ELEMENTAL AIR

"A CHEMISTRY APPROACH TO AIR QUALITY MONITORING"

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ABSTRACT

Air quality has become a critical concern in modern society due to the increasing impact of anthropogenic activities on atmospheric composition. In this chemistry project, we present the design and implementation of an Arduino-based Air Quality Index (AQI) monitoring device employing MQ135 and MQ2 gas sensors. These sensors are specifically chosen for their ability to detect a range of gases, including organic and inorganic pollutants. Major air pollutants include carbon monoxide (CO), ammonia (NH_3), nitric oxide (NO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), sulphur dioxide (SO_2) and volatile organic compounds (VOC).

INTRODUCTION

Gas sensors interfaced with Arduino Uno are devices that measure the concentration of specific gases in the surrounding environment. These sensors are designed to detect and quantify the presence of gases **MQ135** and **MQ2** gas sensors interfaced with an Arduino Uno for comprehensive gas detection.

MQ-135	MQ-2
MQ-135 has broader range.	MQ-2 is more focused on combustible gases and smoke.
NH_3, CO_2, sulfide.	Smoke and combustible gas.
Detection Range: 10-1000ppm	Detection Range : 300-1000ppm (Flammable Gas).

APPLICATIONS

Home Air Quality Monitoring: Use the MQ-135 an MQ-2 sensors to monitor levels of CO2, CO, and other pollutants in indoor environments.

Industrial Safety: Deploy the sensors in industrial settings to detect and monitor the presence of combustible gases.

Gas Leak Detection: Utilize the MQ-2 sensor for detecting gas leaks in residential and commercial spaces.

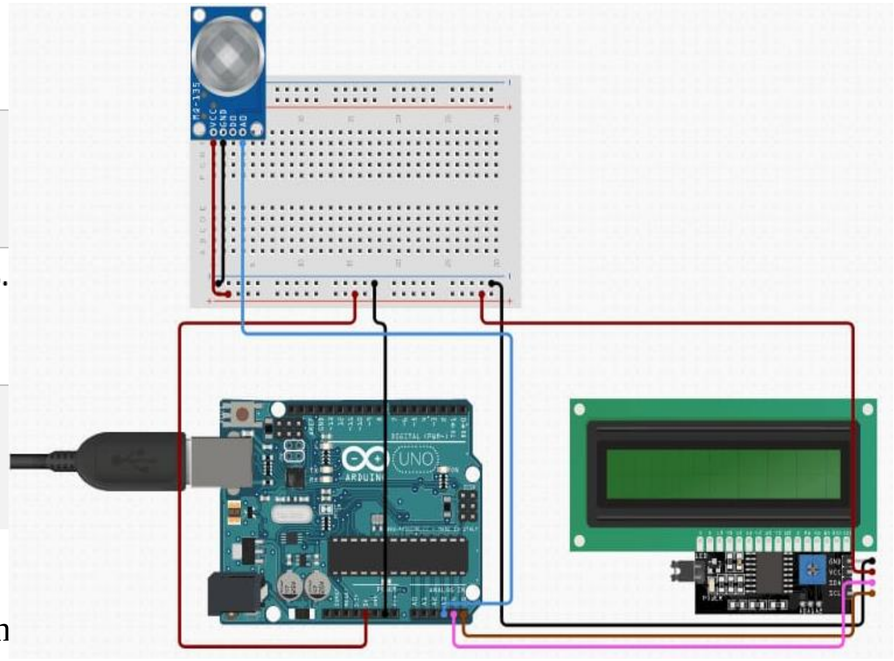
Environmental Monitoring: Employ the sensors for outdoor air quality monitoring in urban areas.

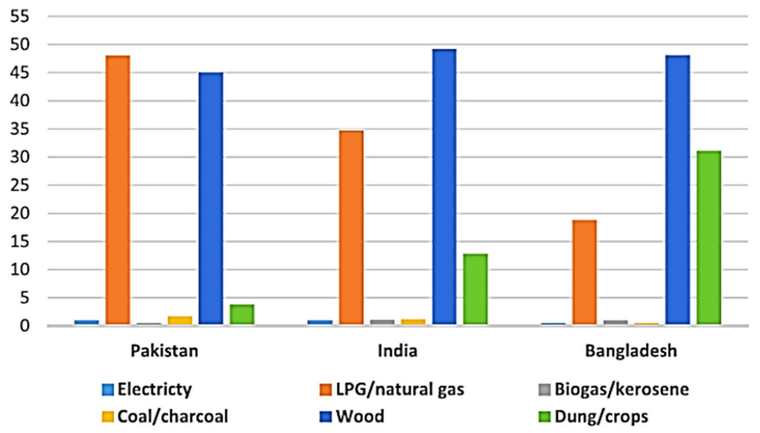
AIR QUALITY STANDARDS

AIR QUALITY INDEX (AQI)	CATEGORY
0-50	Good
51-100	Satisfactory
101-200	Moderate
201-300	Poor
301-400	Very Poor
401-500	Severe

METHODOLODY

Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino UNO is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header and a reset button.





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