The Hong Kong Polytechnic University
香港理工大學
凝聚智慧 創建未來
Innovation and Application for the Future
75th

PolyU's 75th Anniversary Innovation & Technology Showcase

Illustrating how PolyU's sprinkling of MAGIC has benefited our daily lives

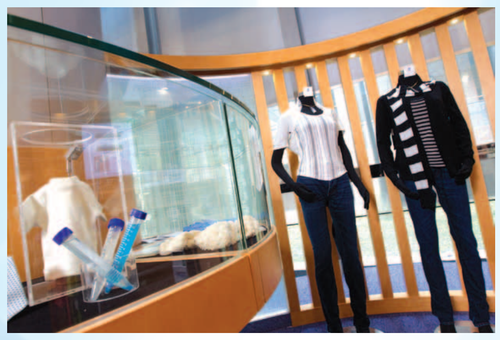
Institute for Entrepreneurship 企業發展院

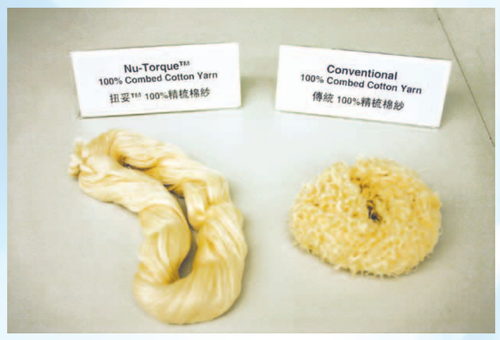
Cutting-edge Textile Production Technology
嶄新紡織科技

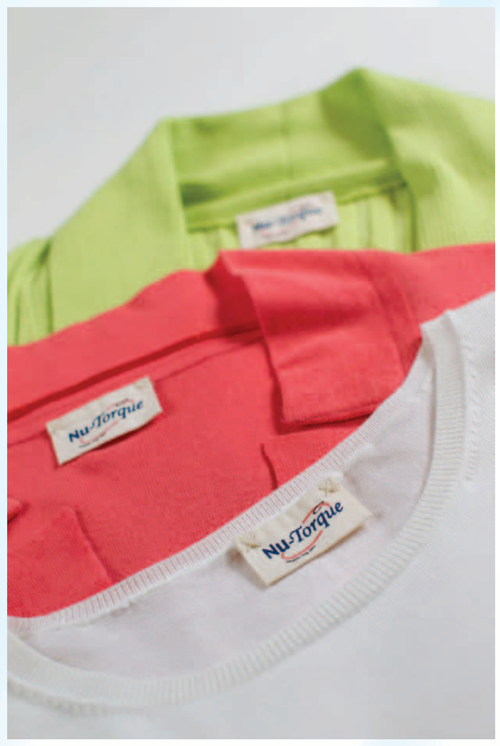
Current challenges

What will come to your mind when you hear Hong Kong's textiles industry? Local garment factories in the 60s and 70s, or the fabric dye shops featured in the movies? With the rapid urbanization of towns along with the rising standard of living, people's expectation on product quality has become higher and higher. This applies to textile and apparel too. To cater to the increasing demand of high quality textile products, clothing manufacturers have been exploring various technologies to improve their capability and enhance their production efficiency. However, the following two challenges remain unsolved for many years:

- To produce yarns with low residual torque and high strength
- To enhance the spinning system to make it more reliable, more economical and capable of mass production







Our solutions

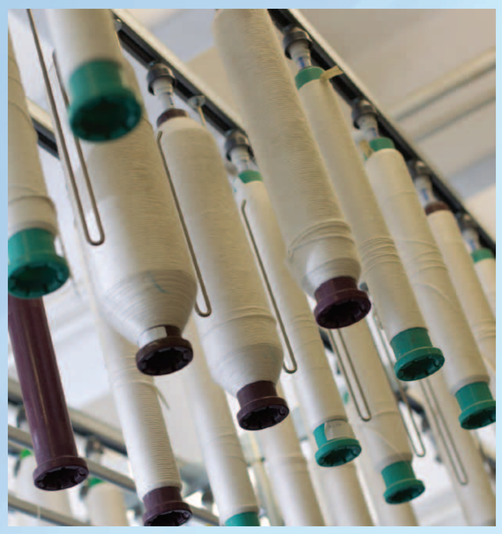
PolyU's breakthrough technology, trademarked as "Nu-torque", provides the means to produce singles ring yarn with zero or low residual torque and high strength. By simply incorporating a device to the existing machine, manufacturers can produce yarns with good quality, low twist but high strength and extra-soft hand feel fabric. This technology has been proven to be industrially practicable. It not only can save energy for spinning, but is also environmentally friendly.

Impact to the world

Nu-torque™ technology makes a revolutionary breakthrough in the textile industry by

- Saving cost by 10% (due to lower spirality and clearer surface with symmetrical loops)
- Saving 335 kWh of electricity per one ton of yarn produced
- Increasing spinning productivity by 25-40%
- No chemicals, no water and steam required for production

This technology is sweeping the global textile industry like wildfire. So far, seven companies from Hong Kong, the Chinese mainland, Taiwan, Thailand, Malaysia and Australia with over 500,000 machines have adopted this technology. From July 2005 to January 2010, the Nu-Torque™ singles yarns and textile products have been sold worldwide with a total sales value of over HKD 5.4 billion. This innovation does not only give us garment which is comfortable to wear and soft to touch, but also comprehensively enhances the industrial standard and competitiveness.



目前之挑戰

提到紡織業大家會想到什麼？是上世紀六、七十年代的製衣廠？或是電視/電影中的染布坊？隨着我們生活水平的提高，現今的紡織業亦需要不同的科技去提升產品素質，切合現代的要求。為滿足社會的要求，廠商需要一個既可持續發展，又能提高衣物質素的紡紗科技。多年來業界在尋覓新的科技：

- 以改善紗綫結構，達到堅韌，低殘餘扭矩
- 以提升紡紗設備，達到可靠，經濟，自動化的大規模生産

理大之解決方案

在傳統環錠細紗機上安裝一個簡單的裝置，即可控制紗線的殘餘扭矩及紗線張力。用該技術製成的紗線所生產的製成品手感柔軟、較輕，而且可以減低布匹歪扭情況、堅牢耐用，改善起毛起球的情況。

對世界之影響

Nu-torque™ 技術是紡織業一個革命性的突破：

- 針織物線圈對稱，歪斜情況得到很大改善，布面平整，織造成本可節省10%
- 每製造一噸紗即可節省335度的電能
- 紡織的生產力可以提升25-40%
- 純物理生產過程，不添加任何化學品，無廢水廢氣

這技術已席捲全球的紡織工業。到目前為止，包括中國大陸、香港、台灣、 泰國、澳洲在內的7家公司，總共超過50萬台儀器正在安裝。其針織物和服裝產品等，從2005年7月至2010年1月，已遠銷歐美及日本市場。本發明不單令衣服更舒適、耐用，同時提升紡織業界的水平。

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