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Smart Gas Leakage Detector Using IOT Sensor

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Abstract: *The IoT-based Gas Leakage Detection System integrates an Arduino microcontroller, gas sensor, LCD display, Wi-Fi module, buzzer, GSM module, GPS module, and a DC fan. This system provides real time monitoring and alerting for gas leaks to enhance safety in domestic and industrial environments. The gas sensor detects gas concentrations continuously and triggers the alarm system when a leak is detected. The LCD shows the detected gas level, the buzzer alerts nearby individuals, and the GSM module sends SMS alerts to designated contacts for remote notification. GPS provides system location for emergency response, and Wi-Fi enables remote monitoring and control. The DC fan helps disperse leaked gas to reduce hazards. The system effectively detects gas leaks, alerts users, and prevents fire accidents by sending GPS-based SMS alerts to individuals or entire groups.*

Keywords: Internet of Things (IoT), Microcontroller, GSM, GPS, LCD

I. INTRODUCTION

Gas leakage is a major concern in domestic and industrial environments. Traditional methods of detection are slow and less reliable.
This project uses the Internet of Things (IoT) for real-time monitoring and immediate response.
Key components include:

- Arduino microcontroller
- Gas sensor
- LCD
- GSM & GPS modules Wi-Fi
- Buzzer DC fan

When gas is detected, alerts are triggered locally and remotely, enabling quick response.

II. NEED FOR SYSTEM

Gas leakage is one of the most dangerous problems in homes, industries, hotels, and commercial areas.
Leakage of LPG or other harmful gases can lead to fire accidents, explosions, property damage, and loss of human life.
Most incidents happen when people are away from home or when gas cylinders/equipment are left unattended.
Traditional gas detection methods are manual and slow, which means leaks often go unnoticed until it is too late.
Traditional gas detection methods are manual and slow, which means leaks often go unnoticed until it is too late.
Therefore, there is a strong need for a system that can:
Why this system is needed

1. Real-time Monitoring

Gas concentration must be monitored continuously to detect leaks instantly before they become dangerous.

2. Immediate Alerts

People must be notified immediately through:
• SMS alerts
• Buzzer alarms
• LCD warnings
This ensures quick action and prevention.

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3. Remote Notification

If a leak occurs when no one is present:

• GSM sends an SMS alert

• GPS shares the exact location

This helps authorities or homeowners take fast action even from far away.

III. SCOPE OF SYSTEM

The Smart Gas Leakage Detection System using IoT provides a wide range of applications and future possibilities. Its scope extends across domestic, commercial, and industrial environments where gas monitoring is essential for safety. The system integrates components such as gas sensors, Arduino, GSM, GPS, Wi-Fi, LCD, buzzer, and a DC fan to deliver efficient and automated gas leakage detection.

1. Domestic Applications

• Can be installed in homes, kitchens, apartments, and small buildings.

• Helps prevent LPG-related accidents by detecting leaks early.

• Protects families even when they are not at home using SMS alerts.

2. Industrial and Commercial Applications

• Useful in factories, hotels, warehouses, and gas storage facilities.

• Ensures worker safety by providing real-time alerts during gas leaks.

• Helps industries comply with safety regulations and reduce accident risks.

3. Remote Monitoring Through IoT

• Wi-Fi and GSM enable continuous monitoring from anywhere.

• Users receive instant SMS alerts along with precise GPS location.

• Ideal for locations that remain unoccupied for long periods (holidays, night shifts).

IV. CONCLUSION

The IoT-based Gas Leakage Detection System provides: Real-time monitoring Multi-layer alert system Remote accessibility Location tracking Hazard reduction using a DC fan The system is reliable for both home and industrial usage and prevents severe accidents.

REFERENCES

[1]. N. Manjunathan, S. Muthulingam, D. Jaganathan, "IoT based Gas Leakage Detection System," ICSCDS-2023, IEEE Xplore.

[2]. G. Nithin Sai, K. Pavan Sai, K. Ajay, Praveena Nuthakki, "Smart LPG Gas Leakage Detection and Monitoring System," ICSSIT 2023, IEEE Xplore.

[3]. Ahmad, M.T.S., Uddin, S.M., Bakar, M.I.A., "Development of Gas Leakage Detector Using GSM for Factory Safety," Journal of Engineering Technology, 2022.

[4]. Aman, F., Thiran, T.P., Yusof, K.H., Sapari, N.M., "IoT Gas Leakage Detection, Alert, and Gas Concentration Reduction System," ISCAIE 2022, IEEE.

[5]. Kumar, A.S., Gobinath, D., Vijayakarthik, P., et al., "An Effective Gas and Oil Leakage Detection System using IoT," ICESC 2022, IEEE.