

## 부유식 풍력발전 해석 프로그램 WindHydro 특성 연구

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### A Study on the Characteristics of WindHydro - a Floating Wind Turbine Simulation Code

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A floating wind turbine dynamic simulation program, 'WindHydro', is newly developed. In order to investigate the characteristics of the program, a series of loading cases are simulated such as (1) wind only case, (2) free decay cases with initial displacement, (3) wave only case (4) wind and wave case. The simulations are carried out for the 5-MW OC3-Hywind model which has a spar buoy and catenary mooring lines. As a result, the reliability of WindHydro is verified in most viewpoints although additional study is still necessary to clear out some uncertainty of the program.

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**Key words** : Floating wind turbine(부유식 풍력 발전기), Coupled dynamics(연성 동역학), Aerodynamics(공력학), Hydrodynamics(유체역학), Mooring mechanics(계류역학), Multi-body dynamics(다물체 동역학), Spar buoy(주상형 부유체), Catenary mooring(현수식 계류), Wave(파랑), Free decay(자유 감쇠)

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## Benchmark test of large scale offshore wind turbine with jacket foundation

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### Benchmark test of large scale offshore wind turbine with jacket foundation

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Nowadays, offshore wind energy experiences a rapid development because of its wind condition and no noise impact problem. Different from Europe, offshore wind is just started in Asia. More work and research are needed in Korea. In this work, a three-bladed upwind variable speed pitch controlled 5MW wind turbine on a jacket support structure is used. During the simulation, several design load cases are investigated in two different fully coupled aero-hydro-servo-elastic codes. Some critical loads on the foundation are compared and analyzed.

**Key words** : Offshore foundation(해상 기초 구조물), Offshore wind turbine(해상풍력발전기), Jacket structure(자켓 구조물), Aero-hydro-servo-elastic(공수탄성학)

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