

INTEGRATED GAS LEAKAGE DETECTION & PREVENTION SYSTEM

with

Web 3

Overview

Introduction

- Gas leakage in households is a silent threat, often unnoticed until it's too late.
- **Integrating Web3 technology into gas leakage prevention systems enhances safety measures by providing remote monitoring and control capabilities.**
- This project aims to leverage the power of Arduino Uno and Web3 to create a robust and efficient system for detecting gas leaks and alerting users in real-time.

The Problem

- Gas leaks occur due to faulty appliances, aging pipelines, or improper installation.
- Odorless gases like carbon monoxide pose an invisible but deadly risk.
- Lack of awareness and monitoring exacerbates the problem, as leaks can go undetected for extended periods.

Consequence

- Gas leaks can lead to explosions, fires, and health hazards.
- Property damage can be extensive, causing financial and emotional strain.
- In worst-case scenarios, loss of life or severe injuries occur, impacting families and communities.

Current Solution

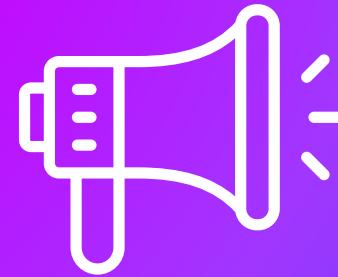
- Traditional gas detectors are often expensive, bulky, and require professional installation.
- Awareness campaigns and regulations exist but are not always effective in preventing incidents.
- DIY methods like soap bubble tests are unreliable and impractical for continuous monitoring.



Our Solutions

- Introducing an affordable, user-friendly gas detection system for households.
- Our device combines advanced sensors with smart technology to detect leaks accurately and quickly.
- Easy installation and intuitive interface make it accessible to all households, enhancing safety without complexity.
- Web3 technology allows the Arduino Uno to interact with blockchain networks or web servers over the internet. By utilizing Web3 libraries, the system can send and receive data, trigger alerts, and execute commands remotely.
- This integration enhances the gas leakage prevention system's capabilities, enabling users to monitor and control the system from anywhere with internet access.

Equipments Used



01

Arduino is an open-source electronics platform based on easy-to-use hardware and software. It consists of a microcontroller and a development environment for writing, compiling. Arduino boards are widely used by hobbyists, students, and professionals for creating interactive projects.

02

A buzzer is an electroacoustic transducer that produces sound when an electrical signal of a specific frequency is applied to it. A servo motor is a rotary actuator that allows precise control of angular position, velocity, and acceleration. It consists of a motor coupled with a sensor for feedback.,

03

The Wi-Fi module for your gas leak detection system, you can go for modules like the ESP8266 or ESP32. These modules are widely used and offer built-in Wi-Fi connectivity along with GPIO pins for interfacing with sensors and other components. These components work together seamlessly to detect gas leaks and transmit data to a web server or blockchain network via Web3 technology.

04

A gas sensor is a device designed to detect the presence of specific gases in the surrounding environment. It works by converting the concentration of the target gas into an electrical signal that can be measured and analyzed.

