

Smart Air Pollution Monitoring and Controlling for Vehicles & Industries

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Abstract

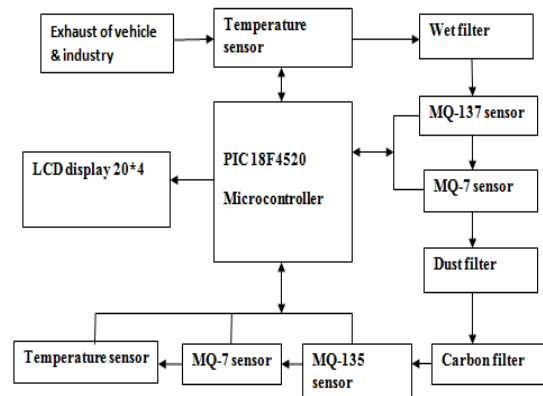
In these days air pollution has increased due to vehicle and industry that leads to many health problem in living being. This paper project is designed to provide healthy air in the environment by filtering polluted air released from exhaust of vehicle and outlets of industry. Our project consist of many filter such wet filter, dust or fabric filter and activated carbon filter. It also consist of sensors such as MQ-135 ,MQ-7 and temperature sensor. We have used Microcontroller PIC18F4520A which help to convert analog data into digital data which is displayed on display 20*4.

Keywords: Air pollution, Filter, Sensors, Vehicle, Microcontroller

1. Introduction

Human being are facing lots of problem due to polluted air which is released from vehicle and industry that leads to many health problem in living being. We are focusing on the issue of day to day life. There are large amount of polluted air and smoke released from vehicle and industry.[2] Our project focus on filtering the polluted air which contains dangerous gases and smoke released from vehicle and industry. Gases released from vehicle and industry are carbon monoxide, carbon dioxide, sulfide, benzene, alcohol, ammonia, hydrogen chloride, nitrous oxide, nitrogen trifluoride etc.[5] Polluted air is passed through this system which contains various filters such as wet filter, dust filter, activated carbon filter along with sensors to detect smoke.[1] A healthy to breathe air is given out after purification and results are shown on the display 20*4.

2. Block diagram



3. Explanation

The gases from vehicles and industries are passed through **wet filter** so that the polluted air is cooled and does not have an adverse effect on the circuit & sensors. At the beginning of the system we have placed a temperature sensor to measure the temperature of the incoming polluted gases.

The **MQ-135 and MQ-7 gas sensor** will detect the polluted air and pass it to the dust collector where all the dust particles are removed. Then it is further passed to carbon filter where the gases are purified. This removes free chlorine, chloramide, chlorine dioxide, phenols, organic solvents and pesticides. This sensors detect almost all gases such as carbon dioxide, carbon

monoxide, sulfide, benzene, alcohol and many such hazardous gases.[4] The importance of MQ-135 gas sensors are long life span , low cost , and simple drive circuit , good sensitivity to toxic gases. But here we use a separate sensor **MQ-7 gas sensor** for CO. This is specially designed to detect CO, as this is major gas from vehicles and industries.[3] Through PIC18F4520A Microcontroller programming where analog data is converted into digital and it is displayed on DISPLAY 20*4.[1] Before filtration and after filtration data will be displayed.

4. Results and Discussion

Substance	Before filtration			After filtration		
	Temperature	Other gases	CO	Temperature	Other gases	CO
Rubber	51°C	16%	32%	29°C	03%	02%
Plastic	40°C	30%	40%	30°C	04%	02%

RUBBER: Before filtration



After filtration:



PLASTIC: Before filtration



After filtration:



Note: Rubber and plastic are used as samples to show the working of system.

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