High-paced innovation in both performance features and environmental issues is how Taiwan's textile industry strives to stay ahead of the competition.

# Innovation rules at TITAS show

In its sixteenth year, the Taipei Innovation Textile Application Show (TITAS) 2012 brought together 333 exhibitors and attracted more than 27,000 visitors coming from 41 countries, up from 25,170 in 2011. The organisers, the Taiwan Textile Federation and Bureau of Foreign Trade, estimate the event generated $60 million in business. The country's main textile fair was held for the first time side by side with a ready-to-wear show, Taipei In Style, where 210 brands exhibited, a move designed to promote ties between the country's established fibre and textile manufacturers and its emerging fashion sector.

Despite the difficult economic environment, Taiwanese companies interviewed by *WSA* at the show were upbeat concerning the future. To support local manufacturers, the organisers invited representatives from 80 international brands who attended 850 one-on-one business matching meetings held during the event.

International fabric buyers readily acknowledge the high quality of fabrics produced by Taiwanese companies. More often than not, they come to Taiwan to find textile solutions for specific functional end-uses. "TITAS is the place to come for innovative knits. Taiwanese companies work with unique specialty yarns," says Chris Sentementes, vice-president of global sourcing for One Source Apparel. The double header programme, with Taipei in Style, was also seen as a positive move. For Tony Yeh, at Evertex Fabrinology, the atmosphere at the show was "livelier and more dynamic than previous editions".

Official statistics however indicate that business is not as brisk as usual for Taiwanese fibre and textile manufacturers. In the first six



*Yogawear is seen as a key market for knit manufacturers.*

Lululemon

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months of 2012, exports by value dropped in all categories (-17% for fibres, -7% for yarns, and -6% for fabrics) and in key markets (-18% to Hong Kong, -13% to China, -7% to Indonesia, -4% to Vietnam and -1% to the US). "It looks like the year 2012 will be worse than 2009," says Justin Huang, secretary general of the Taiwan Textile Federation. He does however see reasons to be optimistic as manufacturing costs rise in China and as an emerging consumer market begins to take shape, also in China. "China used to be the main export country for Taiwanese companies, now South East Asian countries are our main markets," says Mr Huang.

"Business is positive, but it is impacted by the economic context in Europe and North America," says Young-Chin Chen, assistant vice president of Formosa Taffeta Company (FTC), adding that innovation is essential. "It would be much more difficult if we did not develop new products."

The Taiwanese industry is supported in its quest for innovation by the Taiwan Textile Research Institute (TTRI) which works on a diverse array of projects, from fibres to finishes. The institute's yearly budget is NT$900 million, around €24 million.

"We are not cost leaders in the global textile market, our strength lies in innovation and in providing brands with added-value fabrics," confirms John Pai, sales and marketing director for Far Eastern Fibertech (the former DuPont company is a subsidiary of the Far Eastern conglomerate). Functional fabrics, eco-materials and fashion trends are the three key areas the company focuses on.

## Progress in ultralight fabrics

Taiwanese fabric manufacturers are betting on the continued success of puff jackets, presenting many variations on ultra lightweight downproof fabrics. The new standard is 7 denier, improving on the already ultra fine 10-denier fabrics. FTC's 7-denier nylon-6 fabric is said to possess a tear strength of 500 g. This is achieved by a yarn with a special twist and chemical additives, says Young-Chin Chen. A fine polyurethane coating adds surface effects to the range. In the ultralight eco-fabric category, the company's finest recycled polyester downproof fabrics are made in 15-denier yarns. Another company, Fabric King, has created a 7-denier polyamide fabric, which it says possesses a level of resistance comparable to a 15-denier fabric.

As down jackets continue to evolve towards fancier face fabrics, companies showing at TITAS have also expanded the range of materials suited to the garment style. Everest, whose double weave fabrics are a favourite for soft shells, has developed new ultra lightweight references. The company's lightest four-way stretch double weave (90% polyamide/10% elastane) is given a silicone finish, which blocks fine feathers and is quieter to the touch than traditional ciré finishes.

## Improved moisture management

With rising demand for enhanced wearer comfort in all situations, from endurance sports to everyday life, improving fabrics' moisture management is high on the list of priorities of functional fabric producers in Taiwan.

The textile research institute TTRI has developed an ester-based membrane in which hydrophilic particles are added to the polymer to improve its moisture management properties. This waterproof-breathable membrane is elastic (200% elongation), very fine (only 15 microns thick) and vapour transmission is said to be in the order of 40,000 g/m$^2$/24 hours. Aquatimo, the name given to a modified hydrophilic nylon yarn, is yet another high-comfort development from TTRI. "We have added a hydrophilic reactant to the polyamide monomer to improve moisture regain. The result is a cotton-hand fibre that dries faster than cotton," says Ta-yo Chen, TTRI's manager of the department of raw materials and yarns.

Top Cool +, a recent development at Far Eastern New Century, is a bicomponent polyester fibre with a cross-shaped section. The standard polyester fibre core is covered with modified hydrophilic polyester, which absorbs moisture to keep the skin dry and is said to lower skin temperature. "The dual composition reinforces the fibre's durability and makes the effect permanent," says Eddie Lin, a senior manager at Far Eastern New Century. In the field of thermoregulation, the company now offers Outlast filament, instead of staple, yarns. It is one of the few companies, according to Eddie Lin, capable of offering this type of product.

Enhanced wicking can also be achieved via printing, as seen at Maxland. The company recently introduced a new hydrophilic printing process for breathable and windproof fabrics to increase moisture absorption and keep the body dry. The fabrics can be quite lightweight, as light as 45 g/m$^2$ after coating, while offering a cfm rating of 1 and breathability measurement of 8,000, says Brian Ting, a Maxland sales manager.



