LITERATURE SURVEY

1. TITLE: gas leakage detection techniques

AUTHOR: A.Mahalingam, r. T. Naayagi, n. E. Mastorakis

SUBJECT: The proposed alarm system is mainly meant to detect LPG leakage, which is most commonly Used in residential and commercial premises. The system detects not only the presence of gas (gas leak), But also the amount of leakage in the air, and accordingly raises an appropriate audio visual alarm. The Objective of the system is to detect LPG gases such as propane and butane. The allowed UK level for Butane is 600 ppm above which it is considered to be of high level and poses a danger. The proposed system ensures a continuous monitoring of the gas levels. If the gas level increases above The normal threshold level of 400 ppm butane (LPG), the system starts to issue early warning alarms at 100ms interval, which implies low level gas leakage. If the leakage level increases to 575 ppm of butane (LPG), the system activates high severity audio alarms at 50 ms intervals warning the occupants to run to Safety.

2. TITLE: GSM based LPG leakage detection and controlling system

AUTHOR: Prof. M.Amsaveni, A.Anurupa, R.S.Anu Preetha, C.Malarvizhi, M.Gunasekaran

SUBJECT: Its analog output is given to the microcontroller. It consists of Predefined instruction set. Based on this, the exhaust fan is switched on. So, the concentration of gas inside the room gets decreased. Then, the stepper motor is rotated thus closing the knob of the cylinder. Because of this process, the leakage of gas is stopped. The relay is switched to off the power supply of the house. The buzzer produces an alarm to indicate the gas leakage. Then, the user is alerted by SMS through the GSM module. They proposed their methodology that the system takes an automatic control action after the detection of 0.001% of LPG leakage. This automatic control action provides a mechanical handle for closing the valve. We are increasing the security for human by means of a relay which will shut down the electric power to the house. Also by using GSM, we are sending an alert message to the users and a buzzer is provided for alerting the neighbors about the leakage.

3. TITLE : Automated unified system for LPG using microcontroller and GSM module

AUTHOR: B. B. Did paye, Prof. S. K. Nanda

SUBJECT: Their paper Proposed an advance and innovative approach for LPG leakage detection,prevention and automatic Booking for refill. In advance, the system provides the automatic controlling of LPG regulator also if leakage is detected the system will automatically turn off the main switch of power supply. Hence it helps to avoid the explosion and blast.

4. TITLE : gas leakage detection and control

AUTHOR: Srinivasan, Leela, Jeya bharathi, Kirthik,Rajasree

SUBJECT: In this paper, the gas leakage resulting into fatal inferno has become a serious problem in household and other areas where household gas is handled and used. It alerts the subscriber through the alarm and the status display besides turning off the gas supply valve as a primary safety measure.

5. TITLE : The problems of gas accidents in coal mines and family safety from gas usage

AUTHOR: Xie and Tan

SUBJECT: The infrared optics gas detection was high in detection accuracy, long range service life. The system allowed the passage of infrared signal to the gas intended for measurement while its molecules will absorb the light energy. The absorption relationship followed Lamber-Beer law.

6. TITLE : Android based automatic gas detection and indication robot

AUTHOR: Ch. Manohar Raju and N. Sushma Rani, 2008

SUBJECT: Whenever there is an occurrence of gas leakage in a particular place the robot immediately read and sends the data to android mobile through wireless communication like Bluetooth. We develop an android application for android based smartphones which can receive data from robot directly through

Bluetooth. The application warns with an indication whenever there is an occurrence of gas leakage and we can also control the robot movements via Bluetooth by using text commands as well as voice commands. The previous mobile robots are based on heterogeneous technologies like GSM, GPS, internet based etc., but the main disadvantage of those prototypes were the absence of communication in particular areas. So, with the rapid developments and tremendous changes in technology we have lots of techniques to eradicate previous problems. Wireless communication protocols play a vital role in present trends. Bluetooth, WI-Fi, Zigbee etc., we use one of the best feature of smartphone, i.e., the Bluetooth technology to control and monitor parameters driven by a robot.

Moreover, it helps to avoid mistreatment of human inspectors in probably dangerous environments. However, before ready-ing in industrial settings, more development is needed (e.g., in explosion protection, package development, etc.), and in fact leg a problems should be processed before ready-ing in business settings. Still, it is certain that an autonomous, mobile gas detection and leak localization robot is possible today and can significantly enhance safety.

