



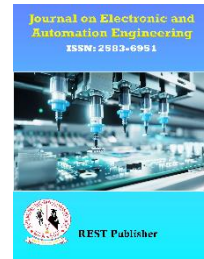
Journal on Electronic and Automation Engineering

Vol: 2(1), March 2023

REST Publisher; ISSN: 2583-6951

Website: <https://restpublisher.com/journals/jeae/>

DOI: <https://doi.org/10.46632/jeae/2/1/11>



LPG Gas Leakage Detector Using Arduino with SMS Alert

A, Rajitha, S. Sreeja, D. Abhinav, *G. Kavya, G. Karthick

Jyothishmathi Institute of Technology and Science Karimnagar, Telangana, India

*Corresponding Author Email: Gourinenikavyarao@gmail.com

Abstract: The Gas explosions have become a major problem in our daily operation. Now the world is evolving with technology, so we should use technology whenever possible. With technology, we can prevent the formation of liquefied petroleum gas solutions. The system is microcontroller based and uses GSM, display and buzzer together with gas sensors. It is designed for LPG gas leakage monitoring and alarm using Arduino Mega with MQ2 sensor. The circuit consists of MQ2 fuel sensor, microcontroller, buzzer, indicator and GSM. The sensor will detect the exhaust gas and send the data to the microcontroller. Based on this information, the microcontroller determines a message sent to the user via GSM and then displays it on the screen. The combination of Arduino microcontrollers with Arduino provides a convenient platform for the implementation of the control system, and the can be easily and quickly modified to meet our future needs.

1. INTRODUCTION

LPG gas leaks increased from 0.72% of all problems in the kitchen to 10.74% of all problems in the kitchen. The small LPG cylinder with the burner directly above the cylinder and without the rubber tube weighs 5 kg, see fig. Conclude that is safer than tubing using rubber tubing, because these tubing carry the risk of explosion, which can cause leakage. A computer running online to detect leaks was developed as an automatic monitor for pipelines in remote areas. LPG was leaked to stakeholders. The building is under initial development and after future renovation, also rooms will be cut to make it safer and more reliable. Gas leak detectors are not only suitable for home use, but the is also suitable for hotels, restaurants and even businesses that use LPG for some purposes.

2. LITERATURESURVEY

Microcontroller based LPG gas leak detector uses GSM module, in this system gas sensor uses GSM module microcontroller, if gas concentration increases, gas sensor detects gas and sends it to microcontroller. Then connect the GSM module to the microcontroller, the microcontroller will issue a command to cut off the main power. Worth the money in the long run. In fact, LPG is a liquefied petroleum gas, often called simply because it contains a mixture of commercial propane and commercial butane and insufficient water and hydrocarbons. It is an odorless product, so ethyl Mercaptan is added to control gas and it becomes more fragrant. This fuel is usually a mixture of propane and butane. First created in 1910 by Walter Snelling (Didpaye1, 2015), LPG is classified as a hazardous substance due to its explosive nature and tendency to explode when stored under pressure. Before the development of home electronics in the 1980s and 90s, non-chemical labels that changed color when exposed to oil were used to identify oil samples (Didpaye1, 2015). Since then, many techniques and tools have been developed to identify, monitor and warn of various oil spills. Therefore, it should be able to control LPG emissions to allow domestic and commercial use. It is a security system against theft, escape and fire. In these cases, the message will be sent to the emergency number. During the planning process, we developed the "Liquefied Petroleum Gas Monitoring and Automatic Bottle Storage Early Warning System". These notifications are only natural gas, LPG etc. in our works. applies to Focus on the exploration of petroleum products. These reports focus on exploration for oil, liquefied petroleum gas, etc. includes. Fuel Economy and Warning Systems" This report focuses on the detection of high quality fuels such as gasoline, liquefied petroleum, alcohol and liquefied petroleum gas (LPG). LPG is a domestic fuel, office, heating, etc. The internal

hardware of the sensor used to prevent alarm failure, a vapor is a gas When it is more than the concentration, an alarm will be issued. LPG and gas sensors for safety, health and equipment. Embedded systems are used to identify errors and notify users via text message. The microcontroller used for this project is Arduino Uno R3.R3 is the third and latest version of Arduino. Uno. The ATmega328 is a 32 KB (0.5 KB of which is in the bootloader) single chip controller. It also has EEPROM library, I/O pins, AVR microcontroller chip, power input, USB connector.

