

Daylightophil Approach towards High-Performance Architecture for Hybrid-Optimization of Visual Comfort and Daylight Factor in BSk

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Abstract : The greatest influence we have from the world is shaped through the visual form, thus light is an inseparable element in human life. The use of daylight in visual perception and environment readability is an important issue for users. With regard to the hazards of greenhouse gas emissions from fossil fuels, and in line with the attitudes on the reduction of energy consumption, the correct use of daylight results in lower levels of energy consumed by artificial lighting, heating and cooling systems. Windows are usually the starting points for analysis and simulations to achieve visual comfort and energy optimization; therefore, attention should be paid to the orientation of buildings to minimize electrical energy and maximize the use of daylight. In this paper, by using the Design Builder Software, the effect of the orientation of an 18m^2 ($3\text{m} \times 6\text{m}$) room with 3m height in city of Tehran has been investigated considering the design constraint limitations. In these simulations, the dimensions of the building have been changed with one degree and the window is located on the smaller face ($3\text{m} \times 3\text{m}$) of the building with 80% ratio. The results indicate that the orientation of building has a lot to do with energy efficiency to meet high-performance architecture and planning goals and objectives.

Keywords : daylight, window, orientation, energy consumption, design builder

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020