

Literature Survey on
GAS LEAKAGE MONITORING
&
ALERTING SYSTEM USING IOT

1. 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 (CO₂), 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.

2. 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 electrical power supply cut-off.

3. Gas Leakage Detection and Smart Alerting and Prediction Using IOT:

IoT is an expanding network of physical devices that are linked with different types of sensors and with the help of connectivity to the internet; they are able to exchange data. Through IoT, internet has now extended its roots to almost every possible thing present around us and is no more limited to our personal computers and mobile phones. 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 having Smart Alerting techniques involving calling, sending text message and an e-mail to the concerned authority and an ability to predict hazardous situation so that people could be made aware in advance by performing data analytics on sensor readings.

4. The Application of a Continuous Leak Detection System to Pipelines and Associated Equipment:

In recent year the problem of leak detection in pipelines, tanks, and process vessels has been the focus of many man-hours of effort. Some examples of leaks occurring in pipelines, an overview of classical leak detection systems, and the engineering basis of a new type of detector system are examined. This system is a flexible hydrocarbon sensing cable that can be installed along pipelines, in double containment tanks and piping, or in trenches to detect and locate leaks of common industrial

hydrocarbon solvents or fuels while ignoring the presence of water. The simple electrical circuit is also described, which locates and detects a leak anywhere along the length of the sensor.

The current major method of leak detection is the compensated volume balance method. This method essentially measures the “volume in” and subtracts the “volume out”. There are meters that are guaranteed repeatable to within -05 percent. An alarm will sound when there is a significant difference in volume. The pump station management will determine if the difference in the two measured volumes is the result of an operational change or if the pipe is leaking. Operational changes can result from a change in product grade, change of pumps or pumping pressure, or a change in temperature because of storage tank changes.

5. Gsm Based Gas Leakage Detection System:

Gas leakage is a major problem with industrial sector, residential premises and gas powered vehicles like CNG (compressed natural gas) buses, cars. One of the preventive methods to stop accident associated with the gas leakage is to install gas leakage detection kit at vulnerable places. The aim of this paper is to present such a design that can automatically detect and stop gas leakage in vulnerable premises. In particular gas sensor has been used which has high sensitivity for propane (C_3H_8) and butane (C_4H_{10}). Gas leakage system consists of GSM (Global System for mobile communications) module, which warns by sending SMS. However, the former gas leakage system cannot react in time.

Gas leakage detection is not only important but stopping leakage is equally essential. This paper provides a cost effective and highly accurate system, which not only detect gas leakage but also alert (Beep) and turn off main power and gas supplies, and send an SMS. GSM module is used which alert the user by sending an SMS. In order to provide high accuracy gas sensor MQ-6 has been used.