TRENDS IN APPAREL + FOOTWEAR DESIGN AND INNOVATION + JANUARY/FEBRUARY 2020 + A FORMULA4 MEDIA PUBLICATION

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TEXTILE TALK | EMILY WALZER

Will Performance Define Outdoor in the New Decade?

was caught off guard at a trade show recently when an exhibitor stopped me in the aisle and asked what I thought were the most influential trends of the past decade. I felt like I was on a game show and had to buzz in my answer quickly so as not to be eliminated from the conversation. Off the top of my head I responded: "sustainability," "speed to market," and "active lifestyle." The exec nodded in a manner indicating for me to elaborate. I ventured on, rattling off a number of climate-positive examples of material innovation and supply chain practices introduced during the past few years. I made a case for speed to market pointing out the fact that new product is now presented constantly and seamlessly year-round, with no regard to season, or traditional time lines. I explained that in fact I had attended a seminar about consumers' "want it all, and want it now" expectations. Fairly out of breath at this point, but determined to fulfill what I now deemed an impromptu work assignment, I mentioned to the exec how an increasingly urban-centric outdoor audience over the past decade played a big role in ushering in a new breed of comfortable, versatile fabrications that fit the everyday needs as well as the fitness requirements of our

24/7 on-the-go culture.

These trends take shape on the following pages. Stories explore how textile suppliers re-frame innovation in new and different ways, and how small companies are having a big impact using textiles to tell stories that align with customer values. We spotlight multi-tasking textiles that raise the bar on apparel and footwear tuned for travel, workwear and service industry professionals categories to watch in 2020 — and provide updates on cotton, wool, microfibers and insulation essentials.

But here's the thing: where does this leave performance? Has our planet-saving state of mind pushed performance aside? Does the desire for comfort and convenience take an important edge off of hard-core functionality? Is low-impact the new high-tech?

Textile driven performance put outdoor on the map, and yet "performance" wasn't on the tip of my tongue when asked about game-changing industry trends. I like how my North Face parka keeps me snug while waiting on the platform for the 7:08 train from New Haven into Grand Central on a stormy winter morning. And my hiking buddies swear by their SmartWool baselayers. This beenthere, done-that functionality is all well and good. But at the upcoming trade shows, it will be my turn to ask that exec: How will performance influence the next decade? In the meantime, feel free to buzz in with your responses. I welcome your thoughts!

Happy 2020,

Emily

Has our planetsaving state of mind pushed performance aside?

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IN THE MARKET | OR+SS PREVIEW

Eco Performance in Lightweight Weather Protection Directional in Fall/Winter 2020.

Warming Trends



A variety of looks from the Concept III x Lenzing Tree Climate collection.

Latest developments tie nicely into today's market trends of individuals looking for quality products with sustainability stories and branded materials that they can trust. nnovation is in high gear for the season ahead as textile suppliers continue to explore new and improved ways to deliver lightweight, yet highly functional fabrications for cold weather wear. Advancing product development and supply chain practices that focus on sustainability is also a key element of introductions slated for Fall/Winter 2020.

Important too are upgrades in membrane technology. This category has gotten buzzy in recent seasons with an uptick in e-spinning capabilities and creativity around air permeability in waterproof/ breathable fabrics.

Eco remains a central talking point. Recycled, biodegradable, regenerative, compostable, upcycled, bio-based, plant-based, climate-positive, net-zero impact, or mono-material construction are all aspects of today's material world, and part of the conversation not only in textile circles, but throughout the Denver Convention Center.

Other categories to keep an eye on at OR+SS are performance knits; recycled materials with improved aesthetics; and durable materials that promote "longevity," a trending word for 2020.

These latest developments tie nicely into today's market trends of individuals looking for quality products with sustainability stories and branded materials that they can trust.

Here's what's on tap for the season ahead:

W.L. Gore releases a new version of Gore-Tex Pro, the first update in seven years for its flagship waterproof/ breathable. Previously a single fabric technology, the new Pro is differentiated into three products: one optimized for 20 percent stretch, another for breathability, and a third for durability, allowing apparel makers to tailor the tech for specific activities. The new Gore-Tex Pro features recycled content materials and solution-dyed backers to minimize environmental impact.

Toray unveils new technologies that provide significant upgrades regarding fiber production from PET plastic bottles. One technology produces a pure white fiber, providing greater end use applications, while the other new tech offers a proprietary traceability system that can identify specific contaminants in the raw materials. Toray has created a new brand called "&+" to market the development.

Concept III Textiles showcases sustainability throughout its collections, including a new collaboration with Lenzing. **Solution dyed** products that check all the boxes in terms of eco and performance for color will preview along with lightweight, high pile Sherpa fabrication ideal for outer midlayer warmth. Hardworking durable fabrics developed for modern workwear are top of mind for brand partners such as Carhartt and several others.

Cordura highlights award winning knits, new brand activations and a re-position for the consumer market. On display, the ISPO Textrend award winning **Cordura 4Ever collection** of softened strength knits and Performance Natural wovens that include 2 and 4-way stretch Cordura denims, and performance Cordura Combat Wool with filament integration.

Schoeller spotlights its new aerobrane e-spinning membrane technology, the **PROEARTH collection** of biodegradable textiles, and wool updates, including recycled wool and wool blends with performance tech. In development for four years the aerobrane membrane's unique structure consists of an ultra-fine, hydrophilic polyurethane fiber composite that differs from other film-based membranes and offers a softer feel and beautiful, fluid textile characteristics. aerobrane features in Outlier's Experiment 200 "Ecstasy in the Rain" jacket launched in December.

Unifi previews sustainable and technical developments, an evolution in activewear knits, and program initiatives. New is availability of Repreve cationic qualities in response to demand for performance heathers but with recycled polyester. The company also spotlights the Repreve Our Oceans, a global initiative that works to prevent bottles from entering the waterways via programs in coastal areas of development regions. 33 percent of the flake that goes into the yarn of a 100 percent Repreve will come from coastline identified post consumer bottles

HeiQ adds bio-based thermo-functional polymer products to its **HeiQ Smart Temp** family for a full range of intelligent thermoregulation triggered by body heat. The newly introduced products add dual-action cooling at contact to the already successful dynamic evaporative cooling technology. The HeiQ Fresh product category of odor control technologies will also feature.

Pertex takes a strong sustainability stance with the launch of the superlight 10-denier Pertex Quantum made from 100 percent recycled nylon, and YFuse fabrics made from 100 percent recycled polyester and 100 percent recycled nylon. The company's ambitious eco targets for 2022 include that 80 percent of fabrics produced to contain a minimum of 50 percent recycled content and 100 percent of fabrics produced to use non-fluorinated DWR finishes. •



SUSTAINABLE TEXTILES AND TECHNOLOGIES FROM SCHOELLER

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Founded in 1868 with headquarters in Switzerland, Schoeller Textil AG is a global leader in high-performance textile manufacturing, specializing in the sustainable development and production of innovative textiles and textile technologies. As a system supplier of solution-oriented products, Schoeller addresses specific customer requirements and supplies its customers and partners with tangible added value.

IN THE MARKET | OR+ SS PREVIEW

Brands Serve up Functional Fabrications that Deliver Comfort in the Cold.

Fresh Takes on Technical

he latest looks for Fall '20 reflect how performance is interpreted for the new decade. Gone is the conventional hard-core, rugged approach to functionality defined often by over engineered pinnacle product, restrictive in everyday comfort and style. What's happening now is environmentally mindful development and design driven by comfort, creativity and street attitude, in functionally proficient product. In other words, clothing and footwear made with materials that can withstand whatever Mother Nature has up her sleeve in terms of cold, windy and wet conditions, but conceived and constructed for today's active, eco-aware outdoor audience. A selection of new styles are shown here: •



Patagonia's R1 Air collection is made with a lightweight technical 5.7-ounce, 100 percent recycled polyester jacquard fleece that has hollow-core yarns in a unique zig-zag pattern to regulate body heat, and HeiQ Fresh durable odor control. The fabric is bluesign approved and Fair Trade certified sewn.

Synchroknit by Wigwam technology debuts in Trail Junkie and Snow Junkie Merino wool styles. Synchroknit technology creates a precision fit that is enhanced by the luxe feel and durable functionality of Merino.



The North Face's Summit L5 FUTURELIGHT Ventrix Jacket is super-breathable with stretch synthetic insulation. Intentionally not a fully taped, the shell provides storm protection without overbuilding the garment.



The Flylow Kane Jacket's Intuitive Perm fabric is ultrabreathable yet achieves a 20k waterproof rating in a super-light, no gimmicks backcountry jacket.



Yulex plant-based rubber alternative is used in this men's Bozeman Tall boot style from BOGS.



The Women's Solice boot by ECCO features PrimaLoft BIO, a 100 percent recycled, biodegradable synthetic fiber insulation.

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IN THE MARKET | ECO UPDATE

Advances in Sustainable Material Development & Ethical Textile Production.

Turkey Raises the Bar in Eco Responsibility

■ he organic farming industry has boomed in Turkey: Between 2002 and 2016, the volume of organic goods production has increased almost seven-fold. and the number of organic products available increased by 50 percent.

Soft and breathable, Turkish organic wool and cotton are increasingly used in a variety of end use applications from children's wear and home textiles, to intimate apparel and mattresses. Driven by the country's strict organic agriculture laws, established in 1994 and strengthened in 2004 as part of EU harmonization policies, Turkey has emerged as a leader in the production of top-quality sustainable fabrics.

Specifically, the number of different organic products offered by Turkish producers increased from 150 types in 2002 to 225 types in 2016. The nation's 698 percent increase

mill to be awarded Oeko-Tex



"Responsible Innovation" through the development and implementation of best practices, ISKO fulfilled the certification's strict requirements, relying on six different modules to assess important areas of production. This follows ISKO being awarded both the rigorous EU Ecolabel and Nordic Swan Ecolabel previously. These achievements are in line with the denim manufacturer's goal of 100 percent sustainable and ethical denim production based on three main pillars: creativity, competence and citizenship.

