

# Smart Industrial Air Pollution Filtration System Using Iot

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**Abstract-** To design an air pollution filtration system and monitoring the air quality. To measure the air pollutants level and analyzed the technique of sensors and Internet-of-Things (IoT). The smart industrial filtration system is an innovative solution designed to address the pollution filtration for pollution free environmental challenges associated with industrial pollution. The project presents the concept, functional physical model of an air purification system for Industrial pollution. This project leverages advanced technologies using such as IOT (Internet of Things) to create an intelligent and adaptive filtration system. Real-time data collected by these sensor is analyzed by the AI algorithm, which dynamically adjust the filtration parameters to optimize pollutant removal efficiency. The integration of a user-friendly interface allows industrial operators to monitor pollution levels, system performance, and receive alerts in real time. This project aims to drive the future of air filtration technology research and development in achieving sustainable and healthy building ventilation.

**Keywords-** Air pollutant level, Air quality monitoring system, IOT specification, sensor for filtering the air pollution.

In today's rapidly evolving industrial landscape, there is an increasing focus on environmental sustainability and the reduction of pollution. Industrial activities often generate various pollutants, including gases, liquids, and solid waste, which can have detrimental effects on both the environment and human health if not properly managed. In response to these challenges, smart industrial pollution filtration systems have emerged as innovative solutions to mitigate the impact of industrial activities on the environment.

These advanced filtration systems integrate cutting-edge technologies such as Internet of Things (IoT), and various sensors to monitor, and variety of scrubber to control the pollution level, and optimize the filtration process in real-time. By leveraging data analytics, these systems can accurately detect pollutants and adjust filtration parameters dynamically to achieve optimal efficiency and effectiveness.

## 1. INTRODUCTION

### 1.2 Block Diagram

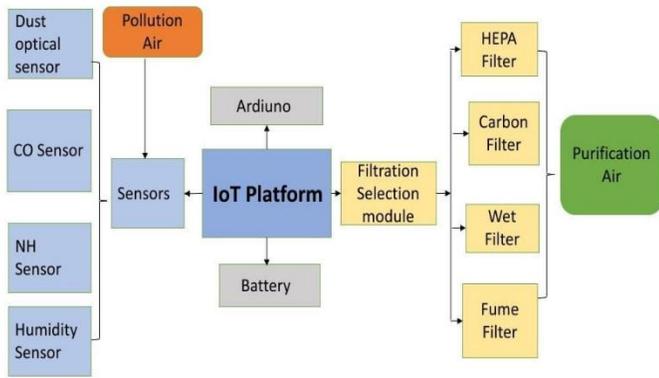


Fig:1 Block Diagram of Pollution Monitoring and Filtering process

## 2. OBJECTIVES

The main objective of our project to filter the air pollution and monitor air quality using with sensors and IoT and this filtration techniques and pollution free environment and ensure the sustainable growth of the society. As we know that, in present the quality of air in the environment is not very good and in some area of our country. A lot of respiratory ailments like asthma, bronchitis and even lung cancer are caused due to the presence of certain pollutants in air. Indoor air quality has been receiving a steady attention not only from the mob, but also from the international scientific community, in the past few decades[1]. Some company made the air purifier which cost is very high, so middle class family or poor family are not able to buy that air purifier. Our aim is to make a device which tells us about the quality of air surrounding us and also purify the air. We have used sensors who tells the quality of air and also about the dust particle which is approx. of 0.3 micron. The budget of our project is cheap comparison to other air purifiers and it is very simple to install at any place and anyone can use it very simply. Our project also tells the quality of gases in the environment and also about the AQI level. It is table in which what kind of pollution monitoring and filtering the quality of air.

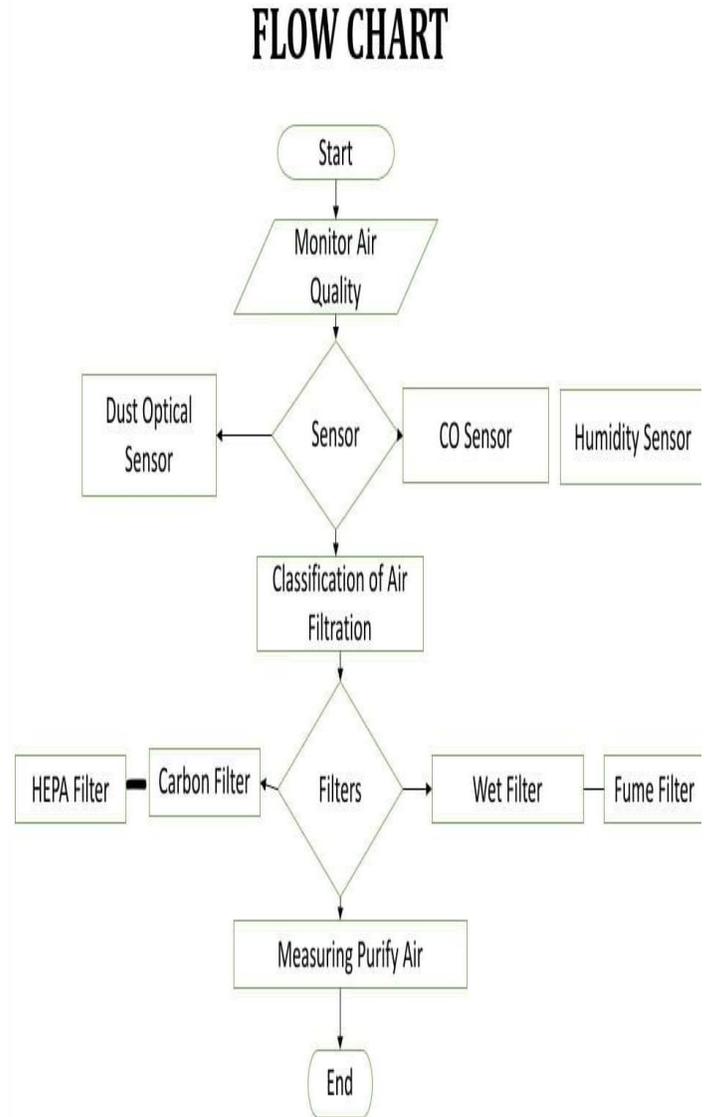


Figure 1.2: Flowchart for air pollution filtering process

### 3.4 PROPOSED SCHEME

In this proposed system for monitoring the harmful gases and filtering the NH<sub>3</sub> gases. This proposed system using various components like, Arduino controller, SDS011 dust optical sensor to detect the dust particles, CH<sub>4</sub> sensor. We using in this project double filtration method and here using many kind of scrubbers like, Wet scrubber, Fume scrubber.

### 4. CONCLUSION

Here, we have come to the end of the project on the "IOT based air purifier with pollution monitoring system." It include using filtration and varieties of sensors to filtering the pollution. This project is useful for pollution free environment.

### 5. FUTURE WORK

This project has enormous applications. It can be installed in the following areas:

1. Build for industries.

Advanced filtration systems can improve the efficiency of industrial processes by maintaining cleaner air quality within production facilities. This can result in fewer disruptions due to equipment malfunctions caused by pollution buildup, leading to increased productivity and reduced downtime.

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