

# Comparison of Year Round Energy Performance with Different Ventilation Methods for ACMV Systems in the Tropics

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## ABSTRACT

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Ventilation methods in Malaysia has become obsolete, the usage of mixing ventilation is no longer feasible as it consumes too much energy. The usage of displacement ventilation only applies to large buildings. Stratum ventilation is the solution for minimising energy usage while being applicable to smaller buildings. Stratum ventilation is expected to have a significant impact on the HVAC community in Malaysia as it will phase out the mixing ventilation. China and Hong Kong have come to embrace the usage of stratum ventilation in their seasonal country. This study will compare the year round energy performance for different ventilation methods in a tropical country. The goal in mind is to evaluate the performance of the stratum ventilation in a tropical country. The grounds of INTI International University will be testing platform for this ventilation. A TRNSYS simulation studio was used to project the year round comparison based on data collected from a lecture theatre in the university. The simulation was done in the form of a lecturer's office and lecture room with the usage of the Malaysia weather data to mimic tropical conditions. The studies suggest that stratum ventilation is feasible in a tropical country promising a minimum saving of 10.81% when compared to the displacement and mixing ventilations. The studies also found that the stratum ventilation uses only 3.54% excess energy when compared to the ideal cooling load of a room. The study seems to be a success and may set the path for a new ventilation system for tropical countries.