



# International Journal of Research Publication and Reviews

Journal homepage: [www.ijrpr.com](http://www.ijrpr.com) ISSN 2582-7421

## Gas leakage detector using Arduino with SMS Alert

*Abdussamad.S.Nadaf<sup>1</sup>, Pratik.D.Panchal<sup>1</sup>, Gajanan.B.Chanvire<sup>1</sup>, Onkar.V.Pawar<sup>1</sup>, R.R.Chougule<sup>2</sup>*

<sup>1</sup> Student, Department of Electrical Engineering, Sharad Institute of Technology Polytechnic, Yadav. Kolhapur, India

<sup>2</sup> Professor, Department of Electrical Engineering, Sharad Institute of Technology Polytechnic, Yadav. Kolhapur, India

### ABSTRACT

Gas leakage is a major problem with residential area, gas related industries, and gaspowered vehicles like buses and cars that operated on LPG or CNG. One of the preventive methods to stop accident associated with the gas leakage is to install gas leakage detection device with controlling Arduino & GSM with SMS alert system in vulnerable places. The aim of this paper is to present such a design that can automatically detect and stop gas leakage detected by sensor in vulnerable premises. In particular gas sensor has been used which has high sensitivity for propane (C<sub>3</sub>H<sub>8</sub>) and butane (C<sub>4</sub>H<sub>10</sub>). Gas leakage system consists of GSM (Global System for mobile communications) module, which warns by sending SMS. However, the former gas leakage system cannot react in time. This paper provides the design approach on hardware.

Keywords: GSM (Global System for mobile communications), CNG (compressed natural gas), LPG (Liquefied petroleum gas), Gas sensor MQ-135, Microcontroller, LCD (Liquid crystal display).

### I. INTRODUCTION

In this project, we are going to learn how to design a Gas Leakage Detector using GSM & Arduino with SMS Alert. We will interface Sim800 GSM Module as well as MQ135 Gas Sensor with Arduino. The gas level value will be displayed on the 16x2 LED Display. Whenever the excess gas is detected SMS will be sent to a particular phone number.

Smoke and gas leakage detectors are very useful in detecting smoke or fire in buildings, and so are the important safety parameters in order to prevent disasters. Bursting cylinders and accidental fires have caused lots of harm to the economies in the past. This circuit triggers the alert system when smoke or gas leakage is detected. The circuit mainly uses the MQ135 Smoke/Gas sensor and Arduino to detect and smoke and gas leak. This MQ135 gas sensor is sensible to LPG, Alcohol, and Methane etc. It detects the presence of a dangerous LPG leak in your car or in a service station, storage tank environment. The sensor has excellent sensitivity combined with the quick response time. The sensor can also sense iso-butane, propane, LPG, and cigarette smoke. If the LPG sensor senses any gas leakage from storage the output of this sensor goes low. This low signal is monitored by the microcontroller and sends the signal to GSM module to send messages as "Gas Leakage" to a mobile number written in code.

### II. EXISTING SYSTEM

In right now existing system there are only alarm type sensor are available, that can detect the leakage but can sense it, so it can't stop it. In right now existing system is only alarm type not communication type.

### III. PROPOSED SYSTEM

The gas detection system is the system which detect or sense the leakage of gas or smoke and send sms to respective mobile number. After that sms send to respective number, then it started its safety precaution that have already build in it.

### IV. PROPOSED METHODOLOGY OF SOLVING IDENTIFIED PROBLEM

There has so many problems occurred when a design a problem gas detection system main parts hardware which contains Electrical system and sensor which fix proper for the accurate working and second problem accurate in sensor system is a important parameter.

#### ELECTRICAL SYSTEM

The electrical system is a begin of the system is a brain of the system which play main role of the gas detectionsystem. The system contains microcontroller, Arduino, MQ-135 gas sensor, GSM-800, LED display and charger.

## SENSOR

There is important sensor MQ-135 gas sensor is playing a lead role on it. These sensors detect leakage of gas and then send information to Arduino. After gathering information, Arduino starts processing.

## Arduino-

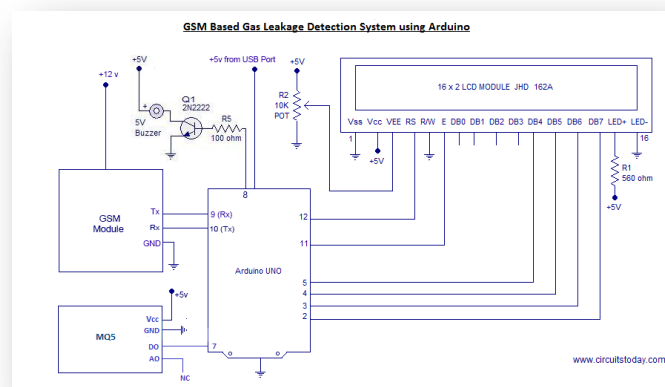
Arduino is an electronics device which is used to read sensor information and do some processing and then forward to the controller. In basic way, Arduino gets some input from the sensor and gets output to the controller. After the processing of Arduino microcontrollers, work starts.

