

A Survey Paper on Gas Leakage Detector System and Automation of Gas Booking Process

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ABSTRACT

We all are very busy in our daily life and it is difficult to know the level of Gas Cylinder. If Gas is going to finish without informing us it can create difficult condition for cooking etc. Our system design can help us to avoid such kind of problem with the help of IOT. The Automatic Gas booking/Order, is mostly done with the help of IOT and continuously weight is measured by using the load cell sensor then it will interfacing with Micro-controller (Compare with ideal value).Leakage Detection using the pervasive sensors and LPG leakage is detected through the MQ-6(gas sensor)and this information is send to the user by short message service(SMS) and simultaneously alerts using the IOT blue-tooth module. In this system gas sensor used to sense the LPG leakage gas and has high sensitivity to LPG and also response to natural gas. This work modifies the existing safety model installed in Industries, offers quick response time accurate detection.

Keywords: IOT, Bluetooth, Wi-Fi, Sensor, Cylinder, Microcontroller.

I. INTRODUCTION

This paper is useful For LPG customers. We get informed by the sensor at the movement when the gas is about to finish and this information is monitored on the daily basis. So in this system we will use a load cell sensor to calculate the wait of gas and if the gas remained 10% then alert message is generated through blue-tooth module to customer mobile and then gas booking automatically done.

LPG is generally smell-less and cannot be detected by the human sense of smell because of smell-less nature.

A chemical is added to it purposely so human can detect the gas. This is one of the disadvantages. The gas is being 5 times heavier then air does not disperse easily and may lead to suffocation when inhaled also the gas leakage gases when the ignited may lead to explosion. In this module we are using MQ6 gas sensors to sense the leakage of gas and as soon as the gas is detected the alert message is generated to the user.

Our system provides security from the gas leakage. It detects the leakage and takes control action over it. It is helpful for us to avoid to explosion it also has provision for automatic gas booking.

II. RELATED WORK

A. Smart Gas Level Monitoring, Booking and Gas Leakage Detector Over IOT

This paper explains about the most common problem experienced in our day-to-day lives that is regarding GAS Container going empty. We bring this paper to create awareness about the reducing weight of the gas in the container, and to place a gas order using IOT. For ease it is even has been added with an RF TX & Rx modules which will give the same information. When it comes it to security of the kit as well as gas container. We have an MQ-2(gas sensor).LM-35(temperature sensor).which will detect the surrounding environment for any chance of error. Whenever any changes is any of the sensor.[1]

B. Gas Leakage Detection and Smart Alerting and Prediction Using IOT

This paper IOT is an expanding network of physical devices that are linked with different types of sensors and with the help of connectivity to the internet. They are able to exchange data. Through IOT , internet has now extended its roots to almost every possible thing present around us and is no more linked to personal computers & mobile phones. Gas Leakages in open or closed areas can prove to be dangerous and lethal. Therefore we have used the IOT technology to make Gas leakage Detector having Smart Alerting techniques involves calling, sending text message and email to the concerned authority and an ability to predict hazardous situation so that people could be made by aware in advance by performing data analytic on sensor readings [2].

C. Gas Leak Detection and Localization system through Wireless Sensor Network

In this demonstration proposal we use prototype of Wireless Sensor Network (WSN) to monitor and locates gas leaks of a complex indoor environment. Specifically,a mobile node is moving inside a building to monitor any leakage of carbon dioxide(CO2),supporting and displaying the level and the location of the leakage. Throughout the demonstration the technological advantages of cognitive networking along with multi-hop routing are explored [3].

2	Gas Leakage Detection and Smart Alerting and Prediction Using IOT.[2]	In this paper used IOT technology to make gas leakage detector having smart alerting technique involving calling, sending text message and email to the concern authority [2].	Gas leakage in open or in closed area can prove to be dangerous and lethal. The field of alerting the people about the leakage.[2]
3	Gas Leak Detection and Localization System Through Wireless Sensor Network.[3]	In this paper A mobile node is moving inside a building to monitor any leakage of carbon dioxide, supporting and displaying the level and the gas leakage [3].	In this demonstration proposal we use a prototype of wireless sensor network to monitor and locate gas leaks of a complex indoor environment [3].

