

Project Design Phase-I

Solution Architecture

Date	19 September 2022
Team ID	PNT2022TMID15153
Project Name	Gas Leakage Monitoring and Alerting System
Maximum Marks	4 Marks

- **Problem Statement**

Gas Leakage Monitoring and Alerting System for safety purpose. The Gas Leakage monitoring has a big role in industries and also at many factories where Gas manufacture is happening. This monitoring will help many Gas Leakage related accidents.

- **Idea / Solution description**

The idea is to the Gas Leakage detection with a WIFI connected so that the alert system will be at a quicker way through IoT. The sensor also should be in the latest upgraded version of MQ 5 sensor. The sensor is designed in a way it can have a huge radius of detecting the gas leakage. The board Arduino or ESP866Mod which has a inbuild WIFI so that the alert system works quick enough to alert the admin.

- **Novelty / Uniqueness**

Uniqueness in the project is that it has a better accuracy than the previous version and also the alerting system is designed in a way that multiple devices get the alert. By using IoT the range of the alert system will be increased and also it is cost efficient if we built a main Hub for a large scale industries to monitoring.

- **Social Impact / Customer Satisfaction**

It will have a great impact in society because gas leakage may lead to many problems to the people and will be affected by many diseases.

- **Business Model**

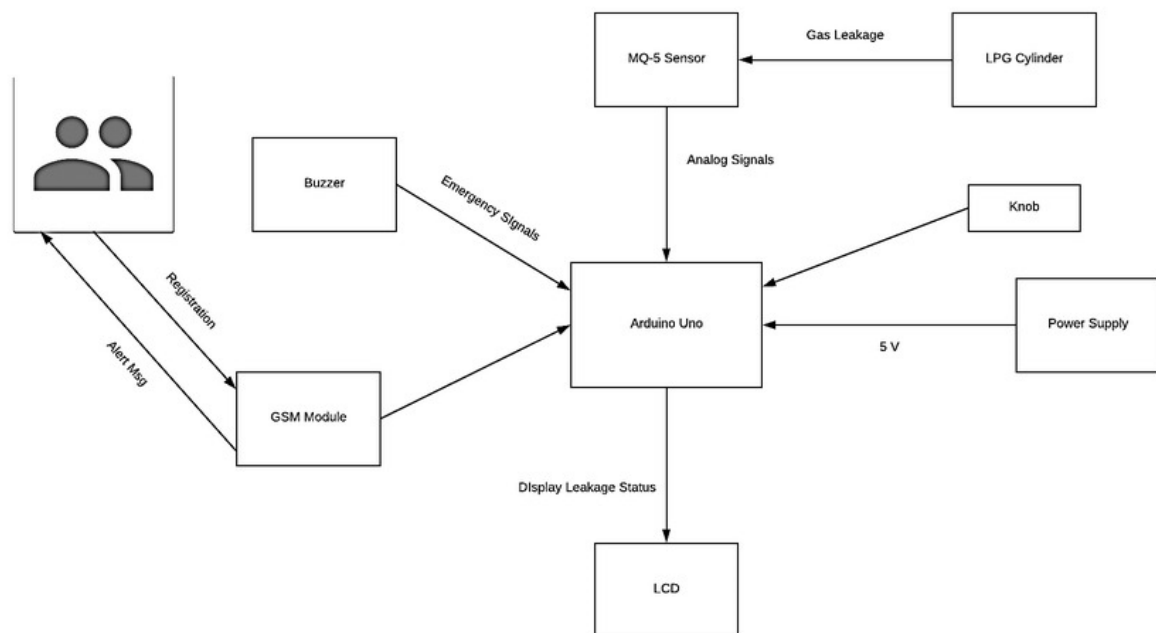
Targeted customers are Factory owners and also Gas related industries and Sterlite factories.

- **Scalability of the Solution**

This is highly scalable since the number of accidents by Gas Leakage is reduced and also through IoT the monitoring also can be held.

Solution Architecture:

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.



SOLUTION ARCHITECTURE

Benefits of IoT-based apps used in gas leakage detection



Fire hazard prevention



Harmful gas detection



Oxygen level measurement



Prompt gas leak alerts

Input: Sensor data signal which is not regular or Change in Signal

Output: End User get informed with alert buzzer and Display to LCD

Functions:

1. Access: In this module we are going to access the feature provided by the module which Will include Sensor data access.
2. Control: In this module we are controlling the Alert System by using System which is connected to hardware or sensor data.
3. Broadcast: In this module we are going to broadcast the alert Display to LCD.
4. Success Conditions: If such data which is received through sensors are not stable or are more than threshold it will predict that there is leakage situation
5. Failure Conditions: Desired output is not generated due to following failures.
 - Software Failure
 - Hardware Failure
 - Network Connection Failure

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 message 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 off the regulator knob of the cylinder automatically when gas leakage detected.