7. **TITLE :** gas leak detection and localization techniques various ways to detect the gas leakage

   AUTHOR: Pal-Stefan Murvaya, Ioan Sileaa, 2008

   SUBJECT: The proposed techniques in this paper are nontechnical methods, hardware based methods which include acoustic methods, optical methods and active methods. In their survey they told 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. This disadvantage is prone to disappear for some of these techniques due to forthcoming technological advancements.

8. TITLE : leakage detection and analysis of leakage point in the gas pipeline system

AUTHOR: Zhao Yang, Mingliang Liu, Min Shao, and Yingjie Ji, 2011

SUBJECT: n this paper they gave various model which used SCADA I/F Model: The SCADA system has the function of transferring the acquired data from a pipeline system to Transient Simulation Model every 30 seconds. This module communicates with SCADA. Dynamic parameters are collected every 30 seconds, such as pressure, flow and temperature. Transient Simulation Model: Transient flow is simulated utilizing perfect numerical methods based on actual data. Pressure and temperature served as independent variables are provided in order to get average pressure and average temperature. Then all the parameters of the gas in the pipeline system can be acquired. Leakage Detection: The leakage detection is carried out by comparing the data acquired through the SCADA system with that by the Transient Simulation Model. This model could provide leakage point judgment and prompt warning based on transient simulation and volume balance.

9. TITLE : GSM-Based Remote Monitoring System

AUTHOR: Chen and Jiang, 2008

SUBJECT: The hardware and software architecture of the system was designed where the remote signal is transmitted through GSM network. The system has two parts: the monitoring center and the remote monitoring station. The monitoring center consists of a computer and a TC35 communication module for GSM. The computer and the TC35 are connected by RS232. The remote monitoring station consist of a TC35 communication module for GSM, an MSP430F149 MCU, a display unit, sensors and a data gathering and processing unit. The software for the monitoring center and the remote monitoring station were designed using VB. A review of gas leak detection techniques was done by (Puranet al, 2014) with a classification of leak detection methods in a gas pipeline to monitor the integrity of a pipeline.

In the year 2014, (Soundaryaet al, 2014) stated that an efficient and smooth working controller is needed to continuously sense both leakage and level of

the gas. And also fast response is required when leakage is found and the monitoring system must provide additional leakage information which can be used in further processing. The detection system includes Arduinoduemilanove. Microcontroller board compatible with ATmega328p coupled with the system is the weight sensor, LCD display, GSM and DC motor.

10. TITLE : leakage detection and real time gas monitoring system

  AUTHOR: P.Meenakshi Vidya, S.Abinaya, G.Geetha Rajeswari, N.Guna

  SUBJECT: In this system, the gas leakage is detected and controlled by means of exhaust fan. The level of LPG in cylinder is also continuously monitored

11. TITLE : Gas detection using an integrated circuit and MQ-9

  AUTHOR: Falohun A.S., Oke A.O., and Abolaji B.M. 2016

  SUBJECT: In this basically, they used an embedded design which includes typical input and output devices include switches, relays, solenoids, LEDs, small or custom LCD displays, radio frequency devices, and sensors for data such as temperature, humidity, light level etc. Embedded systems usually have no keyboard, screen, disks, printers, or other recognizable I/O devices of a personal computer, and may lack human interaction device. The amount and type of detectors and the type of fire alarm system that one chooses for property protection will depend on the owner's property protection goals, the value of the property and the requirements of the owner's insurance company.

  Here again, one of the most common mistakes in fire alarm generally, heat detection will be used in all areas that are not considered high value. Here again, one of the most common mistakes in fire alarm system application is to provide partial protection of a building and expect high performance from the installed systems of any kind.system application is to provide partial protection of a building and expect high performance from the installed systems of any kind.

12. TITLE : System that along with monitoring and detection of gas leakage

  AUTHOR: Hina Ruqsar , Chandana R , Nandini R , Dr. T P Surekha

SUBJECT: Real time data is made available through real time feed over internet They have used Xively IOT platform to provide real time sensor data over the internet.

13. TITLE : gas leakage and LPG levels where gas leakage occurs automatically

AUTHOR: Ms.Shinde Sayali P , Ms. Chavan Sakshi S, Ms. Dhas Snehal S (June 2021)

SUBJECT: The authors suggests that gas leakage is performed by various gas sensors. Whose author has worked on gas leaks and mentions that we can take care if a found using a sensor and gas booking can be done automatically when a small amount of gas is taken closed.

RFID tag microcontroller, pressure sensors and buzzers are used to monitor gas. Through this paper important parameters are used to find the level of gas in the container. The good purpose of this project is to get notification of gas leak to user when gas leakage is started. Arduino was originally created as a tool for fast sampling and activities for Students with no knowledge for electronics. This paper uses a microcontroller, buzzer and a gas sensor to detect gas leakage system. When a gas leak is detected by a gas sensor ,the microcontroller turn on the buzzer in critical condition. The author suggest that this message or instruction may be displayed using an LCD display for LPG monitoring.