According to the company this new certification highlights where even better choices can be made, aiming at implementing responsible production processes in the long term by assessing six different areas of production conditions. These are Chemicals management. Environmental performance, Environmental management, Social responsibility, Quality management and Health protection and safety at work: Together they provide an overall analysis that documents ISKO's responsible commitment in a clear and complete way.

STeP integrates the independent verification system Detox To Zero by OEKO-TEX, allowing businesses to determine the status of chemicals management and wastewater quality in compliance with the goals of the Greenpeace Detox Campaign.

"Responsibility and innovations go hand in hand, at ISKO," explained senior sustainability and CSR executive Ebru Ozkucuk Guler. "To be awarded with such a prestigious certification is proof that one has to look at the big picture: sustainable actions need to involve and take into account the entire value chain, in the long run, considering not only production steps but also the development of a healthy and safe work environment."

Alternative Leather Comes to Market



FW focuses on developing technologies based on the sustainable use of plants and natural fibers. The Peoria, IL-based firm's latest innovation is an alternative leather called Mirum. A high-performance plant-based material, Mirum uses 100 percent natural inputs and is completely free of petroleum-based plastics. Mirum will decompose a garden and can be recycled into new goods. The material debuted at last year's London Fashion Week in the collection of FELDER FELDER.

The company has recently brought on Oihana Elizalde as general manager of the Mirum business unit of NFW. Previously, Elizalde served as director of technology at BASF, the world's largest chemical company strongly focused on sustainability. Elizalde's career started in materials science research and development, helping companies in multiple industries transform their products at a molecular level to be safer and more sustainable.

Her hire comes on the heels of NFW's hire of Greg Stillman, previously of Fashion for Good, as director of business development.

In addition to Mirum, NFW, founded in 2015, has developed a natural materials platform. The company's Welded Fiber Technology consists of closed loop processes and clean chemistries that produce durable items that have a positive impact on the environment.

in overall output of organic materials is noteworthy, with production volume increasing from 310 thousand tons in 2002 to 2.5 million tons in 2016. **Certified Responsible** ISKO is the first Turkish

STeP certification. Fostering



Hyosung Expands Recycled Offering

or 2020, Hyosung will introduce its regen collection of 100 percent recycled multi-function, performance fibers (spandex nylon and polyester). The Korean textile supplier highlights three new qualities. Specifically: creora regen spandex, made of 100 percent reclaimed waste (pre-consumer); Robic regen, the first recycled, high-tenacity nylon made from 100 percent reclaimed waste for tough gear like backpacks, bags and workwear: and multi-function recycled cooling nylon and polyester fibers. •

Investing in Sustainability

mphasizing a responsibility to focus on the climate crisis and plastic waste in the ocean, Vaude director Antje von Dewitz, said in a recent keynote address, "We need everybody on this path. The new reality is that brands need to serve a purpose." Vaude is considered a pioneer of functional, sustainable clothing and has been climate neutral since 2012. Von Dewitz advocates the use of caster bean oil as an eco alternative and has set a corporate goal that all Vaude products be recycled or bio-based by 2024.

Vaude, along with other brands and several textile suppliers intent on tackling the issue of plastic waste have joined forces with The Microfibre Consortium (TMC). The organization, founded in November 2018, facilitates development of practical industry solutions to minimize microfiber release linked with academic research and supply chain production. The latest news from the UK-based association is the launch of the first global microfiber shedding test method for the textile industry. Scientists at the University of Leeds developed the New Test Method Aids Effort to Tackle Microfiber Shedding Issue.

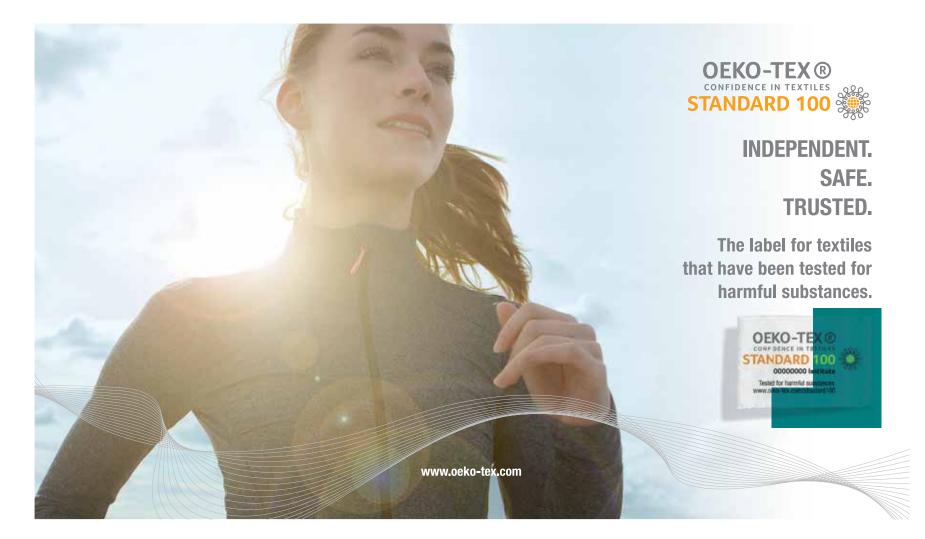
test, which has been shared with TMC members. Researchers are already onto the next phase of work that entails building a database of information regarding the impact of different fibers, yarns, fabric constructions and process steps with regard to fiber shedding at the material level.

Sophie Mather, chair of The Microfibre Consortium, commented, "This is the crucial bridge from deep academic work to the reality of commercial product development that the industry is crying out for and building."

Dr. Jan Beringer of new TMC member Hohenstein added, "We're excited and honored to join The Microfibre Consortium and support this groundbreaking work with the University of Leeds. Sharing the expertise gained while developing our Dynamic Image Analysis method over the last three years will enable all TMC members to get a deeper understanding of the key factors and processes related to fiber shedding. In turn, this will lead to knowledge-based engineering of low shedding textiles for a beneficial impact on the environment." •



The Microfibre Consortium test method was developed by scientists at the University of Leeds.

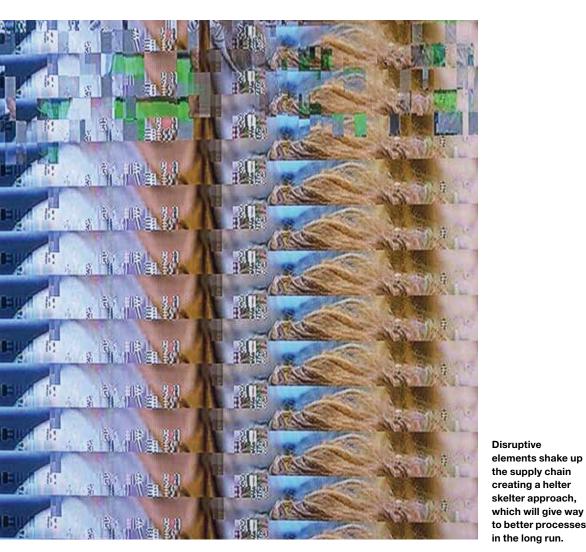


IN THE MARKET | EURO REPORT

How Digitalization Disruption Positively Impacts the Textile Pathway. By Louisa Smith

C2B is the new B2B

■ he textile supply chain has traditionally been a linear process, from the fiber and textile stage, through to designer and retailers, and then delivered to the consumer. However, as the consumer continues to garner market control, particularly through social media, highlighting what they want, a helter-skelter approach is taking place. Increasingly, branded fiber ingredient suppliers are communicating directly with consumers, as well as collaborating directly with brands. Brands then introduce textile mills to the performance and functionality that consumers want. This new consumer



push downstream in the supply chain is bringing change and impacting sales.

Overall, the developments of digitalization have created a disruptive element to traditional textile ways, which, for all intents and purposes is turning out to be a positive one. The conventional, longer B2C platform is no longer applicable; we now have C2B as well as C2C, as consumers share their opinions, spark a rental industry and swap clothing through personal social media.

Consumer app-laden life is also reflected in today's textile industry as a strengthened social and sustainability mindset gives way to armchair activism — a powerful influence the marketplace cannot afford to ignore. You only have to take Greta Thunberg as an example, rallying the younger global population in particular, to demand a change for the future.

As digitalization heightens consumer control and builds eco-awareness globally, the fashion industry is reacting to requests made, with efforts in recycling, reduced emissions and water usage, better living wages, faster speed to market, and full traceability. What's interesting to note is that consumers insist on these improvements, yet they don't necessarily want to know the details. They just want to know that fair play is part of the textile chain in an industry that has to adapt to a modern marketplace.

Transparency is key, with many brand websites providing hyperlinks taking consumers through to the different stages of the production of the garment, to QR codes replacing the traditional care labels and highlighting garment origin, and how to dispose of clothing correctly at the end of its lifecycle.

Today's Waste Not, Want Not Ethos

According to Fashion Industry Waste Statistics from EDGE, nearly 20 percent of global waste is produced by the fashion industry, and about 15 percent of fabric intended for clothing ends up on the cutting floor. While the quantity of garments sent to landfill varies, the organization gives a rough estimate of 10 million tonnes/year in the USA alone.

Businesses are working to change that reality. The Italian firm Assyst, for example, now features digitalization of design and sampling with technology that delivers 3D garments on a screen. The images are so realistic from silhouette to fabric that you actually believe these are real samples, filmed for effect. The benefit in this area is the reduction of waste at the sample stage combined with a more controlled delivery at the production stage, with fewer rejections of garments and an accelerated speed from sampling approval to production.

This update fits nicely with the consumer "waste not, want not" attitude toward consumption, and is helping to grow the clothing rental market in everything from the winter sports market to luxury fashion. Something Borrowed, for example, is an online subscription company that registers consumers' sizing and preferences in colors and style on its website, and for a monthly fee sends a selection of clothing, to be returned by the consumer at the end of the month. Clothing gets dropped off at a courier point in a companyprovided durable bag where customers pick up the next month's offering. The end result: eliminating closets stuffed with clothing hardly ever worn.

