Name: **Ajith Nair**

Problem Statement

In the world of automation, things are getting automated, but the adverse effect is pollution. It is important to reduce the pollution level present in ambient air. Air pollution is the introduction of chemicals, particulates, biological materials, or other harmful materials into the earth's atmosphere, possibly causing disease, death to humans, damage to other living organisms in natural or built environment. One of the major issues in India is air pollution. If air pollution is not controlled, by 2030 the air will become so poisonous that it will be necessary to use an oxygen kit to breathe easily. Rising air pollution will also lead to premature aging.

Therefore there is a need to make an air pollution monitoring system which analyze the air quality of the environment and will display the AQI(Air quality index) of that particular place.Thus helping us to know if we have to take actions to reduce the pollutants in that particular place. This could bring about a significant improvement in the health of this and the following generation.

Software and Hardware Requirement:

Hardware

- **MQ135 Gas sensor**

This sensor is used for detecting or measuring of NH3, NOx, Alcohol, Benzene, Smoke, CO2.

- **ESP8266**

ESP8266 can give any microcontroller access to your WiFi

network.

- **1K ohm resistors**

These resistors are used in a voltage divider configuration to reduce the voltage from 5V to 3.3V for ESP8266 wifi module.

- **16X2 LCD**

LCD is used to display air quality index.

- **Potentiometer**

Potentiometer is used to control the contrast of LCD display.

- **220 ohm resistor**

The resistor will be used to set the back light brightness.

- **Arduino Uno**

Arduino is used to control other devices based on the code present in its memory

SOFTWARE

- **Proteus**

This software is used to simulate the operation of the project.

Additions and Updates:

1.)We could further modify the project by making the website to give advice based on the air quality index measured.

2.)We could also let the user know the effects the air quality will have on their body.

3.)By adding other sensors we could also let the users know conditions like humidity, temperature,etc.

Application & Advantages:

1.)With air quality monitoring systems, industries can detect the presence of these toxics and monitor air quality to take intelligent measures to improve the quality of air for their workers. This leads to an increase in productivity, reduced equipment damage, and effective regulatory compliance

2.)Indoor Air Quality Monitoring System: The indoor air quality monitoring system helps companies to build a healthier working environment to keep the AQI under control. By comparing the real-time air quality data with ideal conditions, companies can facilitate adequate ventilation, control the production of pollutants in their facility, and keep temperature & humidity level in a comfortable range.

3.) By using a PM monitoring sensor along with air quality monitoring systems, companies can monitor the amount of particulate matter present in their facility.

4.)By using gas detection systems, the leakage of toxic and combustible gases can be detected and steps can be taken to roll-out the evacuation process, minimize equipment damage, and prevent their spread.

Conclusion:

This project will be making use of a gas sensor to detect the AQI of the environment and then using arduino the message will be displayed and with the help of Wi-Fi module ESP8266 this data will be available via network or wifi.

References:

- IoT based Air Pollution Monitoring System using Arduino: https://circuitdigest.com/microcontroller-projects/iot-air-pollution-monitoring-using

arduino

- MQ-135 - Gas Sensor for Air Quality:

  https://components101.com/sensors/mq135-gas-sensor-for-air-quality

- WiFi Module - ESP8266 (4MB Flash): https://www.sparkfun.com/products/17146

- ARDUINO UNO: https://store.arduino.cc/usa/arduino-uno-rev3