

Thesis Title	Analysis of Cooling Due To Humidity In Air - Conditioned Room With Built – In Toilet
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Abstract

The objective of the thesis is to analyze a cooling load due to humidity in an air-conditioned room furnished with a built-in toilet. The study puts emphasis on humidity produced from the toilet. Four models of the toilet, namely Model 1 (a toilet with a grill and a ventilation fan installed on a door), Model 2 (a completely closed toilet with a ventilation fan installed on a door), Model 3 (a completely closed toilet with a solid door panel) and Model 4 (a ventilated toilet with a solid door panel), were built for the study. Water utilization in the toilets was simulated by turning on the water for 20 minutes at the flow rate of 6.65 liters per second. In order to study the variation of humidity in each model, the temperature in the air-conditioned room was set at 25 °C (77 °F) and 20 °C (68 °F).

From the study, it was found that, at both temperatures, Model 3 had the highest humidity. The humidity in Model 2, Model 4 and Model 1 was relatively lower and decreases respectively. The cooling load in the air-conditioned room due to humidity produced in Model 2 is a result from the infiltration caused by the air that penetrates from the toilet through a grill on the door panel. In Model 1 and Model 4, the humidity was decreased due to the fact that the air was taken out of the room by the ventilation fan.

From experimental studies at both temperatures, it was found that the compressor of an air-conditioning system of Model 1 consumed the highest electrical energy. The one of Model 4, Model 2 and Model 1 were lower and decrease respectively.

Keywords : Humidity load / Humidity in air-condition room