The proposed system detects LPG leaks and alerts customers. The alarm starts when the system notice and increases in LPG leakage concentration by sending an alarm and sending a message to specific mobile phone. The device assures safety and prevents explosions.A microcontroller based system based on gas sensor(MQ6) has been developed in proposed system to detect LPG leakage . The unit is also integrated with an alarm unit to detect signal a leak.

14. TITLE : Prototype depicts a mini mobile robot which is capable to detect gas Leakage

AUTHOR: Ch. Manohar Raju and N. Sushma Rani (9 September 2020)

SUBJECT: Whenever there is an occurrence of gas leakage in a particular place the robot immediately read and sends the data to android mobile through wireless communication like bluetooth. They develop an android application for

android based smart phones which can receive data from robot directly through Bluetooth.

15. **TITLE :** Leak detecting techniques is available for gas Pipelines

   AUTHOR: Ch. Manohar Raju and N. Sushma Rani (9 September 2020)

   SUBJECT: 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 anddisadvantages. 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.

16. **TITLE :** Leakage detection and analysis of leakage point in the gas pipeline system.

   AUTHOR: Zhao Yang, Mingliang Liu, Min Shao, and Yingjie Ji

   SUBJECT: They gave various model which used SCADA I/F Model: The SCADA system has the function of transferring the acquired data from a pipeline system to Transient Simulation model every 30 seconds. This module communicates with SCADA. Dynamic parameters are collected every 30 seconds, such as pressure, flow and temperature.

17. **TITLE :** ARM7 based automated high performance system for LPG refill booking and leakage detection

   AUTHOR: S Shyamaladevi, V G Rajaramya, P Rajasekar and P Sebastin Ashok

   SUBJECT: t. The paper is designed based on modular approach which is easy to analyze as LPG cylinder booking unit, gas leakage monitoring unit at the consumer end and server system unit at the distributor side. MQ6 placed in the vicinity of the gas cylinder. In the advent of leakage, the resistance of the sensor decreases increasing its conductivity. Corresponding pulse is fed to microcontroller and simultaneously switches on the buzzer and exhaust fan

18. TITLE : Automatic gas detection and indication golem

   AUTHOR: Abhijeethrathi et.al (2013)

   SUBJECT: They planned image depicts a mini mobile golem that is Capable to observe gas leak in unsafe places.Whenever there's an occasion of gas leak during a specific place the golem instantly scan and sends the information to golem mobile through wireless communication like Bluetooth. We have a tendency to develop a golem application for golem primarily based good phones which may receive knowledge from Golem directly through Bluetooth. The applying warns with a sign whenever there's an occasion of gas leak and that we can even management the golem movements via Bluetooth by exploitation text commands yet as voice commands. The previous mobile robots a supported heterogeneous technologies like GSM, GPS, net primarily based etc., however the most disadvantage of these prototypes were the absence of communication specially areas. So, with the speedy developments and tremendous changes in technology we've ample techniques to eradicate previous issues. Wireless communication protocols play an important role in gift trends. Bluetooth, Wi-Fi, Zigbee etc., we have a tendency to use one among the simplest feature of good phone, i.e., the Bluetooth technology to regulate and monitor parameters driven by a golem.

19. TITLE : ARM7 primarily based machine-driven high performance system is used for LPG refill booking and outpouring detection

   AUTHOR: Rahul Nalawade et.al, (2018)

   SUBJECT: That decreases the outpouring resistance.Microcontroller sends a message "EMERGENCY ALERT: LPG gas outpouring found in your home to needed cell numbers via GSM module and therefore the same are going to be displayed on digital display. This technique detects the outpouring of the LPG associated alerts the patron regarding the leak by SMS and as an emergency live the system can shut down the ability offer, whereas activating the alarm.

20. TITLE : Leakage detection and analysis of leakage point in the gas pipeline system

   AUTHOR: The Manichandana Simrah et.al (2019)

   SUBJECT: In this paper they gave various model which used SCADA I/F Model: The SCADA system has the function of transferring the acquired data

from a pipeline system to Transient Simulation Model every 30 seconds. This module communicates with SCADA.Dynamic parameters are collected every 30 seconds, such as pressure, flow and temperature. Transient Simulation Model: Transient flow is simulated utilizing perfect numerical methods based on actual data. Pressure and temperature served as independent variables are provided in order to get average pressure and average temperature