

# **GAS LEAKAGE MONITORING AND ALERTING SYSTEM FOR INDUSTRIES**

**DOMAIN NAME** : INTERNET OF THINGS  
**TEAM ID** : PNT2022TMID29465  
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## **PAPER 1 : Gas leakage detection and alerting system using Arduino Uno**

**PUBLISHED YEAR** : 2020

**AUTHOR** : Syeda Bushra Shahewaz And Ch. Rajendra Prasad

**JOURNAL NAME** : Global Journal of Engineering and Technology Advances

**SUMMARY** : The presence of hazardous LPG gas leakage in a domestic, work place, also, stored gases container gas which 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, LPG and even smoke. The sensor has an advantage to combine a sensitivity response time. If the LPG sensor senses gas leak from work place or home, sensor output goes to active low (logic-0) condition. Arduino UNO is used in the project; low signals are overlooked by the Arduino and gas leakage is been noticed by the Arduino. The Arduino UNO turns on the LCD and buzzer. It even turns on the GSM modem after that, it continues to send messages SMS to mobile number specifically mentioned in the program of the source code for alerting danger to the people

## **PAPER 2 : LPG Gas Leakage Detection and Alert System**

**PUBLISHED YEAR** : 2017

**AUTHOR** : E.Jebamalar Leavline D Asir Antony Gnana Singh

**JOURNAL NAME** : International Journal of Electronics Engineering Research

**SUMMARY** : Home fires have been taking place frequently and the threat to human lives and properties is growing in recent years. Liquid petroleum gas (LPG) is highly inflammable and can burn even at some distance from the source of leakage. Most fire accidents are caused because of a poor-quality rubber tube or the regulator is not turned off when not in use. Therefore, developing the gas leakage alert system is very essential. Hence, this paper presents a gas leakage alert system to detect the gas leakage and to alarm the people onboard.

### **PAPER 3 : GAS LEAKAGE DETECTION AND SMART ALERTING SYSTEM USING IOT**

**PUBLISHED YEAR :** 2018

**AUTHOR :** Shital Imade, Priyanka Rajmane, Prof. V.N. Nayakwadi

**JOURNAL NAME :** International Journal of Innovative Research & Studies

**SUMMARY :** Internet of Things aim towards making life simpler by automating every small task around us. As much is IoT helping in automating tasks, the benefits of IoT can also be extended for enhancing the existing safety standards. Safety, the elementary concern of any project, has not been left untouched by IoT. Gas Leakages in open or closed areas can prove to be dangerous and lethal. The traditional Gas Leakage Detector Systems though have great precision, fail to acknowledge a few factors in the field of alerting the people about the leakage. Therefore we have used the IoT technology to make a Gas Leakage Detector for society which having Smart Alerting techniques involving sending text message to the concerned authority and an ability performing data analytics on sensor readings. Our main aim is to proposing the gas leakage system for society where each flat have gas leakage detector hardware. This will detect the harmful gases in environment and alerting to the society member through alarm and sending notification.

### **PAPER 4 : IOT BASED GAS LEAKAGE MONITORING AND ALERTING SYSTEM WITH MQ-6 SENSOR**

**PUBLISHED YEAR :** 2018

**AUTHOR :** Rohan Chandra Pandey , Manish Verma , Lumesh Kumar Sahu ,  
Saurabh Deshmukh

**JOURNAL NAME :** International Journal of Creative Research Thoughts.

**SUMMARY :** 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.

## **PAPER 5 : IoT Gas Leakage Detector and Warning Generator**

**PUBLISHED YEAR :** 2018

**AUTHOR :** B. F. Alshammari ,M. T. Chughtai

**JOURNAL NAME :** Engineering Technology and Applied Science Research

**SUMMARY :** This paper presents an industrial monitoring system design using the Internet of Things (IoT). The gas sensor (MQ-5) captured information is posted into a data cloud. The sensor detects the leakage of gas under most atmospheric conditions. All the components are controlled by an Arduino (UNO-1) that acts as a central processor unit in the setup. As soon as a gas leakage is detected by the sensor, the alarm is raised in the form of a buzzer. This alarm is supported by an LCD to display the location of leakage, alert the observer, and activate the exhaust fan in the particular section to extract leaked gas. The requirement of a gas detection system is not only to monitor continuously the surroundings but also to help prevent the gas leakage hence minimizing the chances of fire and damage.

## **PAPER 6 : New Gas Leakage Detection System using Internet of Things**

**PUBLISHED YEAR :** 2020

**AUTHOR :** Meteb Altaf, Alaa Menshawji, Ruba Al-Skate, Taghreed Al-Musharraf, Wejdan Al-Sakaker

**JOURNAL NAME :** International Journal of Computer Science and Engineering

**SUMMARY :** Liquid petroleum gas (LPG) is used for variant purposes at home such as central heating and cooking. LPG is primarily consisting of propane and butane which are highly flammable chemical compounds. Gas leakage can introduce risk of fire, which can occur inside homes, commercial premises or factories. Since the LPG does not have any odour, gas companies add an odorant such as Ethanethiol, Thiophene or Mercaptan so human can detect the leakage by the sense of smell. However, this is detection approach is not safe since sleeping person, children, low smell-sense people might not detect the leakage. Therefore, a more robust and reliable detection mechanism is required to increase safety at home. This project introduces a reliable, robust and instant-response solution for such a problem. Gas Leakage Detection System (GLDS) can detect leakage at homes, commercial premises or factories. Two highly important safety factors are considered in this system including: time and control. GLDS detects the leakage soon after it happened and sends users an immediate alarm on the incident. Moreover, by the application of the IoT (Internet of Things) people can control their home premises remotely. Consequently, in the case of users being away from home, he/she can remotely interact with the system to control the safety at home by cutting off electricity or ventilating the house.

