

## **Designing sustainable lighting units in the realm of benefiting from solar energy**

**Assist. Prof. Dr. Alamir Ahmed Shawky**

Assistant Professor, Department of Interior Design and Furniture - Faculty of Applied Arts - Damietta University.

**Assist. Prof. Dr. Gehan Mohamed Fouad**

Assistant Professor, Department of Industrial Design - Faculty of Applied Arts - Beni Suf University.

**Assist. Prof. Dr. Haitham Ibrahim Elhadidy**

Assistant Professor, Department of Industrial Design - Faculty of Applied Arts - Damietta University.

[dr.haithamelhadidy@gmail.com](mailto:dr.haithamelhadidy@gmail.com)

**Assist. Lect. Ahmed Mohamed Nasser**

Assistant Lecturer, Department of Industrial Design, Faculty of Applied Arts, Damietta University.

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

### **Abstract.**

The world is facing increasing problems resulting from the use of traditional and unclean energies in various industrial products, and these problems represent a challenge that requires human society to take a set of effective policies and measures to overcome those problems, before the planet's resources are depleted in a way that makes the situation out of control.

Hence the need to activate the role of the industrial designer in helping to reduce those problems, by exploiting and employing clean energies in the design of sustainable industrial products, to achieve one of the most important principles and goals of sustainability, which is preserving the environment, through energy conservation, also taking into consideration the rationalization of energy consumption throughout the entire life cycle of the product, as well as resorting to the use of clean alternative energies that have no burden on the environment or society and at the same time have an economic return.

This research focuses on ways to use solar energy in the design of sustainable industrial products (sustainable lighting units), by activating the role of the industrial designer in the various stages of designing a sustainable product that works with solar energy, depending on the research findings of a set of dimensions and determinants. The design must be taken into consideration to integrate solar energy in the design of various industrial products, and knowing the impact of using solar energy in product design on both aesthetic and functional values, in addition to economic aspects of the product.

Accordingly, this research is trying to assist in developing the innovative capabilities and design of the industrial designer in terms of employing solar energy and using it in the design of sustainable industrial products, which contributes to the emergence of more products with innovative and sustainable solutions. It also sheds light on the advantages and methods of utilizing solar energy in the process of designing sustainable industrial products.

### **Keywords.**

Sustainable design, Solar energy, Photovoltaics cells, Modern technology.