

VEHICULAR POLLUTION LEVEL MONITORING AND AUTOMATIC IGNITION CONTROL SYSTEM

Naveen Kumar

Student, Department of Mechanical engineering
PRIST University, Puduchery, India
Naveenzen19@gmail.com

Prashant Kumar

Student, Department of Mechanical engineering
PRIST University, Puduchery, India
Mauryaprashant813@gmail.com

Suraj Kumar Prakash

Student, Department of Mechanical engineering,
PRIST University, Puduchery, India
Surajkumarprakash0@gmail.com

Hemant Kumar

Student, Department of Mechanical engineering,
PRIST University, Puduchery, India
Hemantkumar2558@gmail.com

Panneerselvam k

Assistant Professor, Department of Mechanical engineering
PRIST University, Puducherry, India
Panneermech043@gmail.com

ABSTRACT

Pollution is the most discussed issue in recent years. Many systems has been implemented to reduce pollution by Indian government like Odd Even Formula in New Delhi, Vehicle Pollution Certificates and BS4 engines. Our project deals with root cause of pollution which is to stop vehicles immediately once it produces pollution beyond acceptable range. Proposed system deals with automated control system for air pollution detection in vehicles. As the usage of vehicles is more in these days, pollution is increasing drastically. As a solution to the above problem we aim to build an embedded system for controlling the pollution in vehicles.

This emission from vehicles cannot be completely avoided but it definitely be controlled by using semiconductor sensors for detecting the various gases. This system "Pollution check in vehicles and automatic ignition off" works with electronics implementation with mechanical system in mechatronics domain. When the pollution/ emission level shoots beyond the already set threshold level, there will be a warning display in the vehicle to indicate that the limit has been breached and same will be displayed and audio announcement will be done on user mobile phones. The synchronization and execution of the entire process is monitored and controlled by ATMEGA 328 P Microcontroller of Arduino UNO.

Keywords: ATMEGA 328 P, Arduino UNO, Galvanic, Mechatronics

1. Introduction

Along with health concerns, pollution is being greatly considerable in environmental matters. One of the major concerns regarding the environment is air pollution. Air pollution contributes to the greenhouse gases, which affects the ozone layer. Air pollution [1] is not only harmful to the environment but also to all other living beings

on earth. Air pollutants that are inhaled have serious impact on human health affecting the lungs and the respiratory system. Vehicles and Industries are the major sources of Environmental Pollution. Every vehicle will have emission but the problem occurs due to the improper maintenance of vehicles.



Fig.1.1 : Vehicular Pollution

In begun distinct period of history air pollution is consequential problem in society which anguish to the human health & environment. This is the great problem faced in the urban area. The main pollution to form the vehicle is carbon-dioxide, which can be easily sense by the semiconductor gas sensors. These pollutants are having sensors which impact on the human health affecting lungs & respiratory system. These pollutants are also settling on soil plants & water etc. This paper consists of various sensors like MQ7 and Alcohol sensor which detects the concentration of CO gas and Alcohol. If this concentration is beyond the threshold value then this sensor gives the input to the micro-controller.

This Micro-controller displays the result on the LCD and sends the trigger pulse to motor to stop the ignition of fuel. Emitted gases are sense by the various sensors. Therefore this paper is an idea recommends which help to diminish the pollution form vehicle. The use of tetraethyl lead as a gasoline additive in 1923 introduced yet another toxic substance to automobile emissions that threatened human health. To prognosticate weather in now-cast and short range scales over distinct sections of the Metropolitan cities including severe weather warnings. To provide detailed customized meteorological products on-demand basis. In future we can add additional features like traffic police have an authority to stop the vehicle remotely by sending a SMS using GSM.

2. EXISTING SYSTEM

Pollution Maintenance Standard by Government, Vehicle fitness Certifications and Pollution Safety Certificates

Over the years, there have been several regulations made by the Government to control the excretion from most of them being unsuccessful at the same. The standards and the timeline for implementation are set by the Central Pollution Control Board under the Ministry of Environment & Forests. These were proceeding from by making the Catalytic converter mandatory for petrol vehicles and the introduction of unleaded petrol in the market. Car makers were not prepared for this metamorphosis and in a subsequent acuity the execution date for Euro II was not enforced. The standards, based on European regulations were first introduced. Progressively draconian standards have been rolled out

since then all new vehicles construct after the implementation of the norms have to be compliant with the regulations, Bharat stage III norms have been ordained across the country. In 13 major cities, Bharat stage IV emission norms are in place. The phasing out of two stroke engine for two wheeler, the stoppage of production of various preceding model vehicles advent of electronic controls are as a result of the laws related to transport emissions. The beyond decade, has visible many evaluation sports which can be happening to develop semiconductor gas sensors.

There is no result of the implementations of rules and this can be seen in Indian Capital Itself.

