NALAIYA THIRAN

(Professional Readiness for Innovation , Employability And Entrepreneurship)

2022-2023

LITERATURE SURVEY

Team Id : PNT2022TMID48574

Team Title: Gas leakage Monitoring And Alerting System

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INTRODUCTION		SURVEY/BODY OF REVIEW					CONCLUSION		
S.NO/Year	Title	Keywords	Problem Definition	Methodology (Algorithm, Protocol…Etc)	Input Parameters	Result	Advantages	Disadvantages/ Drawbacks	Research Gap / Research Question
1. 2022	Gas leakage detection using GSM Module & Arduino With SMS Alert	1.Arduino UNO 2.MQ - 2 Sensor 3.Buzzer 4.LCD 5.Exhaust Fan 6.GSM Module	To develop an examining system which finds the leak of LPG gas and protects the property by taken correct precaution at correct time. The project consists of Alarm unit which is Buzzer gives an audible sign of the presence of LPG volume.	The Gas sensors are used to detect essence of harmful gasses LPG and smoke. MQ sensor senses gas leakage, it send Information to Arduino UNO and it turns on LED, Exhaust Fan , GSM Module .	MQ - 2 sensor	By using this system we can reduce gas leakage accidents, save. Life and properties	It send Alert Message as an SMS to the Phone number and the exhaust fan will automatically once leakage is detected.	It does not have any mobile app or web pages app to monitor and store the data	1.What will the people over that area do if they do not get the proper signal in that area? 2.How will the alert SMS message reach the people in that area?
2. 2022	IOT Based Gas Leakage System Using ARDUINO	1.LPG-Gas Sensor 2.Node-MCU 3.Smartphones 4. IOT	The implementation for both industry and the society which will detect	Voltage rule sector is accountable for converting alternate power to direct current as	1.LPG-Gas Sensor module 2.Relay	1.MQ2 gas sensor sends the signal to the Arduino UNO after attentive the gas leakage.	The advantage of the Arduino Uno-based LPG detector system project	This monitoring system can be further increased by	1. During the bad weather conditions the internet facilities may get disconnected. In that

			the leakage of gas and also monitor the gas availability. Alerting techniques that include sending messages to the applicable command as well as the ability to analyze sensor reading data.	well as lowering the transmitted signal. The sensors can detect a gas leak. The sensor MQ-2 is working here to detect LPG levels in the air. The gasses on the scale between 200 and 10000 ppm maybe identify as well as the reaction time is completely speedy		2. Arduino the other visible Join devices such as LCD, buzzer and GSM convey active signals. 3.SMS is sent by the GSM module to the supplied mobile number	is that it gives remote indications to the user about the LPG leakage with the help of SMS sing	using Bluetooth in place of GSM to send the alert messages to the user, which abetment another real-time application .	case how will the message reach the people? 2. How will the people know about the gas leakage if the mobile network is not available?
3.2022	Sensor Based Gas Leakage Detector System	1.Arduino Uno 2.LPG gas sensor 3.MQ - 2 4.LCD 5.Exhaust fan 6.Micro-controller 7.Relay Board	To propose and discuss a design of a gas leakage detection system that can automatically detect, alert and control gas leakage.	1.Proposed design will have a MQ-2 sensor which will be used to detect gas to message the owner in the companies and homes etc. It will deliver message to the owner on the app and LCD as gas leakage detects. 2.In our system we are going to design gas leakage detector as well as delivering message. There will be a device to detects gas and turning on the fan and window and turn off the electricity. User will get a message	1.Arduino Uno 2.Exhaust fan	In Arduino Based LPG gas Monitoring System MQ-4 gas sensor, LM-35 Temperature sensor, (for prototype) as input devices and Piezoelectric buzzer,16x2 LCD display and IOT module used as output devices. These project gives alert message by buzzing the buzzer and trough SMS to the house holders. We also provide automatic doors and windows opening, so that the compressed gas can spread in to air freely. Hence a fire accident does not occurs.	1.Strong Shield 2.Continuous Monitoring 3.Displaying The Message On LCD 4.Alert on Mobile Application 5.High Accuracy 6.Low Power Consumption	1.Detected Any Moisture 2.Will not Find Very small Leak 3.Accuracy of Location of leakage need to be carefully verified	1.Why do this system does not shut off the control valve if the gas get leaked ?