Table 1: Related Table

Sr. No	Name of Paper	Technique used	Description
1	Smart Gas Level Monitoring, Booking And Gas Leakage Detector Over IOT.[1]	In this paper, the system is implemented using Internet Of Things (IOT).[1]	This system is a way of monitoring gas quantity in the container and to intimate as well as to place and refill order in the respective branch office via an message by means of through IOT modules.[1]

III. PROPOSED ARCHITECTURE



Figure 1: Architecture diagram

This architecture diagram of the “Gas leakage detection and gas automatically booking” using the AT-Mega32 controller in this system, Blue-tooth Module, Load cell, MQ-6 (gas sensor) Android phone.

- Load Cell



Figure 2: Load Cell

As per dictionary, a load cell is measure the weight of Gas and display weight in digits. Load cell is passive transducer. This will convert applied force into electrical signals. This conversion is indirect and happens in two stages. Through a mechanical arrangement, the force sends deform a strain gauge. Load cell of one or two strain gauges are available. The electronic signal output is typically in the order of a few millivolts and requires amplification by instrument amplified before it can be used. The output of transducer is plugged into an algorithm to calculate the force applied to the transducer.

- GAS Leak Sensor

Depending on available and cost we have selected MQ-6 for our project it operate at 5V+0.1 AC or DC ,it required load resistance 20k ohm in factor for selection of MQ-6 is it's high sensitivity to LPG, ISO-butane propane.



Figure 3: Gas sensor MQ-6

- Bluetooth modem



Figure 4: Blue-tooth modem

Blue-tooth modem is a wireless technology standard for exchanging data over short distances. Blue-tooth has becomes one of the best methods of exchanging correct information.

- ADVANTAGES
 - 1 It provides security from the gas leakage.
 - 2 It consuming less time by replace cylinder in time.
 - 3 It is fully automated system.
- APPLICATION
 1. House hold purpose
 2. Gas agency

3. Chemical factory
4. Companies, Industries.

STATISTICS:

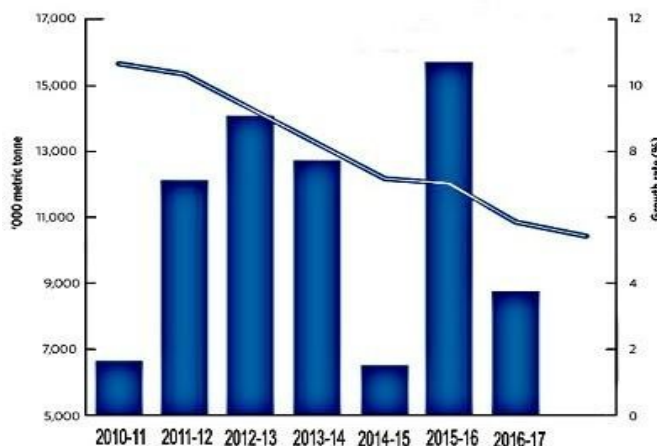


Figure 5: Growth of Gas Booking

The automatic gas booking system was proposed. Designed and successfully implemented in this paper for human simplicity and gas leakage detection system is useful in home safety and industrial applications. This system detects the leakage of the gas and alert the owner about the leakage of gas by SMS. The system continuously monitoring weight of the gas cylinder and gives alert and also efficient home security. This is an efficient method for automatically detection and controlling the LPG gas leakage.

V. FUTURE WORK

We can turn off power supply in gas leak.

VI. ACKNOWLEDGMENT

It gives us great pleasure in presenting the preliminary project paper on “Smart Gas Level Monitoring, Booking & Gas Leakage Detector over IOT”.

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