

ABSTRACT

In the context of modern agriculture, Green Houses have become an essential approach to ensuring efficient and sustainable crop production. However, one of the main challenges is the air quality inside the Green House, which can be affected by carbon monoxide gas pollutants from charcoal burning or other fuels used in heating systems.

This research involves the design and implementation of a carbon monoxide gas pollutant detection system using the MQ-2 sensor module in the Green House of Telkom University. The MQ-2 sensor is capable of detecting hazardous gases such as carbon monoxide (CO), hydrogen sulfide (H₂S), and volatile organic compounds (VOCs) at low concentrations, enabling rapid preventive actions. The aim of this research is to implement the MQ-2 sensor module effectively in detecting and providing early warnings of gas pollutants, helping to maintain air quality in the Green House, reducing health risks, and creating a questionnaire for 25 Tel-U Florist workers.

The test results show that the system successfully monitors air quality in real-time through the Blynk application, using data from the MQ-2 sensor and soil moisture sensor. According to the carbon monoxide detector, good air quality is indicated by a value below 30 ppm, while a value above 30 ppm indicates unhealthy air conditions. If unhealthy air is detected, an alarm will sound as a warning. For moisture content, the ideal value for wood charcoal is above 55%. Charcoal with a moisture content below 55% is considered unsuitable as it takes longer to burn. This research promotes IoT-based technological innovation in Green House management and traditional wood charcoal production.

Keywords: ESP32, MQ-2, Soil moisture, IoT, Green House