

전산유체역학을 이용한 풍황탑 차폐효과 해석

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Analysis of the Effect of Met Tower Shadow using Computational Fluid Dynamics

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When the wind speed is measured by the met-mast sensor it is distorted due to the shadow effect of tower. In this paper the tower shadow effect is analyzed by a computational fluid dynamics code. First three dimensional modeling and flow analysis of the met-mast system were performed. The results were compared with the available experimental wind-tunnel test data to confirm the validity of the meshes and turbulence model. Two-dimensional model was then developed based on the three-dimensional works and experimental data. 2D analysis for various Reynolds numbers and turbulence strengths were then performed to establish the tower shadow effect database, which can be utilized as correction factors for the measured wind energy.

Key words : Met Tower(풍황탑), CFD(전산유체역학), Wind Power Generation(풍력발전), Turbulence Intensity(난류 강도), Effect of Tower Shadow(차폐효과)

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3MW 풍력발전시스템 개발품의 육상풍력실증단지 조성 타당성 평가를 위한 풍황 및 지형평가 연구

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Wind Analysis and Site Assessment for Test Site of 3MW Wind Power System

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A wind turbine power performance test is very important to wind turbine manufacturers because a wind farm developer or planner must want to define power performance characteristics and reliability of new wind turbines. Based on the IEC 61400-12-1, A wind turbine test site has to be nicely installed at flat terrain for testing. We are developing the wind power system which is IEC wind class IIa model with rated power of 3MW. KEPCO's Gochang power testing center was considered as candidates to build the test site without site calibration. This paper aims to verify the validity of the test site by using implement site assessment result that was based on IEC 61400-12-1.

Key words : Wind turbine test site(풍력실증단지), IEC 61400-12-1, WinDS3000TM, Site assessment(지형평가), Site calibration(지형보정)

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