

LITERATURE SURVEY:

A number of reviews on the subject of gas leakage detection techniques were done in the past either as part of research papers/technical reports on a certain leak detection method and other gas related subjects. A.Mahalingam, r. T. Naayagi, n. E. Mastorakis; they introduce design and implementation of an economic gas leakage detector. They gave the formulation of many problems in previous gas leakage detectors. They told that several standards have been formulated for the design of a gas leakage detection system such as IEEE, BS 5730, and IEC. For this work, the recommended UK safety standards have been adopted. 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.[1] Prof. M.Amsaveni, A.Anurupa, R.S.Anu Preetha, C.Malarvizhi, M.Gunasekaran; they told in their research paper on "GSM based LPG leakage detection and controlling system" the leakage of LPG gas is detected by the MQ-6 gas sensor. 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. [2]B. B. Did paye, Prof. S. K. Nanda; in this paper they told about their research on leakage detection and review of Automated unified system for LPG using microcontroller and GSM module". 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.

[3]Srinivasan, Leela, Jeya bharathi, Kirthik, Rajasree; in this research paper they told about gas leakage detection and control. 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. [4]Hitendra Rawat, Ashish Kushwah, Khyati Asthana, Akanksha Shivhare in the year 2014 planned a framework, They gave security issues against hoodlums, spillage and fire mishaps. In those cases their framework sends SMS to the crisis number gave to it. [5]

P.Meenakshi Vidya, S.Abinaya, G.Geetha Rajeswari, N.Guna, Automatic LPG detection and hazard controlling "published in April 2014 proposed the leakage detection and real time gas monitoring system.

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.[6]

Ch. Manohar Raju and N. Sushma Rani, 2008, they introduce an android based automatic gas detection and indication robot. They proposed prototype depicts a mini mobile robot which is capable to detect gas leakage in hazardous places. 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.

They introduce a robot and mobile application for In the meantime, the system prototype has impressively demonstrated its use and capability in intensive series of tests. The drive unit, the navigation system and, therefore, the complementary sensor systems performed superbly throughout the tests. The robot facilitates independent gas detection and leak localization in sites that are otherwise troublesome to access. 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 legal 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]

Pal-Stefan Murvaya, Ioan Sileaa, 2008, they told in their survey on gas leak detection and localization techniques various ways to detect the gas leakage. They introduce some old or new technique to detect the gas. 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]

Zhao Yang, Mingliang Liu, Min Shao, and Yingjie Ji, 2011, in this paper they told about their research on leakage detection and analysis of leakage point in the gas pipeline system. 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. 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]

Falohun A.S., Oke A.O., and Abolaji B.M. 2016, in this paper they proposed their dangerous gas detection using an integrated circuit and MQ-9. 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.

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 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. [10]

Hina Ruqsar, Chandana R, Nandini R, Dr. T P Surekha, have proposed a system that along with monitoring and detection of gas leakage, 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. [11]

