

ABSTRACT

Air quality is one of the comfort factor for the occupants in a room. Problems of indoor air quality arise in nonindustrial buildings when the the outside air supply that was used to dispose the polluted air in the room not fulfillment. Room with split air-conditioner doesn't have ventilation to breathing needs and eliminate air polluted in the room. Meanwhile, the room with the air-conditioning system should get outside air supply.

Indoor air quality can be determined by whether the supply of outside air and air change rate in the room is sufficient or not. Air change rate can be determined using the tracer-gas concentration decay method and the measurements were performed using in-situ method. Instrumentation that was used in this study were equipped by CO₂ sensors, temperature sensors, relative humidity sensor, and dew point sensor. In addition, this instrumentation can record data in real-time using a data-logger that is stored on the memory card. For the data processing, the writer used the two-points method.

The results of this study indicate that the room with use split air-conditioners (AC) did not get an outside air supply. Outside air came into the room occurs by infiltration. Based on the measurements, the incoming outside air infiltration due 7% to 12% from the ASHRAE 62.1-2007 standard. Air change per hour (ACH) measured was 0.2383 h⁻¹ up to 0.4547 h⁻¹ with the average 0.3277 h⁻¹. The temperature difference between into indoor air with the outside air can affect ACH. The greater temperature difference, the greater ACH will be measured. Additionally, WWR does not affect the ACH in the room. ACH difference that happened in rooms that have the same WWR occurred since measurements were performed at the different time.

Key words: indoor air quality, tracer-gas method, decay method, infiltration