

離岸風力機浮動式承載平台關鍵技術開發計畫(1/1)

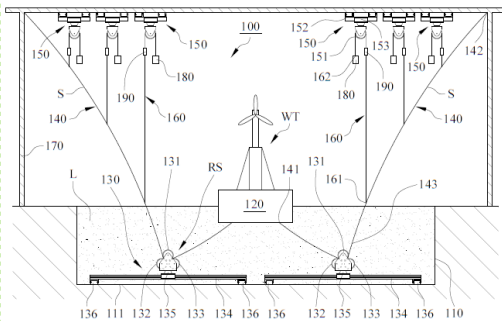
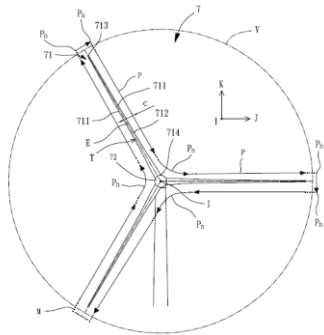
執行單位

金屬工業研究發展中心

計畫主持人

容丕達

- 近年來浮動式離岸風力機承載平台研發已成為世界各國關注焦點。本技術為深水區離岸風力機浮動平台解決方案之先期研究開發，浮動式平台可於船塢先行組裝，在岸邊與風力機組合後，再拖航至定點運轉，不需大型施工船吊裝與安裝，可大幅降低建置成本。



- 針對新竹外海及台中外海兩個虛擬場址，採用浮標及氣象局歷史資料，依據IEC 61400-1建議方法完成年度風速分佈及極端風速條件估算，供浮動基礎設計作為設計條件。
- 採用NREL 5MW及DeepCWind半潛式浮動平台，完成風力機負載條件分析案例、穩度技術評估、耐海性能評估、有限元素結構分析、繫纜概念設計及繫泊錨碇技術評估等項目。透過1/64浮動承載平台縮尺水槽實驗模型進行靜態特性實驗及動態實驗量測浮動承載平台及繫纜特性。
- 浮動式承載平台產業環境建構分項完成針對台灣條件不同水深及容量共八個建置方案之離岸風電浮動承載平台成本分析，取得上述八個建置方案之能源均化成本之估算供後續國內產業開發策略參考，並完成國際產業供應鏈需求調查及浮動承載平台國際合作評估，鎖定適合國內供應商進行國際合作之項目。

Offshore Wind Floating Platform Key Technology Development Project (1/1)

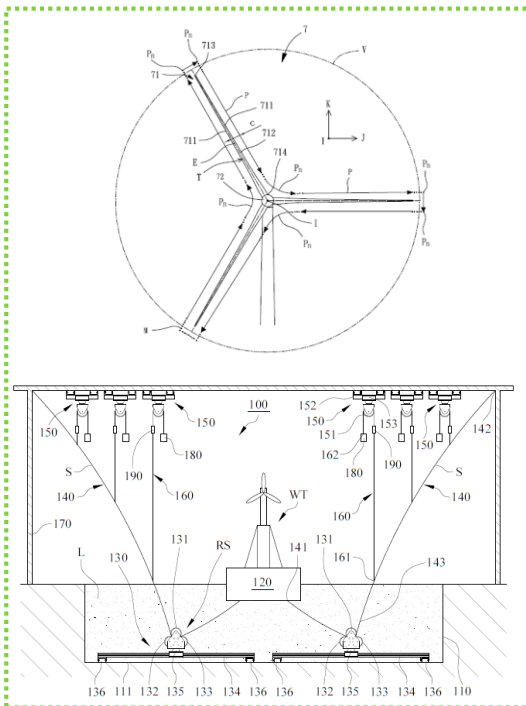
Execution Unit

Metal Industries Research & Development Centre

Project Director

Long Pei-Tat

- Floating foundation has been focus of global research in recent years. In this research deep water depth offshore wind floating platform solution undergoes its preliminary study. Floating platform can be manufactured and assembled in dock and towed to its planned location. This floating platform eliminates the needs of huge jack-up vessel during installation, thus reducing the installation cost.



- Based on two virtual offshore site with water depth more than 50m located outside HsinChu and TaiChung. Finished annual wind speed distribution and extreme wind speed assessment utilizing historical metrological data, with reference to methods suggested by IEC 61400-1. These conditions are used as site condition for floating foundation design.
- Reference to NREL 5MW and DeepCWind semi-submersible floating platform design, finished wind turbine load calculations, floating stability, seakeeping, finite element structure analysis, mooring system design basis assessment. Static and dynamic water tank tests have been performed utilizing a 1/64 scale floating wind turbine model.
- According to 8 configuration of different water depth and total capacity, cost analysis has been performed based on Taiwan and UK conditions. International industrial supply chain investigation and floating platform international cooperation assessment have also been studied to provide domestic industries target for cooperation development.