

Introduction of the Open Sea Test Site for Both Wave Energy Converters and Floating Wind Turbines in Korea

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Abstract

An open sea test is an essential process for commercialization of wave energy convertors (WECs) as well as floating wind turbines (FWT). Through national research and development project of Korea government, Ministry of Oceans and Fisheries, Korea Research Institute of Ships and Ocean Engineering (KRISO) has been establishing the open sea test site for wave energy converters in the western area of Jeju island since 2016 and will be completed by end of 2019. This test site has the characteristics of abundant wind and wave energy, low marine traffic, enough electrical capacity transmitted to national grid, good accessibility of a harbor, and availability of submarine cable and substation. Especially, around the test site, several commercial wind turbine units were established and are operating on land as well as nearshore area. The test site connected 5MW grid for 5 test berths with different water depths of 15m, 40m and 60m. The test site finished consenting process for Wave Energy and deployed submarine cables. Now, the test site is establishing Supervisory Control and Data Acquisition (SCADA) system and a performance evaluation system. The test site has also surveyed marine environment information on wave, current, depth, water qualities and etc., and will provide the information and help to accelerate the commercialization of WECs and reduce the time, cost, and uncertainty in order to test the developer's WECs in open sea. FWT can be installed and operated, and the performance of the FWT can be evaluated in this open sea test site. The test site is measuring the wind speed by using the LiDAR and will analyze the wind energy resource early next year (2020). The test site will initiate the additional consenting process for the wind energy from next year.

Keywords: *Wave energy converters, open sea test site, grid connection, performance evaluation, floating wind energy*