瓩級黑潮發電先導機組研發與實海域測試平台建置規劃

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- 台灣東部有穩定的黑潮洋流通過，其與太陽能及風能等再生能源發電方式相比，具有穩定的能源來源優勢，本計畫成果可加速洋流發電廠設力及提升海事工程能力

- 洋流發電機之專利申請
  【水流動力裝置】
  【水流發電系統之葉片結構】申請中(萬機公司)
- 【具減速翼之重力及鋼錨復合之深海錨錠基座設計】申請中
- 【具防水及吸震的高強度萬向接頭
  】發明專利

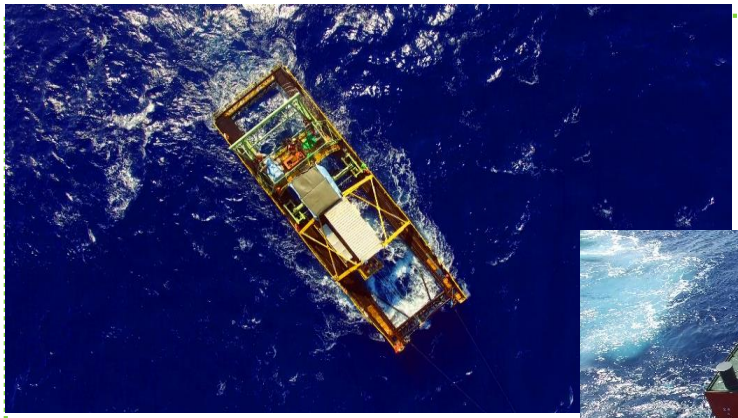
- 國立中山大學所陳陽益副校長和萬機鋼鉄公司白俊彥董事長攜手合作帶領研發團隊自行研發50kW洋流能發電機組，於2015年在小琉球海域進行洋流能發電機組實海域船拖測試，測試結果於1.43m/s穩定流速下平均發電量為32.57kW; 2016年7月25日緊接著進行50kW單元發電機組之發電測試，在洋流能測試系統掛載發電機組並利用多功能浮式載台量測環境流場資料，利用黑潮來推動洋流能渦輪機進行發電測試，同時驗證2015年之船拖測試結果。成功於黑潮主流進行50kW洋流能單元發電機之測試，並得到在1.27m/sec之流速下，其平均發電功率為26.31kW. 以深海洋流能測試系統掛載低轉速洋流能渦輪機，成功於0.45m/sec之流速下啟動渦輪機，並連續運轉達60小時，比起現有洋潮流能發電機組最低啟動流速皆需高達2m/s以上更適合台灣周邊海域。

Development of KW Kuroshio power-generating pilot facilities and evaluation of test paltform in the open sea(3/3)

Execution Unit	Natioanl Sun Yat-sen University
Project Director	Yang-Yih Chen

- . The steady flow of Kuroshio current in eastern Taiwan. It's a stable energy source advantage over that of renewable energy such as solar and wind power. The results of this project can speed up the capacity of ocean current power plants and upgrade their maritime engineering capabilities in Taiwan

- 【WATER-FLOW POWER DEVICE】
  【BLADE STRUCTURE OF WATER FLOW POWER GENERATION SYSTEM】in processing (WANCHI STEEL INDUSTRIAL CO. LTD)
- 【DESIGN OF DEEP WATER GRAVITY ANCHOR WITH DECELERATION WING AND STEEL ANCHOR COMPOUNDING】in processing
- 【HIGH STRENGTH UNIVERSAL JOINT WITH WATERPROOF AND SHOCK 】invention patent



- Currently due to the consideration of blue energy development, Taiwan is interested in and pursuing the application of Kuroshio current energy technologies. However due to the natural environment background in the eastern Taiwan, the low current speed of Kuroshio current (1.m/s~1.5m/s), steep slope coast /deep sea floor (up to deeper than 1,000m water depth) and 3~5 times typhoon surface wave attacked for every year, in developing Kuroshio current energy technologies, a system integrated with power-free underwater vehicle, low current speed turbine, dynamo, mooring line and anchor are necessary. During the 2016/7/24~2016/7/30, the pilot field experiment of 50Kw Kuroshio current energy system was performed at Kuroshio Current in Taiwan. The mooring system for a deep-water floating platform, which located in the 900m water depth, was installed. The 50Kw current energy system was triggered at the minimum current speed 0.45m/s and ran 60 hours continually afterwards. An average value of 26.31kW had been reached at the current speed of 1.27m/s.