

Facades as a factor influencing solar architecture

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Abstract:

Egypt is geographically located in a privileged location in the heart of the global sun belt. Where the Egyptian land is one of the richest lands with a solar nature, and architectural facades are an essential part of solar architecture, and to benefit from Egypt's geographical location in the field of architecture, we must study the path of the sun well to get the best possible design, solar energy is defined as energy resulting from the conversion of sunlight into electricity using photovoltaic solar cells, as it is considered one of the most important sources of renewable energy in the world. It is multi-use in many residential buildings and service buildings with high energy efficiency that employ solar energy in an environmentally friendly environment. Comfortable and user-friendly interior, such as lighting and thermal adjustment requirements.

Solar cells are photovoltaic materials used to replace traditional building materials in some external parts of the building. Since solar architecture is used to illuminate facades, illuminate buildings, and illuminate interior spaces, it also works to heat buildings and heat water.

It has become increasingly involved in the construction of new buildings as the main or additional source for generating electrical energy, as it works to reduce the cost. There is more than one way to use photovoltaic energy and the use of solar panels "PV Cells." They can be used on the roof of the building and also used on the facades. The building's exterior produces energy inside the building again. Solar cells can protect against weather fluctuations and provide shade to protect from the sun's rays.

Statement of the Problem: The presence and construction of many unsustainable architectural buildings that consume a lot of non-renewable energy. Significance of research: Study of modern trends used in solar architecture on architectural facades. Objectives: Utilizing solar energy in architectural facades. Methodology: Applied analytical approach. Results: 1- 1. There is a need to adopt large proportions of thermal storage in floors, walls and ceilings. 2- Care must be taken in choosing architectural openings so that there is a variety of shapes and whether they are fixed or mobile to help control heat and light for the benefit of all seasons. 3- There is a need to more precisely define the areas and limits of heating or ventilation in response to the fluctuations in the climate of the surrounding atmosphere of the building. 4- The various environmental factors of any architectural or urban formation must be studied to take advantage of opportunities to exploit these factors, such as wind and sun. 5-. There is a need to come up with guidelines for designing architecture that respects and benefits from natural lighting in terms of (shape - size - location). 6- Arriving at planning considerations for passive solar design in the design idea stage. 7- The working system of solar refractors in buildings must be studied and analyzed to achieve maximum benefit from them.

Keywords :

Passive Solar Design, Active Solar Water Heating, Solar Photovoltaic Cells "PV", Double Skin Façade, Heat Accumulation, Parametric Façade

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