

عنوان مقاله:

Energy modeling and air flow simulation of an ancient wind catcher in Yazd

محل انتشار:

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خلاصه مقاله:

Wind catchers (wind towers) are one component of the traditional sustainable buildings with a central courtyard in the hot regions of Iran. In this research a most common type of the wind tower – the four sided wind catcher- was evaluated both experimentally and numerically. The tower of the Mortaz house in the city center of Yazd was equipped with temperature, wind, air velocity and solar sensors. Monitoring took place over a three months winter period. A series of 3D steady CFD simulations was carried out using OpenFOAM. The airflow pattern through the wind catcher model was simulated to predict and monitor the air flow behavior in the four equipped shafts for prevailing wind directions. Finally the validation of the CFD numerical simulation results with the onsite measurements data is discussed. The goal of this research is developing a method of informing the design decision for new wind catchers and the renovation of traditional wind catchers in early design stage using CFD simulation tools and energy modeling in sustainable buildings

کلمات کلیدی:

Traditional sustainable buildings, Wind catcher, CFD simulation, Energy modeling, Experimental measurements

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