Blockchain Benefits

Brands have to become more diligent about inventory, too. In 2018 Burberry destroyed unsold clothes, accessories, and perfume worth over \$36M, in protecting their intellectual property rights and brand value. That same year unsold H&M products were being burnt instead of coal in Sweden. (Since then, however, H&M is pursuing one of the strongest sustainability programs to redress their errors.)

Blockchain technology is essential in avoiding situations like this, with all stages of the textile chain guaranteeing transparency and traceability. Being able to access the information on the developments of a garment from the initial concept to the final product enhances the entire value chain. The closer connection and collaboration of products leads to a more efficient process but also, more importantly, less waste on the inventory side.

As we embrace more efficient systems, digitalization has gone one step further with Instagram influencers, as digital clothes hit the market. The concept, using technology from the gaming industry, that for a fee, a designer will create a digital outfit for the subscriber, who can then post on Instagram an image wearing their unique look. The ultimate in sustainability and waste-free fashion, but only for effect, as the garment will never be made, instead just a digital fashion statement to impress the followers.

As the supply chain shifts and becomes an infinite loop, the consumer is now embedded in the decisions made and influencing the industry to conform to better practices. The disruption experienced now, combined with the digitalized tools available, help ensure that the textile industry towards a cleaner pathway in the new decade.

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Consumer armchair activism is growing; a powerful influence the marketplace cannot afford to ignore.

Hyosung Introduces its New regen Sustainability Program Featuring 100% Recycled, Multi-Function Fibers

s sustainably-made products have become more of a consumer expectation than just an industry trend, brands are relying on strong collaborations with their supply chain to make apparel and gear that consumers feel good about purchasing. To help brands produce enduring, eco-friendly products their customers are anticipating, Hyosung has developed its new regen sustainability program of 100% recycled

"With every ton of recycled spandex we produce, we save approximately 2 tons of non-renewable raw material being extracted from the earth." multi-performance fibers that will be introduced during the 2020 winter trade show season.

Among Hyosung's latest developments are the company's new creora* regen recycled spandex made from 100% reclaimed waste, and its new MIPAN*

regen robic, the first recycled high-tenacity nylon made from 100% reclaimed waste. Both fibers have been adopted by leading brands for use in various applications such as activewear, workwear, backpacks and bags.

"It was very important that we develop our creora" regen spandex and MIPAN° regen robic

high-tenacity nylon without compromising the fibers' high-performance features," said Mike Simko, Hyosung Global Marketing Director-Textiles. "It was equally important to make these fibers with 100% reclaimed waste as with every ton of recycled spandex we produce, we save approximately 2 tons of non-renewable raw material being extracted from the earth."

Hyosung's new regen program also extends to its multi-function nylon and polyester fiber collections and features:

- regen askin polyester cooling and UV protective fiber
- regen cotna polyester natural touch fiber
- regen aerocool polyester sweat-absorbing and quick-drying fiber

"Having such a comprehensive package of recycled, multi-function fibers is quite unique and we are excited to not only offer our partners the best possible range of sustainable product offerings, but to also help lift the industry as a whole by being better stewards of the earth," said Simko.



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IN THE MARKET | WOOL UPDATE

Wool Widens Availability with New Varieties, End-Use Applications.

Merino & Beyond

Wools to Watch

Alpaca hairs are very fine and soft, having a diameter of only 15-40 microns, and are naturally hypoallergenic.

Cashmere is obtained from the undercoat of the Cashmere goat, with the diameter of the fiber around 18 microns. The finest cashmere is collected from the neck region of the undercoat. In most cases, when cashmere is finished into clothing, the nap is raised on the wool to further improve softness.

Mohair comes from the Angora goat and has a distinctive frizzy look because the guard hairs from the topcoat are often mixed from the hairs from the undercoat. Mohair fibers have a slightly larger diameter, of about 20-40 microns, similar to wool, but they are stronger and smoother because they are also longer.

Yak wool is produced from the coat of long-haired yaks found mainly found in the Himalayan region, Tibetan plateau, and some areas of Mongolia and Central Asia. Like merino, yak wool is naturally anti-microbial.

Left to right: Super-fine Merino engineered for yoga wear, Cashmere advertised on NYC subway, and high-tech Salewa TirolWool jacket with Celliant. erino's momentum in the active/outdoor market is giving way to increased interest in other varieties of the natural fiber. In a recent Trend Insight survey with feedback conducted on the MESH01 platform for Textile Insight, consumers were open-minded about trying different kinds of wool. When asked, "Besides merino wool, which other types of wool would you be open to adding to your workout wardrobe," alpaca and cashmere ranked high on consumers radar with mohair also generating significant positive feedback. Only 13 percent of the survey takers responded "not open to adding."

Suppliers and growers are happy to oblige. In the past year, everything from camel wool to baby yak has entered the market. Insulations made from a slew of wool variations were showcased at the November Performance Days trade fair. Cashmere, no longer exclusively a luxury item, is reaching out to a more mainstream audience with ads promoting the wool appearing in New York City subways.

Diversification is also the name of the game with Merino. Finer gauge yarns are opening the door to new applications. Realizing the performance benefits combined with a strong eco element, lightweight merino is a natural for studio wear, for example. Merino is also being blended with a wider range of yarns and additives to provide performance, comfort, durability and sustainability features.

Here are some recent developments:

Yoga Wear: An innovative collaborative project introduces merino yoga wear that is soft, yet abrasion resistant as well aesthetically appealing. Specifically developed to promote elasticity and enhance longevity, the exceptionally fine merino wool features in a sport bra, tank and leggings. "The Conscious Choice" capsule collection is the collective effort of WoolMark, Suedwolle, Eva x Carola design studio and Santoni. Representatives from the firms explain that the 15.5 micron wool is engineered to retain stability. Using Santoni's circular seamless knitting technology with wool, the garments support the body as performance wear while being flexible and comfortable. The technology also introduces intricate and interesting patterns that contour the body. The collab serves as a prime example of wool adapting to new markets, say execs. Outer Midlayer & Insulation: A new yarn made from a blend of organic merino and alpaca comes from Schoeller Spinning Group. Using no chemicals or dyestuffs, the undyed yarn takes advantage of wools natural colors. Available in a knit construction or felted designs, the eye-catching 70/30 organic merino/alpaca blend is recyclable and biodegradable boosting its eco status.

UK-based HD Wool is designed with the lowest carbon footprint in mind, manufactured without use of plastics or harmful chemicals. It is grown and managed through a traceable British wool cooperative, and sourced from non-mulesed and farm assured growers. Imbotex Lab, from Italy, has introduced CameLuxe is an upcycled insulation described as ultra-fine insulating technology. The

> product is created from camel hair recovered from Italian mills that is processed into very fine fibers and then blended with recycled polyester.

> Performance Enhanced: Salewa TirolWool combines natural sheep's wool with Celliant. The wool, blended with polyester, gets a functional boost with Celliant technology. Celliant's thermo-reactive particles are inherent to the yarn and work to enhance circulation and enhance recovery. The natural/ synthetic hybrid, plus ingredient tech, results in warmth with added thermo-regulating performance. •







TECHNOLOGY | COTTON INDUSTRY

Facing Formidable Challenges, Cotton Business Aims to Move Forward. By Debra Cobb

Industry Outlook

■ rom rising tariffs to falling demand, and from sustainability issues to supply chain ethics, the cotton industry is currently dealing with a perfect storm of challenges. Amidst these difficulties, the "fabric of our lives" — long the fiber of choice for apparel and home textiles — is determined to improve future prospects from field to marketplace. According to the U.S. Department of Agriculture (USDA) sidered "greener," such as recycled polyester, organic cotton, lyocell and hemp.

However, U.S. growers have reduced their environmental impact over the past 35 years through technologies and innovations in conservation and land management systems, according to Adams. The U.S. cotton industry recently released its 10-year environmental goals. (See info-graphic)

Launching next year, the U.S. Cotton Trust Pro-

13%

tocol (USCTP) was developed to help the U.S. cotton produc30%



TECHNOLOGY | COTTON INDUSTRY

supply chain. Brands and retailers pay a fee to BCI relevant to the volume of Better Cotton they source; but their end product may or may not contain Better Cotton.

BCI explains that by using a system of mass-balance, the organization is able to reach more farmers and implement more sustainable practices.

Supply Chain Ethics Under Fire

Recent reports from major newspapers are calling out "conflict cotton" being grown, processed and sewn by Muslim Uighurs in forced-labor internment camps in the Xinjiang region of China. The region supplies some 84 percent of Chinese cotton products, sourced by a number of global brands.

In the 2017/18 cotton season China accounted for 23.1 percent of Better Cotton production. While BCI acknowledges it is aware of and concerned by reports of the situation in Xinjiang, it has found no direct evidence of forced labor at any of the BCI-licensed farms in the region.

BCI has laid out a plan that will deliver a third-party analysis of the situation by the end of January 2020, and will use the report findings to revise Better Cotton Standard System policies and procedures with the goal of preventing and detecting forced labor.

Lena Staafgard, BCI's COO, remarks, "Increasingly, consumers are looking for products that have a positive impact on people and the planet, while not taking brands' marketing claims at face value. Many are looking for brands to be able to back up their sustainability claims with evidence."

Calling the Xinjiang situation "shocking," MeiLin Wan, VP textile sales at Applied DNA Sciences, Inc. reminds us, "Traceability can help control conflict cotton."

"Most brands do not view beyond their Tier 1 suppliers. But the days of 'not wanting to know' are quickly ending; and the consumer is asking 'what are brands actually doing?"

Applied DNA's CertainT platform combines its SigNature T molecular tagging of textile fibers with a robust program that tests and tracks product along the supply chain to verify its authenticity.

In addition, Applied DNA recently partnered with Molecular Isotope Technologies (MIT), LLC to develop isotopic "fingerprints" for cotton and other materials to "provide innate chemical evidence of their chemical, geographic, and industrial provenance."

