

Spinning a new yarn

In the yarn and textile industry, the terms 'innovative' and 'new' are often used where a more apt phrase would be 'same-old-same'. We are constantly told how the latest product to be unveiled is 'state-of-the-art technology' or a 'breakthrough in innovation', when in reality it's nothing more than a new version of an old product with maybe a few added extras – nothing more than a new spin on an old yarn. Due to the phraseology adopted in press releases and marketing material it is no surprise that we are often slightly cynical of the truly innovative nature of these products because of the hype, but this is a dangerous path to take as one risks missing a 'true innovation'. This has certainly been the case in recent weeks. Whilst the majority of Europe has been basking in the sunshine on their summer holidays, developers at some of the world's best known yarn manufacturers have launched a number of new yarns and finishes that are worthy of attention.

DuPont takes up the challenge

Although DuPont's new Active Layer is being touted by some as being aimed at competing directly with Gore-Tex, this is a new product and has new properties that are unique to it. Launched at the recent Outdoor Retailer show in Salt Lake City, Active Layer is a scientifically engineered monolithic film that offers breathable, waterproof and windproof protection, whilst allowing excess moisture to escape. It was designed to be used in a wide variety of products from sportswear, rucksacks and sleeping bags to protective apparel and bedding and works on the principle of moisture movement by absorption on the inside face, transporting it through the film by water vapour diffusion, and finally evaporation from the outside face of the fabric. Nothing very new so far, but this film is innovative in many ways.

The most important development is that, in contrast to microporous structures, Active Layer is not porous, therefore it is said it cannot become clogged and lose its ability to transport moisture vapour. This means that it does not lose its functional properties. It also has good stretch properties that greatly reduce the risk of tears. Furthermore, in the eco-friendly environment of today, one great advantage in DuPont's latest development is that when used with 100% polyester it can be recycled, which is an important factor for today's consumer.

Improving on nature

Another new product that has arrived on the scene recently and is worthy of some attention is

Cotton Incorporated's new Tough Cotton.

A series of technical developments from Cotton Incorporated's Textile Chemistry Research Department have led to a new concept for a wrinkle-resistant finish known as Tough Cotton. It enables an all-cotton fabric to look good and last longer, while maintaining a smooth appearance after home laundering.

Traditional wrinkle-resistant finishes lower the strength of cotton and tend to reduce abrasion resistance. Compared with these finishes, Tough Cotton has about 20% better tensile and tear strength and boosts abrasion resistance typically by 300%. Other benefits of the finish are: shape retention, shrinkage control, quicker drying, easier pressing, inhibiting pilling and fuzzing, and improved crease edge abrasion.

"The Tough Cotton finish will fulfil an industry need to improve the wear life of durable press cotton garments," says H. Kenneth Greeson Jr., manager, Textile Chemistry Research, Cotton Incorporated. "This is something that people world-wide have been seeking for decades."

All very interesting so far, but although these are positive developments for manufacturers and for end-users i.e. the consumer, there is nothing really new about the fundamental fibres involved. Without doubt they are important developments and they are innovative, but these are new concepts rather than new products in their own right. So, is there actually anything new on the market? In short, the answer is 'yes'. There are several products that have been launched recently that should be described as brand new innovations in the world of textiles.

Unifi unites performance

US-based producer and processor of multi-filament polyester and nylon textured yarns, Unifi, already has a wide portfolio of brands on the global market that includes Sorbtek, A.M.Y. Mynx UV and Reflexx. But the company has gone one step further and has now combined the separate properties of these brands into a single multi-faceted yarn to offer a higher level of performance. Unifi's aio all-in-one performance yarns can offer performance properties such as wicking, stretch, anti-microbial, and UV protection in a single yarn to offer consumers function, comfort, and shape retaining sportswear and outdoor apparel.

Unifi has really achieved a new product in aio, a bespoke yarn. It is not simply a new yarn with new properties, it can be customised to meet the apparel manufacturers' specific requirements. It can incorporate any, or all, of the functions offered by Unifi's established yarns, whether it be the moisture management of Sorbtek, the bacteriostatic properties of A.M.Y., the stretch,

durability, and colour retention of Reflexx or the UV protection of Mynx UV.

"With aio all-in-one performance yarns, you can get all of the performance properties you want and need in any combination," says Roger Berrier, commercial operations manager at Unifi. "These yarns can be fully customised, with an endless range of possibilities and applications, and the properties are inherent in the yarn so it is made for endurance and permanent performance."

