

Numerical Simulation of the Flowfields Induced by a Two Blade NREL Wind Turbine

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Abstract

This work will reconstruct a three-dimensional 2-blade wind turbine as NREL VI type blade tested in NASA AMES Wind Tunnel. The three-dimensional wind blade flowfields will be simulated on non-inertial rotational main frame. The phenomena as the occurrence of aerodynamics forces, blade dynamic stall are investigated by a low-Mach number compressible solver based on preconditioning technique coupling with RNG Turbulence models. Calculations have been obtained to show that predictions of surface pressure distributions of two-dimensional S809 airfoils for numerical validation. The related force distributions due to rotation and vortices effects will be also studied

Keyword : wing energy, CFD, wind turbine