This means, explains Wan, that cotton from a specific region such as Xinjiang could potentially be identified and separated from the supply chain in the future.

"Conflict cotton poses a significant social issue that many in the fashion industry are working hard to fix," says Rupert Hodges, executive director of Oritain, a company that provides forensic verification of origin for cotton and other commodities.

Oritain is partnering with COTTON USA to provide forensic verification of origin for all US cotton. Oritain's forensic science analyses both trace elements and stable isotopes to provide the most accurate origin information.

As the USCTP launches in February 2020, Oritain will work on the pilot to verify cotton has come from protocol-approved farms.

"By being able to independently verify the origin of cotton back to the US—a place free of conflict cotton—any brand wanting to source conflict-free cotton can do so confidently," explains Hodges.

Improving Cotton's Prospects

The cotton industry is moving forward.

"I think market demand is still relatively high," believes Hodges. "The current zeitgeist for natural, plasticfree products has kept the onus on natural fibers; and the increased attention around the involvement of forced labor sees brands looking to established, reputable, cottonproducing regions."

Adams concurs, "The last four decades tell an encouraging story of continuous improvement in U.S. cotton production. As the fashion industry increasingly scrutinizes its supply chain and actively commits to sustainable sourcing, we believe that U.S. cotton will become an even more desirable choice."

Staafgard reminds us, "To safeguard the future of the sector and secure the wellbeing of farming communities, we must work to ensure that all cotton is produced more sustainably. Ultimately, we believe cotton has a great sustainability story, touching all aspects in a way many other options don't." •

"Increasingly, consumers are looking for products that have a positive impact on people and the planet, while not taking brands' marketing claims at face value. Many are looking for brands to be able to back up their sustainability claims with evidence." Lena Staafgard, COO, BCI.



Mass Balance What is it? Better Cotton is sourced from The Better Cotton gets mixed with conventional The retailer has sourced the Better Cotton and icensed BCI Farmers otton in a complex supply chain. BCI Farmers have seen the benefit, but the Better Cotton may not be in the end product 0 1770 1772 What does the BCI logo mean? When you see the On-Product Mark you know you are supporting more sustainable practices at farm level. You are buying cotton from a committed BCI Member who is investing in BCI. The cost to the retailer of sourcing Better Cotton goes directly back to field level activities including training and monitoring. It doesn't matter to the farmer where the Better Cotton ends up. It's better for the people who produce it, better for the environment it grows in and better for the sector's future. Why do it like this? Which enables BCI to reach iss Balance is less complicated than physical traceability and is wand for Better Cotion more cotton farmers

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How Suppliers are Moving the Needle in Domestic Make.

Finding Traction

Darn Tough CEO Ric Cabot (pictured below right with his father, company founder Marc Cabot) will oversee construction of a new manufacturing facility and expanded office space in the year ahead. ews of factory openings and facility expansion, along with reports of ambitious growth plans and commercialization of leading edge, home grown product is gradually becoming the norm in the United States. With entrepreneurial spirit, textile businesses are revitalizing regions with investment, employment, and strategic direction.

For example, new ventures in North Carolina put a progressive spin on textile heritage.

Dan St. Louis described the growth he's seen first hand as executive director of the Manufacturing Solutions Center (MSC) in a December interview with The Weekly RoundUp, a podcast dedicated to all things business in North Carolina. "There's been extraordinary growth in start-ups since 2010, and when you look at the data 70 percent of these people are under 40 years old," said St. Louis, adding, "this is opening lots of doors for small manufacturers, which we have clusters of here, that are willing to do small runs that are higher profit."

Located on the campus of Catawba Community Collage, in Conover, NC, the MSC focuses on helping commercialize product, with prototyping, applied R&D, testing and equipment onsite. St. Louis says he has seen "a lot of crazy ideas" from aerospace to sporting goods come through MSC doors that proved viable. CBD infused compression sleeves are one example.

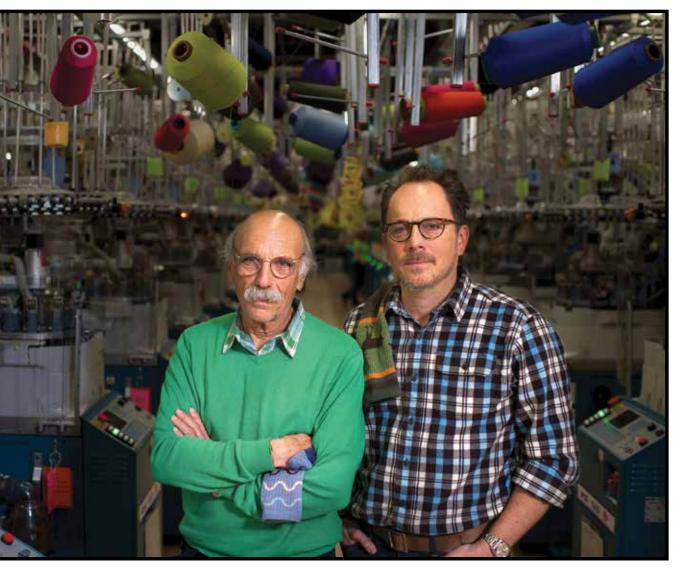
For the past three years, North Carolina-based Founder's Hemp and biomaterials company Nufabrx

> have been testing and developing a compression sleeve garment, called Hemp Squeeze, using Founder's Hemp CBD Oil. The hemp extract is infused into the fibers of the Nufabrx yarn, a patented technology that delivers 3-dimensional, 360 degrees of active relief to the elbow and knee. "We're taking a brand new industry — hemp, and taking an old industry — textile and we're using new technology to help rejuvenate textiles in North Carolina," said Bob Crumley, founder and CEO of Founder's Hemp. "I never dreamed, when we first started this three years ago, that our Hemp Squeeze product would be made in Asheboro."

> Jordan Schindler, founder of Nufabrx moved his headquarters in 2016 from Seattle to the Manufacturing Solutions Center (MSC). "To move my vision forward, I needed a home base that understood the textile industry," said Schindler. "Health Wear is the next generation of clothing, with CBD and other actives built directly into the garment itself."

Advancing Performance

AKAS Tex, a PA-based textile manufacturing and design firm, has introduced a one-way wicking fabric designed to keep athletes cool, dry, and fresh, even in the most humid conditions. ProCool Stretch-FIT Dri-QWick Sports Jersey is a double-facing fabric with hydrophilic fibers next to the skin to wick moisture



away, and hydrophobic fibers on the other side to keep moisture from seeping back into the fabric. It also uses Lycra for a four-way stretch and recovery.

"The hydrophilic side has a special diamond mesh which increases the surface area for wicking," explained Sid Sharma, AKAS president. "It's similar to a crest and valley — the raised diamond gathers the moisture and pulls it into the valley. We also use a special binding yarn between the layers which ties them together, but doesn't allow the hydrophilic and hydrophobic fibers to mix." It is manufactured without harmful chemicals or finishes in highly controlled settings.

AKAS sources raw materials in the USA and partners exclusively with American mills for production. In addition to creating fabrics for customers, AKAS has its own line of high-performance textiles including some of the top brands for absorbency (ZORB), food safety (ProCare), and organics (ProEco). ProCool is the latest addition to the firm's branded offering.

The family-owned enterprise, established in 2007, has grown by double digits every year, according to Sharma and will be expanding its facility space two-fold in 2020. Strategic decision-making, technical proficiency, and lean corporate structure has fueled company success.

In addition to designing and making fabric, the company has weeded out overseas businesses and concentrated on forming solid partnerships with established branded ingredient firms like Dow (Silvadur), DuPont (Teflon), Invista (CoolMax), and Lycra.

AKAS recently announced a licensing agreement with Cotton Incorporated to manufacture and market the TransDry fabrics.

"We work with the best American knitters and laminators and have good partners," said AKAS CEO Arch Sharma.

Factory Investment

Sock maker Darn Tough Vermont, based in Northfield, VT, is adding a new 50,000-square-foot manufacturing facility to its production next year, and expects to have 100 people working at the new Waterbury, VT site in 2021. The leased space is part of an ambitious five-year growth plan for Cabot Hosiery Mill, Darn Tough's parent company. In an interview with the local press, CEO Ric Cabot said the company expects to sell 8 million pairs of socks in 2020.

Renovations will start in February to create an additional 17,000 square feet of office space in the facility with manufacturing starting in Waterbury later in 2020. The company's headquarters and existing sock factory will stay in Northfield. Darn Tough recently spent \$2.5 million updating the 100-year-old Nantanna Building to increase the company's space for manufacturing and internet fulfillment in Northfield.

"We're doing this to fund our growth, but it's also

for the long term," Cabot was quoted as saying. "It's for the prosperity and job security of the people who have been with us all these years."

Georgia is also experiencing progress on the production front. Following two decades of decline, the opening of American Knits returns apparel manufacturing to the town of Swainsboro. The new business bolsters the domestic supply chain with regionally-located textile suppliers Buhler Quality Yarns, Jefferson, Ga., Gastonia, N.C.-based Parkdale, and Carolina Cotton Works (CCW), Gaffney, S.C. Premium knit tops using 100 percent U.S. grown ring-spun cotton will be produced, including T-shirts for a supplier to the U.S. military.

American Knits execs make the point that their company represents a new story in terms of domestically produced textiles. "The old story was 20-plus years ago, when many of the plants in the U.S. closed. Over the last eight years, I've discovered that there is a demand for U.S.-manufactured goods. And younger folks kind of care about where it's made, the type of fabric that's used and the sustainability part of it. We felt like if we could find the right place, then the demand was there," said managing director Steve Hawkins, at a recent media event. Managing partner Dr. David Talton elaborated, "We want everybody to know that we're more than just another plant — we're making a new story here around how we treat people and how we treat our customers, and our employees will reflect to our customers how we treat them." •

"We're taking a brand new industry — hemp, and taking an old industry —textile and we're using new technology to help rejuvenate textiles in North Carolina."

