However well material has been developed and produced, its success or failure in use in a garment is totally dependent on how well the garment is put together.

The secret is in the seam

Historically we put garments together by aligning pieces of the same material and stitching them. The quality and extension capabilities are vital, as if the thread stretched differently from the material we would have a breakage. This somewhat unforgiving approach has been until lately very important, especially in menswear.

So what does Giovanni Mistura, of Mistura in Milan, have to say: "when I see a jacket in natural fabric I notice its beauty and lustre. Then I touch it and feel its softness, refinement and quality. I feel its comfort later, when I try it on.

"I touch the jacket, certainly. But in actual fact I am touching the components of the jacket, sewn together. Therefore, if the components are made of natural, non-elasticated fabric, that means that all things considered they are rigid components. How can a rigid fabric be made stretchy without modifying it?"

Mistura's solution was to make a classic suit which is as comfortable as an elasticated suit by introducing two-way elastic fabric inserts. Out of this was born the concept of the Mistura Seam launched in April 2004.

Seam technology is clearly a very highly technical area. It may sound easy to introduce seams with high levels of elasticity, but what happens if the seam recovery is poor, so that once stretched the seam does not return.

So in making a suit in a traditional fabric with the comfort of a suit made in an elasticised one, without loss of elegance in extended use, Giovanni Misura has had to work on a number of technological areas. And fortunately he has had a good response from tape manufacturers.

Take this one step further into the demanding sports area where stretch and waterproofness both come into play and it is apparent that this hidden element.

Increasingly we have seen new machinery and methods for creating seamless garments, not just via the highly publicised seamless sewing approach. There have been several sewing machine companies re-fitting their machines to accommodate adhesives in place of thread. In addition to this machinery, there are other equipment manufacturers making innovative strides in equipment used to bond and weld fabrics rather than sew.

Bemis is one of the technological leaders in this area with both its Bemis seam tape and the Sewfree adhesives.

Chris Parlee at Bemis Associates describes Bemis seam tape as "the critical link in the chain of waterproof protection". Seam tape is a thermoplastic adhesive film applied to sewn seams of fabrics to prevent water from leaking through the seams. They are designed to effectively seal seams for the life of the garment.

Their newest offer ST-304 has been reformulated, and is a three-layer seam tape with a total gauge measuring only 31mm (012"). Superior soft-hand characteristics are achieved with this thin gauge and unique polyurethane composition. The tape is laminated with a grey tricot that also exhibits soft hand characteristics.

Critically ST-304 adheres to tight or loose weave polyester or nylon tricots and features a softening point of 120°C (248°F) for efficient and consistent hot air sealing for straight and cross-over seams. The adhesive layer has a broad melt flow rate curve which results in excellent adhesion over a wide range of temperatures. ST-304 also has excellent wash characteristics and is resistant to dry cleaning.

This sort of tape is highly flexible as it can be applied by using any of the commercially available hot air taping machines. Applications extend from rainwear/outerwear through active-wear (skiing, snowboarding, cycling, sailing, climbing, paddling sports, hiking, hunting/fishing, golfing), to industrial work-wear and military garments.