				when gas will leak.					
4.2022	IoT Based Gas Leakage Detection and Alarming System using Blynk platforms	1.IoT 2.Gas leakage 3.Blynk platform 4.Thingspeak 5.LPG 6.Alarm system.	Gas leakageAQ causes many health issues. So, to prevent such catastrophes and in order to maintain a clean air environment the workspace atmosphere should be frequently monitored and controlled	MQ2 sensor will detect the concentration of the gas according to the voltage output of the sensor and the ESP8266 will send the data reading from the gas sensor to Blynk IoT platform over an IOS phone; data visualization is done using Thing Speak IoT Platform.	MQ 2 gas sensor	System records the value of the LPG leak level on an IoT platform –which could be a cloud platform of application platform- and the awareness message is sent to the smartphone through the wifi on an IoT application such as Blynk IoT application.	Blynk is an IoT Platform that supports both IOS and Android while being compatible with a plethora of microcontrollers such as Node MCU (ESP), STM32, Arduino and Raspberry Pi over the Internet.	Ardunio UNO is better than the nodeMCU in all functionalities so they would have used that as the microcontroller	1.Does a better IOT analytics can be used instead of Thingspeak platform ? 2.Why sensors like MQ6,MQ306,AQ3 gas sensors cannot be used here ?
5.2022	Gas Leakage Monitoring and HVAC Automation System	1.Leak 2.Hydrogen sulphide 3.Carbon monoxide 4.combustible gas.	Hazards due to gas leakage are a constant part of industries where storage and transportation facilities of flammable and toxic gases are involved.	The device measures the air and water quality, including every parameter that can have deviation as the result of gas leakage in the water or air.	1.5 v DC Motor 2.Wi-fi Module.	The HVAC System provides the interface between the Arduino microcontroller and the web.	The gases are sensed in an area of meter radius of the rover and the sensor output data are continuously transferred to the local server.	The accuracy of MQ sensors are not up to the mark thus stray gas are also detected which creates an amount of error in the output of the sensors.	Does Instead of using L293D Motor driver any other controller can be used for controlling?

6.2022	A Smart Building Fire and Gas Leakage Alert System with Edge Computing and NG112 Emergency Call Capabilities	1.Fire detection 2.Gas leakage detection 3.Smart cities 4.Smart building.	smart building sensor system, SB112, combines a small-size multi sensor-based (temperature, humidity, smoke, flame, CO, LPG, and CNG) scheme with an open-source edge computing framework and automated Next Generation (NG) 112 emergency call functionality.	The COP operator was considered to be the human 'in the loop' receiving and managing the smart city platform information.

Apache Kafka is an effective and open-source distributed event streaming platform for high-performance data pipelines, streaming analytics, data integration, and mission-critical applications in real world conditions, such as smart cities | Gas sensor | The ability of fires or gas leaks to spread out extremely quickly in critical buildings or infrastructure makes their detection and suppression at an early stage a necessity.

Public safety and the reduction of property loss are the two main crucial issues that a smart city seeks to address. | Low power consumption | 1.Low latency 2.The unstable connection between the cloud and mobile devices | If there is an unstable connection between the cloud and mobile device , how will they get aware of this gas leakage? |
| 7.2021 | Arduino Based Gas Leakage Detection System Using IoT | 1.Node MCU 2.LCD 3.Buzzer 4.Gas Sensor 5.Internet of Things | To build a Gas leakage detector using LPG gas sensor this device will continuously monitor the level of LPG gas present in the air and also connect it with IoT using ESP module for safety and security | LPG leakage detection and alert that provide user an easy way to monitor the LPG gas in cylinder with android application. The gas sensor detects the concentration of gas in ppm and outputs analog value which can be converted to a digital signal using inbuilt Analog to Digital Convertor of Node MCU . | Gas Sensor | The detection of leakage of LPG cylinders in particular areas like kitchen and alert the user regarding leakage | It is an economical system which can be installed in apartments, hotels LPG gas storage areas and wherever it is needed. The cost of the proposed system is lesser than the commercially available detectors in the market. | A Mobile Application was not created for this system | How will the people over that environment will come to know the monitor of the exact concentration of gas present in the air ? |

