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國內離岸風機基礎設計實務之考量
Practical Design Consideration of Offshore Wind Turbine Foundations in Taiwan

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摘要

歐洲北海地區自 1960 年代開始建立離岸鑽油平台，並發展離岸結構相關技術。基於過去數十年之離岸結構建置經驗，丹麥於 1991 年完成全世界第一座離岸風場，至今北海地區已成為全世界最大風場。台灣於 2006 年開始規劃第一座離岸風場前，並無離岸結構設計與施工經驗。然而，離岸結構設計須考慮材料、製造、及施工能力，與陸上結構設計考量有極大不同。目前全世界離岸風機基礎設計主要採用 DNVGL 系列標準，其細部要求主要依據歐盟(EU)或國際標準組織(ISO)所制定之標準，此與國內工程界熟悉之美國或日本標準有諸多不同。本文將依據台灣目前條件，探討設計可能面臨之問題與限制。

關鍵詞：離岸風機基礎、離岸結構

Abstract

In European North Sea area, offshore oil & gas platforms and associated technology started being established in 1960s. Based on the decades experiences in development of the offshore structural design and construction technology, the first offshore wind farm was established in 1991 in Denmark. At present, the most offshore wind farms are located in the North Sea area. However, Taiwan didn't have any experience in offshore structural design and construction, before the feasibility study of the first offshore wind farm project was implemented in 2006. The limitations of steel material, fabrication, and construction are required to be considered in an offshore structural design which is very different with an onshore design. Currently, DNVGL series standards are the primary design standards for offshore wind turbine foundations. The detailed requirements specified in DNVGL standards are according to EU and ISO standards. They are very different with American and Japanese standards which are well-known and usually used by Taiwan's engineers. Some issues and limitations, that may need to face in the design, are discussed in this paper, according to Taiwan's practical engineering conditions.

Keywords: offshore wind turbine foundation, offshore structure