

PROBLEM STATEMENT: Gas Leakage Monitoring & Alerting System for Industries

A gas detector is a device that detects the presence of gases in an area, often as part of a safety system. This type of equipment is used to detect a gas leak or other emissions and can interface with a control system so a process can be automatically shut down. A gas detector can sound an alarm to operators in the area where the leak is occurring, giving them the opportunity to leave. This type of device is important because there are many gases that can be harmful to organic life, such as humans or animals. Gas leak detection methods became a concern after the effects of harmful gases on human health were discovered. Before modern electronic sensors, early detection methods relied on less precise detectors.

Who does the problem affect?	Natural gas is safe and convenient when it is installed and used correctly. However, when gas leaks do occur, they pose Serious risks of carbon monoxide poisoning in people and animals. Natural gas is also highly flammable, and should there be leaks, the risks of fire and explosion increases substantially.
What are the boundaries of the problem?	The purpose of this project is to detect the presence of LPG leakage as a part of a safety system. Apart from sound alarm, an SMS alert will inform the authorized person and the solenoid valve will be triggered to shut down the gas supply to prevent any harmful effects due to gas leakage.
What is the issue?	Leaks of natural gas and refrigerant gas into the atmosphere are especially harmful due to their global warming potential and ozone depletion potential. Leaks of gases associated with industrial operations and equipment are also generally known as fugitive emissions.
When does the issue occur?	The major cause of a gas leak in houses is faulty equipment. Gas appliances have various components to regulate and direct the flow of gas to burners. Manufacturing defects, damage caused due to wear and tear, or the component being used beyond its rated lifespan can lead to mechanical failures and leaks.
Where is the issue occurring?	Gas leaks happen when a gas line or a gas-burning appliance springs a leak. Natural gas

	flowing seeps out of the leak into open areas. Gas leaks are dangerous because natural gas is composed primarily of methane. Methane is an asphyxiant that pushes oxygen out of enclosed spaces as it rushes to fill those spaces.
Why is it important that we fix the problem?	Mainly for health reasons, Combustible gases can start fires or cause explosions in homes and workplaces, injuring you, family members, friends, or workers.