

智慧輸電網下世代安全監測、保護與控制關鍵技術及系統研發

執行單位

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計畫主持人

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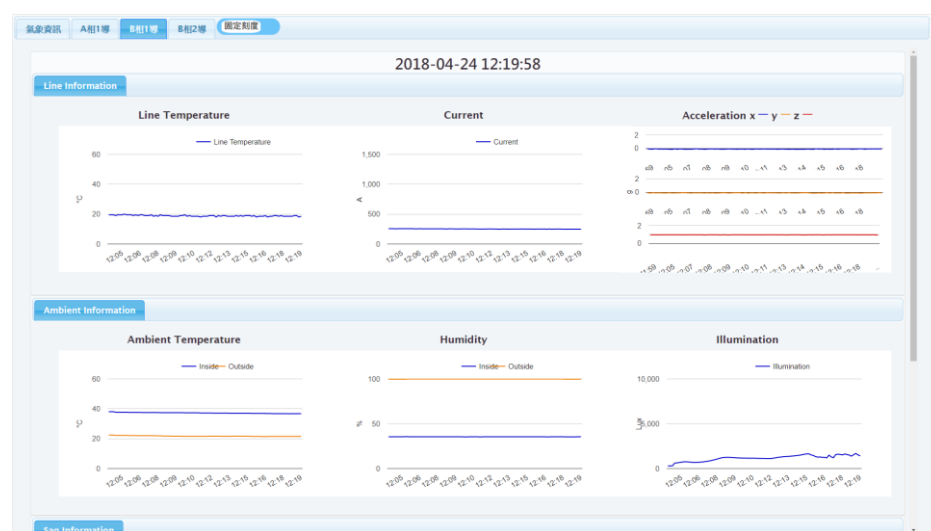
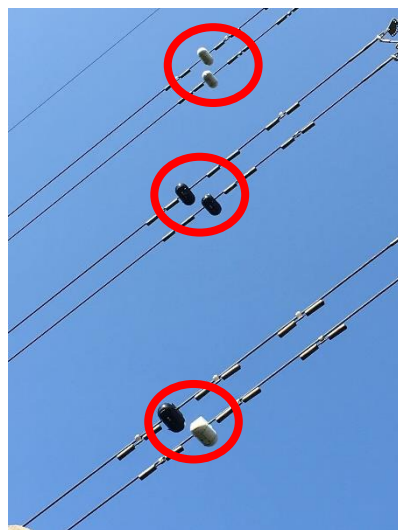
- 利用架設超高壓輸配電線上之物聯網輸電線安全監測系統，整合雲端運算分析與資料庫技術計算出即時計算輸電線熱容量，提供台電人員準確且即時的電力調度參考。此外，臺灣廣域量測系統利用同步的微型相量量測單元所蒐集之資料進行分析並進行電網狀態監控，將來可應用於電力公司相關產業提升穩定的電力品質。

1. 感測裝置及應用該感測裝置之輸電線路監測系統
2. 輸電線路熱容量預測方法
3. 電網開道器及具有多個電網開道器之電塔管理系統
4. 相量計算單元位置選取方法



● 超高壓輸電線路監測系統

本系統結合雲端運算分析與資料庫技術，同步顯示輸電線電力與環境資訊如線溫、輸電線電流與環境溫度等資訊，可計算即時計算輸電線熱容量與預測輸電線路之最大負載情況，提供台電人員準確且即時的電力調度參考。目前已將超高壓輸電線感測裝置實地掛載至161 kV重載線路，未來將會與台電討論345 kV之實裝，並規劃裝設此系統於全台輸電系統。



● 微型相量量測器與台灣廣域量測系統

TWAMS可藉由uPMU量測到資料進行電網狀態監控與即時預警(如發電機跳脫、輸電線事故等)。此外，亦可將uPMU量測到的資訊以圖型化方式呈現於平台上。

Research and Development of Security Monitoring, Protection and Control Technologies for Next Generation Smart Transmission Network

Execution Unit

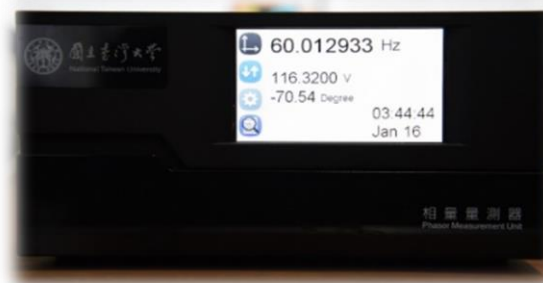
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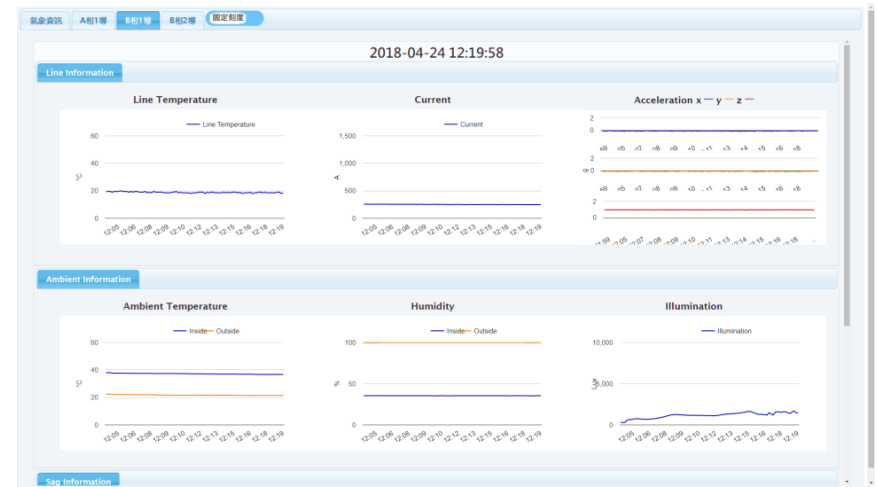
- The IoT-based EHV transmission line monitoring system integrates cloud computing and database technologies to calculate the real-time dynamic thermal rating, and it also provides accurate and real-time electricity dispatching reference for power dispatch.
- TWAMS can evaluate the status of the power grid and provides a platform to display the frequency information based on measuring phasor data of uPMU to system operators.

1. Thermal prediction method for power transmission lines
2. Grid gateway and transmission tower management system with multiple grid gateways



- The EHV transmission line sensing system

This system combines the cloud computing and database technology to display the information of transmission line and environment such as temperature of conducts, current and ambient temperature which measured by the intelligent EHV sensor. According to these information, the system is able to provide the calculated thermal and the estimated maximum ampacity to system operators instantaneously. On the other hand, the intelligent EHV sensor has been installed on a 161kV heavy-load transmission line.



- TWAMS and μ PMU

TWAMS is able to monitor the status of the power grid and provide real-time event warning(i.e. generator trip) based on the phasor data measured by μ PMU. Additionally, TWAMS also provides a platform to display the measuring data of μ PMU.