## Microcontroller

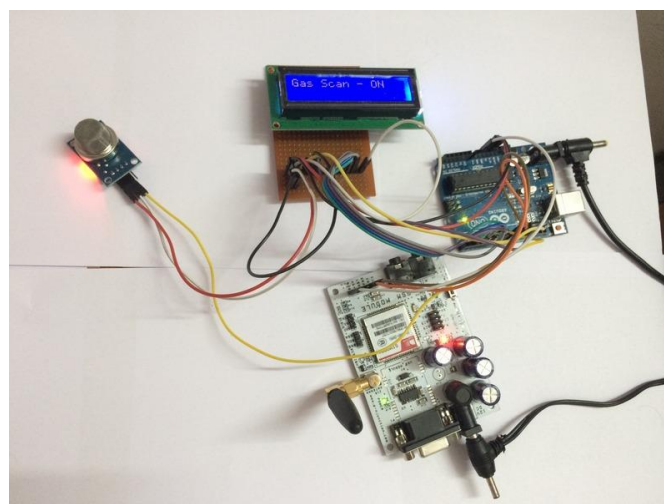
The main function of a microcontroller is to get input from Arduino and show the respective output to the LED screen. The microcontroller can be considered as a self-operating system with a processor, memory, and peripherals. The basic function of a microcontroller is to gather all information from components built in it, and show the result on the display.

## V.PROCEDURE FOR MAKING

1. We collect some more information about the project through the IEEE paper.
2. Get started to collecting the information about the various components which are required for the project.
3. For the whole assembly, first we generate the actual circuit diagram and check working by using various apps, the following figure shows the circuit diagram for the ventilator.



Following figure shows the circuit diagram for MQ-135 & GSM.



Following figure shows the circuit diagram for the device.

4. After conforming a proper circuit diagram, we start to collect the required components.
5. After we collect the required components we start to build the actual project.
6. We also start to represent the programming of the various sensor which has in a next topic.
7. We start to build a proper circuit; we are now on that a position.

## RESOURCES AND CONSUMABLE REQUIRED --

The following components as well as sensors required for the gas detector system.

### 1. MQ-135 Gas Sensor

The *MQ-135* gas sensor senses the gases like *ammonia nitrogen, oxygen, alcohols, aromatic compounds, sulfide, and smoke*. The *MQ-3* gas sensor has a lower conductivity to clean the air as a gas sensing material. In the atmosphere we can find polluting gases, but the conductivity of gas sensor increases as the concentration of polluting gas increases. *MQ-135* gas sensor can be implemented to detect **the smoke, benzene, steam and other harmful gases**. It has the potential to detect different harmful gases. It is with low cost and particularly suitable for Airquality monitoring applications.



The *MQ135 sensor* is a signal output indicator instruction. It has two outputs: analog output and TTL output. The *TTL output* is low signal light which can be accessed through the IO ports on the Microcontroller. The *analog output* is a concentration, i.e. increasing voltage is directly proportional to increasing concentration. This sensor has a long life and reliable stability as well. Check the [MQ135 Datasheet](#) to learn more.

### 2. SIM900 GSM Module

*SIM800* is a quad-band GSM/GPRS module designed for the global market. It works on frequencies GSM 850MHz, EGSM 900MHz, DCS 1800MHz, and PCS 1900MHz. *SIM800* features GPRS multi-slot class 12/ class 10 (optional) and supports the GPRS coding schemes CS-1, CS-2, CS-3 and CS-4. With a tiny configuration of 24x24mm, *SIM800* can meet almost all the space requirements in users' applications, such as M2M, smartphone, PDA and other mobile devices.



*SIM800* has 68 SMT pads and provides all hardware interfaces between the module and customers' boards. *SIM800* is designed with power-saving technique so that the current consumption is as low as 1.2mA in sleep mode. *SIM800* integrates TCP/IP protocol and extended TCP/IP AT commands which are very useful for data transfer applications.

### 3. ADAPTER

Lincoiah



They are switch mode power supplies which means the output is regulated to 5V (No more 14V outputs). These have a standard USB 'A' connector for the output so we can power your Arduino, Raspberry Pi, etc. through a USB cable. Any device than uses a USB cable for a charging or power can be powered with this supply.

### 4. LED DISPLAY



LED displays are electronic visual panels that (Light emitting device), which display the output.

#### \*Approximately expenditure

Sr.No	Activity	Expenditure
1.	Material	4500
2.	Fabrication	1500
3.	Testing and consultancy	1000
4.	Consumable	1000
	Total	8000