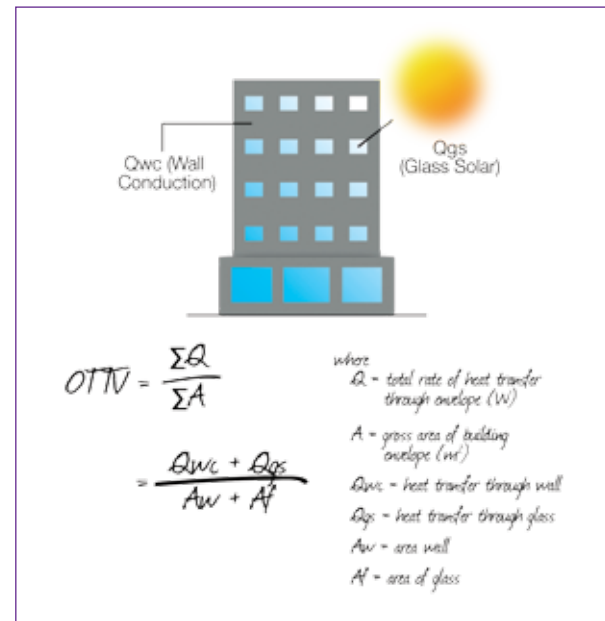


Building Envelope, Window Design & OTTV

Heat conduction through the overall building envelope can be computed by calculating its overall thermal transfer value (OTTV). The OTTV requirement aims to achieving the design of adequately insulated building envelope so as to cut down external heat gain and hence reduce the cooling load of the air-conditioning system.

The OTTV concept takes into consideration the three basic elements of heat gain through the external envelope of a building, as follows.

1. Heat Conduction through opaque walls
2. Heat Conduction through glass windows
3. Solar Radiation through glass windows



Principles of OTTV



The Capers Sentul

How solar control glass contribute to OTTV

1. Heat conduction through opaque walls, the first part of the formula typically accounts for; in the range of 0.5 % to 5% of the overall OTTV. This will have a bigger impact if the window areas are small, such as in shopping complexes.
2. Heat conduction through windows typically accounts for; in the range of 10% to 20% of the overall OTTV, depending on the amount of glazing and if they are single (higher U-value) or double glazed (lower U-value).
3. Solar radiation through glass windows is the greatest contributor to the OTTV typically accounting for; in the range of 70% to 85% of the overall OTTV, depending on the glazing area. The large constant of 194 already hints that this is a major factor in the overall OTTV. In order to keep the OTTV contribution for exceeding 50 w/m^2 , the shading coefficient is a major contributor to the overall OTTV as it can change this component by 30% to 80% of OTTV.



IJM Gallery @ Bangsar South