

# Ideation Phase

## Ideation

DATE	16 October 2022
TEAM ID	PNT2022TMID52179
PROJECT NAME	GAS LEAKAGE MONITORING AND ALERTING SYSTEM
MAXIMUM MARKS	4 MARKS

### Abstract:

Safety plays a major role in today's world and it is necessary that good safety systems are to be implemented in places of education and work. This work modifies the existing safety model installed in industries and this system also be used in homes and offices. The main objective of the work 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.

### Introduction:

The Internet of Things is an emerging topic of technical, social, and economic significance. Consumer products, durable goods, cars and trucks, industrial and utility components, sensors, and other everyday objects are being combined with Internet connectivity and powerful data analytic capabilities that promise to transform the way we work, live, and play. Projections for the impact of IoT on the Internet and economy are impressive, with some anticipating as many as 100 billion connected IoT devices and a global economic impact of more than \$11 trillion by 2025. The Internet of Things (IoT) is an important topic in technology industry, policy, and engineering circles. This technology is embodied in a wide spectrum of networked products, systems, and sensors, which take advantage of advancements in computing power, electronics miniaturization, and network interconnections to offer new capabilities. The large-scale implementation of IoT devices promises to transform many aspects of the way we live. For consumers, new IoT products like Internet-enabled appliances, home automation components, and energy management devices are moving us toward a vision of the “smart home”, offering more security and energy efficiency. IoT systems like networked vehicles, intelligent traffic systems, and sensors embedded in roads and bridges move us closer to the idea of “smart cities”, which help minimize congestion and energy consumption. IoT technology offers the possibility to transform agriculture, industry, and energy production and distribution by increasing the availability of information along the value chain of production using networked sensors.

## LPG sensor:

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 powerful 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 runner 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.

