풍력터빈 제어 검증용 축소형 시뮬레이터 설계

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Design of Small-Scale Simulator for Verification of Wind Turbine Conrol

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풍력터빈에 적용되는 제어로직에 대한 검증을 실험실 기반에서 검증하기 위해서는 바람 및 터빈에 대한 적절한 모델링이 선행되어야 한다. 특히 피치 및 토크제어에 대한 특성을 검증하기 위해서는 블레이드 공력특성 및 터빈의 동특성에 대한 반영이 필연적이다. 본 논문에서는 풍력터빈 적용 제어로직 검증을 위하여 대상터빈에 대한 스케일링 결과, 바람을 모사하기 위한 구동장치 동작 및 터빈 모사장치에 대한 설계 결과에 대하여 소개하도록 한다.

Key words : wind turbine(풍력 터빈), Control(제어), Small-scale simulator(축소형 시험설비), Standard wind profile (표준 바람)

서해 100MW 해상풍력 실증단지 기상타워 구축사례

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Installation of Meteorological Mast for the Test Bed of Offshore Wind Power

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The final site of offshore wind power plant should be decided by comprehensive examination of various conditions such as wind resource, sea depth, geology, grid connection, social circumstance and environmental issue. Wind condition is typically regarded as the most important factor because wind energy increases in proportion to wind velocity and it directly relates to the amount of power output, efficiency of power plant and profitability. Advanced countries in the offshore wind power sector such as Denmark, UK and Germany, they are analyzing wind resource accurately by installing the meteorological mast in the ocean in order to get the optimal type of wind turbine and maximum generation efficiency. Also, it is made much of designing offshore power plant on the basis of actual measurement by met-mast and those wind farms have a chance to get the loan with reduced interest rate in project financing. In Korea, the HEMOSU-1 is installed in the ocean around Wido island to analyze wind resource of test bed of 100MW offshore wind power on october last year. This paper deals with the design and construction procedure of the first met-mast in Korea and also shows the site characteristics of test bed.

Therefore, this paper will give useful information to local governments and private business sector who are trying to construct offshore wind farm and it can also be a good reference for the following projects of meteorological mast in near future.

Key words : Offshore wind power(해상풍력),Test bed(실증단지), Meteorological mast(기상타워), Jacket foundation (자켓식 기초), Design wind velocity(설계풍속)

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