



## Numerical and Experimental Studies on Movable Offshore Wind Turbine Foundation

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### ABSTRACT

Due to the consideration of a great fleet of large ships needed for constructing offshore wind turbines not readily been established in Taiwan, one concept currently developing is the novel “float-out, sink and retrieve” offshore installation method for offshore wind turbines. The concept is to construct the gravity base support structure for the wind turbine, assemble the wind turbine and complete functionality testing at the dock, prior to towing the installation to location. The proof-of-concept for this innovative movable type foundation was confirmed by conducting a series of interdisciplinary studies, including numerical simulation and laboratory tests. Safety condition for the towing process of the movable foundation in the sea site was investigated in the towing tank (150m x 8m x 4m) at the NCKU in advance. Then the stability during the installation of the foundation and the dynamic response of the foundation after it is settled firmly were studied and investigated by means of numerical simulation and small scale physical modelling tests. From the movable bed laboratory experiment, the maximum scour depth around the foundation under wave and current action was also obtained. Thus this study further showed the concept has an added advantage that it will allow for retrieval or re-positioning of the foundation without the use of heavy vessel or other specialist offshore installation vessels.

**Date:** 25 February 2019 (Monday)

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**Venue:** ZS970, Block Z,  
The Hong Kong Polytechnic University

### SPEAKER'S BIOGRAPHY

Dr. Ray-yeng Yang is an associate Professor of Department of Hydraulic and Ocean Engineering, National Cheng Kung University (NCKU), Taiwan. He was the former deputy director of Tainan Hydraulics Laboratory, NCKU (2015-2017). Now, he is the executive director of Taiwan Society of Ocean Engineering and secretary-general of Taiwan Marine Industry Association. He has his expertise in ocean (coastal) engineering, ocean energy (wave & current energy), ocean environment science (internal wave & Langmuir circulation), hydrodynamic stability (double diffusion, finger convection), offshore structure (offshore wind turbine & marine aquaculture cage net) and physical modeling simulation.

\*\*\* All Interested Are Welcome \*\*\*

For further information, please contact Prof. Onyx Wai at Tel: 2766-6025

Free Admission. Please reserve your seat with Ms. Tiffany Szeto by email: [tiffany.szeto@polyu.edu.hk](mailto:tiffany.szeto@polyu.edu.hk)

Certificates of attendance will be provided to participants who attend the whole seminar.