FINAL ABSTRACT

This paper presents a numerical investigation on a new configuration of a vertical axis wind turbine (Darrieus type). The concept proposed is defined as a tandem straight-bladed turbine. The simulations have been performed using Fluent code. Sliding mesh technique was applied to treat the unsteady character of the flow. A time step size corresponding to $\theta=3.6°$ has been chosen. The turbulence model used for calculations is the one-equation Spalart-Allmaras model. The numerical investigation was validated through the comparison of the calculations for a two-bladed turbine and a conventional three-bladed turbine with experimental cases found in the literature. The results obtained with the 2D numerical simulation of the proposed H-rotor present a reasonable improvement in the performance. The gain in power is about 35 % compared to the conventional three straight-bladed turbine.