8.2021	Gas Leakage Detection And Alerting System For Home And Industry	1.Hazardous gas 2.Sensors 3.Arduino 4.detection system 4. LPG	The system can detect and notify hazardous gas present in hazardous and non- hazardous area.	Semiconductor sensor detects gas leakage. The MQ6 (figure 4) gas sensor contains sensitive material SnO2 which is having less conductivity in clean air. If the ppm of gas increases to preset value (leakage) the conductivity of sensor increases which is directly proportional to gas concentration.	MQ6 sensor	The Tinker cad is one of the software tool for design of electronic automation. When gas leakage is detected, it will give a digital output . If no gas detected the sensor gives output of zero. Arduino takes the output from sensor.	It is a cost effective, low power, compact, portable, lightweight, friendly for user, efficient and simple monitoring unit for detecting gas.	This system cannot be connected with IOT devices for ease of monitoring and control.	1.How without the GSM Module the People can know about the gas leakage alert ? 2.Why they have not used any IOT devices for monitoring?
9. 2021	IoT Based LPG Gas Level Detection & Gas Leakage Accident Prevention with Alert System	LPG Gas Level Detection, Gas Leakage, Arduino MKR Wi-fi 1010, IoT, Alert System.	Gas leakage detection and monitoring system for the gasoline content present in household	The weight of LPG is measured using the load sensor (SEN-10245) and the output of the sensor is connected with Arduino MKR Wifi 1010 microcontroller. The user can know the validity of LPG usage daily because the amount of LPG gas will publish as events and watch them come through in real-time using the Wia IoT cloud	MQ – 6 Gas Sensor	MQ-6 gas sensor is provided for gas leakage detection system. Load cell and amplifier unit used as a gas cylinder weight measurement module. Alert system included warning signal and alarm sound for gas leakage detection and SMS alert for gas cylinder refilling. For gas burst accident prevention system, the gas concentration is decreased by turning on the	This project is designed for the kitchen that used LPG for cooking. The alarm unit will activate and also turn on the exhaust fan automatically when LPG concentrations are over 500 ppm in the kitchen.	The alarm unit will activate and also turn on the exhaust fan automatically when LPG concentrations are over 500 ppm in the kitchen.	If they is no LCD display are used then how the they in that spot know the leakage of gas?

No. Year	Title	Components	Description	Software	Sensor	Working	Advantages	Output	Question
				platform.		exhaust fan.			
10. 2021	IOT BASED HOME SAFETY GAS LEAKAGE DETECTION AND AUTOMATIC BOOKING SYSTEM	1.GSM module 2.gas sensor 3.PIR sensor 4.load cell 5.Arduino Uno, 6.Internet of things.	Consequently books a cylinder at the point when the gas is going to discharge is by sending a notice to the gas office using Wifi using Internet of Things approach In addition to that sensor is utilized to identify gas spillage at home .	Regular input for any form of gas leakage is checked through an MQ-6 gas sensor. The positive signal from the gas detection which would make the alarm ring and alert message in LCD display "LPG leakage detected" displayed.	MQ-6 gas sensor	When a small amount of LPG is brought near the MQ6 sensor, it display the message in LCD i.e "GAS LEAKAGE" at the time of leakage of the gas and the system monitors the LPG level and displays the message "HIGH or LOW".	Our system helps customers to upgrade their safety and protect life and property from reputed accidents. We can able to observe the amount of the gas and also the gas leak.By this system, the users can be aware of their gas level and it also avoids the prior and delay booking of the cylinder	Voice feedback system was not included. User will not get intimation through pre-recorded voice messages like the weight of gas Cylinder is ABC kg.	If elderly Customers cannot read or see the letters displayed on the mobile phone or web based application at that time what will they do ?
11. 2021	Gas Leakage Detector System With SMS Alert	1.Liquefied Petroleum Gas 2.Leakage Detector 3.Sensor	This LPG gas leakage detector unit can easily be implemented into a unit that can sound an alarm or send a notification of the LPG concentration via GSM network. The sensor used in this research has both admirable sensitivity and rapid response	The software module is Developed using C-language. The design focuses mainly on module integration and interfacing of the system.	1.Gas Sensor 2.PIC Microcontroller, 3.GSM Module	The gas sensor sensitivity varied with temperature while the refer-	This device can be used as well to sense other gases like iso-butane, propane, LNG and even cigarette smoke.	The output of sensor goes LOW as soon as the LPG sensor senses any gas leakage. Potentially deadly carbon monoxide is also very dangerous to life.	Why can't the use exhaust fan and door opening automatically as a safety measure?

