

ABSTRACT

Clean air is one of the important needs for us in supporting our daily activities. However, the surrounding air that is always inhaled around does not necessarily have good quality for the human respiratory system. Activities in closed rooms that do not necessarily have good air circulation. Departing from these conditions, this research will design and develop a tool that carries the concept of Air Pollutant Sensing System (APSS). The tool focuses on four actions as its main feature, namely detecting, measuring, classifying, and purifying the concentration of carbon dioxide gas. It applies the Tsukamoto method FIS concept in determining the AQI value and purification value. The APSS tool was tested with three conditioning carbon dioxide concentrations in a closed test room. The APSS tool is able to display information via LCD that represents the condition of the test room in terms of AQI status, AQI value, blower speed, and purification value. Based on the experimental results, in Trial I, the initial detection showed an AQI value of 127 ppm with Normal AQI status, so a 7-minute purification was carried out which reduced the AQI value to 110 ppm with the AQI status remaining Normal. In Trial II, the initial detection showed an AQI value of 504 ppm with an AQI status of Alert, so 18 minutes of purification was carried out, which successfully reduced the AQI value to 219 ppm with Normal status. In Trial III, the initial AQI value was 878 ppm with Normal AQI status, and after purification for 25 minutes, the AQI value decreased to 224 ppm with Normal status. It is hoped that this research can be a solution in maintaining and controlling exposure to excess carbon dioxide gas in a closed room with a fast and precise response.

Key Word: Air, APSS, AQI, Carbon Dioxide, Concentration, Purification