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System To Implement Self Controlled Air Pollution Detection of Vehicles

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Abstract – *Now a days vehicles are become the important part in every one's life vehicles are needed in cities and in villages also. But because of vehicles air pollution can be take place. And air pollution is measure problem. Every vehicle having emission of different gases that gases are harmful. Because of that gases problem of global warming take place. That gases are also causes health problems.*

Each vehicles having emission of gases but problem occur when that gases goes beyond the reference value.so there is need of servicing of vehicle in time. Those gases are controlled by proper maintenance of vehicles. This paper is helpful to detect the harmful gases produce by vehicles.

This paper is helpful to controlled air pollution which is produced due to improper maintenance of vehicles.

Introduction

Now a days air pollution is biggest problem due to large number of vehicles are increased because each people used their own vehicle and it causes air pollution. Most of the time air pollution caused by vehicles.

Air pollution badly affected on global environment. Vehicle produces large number of gases such as CO, SO2, NOX etc. that gases are harmful for living organism. When the value of that gases more than the threshold value then air pollution occur.

Air pollution is not in controlled in these days because improper maintenance of vehicle by peoples. The don't check vehicle pollution level regularly.so this system is design for controlled Air pollution. Air pollution is very dangerous for environmental problems like global warming and it causes human diseases such as asthma, lung cancer, respiratory disease etc.

With the help of this paper we can't controlled air pollution completely but it maintain at some level.it uses different sensor they detect different harmful gases level and displayed on LCD screen .when pollutant gases goes beyond reference level vehicle speed goes down automatically. When people serviced that vehicle it become in normal speed. Another advantage of that system is that used the fuel leakage sensor if leakage of fuel from tank can take place it inform to driver about that so wastage of fuel is reduced using this system.

System Design

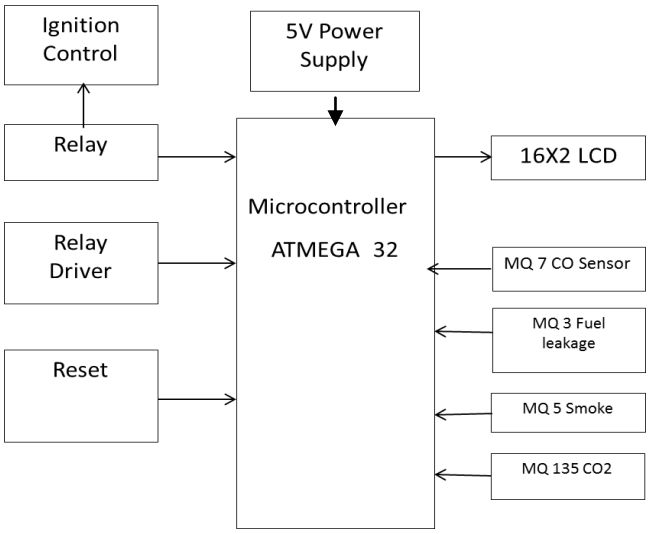


Fig no 1

SENSORS:

LM35: LM 35 series are precision integrated circuit with output voltage linearly proportional to the centigrade temperature. The device is used with single power supply or with plus and minus supplies, or with plus and minus supplies.
As the LM35 device draws only 60µA From the power supply.it has very low self-heating of less than 0.1ºC To 150ºC temperature range, while LM 35 device is rated for -40ºC to 110ºC range. The LM35 series devices are available packaged in hermetic TO transistor packages, while the LM35C devices are available in the plastic To-92 transistor package. The LM35D Device is available in an 8-lead surface mount small outline package and a plastic TO-220 package device LM35.

MQ-7: This is simple to use carbon monoxide sensor. Suitable for sensing CO concentration in the Air.MQ7 detect CO gas concentration anywhere from 20 to 2000.this sensor output is analog resistance. The drive circuit is very simple all you need to do is power the heater coil with 5v, add a load resistance, and connect the output to an ADC.

MQ3: This is an alcohol sensor which is suitable for detecting alcohol.cocentration on your breath ,just like common breath analyser.it has high sensitivity and fast response time. Sensor provides an analog resistive output based on alcohol concentration.

MQ5: this gas sensor module is useful for gas detection.it is suitable for detecting CH4, CO, alcohol. Due to its high and fast response time, measurement can be taken as soon as possible. The sensitivity of sensor can be adjusted by using potentiometer.

MQ135: This sensor is used for detecting poisonous gas that impact air quality in homes and offices. The conductivity of sensor increases with the air pollution. The sensor reacts to NH3, NOX, Benzene, smoke, CO2 and other harmful gases.it has small potentiometer that allows the adjust load resistance if sensor circuit.

MICROCONTROLLER: Microcontroller is used, which is an 8 bit microntroller.it consist of three inbuilt timers. those will be used for the timer configuration. The microcontroller is programme to do three functions namely comparator, timer & triggering circuit.

The microcontroller takes in 2 inputs- one from smoke sensor which is connected to port A and another being the predefined threshold value specified by government. When smoke sensor output is more than the threshold value, the speed of DC motor is decreased.

