

Enviro-Safe Engine Curbed Vehicle

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ABSTRACT: Vehicle is a self-impelled transport that sprint on tires, which acts a medium for transportation. Though vehicles are of different kinds, buses place an important role among them. Due to enormous usage, it causes short- and long-term effect on the environment. The proposed work is put forth for controlling the noise pollution, air pollution exhausted from the vehicle and to reduce the accident by maintaining load at the steps. Arduino Uno acts as the key element for controlling the whole work. Noise pollution is partly caused due to horn sounds which creates a high disturbance to the public as they are horned at unnecessary time. To reduce the horn count, the project deals with the reduction of number of times the horn pressed using the counter, by fixing the limit of horn count per day. If it exceeds the given level, certain amount is added to their insurance in daily basis. The smoke coming from vehicle causes the air pollution. To notify it to the user, the amount of pollution created is displayed in LCD by using the smoke sensor. In fast growing environment, people are in need of vehicles to reach their destination on time. So, people rush and stand on the steps, due to which many accidents occur. The proposed work also focuses to avoid the risk of people standing on the steps. If any load is detected in the load detector for certain interval of time, the engine is automatically set off. GSM is used for the communication purpose. The proposed work reduces the peril of people and also the environment and can be adopted to the betterment of future world.

KEYWORDS: vehicles, noise pollution, air pollution, engine control, automation, horn, LCD, smoke sensor, GSM.

I. INTRODUCTION

A vehicle is a machine that transports people or payload. It helps us in our daily lives such as transportation of goods, medical and emergency uses, commuting from one place to another and also acts as a symbol of social status. Though it has many uses, it also creates negative impacts on the environment. Air pollution is one of the major effects which is extremely serious for the society caused by the vehicles. Exhaust smoke from the vehicle pollute the environment air. Traveller's vehicles are a significant contamination patron, creating huge measures of nitrogen oxides, carbon monoxide and different gases. Vehicles are the main source of noise pollution. Noise pollution can cause physiological as well as psychological damage in human being. Horn engages in a significant job in causing these issues. Presently, people incline toward high decibel sound horn and further more press them at superfluous occasion makes aggravations to the open which additionally brings about hypertension, hearing misfortune, stress related sickness and rest disturbance.

Due to the increase in population, the usage of the vehicles also increased tremendously which results in many accidents in our day to day life. Heavy load is one of the main reasons for creating such road accidents which even leads to death of humans [9]. In many public transports, people stand on the door steps as they need to reach their destination on time. So, there is major chance to meet accidents due to this act of such people [6]. To avoid these problems, people now a days prefer environment friendly vehicles. These vehicles have lower negative effects on environment than traditional automobiles. In addition to this, the proposed system of "enviro-safe engine curbed vehicle" reduces the environmental effects caused by the vehicle.

II. RELATED WORK

The assembly of India made sets of rules to control the pollution levels from vehicles. The organization of India made the Bharat Stage Emission Standards for air tainting control from motor vehicles. Bharat arrange emanation norms are outflow benchmarks that used to manage the yield of air toxins from inside burning motor hardware, including engine vehicles. A few emanation standards were come to control the discharge levels from vehicles since most recent two decades. There are numerous individuals who look into reporting in real time contamination discovery in vehicles.

The creators has picked the financially accessible gas sensors for the harmful gases identification which are contrasted and the created MOO3-TiO2 and MOO3-WO3 flimsy movies in 2002 [1]. In 2010, George F. Fine, Leon M. Cavanagh, Ayo Afonja and Russell Binions said that the metal oxide semiconductor gas sensors that are used in wide range of jobs in businesses. [2]. these are moderately reasonable contrasted with other detecting advances, vigorous, lightweight, enduring and fast reaction times.

In portrayed an installed framework for vehicle lodge dangerous Gas identification and Alerting. The framework is created utilizing GSM and GPS modules for identifying contamination gases with vehicle area [3]. In 2013 Anitha Kulkarni, T. Ravi Teja built up a computerized control framework for air contamination recognition for vehicles.

