# Noise Pollution Monitoring

## Abstract:

Noise pollution is unwanted sound, it needs to be controlled to make the workplace comfortable. This chapter analyses noise mathematically and the effects of multiple sources are examined. Two noises of exactly the same level can have a combined noise level that is 3 dB higher than the individual values.
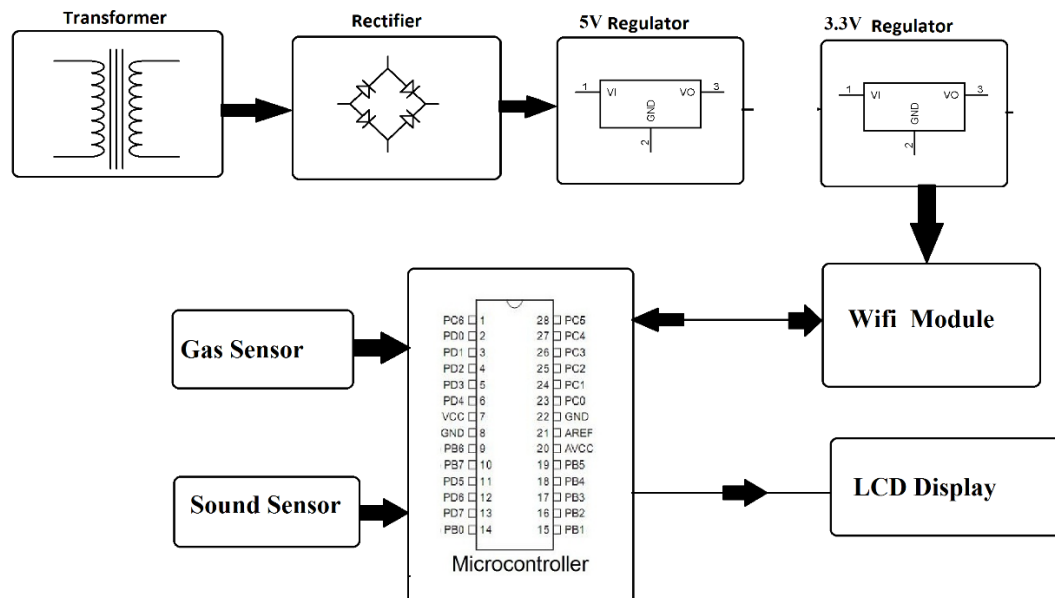
Noise or sound level monitoring or measurement is a process to measure the magnitude of Noise in industries and residential area. Data collected from Noise level monitoring & Testing helps us to understand trends and action can be taken to reduce noise pollution.

It can cause hearing loss, tinnitus, and other health problems. Noise pollution can also affect wildlife and ecosystems by disrupting communication, feeding, and breeding patterns. Noise monitoring can help to identify areas where noise levels exceed the legal limits and take measures to reduce them.

This allows authorities to monitor noise pollution in different areas and take action against it. Also authorities can keep a watch on the noise pollution near schools, hospitals and no honking areas, and if system detects air quality and noise issues it alerts authorities so they can take measures to control the issue.

## Building Of Noise Pollution Monitoring:

System uses noise sensors to sense presence of harmful gases/compounds in the air and constantly transmit this data to microcontroller. Also system keeps measuring sound level and reports it to the online server over IOT. The sensors interact with microcontroller which processes this data and transmits it over.

**Hardware Specifications**

- Atmega Microcontroller
- MQ 135 Sensor
- Mic Sensor
- ESP8266 Wifi Module
- LCD Display
- Crystal Oscillator
- Resistors
- Capacitors
- Transistors
- Cables and Connectors
- Diodes
- PCB and Breadboards
- LED
- Transformer/Adapter
- Push Buttons
- Switch
- IC
- IC Sockets

**Software Specifications**

- Arduino Compiler
- MC Programming Language: C
- IOTGecko

# Public Area Measurement:

Noise or sound level monitoring or measurement is a process to measure the magnitude of Noise in industries and residential area. Data collected from Noise level monitoring & Testing helps us to understand trends and action can be taken to reduce noise pollution.

