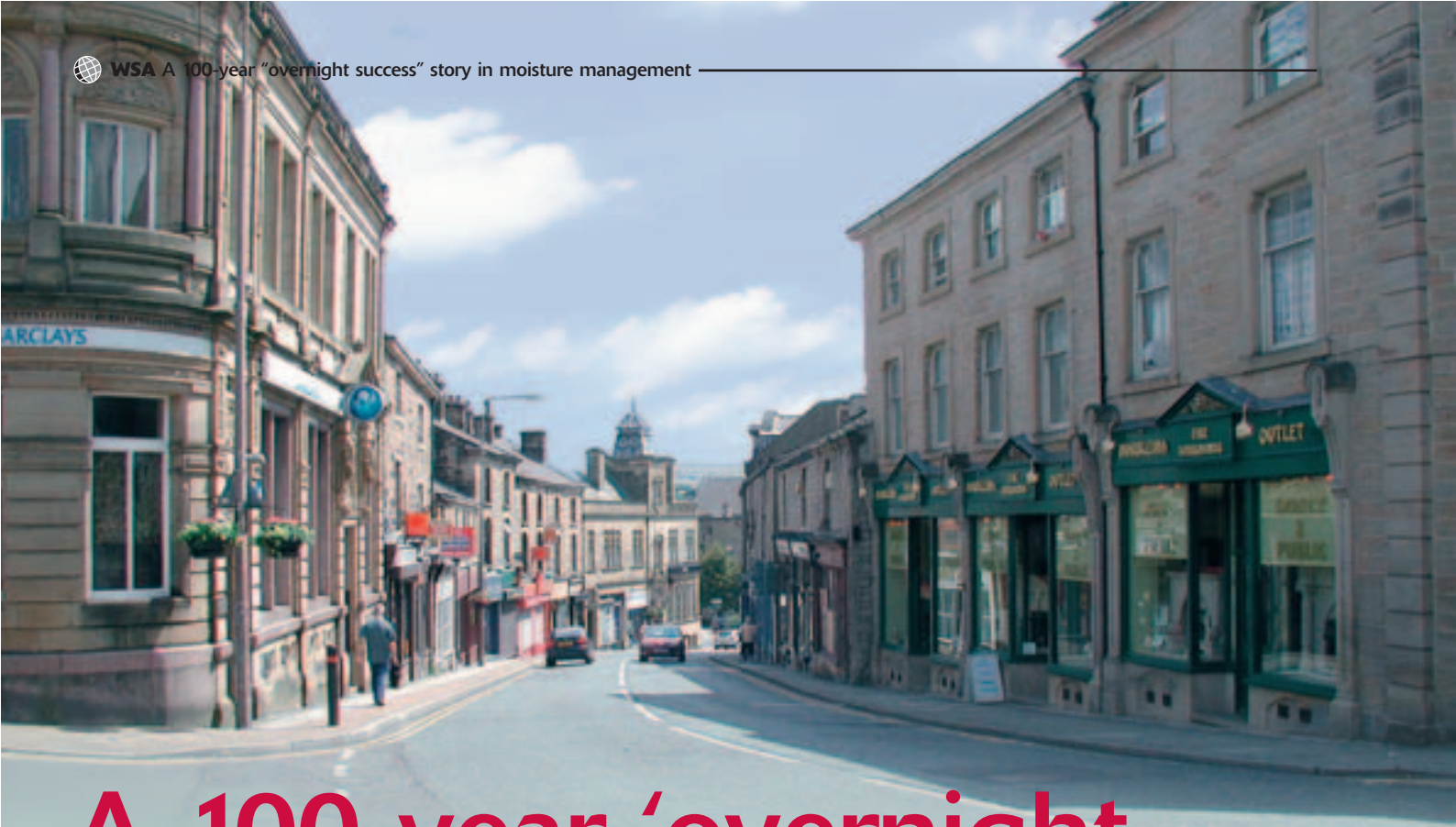


A 100-year 'overnight success' story in moisture management

The year was 1900…four years since Henry Ford had manufactured his first prototype motor car…one year since Marconi had made the first international radio transmission between England and France and three years before Wilbur and Orville Wright made their test flight at Kitty Hawk…it was a time of great optimism and technical advancement… when back in the traditional textile heartland of England yet another new cotton mill was opened.

