Schoeller Textil is the latest company to apply Far Infrared Ray technology to textiles and to present to the market arguments suggesting its new solutions can enhance sports performance.



Interest in Far Infrared Rays heats up

We have run several reports in recent issues of the potential benefits to athletes of wearing garments enhanced with technology that can reflect back to the body healthy radiation in the form of Far Infrared Rays (FIRs). We emit and usually lose lots of energy from the body, but body heat can activate mixes of minerals in a jacket, vest, pair of trousers, shirt or hat and the minerals can reflect energy back to the body in the form of FIRs.

For some athletes, FIRs can make a big difference to performance, increasing oxygen levels in the blood, delaying fatigue, helping people avoid injury, aiding concentration, promoting feelings of wellbeing, and allowing warm-up phases before competing to become shorter.

In 2010, the pit team for Formula One's Red Bull Racing began to wear vests devised by Cyprus-based company Fir-Tex Ltd, equipped with a mix of minerals to reflect FIRs back to the body of the engineers who race against the clock to get the team's cars back onto the track as fast as possible. Red Bull Racing won its first constructors' and drivers' championships in 2010, which may or may not be a coincidence.

Another company to have developed textile solutions using similar technology is US-based Celliant. Running apparel brand Courage Sports was an early adopter of fabrics containing Celliant, and the company has since attracted the attention of some big-name sports brands.

Now Schoeller Textil has entered the FIR trade, calling its technology energear. It has "a special titanium mineral matrix", which can be combined with various Schoeller fabrics. This means that other functions such as stretch, UV protection, weather-proofing and moisture management can be offered too. The possible uses and areas of application for energear fabrics include clothing for biking and mountain sports, trekking and hiking, motorcycling, skiing and winter sports, in workwear and military wear and also in city and street wear, Schoeller Textil has said.

The company's chief executive, Hans-Jürgen Hübner, makes it clear that energear has been put through its paces by people inside Schoeller. "We have quite a few people who run marathons," he explains. "So we made some softshell prototypes with energear for them to try out. This happened in the summer, so our

Golfers wearing hats and clothes enhanced with energear have reported greater stability in their swings.
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Swiss manufacturer Eschler has incorporated energear into fabric for ski suits to allow Alpine skiers on the Swiss team to try the technology out.

Eschler

runners sweated a lot, but what was remarkable was that some of them found their pulse-rate was lower than usual after a run."

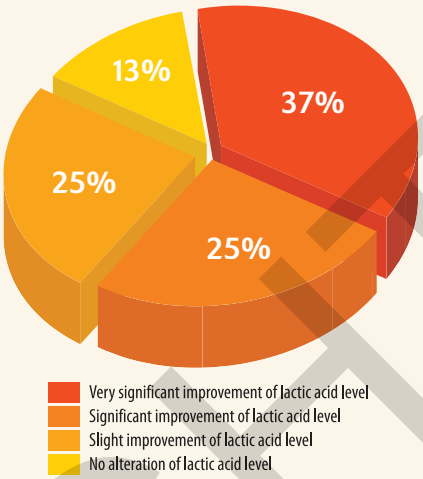
Since then, energear has also gone into fabrics made by Swiss manufacturer Eschler for new ski suits that the country's Alpine ski teams has agreed to trial. The new range incorporates the same high levels of breathability as previous suits have had, but with a layer containing energear bonded in. In early trials, skiers have fed back that they have experienced high levels of comfort while wearing the suits and even a sensation of warmth, to which Schoeller Textil believes energear may have contributed. Mr Hübner talks of this as being a feeling of warmth in the muscles such as a person might feel after a massage in which water-heated stones apply gentle pressure to just the right part of the body.

Other applications include energear-enhanced fabric for trousers for golf and climbing, and for cycling shorts. An early product is a hat that incorporates three Schoeller textile technologies: 3XDRY for quick drying and moisture management; Coldblack, which can help athletes stay cooler under heat by reflecting 80% of heat rays while also offering a minimum ultraviolet protection factor of 30; and now energear. Some golfers who have worn the hat already have said they have noticed more stability in their swings and others have mentioned receiving relief from headaches by wearing the hats.

The company says it is able to apply energear to fabrics in three different ways at the moment to suit customers' needs. It can be built into a membrane layer, woven into a softshell fabric (as with the prototypes the in-house runners tested last summer) or used as a finishing technology in which fabric can be dipped. This last option presents some limitations as the colour of the mix of minerals is, appropriately, an earthy brown, affecting the dyeing options.

"Some customers have reacted to this with a little scepticism, and I understand that because I am an engineer," Mr Hübner says. "But this is very old technology; we have known for a long time that the body emits FIRs. This is about finding ways of reflecting them back so that the body can benefit from them. You have to use real minerals, material that comes from the earth–it doesn't work if you use synthetic substitutes. The clients we have who are at least at the stage of making samples include some big, big names in Germany in market sectors such as trousers. It's interesting."

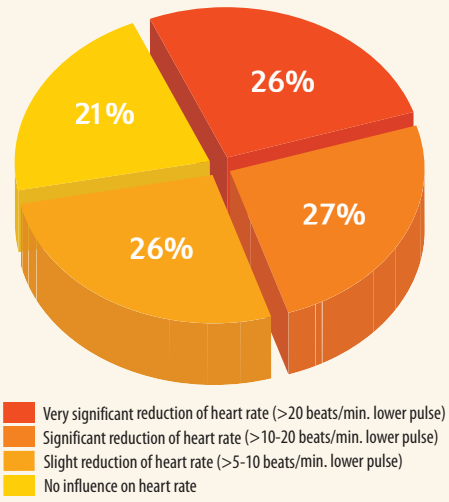
with energear™ after exercise



Lactic acid

Some of the people who have taken part in the trials Schoeller has organised so far have shown interesting readings in the levels of lactic acid in their blood during and after exercise. In many cases, the levels of lactic acid in subjects who had worn energear clothing during exercise were lower than those of test subjects with comparative clothing. Given the fact that an increase of lactic acid levels during physical exercise leads to more rapid muscle exhaustion, these results suggest to Schoeller that energear can enhance physical performance.

Influence of energear™ on heart rate



At heart

Other test results focus on heart rate. The energear clothing appeared to have a positive effect on the heart rates of some test subjects; in some cases, Schoeller said the heart rate was "considerably influenced" by the energear technology. In some cases the heart rate of the test subjects was reduced by up to 20 beats per minute. Although the human heart rate is dependent on many factors, such as age and level of fitness, a lower heart rate during exercise generally means an individual tends not to reach his or her personal limit of endurance as quickly, and can recover faster.

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