The most common instruments used for measuring noise are the sound level meter (SLM), the integrating sound level meter (ISLM), and the noise dosimeter. It is important that you understand the calibration, operation and reading the instrument you use.
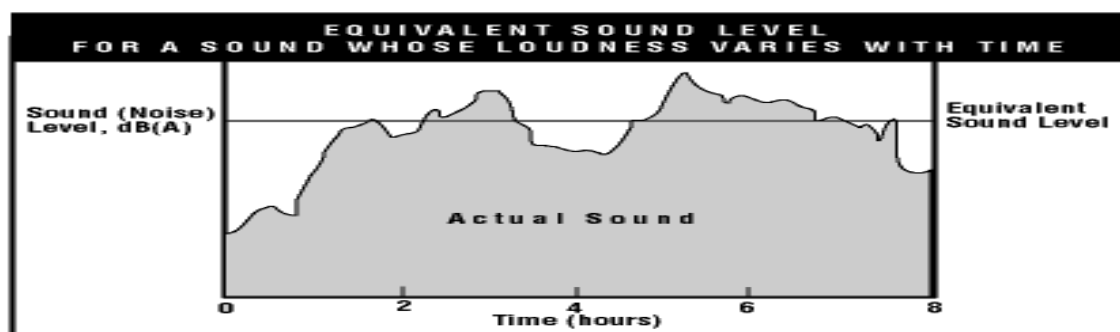
Decibel (dB) is the main unit used to measure the intensity or loudness of sounds.
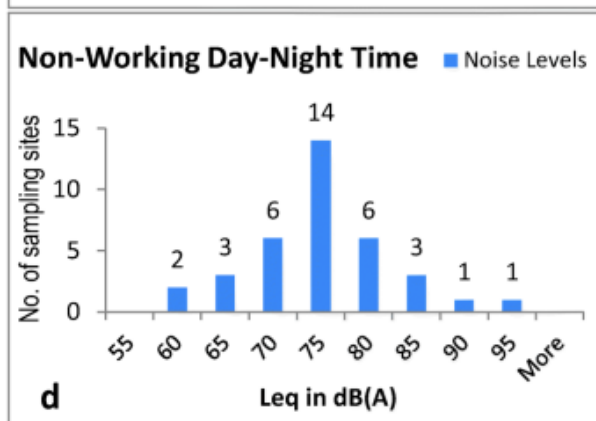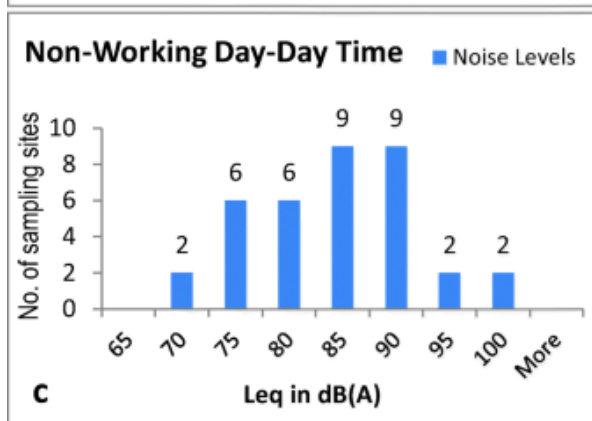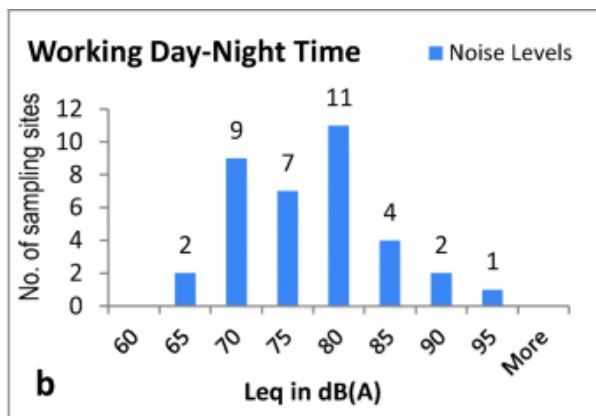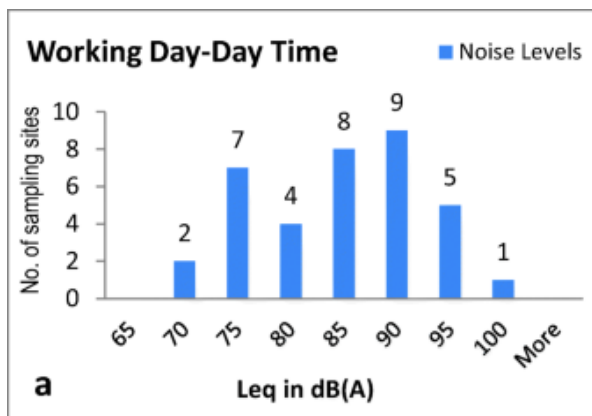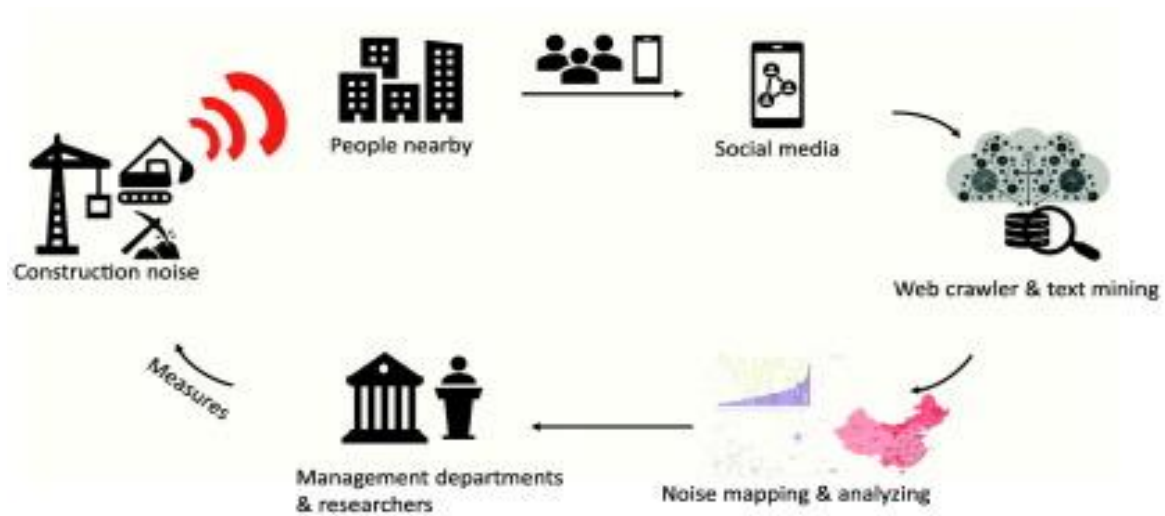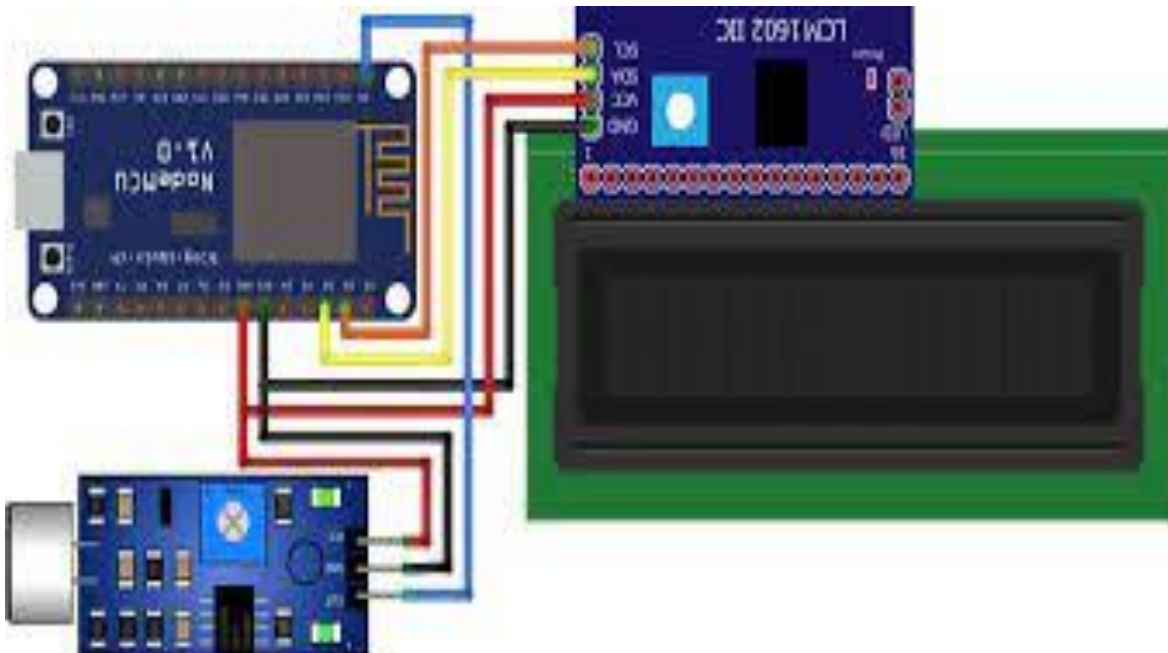
IOT Sensors:

Arduino Nano



Design of Noise Pollution Monitoring System:

Program:

```python
import time
from soundmeter import SoundMeter


# Create a SoundMeter object
sound_meter = SoundMeter()


def monitor_noise():
    try:
        while True:
            # Get the current noise level in dB
            noise_level = sound_meter.get_level()

            # Display the noise level in real-time
            print(f"Noise Level: {noise_level:.2f} dB")

            # Add your logic here to trigger alerts or actions based on noise level

            time.sleep(1)  # Update the noise level every second

    except KeyboardInterrupt:
        # Exit the program gracefully when Ctrl+C is pressed
        pass

if __name__ == "__main__":
    print("Noise Pollution Monitoring Program")
    try:
```

```python
        monitor_noise()
    except Exception as e:
        print(f"An error occurred: {str(e)}")
    finally:
        sound_meter.close()
```