Natural factors (Lighting) and their impact on the glass facades in the future architecture

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Introduction:

Future architecture relies mainly on technological methods and the use of computers in the field of design development in order to control the distribution of natural lighting and shadows through systematic strategies to lead to achieve sustainability in future architecture.

Research Problem:

Lack of adequate studies of environmental control strategies for natural lighting, shadows and negative design considerations in sunlight in relation to the design of glass facades of future architecture.

Research Goal

1. Consider environmental control considerations for natural lighting systems and shadows in the design of glass facades for future architecture.
2. Activate the role of computer technology and digital technology in the design of glass facades for future architecture.

To solve the problem of research and achieve the goal must study each of the following factors:

First: The strategy of daylight and shadows.
Second: The principles of design guidance through the computer in the facades and glass architectural openings.
Third: An analytical study of some aspects of natural lighting in future architecture.

First: Daylight and Shading Strategy

The study relies on two main axes by controlling daylight resulting from sunlight as a natural source of lighting.

• Lighting power or concealment required.

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• External shading devices of the facade of the most important factors of shading in relation to architectural apertures and body.

Second: The study of the principles of design guidance through the computer in the facades and openings architectural glass:

The design of the solar breakers for the architectural aperture or the glass facade must be of a functional and aesthetic nature at the same time. Design Idea Stage

Third: Analytical study of natural lighting control systems and shadows for the design of glass facades for future architecture:

Future architecture relied on several design guidelines defined in the work of different external light sectors in order to limit the location of solar energy and provide daylight throughout the day and intensify light rays and reflect on the interior ceilings and allow adjustment of lighting according to the needs of the consumer, was to use mobile refractors that control the light through Reliable systems coupled with modern technological development that facilitates reflection and heat preservation through smart glass facades, so we will conduct a case study to analyze some future architectural works in order to reach the most important considerations of facade design. Glass for future architecture.

Results:

• Reaching the guidelines in the design of natural lighting in terms of (form - size - location).
• Consider planning considerations for passive design in the sun at the stage of design thought.
• Analysis of the work system of solar breakers in the sea towers building.

Recommendations:

1. Study the concept of natural lighting and the extent of activation with the thought of designer facades and influenced by them and their impact on them and the importance of the designers knowledge of the areas of use and make the most of the sun in the architecture and knowledge of its positive and negative aspects, and the role of designers of the destination of users of raw materials automatically into an effective element in designing the most suitable solutions Which achieve the highest efficiency of these materials and the effectiveness of their performance and development according to their requirements.
2. The importance of adopting architecture departments for environmental issues and making use of them and making them the most important axes of architectural design decisions and making the environmental performance in the thought of projects of the elements of the success of the project and the expansion of the utilization of solar energy technologies in the production of green Egyptian architecture to preserve the environment without pollution and reduce the final cost of consumption Energy in the building.
3. The need to plan to take advantage of daylight starting from the design, and study the architectural materials used to develop the performance of these materials and achieve the integration of architecture with the environment such as the development of technologies for the exploitation of solar energy locally and reuse and recycling and work to add some requirements for the organization of construction work in urban communities according to these scientific studies. .

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