

智慧化高效水洗烘乾節能系統研發計畫

執行單位

紡織所

計畫主持人

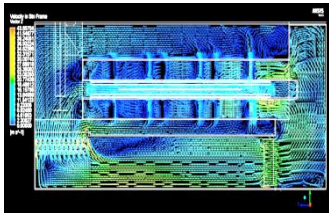
黃慶堂

- 研發紡織工業中最耗能的烘乾作業之「能源管理系統、最適化技術、烘室流場設計優化」，以「能耗最低化」或「產能最大化」兼顧品質並降低生產成本，降低烘乾作業產品單位重量能源耗用15%，有效降低紡織產業供應鏈斷鏈危機，挖掘節能潛力31,500公秉油當量kLOE，降低碳排量潛力97,965公噸CO₂。

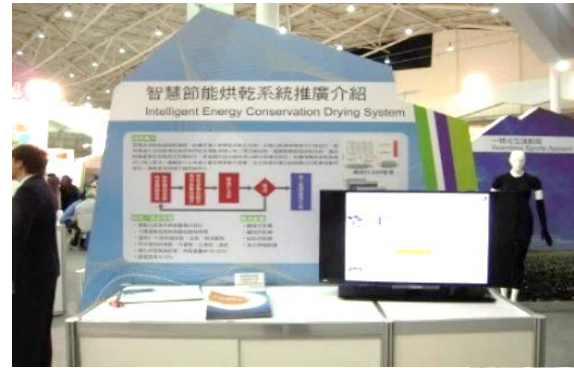
專利名稱：烘乾系統

申請案號：104132213

專利特徵：本專利係利用烘室熱流場逆推設計，導引後段溫溼度高廢熱往前段熱能需求較高的烘室推送，提高熱能應用效率。



【烘室流場優化設計】



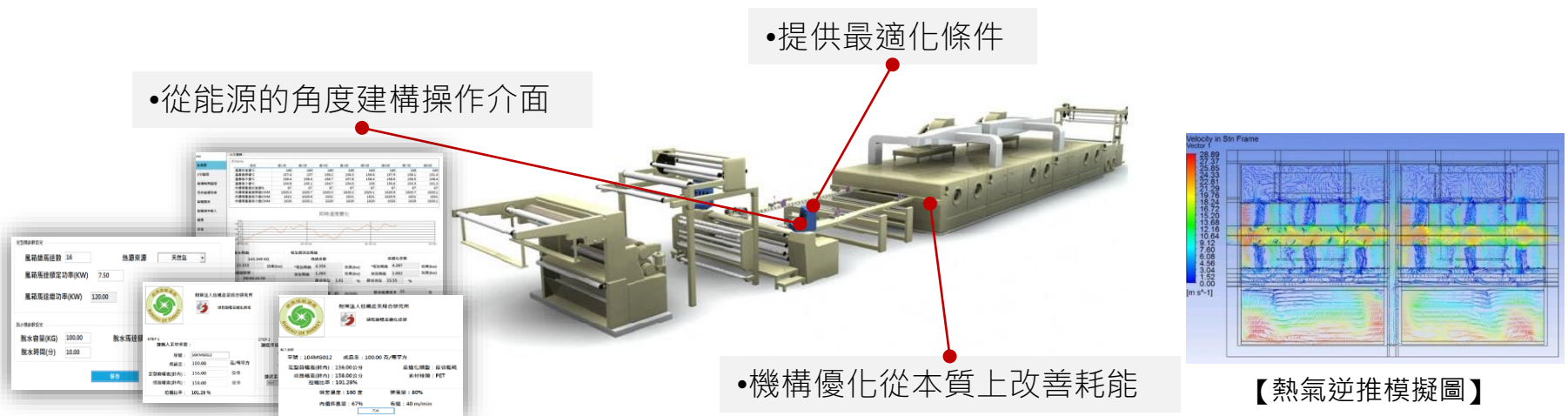
【2015TITAS展 成果推廣】



【成果發表會】

紡織產業為國內六大耗能產業之一，本計畫導入智慧化節能技術，結合能源管理技術、多目標最適化技術與熱流場優化技術，解決產業斷鏈危機，讓紡織產業持續維持國際競爭力，其技術介紹如下：

