ABSTRACT

Waste burning as an effort to reduce the volume of waste raises new problems, namely air pollution. Some pollutants that can be produced from burning waste include CO_2 gas and NO_2 gas, and $PM_{2.5}$. However, the concentration of pollutants produced depends on the type of waste burned, the reaction that occurs, adequate air supply, and burning temperature. Therefore, in this study a calibrated CO_2 and NO_2 gas concentration meter was built which was equipped with $PM_{2.5}$, temperature and humidity sensors to monitor emissions from burning household waste. The CO_2 gas sensor has a linearity of y = 3.125x - 1251.4 with a sensitivity of 3.125 ppm / mV on the variation of rising and falling data. Then, the CO_2 gas sensor in this study carried out a comparison of measurements with the detector, the results obtained R^2 = 0.4862 and y = 1.004x. NO_2 gas sensor has a linearity of y = -0.066x + 98.92 and sensitivity of -0.0633 ppm/mV for rising data and y = -0.0646x + 100.91 and sensitivity of -0.0646 ppm/mV for down data . NO_2 gas sensor is set to zero so that the reading in the room becomes better (0.01-0.04ppm). Power consumption on measuring devices connected to Arduino is ~ 1.3W while on systems connected to laptops is ~ 2W. Flowrate used in measuring devices has a rotation speed of ~ 4199rpm acting as an air drawer to enter the gauge. Based on the measurements that have been made, the distribution of emissions from waste burning can increase the concentration value of $PM_{2.5}$ by 60-83µg/m^3 at a distance of 300m from the source of burning. However, the value of CO_2 concentration is relatively stable. In burning garbage, the burning reaction in the presence of fire can produce CO_2 gas concentrations above ambient air up to 2069.37ppm. Whereas when the burning reaction there is no fire, the value of the concentration of CO_2 gas produced approaches the value of the concentration of CO_2 in ambient air (~ 578.13ppm).

Keywords : *CO_2, emission observation on waste burning, NO_2*