Windcatcher

31 languages

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A **windcatcher**, **wind tower**, or **wind scoop** (Persian: بادگیر) is a traditional architectural element , originated in Iran (Persia) , used to create cross ventilation and passive cooling in buildings.[1] Windcatchers come in various designs, depending on whether local prevailing winds are unidirectional, bidirectional, or multidirectional, on how they change with altitude, on the daily temperature cycle, on humidity, and on how much dust needs to be removed.[2] Despite the name, windcatchers can also function without wind.

Neglected by modern architects in the latter half of the 20th century, the early 21st century saw them used again to increase ventilation and cut power demand for air-conditioning.[3] Generally, the cost of construction for a windcatcher-ventilated building is less than that of a similar building with conventional heating, ventilation, and air conditioning (HVAC) systems. The maintenance costs are also lower. Unlike powered air-conditioning and fans, windcatchers are silent[4] and continue to function when the electrical grid power fails (a particular concern in places where grid power is unreliable and expensive, such as India).[5][11]

Windcatchers rely on local weather and microclimate conditions, and not all techniques will work everywhere; local factors must be taken into account in design.[5] Windcatchers of varying designs are widely used in North Africa, West Asia, and India.[12][2] A simple, widespread idea, there is evidence that windcatchers have been in use for many millennia, and no clear evidence that they were not used into prehistory.[3][2][12] The "place of invention" of windcatchers is nonetheless intensely disputed; Egypt, Iran, and the United Arab Emirates all claim it.[12][13]

Windcatchers vary dramatically in shape, including height, cross-sectional area, and internal sub-divisions and filters.[2]

Windcatching has gained some ground in Western architecture, and there are several commercial products using the name *windcatcher*. Some modern windcatchers use sensor-controlled moving parts or even solar-powered fans to make semi-passive ventilation and semi-passive cooling systems.[2]

Windscoops have long been used on ships, for example in the form of a dorade box. Windcatchers have also been used experimentally to cool outdoor areas in cities, with mixed results;[2] traditional methods include narrow, walled spaces, parks and winding streets, which act as cold-air reservoirs, and takhtabush-like arrangements (see sections on night flushing and convection, below).[14]:Ch. 6

An *ab anbar* (water reservoir) with windcatchers (openings near the top of the towers) in the central desert city of Yazd, Iran

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Iranian Windcatchers

Iran

Windcatchers, also known as badgirs, are traditional Persian architectural elements that capture and circulate the wind to cool indoor spaces.

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