

IoT Based Gas Leakage Detection and Alert Generation

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Abstract— Nowadays the use of the gas is increased the gas leakage has been a notable issue. The gas leakage causes the wastage of the gas and mainly as its combustible serious harm can be done to the living thing and other property. To overcome such an incident, we are developing a IoT based Gas Leakage Detection and Alert Generating system this will notify the user about the leakage and take the safety measures instantly. The proposed system can be use in the area where the gas is frequently used such as kitchens and industries and even in the gas operated vehicles too. The idea of the system is that the gas sensor is used which detects the presence on the gas in the surrounding atmosphere and if the value of the gas in atmosphere is increased then the threshold value alert is generated by the system and the system can be monitored and controlled remotely

Keywords— IOT, Android APP, PHP, Raspberry Pi, Sensor.

1. INTRODUCTION

LPG is as of now the most utilized gas in our home for cooking purposes. LPG gas is a combustible gas, if spilled it can make real harm to the life and property. The main highlight of the LPG is that it is heavier than the air present in our surrounding so it does not scatter effectively which in case inhaled by someone while

breathing causes suffocation and may lead to the loss and harm of life, and if the scattered gas gets ignited by any source of light it can cause explosion resulting in damage to life and people. Although it is combustible we need to use it, so by taking some safety measures and by following some guidelines it can be safely used. The proposed system installation can act as the safety measure in case of the leakage of gas. The proposed system works in way such that if the presence if the gas is detected in the air and if the value of the detected gas is more than threshold set then the alert is raised this will inform the user about the leakage at the site and at the site one buzzer is placed which gives loud notification by making beep sound continuously alerting the people, one exhaust fan is connected to the model which is switched ON as soon as the gas leakage is detected this fan helps to draw the gas outside to open surrounding reducing the risk and the system is linked with an Android app which is capable of monitoring and controlling the system remotely. The user is able to see the value of gas leakage and with this data the user can estimate the amount of risk due to leakage and take some safety measure on the basis of the known data

2. RELATED WORK

[1] This paper presents a framework for detection and alert generation for gas leakage We propose a Raspberry Pi based system which is connected to peripherals like buzzer exhaust fan and MQ sensor which detects the presence of gas. This

sensor generates alert when the gas is spilled out in the surrounding the alert is not only generated and the location where the gas is leaked but also on the user Android phone at any location the user may be present. As soon as the leakage is detected the user is notified and the user can monitor the current situation at the site with help of Android App and even user can control the system remotely

[2] This paper presents a novel method for Detecting the gas leakage with the help of MQ sensor. We have made provisions such as login page for user in the Android App. The user has to login to App to get benefits of the App. The login user and password will set by the user itself which will be stored in data base, the reason for providing the login Credentials is for the safety purposeso that unauthorized person cannot be able to login into the App and misuse the App

3. PROPOSED SYSTEM

The proposed system is developed using the Raspberry Pi 3. Raspberry Pi is a minicomputer which can developed and modified in various ways it allows us to run various programs and also support different peripherals which are toways it allows us to run various programs and also support different peripherals which are to be used in our system MQ Sensors are installed near the LPG source to detect the leakage of gas, once the minimum threshold is reached it will send an alert on the registered user app and also the buzzer connected to system will start buzzing. The exhaust fan will start automatically. The user can monitor the value of gas and temp remotely with the help of the Android App

In this proposed model we want to achieve

Embedded System Design

in this we use the Raspberry Pi 3 which will control all the module and things

Features to avoid Accident

in this we use the exhaust fan to reduce the gas from the place, and to notify the local people automatically weeping the buzzer.

IOT

This module is use for app notification.

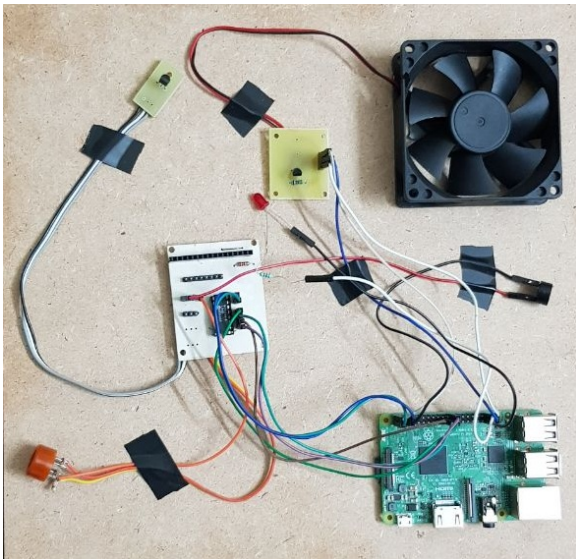


Fig-1: Diagram for IoT based gas leakage detection and alert generation

Sensor Module

This module is use to sense the gas leakage. In this module we use a sensor MQ to perform the leakage detection operation.

4. CONCLUSION

Finally, we conclude in recent households, the use of LPG is taking a big toll. From the use of cylinder up to the use of petroleum pipelines The biggest threat in using this technology is security. And our project will prove to be boom for households and industries. A wide variety of leak detecting techniques is available for gas pipelines. Some techniques have been improved since their first proposal and some new ones were designed as a result of advances in sensor manufacturing and computing power. However, each detection method comes with its advantages and disadvantages. Leak detection techniques in each category share some advantages and disadvantages. For example, all external techniques which involve detection done from outside the pipeline by visual observation or portable detectors are able to detect very small leaks and the leak location, but the detection time is very long. Methods based

on the mathematical model of the pipe have good results at high flow rates while at low flow rates a mass balance based detection system would be more suitable. Hybrid systems benefiting from the real-time detection capability of a software based method and the high localization accuracy of a hardware based technique, along with other specific advantages of both approaches, seem to be the future trend in gas leak detection.

5. REFERENCES

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