Bob Crumley Founder, Founder's Hemp

"There's been extraordinary growth in start-ups since 2010, and when you look at the data 70 percent of these people are under 40 years old."

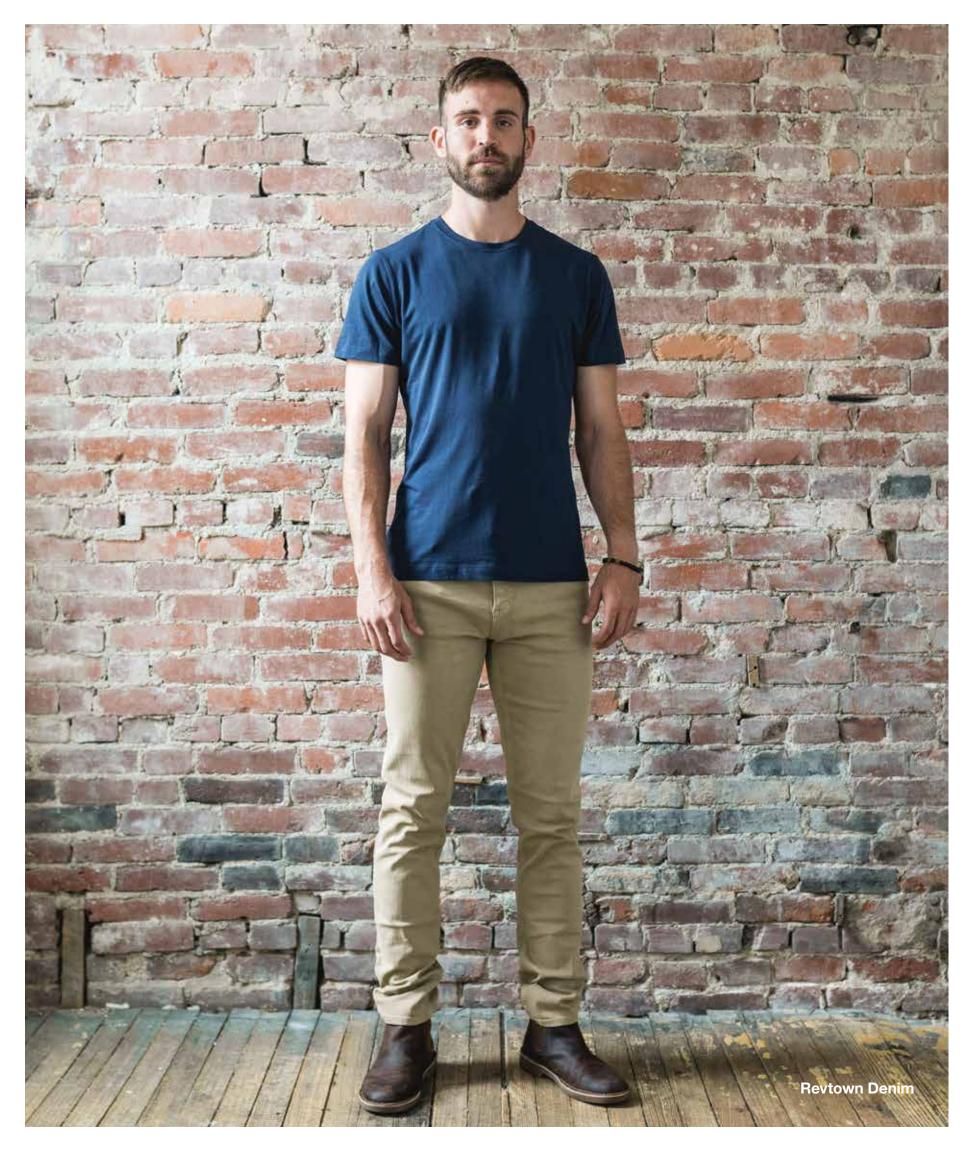
Dan St. Louis Executive Director, Manufacturing Solutions Center

"We work with the best American knitters and laminators and have good partners."

Arch Sharma CEO, AKAS Tex







STRATEGIES | UNIQUE BUSINESSES

Niche Firms Are Finding Traction Through Differentiation in the Apparel Space. By Suzanne Blecher



n an industry that can be dominated by huge conglomerates, small – and even tiny – companies are standing out by presenting innovative ideas. Here are three notable names currently on our radar.

REVTOWN, Pittsburgh, PA

What makes Revtown unique?

Henry Stafford, CEO: "It starts with a really high-quality product at an affordable price – \$79. But we also believe that jeans should be sustainable. That means they last wash after wash, but it also means that we are committed to clean denim production. One hundred percent of all waste is recycled, and our denim is sustainably dyed using shrimp shells, orange peels, and nut shells – saving energy, water, and using less chemicals in the process."

Tell me about some of the unique materials you use.

"One thing that we learned from our time [previously working] at Under Armour is that it always starts with material and fabric. What we found was Decade Denim, which is our signature and trademarked fabric made from premium Italian yarn and infused with fourway, dynamic stretch, and constructed with the strongest fibers. Products look and feel like a high-end pair of jeans, while they fit and perform like an athletic pant."

What do you have for the upcoming season that illustrates the brand's unique perspective on denim?

"We just launched our women's lineup in late

September. We put out a call for real women via our customer database, social channels, and website and used them as the basis for building the product. We had women of all backgrounds, from fitness instructors, photographers, chefs, and YouTubers just to name a few."

Comfort and fit can be secondary in denim. How are you addressing that and how does it tie to your mission?

"Our jeans won't dig into your waist or cut off circulation or crush your crotch. We've even had some people tell us they work out in them when they're on the go and in a pinch; they're just that flexible. With a background in athletic apparel fit and comfort and durability, it felt that this hadn't translated into the denim industry. It's also why we created our 'Digital Tailor' tool, which allows customers to enter their personal data and it sizes them up to 95 percent accuracy."

HOUDINI SPORTSWEAR, Nacka, Sweden

What makes Houdini unique?

Eva Karlsson, CEO: "We are proud of having a collection where 100 percent of the fabrics are either made from recycled/renewable material, can be recycled/biodegraded or are Bluesign-certified. We have set a goal of having our collection 100 percent circular by 2022. For FW2019, 63 percent of our styles are circular."

Tell me about some of the unique materials you use.

"First, there's our circular shell program where we work with Japanese fabric supplier Teijin to create shell fabrics that can go around in a recycling loop. Our Lana Series is a woolen shell layer that is waterproof by construction and uses no DWR or membrane. The biodegradable fabric is created by treating a tight woolen knit with water and heat, creating a super dense weave that doesn't let water, yet breathes like your favorite wool sweater. Houdini gear does not have to look technical, it just has to be technical."

What do you have for the upcoming season that illustrates the brand's unique perspective on sportswear?

"For FW20, we are launching the Mono Air series, the latest iteration of fabric based on Polartec's Power Air concept. It's a fleece specifically designed to combat the problem of micro fiber release into rivers and oceans."

Your mission is "Houdini is a group of friends on a mission, always guided by our core values: Do good, play hard, push boundaries, have fun!" How does that translate into what you create?

"We often say that people feel unrestricted in our gear, kind of like they can go do anything they want and the clothes would just work. When we find partners, whose values resonate with ours, we tend to hold on to them. With Polartec, that's over 25 years!"

MINISTRY OF SUPPLY, Boston, MA

What makes Ministry of Supply unique? Ministry of Supply Co-Founder, Gihan Amarasiriwardena: "We start with wardrobe problem statements, research deeply, and design and test garments that solve those problems.

STRATEGIES | UNIQUE BUSINESSES

We're on the cutting-edge of innovation: from shape-shifting textiles to coffee-infused, odor absorbing socks to artificial intelligence-powered jackets, we're constantly pushing forward."

Tell me about some of the unique materials you use.

"Born out of MIT, our goal is to use science and technology to make clothing better - better performing, fitting, and better for the environment. Our best-selling Apollo dress shirt features NASA-invented Phase Change Materials, originally created to regulate astronauts' body temperature in space. In addition, the shirt uses a piqué knit fabric that has a honeycomb-like structure that provides coverage for the body, while letting air meander through its channels. The garment is 19 times more breathable than a traditional dress shirt. Additionally, instead of leaning on quick fixes like chemical washes, we reimagine the composition of every piece from design to the fiber level. For example, to create wrinkle-resistant clothing, we call on the unique properties of polyester, which reacts to body heat to naturally release wrinkles."

What do you have for the upcoming season that illustrates the brand's unique perspective on sportswear?

"In 2019, we introduced the world's first carbonneutral dress shirt. Using our engineering backgrounds, familiarity with technology, and our own direct experience designing and producing garments, we are in a unique position to tackle this issue in a meaningful way."

Should more apparel/textile firms include science into the equation for creating clothing? How is this part of your mission?

"To us, it's not about using tech for tech's sake — it's about designing forward-looking apparel in a way that seamlessly integrates into people's day-to-day, and solves everyday wardrobe problems. For example, we launched the first AI-powered heated jacket to market last year, and while we wanted to ensure that the technology was solid, we also wanted to be sure that it was just a great jacket." •





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Dyntex Introduces World's First Ultralight Biosynthetic Functional Fabrics

Environmentally Friendly, Functional Textiles Made of Biosynthetic Yarn and Biodegradable Fabric

yntex, developer and manufacturer of functional materials based in Bregenz, Austria, has launched two world premieres: DYNTEX[®] Biodegradable is the world's first ultralight functional fabric that only takes five years to biodegrade. Dyntex[®] Biological Origin is also ultralight and made entirely from bio-based raw materials. Leading premium manufacturers of athletic and lifestyle clothing have already expressed their interest in the fabrics.

Working with specialists from Japan and Italy, Dyntex invested three years into the development of these two extraordinary biosynthetic fabrics. Dyntex CEO Mathias Braun is convinced that "they have what it takes to revolutionize the market for environmentally friendly functional fabrics. Our fabrics set new standards when it comes to athletic, outdoor, and lifestyle apparel." Premium manufacturers have already shown great interest after initial talks.

