EVALUATION OF SOLAR HEAT GAIN AND DAYLIGHTING THROUGH BUILDING ENVELOPE IN MALAYSIA : A CASE STUDY OF UITM TEST CELL

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ABSTRACT

EVALUATION OF SOLAR HEAT GAIN AND DAYLIGHTING THROUGH BUILDING ENVELOPE IN MALAYSIA : A CASE STUDY OF UITM TEST CELL.

This is study to evaluate of solar heat gain and daylighting through building at facing east and west. A test cell located in the campus UITM Shah Alam is used as a case study. Data of the internal and external surface temperature for walls and window at facing east and west were measured using thermocouple type T. In this experiment, the vertical glazing solar material were used for the windows. Three types of control system material were Control, System 1 and System 2. The data were recorded in on automated data logging system at an interval of 5 minutes for a duration of 14 days using data logger. The solar heat gain for each orientation were calculated and compared with the Control system. The value of visible transmittance of Control is 88% while System 1 and System 2 are 0.29 and 0.25. the value of thermal transmittance for Control is 5.893 $W/m^2°K$ while the System 1 and Syatem 2 are 0.855 $W/m^2°K$ and 2.717 $W/m^2°K$. The result showed that the Control system is the highest heat transfer than other system based on the thermal and optical properties of the window.

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