

# **Activating the environmental role of the Building envelope to improve the energy performance of social housing units in Giza Governorate- Egypt**

**Dr. Mahmoud Attiya Mohamed**

**Lecturer of Architecture, October High Institute for Engineering and Technology in 6 October city- Giza.**

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

**Dr. Samah Sobhy Mansour**

**Lecturer of Architecture, October High Institute for Engineering and Technology in 6 October city- Giza.**

[sameh.mohamed.nagiub2017@gmail.com](mailto:sameh.mohamed.nagiub2017@gmail.com)

## **Abstract:**

The housing problem is one of the most complex problems in most countries of the world. Therefore, most countries resort to finding solutions and initiatives for social housing units that take into account the needs of users and fulfill their basic requirements. The Egyptian state has a major role in the construction and reconstruction of cities where huge initiatives have been taken to establish social housing units for low-income people, The main aim of this research paper was to improve energy performance within social housing units Sixth of October City by treating the building envelope and using thermal insulation for walls And choosing the type of low-emission glass in order to improve the energy performance of social housing buildings in the New Sixth of October City in Giza Governorate, and this was through an applied study of the Design Builder v 6.0 program for social housing units, taking into account the design determinants and variables such as orientation and type Glass used, occupancy rate and building materials used in the building envelope, down to how to improve their energy performance , The results of the simulation showed the effect of the architectural dimensions and the dimensions of the building materials, and their effects on thermal comfort and the rate of energy consumption through the treatment of the outer covering, thus proving the validity of the hypothesis, which is a thermal insulation thickness of 6 cm in the walls and 8 cm in the surface and the wall thickness of 25 cm, red brick and double-reflective glass 6 mm low emission E-Glass in the building envelope and energy consumption can be saved by more than 50% over the base case.

## **Keywords:**

Energy Saving, Social Housing Units, Thermal Comfort, Thermal Insulation.