Lancashire is an administrative district of Northern England some 200 miles north of London. Since cotton had ousted wool as Britain's prime textile export some 150 years before and the subsequent coming of the Industrial Revolution it had become the "workshop of the world". Padiham was a small market town typical of many in this area, which by the end of the 19th century already had nearly 20 cotton mills with 11,600 looms and yet a population of only 10,500. It was with this background that Perseverance Mills was opened as a specialist weaver of cotton. Over 100 years later and, not only has the company survived the decline that has blighted most of the industry surrounding it, but it has continued to go from strength to strength, with significant investment still being undertaken.

From balloons, typewriters and parachutes…

Now a major player in the technical outdoor market, the company's fortunes followed some of the major historical events and developments of the 20th century. In 1914 the company began to weave balloon type fabrics required by the UK government for the production of dirigible balloons to protect from air raids during World War I. After the war the company focused on manufacturing industrial fabrics used mainly for the ribbons in the typewriters that were becoming so popular. The outbreak of World War II then saw a revival in the demand for balloon cloths.

The decline in demand for cotton however led to the company focusing on weaving synthetic yarns for both the established typewriter ribbon business and a newly developed end use, parachute canopy fabrics - where the company is still a major innovator 50 years later.



The Rab Vapour-Rise jacket uses Pertex Equilibrium technology to create a comfortable micro-climate whilst maintaining the fabric's water-repellent finish.

Rab



Buffalo deploys Pertex fabric's weather protection properties in its Equimax Jacket.

Buffalo Systems

The highly experienced, respected (and some say eccentric), mountaineer, Hamish Hamilton approached the company in the 1970s with a new theory which was to alter the destiny of the company. Whilst developing the now legendary Vango Force 10 tents, Hamish theorised that cotton canvas canopy fabrics gained much of their water resistance by wicking moisture along the surface of the fibres within the softly spun yarns. In addition to this it was noticed that when boiling a kettle inside the tents there was no condensation as one might have expected. As Steve Laycock, the Pertex product manager, says, "Hamish's theory, and the company's subsequent trials confirmed in simple terms that Capillary Action existed."

The company then developed and tested these theories with some of its new, tightly woven fabrics which had been manufactured with some of the latest multifilament nylon yarns. (Fabrics which had actually originally been produced for use as impression fabrics for impact printing machines i.e. ribbons for typewriters.) It was discovered that due to their tightly woven construction, these fabrics offered excellent weather protection, breathability and comfort especially when users were active in cold and damp climates, without the need for any membranes or coatings. Thus the Pertex revolution had begun.

The Pertex Revolution

With an unrivalled history in "creating fabric solutions to a given set of problems" as Steve Laycock puts it, the company then used its extensive knowledge and experience to develop products that demonstrated the significant benefits of the capillary action of its fabrics, and this new innovation was given a name - Pertex- and registered in 1980.

The concept was simple: fabrics tightly woven with fine filament nylon yarns would create products which would remain very light, soft, and hard-wearing, whilst allowing small molecules of water to pass from the inside to the outside where they would spread out with capillary action and evaporate, whilst ensuring that light rain would be repelled, keeping the wearer comfortable.

One of the first products ever to be sold was a traveller's towel, extremely lightweight and fast drying, versions of which have since sold in their hundreds of thousands. This was closely followed by the development of the revolutionary Pertex/Pile clothing system launched by Buffalo Systems. A garment was made using a unique combination of a Pertex fabric and an equally unique fibre pile lining, creating a product which is windproof, lightweight, warm and resistant to rain.

Since these innovations over 20 years ago, through extensive development and research and working with leading experts in outdoor and mountaineering pursuits, the range has been continuously progressed and extended to fully address the needs of these markets and to utilise the latest advances in yarns and fabric processing.

