

# GAS & Smoke leakage detection and Automatic Valve Control System

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**Abstract:-** In current scenario detection of gas leakage and smoke in building it is very important safety parameters to prevent disasters. In industries, urban areas, residential areas and cars which run by CNG in this place affected by gas leakage and fire accident. This type accident only done by human error and natural disaster .in after disaster find cause of the accident after take next step .we can predict the gas leakage and fire alert the people and reduce human loses. In this concept concentrate detecting the gas leakage before the accident. and adjust the cause of the leakage automatically.

**Keywords:** Gas sensor (MQ6 or MQ2), Arduino UNO, GSM module

## INTRODUCTION:

In industries affected fire accident due to gas leakage like (LPG, propane). In not properly maintain the gas cylinders and human errors main cause for this kind of accident .in our project implement new technique to detect gas leakage and send alert message to control station and if valve are not correctly close the system automatically adjust .so ,prevent our place from accident and alert the people using gas sensor it use to detect the gas like LPG and propane.

### GAS SENSOR MQ6:

This sensor suitable for sensing the LPG (composed of mostly propane and butane) concentrations in the air .The MQ -6 can detect gas concentration any where from 200 to 100000ppm .the sensor highly sensitivity and fast response .the sensor output is an analog resistance .the drive very simple .all you need to do is power the heater coil with 5V, add a load resistance and connect the output ADC.



Fig 1: Gas sensor MQ6

## ARDUINO UNO:

The arduino UNO micro controller based on at mega 328P. It has 14 digital input/output pins( of which can be used as PWM outputs). USB connection, a power jack, an ICSP header, reset button .6 analog input pin, 16 MHz ceramic resonator .It contained everything needed to support the micro controller. Simply connected to battery or computer.



Fig 2: Arduino UNO

## GSM MODULE SIM (900A):

GSM ,GPRS modem RS 232 is built with dual band GSM/GPRS engine-SIM 900A ,Works on frequencies 900/1800MHz.The modem is coming with RS232 interface ,which allows you connect PC as well as micro controller with RS232 chip(max 232).The baud rate is configure table from(9600-115200) through AT command. The GSM/GPRS it suitable for SMS, Voice as well as DATA transfer application in M2M interface. The on board Regulated power supply allows you to connect wide range un regulated power supply. using this modem ,you can make audio calls ,SMS ,Read SMS, attend the incoming calls and internet etc through simple AT commands.



Fig 3: GSM module (SIM 900A)

#### VALVE CONTROL MECHANISM:

In Valve control system using slider crank mechanism to lock cylinder valve automatically. In DC motor and valve connected lever. In dc motor attached crank and it rotate 90 deg clockwise automatically valve rotate and lock cylinder. In dc motor insulated because supply power it produce spark it blast the LPG so, the motor has insulated.