				time					
12.2021	IOT Gas Leakage Detector	1.Buzzer 2.Gas robot 3.GPS 4.Gas detection sensor 5.IOT 6.Liquiefied petroleum gas 7.Manual gas detection system	This paper gives us the information on LPG discharge supported microcontroller (Arduino). To alert Liquefied Gas leakage and then preventing from the unwanted incident, we need to use some of the cautions to discover discharge.	A GSM modem is a specific kind of a modem which accept a sim card and work over a membership to a mobile operator just as same as the cell phone. A microcontroller is the small integrated circuit and used for monitoring a particular task in embedded system.	1.Fire Sensor 2.Gas Detector 3.Camera	This paper gives an overview of how IOT incorporated in modern system is being beneficial in detecting the gas leakage.	1.All modules function distinctively and produce own output. 2.Highly affective gasses. 3.Great selectivity and quick reaction are got.	Camera is not efficient .	How will they come to know the gas leakage if there is know LCD Display ?
/ 13.2020	IoT Gas Leakage Detector and Warning Generator	1.Internet of Things 2.Gas leakage detection 3.Arduino 4.WiFi 5.LPG natural gases 6. oil and gas industry	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 t. 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	Gas sensors	This smart device offers several safety benefits that are vital for early gas leakage detection, and response towards preventing LPG leakage. With small modification the system can also be used for household	After the design implementation , the device accurately detected the simulated gas leakages and a message was generate d through the Wi-Fi network. The message Was transmitted to the server to	The accuracy of the results output must be improved	Can any cloud services can be used to store the records of the data ,to know the previous events of gas leakage ?

			activate the exhaust fan in the particular section to extract leaked gas.			purposes to prevent house gas leakages.	arm the buzzer for the purpose of user alert.		
14.2020	Sensor-Based Gas Leakage Detector System	1.Gas sensor LED, 2.Buzzer Alarm	Gas leakage is a serious problem and nowadays it is observed in many places like residences, industries, and vehicles.	In this paper, semiconductor sensors are used to detect LPG gas. An MQ6 semiconductor sensor is used.	1.Gas lighter, 2.9V battery	A gas leakage detector becomes vital and helps to protect people from the dangers of gas leakage.	Gas leakage detection will not only provide us with significance in the health department but it will also lead to raise our economy.	In the open literatures it is noticed that much work has not been done for a smart gas detection system.	Instead of using sensitive material like SnO2 alternative material can be used?
15.2020	LPG GAS LEAKAGE DETECTION USING IOT	1.IOT 2.Ardunio 3.LPG 4.Sensors	This paper conjointly shows the ratio and temperature over the alphanumeric display.	Here we have adapted new technology IOT (Internet of Things) to get fastest notification of gas leakage. We shall use a stepper motor to OFF the knob of cylinder regulator to avoid the accidental cases due to gas leakage. We will also use a website or application under the IOT technology to get fastest response from the module	MQ 5 or MQ 6 gas sensor	This paper conferred LPG escape detection and alert system. This technique triggers buzzer and displays the severity of the escape to alert individuals once LPG escape is detected.	The importance and connection of the paper is very beneficiary for man as a result of it's a vital cautions for our domestic life.	Battery utilized in this technique is of 5V that isn't that a lot of tolerable	1.If the battery got dried and it has been failed to replace . what will one do if the gas is spilled out get? 2.What is the alternative for batteries?

16.2020	Gas leakage detection and alerting system using Arduino Uno	1.Arduino UNO 2.MQ2 Gas sensor 3.GSM Modem 4.LCD 5.Buzzer	It is extremely accurate with a least cost, this project system is best to detect gas leakage and also warn people around by buzzer beep sound and ansms is been send to the responsible person for preparatory safety calculation.	The signal conditioning of the Arduino UNO is done by output signal of the sensor , provided input to Arduino .the detection result displayed on LCD ,buzzer activity with beep (siren) sound is made. Also send an alert SMS to the in-charge of the plan whose number is saved in SIM Card using GSM Modum.	1.GSM Module 2.Sensor	Applicable Usefully in the industrial and domestic purpose. In danger situations we are able to save the life by using this system. An alert is indicated by the GSM Module .	In danger situation we are able to save the life by using this system.	A sensor node only senses gas like CO2,Oxygen and propane it does not senses other gases.	Advanced module can be used in the place of GSM module?
17.2020	LPG gas detection robot on IOT	1.MQ6 sensor 2.IOT 3.GPS Module 4.LPG Gas	To reduce the chances of such mishaps by presenting a model of microcontroller-based LPG gas detecting and warning system.	The proposed device is delivered using the Raspberry Pi Raspberry Pi would possibly be a computerized PC which may have made and balanced the absolutely extraordinary ways it licenses us to run a range of undertakings and in addition reinforces particular peripherals in various manners with which it grants us to run various activities	MQ6 sensor	Robot is built with specific sensors and machinery to reduce the risk of any unwanted hazard`s occurrences by leakage of toxic gases which are commonly used in homes, office and industrial works	The existing work on this technology and attempted to improve the efficiency of device and make it installable at every place to get world safe and sound of accidents by gas leakages.	This robot is not much advanced and does not detect accurately	Does any other alternative modules can be replaced instead of GPS Module?

