**IOT BASED AIR POLLUTION MONITORING SYSTEM**

**Name:** Gaurav G. Salgaonkar

**Class:** D6

**Division:** A

**Branch:** Electronics

**PROBLEM STATEMENT UNDERSTANDING**

Air pollution is one of the biggest problems of every nation whether it is developed or developing. Because of air pollution health problems are rapidly increasing in urban areas. Various other factors like industrialization and use of vehicles are key factors of this problem. IOT based air pollution monitoring system is used to monitor the air quality. It will trigger an alarm when the quality of air goes beyond a certain limit that is beyond a particular PPM limit. It will automatically detect the presence of some harmful gases like CO2, smoke, NH3 etc. It will show the air quality in PPM on the LCD as well as the webpage which we will be creating.

The system uses MQ135 sensor for monitoring Air Quality. This sensor will help us to acquire accurate data regarding the components present in air. So, this is how proper monitoring of air pollution will be done.

**SOFTWARE AND HARDWARE REQUIREMENTS**

**HARDWARE REQUIREMENTS**

|  |  |
| --- | --- |
| 1) MQ135 Gas Sensor | 7)1K ohm resistors |
| 2) Arduino Uno | 8) 220-ohm resistors |
| 3) Wi-Fi module ESP8266 | 9) Buzzer |
| 4) 16 x 2 LCD |  |
| 5) Breadboard |  |
| 6)10K Potentiometer |  |

**SOFTWARE REQUIREMENT**

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| --- |
| 1. Proteus Software |

**Key features of some hardware components**

1. MQ135 Gas Sensor

Type – Semiconductor standard

Encapsulation – Bakelite, Metal cap

Detection range – (10-300ppm) NH3

(10-1000ppm) Benzene

(10-300ppm) Alcohol

1. Wi-Fi module ESP8266

Type – 32-bit microcontroller

Input – 17 GPIO pins

Power – 3.3V DC

**ADDITIONS AND UPDATES**

1) Some specific limits can be set while coding which can tell humans that how much ppm of air pollution can create particular risk for their health.

2) More hardware sensors can be used that can detect hazardous gases and the whole setup can be used in industries so that municipal bodies can check the amount of pollution a particular factory is creating and actions can be taken in order to reduce the air pollution.

**Applications**

1. Industrial air quality monitoring.
2. Making data available to users.

3)Indoor air quality monitoring.

**Advantages**

1) Easy to install.

2) Accurate Pollution monitoring.

3) Updates available on websites easily.

**Conclusion**

The system is made in order to monitor the quality of air. IOT technology is used in order to reduce the air pollution by detecting the quality of air. Using of sensor such as MQ135 helps in detecting the hazardous elements present in the air.

Finally, the visual output is displayed on LCD and updates regarding the air are available on the webpage.

**References**

1)IOT based air pollution monitoring system

<https://circuitdigest.com/microcontroller-projects/iot-air-pollution-monitoring-using-arduino>

2)Wikipedia for finding key features of MQ135 Gas sensor and Wi-Fi module ESP8266.