

結合智慧電網技術於住宅社區型電能管理平台

執行單位

國立臺灣大學
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計畫主持人

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- 透過推論使用者用電習慣及社區型的用電合作排程，未來將尋求可能的合作機構，將用電排程技術推廣到大型物聯網社區，並將照明與電器控制技術推廣到居家用戶，最後將配電技術落實到台灣智慧電網。

申請專利

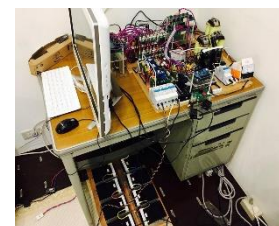
1. 供電控制系統、方法及其非揮發性電腦可讀取記錄媒體
2. 即時辨識情緒之環境調控裝置、系統、方法及其電腦程式產品
3. 供電控制系統及方法



住家照明及電器之情境調控

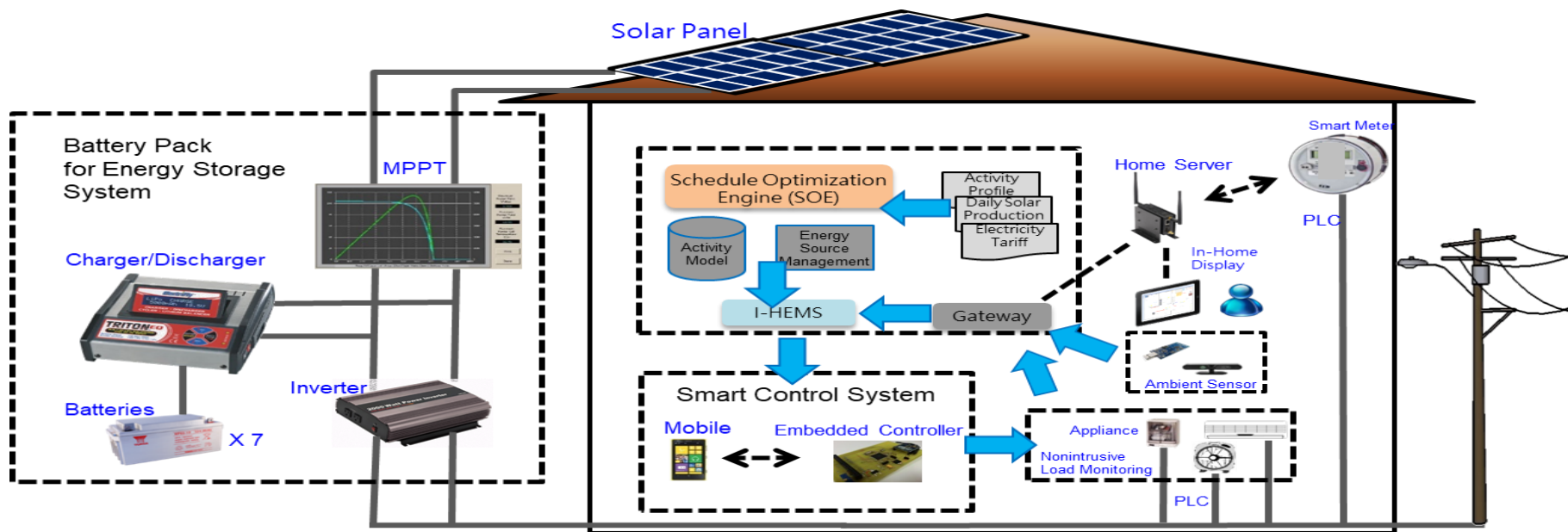


25kVA社區型三相變流模組



智慧家庭實驗實際場域

- 本計畫的目的，在於推論消費者的用電行為，以雲端叢集技術精算對消費者及電力公司最有利的用電排程，對電力管理業者而言，可均化用電峰值、極大化設備使用率、增加用電可靠度，而消費者亦可享受低廉的電費及優質的生活環境，實為雙贏的局面。本計畫跨主軸中心整合住商節能及智慧電網技術，由嵌入式無線感測網路為基礎之舒適度感知單元，拓展至結合再生能源發電之住商近零能耗的設計，接著連結多住商的用電行為推論，在需量反應機制下，精算影響消費者程度最低的用電排程，最後結合萬瓦級虛功補償器之開發，透過雲端最佳電力潮流之精算控制，降低輸配電損失。



系統架構圖

Smart Grid-incorporated Electricity Management Platform for Residential Community

Execution Unit

Department of Computer Science & Information Engineering, Nation Taiwan University

Project Director

Yung-jen Hsu

- Based on our prediction of users' energy using habits, we will first seek cooperation with local authorities and implement our technology to large-scale IOT community in the near future. Our ultimate goal is to implement the power delivery technology in Taiwan's smart grid system.