- Pertex Classic has a DWR treatment to keep the wearer dry and comfortable, whilst staying lightweight and soft to handle, providing comfort and maximum loft for insulated items.
- Pertex Quantum is the lightest fabric ever made by the company. With weight savings of up to 50%, the fabric offers the best strength to weight ratio.
- Pertex Microlight uses some of the finest denier yarns available in a very tight weave to ensure that the fabrics are extremely lightweight and soft to handle.

Montane waterproof jacket and trousers.

Montane

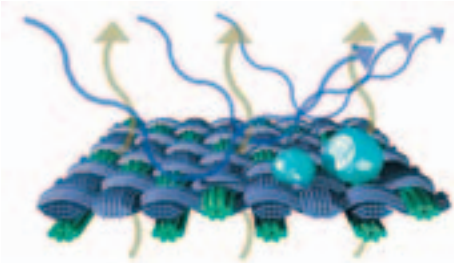


Equilibrium: noun: a stable situation in which forces cancel one another

In the mid 1990s, as they were travelling together on the road to Chamonix in France, Steve Laycock, and Rab Carrington, the pioneer, respected mountaineer and founder of the eponymous outdoor clothing brand were discussing the constant conflict that exists in balancing moisture management on the inside and the outside of 'active' outdoor apparel. It was during this alpine road journey that the idea for what would become Pertex's latest development was conceived. Knowing that the very fine, tight woven structure of Pertex was already successful in providing excellent weather protection, the key was in ensuring that moisture generated on the inside of garments was actively moved away from the body. The solution was to create a denier and density gradient system.

This concept was not totally new, it had already been seen in the past in knitted products for active sports which needed to





Pertex Equilibrium uses fine microfibre outer filaments to provide weather protection while coarse inner filaments transport moisture through the fabric.

Pertex

achieve a high degree of wickability where weather protection was not actually necessary (eg. DuPont's Aquator and Rhone Poulenc's Comforto). Achieving this moisture transfer effect with woven fabric technology was however a different matter entirely. Through extensive trials, Pertex managed to combine a coarse filament yarn on the inside of the fabric (creating a low surface area) with a closely woven multifilament yarn on the outside of a fabric (creating a high surface area). The technique was extremely successful in achieving a fabric with a very high rate of moisture transfer from inside to outside, where the moisture would evaporate rapidly, whilst the fabric maintained a hard wearing weatherproof shell. In addition to this it was also discovered that using coarser filament yarns resulted in a raised surface on the inner layer of the fabric which created a comfortable microclimate near to the body. The company believes strongly that this development is a vital innovation in addressing the demands of true "Soft Shell" garments, namely, optimum comfort when active whilst still remaining weatherproof.



Kathmandu's striking Cassium jacket.

Kathmandu

Patented in Europe, this unique technology was then branded as Pertex Equilibrium and immediately won the Outdoor Writers Guild Award on its launch in 1999. However not being a company wishing to rest on its laurels, a new development with the introduction of stretch yarns has recently been launched as Pertex Equilibrium Stretch. With all of the same benefits of the original fabrics, the addition of stretch properties is designed to provide greater comfort and freedom of movement.

The future?

With an extensive list of some of the leading outdoor apparel brands already using Pertex fabrics (such as The North Face, Berghaus, Marmot, Buffalo Systems, Rab, REI, Kathmandu) the company is very positive about its future. When asked the question about what the next development will be, Steve Laycock wryly smiles as he says: "There are some very exciting developments we do have in the pipeline but, as always, we are committed to producing the right products at the right time, whether that will be for one of our own or our customer's projects."

Although there is increased competition from low cost manufacturing across the globe, the Pertex story is yet another demonstration of the fact that a strong commitment to technical innovation, which delivers the right product for the right end use to the highest quality standards, is still successful even after all these years. Whilst not part of the "workshop of the world" anymore, Padiham in Lancashire can still proudly lay claim to playing a part in the global textile industry.