Project Design Phase-I
Proposed Solution Template

Date	24 September 2022
Team ID	PNT2022TMID01909
Project Name	Project - Gas Leakage monitoring & Alerting system for Industries
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Safety has always been an important criterion while designing home, buildings, industries as well as cities. The increased concentration of certain gases in the atmosphere can prove to be extremely dangerous. These gases might be flammable at certain temperature and humidity conditions, toxic after exceeding the specified concentrations limits or even a contributing factor in the air pollution of an area leading to problems such as smog and reduced visibility which can in turn cause severe accidents and also have adverse effect on the health of people. Hazards due to gas leakage are a constant part of industries where storage and transportation facilities of flammable and toxic gases are involved. These include the oil and gas industries, petro-chemical industries and even plants which have toxic and flammable by-products. These leakages can cause serious losses to life and transportation in plants. A gas leakage monitoring system consisting of a rover which moves outside the pipeline to measure leaked gases and continuously send the monitored data to a local server using an IoT platform. This allows continuous monitoring of the plant conditions and provides a quick alert when situations go out of hand.Liquid Petroleum Gas (LPG) is a highly flammable chemical that consists of mixture of propane and butane. LPG is used for cooking at home, restaurant, and certain use for industry. They

		have certain weaknesses that make the gas leakage occur. The leakage of gases only can be detected by human nearby and if there are no human nearby, it cannot be detected. But sometimes it cannot be detected by human that has a low sense of smell. Thus, this system will help to detect the presence of gas leakage
2.	Idea / Solution description	In this Gas leakage detection system project, we propose an Arduino and IoT based gas leakage detection system, which will help in detecting any gas leakage with the help of MQ5 gas sensor and send this data over the internet to the IoT module and that will in turn alert the user about this gas leakage.Hence, following this process, we can detect gas leakage in the early stages and prevent any future accidents. The finished device is connected to the IoT module over Wi-Fi.The maximum and minimum parameters of the gas can be set in the device accordingly.The device will continuously monitor the level of gas in the surrounding air with the help of MQ5 gas sensor.The signals from this sensor is continuously being sent to the Arduino circuitry.If any abnormal reading is found, which is more than the set parameters of the maximum level that can be present in the air, the RGB LED lights will glow red and instantly the solenoid value will turn off and these readings will be transferred over the IoT module and the user will be alerted about this leakage.Once the gas leakage is detected, the buzzer is turned ON and a 'Leakage detected' message is displayed on the LCD. If the values of the gas present in the air is within the set parameters, then the RGB lights glow green. Therefore, with the help of this project, we can easily detect LPG gas leakage with the help of IoT and Arduino and prevent any hazardous accident.
3.	Novelty / Uniqueness	✦ IOT based gas detection. ✦ Wi-Fi module

4.	Social Impact / Customer Satisfaction	By implementing real-time gas leak detection, industries can monitor their environmental performance, ensure better occupational health, and eliminate potential hazards for optimum safety. Also, early detection of gas leaks can trigger concerned engineers to curtail the spread and keep a safe environment for better health and safety.
5.	Business Model (Revenue Model)	Subscription and advertising model
6.	Scalability of the Solution	Fully Automated System. If proper steps are taken instantly, it can save loss of life and property. It can also be used to detect other poisonous gases.