



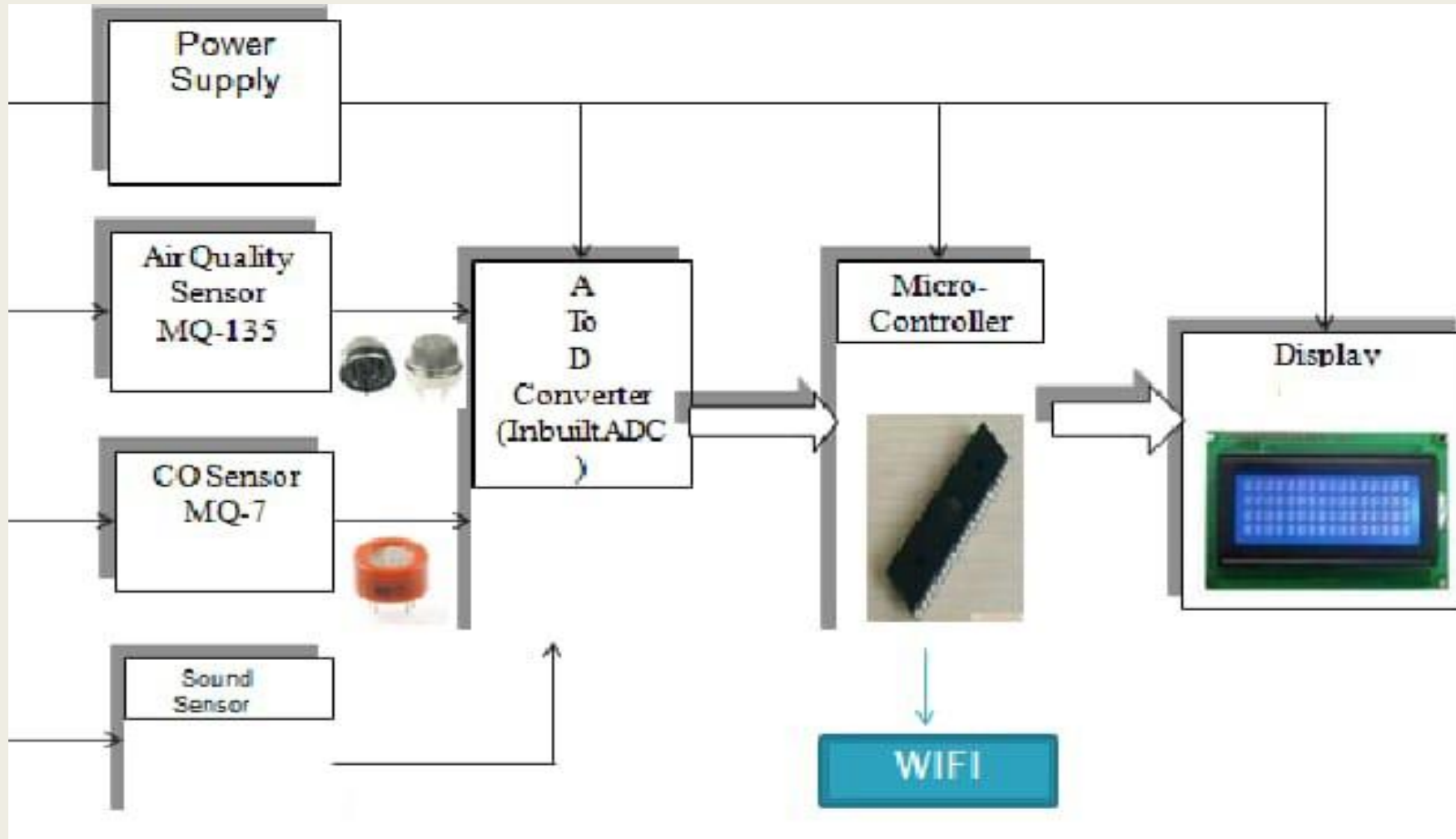
AIR QUALITY MONITORING



INTRODUCTION

Air quality monitoring is the process of measuring and assessing the composition and pollution levels in the Earth's atmosphere. It plays a crucial role in understanding and mitigating environmental and health risks associated with air pollution. Such as particulate matter (PM), nitrogen dioxide (NO₂), sulphur dioxide (SO₂), ozone (O₃), carbon monoxide (CO), and volatile organic compounds (VOCs). Monitoring can be done through stationary monitoring stations, mobile sensors, satellites, and other technologies.

BLOCK DIAGRAM



COMPONENTS

1. SENSORS:

These are the heart of the system. Various sensors measure different air quality parameters, such as particulate matter (PM_{2.5} and PM₁₀), volatile organic compounds (VOCs), carbon dioxide (CO₂), carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), temperature, humidity, and more.

2 . DATA ACQUISITION:

Sensor data is collected and digitized by data acquisition units. These units often include analogue-to-digital converters to convert sensor readings into digital values.

3 . COMMUNICATION:

Data collected from sensors is transmitted to a central processing unit or a data repository. This can be done through wired connections or wireless technologies like cellular networks, Wi-Fi, or LoRaWAN.

4 . CENTRAL PROCESSING UNIT(CPU) :

The CPU receives data from various sensors and performs data processing tasks such as data fusion, calibration, and error correction.

5 . DATA STORAGE :

The processed data is stored in a database for historical records and analysis. This can be a local database or cloud-based storage for remote access and scalability.

PROCEDURE

1. DEPLOY THE AIR QUALITY SENSORS IN STRATEGIC LOCATIONS.

The sensors should be placed in areas where people are likely to be exposed to air pollution, such as near busy roads, factories, and construction sites.

2 . CONNECT THE SENSORS TO THE MICROCONTROLLER.

The sensors can be connected to the microcontroller using wires or wirelessly.

3 . CONFIGURE THE MICROCONTROLLER TO COLLECT DATA FROM THE SENSORS AND TRANSMIT IT TO THE CLOUD.

The microcontroller can be programmed using a variety of programming languages, such as C, C++, and Python.

4 . CONNECT THE MICROCONTROLLER TO THE COMMUNICATION MODULE.

The microcontroller can be connected to the communication module using wires or wirelessly.

CONCLUSION

Monitoring the environmental parameters Especially with respect air plays very important role to ensure healthy environment for living being. We have seen various hazards being caused at Delhi due to air pollution. There are many reasons for causing air pollution but knowing their concentration at various locations helps to take decisions on prevention measures.

Thank you!

