

The Performance of Natural Light by Roof Systems in Cultural Buildings

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Abstract : This paper presents an approach to the performance of the natural lighting, when the use of appropriated solar lighting systems on the roof is applied in cultural buildings such as museums and foundations. The roofs, as a part of contact between the building and the external environment, require special attention in projects that aim at energy efficiency, being an important element for the capture of natural light in greater quantity, but also for being the most important point of generation of photovoltaic solar energy, even semitransparent, allowing the partial passage of light. Transparent elements in roofs, as well as superior protection of the building, can also play other roles, such as: meeting the needs of natural light for the accomplishment of the internal tasks, attending to the visual comfort; to bring benefits to the human perception and about the interior experience in a building. When these resources are well dimensioned, they also contribute to the energy efficiency and consequent character of sustainability of the building. Therefore, when properly designed and executed, a roof light system can bring higher quality natural light to the interior of the building, which is related to the human health and well-being dimension. Furthermore, it can meet the technologic, economic and environmental yearnings, making possible the more efficient use of that primordial resource, which is the light of the Sun. The article presents the analysis of buildings that used zenith light systems in search of better lighting performance in museums and foundations: the Solomon R. Guggenheim Museum in the United States, the Iberê Camargo Foundation in Brazil, the Museum of Fine Arts in Castellón in Spain and the Pinacoteca of São Paulo.

Keywords : natural lighting, roof lighting systems, natural lighting in museums, comfort lighting

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