*Functional fabrics for sportswear end-uses are the key focus of the TITAS show in Taipei. A preview of the new products was presented to trade professionals during a catwalk presentation.*
*TITAS*

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Yogawear is seen as a key market for many manufacturers who seek to attract the likes of Lululemon. "The soft hand feel of polyamide knits is a popular choice for yogawear," says John Pai, at Far Eastern New Century. The company has chosen modified polyamide yarns to offer enhanced moisture management in addition to a soft and smooth touch. Eclat Textile's performance interlock knits are made in such a way that the Spandex yarn remains invisible even when the fabric is stretched. "This product targets leggings and shapewear," says sales manager Jay Chuang. The company seeks to capitalise on the specific properties of knitted fabrics in terms of comfort and ease of movement from first layer to weatherproof outerwear.

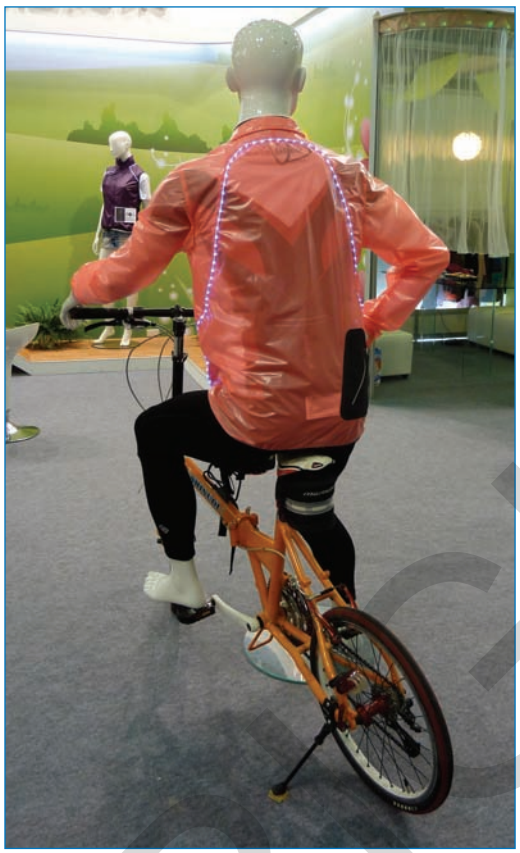
## Recycled PET, a new standard

The fabric collections shown at TITAS often include recycled polyester references, confirming Taiwan's focus on eco-fabrics. One of the key suppliers of post-consumer bottles is a non-profit religious organisation, DA.AI, a part of the Tzu Chi Foundation charity. Some 200,000 volunteers work for the organisation, collecting used bottles from all over the country for the fibre producers. Among the many companies that work with DA.AI, Libolon has expanded its selection of recycled yarns. "The lowest we can achieve now in recycled polyester is 1 denier per filament, compared to 0.5 denier per filament with virgin polyester," says Jonathan Lin, president of Libolon, the umbrella brand co-developed by LeaLea and LiPeng.

Far Eastern New Century has partnered with Coca Cola and Pepsi, in Taiwan, to secure procurement of post-consumer bottles. The company says recycled polyester now accounts for 25% of its production, and it plans to raise the proportion to 50% by 2015.

Singtex, the maker of S-Café, a fibre containing coffee-ground particles that are reported to offer odour control, UV protection and fast drying properties, is now adding the unconventional additive to recycled polyester yarns. For summer sportswear, a new Ice Cool version of S-Café contains a crystal additive said to provide a cool hand feel. Continuing research in coffee-derived substances has brought Singtex to investigate the potential of coffee oil in textiles. The ingredient has been added to waterproof-breathable polyurethane coatings.

Solution or dope-dyed yarns are yet another area in which Taiwanese companies seek to promote cleaner production processes. Fabric King has recently introduced a range of fabrics made with dope-dyed yarns under the D'Dye label. The five original colours (yellow, blue, red, white and black) can be blended to achieve different mélange effects, says Evonne Chu, sales manager at Fabric King. Libolon's Ecoya yarn-dyed range boasts a palette of 20 colours, doubling the ten tones previously available. Libolon points out that compared to standard wet-dyeing processes, Ecoya fabrics help reduce water consumption by up to 89% and energy use by 63%.



*At Fabric King, LED trims are now available in five colours (red, white, blue, green and yellow) and can be combined for two-tonal effects. They are powered by a battery weighing only 45 grams and generating 1200 mAh.*

*TITAS*

Finally, bio-based synthetics are yet another area in which Taiwanese companies are striving to "green" the sportswear industry. FTC uses the DuPont polymer Sorona, derived from bioPDO and produced by a sister company of FTC called Nan Ya Plastics. "This biopolymer has real potential as it is easy to dye and control throughout the production process," says Young-Chin Chen. "If a fabric made with these yarns is treated with a water-based coating, it will present reduced VOC emissions. But this is an area where there is still room for progress," he says, mentioning specifically the handle of water-based finished fabrics.

As the country makes progress on the environmental front, Justin Huang, secretary general of TTF, says the next step is "to monitor and promote our expertise in eco-textiles." Taiwan is a member of GAFTI (Global Apparel Footwear and Textile Initiative). Close to 30 companies have joined the working group, says Mr Huang, including Formosa Taffeta Company, one of the country's largest textile conglomerates. FTC sees GAFTI membership as a way to support the move to simplify and unify environmental standards and ultimately make progress on a global scale.

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