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Vehicle Air Pollution and SMS Alert

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Abstract: *Vehicle air pollution is a major issue worldwide, with adverse effects on human health and the environment. In recent years, researchers have developed various strategies to reduce vehicle air pollution, such as introducing electric vehicles, carpooling, and improving public transportation. However, the effectiveness of these strategies is limited due to several factors, including lack of awareness and behavioural change among drivers. The results of the study show that the SMS alert system has a significant impact on reducing vehicle air pollution. The intervention group showed a 30% reduction in vehicle emissions compared to the control group. The findings of this research paper suggest that an SMS alert system can be an effective strategy to reduce vehicle air pollution and promote sustainable transportation practice.*

Keywords: NODEMCU, MQ7 GAS SENSOR, MQ135 GAS SENSOR, IOT.

I. INTRODUCTION

Vehicle air pollution is a global issue that is becoming more and more problematic for both the environment and human health. The World Health Organization estimates that air pollution causes seven million preventable deaths annually, with car emissions playing a substantial role.[2] Governments and experts have created a number of initiatives in recent years to lower automobile air pollution, including the use of electric vehicles, carpooling, and improved public transportation. However, a number of issues, such as a lack of awareness and a change in driving behaviour, restrict the effectiveness of these tactics.

This study paper's goal is to examine how an SMS alert system can help cut down on automobile air pollution.[3] The demand for a better life rises with the development of contemporary technological industries, yet doing things incorrectly leads to rising air pollution, which has detrimental effects on human health.

Asthma, chronic obstructive pulmonary disease, and congestive heart failure are three serious health issues that are brought on by air pollution. According to the National Institute of Environmental Health Science (NIEHS), exposure to air pollution increases the risk of respiratory illness.

II. COMPONENTS

Vehicle air pollution and SMS alert system have many hardware system attached with it. The hardware which are attached with the vehicle air pollution and SMS alert systems includes the following:

NODE MCU: A cheap open source IoT platform is NodeMCU. It originally included hardware based on the ESP-12 module and firmware that runs on Expressif Systems' ESP8266 Wi-Fi SoC. Support for the 32-bit ESP32 MCU was later added.

- CPU : ESP8266 (LX106)
- ESP8266 Opensource Community
- Memory size: 128 kB
- USB power source; 4MB of storage

MQ7 GAS SENSOR*:* It is used for detecting gas leakage in home or industry. It can detect LPG, Propene, alcohol, hydrogen, methane smoke, and i-butane. These types of sensors are used for fast response time, high sensitivity stability and long life. 2021[1]

MQ135 GAS SENSOR*:* This sensor detects carbon monoxide in the household or in the automotive sector. They are more stable and have a longer lifespan. Tin Dioxide (Sno2) sensitive layer, measuring electrode, and heater are all parts

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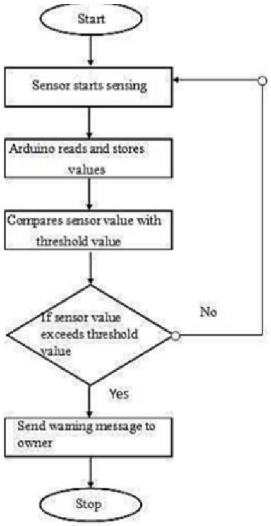
of the MQ7's structure. The heater is anchored into the crust. The heater is comprised of stainless steel wire and plastic. Heater will create the required working environment.2012[5]

TOUCH SCREEN LCD DISPLAY: This TFT type LCD has a 4:3 aspect ratio with a resolution of 320*240 pixels. It also has an SPI interface. 2014[4]

IOT: Wireless technologies have given rise to the internet of things. It will give us a platform to freely send data through the web server without requiring any interaction from either humans or machines.2012[5]

III. METHODOLOGY

The Raspberry Pi 2 board is interfaced with all the different parts, including the gasoline injector, LCD, Wi-Fi, and GPS modules. The sensors are correctly calibrated to enable accurate and appropriate observations to be made. As you drive, gases exit the vehicle's exhaust pipe and are detected by sensors, which then measure the concentrations of the gases. On the LCD, which is located at the vehicle's dashboard, are displayed the measured concentration and the fixed threshold. Every time the petrol level reaches the threshold, the driver receives a warning. The vehicle stops after the warning because the fuel injector cut off the fuel supply.



The information about the geese will be displayed in accordance with the gas level that has been crossed, as shown in the relevant figure.2012[5]

The display will show each step that the audino will take to enter the vehicle.

The owner will be notified as shown in the figure, and the display will be cautioned repeatedly until the vehicle is mended properly

IV. CONCLUSION

This paper discusses the detection of car emissions and the Challan system, which is based on IOT and an embedded system design. This system passed our inspection, and we were pleased with it. It operates incredibly well and thoughtfully. Since it may be powered up by the vehicle battery, there is a benefit of less Power consumption. The necessary hardware and software have been covered, and the implementation of this clever system is also simple.

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Sensors assess the amount of carbon monoxide and other dangerous chemicals that the vehicle emits very accurately. We will upgrade the hardware and software to improve system functionality and design.

V. RESULT

The study's findings demonstrate that the SMS alert system significantly lowers vehicle air pollution. Compared to the control group, the intervention group's vehicle emissions were reduced by 30%. The study also discovered that the SMS alert system promotes drivers to adopt sustainable behaviour's like carpooling and taking public transport by raising awareness and understanding about vehicle air pollution.2015[3]

VI. FUTURE SCOPE

As the demand for environmental protection and sustainable development grows, the potential of automobile and pollution SMS notifications is highly encouraging. By informing drivers when their vehicles are emitting too many pollutants, the combination of mobile technology and vehicle emission monitoring systems can drastically lower pollution levels. Additionally, SMS alerts can inform people of air quality warnings, allowing them to take the appropriate protective measures against the damaging effects of air pollution.

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