Horns have been given in vehicles with the goal that drivers can alarm the walkers and different voyagers if there should be an occurrence of any risk [11]. Yet, rather we will in general blow the horn tenaciously so as to stay away from the difficulty of driving cautiously. Aside from the bother and disagreeable feeling that perpetual blaring inspires, it is likewise something which prompts, risky wellbeing outcomes. Sounding stances danger to life of walkers, to cyclists and bikers. Perpetual blaring is an indication of developing restlessness, outrage, uneasiness and stress. A few urban areas in India have been confronting genuine clamor contamination issues over the most recent couple of decades because of considerable development in the quantity of vehicles, extension of street system, industrialization and urbanization.

Lekshmi Ajaykumar et al., has created a horn limiter project by altering the sound level as per the permissible decibel level of the zone as prescribed by the authorized body this is done by using a set of acoustic filters [14].

III.METHODOLOGY

Vehicle is which someone travels or something is carried or conveyed. Vehicles are increased to a greater extent to reduce the risk of time and travel. Though it has many advantages, it also creates high consequences to the environment.

A. Problems identified in existing method

- The gases coming out of the vehicle is highly harmful which may even result in global warming.
- The noise roared from the vehicle makes high disturbances to the public.
- The load on the steps of the running vehicles leads to road accidents.

IV.PROPOSED SYSTEM

The working principle of the proffered work which consists of ATmega328p based microcontroller which is the main controller. It has 14 digit I/O pins and 6 analog input pins as shown in the fig 3.1. As all know, any creation of most recent innovation can't be actuated without the wellspring of intensity. So, in the fast-moving world, we deliberately used a proper power source. Here, the power supply is 12V. The block diagram can be divided into two side as mentioned in the fig 3.2, one is input side and other is output side. Input side consists of smoke detector, load cell and keypad

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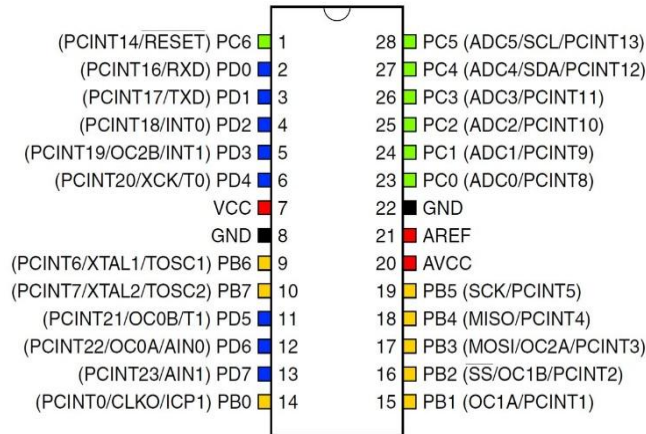


