SMART AIR POLLUTIONAND PURIFIER SYSTEM

https://www.youtube.com/watch?v=DoEv1eq3E6E

This project presents an IoT-based Air Purifier System designed to monitor and improve indoor air quality using an ESP32 microcontroller. The system integrates an MQ-3 gas sensor to detect harmful gases and a DHT11 sensor to measure temperature and humidity levels. Based on the real-time air quality readings, the ESP32 activates air purification components including a DC fan, carbon filter, and HEPA filter through a relay module. The system displays environmental data such as air quality index, temperature, and humidity on an LCD screen for user awareness. With its Wi-Fi capability, the ESP32 can also upload sensor data to an IoT platform for remote monitoring and data analysis. This smart purifier provides an automated and efficient solution for maintaining healthy indoor air quality, contributing to improved living conditions and environmental awareness.

The main objective of this project:

 To monitor air quality in real-time using the MQ-3 sensor for detecting harmful gases and smoke.

 To measure environmental parameters like temperature and humidity using the DHT11 sensor.

 To automatically control the air purification process by activating the DC fan, carbon filter, and HEPA filter through a relay module when air quality deteriorates.

 To display sensor data such as air quality index, temperature, and humidity levels on an LCD screen for user awareness.

 To enable IoT connectivity via the ESP32, allowing remote monitoring and analysis of air quality data through a web or mobile platform.

 To develop an energy-efficient and cost-effective system for improving indoor air quality automatically without continuous human intervention.

 To enhance health and comfort by maintaining clean and breathable indoor air using a smart, sensor-driven purification system.

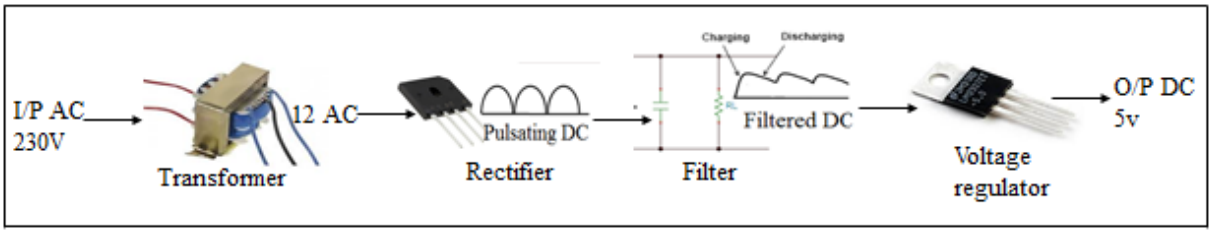
The major building blocks of this project are:

1. Power Supply.
2. Esp32.
3. LCD display.
4. MQ-3 Gas Sensor.
5. DHT11 temperature and humidity.
6. Carbon Filter.
7. Hepa filter.
8. DC fan
9. Relay.

Software's used:

1. Embedded C programming.
2. ARDUINO IDE STUDIO COMPILER for dumping code into Micro controller.
3. Express SCH for Circuit design.

Regulated Power Supply:



Block diagram