IoT based Air Pollution Monitoring System

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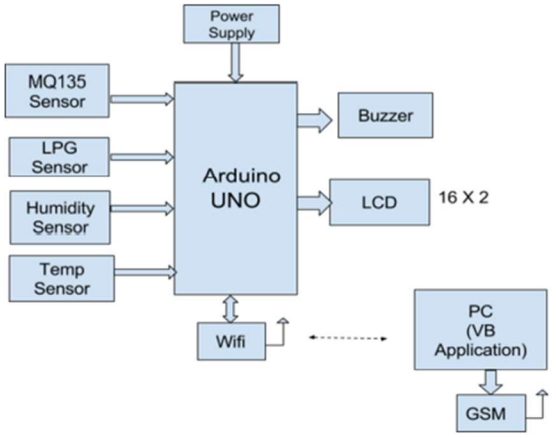
Introduction:

Air contamination is the most concerning issue of each country, regardless of whether it is created or creating. Wellbeing issues have been developing at quicker rate particularly in metropolitan spaces of non-industrial nations where industrialization and developing number of vehicles prompts arrival of part of vaporous toxins. Unsafe impacts of contamination incorporate gentle unfavorably susceptible responses like aggravation of the throat, eyes and nose just as some significant issues like bronchitis, heart sicknesses, pneumonia, lung and irritated asthma

According to a survey, due to air pollution 50,000 to 100,000 premature deaths per year occur in the U.S. alone. Whereas in EU number reaches to 300,000 and over 3,000,000 worldwide [1].

IOT Based Air Pollution Observing System screens the Air quality over a web server utilizing Internet and will trigger an alert at the point when the air quality goes down past a certain limit level.

Block Diagram[1]:



Hardware Requirement:

1) MQ135 Gas sensor

2) Arduino Uno

3) Wi-Fi module ESP8266

4) 16x2 LCD

5) Breadboard

6) 10K potentiometer

7) 1K ohm resistors

8) 220 ohm resistor

9) Buzzer

10) MQ 6 LPG gas sensor

11) Temperature sensor LM35

12) Humidity sensor SY-H5220

Software Requirement:

1) Arduino 1.6.13 Software

2) Embedded C Language

Addition and Updation:

Presentation of real time air contamination on 16*2 LCD display.

Application[3]:

The system will show temperature and humidity. The system can be installed anywhere but mostly in industries and houses where gases are mostly to be found and gives an alert message when the system crosses threshold limit.

The system will show the air quality in PPM on the LCD and as well as on webpage so that it can be monitored very easily.

Advantages[2]:

Sensors are easily available.

Detecting a wide range gases like CO2, CO etc.

Simple, compact and easily handle.

Continous update of change in percentage of quality

Challenges:

One of the major challenges here is large size and heavy weight of components.

Also, these are highly expensive.

In order to be effective, the locations of the monitoring stations need careful placement because the air pollution situation in urban areas is highly related to human activities.

Conclusion:

The system to monitor the air of environment using Arduino microcontroller.

IOT Technology is proposed to improve quality of air.

Wi-Fi module connects the whole process to internet and LCD is used for the visual Output.

References:

1. https://www.ijser.org/researchpaper/IOT-Based-Air-Pollution-Monitoring-System.pdf
2. https://ieeexplore.ieee.org/document/8378212
3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6696184/#:~:text=The%20Internet%20of%20Things%20(IoT,data%20to%20the%20IoT%20cloud