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Innovative Technologies Transforming the LPG Sector

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Abstract - LPG Gas which is naturally used in home appliances and kitchen department. In this generation LPG became most commonly used gas and this is the main source if income generation. But slightly Lpg also becoming Dangerous because if is there any gas leakage it will become big hazard and there will be more financial loss so to overcome, we have designed a project a by using IoT which can decrease the hazards and which will save the poverty and decrease the financial loss.

Keywords-ESP32, Flame Sensor, MQ-2 Protocol.

1.INTRODUCTION: LPG Sector which will be more efficient and effective for environment. LPG Gas which is naturally used in home appliances and kitchen department. In this Existing LPG system, we have discovered some problems.

1.1 Power dependency of fire: With our fire there is no power supply to the system due to this the system does not turn on.

1.2 No backup-communication: In previous system they have used LoRa module for communication if its fails to communicate with micro-controller there is chance for gas leakage and there is no chance for Automatic Stove shut-off

1.3 Flame sensor: In previous they do not include flame sensor due to that if there is a chance for fire leakage no sensor will detect the fire at that time there will be huge human loss and finance loss.

These are the three major problems we have noticed in existing system.

2.LITERATURE SURVEY:

In this IoT Based Automatic LPG Gas booking And Leakage Detection System, Authors was Ravi Kishore Kodali and Tirumala Devi, the existing system is designed for efficient LPG monitoring and safety. A load cell measures the cylinder's weight and sends the data to NodeMCU, which transmits it to Ubidots Cloud via ESP8266 Wi-Fi. The weight values are displayed on Ubidots, and when the weight falls below a threshold, a red indicator light turns on, and an email is sent to the gas agency for automatic cylinder booking. Additionally, an MQ2 gas sensor continuously monitors gas concentration. In the event of an LPG leak, the concentration increases and is reflected on Ubidots.

2.In LPG Gas Leakage Detection Using IOT: Author was Arun Manhas and Neeraj Chambyal, Gas leaks can cause severe accidents, leading to material loss and human injuries, often due to poor maintenance and lack of awareness. LPG leak detection systems help prevent such incidents and save lives. This paper presents a simple yet reliable detection and alert system that triggers a buzzer and displays the severity of a leak to warn individuals. While effective, the system has room for improvement, such as using a higher-capacity rechargeable battery for longer operation and adding gas concentration detection for better accuracy. Future design enhancements can make the system more user-friendly and cost-effective.

3. In LPG Leakage Detection: Author N.P.Prajith Existing a system of automatic gas controlling unit employing by Arduino that confirms the detection of leakage gas accompanied by shutting down the main supply line of the cylinder, then the burner is turned off automatically by the timer-controlled knob and it also calculates the weight of the cylinder continuously. Cylinder booking.

4.Smart Gas Leakage Detection using IOT: Author V. Abishek evolved a gas leakage detection system, then trips off the main power supply connection for safety issues. The power will be tripped for the definite amount of gas in the system.

5.LPG gas detection and alert system: Author Antony Gnana Singh has given the information about how can we overcome from the gas leakages when we are in Critical gas leakage, we can overcome this by MQ-6 and by giving alert by Buzzer.

3.PROPOSED METHODOLOGY:

In our system we have use micro-controllers as Esp-32 and we have use Two sensors Message queue-2 and flame

sensor MQ-2 sensor which is used to detect Toxic smoke and flame is used to detect the flames which is emitted by gas stove in severe conditions we have used that servo motor to automatic-shutoff the gas valve and we have also integrated the Buzzer and LCD for alerting the people.

