LITERATURE SURVEY ON IOT BASED GAS LEAKAGE MONITERING AND ALERTING SYSTEM

ABSTRACT:

Internet of Things aim towards making life simpler by automating every small task around us. As much is IOT helping in automating tasks, the benefits of IOT can also be extended for enhancing the existing safety standards. Safety, the elementary concern of any project, has not been left untouched by IOT. Gas Leakages in open or closed areas can prove to be dangerous and lethal. The traditional Gas Leakage Detector Systems though have great precision, fail to acknowledge a few factors in the field of alerting the people about the leakage. Therefore 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 readings. Our main aim is to proposing the gas leakage system for society where each flat have gas leakage detector hardware. This will detect the harmful gases in environment and alerting to the society member through alarm and sending notification.

INTRODUCTION:

Gas leakage leads to various accidents resulting in both material loss and human injuries. The risk of explosion, firing, suffocation are based on their physical properties such toxicity, flammability, etc. The number of deaths due to explosion of gas cylinders has been increasing in recent years. The reason for such explosion is due to substandard cylinders, old valves, worn out regulators and lack of awareness in handling gas cylinders. Natural gas is another widely used fuel in homes. Both gases burns to produce clean energy. Being heavier than air, these gases do not disperse easily. It may lead to suffocation when inhaled and may lead to explosion

PROBLEM STATEMENT:

This project proposed the most common problem experienced in our day- to-day life. In most industries, one of the key parts of any safety plan for reducing

risks to personnel and plant is the use of early-warning devices such as gas detectors. These can help to provide more time in which to take remedial or protective action. They can also be used as part of a total, integrated monitoring and safety system for an industrial plant [2]. Rapid expansion of oil and gas industry [3] leads to gas leakage incidents which are very serious and dangerous. Solutions need to be find out at least to minimize the effects of these incidents since gas leaks also produce a significant financial loss [4]. The challenges are not only to design a prototype of the device that can only detect but also automatically respond to it whenever the leakage occurs.

ARCHITECTURE:

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PURPOSE OF GAS DETECTORS:

Natural gas detectors measure the amount of gas present in the environment. If the detector is placed correctly near a source in the home where a potential gas leak could occur, an alarm will go off if a (minor) gas leak is detected. 2. The gas alarm will use an early warning signal to indicate the leakage of gas in the home, using light and sound alerts. Some devices only have a sound alarm. It is important to place the detector in a place where you will be able to hear and see the device, if the device is placed in a location where you cannot hear the alarm go off, the gas alarm will be useless.

WORKING:

This proposed method consists of gas leakage detection system, weight measurement module, microcontroller, IOT module and alert system. The main basic arduino Mega2560 micro controller requires the power supply ranging from 7-12 volts which can be build by using different components like step down

transformer, rectifier, filter and regulator which are readily available as adapters these days. The other main component we are using in our project is use of Load cell. A load cell is a transducer that is used to convert a force into electrical signal, which is used to measure of a LPG gas cylinder weight so that we can expect and alert the user with in how many days the cylinder is about to empty. There are different Load cells available in the market with different weight measurement capabilities. The Gas Sensor is also one of the components used to detect the leakage of the LPG Gas (Methane & Propane) which converts one form of the signal into other form.

HARMFUL GAS DETECTION:

The sensing of toxic gases such as H2S, Methane, and CO is of great importance in any industry to avoid unwanted leakage and consequences like poisoning or explosions. The presence of these gases can be easily detected in the industrial facilities and commercial buildings with the help of IoT-powered gas monitoring solution. Moreover, a gas detector or sensor device is a crucial part to carry out safe industrial operations. The sensor-enabled solution helps prevent the high risk of gas explosions and affecting any casualties within and outside the premises.

CONCLUSION:

Gas leakage detection and alarm system helps in saving the loss of lives and property. The main advantage of this project is that it can determine the leakage and send the data over to a website, where it can be monitored and corrective actions can be taken. Further, we can add Smoke and Fire Detectors to detect fire.