

# A green bridge to China

For Taiwan's textile industry, a 21st Century transformation has resulted in a firm focus on sustainable processes and products.

Adrian Wilson reports from Taipei.

**T**aiwan's lead in recycled synthetic fibre processing has been surprisingly influenced by the charitable work of the Buddhist Tzu Chi Foundation.

This organisation – with its motto 'use the applauding hands to do environmental work' – has 76,462 volunteers worldwide and in the past five years has established nearly 5,500 recycling centres in 17 countries, with the bulk of them in Taiwan where it is headquartered.

The original aim of this was to turn discarded PET bottles into both blankets and bowls for use in Tzu Chi's disaster relief projects around the world. Such has been its success, however, that volunteers formed Daai Technology in 2008 to promote its Daai Tech yarn commercially,

with all profits pumped back into charitable works.

At the 14th TITAS – the Taipei Innovative Textile Application Show – which took place from October 13-15 at the Taipei World Trade Centre – Daai Technology showcased a range of garments made with its patent-pending process for producing 100% recycled polyester fabrics. These are available in white, green or grey – with the first two colours achieved completely without the use of dyes or additives and no contamination.

The company says its meticulous process for sorting PET waste bottles – carried out purely by volunteers at its centres – means the fabrics have the original colours of the collected bottles – although the grey fabrics are treated

## TAIWAN'S TEXTILE INDUSTRY

In the first six months of 2010 Taiwan's export sales have soared:

- Fibres worth US\$600 million +51%
- Yarn \$1,087 million +33%
- Fabrics \$3,256 million +59%
- Apparel and Accessories \$366 million +0.3%
- Other Products \$192 million +27%

with black master batches.

The use of additives at the fibre extrusion stage – cutting out the extremely energy and water-intensive dyeing process – has been perfected in Taiwan, and a wide range of such fabrics were on show at the 14th TITAS, notably by the country's three vertically-integrated chemical fibre producers – Formosa (FCFC), Far Eastern New Century, Libolon and Ho Yu.

## Transformation

It was around the time of the very first TITAS show in 1997, that the need for Taiwan's textile industry to transform itself was becoming very apparent.

At that time, the industry still consisted of around 6,000 mills with an annual turnover of T\$680 billion, but even so, the writing was on the wall for rapid change.

"It was the time of the first Asian financial crisis, but also of the huge build-up of textile operations in China," remembers Justin Huang, secretary general of the Taiwan Textile Federation. "We quickly realised we would be unable to compete in any way with China on volume, but we were also experiencing a labour shortage at that time, which added to our problems."

The response, he added, was to intensify R&D efforts, in order to combine fashion with function – mirroring the success of Japanese companies such as Asahi, Teijin and Toray through this approach, while retaining certain cost advantages.

## Recycling

The next stage of the Taiwan textile industry's transformation has been in terms of introducing sustainable processes and products – and in mastering recycling techniques.

"The influence of Tzu Chi in boosting



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The T-Man robot designed by the Taiwan Textile Research Institute incorporates flat knitting, circular knitting and weaving technologies.

## SELECTED INNOVATIONS

- 90,000 tons of PET bottles are reclaimed in Taiwan every year – the equivalent to four billion 600ml drinking water bottles.
- Garments made from polyester, polypropylene and nylon filament fabrics down to as fine as 5 dtex have been developed by a number of Taiwan companies, notably Formosa Taffeta. These extremely lightweight products have very interesting handles, and in some cases shape memory.
- The perfection of polyester solution dyeing by companies such as Nan Ya Plastics cuts out the dyeing process entirely, leading to a reduction of as much as 80% of water and energy consumption, as well as effluents and waste gases.
- Far Eastern New Century is making 100% recyclable laminate membranes from its Topgreen recycled range and FETretch and FETex breathable and waterproof films.
- Libolon's NanoRed is a far infrared PET yarn with nanopowders in sizes from 70-100nm blended during the polymerisation process. The yarns can absorb energy from sunlight or the human body, improving blood circulation and boosting the metabolism.
- Li Peng's Ecoflying recycling system extends to RePet recycled PET, recycled nylon fibre and Ecoya solution dyed yarns.
- Shinkong Synthetic Fibers is the first company in Asia to acquire certification from the Intertek Recycled Polyester Management System.
- Far Eastern and New Century have perfected the low-temperature solution dyeing of polypropylene, which in addition to environmental benefits allows end-products to retain their functional characteristics.

the use of recycled PET, in particular, has been significant, drawing on its volunteers for collection and sorting," said Mr Huang, "but at the same time, Taiwanese companies have invested heavily in bridging the technical gap required to produce successful recycled fibre, and our RePet products are now certified by Control Union."

The recycled products have also attracted considerable media and consumer attention, through both the disaster relief endeavours of Tzu Chi, and also high profile events such as the 2012 FIFA World Cup in South Africa, when both Adidas and Nike kitted out their teams in soccer strips made from Taiwan's recycled polyester fabrics.

## Partnerships

Functional and sustainable products now account for two aspects of the Taiwan textile industry's strategy going forward. A third is the increasing formation of partnerships involving both other countries and their individual companies.

One notable success story, is the joint venture between Formosa Taffeta and Schoeller, via which the Swiss company's well-known brands are being marketed to the Chinese mainland.

Mr Juang believes more will follow, but it's also a two-way street.

"We still have labour shortages in Taiwan, and there are positions within our

companies which can be filled with the talented young people in China, taking advantage of our research and development infrastructure. An important point is that we now have an intellectual property agreement with China too. There are many compelling reasons for European companies to look at entering China with the help of Taiwanese alliances."

The Taiwan Textile Federation also signed a historic trade co-operation agreement with European textiles and apparel body Euratex during the 2010 TITAS – just a month after the signing of the ECFA – the Cross-Strait Economic Cooperation Framework Agreement – between China and Taiwan.

"The ECFA means many Taiwan-made textile end-products can be exported to the Chinese mainland duty free – a big boost to their competitiveness," said Mr Juang. "More products will be added to the list in the coming years. This is very significant when you consider that of the T\$2.7 billion sales of Taiwan textile products to China last week, 69% of the value was swallowed by duty.

"Already the effects can be felt. For the first time at TITAS this year, more than one hundred booths were engaged by overseas exhibitors, with 25 coming from China, and the buyers of many international brands, such as Marks and Spencer, Puma, the North Face, Levi's and Red Fox made visiting their priority." ■