Thesis Title	The Study of Suitable Ventilation for Indoor Carbon Dioxide Concentration Control and Energy Saving in a Classroom Building in Education Institute
Thesis Credits	12
Candidate	Mr. Phattarawut Wongsuwan
Thesis Advisors	Assoc. Prof. Dr. Apichit Therdyothin
	Asst. Prof. Dr. Kuskana Kubaha
Program	Master of Engineering
Department	Energy Management Technology
Field of Study	Energy Management Technology
Faculty	School of Energy, Environment and Materials
B.E.	2555

Abstract

This research examined properly ventilation rate to satisfy indoor air quality of classroom in classroom building. In order to be a guideline as an appropriate ventilation rate to adjust indoor air quality in the classroom, also to reduce energy consumption of air conditioning system. The results of Carbon dioxide measurement in classroom showed that the maximum carbon dioxide level of maximum 80 person classroom, maximum 100 person classroom, maximum 120 person classroom, and maximum 150 person classroom was 5,592 ppm, 5,141 ppm, 4,593 ppm, and 3,746 ppm, respectively. The ventilation calculation results showed that the properly ventilation rate of maximum 80 person classroom, maximum 100 person classroom, maximum 120 person classroom, and maximum 150 person classroom was 0.79 m^3/s, 0.97 m^3/s, 1.16 m^3/s, and 1.44 m^3/s, respectively. The results of cooling load from ventilation showed that using the building's corridor fresh air to ventilate into the classroom increase heat gain inside the space that also increase cooling load inside the classroom less than using fresh air with high temperature from outside the building. The finding also showed that excess cooling load of maximum 80 person classroom, maximum 100 person classroom, maximum 120 person classroom, and maximum 150 person classroom was 5.49 kW, 6.74 kW, 8.06 kW, and 10.00 kW, respectively. The results of increasing energy consumption as the result of ventilation by using fresh air from the building's corridor showed that the increasing energy consumption of maximum 80 person classroom, maximum 100 person classroom, maximum 120 person classroom, and maximum 150 person classroom was 4,898 baht/month, 6,012

baht/month, 7,190 baht/month, and 8,920 baht/month, respectively. Moreover, using the building's corridor fresh air was saver than using outdoor fresh air approximate 60%. Therefore, using building's corridor fresh air will be appropriate for classroom building purpose to reduce energy use while the occupant health remains healthy.

Keywords : Carbon dioxide/Ventilation rate/Cooling load