IBM PROJECT

GAS LEAKAGE MONITORING AND ALERTINSYSTEM FOR INDUSTRIES

PROPOSED SOLUTION:

1.PROBLEM STATEMENT.

There have been many incidents like explosions and fires due to LPG gas leakage. Such incidents can cause dangerous effects if the leakage is not detected at an early stage. Arduino and IOT based LPG leakage detection system is a project which will help in determining gas leakage in the surroundings and send data to an IOT module. 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 and the same is the case with iot based gas detection system. It does not require human attention.

2. IDEA /SOLUTION DESCRIPTION

the Arduino Uno-based LPG detector system project is that it gives remote indications to the user about the LPG leakage with the help of SMS sing. This project has applications in our home. We can also use this gauge in industries, offices, and colleges where the LPG gas cylinder is used in the canteen. This project also has use in hotels and restaurants. To refine this project, we can add a GPS modem to this system. It is used in dangerous Gas detection. It is used in Fire Hazard Prevention. It is also used in Oxygen level Measurement. The sensor has exquisite sensitivity combined with a precipitate response time. The system is highly authentic, tamper-proof, and fixed. in the long run, the preservation cost is very less when compared to the present systems.

3.NOVELTY/UNIQUENESS.

Here, 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 in environment and hence nullify any major or minor hazard being caused due to them. 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. This system will be able to detect the gas in environment using the gas sensors. This will prevent form the major harmful problem.

4.SOCIAL IMPACT/ CUSTOMER SATISFACTION.

Gas leakage leads to various accident resulting in both material loss and human injuries the risk of explosion firing suffocation are based on their physical properties such as toxicity flammability etc, so to satisfy the customer needs we introduce the gas leakage alerting and monitoring system . 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 consists of gas detector sensors, Arduino board, ESP8266 and Cloud server.

5.BUSINESS MODEL(FINANCIAL BENEFIT).

Unidentifiable gas leaks give rise to explosions that are harmful to the employees working in the hazardous environment. In the automotive industries like oil and gas, hotels, and places where flammable gases are used in abundance, a gas detection system is a basic requirement for safety. An IoT powered gas detection solution uses gas sensors to identify the presence of toxic gases such as CO2, CO, NOx in the industrial facilities. Especially, in the oil and gas industry where many gaseous products like propane, butane, and hydrogen are manufactured at a greater level. Hence, the chances of gas explosions are higher as these gases are easily combustible in the oxygen-rich environment. Apart from these, toxic gases like hydrogen sulfide (H2S) is produced during refining processes that might harm the workers' health. Thus, it becomes a necessity to keep a real-time check on gas production. If these toxic gases are released untreated, their harmful contaminants result in air pollution and acid rains. The Internet of Things is an advanced technology that works on multiple levels creating a smart network of sensor devices, equipment, and assets. These devices help provide valuable data for analysis and allow the industrialists to make better decisions. In a gas monitoring system, the gas detection sensors are installed strategically on different locations for real-time monitoring. These sensors then alert the managers via a centralized platform through live notifications when the gas is detected.

6.SCALABILITY OF SOLUTION

It enables threshold-based triggers that alert the concerned managers with visual and sonic alarms. – Accurate data monitoring helps timely actions for a known concentration of air pollution. – Also, multiple deployments across any potential sources can help industries to avoid any industrial incident and protect workplace safety. Scalability offers an efficient, cost-effective solution to achieve reliable condition monitoring of a rapidly increasing number of assets without increasing staff resources to match. Our end to end wireless gas monitoring system uses wireless sensors to detect the presence of toxic gases. The solution can hence be scaled up for flexible functionality and offer great extendibility for multi-purpose usage.