Fig.1 Atmega 328p pin description

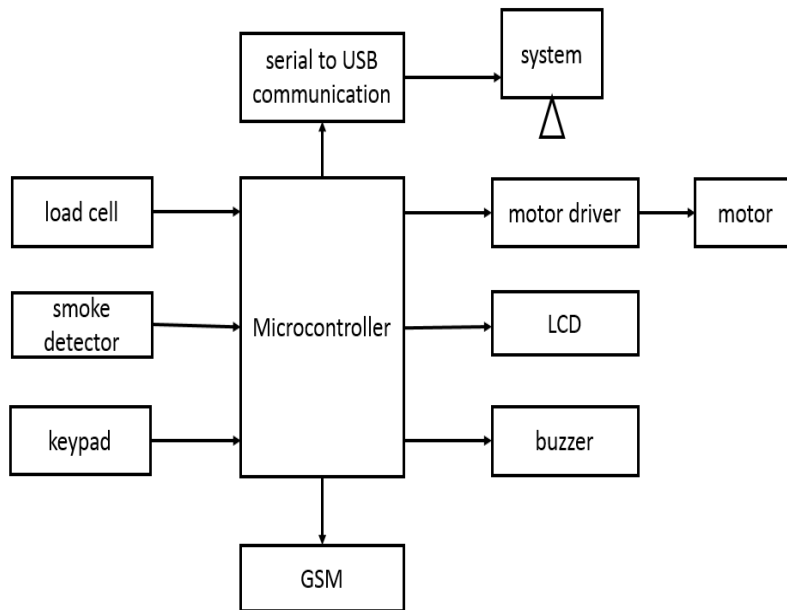


Fig.2 Block diagram

Smoke sensor MQ2 detects the smoke exhaust from the gas chamber of the vehicle. It has 4 pins – analog pin, digital pin, ground and Vcc. This sensor can measure concentration of 10 to 10,000 ppm and can operate at temperature from -10°C to 50°C [7]. The digital output from smoke sensor is given as input the microcontroller. When the signal reaches the microcontroller, the message is sent to the user about the smoke exhaust from the vehicle at regular time interval and alters if it increases the certain fixed level with the use of GSM and alarm respectively. The LCD displays the status of the vehicle.

Load cell is a sort of transducer, explicitly a power transducer. It changes over a power, for example, strain, pressure, weight, or torque into an electrical sign that can be estimated and systematized. The compression load cell from high bandwidth measurement (HBM) are available with maximum capacity of 50 tons [8]. Here, it

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measures the load at the door steps of the vehicle. If any kind of load is detected for the certain interval of time, the signal is given as the input to the Arduino and alerts the user about it and automatically changes the state of the motor to OFF condition.



Fig.3 load cell

Keypad 1*4 highlights comprises of a 4 attaches in Matrix structure. This is a layer keypad with no moving parts. A female 5-pin berg connector is required for interfacing it with the smaller scale controller circuit. In the proposed work, keypad is utilized as the contribution to place of the horn. The occasions the horn squeezed is noted and send it as the contribution to the microcontroller. On the off chance that the check is expanded over the fixed level, certain fine sum is added to the client's protection.

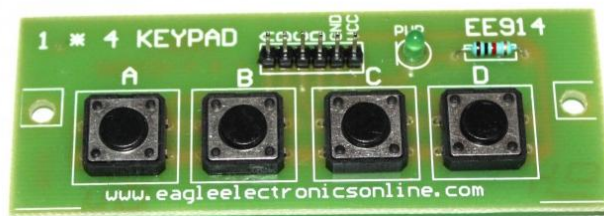


Fig.4 1×4 keypad

Global System for Mobile communication (GSM) is a computerized cell innovation utilized for transmitting versatile voice and information administrations. It digitalize and compress data then send it down through a channel with two others streams of user data each in its own timeslot. It is used to send message to the user about the status of the load, pollution caused by the vehicle.

Liquid Crystal Display (LCD) is an electronic display module which uses liquid crystal to produce a visible image. Here, we use 16*2 matrix LCD to display the status of the horn count, the load at the steps and also the amount of smoke exhaust by the vehicle.

L293d Motor driver is an intensifier or force modulator that consolidates between the controller and a DC engine. It accepts the low present as the info and afterward changes over it into a high present which is reasonable for running the engine.

DC engine manages the manner in which that a present passing on conductor put in an appealing field experiences a force which makes it turn concerning its one of a kind position. The DC engine or direct current engine takes a shot at that head of Lorentz law.



Fig.5 DC motor

V. RESULT AND DISCUSSION

	ENGINE OFF	MESSAGE	FINE
SMOKE DETECTION		✓	
HORN COUNT		✓	✓
LOAD AT STEPS	✓	✓	

Table I Experimental output.



Fig.6 The output when the vehicle is overloaded at the steps and the motor is set off respectively.



Fig.7 Indication for over usage of horn count and the fine amount is added to the users insurance.



Fig.8 smoke is detected and message is sent to the user.

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Fig.9 Updates sent to the user about the status of the vehicle using GSM.

VI. CONCLUSION

We have implemented an Enviro-safe engine curbed vehicle. In recent years, modern technologies have developed automation in every field that promotes comfortable and better life for everyone. The proposed work is based on the “Enviro-safe Engine Curbed Vehicle” which focuses on reducing the effects created by using the vehicles. It deals with the control of noise pollution from the horn by fixing certain count and if it exceeds the level a certain amount of fine is added to their insurance. Secondly, the load on the steps of vehicle is monitored and stops the engine if it lasts for decisive time. And also the smoke overtired from the vehicle is spotted and alerts the user. The prospective work is very much useful to attain the pollution free environment and gives rise to the technology of the green vehicle.

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