

## ABSTRACT

Carbon monoxide (CO) is one of the air pollutants that has characteristic odorless, colorless, and tasteless CO difficult to be detected by the human senses. Co is toxic air so it is very dangerous. When CO levels in a closed room is over, will threatening health and lead to death. The victim of poisoning does not feel poisoned but only feeling tired, weak and want to rest until death.

Reviewing the problem, human need a system that can monitor the CO levels in the room and controlling system to reduce CO. The system consists of MQ-7 sensor, relay, exhaust fan, NodeMCU and Wireless sensor network technology. The system starts with CO detection and then sent data and display data. When the CO exceeds the safe limit of 500 ppm, the exhaust fan will be active.

To determine the quality of the network made it is necessary to test in several scenarios. Based on the result of testing the range of the coordinator's maximum range of 12 meters. As the distance of the connected node farther away from the coordinator, the delay tends to increase and the throughput diminishes.. On overall system, the delay in the actuator is greater than the sensor node delay. When using MQTT, according to the ITU-T G114 standard the quality of the system in good quality for the MQTT and on the HTTP, node sensor in acceptance quality and actuator node in bad quality. In this system, using the MQTT protocol is better during HTTP because in the MQTT protocol only one time the connection process. That is stored makes the delay smaller than HTTP. While on HTTP it will always make the connection process every packet will to send and closing connection if sending packet finished. That is make large delay in HTTP. Throughput in the MQTT is less likely throughput in HTTP

**Kata Kunci :** *Wireless sensor network*, Carbon Monoxide, Monitoring and *Controlling*, HTTP and MQTT.