## **PAPER 7 : SMS Based Gas Leakage and Fire Detection Alert System**

**PUBLISHED YEAR :** 2022

**AUTHOR :** Noman Mazher , Maria Latif , Jazzba Asad , and Faiza Nawaz

**JOURNAL NAME :** Global Journal of Engineering and Technology Advances

**SUMMARY :** Safety is the foremost aspect in today's world. In this world of technology, people need technology to help them in danger conditions. Gas leakage becomes a severe issue that results in many accidents which lead to mortal and monetary harm. It is need of hour to install the gas leakage detection systems on public places. This paper presents a system design that identifies the leakage of gas and warns the user about the situation by sending SMS on user's phone with the help of GSM. Smart kitchen by means of IOT is aimed, created and verified. Our system has more features than existing systems because those were manual while our system is automatic and provides rapid reply and correct identification that can save many lives and prevents humans from many hazardous cases

## **PAPER 8 : Gas Leakage Detection System with Alarming System**

**PUBLISHED YEAR :** 2022

**AUTHOR :** Muhammad Ahmad Baballe, Mukhtar Ibrahim Bello

**JOURNAL NAME :** Review of computer engineering research

**SUMMARY :** This system aims to present a design that can automatically detect, alarm, and control gas leakage using an exhaust fan to suck the gas away from the premises where there is leakage. This system detects the nature of gas using LEDs (red and green). The alarm gives a sound when gas leakage is detected, the exhaust fan sucks the gas away from the premise, and the Liquid Crystal Display (LCD) indicates the system performance at any distortion condition. The Arduino UNO is used as the main controller of the system, and the buzzer is used as a means of notification. One of the prophylactic means to stop accidents related to this gas leakage is to mount a gas leakage monitoring device in susceptible places. The system will detect the leakage of liquefied petroleum gas (LPG) using a gas sensor and use the buzzer to alarm the industries, companies, or people about the leakage. The system also consists of two indicators (LEDs). The Green LED used in this research indicates no gas detection, that is, there is no gas leakage in the environment, and the red LED will indicate that there is gas leakage detected. The device is intended for use in household safety where appliances and heaters that use natural gas or LPG may be a source of risk. The system can also be used for other applications in the industries or companies that depend on LPG and natural gas in their operations.

## **PAPER 9 : A SURVEY PAPER ON GAS LEAK DETECTION USING IOT**

**PUBLISHED YEAR** : 2019

**AUTHOR** : Manichandana, Simrah UmmeRuman, Harshavardhini Biderkota,  
Ms.Pr Anisha, Dr.B V Ramana Murthy, And Mr.C Kishor Kumar

**JOURNAL NAME** : Journal of Applied Science and Computations

**SUMMARY** : Internet of Things (IoT) is the networking of 'things' by which physical things can communicate with the help of sensors, electronics, software, and connectivity. These systems do not require any human interaction. Internet of Things aim towards making life simpler by automating every small task around us. As much is IoT helping in automating tasks, the benefits of IoT can also be extended for enhancing the existing safety standards. 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 can also be used in homes and offices. The traditional Gas Leakage Detector Systems though have great precision, fail to acknowledge a few factors in the field of alerting the people about the leakage. Therefore we have used the IoT technology to make a Gas Leakage Detector for society which having Smart Alerting techniques involving sending text message to the concerned authority and an ability performing data analytics on sensor readings.

## **PAPER 10 : Gas Leakage Detector and Monitoring System**

**PUBLISHED YEAR** : 2022

**AUTHOR** : Yekini N. Asafe, Adigun J. Oyeranmi ,Akinade O. Abigael

**JOURNAL NAME** : I. J. Engineering and Manufacturing

**SUMMARY** : Leakage of gas is a major issue in the industrial sector, residential buildings, and gas-powered vehicles, one of the preventive methods to stop accidents associated with gas leakage is to install gas leakage detection devices. The focus of this work is to propose a device that can detect gas leakage and alert the owners to avert problems due to gas leakages. The system is based on a microcontroller that employs a gas sensor as well as a GSM module, an LCD display, and a buzzer. The system was designed for gas leakage monitoring and alerts with SMS via an Arduino microcontroller with a buzzer and an MQ2 gas sensor. The circuit contains a Microcontroller MQ2 gas sensor, buzzer, LCD display, and GSM module, when the sensor detects gas leakage it transmit the information to the Microcontroller while the microcontroller makes a decision and then forwarded a warning message to the user as SMS to a mobile phone for decision to be taken accordingly. The output of this research will be significant in averting problems associated with gas leakages now and in future.