3. PROPOSED METHOD

When the circuit is powdered ON after uploading code, when the gas level exceeds it will display SMS sent status and buzzer will be ON. The circuit mainly uses the MQ2 gas sensor and Arduino to detect gas leak. Supply MQ2 sensor with 5v power supply, connect its analog pin A0 to Analog pin A0 of Arduino. Similarly, connect the GSM module with 9v/12v external power supply. Only Tx, Rx, and GND pin of sim800 modem is connected to Arduino. So connect Tx, Rx to pin No. 9 and 10 of Arduino respectively. This circuit triggers the alert system when smoke or gas leakage is detected. The sensor has excellent sensitivity combined with the quick response time. The low signal monitored by the GSM module sim800 to send messages as: Excess gas detected open windows" to a mobile number written in code. Whenever the excess gas is detected SMS will be sent to a particular phone number.

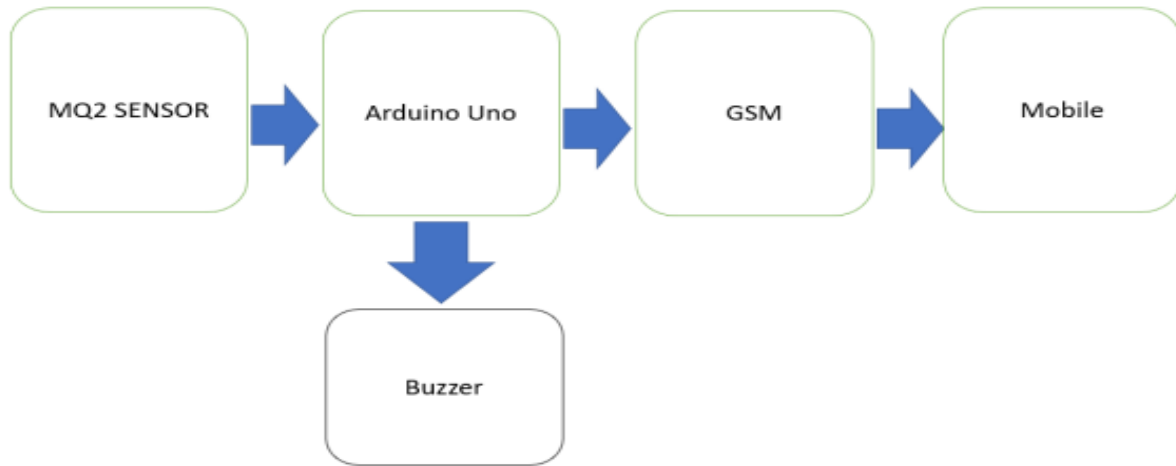


FIGURE 2. Block Diagram of LPG Leakage detector

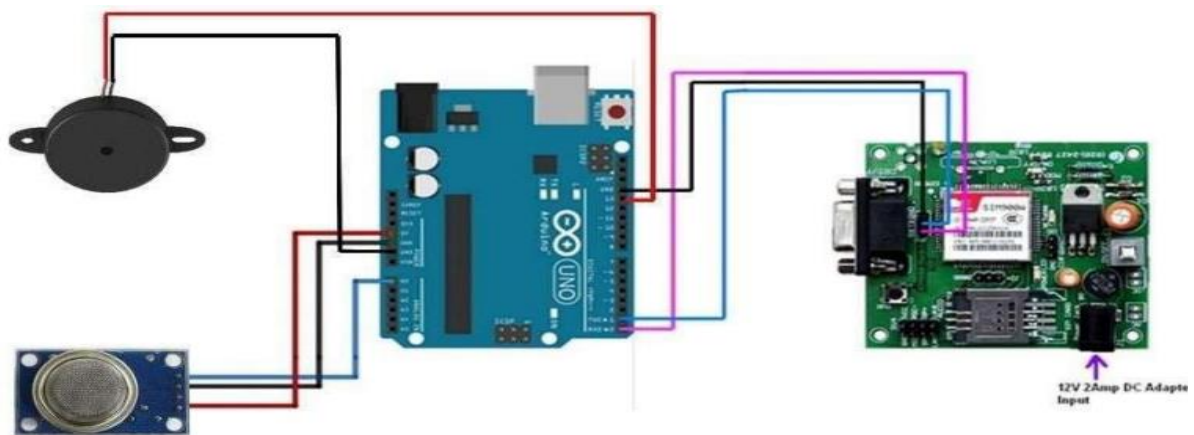


FIGURE 3. Circuit Diagram

Teaches you how to interface MQ2 LPG sensor to Arduino and read values sing analog or digital out pins of the MQ2 module. Teaches you how to interface a GSM module to Arduino and send/receive text messages using AT commands.

