عنوان مقاله:

Torsional Aeroelasticity of a Flexible VAWT Blade using a Combined Aerodynamic Method by Considering Post-stall and Local Reynolds Regime

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خلاصه مقاله:

The present research investigates the torsional aeroelasticity of the blade of an H-type vertical axis wind turbine subject to stall and post-stall conditions in various Reynolds regimes, which is experienced by the blade in a full revolution. In order to simulate the aerodynamics, a new model based on a combination of the Double Multi Streamtubes (DMST) model and the nonlinear multi-criteria Cl-a equations, which is depended on the local Reynolds number of the flow, has been proposed. The results indicate that using of multi-criteria function dependent on the Reynolds number for the Cl-a curve has improved the prediction of the torsional behavior of the blade in azimuthal rotation of the blade compared to using single-criterion functions and linear aerodynamics. The blade's aeroelastic torsion has been studied for various TSR values.

کلمات کلیدی:

Vertical axis wind turbine, Aeroelastic torsion, DMST, Static stall, Post-stall, Reynolds