

Business &amp; Management 工商管理

# Hi-tech system raises the efficiency of apparel production

## 高科技系統提升成衣生產效率



The card reader of the RAME System can be set up in factory  
RAME系統的讀卡器可設置於廠房

PolyU has jointly developed the RFID-based Apparel Management Expert (RAME) System in collaboration with B&S Equipment Development Limited to facilitate accurate production planning and prompt control decisions by shop-floor managers.

理大與保誠儀器拓展有限公司共同研發出「RFID-based Apparel Management Expert System」(RAME系統)，有助廠房經理準確地進行生產規劃和迅速地作出管理決策。



Miss Janet Wong, Commissioner for Innovation and Technology, presents the awards to (from right) Mr Liu Kwok-keung, Managing Director of B&S Equipment Development Limited, Dr Calvin Wong, and Mr Laurent Lenoble, Operation Manager of Affirm Heart Far East Limited - industrial user of the RAME system.

創新科技署署長王榮珍女士頒發獎項予(右起)保誠儀器拓展有限公司董事廖國強先生、黃偉強博士及RAME系統工業用家現心遠東有限公司營運經理 Laurent Lenoble 先生。

Dr Calvin Wong Wai-keung, Associate Professor at PolyU's Institute of Textiles and Clothing, developed the system by integrating artificial intelligence (AI) and cloud computing technology on the radio frequency identification technology (RFID) platform. This innovation won the Gold Award in the "Innovative Use of RFID Technology" category and Silver Award in "Best Implementation of RFID Technology" at the Hong Kong RFID Awards 2012 organized by GS1 Hong Kong.

The RAME system has two modules. The first is a cloud computing-based production tracking and monitoring module that uses RFID technology to capture production data in real time. As the system is cloud-based, it is able to collect and consolidate production data from manufacturing plants located in different regions. The module also includes effective quality monitoring and control functions for production management to track and monitor quality defects in each product, and provides in-depth analysis and diagnosis of production progress and identifies potential production issues.

The second module is an AI-based production decision-making module in which algorithms can predict the efficiency of individual worker using historical and real-time data, and recommend how workers should be assigned to achieve production targets. It can also monitor whether assembly lines need re-balancing and how those lines execute instructions in real time.

With over \$3 million in funding support from the Hong Kong Research Institute of Textiles and Apparel (HKRITA), the system went through pilot testing in haute couture production by an apparel manufacturer that subsequently reduced labour costs by 8 per cent, increased production efficiency by 25 per cent and reduced production waste by 10 per cent.

理大紡織及製衣學系副教授黃偉強博士結合人工智能演算法、雲端運算技術及無線射頻識別技術，成功開發一套成衣生產管理方案系統(RAME系統)，並憑此項目奪得由香港貨品編碼協會舉辦的二零一二年「香港無線射頻識別大獎」的「無線射頻識別技術創新應用獎」金獎及「最佳無線射頻識別技術應用獎」銀獎。

RAME系統包括兩部分，第一部分是雲端運算生產追蹤及監測系統，利用無線射頻識別技術，收集即時生產數據。同時，由於系統以雲端運算操作，因此能收集和整合位於不同地區的生產數據，有效監察及控制品質，以便管理層追蹤及監察每件貨品的品質缺陷，為生產進度提供深入分析，識別潛在的生產問題。

第二部分是人工智能為基礎的生產決策系統，利用每名工人過往和即時的生產數據，預測工人的生產效率，建議如何分配他們的工作，以達致生產目標。這系統亦能監測生產線，判斷是否需要作出調整，以及監察生產線如何實時執行指令。

這套系統獲得香港紡織及成衣研發中心撥款三百萬元資助，並已經成功應用於一所高級時裝生產商的廠房，使其勞動成本降低8%，生產效率提高25%，生產廢物更減少10%。