台灣離岸示範風場之風能觀測評估與電網併連技術開發-Ⅱ

執行單位	國立成功大學 能源科技與策略研究中心	計畫主持人	宣崇堯

本「台灣離岸示範風場之風能觀測評估與電網併聯技術開發」整合計畫的研究目的為使用海氣象觀測塔儀器設備和遙測式光達技術，協助台電公司等國內離岸風場開發商，完成海氣象觀測塔建置、海氣象觀測技術開發、風力資源與海域環境資料庫建立、風況預測與風能評估以及風場運維所需的電網併聯技術開發等工作。

合作完成海氣象觀測塔建置

利用光達現址量測分析
風機發電效能

離岸風力開發與海氣象觀測經驗交流論壇

- 本計畫依據「風力發電離岸系統示範獎勵辦法」規範，完成台電彰化外海離岸海氣象觀測塔之儀器設備規劃、採購及安裝，獲取台灣海峽彰化區域離岸風場的海氣象實測資料，並自105年11月起將資料整理分析之後，送台電再生處供能源局備查。

- 國立成功大學能源科技與策略研究中心執行本計畫，於105年12月21日籌辦”離岸風力開發與海氣象觀測經驗交流論壇”，邀請國內三家海氣象觀測塔受示範獎勵辦法補助公司，及中鋼、工研院、金屬中心等參與離岸風場規劃、開發及建置等相關單位齊聚一堂，分享海氣象觀測塔建置過程的實務經驗，可成為未來各方合作及交流的開端。

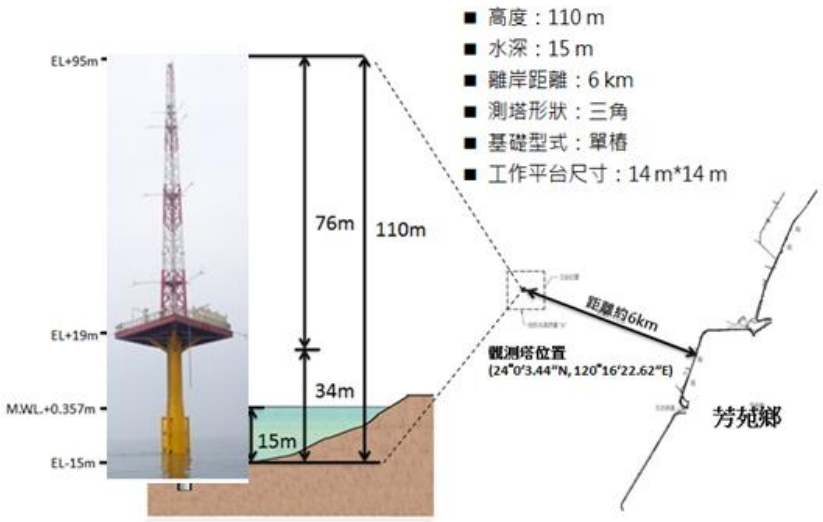
- 105年數個強颱侵襲台灣，團隊應用固定式光達的機動與高空觀測優勢，分別測得「尼伯特」、「莫蘭蒂」及「梅姬」颱風高空風況數據，並分析記錄風速、紊流強度等資料，藉以瞭解颱風特性；以及利用光達現址量測分析台電五種不同陸域風機發電效能。

- 電網併聯研究團隊至彰化王功進行風場實地量測，並將彙整出來之電力品質數據比對台電「再生能源發電系統併聯技術要點」是否符合規範，可作為未來彰化離岸風場運轉的參考。

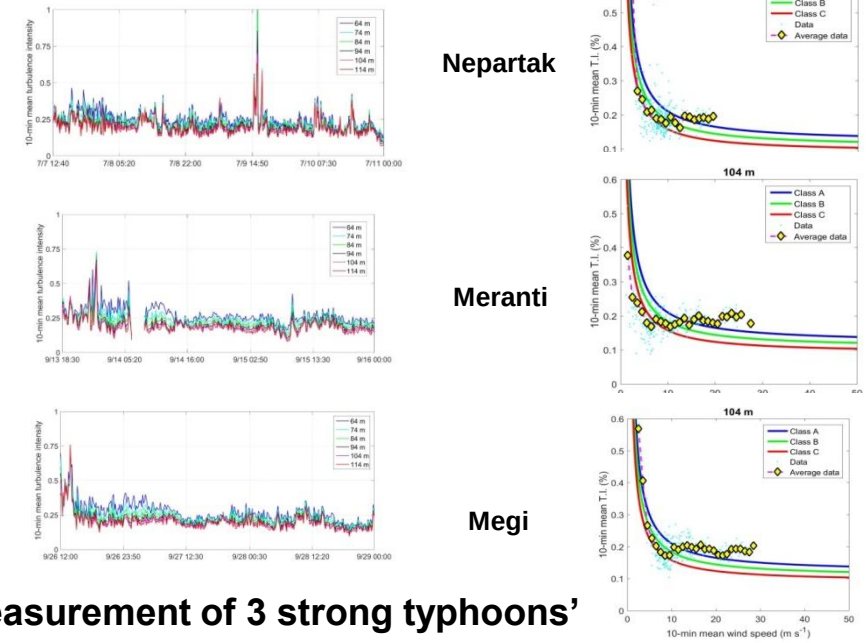
Observation and Evaluation on Wind Energy and Power Grid Connection for the Demonstration of Taiwan Offshore Wind Farms- Ⅱ

Execution Unit	Research Center for Energy Technology and Strategy, National Cheng Kung University
Project Director	Chung-Yao Hsuan

The purpose of this project is to use oceanographic and meteorological sensors and remote sensing technology to assist Taiwan's offshore wind farm developers. Cooperation with TPC to complete The TPC offshore met. Mast, the development of offshore wind measuring technology, establishment of offshore wind meteorological database, wind resource measurement and assessment , as well as wind power grid operation and maintenance technology study.



Installation of TPC met mast all sensors and equipment



Measurement of 3 strong typhoons' wind speed and turbulence intensity

- This project had completed the planning, procurement and installation of TPC offshore meteorological mast all sensors and equipment, bases on the “Promulgation of Offshore Wind Power Generation System Demonstration and Motivating Measures” by EoB. Obtained the meteorological data from Changhua offshore wind and sent to the department of renewable energy of TPC for analyzing and future reference.
- RCETS of NCKU organized the “ Offshore Wind Farm Development and Meteorological Mast Experiences Exchange Forum”, invited TPC, TGC, Swancor, ITRI, CSC, MIRDC, etc. to share their practical experiences. For the beginning of future cooperation and interaction between all parties.
- In 2016, a few strong typhoons invaded Taiwan. The project team measured 3 strong typhoons high altitudes wind data of “Nepartak”,”Meranti”,”Megi” by a remote sensing technology of WINDCUBE LiDAR. Observed and analyzed the wind speeds, turbulence intensities, etc. to understand the characteristics of the typhoons.
- The research team of offshore grid connection measured Chang-hua Wang Gong on-shore wind farms actual power generation combined to TPC power grid system. And compared the summarized power quality data with the TPC standard of “ Parallel Renewable Energy on Wind Power Generation”. The results of the analysis can serve as a reference for the operation of the offshore wind farm in Chang-hua in the future.