Gas Leakage Monitoring and Alerting System for Industries Using IOT

ABSTRACT

Combustible gas detection and measurement has become essential in many fields. Combustible gas leakages are capable of reaching large areas, affecting entire neighborhoods or even cities, causing devastating environmental impacts. This documentation presents an industrial monitoring system design using Internet of Things (IOT). This gas sensor which has captured information about combustible gas leakage will be posted into a data cloud. The gas sensor is capable of detecting the leakage of combustible gas under most of the atmospheric conditions. All the components are controlled by an Arduino that acts as a central processor unit in the setup. As soon as a combustible gas leakage was detected by the sensor, the alarm will be raised in the form of a buzzer. This alarm supports a small LCD to show the leakage location, to alert the respected person to turn on the exhaust fans or stop incoming gas in the particular section to extract the gas leakage. The capabilities of this gas detection system are not only to monitor continuously the surroundings but are also to help to prevent the gas leakage and hence minimizing the chances of fire and damage. Keywords: IOT Gas leakage detector

Introduction:

The Internet of Things is a developing theme of specialized, social, and monetary centrality. Customer items, tough goods, cars and trucks, modern and utility segments, sensors, and other regular articles are being joined with Internet availability and amazing information systematic capacities that guarantee to change the manner in which we work, live, and play. The Internet of Things (IoT) is an essential theme in innovation industry, strategy, and designing circles.The focus of this work is to design a system that monitors gas leakage in an enclosed system using an Arduino Uno microcontroller and an alarm system are used to alert people within leakages neighborhood while SMS will be sent to the premises owner or safety organization to towards making decision to avert damages and loss of lives/properties.

LITERATURE SURVEY:

Shruti unnikrishnan, Mohammed Razil, Joshua benny have proposed a Liquefied Petroleum Gas (LPG) monitoring and leakage detection system. With the large demand and use of LPG, this system would be helpful to monitor the usage of LPG on a regular basis and to alert about any hazards that may occur due to LPG leakage.

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.

S.M.Zinnuraain , Mahmudal Hasan ,Md Akrmal Hakque have proposed a LPG (Liquified Petroleum Gas) leakage detection with monitoring and automatic safety system. With the drastically increased demand and use of LPG, this system would be helpful to monitor the usage of LPG on a regular basis and to take safety about any hazards that may occur due to LPG leakage. We have designed a system that notify the user using IOT.

LITERATURE REVIEW:

ARDUINO BASED GAS LEAKAGE DETECTION SYSTEM USING IOT:

It has become important factor nowadays to bring the technology into our home and office. By making the place smart, the day-to-day activities are becoming more and easier. The development of home automation has become mandatory in homes as people are moving towards to the smart home concepts. The supply gas will also be stopped with the use of solenoid, ultimately preventing the chance of accident. This system will not only able to detect the leakage of gas but also alerting through audible alarms. Presence of excess amounts of harmful gases in environment then this system can notify the user. System can notify to society admin about the condition before mishap takes place through a message. This system will not only able to detect the leakage of gas but also alerting through audible alarms. Presence of excess amounts of harmful gases in environment then this system can notify the user. The people in the neighbors can also be included in case of an emergency. LPG gas sensor is used for input. A buzzer is connected along with the circuit to indicate the use of the output.

Cloud Connected Smart Gas Leakage Detection and Safety Precaution

System :The project design and develop a cloud connected smart LPG gas cylinder platform, acting as a safety device for detecting LPG gas leak at low levels to avoid any possible accidents. It is also capable of sensing fire breakout in the area and weight of the gas in order to provide real time monitoring and alert over Internet. If an abnormal condition is detected, the device sends an alert to the smartphone app of the user and also generates an alert e-mail to other authorities. In addition to this upon detecting a gas leakage or a fire breakout, the device automatically takes safety precautionary measures, like gas valve closing, ventilation opening, fire sprinkler activation and home electrical power supply cut-off. The device connects to the internet via Wi-Fi and thus increases the mobility of the platform within the premises of the house. A Wi-Fi capable ARM Cortex-M4 microcontroller is used to implement the system. This device offers a complete, low cost, powerful and user-friendly way of real-time monitoring and remote control of gas leakages and prevention mechanisms in household and industrial areas.

Gas Leak Detection and Localization System through Wireless Sensor Networks:

In this project we proposed a prototype of a Wireless Sensor Network (WSN) to monitor and locate gas leaks of a complex indoor environment. Specifically, a mobile node is moving inside a building to

monitor any leakage of carbon dioxide (CO_2), supporting and displaying the level and the location of the leakage. Throughout the demonstration, the technological advantages of cognitive networking along with multichip routing are explored.

INFERENCE:

The IOT components used help in making the system much more cost effective in comparison with traditional Gas detector systems. A discussion on how the aims and objectives are met is presented. An overall conclusion IOT based toxic gas detector is it has become more efficient, more applicable to today's applications and smarter.In this paper we use IOT technology for enhancing the existing safety standards. While making this prototype has been to bring a revolution in the field of safety against the leakage of harmful and toxic gases

FEATURES:

• In this project,the physical use of wires and devices to be used is less. • Coverage area of MQ2 Sensor is more compare to other sensors(i.e)300-10K PPM. • With help of Web User Interface and IOT devices, we can remotely monitor the gas level. • Cost efficient and user friendly devices to be used..

FUTURE SCOPE:

A Mobile Application can be created for this system which can give information about the concentration of gas present in the area, setting reminders to check gas level, also to predict the gas leak by giving values. A Mobile Application can be created for this system which can give information about the concentration of gas present in the area, setting reminders to check gas level, also to predict the gas leak by giving values. Relay motors can be added into the system to provide more safety. These motors can switch off the Main Gas Supply and Main Power supply in case the gas concentration exceeds certain limit

CONCLUSION:

The advantage of this simple gas leak detector is its simplicity and its ability to warn about the leakage of the LPG gas. This system uses GSM technique to send alert massage to respective person if no one is there in the house and then gas leaks occurs, GSM module is there to send immediate messages to the respective person regarding the gas leak . The main advantage of this system is that it turns off the regulator knob of the cylinder automatically when gas leakage is detected. As a result of this,the damages caused by the leakage of gas is increasing day by day.

REFERENCES:

1.G.B.C.V.K.G.S.V.H., B.N.V. Abhishek and P. Bharath, "Automation of lpg cylinder booking and leakge monitoring system", *International Journal of Combined Research and Development (IJCRD)*, pp. 693-695, 2016.
2.A. Raj, A. Viswanathan and T. Athul, "Lpg gas monitoring system", *IJITR*, vol. 3, no. 2, pp. 1957-1960, 2015.
3.D.H. Priya and L. Babu, "Gas leakage system", *International Journal of Scientific and Research Publications*, pp. 653, 2014.
4.P.M. Vidya, S. Abinaya, G.G. Rajeswari and N. Guna, "Automatic lpg leakage detection and hazard prevention for home security", *Proceeding of 5th National Conference on VLSI Embedded and Communication & Networks on*, vol. 7, 2014 April.
5.S.S.S.S.K.K. Pankaj, C. Warule and Shivam Upadhyay, "Lpg detection metering and control system using microcontroller", *International Journal of Advance Research and Innovative Ideas in Education*, 2016.