Biodegradable in Only Five Years

Dyntex[®] Biodegradable is the first ultralight functional fabric that is completely biodegradable in just five years. The yarn made of the high-tech polyamide Amni Soul Eco[®] makes it possible to produce fabrics of the highest quality that weigh only 38 grams per square meter. In addition, they are water-repellent, breathable, fluorocarbon-free, and extremely durable, even under heavy use. With



market potential for two new ultralight and environmentally friendly functional textiles.



Dyntex is introducing the world's first ultralight, organic functional fabrics.

one-of-a-kind tactile properties and exceptional looks, they are perfect for stylish functional clothing.

In a landfill, functional textiles made of Dyntex[®] Biodegradable materials decompose into CO2, methane, and biomass within just five years – this was verified in a US laboratory that tested anaerobic biodegradation pursuant to the international ASTM D5511 (ISO 15985) standard. Standard polyamides typically take ten times longer to biodegrade. When combined with a biodegradable lining, this makes it possible to manufacture fully biodegradable products.

Completely Organic Yarn

Dyntex^{*} Biological Origin is made entirely from renewable resources, with the castor oil plant serving as the basis for the ultralight functional fabric. A bio-polymer is extracted from the plant that is then used to produce a particularly highquality yarn. In a special manufacturing process, DYNTEX^{*} uses this yarn to produce ultralight functional fabrics of the highest quality with oneof-a-kind tactile properties and exceptional looks. With this newly developed collection of materials, manufacturers can completely eliminate the use of fossil resources. The castor oil plant is the perfect raw material for such fabrics. It grows in arid, nutrient-poor soil, requires little water, and is not edible. This means the castor oil plant does not compete with the cultivation of food crops in the agricultural industry.

Environmentally Friendly and of the Highest Quality

According to Dyntex CEO Mathias Braun, the newly developed fabric collection "plays a critical role in protecting the environment for future generations." Accordingly, he sees tremendous opportunities in the rapidly growing market for environmentally friendly functional textiles. An Italian fashion label will already be releasing the first jackets made with Dyntex fabrics in January.

DYNTEX BIOSYNTHETICS FACTS

Ultralight functional fabrics weighing as little as **38 gr/m2**.

Dyntex* Biodegradable: Fully biodegradable in five years. Dyntex* Biological Origin: Made from the castor oil plant.

Applications: Athletic, outdoor, and lifestyle clothing. Breathable, water-repellent, extremely durable.

For inquiries, please contact:

Dyntex GmbH, CEO Mathias Braun +43-5574-21404, m.braun@dyntex.eu Dyntex Italy, Andrea Paghera +39-335-5956-871, a.paghera@dyntex.eu For more information, please visit: www.dyntex-bio.com and www.dyntex.eu

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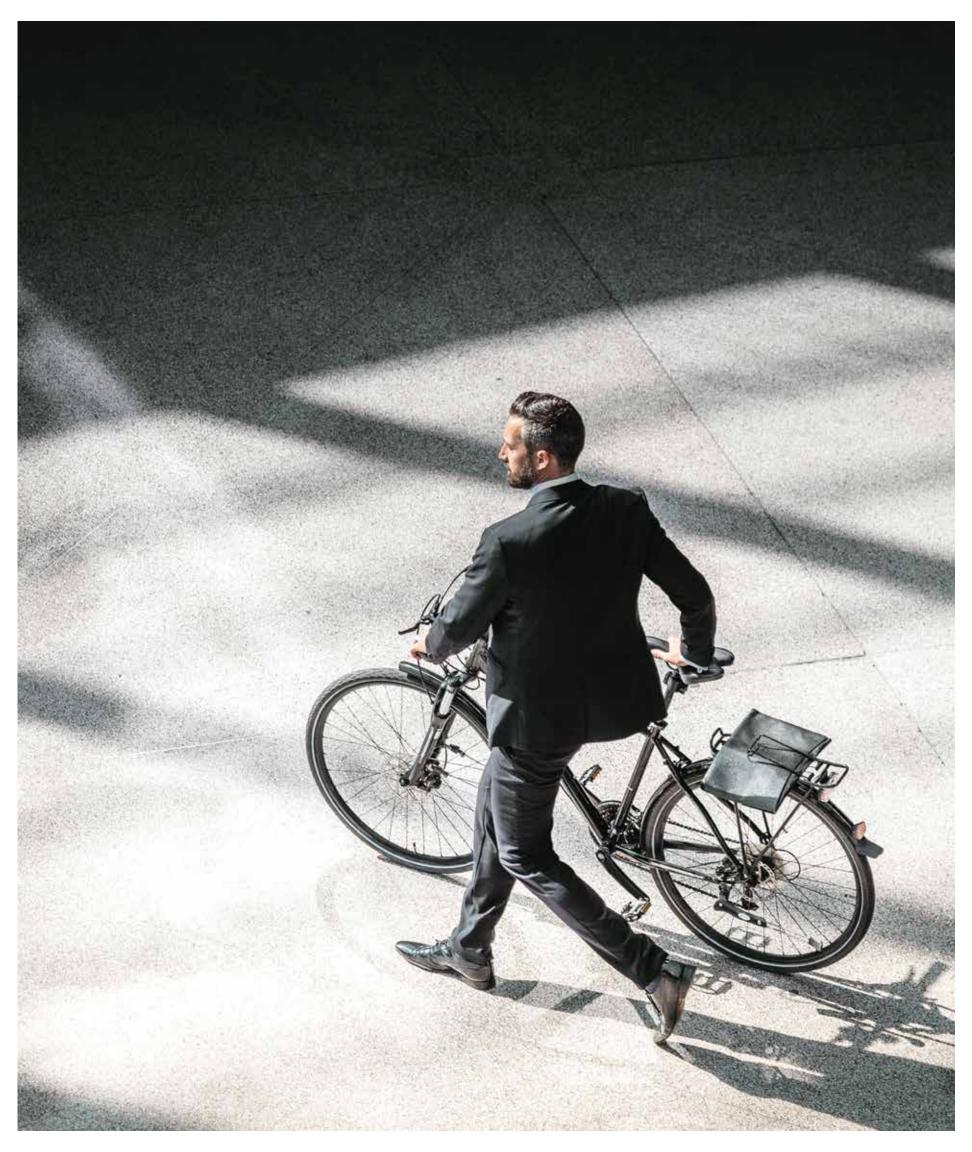
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DYNTEX[®] Biological Origin

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FROM GLOBETROTING TO URBAN TRANSIT, TODAY'S TEXTILES ARE GOING PLACES. BY EMILY WALZER

f it feels like contemporary society is in constant motion, it's because it's true. Whether for business or adventure, travelers continue to up their game; execs nowadays hit multiple cities in a day for meetings, crisscross continents within a week for trade events, and rack up sky-high frequent flyer miles annually. Millennials make savvy use of credit card points to see the world; Peru, Mexico City and Montreal are just a few quick clicks away with free airline tickets and Airbnb housing at the ready. However, no matter the destination, or the intent, what's critical to on-the-go individuals is elevating the travel experience. And that's where textiles increasingly come into play.

Multi-tasking clothing that does more than just look nice is a key element of today's travel wardrobe. "The big trend driving development, in all apparel, is comfort and convenience," said Judith Russell, global marketing strategist, Nilit, in her presentation at Performance Days titled, *Satisfying the Consumer Who Has Everything (But* *Wants More*). "Comfort is driving lifestyle in general and convenience is driving consumers' 'I want it all, and want it now,' intensity."

Comfort 24/7 is achieved with today's textile tech that levels up performance properties like moisture management, temperature regulation and lightweight weather protection without skimping on the feel-good attributes of softness and stretch. Advances in odor-capture technologies, along with new technical wools, reduce the need for washing and save time, while new CBD infused fabrications offer wearable wellness benefits. Other travel-friendly functionality includes wrinkle-resist, pack-ability, 4-way stretch and softto-the skin feel.

"Today's membrane tech offers modern solutions for increased air permeability, comfort and waterproof protection. These are products you can wear comfortably. You're not going to overheat in city street conditions or backcountry adventures," says Schoeller Textil NA president, Stephen Kerns, who cites Swiss firm Aerobrane's product as a prime example.

Performance knits are increasingly noted as travel-friendly fabric. "Cordura knits have evolved from tactical to active and continue to evolve as ideal for travel," comments Cindy McNaull, Cordura business development director. New "Softened Strength" knits, in Cordura's 4EVER collection, recently were named an ISPO Textrend award winning fabric. (For more information on these and other new developments in functional fabric turn to our OR Show preview story on page 6.)

All About "Active Living"

Trend forecaster Louisa Smith uses the term "active living" to describe the rise of textiles designed for on-the-go comfort and convenience. "It's dressing casually in relaxed mode but with a smarter look."

Western Rise puts its own spin on this trend by minimizing the product, maximizing the fabric and letting the textile broaden the "wear spectrum." Says Western Rise co-founder Will Watters: "Our wear spectrum approach

FUNCTIONAL TRAVELER

will check all the boxes for travel but not give way to things like 12 travel pockets. Rather it will give way to a pant that you can wear when lounging in the hotel checking emails or wear to a business dinner in New York City."

In other words, the Western Rise Evolution pant. Three years in development, the pant was designed from the yarn up to feel like cotton but perform like a high-trade nylon. The result is a durable nylon Supplex with a soft hand, spandex for stretch, DWR performance and sharp style. Creating a better version of what exists drives development at Western Rise, explains Watters. "Jeans, for example, don't hit the wide spectrum of wear – when it comes to travel for instance, jeans are heavy to pack, and lack performance of lightweight technical nylon."

