agriculture, industry, and energy production and distribution by increasing the availability of information along the value chain of production using networked sensors.

2.Literature Review

In the year of 2008, LIU zhen-ya, WANG Zhen-dong and CHEN Rong, "Intelligent Residential Security Alarm and Remote fire alarm, toxic gas leakage remote automatic sound alarm and remote control system, which is based on 89c51 single chipcomputer. The system can perform an automatic alarm, which calls the police hotline number automatically. It can also be a voice alarm and shows alarm occurred address. This intelligent security system can be used control the electrical power remotely through telephone.

In the year of 2002, K. Galatsis, W. Wlodarsla, K. Kalantar -Zadeh and A. Trinchi, "Investigation of gas sensors for vehicle cabin semiconducting (MOS) gas sensors. In this paper, commercially available gas sensors are compared with fabricated Moo3 based sensors possessed comparable gas sensing properties. The sensor has response 74% higher relative to the hest commercial sensor tested.

3.Objective

- ✓ To build a system that can detect the liquid petroleum gas leakage.
- ✓ To detect the changes of temperature caused by fire.
- ✓ To send the information to the nearest fire station through Internet of Thing (IoT).

4.SCOPE

The scope of this project had been performed in order to achieve the objectives of this project. Design and build a prototype of an LPG leakage detector controlled by Arduino Uno using MQ-2 gas sensor to detect the presence of gas leakage and DHT-11 temperature sensor. To give the real time response, Espresso lite V2.0 was used as Wi-Fi module and Blynk act as software that use to display all the reading.

This system can be implemented in residential area, small industries and restaurant. Besides that, this system also exposes to the community about the important of the LPG leakage detector to be used because it can help to avoid any dangers of gas leakage that not only can give effect to the user but to the other person too.

4.Problem statement

Liquid Petroleum Gas (LPG) is a highly flammable chemical that consists of mixture of propane and butane. LPG is used for cooking at home, restaurant, and certain use for industry. They have certain weaknesses that make the gas leakage occur. The leakage of gases only can be detected by human nearby and if there are no human nearby, it cannot be detected. But sometimes it cannot be detected by human that has a low sense of smell. Thus, this system will help to detect the presence of gas leakage.

Furthermore, gas leakage can cause fire that will lead to serious injury or death and it also can destroy human properties. This system was developed by using IoT to give real-time response to the user and the nearest fire station.

5.Conclusion

An overall conclusion IOT based toxic gas detector, or IOT technology has come a long way since it was conceptualized two was directed towards pushing IOT technology to the next level. The work has presented solutions to several problems and issues that have not been addressed in previous work. The principle of operation of Operation of IOT based gas leakage and monitoring system was shown by operating the Raspberry pi 3 model attached with embedded system with required input and output gas level with the help of gas sensors. This results in a more efficient in operation because it is connected to a common web page specially built to notify or email the responsible authority automatically so reduces the stress of constant monitoring. The choice of using a real time gas leakage monitoring and sensing the output levels of gas has been clearly observed by the help of this system.

6.References

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