- 烘乾製程能源管理系統技術：透過即時擷取能源資料，包括電能、熱能等進行數據收集，並經由數據分析，給用戶提出合理的節能建議，以達成能源節省目的。
- 烘乾製程最適化技術：分析烘乾與素材參數對於含潮率之影響，並依其統計分析結果，建構烘乾製程最適化技術。再依最省能耗或最短時間需求，提供烘乾製程參數最佳條件。
- 烘室流場設計與模擬技術：開發可調動式的逆流引導設計，設計以後氣推前氣模式，讓後段烘室較為乾燥高溫的熱氣逐步往前推至前段烘室。



【具最適化推演的能源管理開發】

The Program for High-efficiency Washing and Drying System With Automation Intelligence.

Execution Unit

Taiwan Textile Research Institute

Project Director

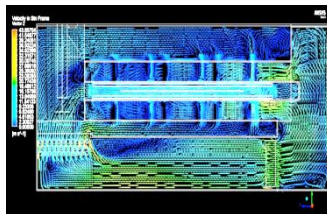
Huang, Ching-tang

- Drying and finishing are the most energy-consuming processes in textile industry. Intelligent energy-saving drying and washing system developed by TTRI consists of energy management system , optimization technology and Improved the drying chamber mechanism. Reduce products energy consumption 15% ,Excavate the potential of energy saving 31,500 kLOE. Lower carbon emission potential by 97,965 ton of CO₂.

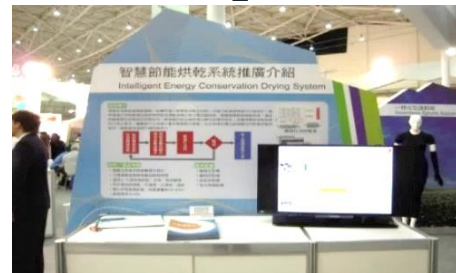
Patent name: drying system

Application number: 104132213

Patent Features: This patent design the mechanism of drying chamber by reverse heat flow. Guideing the waste heat behind to the front. Improve the efficiency of energy.



【 Optimization of flow field in drying chamber 】



【 2015 TITAS 】

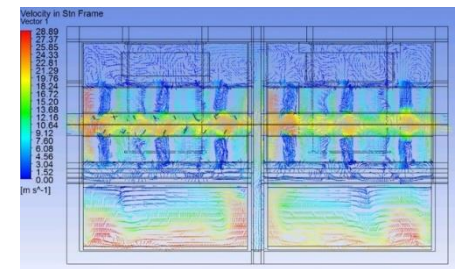
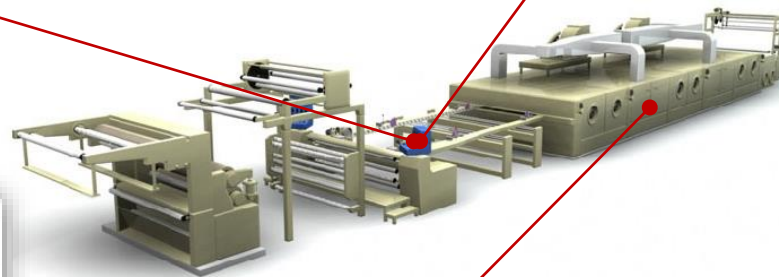


【 Results presentation 】

- Textile industry is one of the most six energy-consuming industries in Taiwan. Combining with energy management technology, multi-objective optimization technology and optimization of heat flow field to solve the crisis of industry chain broken. Let the textile industry continue to maintain its international competitiveness.

Construct the interface from the perspective of energy

Provide the optimization conditions



【 Heat flow reverse simulation map 】

Mechanism optimize from the essence to improve energy consumption



【 Energy Management System Development 】