

The role of green architecture strategies in achieving zero energy buildings

Gidaa Ali Alamry

Interior Design Specialization, Department of Home Economics, King Khalid University, galamri@kku.edu.sa, <https://orcid.org/0000-0003-0676-6026>

Abstract:

The current research aims to identify the role of green architecture strategies in achieving zero-energy buildings. The current research also seeks to identify green architecture strategies used to achieve zero-energy buildings. The current research also tries to identify the basic principles used in the design of zero-energy buildings. This is in addition to identifying a set of suggested recommendations to improve the performance of zero-energy buildings. To achieve this, the research relied on the qualitative approach in presenting the research variables. We have relied on a group of literature and previous studies that presented the same variables as the current research. The research concluded that there are many problems related to the environment and the future of architecture in most countries of the world, where the consumer lifestyle led to the existence of many environmental problems related to energy, such as the problem of pollution and the energy problem. In addition, green architecture contributes to conserving energy, rationalizing its consumption, improving the consumption of natural resources optimally, restoring human connection with nature, achieving a balance between the production and consumption of resources, in addition to working to ensure the rights of future generations to the available natural resources. The research also concluded that green architecture strategies contribute to enhancing the ability of buildings to adapt to different climatic conditions and to ensure that the internal environment of the building is suitable for all uses throughout the year. The study recommended the need to encourage investors in the Arab world to move towards implementing zero-energy buildings. The research also concluded the importance of developing a special code for designing zero-energy buildings, so that designers adhere to it during design and implementation.

Keywords:

Principles, environment problem, energy problem, rationalization, resources, adaptation

References:

- 1- Al-Ibrahim, Muhammad. (2020), Sustainability in Service Buildings: A Review of Sustainability Elements in the Al-Jouf Municipality Building Complex as a Leading Case Study in the Al-Jouf Region, Al-Jouf University Journal, pp. 242-260.
- 2- Bin Khalifa, Maryam; Abdel Fattah, Mohamed; Setif, Mohamed. (2017), Green Architecture, Generation Human Rights Magazine, No. (15), pp. 13-25.
- 3- Hamid, Asmaa. (2020), The Impact of Solar Energy on Interior Design Achieving Zero Energy Buildings, Journal of Architecture and Arts, Vol. (5), No. (23), pp. 1-21.
- 4- Al-Hassan, Qasim. (2020), Methods of Sustainable Development (The City of Architecture as a Model), Journal of Research in Educational and Human Sciences, Arts and Languages, No. (24), pp. 147-167.
- 5- Hussein, Amira. (2018), Analysis and evaluation of interior design elements for educational buildings through the concept of sustainability, Faculty of Applied Arts, Helwan University, pp. 1-48.
- 6- Protection, names. (2021), Green Architecture and its Impact on the Architectural Design of Schools at the Secondary Education Level in Egypt, Research in Art Education and the Arts, Vol. (21), issue. (2), pp. 149-157.
- 7- Al-Houti, Iman. (2018), The Role of Sustainable Environmental Architecture in the Interior Design of Tourist Resorts, Journal of Architecture and Arts, No. (12), Part Two, pp. 35-47.
- 8- Al-Ramahi, Areej. (2022), The Problematic of the Relationship between Green Architecture and Green Architecture, Arab Journal of Scientific Publishing (AJSP), No. (42), pp. 617-630.
- 9- Salem, Jamila. (2021), Eco-Friendly Interior Architecture, Egyptian Journal of Specialized Architecture, Vol. (9), issue. (32), pp. 19-59.
- 10- Salman, Abdullah; Hamid, Taqi. (2020), Sustainability Systems in Architecture, Iraqi Journal of Architecture and Planning, Vol. (19), issue. (1), pp. 13-24.
- 11- Al-Tahhan, Lawrence. (2014), Applying green standards to existing buildings from 1950 to 1970: a case study of Baghdad Street, a study prepared for the master's degree in building sciences and implementation at the Faculty of Architecture at the University of Damascus, Department of Science and Building, Faculty of Architecture, University of Damascus, the Republic. Syrian Arabic.
- 12- Abdel Samie, Ahmed. (2020), Schools in Arab Cities as an Introduction to Sustainable Development: Zero-Energy Schools as a Model, Al-Jouf University Journal, Vol. (3), number. (2), pp. 261-284.
- 13- Abdel Maqsood, Asmaa. (2020), The Impact of Solar Energy on Interior Design to Zero Energy Buildings, Journal of Architecture, Arts and Humanities, Vol. (5), No. (23), pp. 1-21.
- 14- Attia, Iman; Al-Balshi, Aya. (2018), Green Architecture Strategies for Achieving Zero Energy Buildings, Journal of Engineering Research, Vol. (41), issue. (3), pp. 221-230.
- 15- Mustafa, May; Qasim, Magdy; Atwa, Muhammad. (2016), Evaluating the Green Architecture Experience in Egypt, Al-Azhar University Journal of Engineering Sector, Vol. (11), issue. (39), pp. 716-727.
- 16- Hilal, Maysoon; Mahdi, Khawla; Kawthar, Khawla. (2014), Sustainability in Architecture: Research into the Role of Sustainable Design Strategies in Reducing Environmental Impacts on the Built Environment, 13th Al-Azhar

International Engineering Conference, December 23-25, pp. 1-18.

- 17- Wei, Jia; Li, Jiyang; Zhao, Jiafan; Wang, Xiaoyang. (2023), Hot Topics and Trends in Zero-Energy Building Research: A Bibliometric Analysis Based on Cite Space, MDPI, buildings, Vol. (13), No. (2), P 1-25.
- 18- Salah, Wesam; Musarat, Muhamed. (2020), Impact of Zero Energy Building: Sustainability Perspective, Sustainable Sewage Sludge Management and Resource Efficiency, Publisher: IntechOpen, The article is available on this link:https://www.researchgate.net/publication/342475905_Impact_of_Zero_Energy_Building_Sustainability_Perspective
- 19- Barthelmes, VM; Bcchio, C. (2016), Occupant behavior lifestyles in a residential nearly zero energy building: Effect on energy use and thermal comfort. Science and Technology for the Built Environment, Vol. (22), No. (7), P 960-975.
- 20- Wells, Louise; Ricsmanchi, Behzad; Aye, Lu. (2018), A review of Net Zero Energy Buildings with reflections on the Australian context, Energy and Buildings, Vol. (158), Edition. (2018), P 616-628.
- 21- Chen, Shang. (2019), Use of green building information modeling in the assessment of net zero energy building design, Journal of Environmental Engineering and Landscape Management, Vol. (27), Issue. (3), P 174-186.

Paper History:

Paper received December 29, 2023, Accepted March 22, 2024, Published on line May 1, 2024