A look at some new textile and fibre ideas that made their way into athletes' clothing at the XXI Winter Olympic Games in Vancouver.

Advances worthy of Olympians

The Olympic Games are still the pinnacle for most athletes, in winter no less than summer. And it's only reasonable for the skiers, skaters, sledgers, snowboarders and so on who travelled to Canada to take part in the XXI Winter Olympics in Vancouver and Whistler in February to have expected the sports textiles and apparel industry to work hard to help them perform at their peak at the event.

Athletes on the Dutch short-track speed skating team were among the first to wear a new single-layer skin suit from Swedish sports apparel brand Craft, at the Vancouver Games. The suit has plenty of Dutch connections. It was manufactured by Sportconfex, a sports clothing producer based in the city of Assen. Skating, as well as cycling, is one of Sportconfex's specialisms and it is a long-standing manufacturing partner of brands including Odlo, Asics and, of course, Craft. It made the new suit for the Dutch Olympians using nylon and Dyneema, an ultra strong polyethylene fibre that combines full body protection with lightweight, comfort and cooling qualities. The Dutch company behind the fibre, DSM Dyneema, claims that it is the strongest in the world.

Craft has said that one of the important advantages it is able to offer with the new suit is that athletes will no longer have to wear a protective layer next to the skin and a nylon suit on top. Explaining this further, Sportconfex chief executive, Bert van der Tuuk, says: "The traditional combination of a protective underlayer with a nylon suit on top meant that the overall outfit was too heavy and fairly uncomfortable. We have developed a new solution, involving a double-face single layer construction combining Dyneema and nylon. We are very excited about this new product and foresee many more opportunities for its use in other sports."

Short-track team-member Annita van Doorn says the new suit feels cooler than other clothing she has worn in competition. "That is a definite advantage in a warmer environment such as we will encounter in Vancouver," she adds. "It will also be nice to feel well protected with just a single suit, rather than having to wear several layers as before."



Wind-tunnel tested, Spyder's special suit for the US Olympic ski team.

Spyder

At DSM Dyneema, yarn business manager, Jaco Fok, says the whole organisation (which is more used to industrial and maritime protection applications), is "extremely proud" of playing a role in improving the chances of success of Ms van Doorn and her team-mates at the Games. He adds: "It really is fantastic to know that our sportsmen and women will be competing in more comfort with better protection."

Stealth garments

Further textile innovation was on display at the event from the US ski team, whose suits were constructed from a triple-layer bonded polyester knit fabric. The new suit's design keeps all seams protected from the wind to reduce wind-drag. And to keep sewn seam lines to a minimum, the padding for it, supplied by UK manufacturer d3O, is separate with the skiers having to put the suit on layer by layer.

The company behind the suit, winter sports apparel brand Spyder, says the end effect is that wind drag can be reduced by as much as 3%, which it works out as making possible a reduction in a downhill skier's time by a second. A second is a long time on downhill courses like the one at Whistler. And with the conditions there very much in mind, Spyder worked with engineers at the wind tunnel at the San Diego Air and Space Technology Center to test the new product in advance of the Games.

The brand's product director, Phil Shettig, explains: "We've looked at textures on the suits, and a lot of the research we've been doing over the past couple of years has been about how we get more slippery. We've taken the textures off; we've got a couple of new, proprietary knit surfaces that we've been working with, as well as the pads. We're decoupling the pads from the suit. We're turning them all into stealth garments and building them to take advantage of air-flow properties, and we believe that this is going to be a major, major advantage."

A ton of feedback

The aerotest engineering manager at the San Diego facility, Dave Sanford, confirms that this was the first time the wind-tunnel there has been used on a ski-suit. He says the biggest challenge was how to get an athlete into the tunnel—previously the preserve of aircraft—and hold him in position for long enough to be able to carry out the tests. The team-member who offered his services in the end was downhill specialist Steve Nyman. Giving his account of the experience, he says: "You're just sitting there feeling the wind, and every little movement, you can feel the difference that makes on the aerodynamics and the drag, and you can also see it on the monitor. It's cool. You shift your head and it will pull you this way, or you flap your arm out and your body's twisting back the other way. It gives you a ton of feedback."

For Phil Shettig, the main advantage of testing in the wind tunnel is that you can eliminate all other variables and only test the difference that each fabric makes.

With wind-tunnel testing complete, the Spyder team took its new ideas into the field for trials on snow on Mount Hood, the highest mountain in Oregon. This allowed the company to tweak the design of the suit, including the pads that d3O supplied. Mr Shettig asked a lot of his supplier, saying: "We've looked at the design of the pads, getting them thinner, but keeping the same amount of protection, keeping the pads long in the face of the wind, which is a great aerodynamic position, essentially building grooves into them, so that the air can flow over them."



Iceland's team in Vancouver received a range of clothing to wear at the official opening ceremony and around the Olympic village from sports brand 66°North.

66°North

Off course

Away from the tensions of competition, Icelandic outdoor clothing brand 66°North supplied a range of apparel for the country's Olympic team to wear for the official opening ceremony and on rest and training days. Iceland only had four athletes competing at the Games, all Alpine skiers—Bjoergvin Bjoergvinsson, Iris Gudmundsdottir, Stefan Jon Sigurgeirsson and Arni Thorvaldsson—which may make the clothing company's gesture seem slightly less magnanimous, but the company points out that it simply wanted to make a contribution to the country's Olympic effort. A lot of Icelanders live in the Vancouver area, it explains, and to see the athletes sporting Icelandic clothing in and around the Olympic village helped encourage support for the four competitors.

The 66°North clothes they got to wear included the Kaldi sweater and cap, Jadar trousers, Hlidarfjall skiing jacket and skiing trousers, Asia light jacket and Surtsey caps.

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