

عنوان مقاله:

Effect of Window Area and Proportions of Iwan on Daylight in Adjacent Room: An Investigation in Yazd City

محل انتشار:

فصلنامه انرژی و محیط زیست ایران (ایرانیکا), دوره 15, شماره 1 (سال: 1403)

تعداد صفحات اصل مقاله: 13

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خلاصه مقاله:

Yazd is located in a hot-dry region with harsh weather conditions. Houses with an iwan were suitable for establishing comfort conditions in the past. An evaluation of the visual comfort conditions in residential courtyard buildings in Yazd city was carried out by investigating the effects of the depth of the iwan and the ratio of the adjacent rooms' openings. Research is currently being conducted on an optimal model of the iwan in an effort to facilitate sustainable development and increase the use of such a model in contemporary housing. The effect of the parameters was investigated by simulating models containing different proportions of the iwan and sizes of the window in the Design Builder software. The results indicate that the proportion of the iwan and Window Wall Ratio of the adjacent room's window significantly affects the daylight that penetrates into the rooms. For the purposes of this study, climate-based daylight metrics (CBDMs), such as Useful Daylight Illuminances (UDI) with thresholds of ۱۰۰-۳۰۰۰ lux and Spatial Daylight Autonomy (sDA) over ۳۰۰ lux. In models with an iwan depth of ۱.۵ and above, windows from ۲۰% to ۶۰% WWR have the ability to bring a suitable amount of light into the room. This means that by using the iwan, wider windows can be designed without having glare and adding extra thermal load to the building. Results obtained from this research will provide new insight into the concepts of iwan. Furthermore, findings of this research help architect to design spaces with the utilization of daylight.

کلمات کلیدی:

Daylight Factor, Iwan, Simulation Software, Spatial daylight autonomy, Useful Daylight Illuminance, Window area

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