

عنوان مقاله:

Investigation of Geometric Dimensions and Dust Effects on Invelo Wind Deflectors Performance

محل انتشار:

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خلاصه مقاله:

The present study simulates Invelox in a three-dimensional and stable way. The flow regime is turbulent flow and an unorganized grid with ۳۵۰۰۰۰ cells was utilized. This work has studied the modeling of invelox with conventional dimensions and four different sizes in the form of four modes for use in a residential building. The numerical data with an error of less than ۶% are in good agreement with the available experimental and analytical data. The results show that considering the average velocity of mode ۲ with a velocity of ۶.۵۴ m/s and a ۵% difference from the other two modes, it can be operated in a residential building. It is worth noting that in this investigation, in addition, the effect of dust on the turbine performance was evaluated. The results represent that the oscillation frequency of the blades increases with the increase of the rotational speed. In the case of not considering dust particles on blades, this amount increases by ۲۵%, while considering dust particles with an amount of ۰.۱%, it increases up to ۳۰۰%, and this .can cause irreparable damage to the turbine as well as the power generation system

کلمات کلیدی:

Computational Fluid Dynamics, Invelox, Residential Building, Wind deflector

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