Gas Leakage monitoring & Alerting system for Industries

PROJECT NAME	**GasLeakagemonitoring&Alertingsystemfor Industries**
TEAMID	**PNT2022TMID52302**
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Abstract:

In recent years, gas leakage of any kind has been a problem, whether it occurs in a home, a place of business, a cafe, or a canteen. In this study, it is suggested to construct an IoT-based system for tracking gas loss and alerting users to leaks. This essay elaborates on the construction of an intelligent system that will aid in gas conservation and accident prevention. The system and the cooker must be interconnected. Ultrasonic sensors built into the technology determine whether or not the cooker is being used for cooking. The gas supply is shut off automatically by the system if it is determined that the cooker is not in use. Users will be notified via SMS through GSM the minute gas leakage is likely to be discovered, allowing them to address the problem as quickly as feasible. Through a flame sensor, the system will keep an eye on flame and fire. The buzzer starts to buzz when a fire is discovered. In addition to that, the system also supports cloud storage. This cloud storage option allows for the tracking of each user's daily gas consumption. Ultimately, this process will help in determining natural gas usage per user.

The system has been tested, and it can track gas leakage and wasting while also sending the user an SMS. The performance that followed showed how effective it was in preventing a sizable amount of household gas waste.

Introduction:

The home safety detection system is becoming very crucial for people's protection. Since everyone in the household works every day, it is impossible to check on the household appliances, particularly the LPG gas cylinder, wired circuits, etc. Liquefied petroleum gas (LPG) and natural gas demand has significantly increased during the past three years. LPG and natural gas are recommended to meet this high level of energy demand and to substitute oil or coal due to those fuels' negative environmental effects. Large-scale applications for these gases include industry, heating, home appliances, and motor fuel. The system has a MQ6 gas sensor to monitor this leakage gas. This sensor detects how much leak gas is there in the environment around it. Explosions or being harmed by gas leaks could be avoided in this way.

Objective:

These gases have extensive uses in the industrial, heating, home appliance, and motor fuel sectors. To keep track of this leakage gas, the system contains a MQ6 gas sensor. This sensor measures the amount of leak gas present in the area around it. By doing this, explosions and gas leak injuries could be prevented.
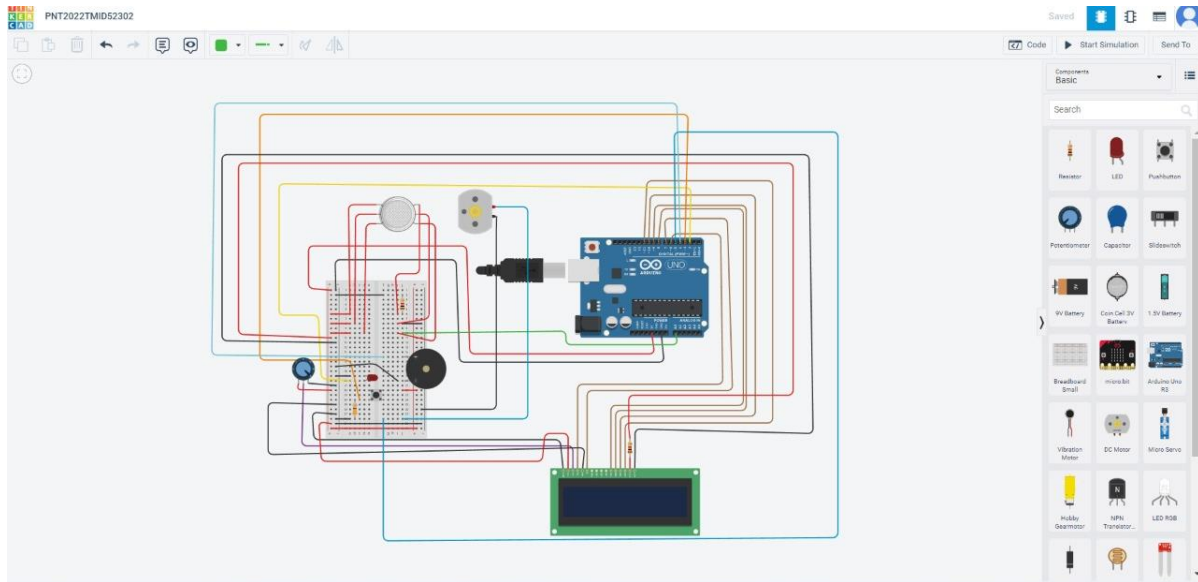
ProblemFormulation:

Any gaseous molecule that escapes from a stove, pipeline, cylinder, etc. is considered a gas leak. This may happen on purpose or even accidentally. We are all aware that these types of leaks are harmful to human health, and when they explode, they pose a serious threat to everyone's safety as well as that of their homes, places of employment, industries, and the environment. The Bhopal Disaster and the Vizag Gasleak are only a couple of the significant occurrences that occurred as a result of gas leaks. As far as industrial accidents go, the Bhopal disaster is considered the worst. From this insecticide plant, over 45 tonnes of methyl isocyanate escaped.Methyl isocyanate is an organic molecule that can be found in insecticides that contain carbamates. The colourless, lethal, and flammable liquid must be kept out of reach of people. Vizag Styrene that was allowed to escape after being left neglected for a long time caused a gas leak.

This greasy liquid has no colour and can be spread by fumes. Therefore, a detector needs to be built in a way that it can pick up any type of gas, fume, leak, smoke, etc. Despite how destructive and deadly it may be, the detector may have some characteristics associated that could aid in problem prevention.

ListofComponents:

Name	Quantity	Component
GAS1	1	Gas Sensor
PIEZO1	1	Piezo
M1	1	DC Motor
S1	1	Pushbutton
D1	1	Red LED
Rpot1	1	250 kΩ Potentiometer
R1 R3	2	1 kΩ Resistor
R2	1	330 Ω Resistor
U1	1	LCD 16 x 2
U2	1	Arduino Uno R3

CircuitDiagram:

SolutionStatement:

The system might be viewed as a modest attempt to link up the principal gas detection techniques now in use with a mobile platform coupled with IoT platforms. One metre around the rover, the gases are detected, and the sensor output data is continually sent to the nearby server. Stray gases are also detected because of the sensors' subpar precision, which introduces some inaccuracy into their results, particularly in the case of methane. Additionally, the storage and availability of hazardous gases like hydrogen sulphide makes it difficult to test the integrated gear. The complexity of system maintenance and material selection arises from the system's operation outside of the pipeline.reduces when corrosive gases are present. The technology can only be utilised as a major indicator of leakage inside a plant at this point.

Conclusion:

We can infer from the project's performance that the system's detection of LPG gas leakage is remarkable. Useful for both residential and commercial purposes. We can use this technique to save lives in dangerous situations. The GSM module indicates an alert. A sensor node detects gases such as CO2, oxygen, and propane. Power usage and transmission range estimates are made. The sensor was constructed using straightforward techniques and an Arduino UNO Micro controller.