

ABSTRACT

Air is an important factor for human life, amid the progress of the development of transportation vehicles in the industrial era 4.0, it affects the level of air cleanliness or air pollution. The increase in the number and types of motorized vehicles causes an increase in the number of emissions released in the form of Carbon Monoxide (CO), Hydrocarbons (HC), Nitrogen Oxides (NO), and dust. The dangers posed by inhaling carbon monoxide (CO) gas are headaches, fatigue and nausea, and even death. Therefore, in this study, we designed a prototype for monitoring levels of carbon monoxide (CO) gas caused by vehicle exhaust emissions. This prototype is designed using ESP32 as a microcontroller which is equipped with a wifi module for sending data to the Thingspeak platform, using 4 MQ-7 sensors as a detector of carbon monoxide (CO) gas in vehicles. From the calibration results of each sensor, the error value is obtained, on sensor 1 the error value is 1.870%, on sensor 2 the error value is 1.501%, on sensor 3 the error value is 1.869%, and on sensor 4 the error value is 1.494%. This prototype is applied to motorized vehicles, namely 2-stroke motorcycles, 4-stroke motorcycles, and diesel cars. The results of prototype testing on a 2-stroke motor, obtained an average level of carbon monoxide (CO) gas is 158.133 ppm, a 4-stroke engine obtained an average level of carbon monoxide gas content is 132.55 ppm, and in a diesel car the average level of gas is 132.55 ppm. carbon monoxide (CO) is 193,267 ppm. From the error value and carbon monoxide (CO) gas content taken from 3 vehicles, it shows that the prototype can work well.

Keywords : Carbon Monoxide (CO) Gas, MQ-7 Sensor, ESP 32.