

Investigating the effectiveness of self-shading strategy on overall thermal transfer value and window size in high rise buildings

Abstract:

So much energy is used in high rise buildings to fulfill the basic needs of users such as lighting and thermal comfort. Malaysia has hot and humid climate, buildings especially high rise buildings receive unnecessary solar radiation that cause more solar heat gain. Energy use specially electricity consumption in high rise buildings has increased. There have been growing concerns about energy consumption and its effect on environment. Building, energy and the environment are important issues that the designers should consider to them. Self protected form is one of possible ways against the impact of solar radiation in high rise buildings. The Energy performance of building envelopes was investigated in term of the Overall Thermal Transfer Value (OT TV). In this paper, the amount of OT TV reduction was calculated through OT TV Equations to clear the effectiveness of self shading strategy on minimizing energy consumption for cooling interior spaces in high rise buildings which has considerable envelope areas against solar radiation. Also increasing the optimum window area was investigated using self-shading strategy in designing high rise buildings. As result, the significant reduction in OT TV was shown based on WWR. In addition slight increase was demonstrated in WWR that can influence on visible comfort interior spaces.