

The Role of Human Factors Engineering in Designing Interactive Metal Facades

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Abstract:

The rapid development in modern digital technology has influenced all life aspects; and its impact has reached the arts of architecture and design. As interactivity has been introduced to architectural application; the advanced materials and techniques is redefining the relation between architecture and the physical world; especially in the fields of buildings claddings and facades. Facades nowadays effectively respond to the internal and external effects of the environment; in what is known as “the intelligent behavior”, which ensures that these facades can react to the different environmental effects through the information fed into it by computer systems. This research discusses the role of human factors engineering in supporting the process of designing interactive metal façade, through an analytical inductive method. The research aims to emphasize the importance of human factors engineering; as a design determinant of the expressive and functional formation aspects; in designing interactive metal façades, and to develop a design methodology based on the utilization of human factors engineering, to design interactive metal facades. The research managed to provide a proposed design methodology to create interactive metal facades, that comply with the characteristics of the human factors engineering; and can develop a physical interaction between the interactive metal facades and the user, thus; create a three-dimensional change in all the units of the interactive metal facade, as a result of responding to the external environmental effects; such as sound, movement, light and temperature, so that active design formations are created due to the re-arrangement of its units.

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