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Energy Efficient Shading Strategies for Windows of Hospital ICUs in the Desert

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Abstract : Hospitals, everywhere, are considered heavy energy consumers. Hospital Intensive Care Unit spaces pose a special challenge, where design guidelines requires the provision of external windows for day-lighting and external view. Window protection strategies could be employed to reduce energy loads without detriment effect on comfort or health care. This paper addresses the effectiveness of using various window strategies on the annual cooling, heating and lighting energy use of a typical Hospital Intensive Unit space. Series of experiments were performed using the EnergyPlus simulation software for a typical Intensive Care Unit (ICU) space in Cairo, located in the Egyptian desert. This study concluded that the use of shading systems is more effective in conserving energy in comparison with glazing of different types, in the Cairo ICUs. The highest energy savings in the West and South orientations were accomplished by external perforated solar screens, followed by overhangs positioned at a protection angle of 45°.

Keywords : energy, hospital, intensive care units, shading
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