Western Rise will launch a new pant in February; a nylon, double weave with 4-way stretch, the fabric has a high durability canvas exterior and soft dobby next to skin. It is designed to be packable, lightweight and excel in comfort, says Watters. ACCORDING TO RECENT RESEARCH FROM THE WORLD TRAVEL AND TOURISM COUNCIL (WTTC) THE TRAVEL AND TOURISM SECTOR CONTRIBUTED A RECORD **\$8.8 TRILLION** AND **319 MILLION** JOBS TO THE WORLD ECONOMY IN 2018 AND IS THE SECOND-FASTEST GROWING SECTOR IN THE WORLD, AHEAD OF HEALTHCARE, INFORMATION TECHNOLOGY AND FINANCIAL SERVICES.

ON THE ROAD AGAIN



Cindy McNaull



Molly Kremidas

MOLLY KREMIDAS

Senior Sales Director, brrr

Frequent Flyer: 2M miles on Delta, logged 132 flights in 2019

Airport of Choice: Greensboro, NC.

The benefits of a small airport: "If I'm running late, they see me coming and print out my board-ing pass!"

Travel Advice: When plans go awry: "There's always another plane."

Best Travel Story: Having to take a small sightseeing plane piloted by a civilian from tiny Mackinac Island, Michigan to Detroit airport to make a direct flight for a last minute business trip to Shanghai with brrr CEO.

CINDY MCNAULL

Cordura Brand Business Development Director Frequent Flyer: 1M miles on American, 1M miles on Delta

Local Airport: Charlotte, NC. "It has a hometown vibe and is a hub for direct international flights." **Packing Routine:** Keeps duplicate sets of grab and go items always at the ready. Unpacks from one trip, and immediately re-packs for the next.

Packing Advice: Take fewer shoes! **Travel Advice:** Hydrate, hydrate, hydrate, and bring vitamin tablets that dissolve in water to drink on the plane.

STEPHEN **KERNS**

President, Schoeller Textil USA

Frequent Flyer: United, nearly 1K, Premium Platinum **Local Airport:** Logan Airport, Boston, MA **Travel Wardrobe:** Multi-versatile clothing that stands up to all weather conditions while looking professional yet casually acceptable. **Apparel Faves:** Schoeller Dryskin trousers, merino wool layers, softshell outerwear. **Done in a Day Trip:** From Boston to Portland, OR to San Jose, CA to San Francisco and then Denver, CO.

TIM SKEDZUHN

President Global Brandforce, HeiQ

Frequent Flyer: Star Alliance member airlines; 175,000 miles logged in 2019.

Flight Routine: Movie, drink red wine, eat a meal, and go to sleep.

Plane Preference: United 787 for its atmosphere; United 787 Dreamliner for best cabin pressure. Travel Interest: New Newark to Singapore flight direct in 19.5 hours!

PAUL MIDDLETON

Technical Director Brandforce, HeiQ

Frequent Flyer: 110 flights as of November 2019. Favors Emirates airlines

Local Airport: Birmingham, England. "If going east, Birmingham; Heathrow is best if going west." **Common Trips:** Taiwan (five times a year), Sydney,

Bangladesh, Sri Lanka. Has been to every country in Europe.

Travel Routine: Window seat, right side of the plane, so right arm free to work on the computer.

CHRIS PARKES

West Coast Sales, Concept III Textiles

Frequent Flyer: 2.4M miles on United, logged 125,000 in 2019

Common Flights: Asia three times a year; Europe twice a year; flies domestically throughout the year. **Aisle or Window:** Aisle

Travel Wardrobe: All Birds shoes, no socks; jeans or khakis, wool polo. "I can wear a wool polo multiple times on a trip. It's comfortable on the plane, in China on a rainy day, or traveling by car."

Travel Approach: In and out as fast as possible. Best Part of Travel: "When you take off and land safe."

COTTON DOES simple ingredients.

Cotton makes going natural feel effortless. Just combine a handful of simple ingredients to turn a cotton seed into a rain-fed plant which in turn becomes a versatile, Earth-grown fiber that can go anywhere and do anything. For cotton, "Natural" isn't a trend – it's what we've always been.



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FUNCTIONAL TRAVELER





Above, left to right: Western Rise Evolution Pant; Mosko Moto apparel.

s more people opt for scooters and city bikes as a preferred mode of urban transit, and a growing segment of the motorcycle crowd veers off-road for backcountry adventure, workwear is getting a new tool kit. While high abrasion and protective qualities remain fundamental, modern workwear is being re-framed to fit the needs of a broader customer base.

The latest versions of traditional hard-working textiles are lighter in weight with enhanced comfort features and a more active design orientation. "Today's workwear is 25 to 30 percent lighter than conventional workwear and has more stretch," confirms David Parkes, founder, Concept III Textiles. Brand partners Carhartt, Duluth, Dickies and Milwaukee Tool are helping lead the charge in workwear's current crossover appeal.

INDUSTRY ANALYSTS FORECAST THAT THE GLOBAL DUAL-SPORT MOTORCYCLE Market Will grow at a **rate** of **9.19 Percent** During the Period 2018-2022.

Ventile Fabrics, made from high-grade long staple cotton, is also experiencing an update. The fabric has long been a workwear essential based on the extremely dense weave construction that allows for inherent water/ windproof-ness and breathability without the need for a coating or laminate. Recent Ventile introductions include a trim 145 g/s2 fabric (classic Ventile fabric weight is 240 g/s2); a 100 percent recycled cotton quality; and a waterproof organic cotton fabric.

"We're finding relevance in today's workwear trend of lighter, functional fabrics, that also ride the green wave of sustainability," says Daniel Odermatt, marketing/sales, Stotz, the Swiss company that owns and produces Ventile fabrics. (UK manufacturing and finishing facilities both closed years ago.) A first time exhibitor to Performance Days Munich, Ventile Fabrics featured in the trade fair's Performance Forum as a Top 25 pick.

Originally developed during wartime England, Ventile was designed to save the lives of pilots flying escorts on the Atlantic and Russian convoys. The ships they flew from weren't equipped for landings, so pilots had to bale out or ditch in the sea. The high performance 100 percent cotton fabric proved to be cool and comfortable in the cockpit and warm and impenetrable in the water. According to the company, Ventile fabrics "kept out the arctic winds and the icy ocean, extending survival times 10 fold."

Comfort Protection

Execs who attended the 2019 A+A International workwear trade show in Dusseldorf last November say that a main takeaway was product that is getting more casual and better looking all the time. IBQ Technical Fabrics, a Barcelonabased firm specializing in textile products for the Safety & Durability workwear category expanded its stable of performance textiles with a new Black Dyneema, Black Kevlar and Recycled offering.

The company additionally introduced reflective lights that can be integrated easily into product. The new line came out of the firm's protective textile business in the motorcycle market. The company reports that there's a lot happening in personal safety and sees growth in outdoor/action sports as consumers increasingly value safety features.

Motorcycle is also the springboard for innovation at Mosko Moto, a brand focused on the Dual Sport Adventure market that is finding traction among riders with its gear and a new high-performance apparel collection. The Basilisk Jacket and Pant, for example, feature eVent's toughest waterproof membrane solution, DVexpedition, while the packable Deluge jacket and Overpant uses eVent DValpine technology. Super Fabric textiles are used in key abrasion panels and premium YKK zippers also feature.

SCOOTER SERVICES ARE OPERATIONAL IN OVER **100 CITIES** WORLDWIDE; Paris has an estimated **20,000 E-Scooters**.

"Traditional jacket thinking was to make it better, it had to be bigger," explains Ashley Myhre, brand creative director for Mosko Moto, White Salmon, WA. "Jackets were built based on an old aesthetic with hanging liner and integrated body armor that could weigh up to 20 pounds. We take a different approach, which is a premium shell that supports the body armor and provides lightweight durability, freedom of movement and plenty of functionality."

Myhre says the Dual Sport Adventure market is on a strong growth curve and Mosko Moto products elevate the riding experience. "Our apparel is purpose built to withstand soaking rain and strong wind over the long haul while sitting on the bike. On a 12-15 day trip that one jacket could be worn all the time."

This Spring Mosko Moto will add to its apparel collection. "Product will fit today's performance needs but also feature what backcountry riders want in terms of packable, versatile, comfortable functional clothing," says Myhre. "This market is ripe for change and we believe in a blend of moto and nature going forward."

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INNOVATION | TRENDS

3 Key Textile Categories to Watch in 2020.

Modern Day Performance



Gore Innovation Center



HeiQ Fresh Air



Delilah Home hemp sheets

1. Bio-Tech

RECENT NEWS of the partnership between Berkeley-based biotech start-up Checkerspot and **W.L. Gore's Innovation Center** in Silicon Valley shines a light on what's next in performance materials. Specifically synthetic biology enabled functionality. "Synbio," aka biomaterials, has been on the radar in recent years with firms such as Bolt Threads and Modern Meadow commercializing synthetic spider silk and bio-enhanced leather, respectively. But this latest development with Gore brings biotech steps closer to the active/outdoor industry space.

Checkerspot's sweet spot is a platform that uses microalgae as a tiny biological factory for the production of oil, according to the company, which with a recent round of funding, the company will use to develop performance textiles.

The Gore Innovation Center in Silicon Valley is an 11,000-squarefoot co-innovation space complete with a prototyping lab and co-working space that offers startups the chance to collaborate with Gore scientists on advanced materials science challenges. "The Gore Innovation Center is a place for experimenting with new ideas, pushing boundaries and bringing together diverse talents to deliver transformative solutions that improve lives," said Linda Elkins, chief technical officer.

Previous to the partnership with Checkerspot, the Gore Innovation Center signed a joint development agreement with digital health start-up Kenzen to create a comprehensive wearable monitoring system employing biosensor data and predictive modeling to anticipate avoidable injuries. Another Gore partnership, with the firm Bonbouton, focused on the codevelopment of a smart fabric used to detect changes in body temperature. Incorporating Gore's advanced materials enhances the comfort, durability and reliability of these products.

According to Zion Market Research, in a report released in June, the global

biomaterials market was over \$94 billion in 2018 and is expected to reach above \$256.2 billion by 2025. Healthcare is the main driver of growth in this area by far. However, as we know for instance with Gore, developments in the medical/health field, have a way of filtering down to innovation targeting high-tech performance fabrications for active/outdoor.