Fig 4: valve control mechanism

#### BLOCK DIAGRAM:

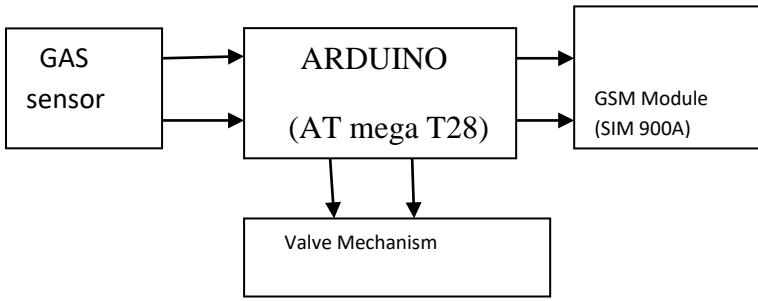


Fig 5: Gas sensor and GSM interfacing with Arduino UNO

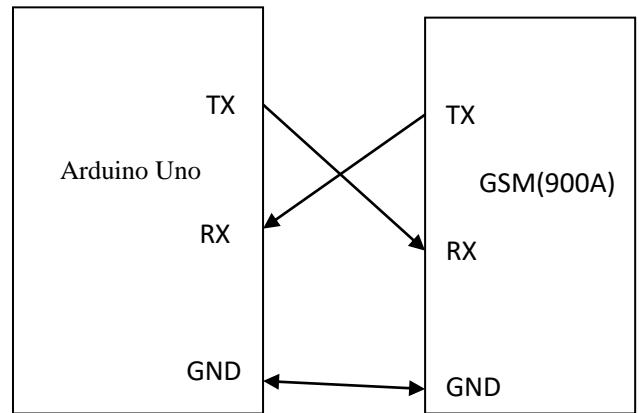
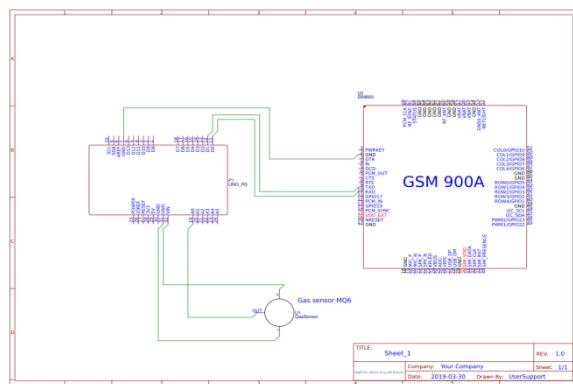


Fig 6: GSM interfacing Arduino UNO

#### CIRCUIT DIAGRAM:



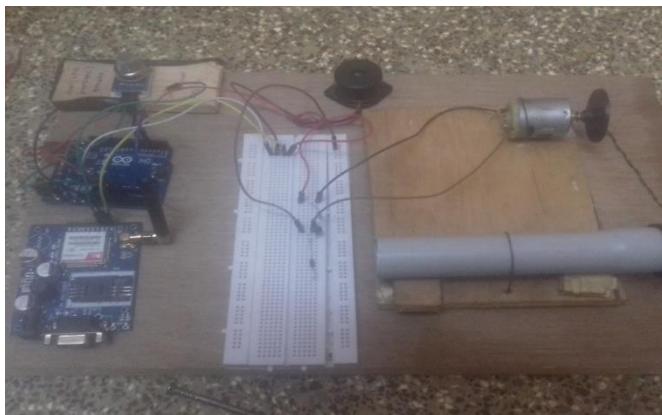
#### WORKING FUNCTION:

Gas sensor having three terminals in arduino supply power to the sensor (5v). It connects to sensor and the input pin of sensor connects to analog input of arduino pin no A0. Arduino interfacing GSM module 3 pins. RX (receiver), TX (transmitter), GND. In TX of arduino connected to RX of GSM module. and RX of arduino connected to TX of GSM. GND connected to GND. And add dc motor the motor connect to valve using slider crank mechanism.

If the sensor sense gas leakage the arduino, measure level gas leakage and it recommended GSM module to send the SMS to mobile. and the motor runs to lock the valve of the cylinder.

The motor additionally supplied power because source of arduino not sufficient to motor. If control the valve using the relay. In this concept using DC motor for locking system when using servo motor security increase more and motor is fully insulated.

#### PROJECT MODEL:



#### CONCLUSION:

In this concept help to secure house, industries detect gas leakage before accident and send alert message to mobile so, the people take security precaution . And automatically lock the valve it helps to stop gas leakage. And the in this concept mainly suitable for urban areas.

#### REFERENCE:

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- [4] "Gas Leakage Detection Control and Weight Alert System" Aleena Joseph1, Anies Babu2, Athira S3, Jerin Varghese4 and Nithin Prince John5 1234BTech Scholar,Saintgits College of Engineering,Kottayam,Kerala 5Asst. Professor, Dept. of Computer Science and Engineering, Saintgits College of Engineering, Kerala, India.