

International Conference on

Coastal Zones

May 16-18, 2016 Osaka, Japan

Field establishment and dynamic response investigation of multifunction movable offshore foundation based marine LiDAR system

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Due to the consideration of a great fleet of large ships needed for constructing offshore wind turbines not already been established (lacking facilities) in Taiwan, one concept of multifunctional movable foundation for the offshore wind turbines was proposed in this study for making local marine construction of offshore wind turbines in Taiwan much easier and less expensive. Thus a series of interdisciplinary studies, including numerical simulation, laboratory tests and field experiment, were conducted for the proof-of-concept of this innovative movable type foundation as local marine method & fleet in Taiwan. Based on this concept, marine LiDAR system (for wind profile measurement) or offshore wind turbine (for wind electrical power output) can be mounted on this multifunctional movable foundation in the ship dock instead of on ocean field site installation. The goal of this investigation is to follow the program of the “government grant for offshore wind development” by the Bureau of Energy, Ministry of Economic Affairs (MOEA), Taiwan, dividing the project into two main phases. The first phase (this study, from 2015~2016) is to establish the multifunction movable offshore foundation based marine LiDAR system which is the near full-scaled foundation for the meteorological observation and structure stability investigation. Then the second phase (from 2017~2018) is to establish the foundation for two 3.6 MW offshore wind turbines for full-scaled foundation field investigation and the real offshore wind energy production and wind turbine performance tests.

Biography

Ray-Yeng Yang completed his PhD from National Taiwan University. He is a Senior Researcher, Deputy Director and Secretary-General of Tainan Hydraulics Laboratory, National Cheng Kung University. He has authored more than 150 papers (25 SCI, 35 EI papers and 118 Conference papers), two book chapters and 85 technical research reports.

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