			and besides guide various peripherals which are to be used in the system MQ Sensors are introduced on the motive of the LPG Supply to apprehend the spillage of gas, Once the catch facet is completed it will send an alert message to control adaptable, The message is send to Email or at smart phone.					
18.2019	LPG Leakage Detector using Arduino with SMS Alert and Sound Alarm	1.MQ5 Sensor 2.LPG Gas 3.Arduino 4.SMS Alarm 5.Sound Alarm	To give a solution by power cut the gas provision as soon as a gas leakage is perceived apart from activating the sounding alarm .	a) The Arduino Software which is an open source (IDE) makes it simple to create code and upload it to the Arduino Uno board. It also needs a GSM module for the purpose of SMS alert, Buzzer or speaker for sound alarm, LCD module, and display, and Single relay to a triggered Solenoid valve for gas supply manipulation. b) The Arduino Uno is the microcontroller chip that is	1.MQ5 Sensor 2.LPG Gas.	After all the data had been gathered, analyzed and processed, the proponents arrived at the succeeding conclusion. Therefore, the researchers concluded that the "LPG Leakage Detector Using Arduino with SMS Alert and Sound Alarm" will help a lot in terms of preventing any danger caused by gas leakage and useful as part of safety to avoid the gas leak that can cause harmful result. It will	It runs on Linux, Mac OS , and Windows.	They didn't develop a prototype device to find a way to include the manipulation of LPG tank hand wheel	Does any other Advanced Sensors can be used along with this system to enhance the performance?

				responsible for all function of our proposed project. It functions as the brain of this system. The microcontroller chip used is Arduino Uno manufactured by Arduino. The chip works to control the hardware and the interface with the transmitter part.		also improve the safety of all users of Liquefied Petroleum Gas			
19.2019	Gas Leakage Detection and Alert System using IoT	1.IOT 2. MQ5 sensor, 3.Arduino module 4.GSM networks.	We design and develop an propose system which include some safety factors. A safety has been a major issue in today's day to day life.	In this module we are controlling the Alert System by using to connected the hardware or sensor data.	Sensor, Data signals	End User get alert Sound (buzzer) and Display to LCD.	Simple gas leak detector is its simplicity and its ablility to warn about the leakage of LPG gas.	Desired output is not generated due to following failures. 1. Software Failure 2. Hardware Failure 3. Network Connection Failure	How will you over come the hardware and software failures?
20.2018	Intelligent Gas Leakage Detection System with IoT Using ESP 8266 Module	1.Arduino 2.ESP Module 3.Internet of things (IoT) 4.LPG 5.MQ5 sensor 6.Thingspeak 7.Thingtweet.	The main objective of the project is to build a Gas leakage detector using LPG gas	This paper describes that using LPG gas sensor for sensing the leakage and produce the result in audio and visual formats also alerts human via Short Message Service (SMS). The sensor has excellent	MQ5 Sensor module	The final output of the project is used to detect leakage if gas from cylinders and also notify the user by connecting via IoT software.	This system provides a control action during gas leakage by closing the solenoid valve. And it activates the alarm and also sends alert messages to the users within a short time. It is	Multiple air qualities are not used to detect various kind of gases.	Why can't one use the multipe air quality sensors to detect the leakage? Does alternative can be used for thingspeak and thingtweet?

				sensitivity combined with a quick requital time. The sensor has also sense iso-butane, propane and cigarette smoke.			an economical system which can be installed in apartments, hotels and wherever it is needed.		