

## OW\_01

# 利用風能軟體進行風場最佳化擺設與風力潛能分析-以彰化與雲林地區為例 The Optimization of Offshore Wind Farm Layout and Wind Resource Analysis Using Wind Model-Taking Changhua and Yunlin Area for Instances

張珮綺<sup>1\*</sup>、賴啟銘<sup>2</sup>、洪靖博<sup>2</sup>

<sup>1</sup> 國立成功大學水工試驗所

<sup>2</sup> 國立成功大學土木工程學系

Pei-Chi Chang<sup>1\*</sup>, Chi-Ming Lai<sup>2</sup>, Jing-Bo Hung<sup>2</sup>

<sup>1</sup> Tainan Hydraulics Laboratory, National Cheng Kung University

<sup>2</sup> Department of Civil Engineering, National Cheng Kung University  
pamchang@mail.ncku.edu.tw

### 摘要

台灣目前已完成陸域風場的建置並且開始運轉，但由於陸域風場已日趨飽和，而相較於陸域風場，台灣離岸風場更具豐富的資源，且尚未被開發。為了獲得更可靠的台灣西部海域風能估算數據，以利後續台灣西部離岸風場之開發，本研究以彰化與雲林地區為例，使用兩個世界著名的風能軟體「WAsP」與「Windfarm」來進行模擬分析的工作。在模擬過程中，先執行軟體驗證作業，後進一步將風機尾流與風向等因素納入考量，採用最佳化間距規則，計算出彰化與雲林地區潛在可開發場址處不同水深下之最佳建置風機數量與其總發電量，期後續可做為相關主管機關或相關廠商執行時的比對參酌。

關鍵詞：風能、WAsP、Windfarm、彰化、雲林。

### Abstract

The installation of onshore wind farms in Taiwan was finished and under operation for over a decade, yet the construction of onshore wind farms were near a saturation point. Comparing with the onshore wind farms, the rich offshore wind resource of Taiwan is still undeveloped. For the future development of offshore wind farms in western Taiwan and reliable offshore wind resource information, this study applies two reliable and accurate wind model WAsP and Windfarm to simulate the case study at Changhua and Yunlin area. The objective is to optimize the offshore wind farm at different water depths to get the best layout and energy production which the wake effect and wind characteristics are considered. Eventually, the modeling results can be viewed as reference to the correlated authority and wind farm developer.

**Keywords:** Wind energy, WAsP, Windfarm, Changhua, Yunlin.