Evaluating the Thermal Performance of Facades for Housing Projects in the New Capital (Investment Housing Projects as Case Study)

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Abstract

The research discusses in two parts, the extent to which environmental integration is achieved for the facades of investment housing projects in the New Capital, by studying the environmental aspects and design determinants of the project, which aims to link the natural environment with the built environment and achieve sustainable development strategies in the field of energy rationalization in buildings, and thermal comfort for users. Without neglecting the importance of the aesthetic values of the facades for the real estate marketing process and the expected return from these projects, the first part of the research contains an analytical study of the natural climatic factors affecting the design decision of the hot and dry region (the study area) in the New Capital of the Arab Republic of Egypt, which includes heat, humidity, and rain The solar radiation and the percentage of the sun's brightness, and the consequent actions of these data help the designer to reach an environmentally compatible architectural design and improve the thermal performance of residential buildings.

The second part of the research is the applied part (the applied analytical study), and it presents the results of a questionnaire that the researcher did for a group of specialist architects working on various housing projects in the New Capital. The response of national projects to climatic influences that are reflected in energy consumption in buildings, and the research study concludes by analyzing the results of the questionnaire, and by reviewing sustainability requirements through the standards set by international organizations, through the analysis matrix of environmental data with the design elements of the facades. This methodology is measured using the analysis of 4 different models of the facades of existing housing projects in the New Capital, identifying weaknesses and strengths and the extent to which these designs are integrated with the actual environmental influences on the site, In addition, the results and recommendations of the study research.

Keywords

Architectural Facades- Thermal Design - Energy Efficiency