This development means that Unifi can now supply manufacturers with the yarns they need to fulfil the demands of an ever more demanding and knowledgeable consumer, who may have a pre-conceived idea of the functions he/she wants in performance apparel. Meeting consumer demand is now, more than ever, the driving force behind new fabric and yarn developments and increasingly brands are collaborating with developers to produce yarns and finishes that meet these demands. Nike, as the largest sports brand in the world, knows better than most the importance of producing the goods that consumers want and it is as a result of such collaborations that true innovation is achieved. It's latest joint development programme with Teijin Fibers Limited (TFJ) has led to the launch of a next generation 'self-regulating' fibre that was recently launched by TFJ for Nike's 'Sphere React' range.

TFJ enters a new dimension

TFJ's new fibre, provisionally named Responded Transformable Fibre (M.R.T.), is the result of a project that began in 2002, when Nike approached the company with its Sphere React concept. The two companies collaborated intensively to create a fibre that would offer the properties that were required to produce a new sportswear range for use in golf, tennis, soccer, running, and outdoor activities. M.R.T. is a 'self-regulating' fibre that undergoes structural changes to adapt to the wearer's environment by stretching when moisture is absorbed and shrinking when it dries again.

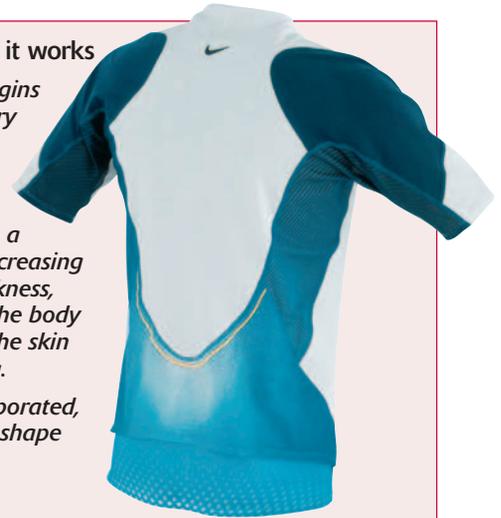
In order to do this, TFJ had to create a new polymer, a new polyester ester polymer, that absorbs and discharges moisture quickly, and new yarn making technology, for controlling the amount of moisture absorbed and discharged, the degree of stretch and shrinkage and the response speed of this. This has resulted in not only a new textured yarn, but also new weaving and knitting, and dyeing and finishing technologies, which have been combined to produce yarns that control shape changes and the breathability of the fabric in moist environments. This new technology is without doubt innovative, so much so that there are already 16 patents held for it in Japan, whilst another three international patents are pending.

A yarn worth listening to

It appears that when it comes to the

Nike Sphere React Dry – how it works

- *As the athlete heats up and begins to sweat, Nike Sphere React Dry is activated.*
- *Upon contact with perspiration, the M.R.T. fibre transforms from a flat fabric to a three-dimensional structure, increasing to nearly twice its original thickness, holding the fabric away from the body and increasing airflow across the skin which aids evaporative cooling.*
- *Once the perspiration has evaporated, the microfibre returns to a flat shape against the body.*



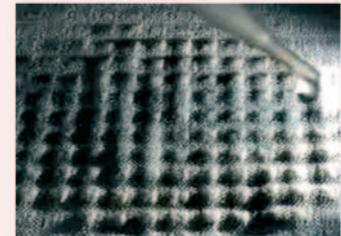
Nike Sphere React Cool – how it works

- *As the athlete begins to perspire, the M.R.T. fibre opens up becoming more breathable to allow increased airflow across the skin.*
- *The fabric reacts to the moisture to become up to twice as breathable.*
- *As the body cools, the fabric returns to its original shape.*

Change of Dimension (Nike Sphere React Dry)

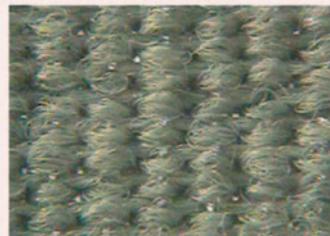


DRY : FLAT (2D)

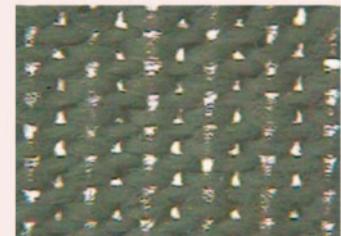


WET : CONVEXO-CONCAVE (3D)

(Nike Sphere React Cool)



DRY : CLOSE



WET : OPEN

Data evaluating stickiness during perspiration (Measured at TFJ's Osaka Research Centre)

 Teijin Ltd.

developments being made in the sphere of yarns and fabrics recently it's no bad idea to actually believe the hype. With new properties and advances being made in known technologies and completely innovative products being launched onto the market, the future for yarn innovation is an exciting area to watch. Although it remains true that most products in this sector are marketed on their innovative, uniqueness, it is well worth wading through the information available in order to separate the wheat from the chaff. If not you could easily miss a crucial development in an industry where standing still just for a moment can mean that you are out of the race for good. 