A common commitment to innovation has allowed Luxilon and Sofileta to offer an award-winning fabric that can cool athletes down.

New yarn delivers real performance

An Avantex Innovation Award for 2011 has gone to Belgian yarn manufacturer Luxilon and fabric manufacturer Sofileta from France, who have combined to make wearable materials from Luxicool, a new fibre that according to the judging panel for the awards offers "excellent cooling properties achieved solely through the performance of the yarn". Luxicool works by carefully combining hydrophilic and hydrophobic co-polymers. This makes evaporation of moisture so efficient, the manufacturers claim an athlete's body temperature can reduce by 1.7°C if fabric made from the fibre is in contact with the body. Dr Jan Laperre, chairman of the judging panel for the 2011 Avantex Innovation Awards, said on presenting the prize that several top tennis players and a professional cycling team have become involved in testing Luxicool in the field. Dr Laperre recognised that a difference in temperature of 1.7 degrees could make a great deal of difference to an athlete's level of comfort, and therefore to his or her level of performance.

This point has also been on the mind of Éric Firmann, export manager of one of the companies involved, Sofileta. He has spent 15 years serving the needs of the activewear market and insists this is the first time he's seen such an innovation on the yarn side. "It's genuinely new," he says. "It's not nylon, it's not polyester; it's something that didn't exist before."

Luxicool cannot be dyed yet, so the fabrics that Sofileta has been able to make so far have Luxicool on the inside and microfibre nylon on the outside, combining to make attractive products, Mr Firmann insists, with good handfeel and a high level of moisture management. They



Tests suggest that fabric containing Luxicool can cool an athlete's body by as much as 1.5°C.
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have come through a programme of testing at specialist Swiss research and services institution EMPA, which included the use of 'sweating torso' equipment, complete with 13 sensors, to simulate the effect Luxicool would have on a perspiring athlete. The tests compared fabric made from 42% Luxicool and 58% nylon with another made from polyamide microfibre and a commercially available fabric made from specially-engineered polyester fibres to improve breathability and moisture management.

The test method for simulating sports activity was to heat the 'torso' to 35°C, then to spray water in an attempt to reproduce the effect to that of sweat on the human body, and finally to cool the equipment down in a recovery phase. The test confirmed that, during activity, Luxicool appears to cool the wearer down by 1.5 degrees. "That's a lot," Éric Firmann continues. "If your child is ill and has a fever of even 0.5 degrees it can make a big difference." Conductivity is the key, he explains. Luxicool has a higher conductivity than the other fibres in the test, meaning that it can transfer heat more quickly, but it also has high resistance so it can stay cool for longer.

Because this is engineered in at yarn level, the cooling effect of the fabrics Sofileta has made will be permanent. "It will last the lifetime of the fabric," Mr Firmann says. "This is a completely different type of story to the ones you hear about with microencapsulation and essential oils, with things such as mint added to fabric to cool the skin. We are targeting companies that make clothing for any sweaty activity (running, cycling, but also some workwear applications because when people need heavy protection on top, a cooling effect underneath can provide a lot of comfort)." He believes running apparel will be a particularly important market.

In all, Luxicool has taken four years to reach the stage of apparel manufacturers and sports brands being able to take the fabric in their hands and imagine the possibilities. Mr Firmann says Sofileta and Luxilon have worked well together, aided by being similar in size –"the very big companies are not so keen to develop with us", and by being close to one another. Sofileta is committed to its French roots, he adds, part of a company that carries out circular and warp knitting, weaving, dyeing, finishing and lamination at its own sites in the south-east of the country. Its commitment to innovation is the key to its being able to keep production in France, he says. Its partnership with Luxilon and the development of fabric containing Luxicool are good examples of this commitment, as the Avantex award shows clearly.



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