HARDWARE DESIGN

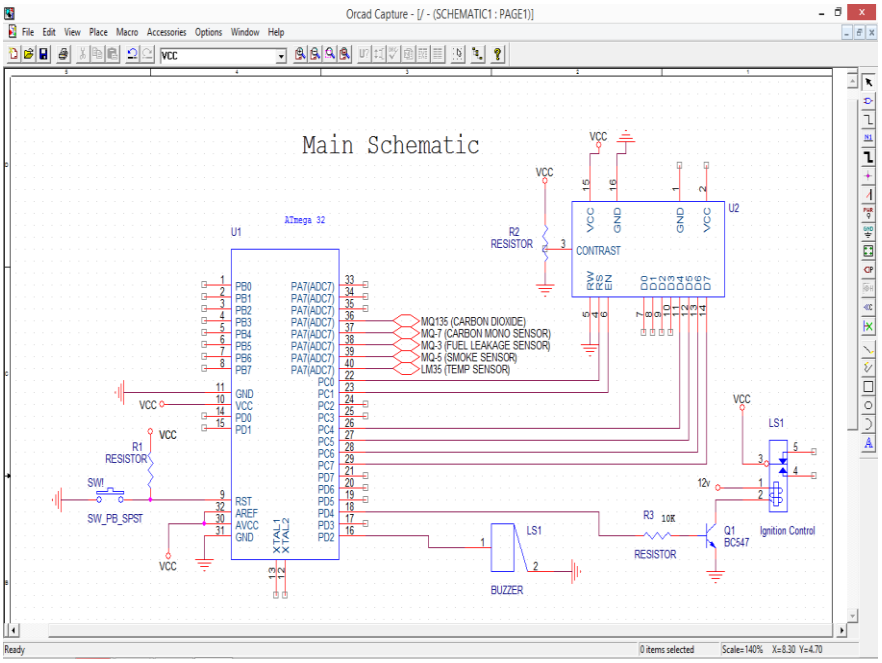


Fig no 2

Working principle;

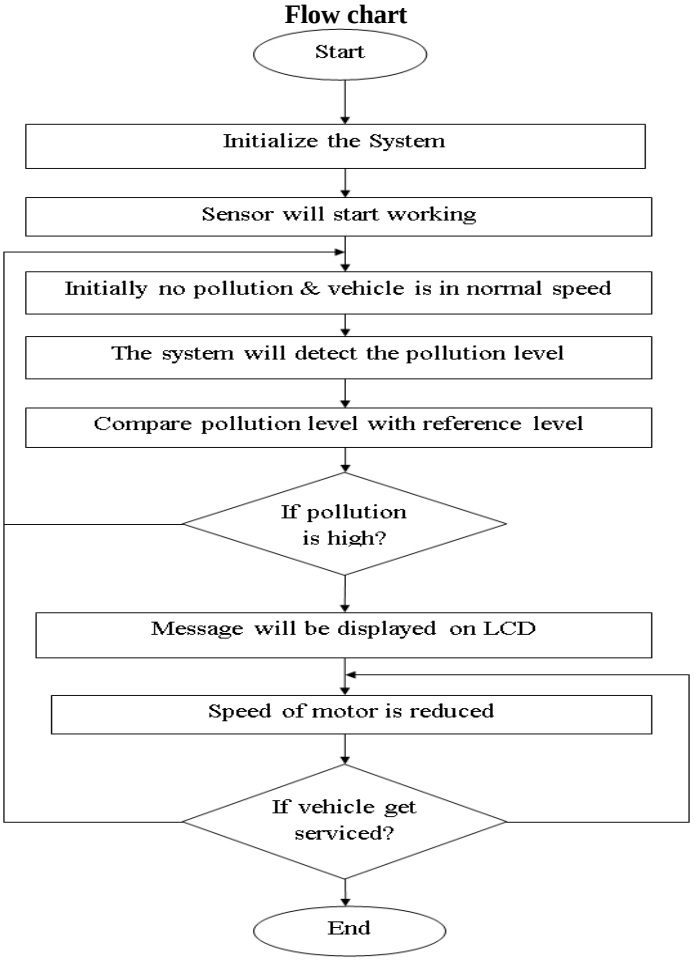
Block diagram consist different blocks like sensors, microcontroller, LCD, power supply, relay, ignition control. LM35 which is used to detect the temperature level MQ3is used to detect leakage of petrol or diesel. Other sensors are used to detect different types of pollutant gases which are harmful. This value is given to transducer which converts signal into electrical form that signals given to analog to digital converter and digital signals given to ATMEGA 32 microcontroller. The microcontroller is used to compare the value with reference value which is already stored. When that value goes beyond the reference value at that time speed of dc motor goes down or speed of vehicle goes down automatically. Value of gases displayed on LCD.servicing of vehicle done by owner vehicle become in normal speed.

Result:

Basically different types of sensor can be used that sensor senses the level of pollutant gases .when value is above threshold level buzzer get turn on.

SR NO	SENSOR	OBSERVATION	Action taken
1	MQ7	Above 500PPM	Speed of motor is reduced
2	MQ5	Above 700PPM	
3	MQ135	Above 700PPM	
4	LM35	Above 50°C	

Flow chart



Conclusion

This paper consist different things. First thing is sensors detect the level of pollutant gases & when that level goes beyond the reference level there are many environmental problems are take place. For examples air pollution & global warming.

Second thing is this paper can be consist fuel leakage sensor if there is leakage from tank of vehicle can be take place driver of that vehicle easily know about that vehicle. And driver can take easily action on that so wastage of fuel from tank can be reduced.

Third thing is this system consist ignition control when value of pollutant gases goes beyond threshold level the speed of vehicle goes down owner take action immediately servicing of vehicle done by owner in time to time. Hence pollution of air controlled by using this system .

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