Snow might have been in short supply in Vancouver at the start of the XXI Winter Olympic Games, but new technology from Portland, Oregon, might still have been welcomed by the spectators.

Omni-Heat: the new hot topic at Columbia

Columbia Sportswear recently came up with a way of keeping sportspeople warm without causing overheating. Its Omni-Heat technology was inspired by NASA's space blanket technology, used in extreme situations to keep people warm. However, it needed to be adapted for use in active sports because when sweat builds up, the vapour needs to be able to escape, which the blanket technology does not permit.

According to Dan Trapp, country manager for the UK and Ireland, the risk of overheating can be very serious because if the body sweats too much it can lead to dehydration. "For the serious athlete Omni-Heat allows the body to regulate its temperature so they can stay out longer," he says. The company claims tests show that people wearing Omni-Heat garments use less energy so they can stay out longer and recover more quickly.

Constant warmth

The technology comes in three different forms. The first is called Omni-Heat Thermal Reflective and is a dot-matrix aluminium lining applied to a moisture-wicking, air-permeable baselayer. "A couple of other brands have used a reflective lining, but as a solid panel and basically you overheat because the moisture can't escape," explains Mr Trapp. "With Omni-Heat, if you do overheat, you're still able to sweat and the moisture is taken away from the body."

The lining also acts as a conductor, so if the wearer becomes too hot it can conduct heat away from the body, acting as a temperature



regulator. "A good example might be if you're skiing," Mr Trapp says. "If you're on the ski lift it will keep you warm and then when you're active again it keeps you at a constant temperature. We've tested it in real life situations so we know it does make a difference." The company is currently working with various test agencies to measure the benefit as, according to Mr Trapp, there isn't really a test that can demonstrate this in numbers at the moment.

One major benefit of the lining version of Omni-Heat is that it is visible, which, according to the company, is a first for warmth technology in outdoor apparel. "From a technical and an appearance point-of-view, visible technologies don't come along that often. It's something consumers can see in store, something they'll be drawn to and that will generate conversation on the shop floor," says Mr Trapp. "From a marketing point of view it's extremely important."

The lining boosts heat retention in apparel by at least 20% and can be used with the company's own synthetic fabrics or with down. "There are so many applications," he adds. "You can also potentially use it in a body mapping way." Another aspect is that it neutralises static build-up. "You often find with an insulation fabric that fibres migrate through and that's because of static," Mr Trapp explains.



Four of Columbia's footwear models now contain a thermoelectric heating system to keep feet warm even in extreme conditions.

Columbia Sportswear

Beating the competition

The second form the technology comes in is Omni-Heat Thermal Insulation. While there are already some excellent synthetic alternatives to down on the market, Columbia believes its version is superior. The technology has been tested in laboratories in Switzerland, Germany and Hong Kong with some interesting results. Independent testing agency in Hong Kong, SGS, found that the new insulation product had a CLO rating of 2.931 which, according to the company, is 30% better than the best-known competitor. CLO is the unit of measurement used when testing for thermal resistance.



According to the company, the Omni-Heat Thermal Reflective, the aluminium lining shown here, is the first visible warmth technology in outdoor apparel.

Columbia Sportswear

"Added to this, it has a very soft hand, it feels very much like down and compresses in the same way. It's very light and durable because of the way it is constructed," Mr Trapp claims. The three-dimensional ripstop structure helps maximise airspace and inside there is an ultrafine filament structure, which he says is a bit like a cotton wool ball as it traps warm air and is very soft. Furthermore, 50% of the polyester filament is recycled. "We're always looking for ways to use recycled material; we've been working to improve that over the years," says Mr Trapp.

The third form, Omni-Heat Thermal Electric, is currently only available for footwear and has been used in four Columbia shoe models so far including the Bugathermo Techlite boot for men and the Snowfall Thermo for women. The system uses heating elements throughout the footbed which are activated using a waterproof switch. When fully charged, the system can provide four to six hours of heat. Two of the models using the technology come with three temperature settings so that wearers can choose how warm they want their feet to be. "It's the ultimate cold weather footwear, which gives us a real competitive advantage," Mr Trapp says.

Democratic technology

Omni-Heat in its various forms has several advantages compared with other products on the market, according to the company. One important thing, it points out, is that when most innovations come out they're launched as top-of-the-mountain products, at the highest price points. However, Omni-Heat is available from as little as £20 in hats all the way up to £300 boots. "It's a democratic technology, not just for skiers in Whistler," Mr Trapp says. "It's also versatile; it can be used in jackets, bags, pants, even rucksacks, so it's broadly relevant."

He admits that Columbia had lost its way a bit in recent years from an innovation point-of-view but says there is now a real focus on bringing innovation to market season-on-season. "This will stand us in good stead for when the recession ends," he explains. However, coming up with new developments is no good if the benefits cannot be explained to the consumer. "We want consumers to understand what we're doing, to make it easy for them to grasp so we're doing our best to keep it simple," he says. "There's so much technology in the industry that's too confusing. I've been in the industry for 15 years and I've just about got the hang of it! I still read swingtags sometimes and think they could be quite alienating to some consumers."

One really effective way of communicating the benefits, he says, is to give consumers a first-hand experience of the technology. "It sounds quite cheesy to say it, but you have to feel it to believe it," he says. The company's showrooms contain giant freezers set to a temperature of -15°C. Mr Trapp says: "Customers come in, get the product on and get into the freezer. They feel super warm and, from a regulatory point of view, when they keep the product on in the heated room and find they're not overheating it is easier to understand." This, he claims, dispels a certain level of cynicism which always comes into play when a new innovation is launched.

"It's important to do something different, to have a unique selling point," he concludes. "The fact it is visible is a real commercial advantage. I can't wait to get the product into stores. It will be really interesting to see how consumers interact with the product."



Omni-Heat is versatile and is available in products across a wide price spectrum.

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