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Comparative Study of Gorgan and
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Climate based Architecture-Comparative Study of Gorgan and Bushehr Historical Houses

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Climate differences are visible all throughout Iran and in some cases, these climates have one or more similar characteristics. In both mild- humid climates and hot- humid climates, high humidity is a common climatic factor, very disruptive for the comfort of its inhabitants. Humidity is a potential factor in the building that can endanger the health and comfort of its occupants and damage the beauty and materials of the building. Damp walls may cause persistence and exacerbation of diseases.

In the past, buildings were built according to the climate of each region and natural energy and resources were used to create comfort. The most effective way to control high humidity is applying wind energy. Wind energy has long been used in various fields of production and architecture.

Today, humans have wasted energy and increased costs by neglecting previously used climatic factors. Climate design can be considered as a way to reduce energy costs of a building. Understanding the wind flow rules allows it to be controlled in three fields: Cooling using optimal air flow by creating natural ventilation in passive or active construction methods, to avoid annoying winds in hot and cold weather and natural ventilation of the building.

In this paper, examples in cities of Gorgan and Bushehr have been compared in order to find common and different solutions to solve humidity issues. Gorgan is located in northeastern Iran. This city leads to the Alborz Mountains from the south and to the Gorgan Plain from the north. It has a temperate climate, but due to its proximity to the Caspian Sea and heavy rainfall, the city has relatively hot and sultry summers. Therefore, in hot seasons, the need for ventilation in the building increases. The city has a temperate climate, but due to its proximity to the Caspian Sea and heavy rainfall, the city has relatively hot and sultry summers.

Bushehr is a seaport city located in southwest of Iran. It is a peninsular city bounded on the north, west and south by the Persian Gulf. This seaport has hot and humid climate. In this region, summer is relatively long and winter is observed only in January and February with relatively cold weather. The feeling of warmth is more difficult than mentioned due to the high relative humidity in the warm months of the year.

The research method in this paper is descriptive analytical and comparative and samples are purposefully selected. At first, the climatic solutions of these two areas to create air conditioning

in the historical context and interior of the houses have been studied, after the similarities and differences of the solutions presented in these two climates were discussed. The selected samples were carefully studied according to the climatic knowledge obtained and observations and the elements of local architecture were analyzed in each of them. It should be noted that the amount of humidity in these cities is not much different, but the very hot weather in Bushehr makes people feel more dissatisfied with the humidity.

The following results were obtained after studies and observations. Due to the problem of humidity in temperate and humid and hot and humid climates, in both samples, the plans are rectangular and elongated to allow easy ventilation. According to the direction and wind speed diagrams of each city and its compliance with the building plans, it was found that the orientation of these buildings was completely consistent with the relevant diagrams. Proper orientation for the building allows it to easily take full advantage of favorable winds and other climatic factors and provide comfort for residents. For air conditioning, methods of creating air pressure difference, one-way ventilation and two-way ventilation have been used. At first glance, there are many differences between the two buildings, but in relation to the common problem in these two areas, namely high humidity, both have used similar solutions that can be achieved with a closer look.

By studying and examining any of the climatic solutions that are abundant in vernacular architecture, they can be included in their contemporary architecture and by using these solutions, the use of mechanical devices can be minimized. Here we can make a valuable contribution to reducing energy consumption.

Keywords: Air ventilation, Climate design, Historic houses, Vernacular architecture, Wind energy

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