Evaluate The Effect of Urban Spaces Elements On Thermal Comfort for Humans

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Abstract:

The elements of space have an important role in the formation of thermal comfort within the urban space and the formation of a visual image of it. Therefore, the study aims to determine the elements of urban space and the effect of each element on thermal comfort and the formation of an appropriate thermal image for it using various practical experiments, in addition to studying the role of trees in thermal performance and creating a suitable climate for it and knowing the best raw materials for use within the urban space. This study relied on the use of the experimental method by conducting an experiment in the city of Alexandria (Muhammad Naguib Square) to find out the effect of the different materials used in the voids on their thermal performance.

The experimental phase was carried out using Design builder, a simulation engine that uses Energy Plus, and many passive cooling solutions were tested in the reference building through testing the types of materials for glass and walls proposed to be used, through which appropriate thermal and visual comfort can be achieved in the urban space ,the cooling energy used in the reference building can be reduced by 60%.

Furthermore, the study demonstrates the potential of the design options examined by calculating the amount of thermal comfort that each alternative might achieve.

Keywords:

Urban spaces; Visual pollution; Thermal comfort; Energy consumption.

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