SUSTAINABILITY: TORAY



Innovating its fibre offering by using renewable raw materials is just the first step in Toray's strategy. It wants its new ideas to come to market as part of a "complete concept", involving finished garments that partners have made using its innovations. The latest examples, outdoor jackets that combine fabric made from sustainable fibres and sustainable down from Toray, will be on show at ISPO 2013 in Munich (February 3-6).

Fibre manufacturer has garments in mind

Japanese industrial group Toray is pressing ahead with its strategy of using more and more renewable resources in its products. At the start of 2012, a new 'hybrid engineering' project, which involves using renewable resources to make fibres, won one of the ISPO Awards as best product in environmental responsibility. This attracted a high level of attention from visitors to the 2012 edition of the Munich exhibition.

The first fibre to come out of the project was a polyamide, with castor plants grown in India supplying the renewable raw materials. This plant grows in dry regions, which means land use to produce it does not detract from food-crop production; it requires few pesticides too. Using biomass from the castor plant also means relying less on fossil fuels, with a corresponding reduction in carbon emissions for any fibre, fabric or garment that is made with it further downstream.

New year, new sustainable fibres

The story has moved on since then. Toray's marketing manager in Europe, Steffen Meiler, says that ISPO 2013 (February 3–6), and Outdoor Retailer Winter Market in Salt Lake City (January 23-26), will now host the global introduction of biomass-based nylon too. He goes on to say that the future is polyester made 100% from raw material sourced from biomass. Toray is carrying

The castor plant. Toray believes the future is polyester made 100% from raw material sourced from biomass.

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out the world's first 100% bio-based polyester production on a pilot scale. Polyamide and nylon are a reality today, even if, for now, only a proportion of the raw material is from biomass.

Up on down

He won't reveal names in advance of the exhibitions, but says visitors to these shows will see prototype jackets that combine textiles made from these new fibres, and Toray's sustainable water-repellent down product, Quix Down. "What we are introducing now," Mr Meiler says, "is a complete garment concept, together in a team with leading partners in key segments."

The company describes Quix Down as a sustainable thermal insulation programme. It uses real goose feathers. They are a by-product of the meat industry and come from white Koluda geese reared in Poland. Strict inspections from the Polish ministry of agriculture guarantee no live plucking of the feathers from the birds and Toray says that anyone who wants to can run a DNA check on the feathers to trace them back to official, controlled sources. "We know that feathers in down have been a controversial issue in the past," says Steffen Meiler, "but brands have looked at Quix Down and told us we are ahead of the curve. We have a special factory in Japan that makes the water-repellency treatment. It's unique; there is a catalyst that connects the chemicals and the down. This is our 'black box'."

Able to perform

Scientific tests in the field and in a special climate chamber have involved samples of the jackets these brands have made, as well as control garments. Testers didn't know the characteristics of the particular jacket they were given to wear and simply reported their findings and submitted their bodies for assessment. The tests showed significant results; there was less 'cooling out' for people taking part in strenuous activity if they were wearing the Toray garment concept. What this shows, Mr Meiler insists, is that as well as offering sustainable products, the garment concept is about "better performance"; Toray wants athletes to perform better with its products.

Fabrics for the jackets that featured in these tests come under the ecoShell category. Toray announced ecoShell last year, describing it as a highly functional hybrid shell material, with more than 60% coming from biomass and around 40% from conventional hydrocarbon-based raw material. It was only ever meant to be a first step and, as mentioned above, the vision for fabrics made from 100% biomass-based fibres is still very much part of the strategy.

Although it is always on the look-out for good alternatives, Toray still likes the castor plant as a source of its biomass-based fibres. It's non-edible (and can even be toxic in its raw state if not handled carefully), grows in the kind of challenging conditions that usually prevent farmers from using their land to grow food and represents a good example of adding much-needed value to a little-appreciated renewable resource.

Growing appreciation

Appreciation of its qualities may grow, though. Nature is often much smarter than humankind and Toray researchers have begun to look carefully at what appears to be an intrinsically hydrophobic functionality in the biomass-based nylon the company has begun to produce, hinting at what Steffen Meiler calls "excellent possibilities for outdoor garments" in future. Another advantage he perceives is that there is "no real limitation" on the density, or rather lack of it, that fabric manufacturers can achieve using these fibres; ten-denier fabrics feature already and Mr Meiler says Toray is now at the stage of going even lower. The drive for lighter-weight fabrics will continue, he insists. The company has no intention of compromising on important characteristics such as durability, but acknowledges that most people like the garments they are wearing to feel light, but also allowing athletes to perform better.

So the strategy of focusing on "complete and comprehensive concepts", such as combining Quix Down with fabric from biomass-based polymers, will continue. There will be further developments along these same lines, Mr Meiler promises. He talks of a one-stop concept, in which Toray will continue to work with its partners and customers to bring garments to the market. "We know our high-tech know-how and innovation are our unique selling points," Mr Meiler concludes "but we want to focus on garments because we can see that connecting the innovation to a complete concept is a way of accelerating our business. Sometimes, for customers, our innovations come to market too early, so we have been thinking about how best to bring these new ideas to market. We want the complete concept, to team up with our partners and support them in launching innovative garments onto the market with us, with shared brand management."



Sustainable fabric plus sustainable down means a greener jacket.
Toray

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