**NOISE MANAGEMENT OPTIMIZATION**

**Abstract:**

Modernization has brought the world technological advancements, but it has also brought with it a slew of

problems. In today's Malaysia, air and noise pollution are becoming more of a concern, along with a rise in

occupational disease. A monitoring system is needed to address these issues. This paper describes the

development of a real-time IoT-based air and noise pollution monitoring system that can provide

monitoring and alert the user to the pollution levels. This monitoring system was built using IoT technology,

which included the use of an ESP8266 Wi-Fi Module NodeMCU as a microcontroller to communicate with the

chosen IoT analytics platform, ThingSpeak. A gas sensor MQ9 was used to measure carbon monoxide

concentrations, and a sound sensor LM393 was used to measure noise levels in the surrounding area. The

measured values were displayed on the Arduino software's serial monitor, then sent to the ThingSpeak

server and graphically displayed in real time on a screen. The results of the electronic sensors were

compared to the results of the stand-alone carbon monoxide meter and digital sound level meter for

validation. The proposed monitoring system produced promising results, with 91.12 % and 97.86 % accuracy

for gas and sound levels shown by the gas sensor MQ9 and sound sensor LM393, respectively. The framework

also provides ThingSpeak server warning messages. When the calculated conditions exceeded the user's

defined cap, the server sent the user an email update with the gas and noise limit status.

**Keywords:**

IoT Monitoring

Real-time

NodeMCU

ThingSpeak

Air Pollution

Noise Pollution