

Windphil Poetic in Architecture: Energy Efficient Strategies in Modern Buildings of Iran

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Abstract : The term 'Windphil Architecture' refers to the building that facilitates natural ventilation by architectural elements. Natural ventilation uses the natural forces of wind pressure and stacks effect to direct the movement of air through buildings. Natural ventilation is increasingly being used in contemporary buildings to minimize the consumption of non-renewable energy and it is an effective way to improve indoor air quality. The main objective of this paper is to identify the strategies of using natural ventilation in Iranian modern buildings. In this regard, the research method is 'descriptive-analytical' that is based on comparative techniques. To simulate wind flow in the interior spaces of case studies, FLUENT software has been used. Research achievements show that it is possible to use natural ventilation to create a thermally comfortable indoor environment. The natural ventilation strategies could be classified into two groups of environmental characteristics such as public space structure, and architectural characteristics including building form and orientation, openings, central courtyards, wind catchers, roof, wall wings, semi-open spaces and the heat capacity of materials. Having investigated modern buildings of Iran, innovative elements like wind catchers and wall wings are less used than the traditional architecture. Instead, passive ventilation strategies have been more considered in the building design as for the roof structure and openings.

Keywords : natural ventilation strategies, wind catchers, wind flow, Iranian modern buildings

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