Anti-Gas Leakage and Detection Using IoT

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Abstract: - In the past few years, there is a rise in home automation systems which benefits the need for people to use methods of the Internet of Things (IoT). The main idea of this paper is to carry out a literature review on IoT-based gas detection techniques and to ensure the safety of people and surroundings. So, the idea is to present a simple and reliable gas leakage detection system using gas sensors, and the Arduino Uno controller is incorporated with cloud storage for data collection and also used for storing and analyzing data. The gas that leaks is converted from Parts Per Million (PPM) to volts through the Arduino and the results are notified to the user when the threshold limit is crossed. This system provides an efficiency of 38% more accuracy & comparison to conventional systems out there. And also provides data KPIs for day-to-day analysis. The user is alerted via a Web application for quick notification through the internet and also through a buzzer/ LED for physical notification. Our Proposed system comprises of tech stack from website to user interface using Cloud Component from Arduino.

Key Words: - ***GSM Module, Gas Sensors, Arduino UNO, Internet of Things.***

I. INTRODUCTION

Gas spillage and fire accidents in houses, Industries are causing various losses and property harm. For instance, the flammable gas leaks, which are significantly burnable, increase the danger of fire and can even instigate impact. These days, sensor-based different projects are broadly utilized. This system is used to send live updates about bothersome conditions when contract holders are far away from home and industries. Every year lots of people died from the fire that's because of harmful gas leakage. So, the idea is to distinguish between gas spillage and recognize fire accidents. Each private home and Industries should have an alarm framework to remain protected from fire accidents. The proposed point "IoT (Internet of Things) based Anti-gas leakage management system" manages five significant issues, gas spillage location, fire discovery and auto ventilation, disturbing System (SMS, Notification utilizing versatile application).

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II. PROPOSED SYSTEM

Gas level detection and automatic booking are designed with various features which are implemented using Arduino R3 and this device will be a single system with multiple applications for household and industrial consumers. This system provides an efficiency of 38% more in accuracy & comparison to conventional systems out there. And also provides data KPIs for day-to-day analysis, The user is alerted via a Web application or Arduino Cloud for quick notification through the internet and also through a buzzer/LED for physical notification, Our Proposed system comprises of tech stack from website to user interface using Cloud component from Arduino.

III. HARDWARE USED

This project is aided by many hardware components. The proposed technology uses

- Arduino UNO/Arduino R3
- MQ135 Sensor
- MQ3 Sensor
- MQ9 Sensor
- LM2596 Step Down Module
- Dot Matrix PCB Board

- GSM 800L Module
- DC Exhaust Fan - 5V
- LCD Display - 16x2
- I2C Module
- Relay - 5V

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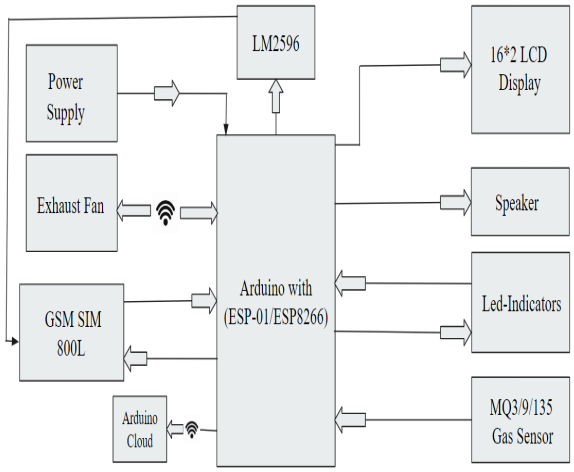

Fig.1: Block diagram of the Anti-Gas Leakage System

IV. RESULTS & DISCUSSION

The sensors are interfaced and have been interlinked with Web application to collect and showcase the data. The data collected from the Arduino, the sensors depict gas leakage, level if any.

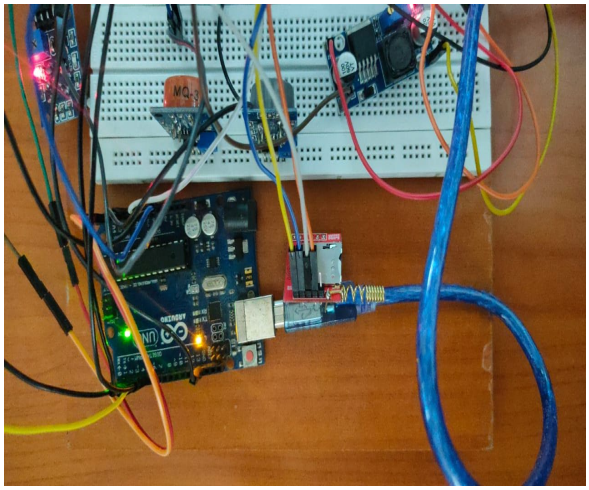

Fig.2. Hardware Connection Diagram

V. CONCLUSION

This project emphasizes supply flexibility in operation. This is often easy to operate and the price of maintenance is low. Hence this project is usually designed to form a system considerably economical and helpful to secure households, Manufacturing Industries, Yachts, and even ships to an extent from mislead explosions. The main focus is to reduce Mortality rate that happens due to gas leakages or unexpected explosion.

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