4. RESULT

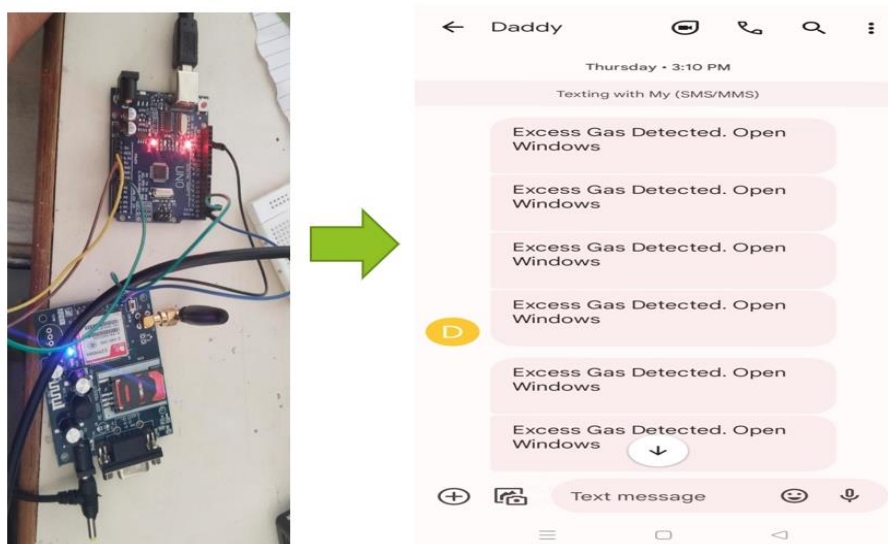


FIGURE 4. Daddy

This method has been tested for gas leaks in almost all sensors, MQ2 Gas Sensor will send a signal to Arduino UNO after detecting a gas leak. Arduino sends power signals to other external devices such as LCD, buzzer and GSM. As a result, the GSM module sends SMS to the given phone number. In fact, results were found by people in the vicinity displayed on the user's mobile screen.

5. CONCLUSION

Hence, the leakage of the gas causes destructible impact to the lives and as well as to the heritage of the people. So, the system consists of Alarm unit which is Buzzer gives an audible sign of the presence of LPG volume. If the LPG sensor senses gas leak from workplace or home, sensor output goes to active low (logic 0) condition. The Arduino UNO turns on the LCD and buzzer. It even turns on the GSM modem after that, it continues to send messages SMS to mobile number specifically mentioned in the program of the source code for alerting danger to the people and the LPG safety device is used to turn off the gas supply by using this system we can reduce gas leakage accidents.

REFERENCES

- [1]. Shrivastava, A., Prabhaker, R., Kumar, R., & Verma, R. GSM based gas leakage detection system. *International Journal of Emerging Trends in Electrical and Electronics (IJETEEISSN: 2320-9569)*, 2013; 3(2):42-45.
- [2]. Hema, L. K., Murugan, D., & Chitra, M. WSN based Smart system for detection of LPG and Combustible gases. In *National Conf. on Architecture, Software systems and Green computing-2013*.
- [3]. Ramya, V., & Palaniappan, B. Embedded system for Hazardous Gas detection and Alerting. *International Journal of Distributed and Parallel Systems (IJDPS)*, 2012; 3(3):287- 300.
- [4]. Priya, P. D., & Rao, C. T. Hazardous Gas Pipeline Leakage Detection Based on Wireless Technology. *International Journal of Professional Engineering Studies, India*, 2014; 2(1).
- [5]. Jero, S. E., & Ganesh, A. B. 2011, March. PIC18LF4620 based customizable wireless sensor node to detect hazardous gas pipeline leakage. In *2011 International Conference on Emerging Trends in Electrical and Computer Technology* (pp. 563-566). IEEE.
- [6]. Pravalika, V., & Rajendra Prasad, C. Internet of things based home monitoring and device control using Esp32. *International Journal of Recent Technology and Engineering*, 2019; 8(1 Special Issue 4):58–62.
- [7]. Sanjay Kumar, S., Ramchandrarao, P., & Rajendra Prasad, C. Internet of things based pollution tracking and alerting system. *International Journal of Innovative Technology and Exploring Engineering*, 2019; 8(8):2242– 2245.
- [8]. Deepak, N., Rajendra Prasad, C., & Sanjay Kumar, S. Patient health monitoring using IOT. *International Journal of Innovative Technology and Exploring Engineering*, 2018; 8(2):454– 457. <https://doi.org/10.4018/978-1-5225-8021-8.ch002>

- [9]. Ramu, M., & Prasad, C. R. Cost effective atomization of Indian agricultural system using 8051 microcontrollers. *International journal of advanced research in computer and communication engineering*, 2013; 2(7):2563-2566.
- [10]. 10.Anusha, O., & Rajendra prasad, C. H. Experimental investigation on road safety system at crossings.