Benefits & Scope

Safety

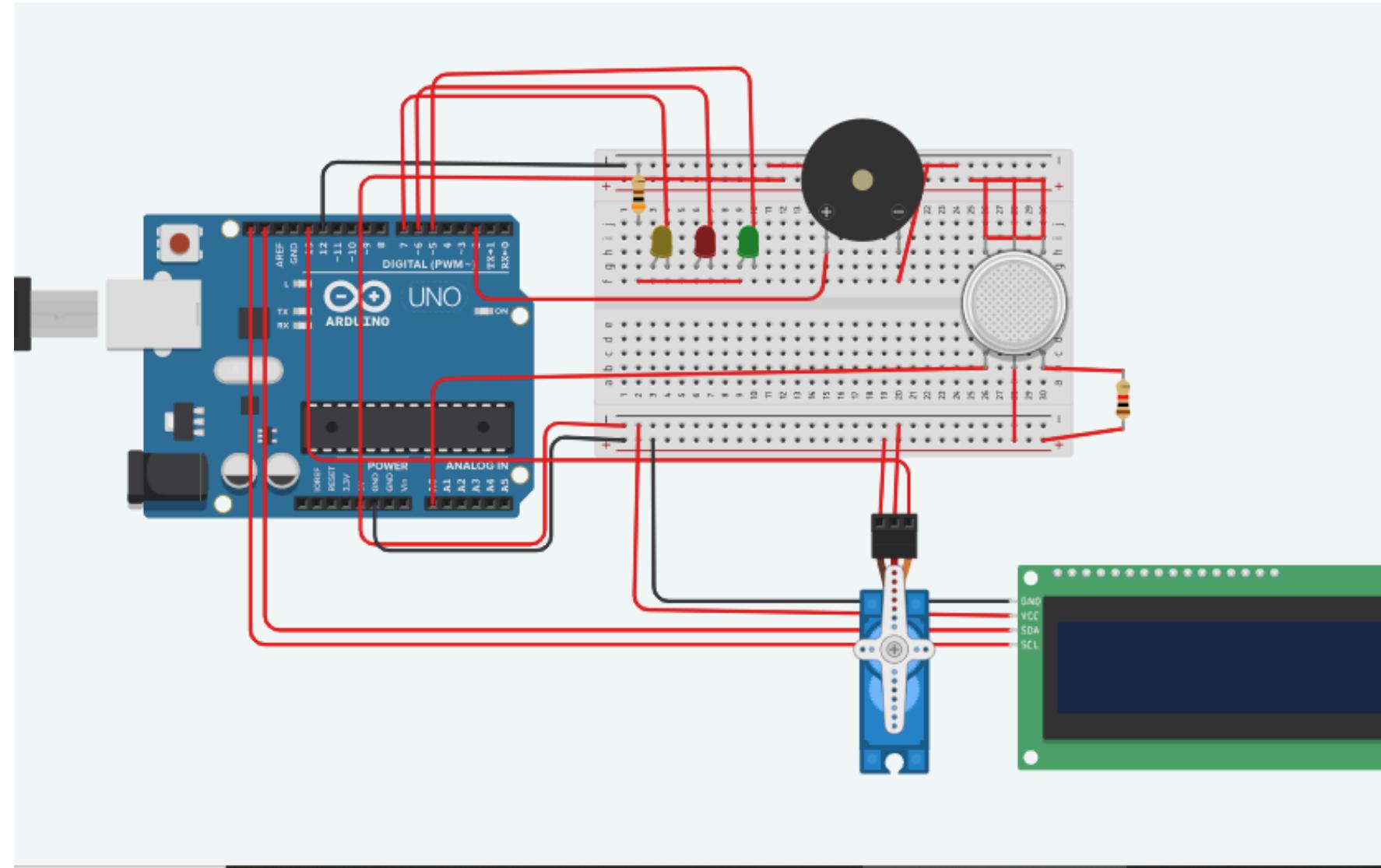
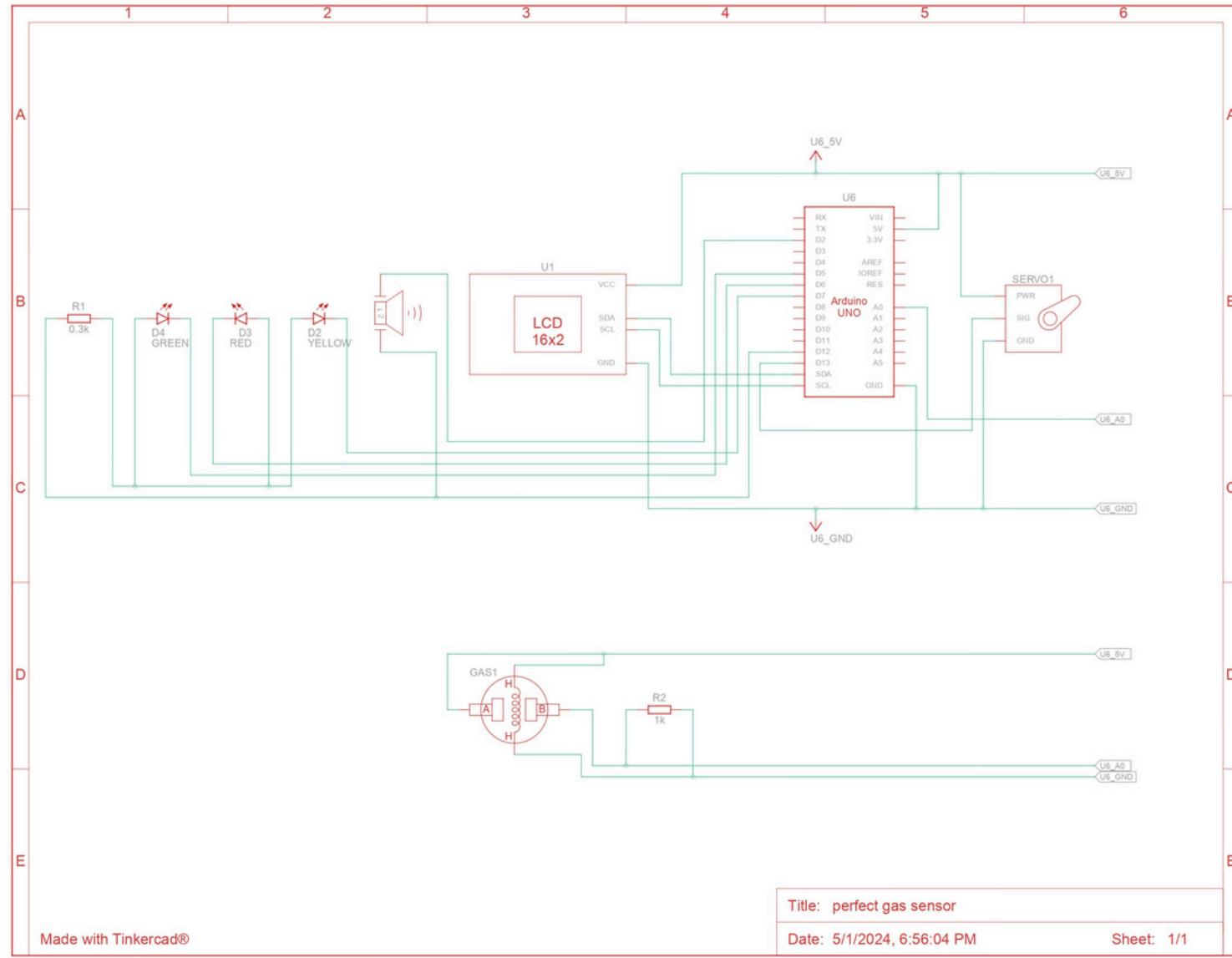
Prompt identification of LPG leaks guarantees prompt action, averting possible risks and guaranteeing inhabitants' safety.