Filed patents

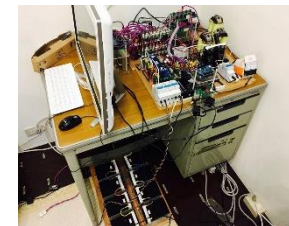
1. Power generation control system, method and non-transitory computer readable storage
2. Real-time mood sensing control device, system, method and software
3. Power supply control system and method



Emotional control of house lighting and appliances

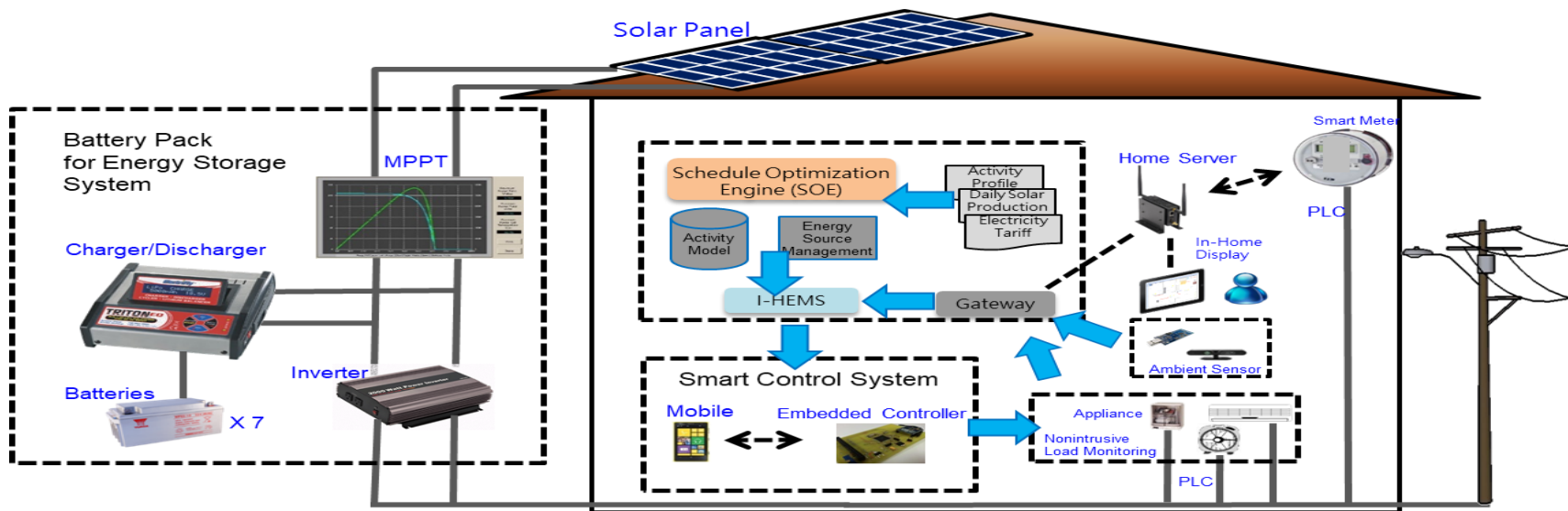


25 KVA community-based three-phase converter



Real experimental area of smart home

- The objective of this project is to infer the user's energy using habits and provide a one-day schedule benefit to both consumer and utility by using cloud computing. This project integrates the technique of energy-saving and smart grid. First, we develop the comfort sensing unit based on embedded wireless sensing network, and then extend to the design of zero energy-cost system with renewable energy and infer the energy using habit of community and commercial building .Second, we provide the schedule of energy usage that is most beneficial to the user under the demand side management mechanism. In the end, we combine the technique of battery and SVC to reduce the energy loss of transmission.



System architecture