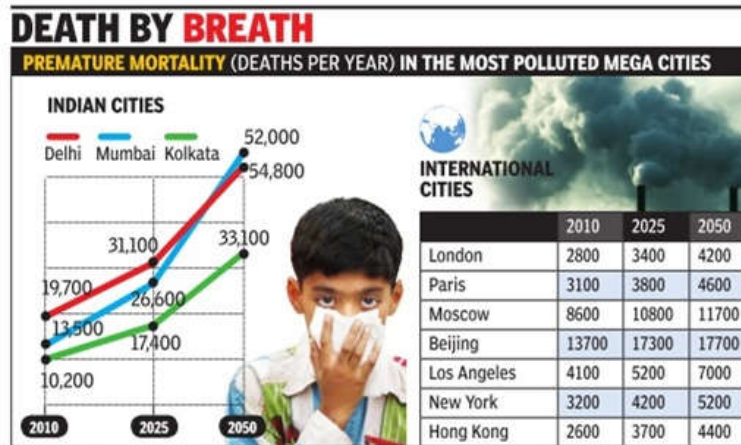


Fig.1.2:- Pollution Worldwide

2.1 Drawbacks

- Improper Maintenance and impositions
- Not followed generally
- Faulty System
- Influence and Partiality
- Bribe
- Non-technical pollution testing in real-time

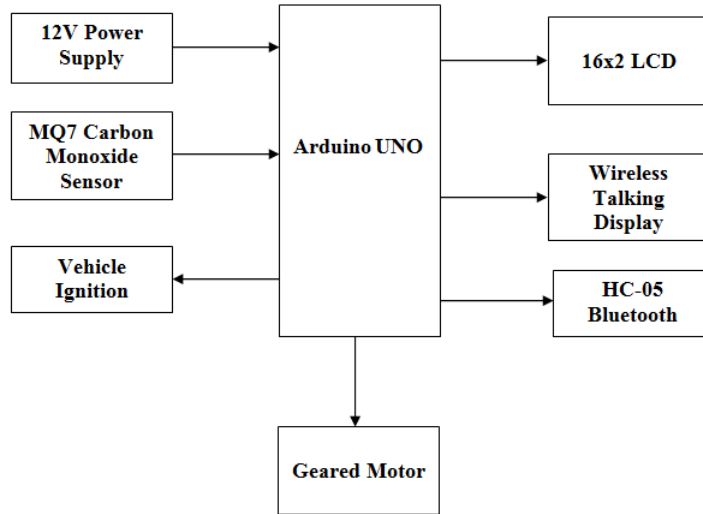
3. PROPOSED SYSTEM

3.1 Implementation

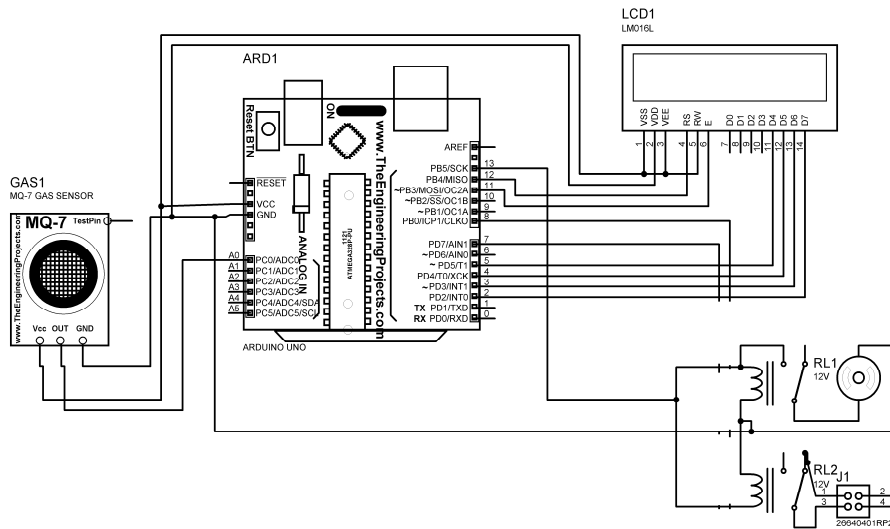
This emission from vehicles cannot be completely avoided but it definitely be controlled. For that, we have designed an excellent system which controls the pollution in vehicles. The main pollutants [2] from vehicles are the oxides of carbon and nitrogen, which can be easily detected these days with the help of semiconductor gas sensors. Therefore, in this project we prepare a system useful in reducing the amount of pollution from vehicles. The proposed automated control system uses GSM & Arduino interfacing with MQ7 Carbon Monoxide Sensor. We use CO (MQ7) sensors [3]-[4] to detect the pollutants. GSM technology is used to send the alert message once the upper value is reached.

