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Effect of Orientation of the Wall Window on Energy Saving under Clear Sky Conditions

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Abstract : In this paper, an attempt has been made to analyze the effect of wall window orientation on Daylight Illuminance Ratio (DIR) and energy saving in a building known as “SODHA BERS COMPLEX (SBC)” at Varanasi, UP, India. The building has been designed incorporating all passive concepts for thermal comfort as well daylighting concepts to maximize the use of natural daylighting for the occupants in the day to day activities. The annual average DIR and the energy saving has been estimated by using the DIR model for wall window with different orientations under clear sky condition. It has been found that for south oriented window the energy saving per square meter is more compared to the other orientations due to the higher level of solar insolation for the south window in northern hemisphere whereas energy saving potential is minimum for north oriented wall window. The energy saving potential was 26%, 81% and 51% higher for east, south and west oriented window in comparison to north oriented window. The average annual DIR has same trends of variation as the annual energy saving and it is maximum for south oriented window and minimum for north oriented window.

Keywords : clear sky, daylight factor, energy saving, wall window
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