

微型風力機測試國家標準與關鍵零組件檢測驗證計畫

執行單位

經濟部標準檢驗局

計畫主持人

葉志明

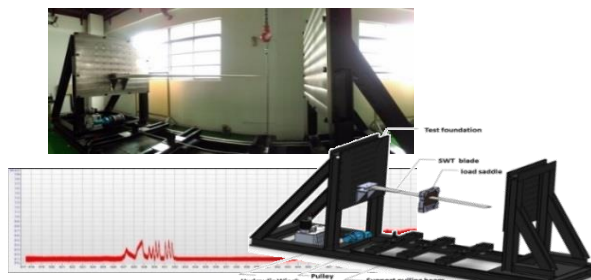
- 建立及更新維持中小型風力機相關檢測驗證之技術，降低國內業者以往只能送往國外測試驗證之不便與成本。並以此中小型風力機檢測技術為基礎，延伸其他零組件測試之發展及大型(離岸)風力機之型式測試之能量。
- 藉由推動「國際實證合作」、「標準測試驗證發展與技術交流」、「檢測驗證與國內外市場鏈結」，促進國內中小型風力機產業發展及推動全球市場接軌。
- 透過標準檢測驗證提升國際競爭力，開拓海內外市場，達成雙邊或多邊小型風力機檢測驗證相互認可，並以實證連結標準制定，透過國際合作的方式達成。



中小型風力機測試場軟硬體能量更新及建置



協助取得認證後業者實地實績



小型風力機葉片靜態測試平台



國際能源總署(IEA)執行風能系統研究發展工作組(Wind Task 27)會議首度在台舉辦

- 持續進行風力機國家標準與國際標準調和

持續進行風力機與再生能源併網相關國際標準追蹤，並針對相關國家標準進行更新與增訂。

- 取得中小型風力機測試場國內及國際認可

建立及維持中小型風力機測試場國內及國際間認證單位各項評鑑認可，測試場受國際認證單位肯定，陸續取得美國Intertek、英國TÜV NEL、日本ClassNK認可，降低國內廠商以往需至國外測試成本50%。

- 進行學術研究參與國際交流研討會

參與IEA TASK27國際研討會，進行風場屋頂高紊流計算相關研究，相關成果與國際專家進行熱烈交流，增加台灣於小型風力機風場研究之國際能見度。

- 協助風力機認證

目前國內已有4家業者之風力機系統完成CNS15176-2測試，並取得VPC認證，已有業者進行申設躉售資格，並協助另兩機型取得日本ClassNK認證，目前在日本稚內市、秋田市皆有安裝實績，國內也已有業者通過VPC認證後在麥寮鄉地區完成國內首座小型風力機風場開發並開始進行躉售運行(3區塊各9.6kW)。

- 發展風力機相關檢測驗證能力

目前已完成單座靜態拉伸25kN可測葉長4公尺等級之葉片靜態測試平台及已預留平台能量進行未來疲勞測試項目。(疲勞力矩變動範圍5kNm，動態疲勞壽命： $>10^6$ cycles)

Small wind turbine and key Components testing and verification project

Execution Unit

Bureau of Standards and Inspection,(MOEA)

Project Director

YE,JHIH-MING

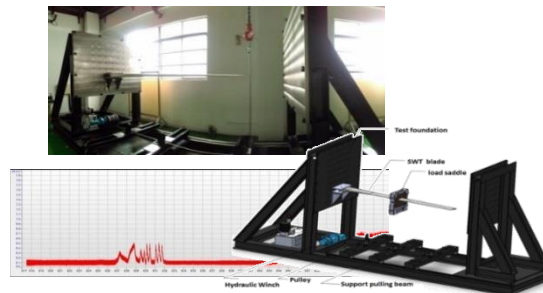
- From 2014 to 2018, establish and update the technology of testing and verify for small wind turbine that will reduce the costs and shorten the schedule when sent to oversea for certification in the past. Base on this testing technology that will extend to development for others components testing and create the testing ability for offshore wind turbine.
- To promote the development of domestic small and medium wind turbine industry and the wind turbine products in the global market, supplemented with core work to promote "international demonstration cooperation", "standard test certification development and technical exchange", "market links test certification". Assist manufacturers to enhance their international competitiveness through standard testing and certification, explore domestic and overseas markets, reach mutual recognition of bilateral and multilateral small wind turbine testing and certification, and formulate them through empirical link standards through international cooperation.



Update and build hardware and software in small wind turbine test site



Support to get the field performance of certificated vendor



Static testing platform for small wind turbine blade



Promotion of cross-strait common standards

- **Continued wind turbine national standards and international standards to update**

The Company will keep track of the relevant international standards for wind turbine and renewable energy grid connection and update and update the relevant national standards.

- **Obtained domestic and international recognition of small wind turbine test sites**

Establish and maintain the certification of small wind turbine testing site for accreditation by Domestic and International Certification Organizations. The testing site has been certain by Intertek of the United States, TÜV NEL of the UK and Class NK of Japan that will reduce the test costs about 50%.

- **Academic research participation in international exchange seminars**

To conduct research on roof turbulence calculation in wind farm and exchange relevant achievements with experts in the IEA TASK27 International seminar that will increase the international visibility of Taiwan's wind farm research for small wind turbines.

- **Small wind turbines certification**

Currently, four wind turbine systems have completed the CNS15176-2 test and obtained VPC certification. Has been the vendor apply for FIT, and to help the other two models to obtain Japan ClassNK certification, at present in Japan Wakkanai, Akita have field performance, the domestic industry has also been certified by VPC then finish the first small wind farm development at Mailiao and start FIT. (3 blocks, 9.6kW per block)

- **Development of wind turbine related testing ability**

Currently, we had completed the static test platform which can measure the static tensile 25kN and blade length 4 meters and the platform has been reserved for fatigue test project in the future. (Fatigue torque fluctuation range 5kNm, dynamic fatigue life:> 10⁶ cycles)