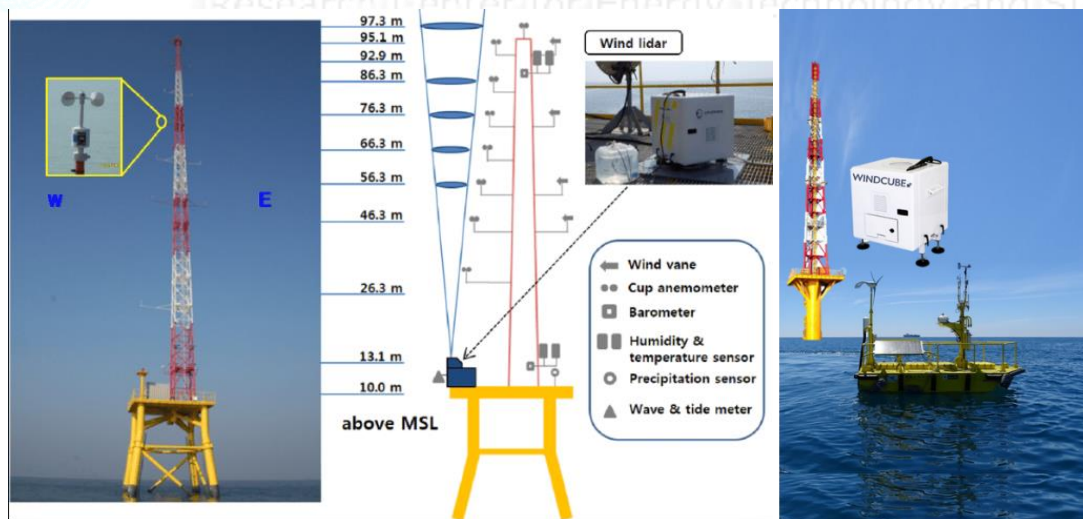


【台灣離岸風場海氣象大數據預測技術與觀測標準認證】

● 成果摘要

國立成功大學能源科技與策略研究中心已獲得台電再生能源處，委託執行台電彰化外海離岸海氣象觀測塔維運量測，及資料研析之產學合作計畫，期間觀測所得寶貴海象及氣象資料應善加應用，以發揮更全面且更深入之延伸效益；本整合型計畫架構為：海象資料蒐集方法提升，使海象資料能更穩定蒐集海流流速、流向、波高、波向，並將此技術技轉給國內從事海事工程作業廠商，以提升我國產業於海事專業。持續蒐集離岸風場資料需克服海上惡劣天候，造成觀測儀器無法長期維持其正常效能與資料有效，配合後續大規模區塊風場開發及機組運轉監測工作等所需之資料庫。

配合國家政策，將綠能產業與人工智慧應用技術結合，以類神經網路與深度學習技術發展離岸風場人工智慧預報模型，計畫成果可望為我國綠能發電產業提供未來應用整合基礎與發展利基。規劃導入歐洲離岸海氣象量測先進觀念與技術，目標為建立符合台灣需求之離岸風力量測及運維品質系統，做為本土離岸風場觀測作業規範擬訂與風能評估結果之認證依據。結合 AI 分析技術與 domain know-how 可預測 1hr 後之風速風向反應達 90%，可作為電力調度參考。取得兩項國內專利：「離岸測風塔雙重觀測系統」(專利證號：M592081)、「離岸觀測塔風向定向系統」(專利證號：M592974)。



離岸風場觀測技術

【The Technique of Big Data Prediction and Accreditation Standard for Taiwan Offshore Wind Farm】

● Summary of achievements

Research Center for Energy Technology and Strategy (RCETS) of National Cheng Kung University cooperates with Taipowr to maintain the offshore marine weather condition away from Chanbin and utilize the wind data for the further integrated project. The project will enhance the result derived from offshore met mast and brief as follows.

1. To enhance related technique to understand local marine condition and get related data such as speed and direct of the ocean current, wave height, wave direction and wave period. It can promote marine business by transferring the related technique to the vendor in Taiwan.

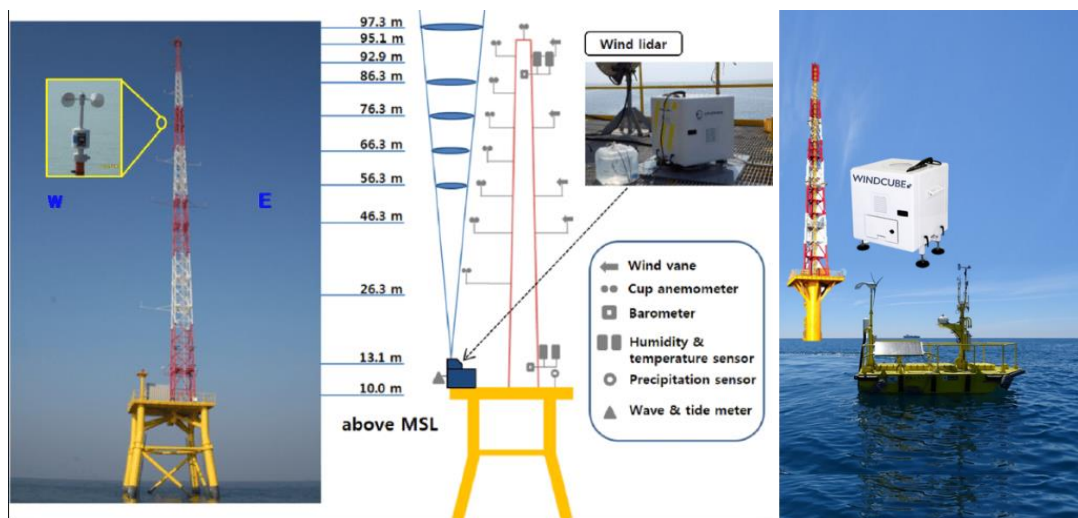
2. To collect offshore wind data consistently under the severe marine weather needs to overcome the issues derived from high standard based on measuring tools at offshore environment and maintain the database for large scale of wind farm development and wind turbines operation.

3. To integrate the green energy and artificial intelligence (AI) technology for national energy policy. Moreover to develop AI predictive model for offshore wind farm based on neural network and deep learning technique. These results can be the potential integrated basis and niche of Taiwan's green energy industry.

4. To introduce advanced concept and technique of European offshore marine weather. The objective is expected to set up the international quality system of offshore wind power assessment and O&M as Taiwan's certificate reference for the related standard and evaluation basis.

5. To utilize AI technique and domain know-how has achieved 90% accuracy of one-hour later wind speed and direction as reference for the global electrical power distribution.

6. Two Taiwan's patterns have been announced as “Dual wind measuring system in offshore met mast”(M592081), “Technique for wind vane orientation in offshore met mast”(M592974)



Marine and Meteorological Techniques for Offshore Measurement