Ideation Phase

Define the Problem Statements

Date	19 September 2022
Team ID	PNT2022TMID15063
Project Name	Gas leakage monitoring and alerting system for industries
Maximum Marks	2 Marks

LITERATURE REVIEW

PAPER 1:

Gas Leakage Detection System

This device consists of three main parts.

a) Detection System
   This part consists of a gas sensor MQ5 and this will continuously monitor the gas concentration.
b) Prevention System
   This part consists of a special type of Gas valve that we will be designing that will be similar to present regular valves but a servo motor will be attached to its control knob to allow automatic and as well as manual control. A connection to the exhaust fan and window is made, in which the sensor would make it run in case of gas detection. All these parts will be interfaced with Arduino Uno which will be controlling the whole device.
c) Alerting System
   It consists of a GSM modem to send an Alert message to the user via SMS. Also, we attach a section that would make call to the user upon detection.

Link:
https://www.researchgate.net/publication/358275193_Gas_Leakage_Detection_System

PAPER 2:

SMART GAS MONITORING SYSTEM FOR HOME AND INDUSTRIES

In this paper, an IoT device is designed that will detect gas leakages and the status of the gas to be known whenever cut off is specified by the user. The proposed IoT methodology for knowing the status of the gas summary is demonstrated using the specific use cases. The proposed IoT to be installed through a manual approach or virtual approach is depending on the consumer interest. There were many instances experiencing the many people to become victims of this and also the environment to be also spoiled and it takes more time to purify the infected environment or to bring the affected environment to a normal level. It is demanded nowadays to predict future disasters using G-IoT. In G-IoT, the components whenever meet less than the cut off values, will notify the report to the main center and authorized user. The V-IoT is also used to monitor outer environments like gas pipeline and its conditions. If the resources are supplied at the time of installation of setup and detected whenever a specific component becomes shortage, the automatic approach takes place and will start filling that specific component with required according to manual recording.

Link:
https://www.researchgate.net/publication/346940972_Smart_Gas_Monitoring_System_for_Home_and_Industries_Smart_Gas_Monitoring_System_for_Home_and_Industries

PAPER 3:

Smart Gas Leakage Detection with Monitoring and Automatic Safety System

In this paper, they have proposed a LPG (Liquified Petroleum Gas) leakage detection with monitoring and automatic safety system. With the drastically increased demand and use of LPG, this system would be helpful to monitor the usage of LPG on a regular basis and to take safety about any hazards that may occur due to LPG leakage. We have designed a system that notify the user using IOT (Internet of Things) through mobile app about the amount of LPG so that appropriate measures can be taken. Since LPG is a highly hazardous

and inflammable gas, we have also designed a safety system to with the help of IOT (Internet of Things) through mobile app, when any leakage occurs in LPG so that necessary safety can be taken to avoid an explosion.

Link: https://ieeexplore.ieee.org/document/9032872

PAPER 4:

Gas leakage detection and alerting system using Arduino Uno

The presence of hazardous LPG gas leakage in a domestic, work place, also, stored gases container gas which exhibits ideal characteristic is use. For that sake, an alarm unit is used to vibrate an alarm which is buzzer. Buzzer gives an audible sign of the presence of LPG volume. The sensors are widely used to detect essence of propane, iso-butane, LPG and even smoke. The sensor has an advantage to combine a sensitivity response time. If the LPG sensor senses gas leak from work place or home, sensor output goes to active low (logic-0) condition. Arduino UNO is used in the project; low signals are overlooked by the Arduino and gas leakage is been noticed by the Arduino. The Arduino UNO turns on the LCD and buzzer. It even turns on the GSM modem after that, it continues to send messages SMS to mobile number specifically mentioned in the program of the source code for alerting danger to the people.

Link:
https://www.researchgate.net/publication/347495607_Gas_leakage_detection_and_alerting_system_using_Arduino_Uno

PAPER 5:

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

The main objective of this project is designing microcontroller based toxic gas detecting and alerting system. The hazardous gases

like LPG and propane were sensed and displayed and notify each and every second in the LCD display. If these gases exceed the normal level then an alarm is generated immediately and also an alert message (Email) is sent to the authorized person through the INTERNET and used ARM development board. The advantage of this automated detection and alerting system over the manual method is that it offers quick response time and accurate detection of an emergency and in turn leading faster diffusion of the critical situation.

Link:
https://www.researchgate.net/publication/357768388_Internet_of_Things_IOT_Based_Gas_Leakage_Monitoring_and_Alerting_System_with_MQ-2_Sensor