User-Friendly

Having a real-time LCD display and both visual and audible alerts improves user awareness and speeds up response time.

Cost-Effective

This concept offers a practical and economical way to improve home security without requiring pricey and complicated technologies



Before

After Web3



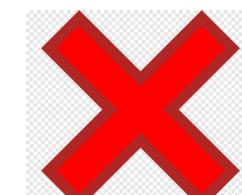
LED INDICATOR



BUZZER



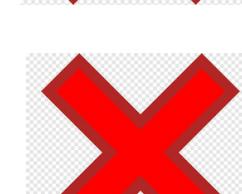
AUTO CUTOFF



USER ALERT



EMERGENCY



SOS



REAL TIME

MONITORING



LED INDICATOR



BUZZER



AUTO CUTOFF



USER ALERT



EMERGENCY



SOS



REAL TIME

MONITORING



License/Permit

License/Permit	Description	Estimated Cost (INR)
Environmental Clearance	Approval from pollution control authorities	50k-200k
Fire Safety Certificate	Compliance with fire safety standards	5k-20k
Electrical Installation License	Approval for electrical installations	5k-20k
Gas Safety License	License for handling and detecting any gas	10k-30k

Available Systems

(COSTING WITHOUT LICENSE)

Product	Description	Features	Estimated Cost
Portable Gas Detector	Handheld device for detecting gases	LCD display and adjustable sensitivity	2k-5k
Fixed Gas detection system	Stationary system for continuous monitoring	Multiple Sensor options	10k-50k
Wireless Gas Detection system	Wireless sensors for remote monitoring	Real time data transmission	20k-100k
Smart Gas Sensor IoT solution	IoT enabled sensor system with cloud connectivity	Remote monitoring and alerts	50k-200k

Our Costing

Our Product	Description	Features	Estimated Cost
Gas leakage detection and prevention system	IoT enabled sensor system with sensor connectivity	Auto cut-off ,early detection, various alerts	1.2k - 1.5k

Given these factors, the cost per unit for manufacturing at an industrial level would likely be significantly higher than the initial cost of Rs. 1500 per unit. However, without specific details about your project and its manufacturing requirements, it's challenging to provide an exact figure.

As a very rough estimate, the cost per unit for manufacturing at an industrial level could range from Rs. 2000 to Rs. 5000 or more per unit, depending on the complexity of the project, regulatory requirements, quality standards, and other factors.

Therefore, for 1000 pieces, the total cost could be approximately Rs. 2,000,000 to Rs. 5,000,000 or more, excluding any additional costs such as licensing fees, taxes, and overhead expenses.

Applications

Residential Safety

Installation in kitchens and cooking areas to detect potential gas leaks from stoves or gas cylinders.

Commercial

Integration into restaurants, hotels, and other commercial kitchens to enhance safety during cooking operations. Use in industrial canteens and food processing units to monitor gas leaks

Laboratories

Implementation in laboratories where LPG is used as a fuel for Bunsen burners and other applications.

. Additionally, the system can be used for environmental monitoring to detect gas emissions and prevent environmental pollution.

Vision

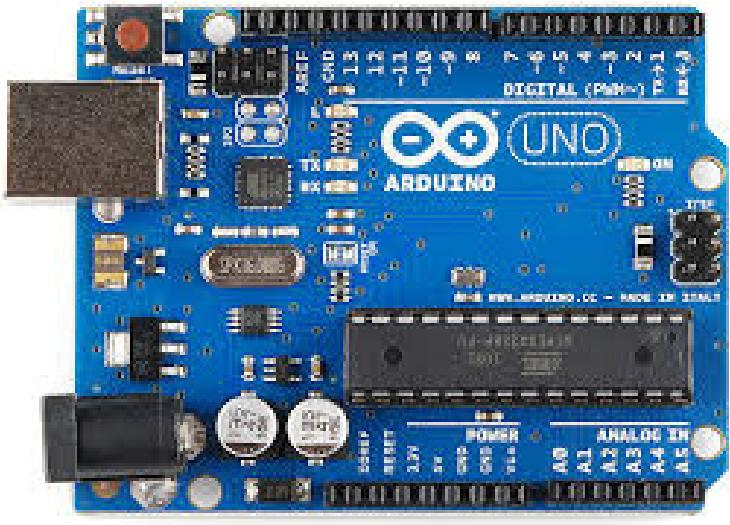
So mainly we right now we are in a ideation stage and our main requirement is industrial connections further in next stage we will need a support to implement our technology in plants and then we will make it big with the profits that we will be getting through these industries only.

Considerations:

While integrating Web3 into the gas leakage prevention system offers numerous benefits, there are several considerations to keep in mind. These include the limited resources of the Arduino Uno, power consumption of the components, and the security of data transmission over the internet. Addressing these considerations ensures the system operates efficiently and securely.

Conclusion

Integrating Web3 into gas leakage prevention systems using Arduino Uno enhances safety measures by enabling remote monitoring and control capabilities. By leveraging the power of Web3 technology, the system can detect gas leaks in real-time, alert users, and facilitate timely responses to mitigate potential risks. With its diverse applications and potential for future enhancements, the integrated system represents a significant advancement in gas leakage prevention technology.



Thank you

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