

عنوان مقاله:

D CFD Computations of the Two-Bladed Darrieus-Type Wind Turbine-۲

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خلاصه مقاله:

In spite of the attractiveness of CFD methods and advanced measurement methods, there is still no full analysis of aerodynamic blade loads for vertical axis Darrieus-type wind turbines. Due to an inherently unsteady flow around the rotor blades, blade-wake-blade interaction and the occurrence of dynamic stall, the aerodynamics of this type of wind turbine is very complex. A two-bladed rotor have been investigated numerically for the tip speed ratio of ۵.۰. This paper compares results for aerodynamic blade loads obtained applying such turbulence models as: the standard k- ϵ ; the RNG k- ϵ ; the Realizable k- ϵ and the SST k- ω . As a result, quantitative instantaneous blade forces as well as instantaneous wake profiles behind the rotor have been obtained. Aerodynamic wake behind the rotor is also visualized by using streak lines. All CFD results are compared with experimental data taken from literature. Good agreement between the numerical results and the experiment is shown for the aerodynamic blade loads as well as for aerodynamic wake behind the rotor.

کلمات کلیدی:

Aerodynamic blade loads, Wind turbine, Aerodynamic wake, Streak line

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