

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

**Prof. Mohamed Zenhom**

Professor, Department of Glass, Faculty of Applied Arts, Helwan University, Egypt

[zana3r@hotmail.com](mailto:zana3r@hotmail.com)

**Prof. Amgad Mohamed Hosny**

Assistant Professor, Glass Department, Faculty of Applied Arts, Helwan University, Egypt

[amgadokasha@yahoo.com](mailto:amgadokasha@yahoo.com)

**Dr. Azza Osman Bakr**

Lecturer, Glass Department, Faculty of Applied Arts, Damietta University,

[Egyptazzaosmanbakr@gmail.com](mailto:Egyptazzaosmanbakr@gmail.com)

**Assist. Lect. Sammar Mahmoud Gomaa**

Assistant Lecturer, Glass Department, Faculty of Applied Arts, Helwan University, Egypt

[des.sammar@gmail.com](mailto:des.sammar@gmail.com)

### Abstract:

Architecture is the mirror of civilization and the reflection of technological advances, and future architecture reflects the most important used technological standards and the most energy-efficient environmental control techniques. Future architecture relies on computer design and the distribution of natural lighting through systematic strategies to lead to sustainability. Achieving the rapidly changing variables and developments shows the role of future studies and their methodologies for identifying these variables and proposing ways of developing architecture. This is a new role in the field of glass facades in future architecture. Study them.

Research Problem:

Lack of adequate study of the strategies of natural lighting and shadows and considerations of passive design in sunlight, which leads to the lack of perfection in the design of glass facades of future architecture.

Research Goal

1. Reaching considerations to achieve natural lighting systems in the planning of design thought in terms of the distribution of openings and guidance of the glass facade and guidelines in (form, size and installation)
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. The study relies on two main axes by controlling daylight resulting from sunlight as a natural source of lighting.

- Lighting power or concealment required.

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

Passive Solar Design considers passive solar design. The main objectives of passive solar design are to reduce the consumption of fuel (or any type of energy) of buildings as well as the design and implementation of buildings that work in conjunction with natural forces and not against them.

There are three considerations of passive sun design:

Considerations for controlling the size and type of lighting.

B - Design considerations of shadows in order to avoid direct sunlight that causes glare.

Considerations for controlling the amount of heat allowed

**Keywords:**

Design, architecture, futuristic, lighting, shading