3.2 Block and Circuit Diagram

Block Diagram



Circuit Diagram



4. MICROCONTROLLER PROGRAM

```

#include<LiquidCrystal.h>
#include <SoftwareSerial.h>
int mq3=A0;
int rel=13;
int buz=12;
int a;
float p;
LiquidCrystal lcd(12, 11, 5, 4,
3, 2);
void setup()

```

```

{
  Serial.begin(9600); //
  Initialise Serial
  Communication with the
  Serial Monitor
  pinMode(rel,OUTPUT);
  pinMode(buz,OUTPUT);
  digitalWrite(rel,LOW);
  digitalWrite(buz,LOW);
  lcd.begin(16,2);

```

```

  lcd.setCursor(0, 0);
  lcd.print(" *--- PRIST ---*");
  Serial.println("$bc6");
  Serial.println("$ta90");
  Serial.println("$ts30");
  Serial.println("$tc13");
  Serial.println("--- PRIST ---");
  Serial.println("--- PRIST
  UNIVERSITY ---");

```

```

Serial.println("*Prist
University");
delay(1000);
lcd.setCursor(0, 1);
lcd.print("
MECHANICAL-");
Serial.println("$ts30");
Serial.println("$ta45");
Serial.println("-
Mechanical Department-");

Serial.println("*Mechanical
Department");
delay(1000);
Serial.println("$ta135");
Serial.println("-FINAL YR
PROJECT-");
Serial.println("*FINAL YR
PROJECT");
delay(1000);
Serial.println("$ta90");
Serial.println("*VEHICLE
POLLUTION MONITORING");
Serial.println("VEHICLE
POLLUTION MONITORING");
lcd.setCursor(0, 1);

lcd.print("FINAL YR
PROJECT");
lcd.print("*FINAL YR
PROJECT");
}
void loop()
{
a=analogRead(mq3);
lcd.setCursor(0,0);
lcd.print("POLLUTION
LEVEL");
if(a<30
{
p=0;
}
else
{
p=(a-30)/9.64;
}
lcd.setCursor(0,1);
lcd.print("Sensor-");
lcd.setCursor(7,1);
lcd.print(p);
Serial.println("$ts120");
Serial.println(p);
lcd.setCursor(12,1);
lcd.print("%");
if(p>=7)
{
Serial.println("$ts30");
Serial.println("Danegerous
Air");
digitalWrite(buz,HIGH);
delay(100);
digitalWrite(rel,LOW);

lcd.setCursor(0,0);
lcd.print("-
DANGER!WARNING-");
Serial.println("$bc7");
Serial.println("-
DANGER!WARNING-");
Serial.println("*Warning");
lcd.clear();
lcd.setCursor(0,0);
lcd.print(" ENGINE OFF IN");
delay(300);
lcd.setCursor(4,1);
lcd.print("10 SECOND");
delay(1000);
lcd.setCursor(4,1);

lcd.print("09 SECOND");
delay(1000);
lcd.setCursor(4,1);
lcd.print("08 SECOND");
delay(1000);
lcd.setCursor(4,1);
lcd.print("07 SECOND");
delay(1000);
lcd.setCursor(4,1);
lcd.print("06 SECOND");
delay(1000);
lcd.setCursor(4,1);
lcd.print("05 SECOND");
delay(1000);
lcd.setCursor(4,1);
lcd.print("04 SECOND");
delay(1000);
lcd.setCursor(4,1);
lcd.print("03 SECOND");
delay(1000);
lcd.setCursor(4,1);
lcd.print("02 SECOND");
delay(1000);
lcd.setCursor(4,1);
lcd.print("01 SECOND");
digitalWrite(rel,HIGH);
digitalWrite(buz,LOW);
delay(2000)
}
else
{
//digitalWrite(rel,HIGH);
//digitalWrite(buz,LOW);
Serial.println("$bc4");
}
delay(500);
lcd.clear();
}
}

```

8. CONCLUSION

Thus we created a new concept of biomedical tool for body parameter measurement. If our system is implemented doctors from several countries can come together to work for a patient as they digital information based on new feature and that too of GSR level high accuracy. Our system can be readily implemented in hospitals to check the body parameter value for body conductivity. It's a self-independent system to analyze the body condition. It has the additional Heart Beat sensor to properly identify the heart condition and can warn for heart attack chances.

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Mr. Naveen Kumar was born in sugauli East champaran BIHAR, India on 22 FEB 1997. he received his Graduate degree in B-tech Mechanical engineering from, PRIST University, Puducherry in 2018.

Currently he is pursuing his Graduate B-tech degree under the department of Mechanical engineering from PRIST University Puducherry.



Mr. Prashant kumar was born in Malihar, begusarai (DIST) BIHAR, India on 02 JAN 1997. he received his Graduate degree in B-tech Mechanical engineering from, PRIST University, Puducherry in 2018.

Currently he is pursuing his Graduate B-tech degree under the department of Mechanical engineering from PRIST University Puducherry.



Mr. Suraj kumar prakash was born in katihar BIHAR, India on 06 Aug 1997. he received his Graduate degree in B-tech Mechanical engineering from, PRIST University, Puducherry in 2018.

Currently he is pursuing his Graduate B-tech degree under the department of Mechanical engineering from PRIST University Puducherry.



Mr. Hemant kumar was born in chilbilli post Nisarpur BIHAR, India on 18 April 1997. He received his Graduate degree in B-tech Mechanical engineering from, PRIST University, Puducherry in 2018.

Currently he is pursuing his Graduate B-tech degree under the department of Mechanical engineering from PRIST University Puducherry.



Mr. Panneerselvam K Assistant professor, Department of Mechanical Engineering, PRIST University, Puducherry.