

# IOT Enable proactive Air Quality Monitoring system

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## Abstract-

The paper propose a methodology for IoT base Air monitoring system to determine the real air quality at a particular place. Air pollution is of the largest environmental health risks in world. Air is get polluted of release of toxic gases by industri, vehicular emission and increase concentrte of Harm gas. These pollution causes damage in Human health & other organism. This system is integrated with mobile application also its communication with arduino internet of thing is now days find profound use in each and every sector. The paper put a kind of realtime air pollution monitor in which we are using different gas sensors. The use of multiparameter Air quality monitor systems makes it possible to do a detailed level analysis of major pollutants.

Keywords- IoT (Internet off Things)

## 1. Introduction

With a develop of the industri and urban process the world environment pollution is a common problems most of the countri. Environment pollution include air pollution, water pollution.

pollutants in reach epoch, air pollutions is an important problems in society that harms the human health and environment. This is a great problems faced in the urban area. Air pollution contributes to the greenhouse gases, which causes the greenhouse effects. Whose side effects are well known to all of us? In recent time there is a tremendous increase in pollution by the private vehicles. The main component of pollution from vehicles is oxide of carbon, which can be easily sence by the semiconductor gas sensor. Theses pollutants impact on the human health affecting lungs & respiratory system. Air plays a very important part in our life, we will talk about just a few of them today Air contain oxygen, which is essential for life on earth. We inhaled air, talking the out oxygen and other gases our bodies need, then air we exhaled is made of the gases useless to us-mainly carbon-dioxide.

Internet of things (IoT) has become a very popular paradigm in the modern wireless communication era. In these projects we are using mobile application, arduino Wi-Fi module and various gas sensors. The various sensors can do the sensing of emitted gas like CO (carbon monoxide), SO<sub>2</sub> (Sulphur Dioxide) smoke and temperature for this projects we are using MQ 2, MQ 7, MQ 135 and LM 35.

This paper suggests an idea, which is expected to help in reducing the pollution in air. Paper are include propose model ideas implement the same as the real time project air pollution detection and monitor.

The main mission of air quality monitor network to record concentration of pollution and other parameter related to the pollution and delivered this information or data to the user.

## 2. Need of Monitoring

Clean air is a vital need for every human being. Polluted air cause many Health problem serval damages there are to make step ahead of control the pollution rate is necessary monitor air quality which may help to make right Decision right time.

They are various causes of increasing the pollution such as smoke automobiles exhaust, chemical discharge from industries, radioactive substance etc. these are main reason of decreasing the air quality. Main gas which direct affects The Human health is carbon monoxide, hydrogen sulphide, sulphur dioxide Nitrogen dioxide (NO<sub>2</sub>) and the main contribute of this gas is traffic relate pollutant emission. Huge effort are required to improve the air quality in indoor environment. Monitoring environment is control to manual automatic control step . This are various improvement in the instrument of environment monitoring but still cannot meet the harsh environment [2].

## 3. Air Quality Index

An air quality index is use government agencies To communicate to the public pollute air current is how pollute it is

forecast. As the AQI increase, increasing large percentage of population likely to experience Increasingly adverse Health effects. The air quality monitouring index of report air quality. It about you how clean or pollute air is and what associate health effect might a concern for you. The AQI focus to health affects you may experience within a few hours or days after breathing polluted air.

Their are six air quality and monitouring categori, name good, moderate, moderately polluted, unhealthy, vary unhealthy and hazardous.

AQI Level	value	Meaning
Good	0-50	Air quality satisfactory
Moderate	51-100	Air quality acceptable
Unhealthy for sensitive groups	101-150	Members of sensitive group may experience health effect
Unhealthy	151-200	Everyone is begin to experience health effects
Vary unhealthy	201-300	Everyone is experience more serious health effects
Hazardous	301-500	Health warning is emergency condition.

#### 4. Related Works

Advancement in wireless communication sensor technology is rapidly changing air pollution monitoring paradigms. Internet of things allows the creation of smart environments in which objects interact and cooperate with each other.

##### A. Technique used for pollution monitoring

Previously, air pollution monitoring is done using computer tomography techniques which generate two-dimensional maps of pollutant concentration. It provides many advantages over the different absorption methods.

##### B. wireless sensor Network for real time monitoring

A distributed infrastructure consists of a wireless sensor network and grid computing technology for air pollution monitoring as well as mining.

##### C. Centralized Monitoring

Different sensors are deployed to different regions and their sensors must send their collected information to the server so that the end user can easily see the pollution information in the different areas.

##### D. Pollution Level Monitor over the Google Map

The main objective of monitoring is to display the collected information in a user-friendly format. The mobile application and website are developed in order to display the real-time data that contained previous history and recent measurement of pollution level.

#### E. Types of Sensor

There are different types of sensors available for collecting atmospheric data. Such as a temperature sensor, humidity sensor, rain sensor, gas sensor etc.

#### 5. System Design

This area IoT has developed rapidly in the recent years due to advances in many areas such as hardware, sensors and networking. IoT is a network of physical or virtual objects that communicate with each other over the internet. In this project, we are using an Arduino, Wi-Fi module and some gas sensors. We are using an Android app to show output.

Sensors scan the air and data readings of different gases at processing mode, with the help of internet access devices, those readings are sent to the server and that sent data and information is fetched by the Android application.

## A. Components

The Arduino uno is micro control board based is remove, dual in line packages (DIP) AT mega AVR microcontroll. It 20 digital input/output pin ( which 6 can be used as PWM output and 6 can be used as an analog input)



## B. MQ 135

Air quality sensor is detect a wide range of gase, include NH<sub>3</sub>, NO<sub>x</sub>, alcohol, benzene, smoke and CO<sub>2</sub>. Ideal is use office for factory. MQ135 gas sensor high sensitive to ammonia, sulfide and benze steam.

