**Gas Leakage detection and Alarming system**

* An IBM guided project

-Team ID : PNT2022TMID51059

Dated : 30th September 2022

**Literature survey :**

1. **Gas Leakage Detection and Alert System using IoT**

Sayali Joshi, Shital Munjal, Prof. Uma B. Karanje

Computer Engineering, Marathwada Mitra Mandal Institute of Technology, Lohgaon, Pune, Maharashtra, India.

**Abstract :**

We design and develop an propose system which

include some safety factors. A safety has been a major

issue in today’s day to day life. LPG and CNG i.e.

petroleum gas and compressed natural gas are most

commonly used in residential and commercial places

for cooking purpose and in various vehicles as a

replacement for costly fuels like diesel, petrol

These gases are filled in cylinders which are easily

un-damageable. But leakage can take place through

pipes or regulators or knobs which may cause

accidents like suffocation, uneasiness or sometimes

may catch fire and short circuit as well. The main

aim of this project is developing a system that can

detect gas leakage . On detection it will send an

alert SMS and the gas supply knob of cylinder will be

switched off automatically.

1. **GAS LEAKAGE DETECTION AND SMART ALERTING SYSTEM USING IOT**

Shital Imade, Priyanka Rajmanes, Aishwarya Gavali , Prof. V. N. Nayakwadi

**Abstract :**

We proposed a wireless sensor network (WSN) for monitoring indoor air quality, which is crucial for people’s com-fort, health, and safety because they spend a large percentage of time in indoor environments. A major concern in such networks is energy efficiency because gas sensors are powerhungry, and the sensor node must operate unattended for several years on a battery power supply. A system with aggressive energy management at the sensor level, node level, and network level is presented. The node is designed with very low sleep current consumption (only 8 µA), and it contains a metal oxide semiconductor gas sensor and a pyroelectric infrared (PIR) sensor. Furthermore, the network is multimodal; it exploits information from auxiliary sensors, such as PIR sensors about the presence of people and from the neighbour nodes about gas concentration to modify the behaviour of the node and the measuring frequency of the gas concentration. In this way, we reduce the nodes’ activity and energy requirements, while simultaneously providing a reliable service. To evaluate our approach and the benefits of the context-aware adaptive sampling, we simulate an application scenario which demonstrates a significant lifetime extension (several years) compared to the continuously-driven gas sensor. In March 2012, we deployed the WSN with 36 nodes in a four-story building and by now the performance has confirmed models and expectations.

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

1. **Internet of Things (IOT) Based Gas Leakage Monitoring and Alerting System with MQ-2 Sensor**

Rohan Chandra Pandey , Manish Verma , Lumesh Kumar Sahu Kalinga University, PG Student, Vlsi and Embedded System Kalinga University, Assistant Professor,Department of Vlsi Design and Embedded system, Kalinga University, Head of department,Assistant Professor, Department of Electrical Engineering Village-Kotni,Near Mantralaya Naya Raipur, Chhattisgarh Pin-492101.

**Abstract :**

It is an ideal sensor to detect the presence of a dangerous LPG leak in our home or in a service station, storage tank environment and even in vehicle which uses LPG gas as its fuel. This unit can be easily incorporated into an alarm circuit/unit, to sound an alarm or provide a visual indication of the LPG concentration. The sensor has excellent sensitivity combined with a quick response time. When the target combustible gas exist, the sensor’s conductivity is higher along with the gas concentration rising. LPG gas sensors change of conductivity to its corresponding output signal of gas concentration. MQ-2 gas sensor shown in figure is used to sense the poisonous gas and has high sensitivity to LPG, and also response to Natural gas. It is a portable gas detector which has long life with low cost.. Model No. MQ-2 Sensor Type Semiconductor Standard Bakelite (Black Bakelite) Detection Gas PROPANE, HYDROGEN,LPG Concentration 300-1000ppm (Hydrogen, Propane, LPG). When the target combustible gases exist, the sensor’s conductivity is higher along the gas concentration increasing..

Raspberry pi 3 has been used as a single-board computer with wireless LAN and Bluetooth .It is a powerfull processor which can run full range of ARM GNU/Linux distributions as well as windows 10 IOT edition. The raspberry pi 3 is installed in our project model which supports linux operating system and python language coding commands which helps us to control and monitor the detected gas level through a sensor and it is interfaced with a free web page is linked via cloud interface raspberry pi 3 model which in turn is runned with set of python coding commands which detects and tells us about the real time value of gas level in the plant via MQ-2 sensor units.