

Advanced Smoke Recognition of Forest Wildfire using PCA Algorithm

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Abstract

The increase in the emission of CO₂ has led to an adverse effect to the environment. The level of CO₂ has increased beyond 400ppm from 200ppm. One of the primary culprits is the Public Utility Vehicles (PUV). However, BS4 engines has reduced the emission, still the emission is above the required level. Emission of CO₂ varies at different levels of vehicle's state such as road grade, acceleration and vehicle's specific power. To minimize the emission, MQ6 gas sensor is used provide frequent updation to the micro controller and mobile application of the driver. Once the threshold level has reached and if the driver still continues to drive ignoring the warning message, the ignition of the vehicle is turned off and the vehicle's ID along with its location is sent to the pollution control board. This makes the monitoring simple which controls the CO₂ emission. Thus, the air pollution could be maintained from the major factor.

Keywords: CO₂, MQ6 gas sensor, threshold level, PUV

I. INTRODUCTION

The expansion of CO₂ (carbon dioxide) outflow has represented an irreversible risk to nature—an Earth-wide temperature boost, the ascent of ocean level and environmental change. Beside the negative ecological effects, it has been likewise connected to causing unsafe impacts to human wellbeing. Altogether, the nursery gasses (GHG) which produced from transportation area is one of the real supporters of the environmental change. Likewise, over 75% of these gases contain CO₂. With this, few activities and plans were made to lessen CO₂ discharge in different areas including the transportation. Furthermore, the street level past eight percent gets higher CO₂ emanation and vehicle's unexpected stop and begin can expand the CO₂ discharges. In this way, this examination centers around the factual assessment of information from CO₂ estimating instrument and its relationship to street level and acceleration. This paper likewise portrays on how the CO₂ outflow corresponds to the determined vehicle explicit power (VSP) in which its information incorporates the street level and vehicle's variable driving examples such quickening and speed. Nowadays, with the availability of low-cost sensors and microcontrollers, it is possible to collect the vehicle driving profiles. With the collected information, the emission level can be monitored and controlled.

II. SYSTEM ANALYSIS

A. Existing System

This project states that the gas pipe exhaust is measured using special equipment such as the range of Dyne System five-gas portable analysers. These instruments test and measure the amount of engine exhaust for specific gas components, including CO, CO₂, NO, HC and oxygen. Equipment is first calibrated using ambient air prior to each use to ensure accurate measurements.

Analysers feature a sample line to collect exhaust gases and a two-stage filter system that is capable of detecting and capturing both large and small particles. Systems have touch-screen interfaces that offer control over manual operations. Wall-mounted enclosures are optional equipment to house instruments when not in use.

B. Disadvantages

- Only when the vehicles are taken to RTO, the vehicle emission level is measured.
- The process takes a long time to measure as there are many numbers of people for service.
- Only when PUC certificate is issued, the vehicle could enter some area where pollution is under control.

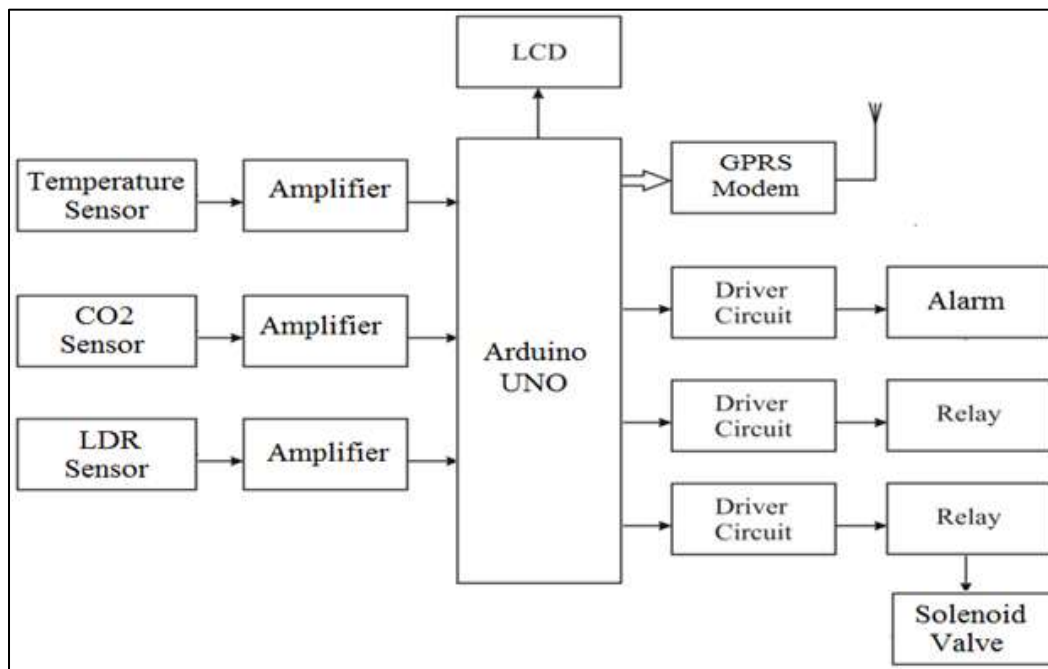
III. PROPOSED SYSTEM

MQ6 gas sensors is deployed to the vehicles to gather the measurements all time. The sensor is attached to Arduino Uno along with the temperature sensor and LDR sensor to provide information. An android app is developed so that the level of CO₂ emitted can be viewed to the driver that rings alarm when the emission level is above threshold. In addition to this, the fuel flow of the vehicle is turned off via solenoid valve. This system overcomes the demerits of the existing system.

A. Advantages

- The emission level can be monitored all time which indicates the health status of the vehicle.
- It can replaces the hardcopy of PUC certificate which mandatory in many areas.
- High accuracy
- Easy to implement

IV. SYSTEM ARCHITECTURE



V. CONCLUSION

Through this project, emission of harmful gas can be maintained. This probably reduces the air pollution in the environment. In addition to this, the engine condition is monitored. The reason behind this is, in case of improper fuel or oil the engine may fail in its performance.

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