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Experimental and CFD of Desgined Small Wind Turbine

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Abstract : Many researches have concentrated on improving the aerodynamic performance of wind turbine blade through testing and theoretical studies. A small wind turbine blade is designed, fabricated and tested. The power performance of small horizontal axis wind turbines is simulated in details using Computational Fluid Dynamic (CFD). The three-dimensional CFD models are presented using ANSYS-CFX v13 software for predicting the performance of a small horizontal axis wind turbine. The simulation results are compared with the experimental data measured from a small wind turbine model, which designed according to a vehicle-based test system. The analysis of wake effect and aerodynamic of the blade can be carried out when the rotational effect was simulated. Finally, comparison between experimental, numerical and analytical performance has been done. The comparison is fairly good.

Keywords : small wind turbine, CFD of wind turbine, CFD, performance of wind turbine, test of small wind turbine, wind turbine aerodynamic, 3D model
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