3.1 Block Diagram

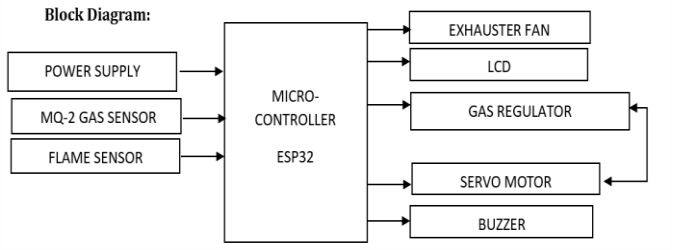


Figure 1: Block Diagram

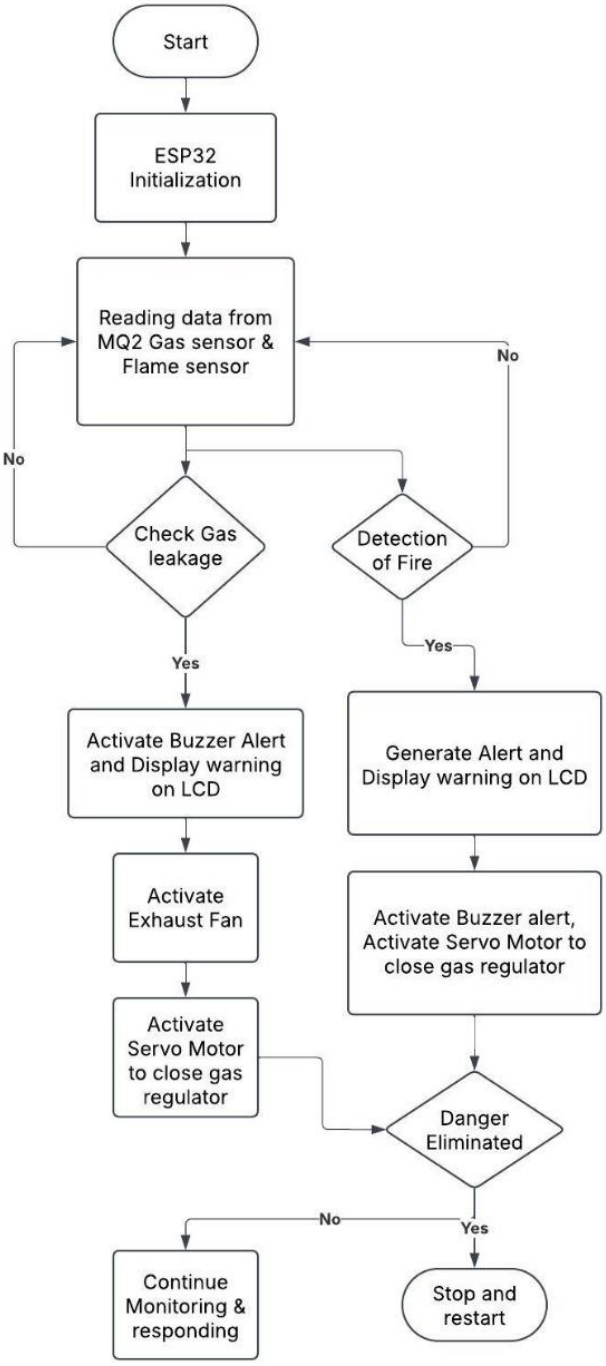
1.ESP32 Micro-Controller:

We are using ESP-32 as a micro-controller which is the brain of the system which can control the every component in the system. It is the main source for generating or sending power to the other sensors and components

2.MQ-2 PROTOCOL: This sensor which detects the gases like (LPG, methane, co) This sensor sends the signals to ESP-32 after detecting the smoke and now micro-controller will activate the Buzzer, LCD, servo motor for automatic gas valve shutoff and also switch on the exhaust fan to clear the smoke.

3.FLAME SENSOR: This sensor which detects the flame which emitted by gas stove. This sensor sends the signals to ESP-32 after detecting the smoke and now micro-controller will activate the Buzzer, LCD and servo motor for automatic gas valve shutoff

1.2 ARCHITECTURE OF THE SYSTEM



RESULT: By Doing This project we can detect we have got results which is accurately detecting the smoke and flames. This system gives the more efficient while taking less power it gives more outputs.

Conclusion: We can conclude Gas leakage is more dangerous which will affect human biodiversity and environment collateral damage and also more financial

loss in this way we are suffering from gas leakages so by using this proposed system project we have overcome the problems which are faced in existing system.

FUTURE SCOPE: In this we may add automatic shut-off from mobile phone and also controlling the servo motor from through android this may include more complexity but it useful far distance communication.

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