2. Health & Wellbeing

NEW APPROACHES to the wellness category extend the ability of performance textiles to play a role in an individual's healthy lifestyle. Two material innovations coming to market tap into today's personal wellbeing/ self care trend. New technology in the **HeiQ** Fresh range turns IKEA curtains into air purifiers, and Devan Chemicals upgrades its health and wellness range with Hemp CBD and skin enhancers.

According to the World Health Organization, over 80 percent of urban residents are exposed to high levels of air pollution. The concentration of Volatile Organic Compounds (VOCs) indoors is generally higher than outdoors. While many VOCs are not considered as harmful to health, such as perfumes and fragrances, others such as acetaldehyde, formaldehyde, nitrogen oxide (NO) and d-limonene are attributed as responsible for significant negative impact on health, the World Health Organization (WHO) reports.

HeiQ's new air purifying technology targets this issue. HeiQ Fresh Air is a mineral-based Swiss technology infused into the curtain fabrics. It purifies the indoor air by using transmitted ultraviolet light (UVA) from the sun to transform problematic VOCs into components of fresh air. The IKEA Gunrid curtain looks like an ordinary curtain but functions to provide cleaner air and healthier atmosphere. "We aim to improve the air quality in consumers' homes with ease, simply by hanging up a curtain and utilizing the natural light passing through the window. A simple tool for something so important, fresh air in your home,"

says Carlo Centonze, HeiQ's co-founder and Group CEO.

Devan Chemicals, a Belgium-based developer of finishing technologies, is expanding its R-Vital range of microencapsulated, organic active ingredients and working on an upgrade of the Hemp CBD range, with other organic ingredients – CBG and terpenes – that enhance the properties of CBD. Devan's CBD range, sourced in the U.S., is organic, GMO-free, pesticide free and contains no THC.

Devan's R-Vital "Super Moisture Boost" is a carefully composed organic blend of avocado (a popular ingredient in keto-diets) and amaranth seed oil (containing squalene) that helps to soften and hydrate the skin. The natural oils deeply penetrate into the skin, and contain fatty acids known to delay the appearance of premature aging and to moisturize and tighten the skin. The company also offers R-Vital "Cold Proof," a finishing solution that releases organic ingredients such as camphor and echinacea to protect people from the ailments of colder times.

3. Sustainable Sleep

RECENTLY LAUNCHED firm **Delilah Home** is the first U.S. brand to offer 100 percent hemp sheets at scale nationwide. The company also offers organic cotton towels and sheet sets certified to the stringent Global Organic Textile Standard (GOTS). Hemp features natural antimicrobial properties, durability and is highly absorbent.

The interest and demand for organic fiber products is only growing. Organic fiber sales in the U.S. reached another record in 2018, hitting \$1.8 billion and posting a 15 percent increase from 2017, according to the Organic Trade Association's 2019 Organic Industry Survey. The organic fiber and textiles category continues to rank as the largest non-food organic category in the overall \$52.5 billion U.S. market.

"Delilah Home's goal is to create an organic safe haven in your home," says Delilah Home CEO Michael Twer. •



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FOOTWEAR | INNOVATION

How Materials Factor into Nike's Much Talked About Vaporfly Franchise. By Jennifer Ernst Beaudry

The Science of Speed

ast year closed with two eye-popping feats in the running world, logged back to back in October. On Oct. 12, Eliud Kipchoge broke the two-hour marathon barrier, long thought an impossible feat, with a time of 1:59:40 during a specially tailored event in Vienna, Austria. On Oct. 13, Brigid Kosegi obliterated the 16-year women's



marathon record by more than a minute, finishing the Chicago Marathon with a time of 2:14.04 and setting a new world record.

The common thread in both wins — and a topic of fierce debate since — was the latest iterations of Nike's new racing franchise.

Launched in 2017, The Nike Vaporfly 4% shoes were specifically created with the mission of improving running economy by four percent — enough to make a difference in an elite marathon pace of a few minutes, or possibly enough to drop a runner's time from world-record pace (at the time, 2:02.57) to under 2 hours. The shoes have been refined since their debut: the \$250 Nike ZoomX Vaporfly NEXT% is out now, and a version of Kipchoge's race-day version, the AlphaFly, is anticipated.

To find out what's inside the shoes that have everyone talking, we went to an expert.

Simon Bartold is a podiatrist, biomechanics expert and CEO of Bartold Clinical, an educational resource for podiatrists, physiotherapists and sports medicine professionals. Bartold has spent his career investigating the relationship between shoes and feet, and has held positions in the industry including director of strategic planning for Salomon and international research consultant for Asics for more than a decade. Here's what he had to say about materials, the science of getting faster, and the "arms race" he sees coming:

What makes the shoes different?

Bartold highlights two technologies: carbon fiber plates (The Next% shoe has one; the AlphaFly prototype has three), and surrounding them, ultra-thick layers of Pebax foam. Pebax, a thermoplastic elastomer, is no stranger to footwear, and is frequently found in a more rigid form in soccer boots or as a plate in hiking product. The foam version of the material is less common. In the AlphaFly and Next% styles, the material makes up the super-thick, rocker-shaped midsole.

Why do they work?

The carbon plate in the midsole acts as a lever, which improves the ankle mechanics of the runner and puts less load on their calves. The foam is the biggest contributor: the Pebax material itself is characteristically springy, and in the thickness of the shoes it creates what Bartold calls "extraordinary" energy return. "Obviously, [the first shoe] was called 4% because the suggestion was that it would offer a four percent advantage in economy, that you would extend four percent less energy in it. And when that came out, a lot of people said, oh, it's just marketing. But to date, all the studies have shown at least a four percent advantage, and some as much as six percent," he said.

How does the material return energy?

Bartold thinks it comes down to vibration. He explains

that a major cause of muscle fatigue is in absorbing and attenuating the vibrations that pounding the pavement send through the body. Vibration puts stress on bones, tendons, muscles, nerves and blood vessels — a shoe design that could absorb significantly more of that input would make a measurable impact on muscle fatigue. And the sandwich construction of the shoe midsole could act much like a soundproof wall it resembles, dampening vibration and giving the runner the extra energy, tests show.

Can anyone see time drops using the same technology?

Probably not. "I think what most people are thinking is that these shoes are best exploited by the very best elite runners," he said. "Only the fastest athletes — elites and competitive runners, and possibly even very fast recreational runners — will be able to activate both the foam and the plate to their full advantage. For a weekend warrior, the benefit is probably quite questionable."

What will this do to the running shoe market?

It's complicated. A decision is expected early this year from sport governing body World Athletics (formerly known as the International Association of Athletics Federation) as to whether the technology used in the Vaporfly shoes is permissible in competition, i.e., whether or not they give an unfair advantage to wearers of the shoes over athletes not wearing them.

"That shoe was already obsolete the day he broke the record," Bartold asserts. "Newer, more sophisticated models are certainly in the pipeline, and I have no doubt at all that in 18 months to two years, there will be other product to test the



boundaries of legality. I think the genius of what Nike's done is they've enacted an absolutely brilliant marketing plan. There's never been a shoe where the manufacturer says it will make you faster and then the research supports it."

The shoe has certainly kicked off what Bartold calls an arms race: Other major brands are rumored to have their own new technologies debuting in 2020 in the run-up to the Olympics. "In the last 10 years, it's been a complete innovation vacuum in running footwear. "I'm really intrigued to see what comes next."

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TRENDSETTER | VIONIC PRO FOOTWEAR

Fashionable Shoes Get the Job Done for Medical and Restaurant Professionals. By Suzanne Blecher

SOLE DIAGNOSIS

ust because folks work in the medical industry it doesn't mean that their shoes need to look orthopedic. The same goes for service industry employees who would appreciate footwear that is serviceable yet stylish. We recently caught up with Vionic Pro execs Laura Nogueiro and Taylor Leaf to chat about creating fashion-forward footwear for professionals on their feet all day. "Our technology fits this need perfectly," states Nogueiro, product line manager. "It's not only the materials and color, but the range of product, too," adds Leaf, senior designer. Here's more from our conversation:

Where did the idea for the line stem?

Nogueiro: "I've been here for four years and this has been a request I have heard pretty much from day one. I used to work in marketing and consumers would be calling in saying, 'I work in the service industry; do you have any slip-resistant shoes?' We would always say 'no.' We never thought of it as a large enough group, more like a very vocal minority. But then we started doing more research and decided we had a shot."

What industries do you serve?

Nogueiro: "Mainly medical right now; Secondarily, restaurants. Our price point lends more toward medical, along with our materials and features. The shoes are water resistant, and sometimes oil repellent, so they have a higher price point."

Leaf: "Sometimes there are more restrictions in the service industry where you need to wear a uniform. In medical, this is a way to add a bit of fashion sense to your basic wardrobe. It's the one place to play."

Do people wear Vionic Pro beyond the work setting?

Leaf: "Yes. Some of these shoes are a lot lighter than our inline models. In service, the shoes can sometimes be heavy due to the full-length rubber outsole plate with the slip resistant technology. We've combined ours with an EVA compound so it is an overall lightweight shoe. It's multifunctional because it's also comfortable and has some cool, fashionable materials."

Nogueiro: "We did a survey through our ecommerce site asking people in the medical industry if they wear their shoes outside of the office. An overwhelming majority said no. So, part of our goal was to make a shoe that you can walk out of the hospital [with it on], like a normal, cute shoe."

Tell me about the materials in the shoes.

Nogueiro: "The Avery suede is water-resistant and oil repellent, as is the rose gold metallic suede. The Avery and Mable in other colorways are water resistant. These

"We did a survey through our ecommerce site asking people in the medical industry if they wear their shoes outside of the office. An overwhelming majority said no." **Laura Nogueiro**

"Pro is great because it's very clear whom we are designing for. There's so much opportunity with technologies." **Taylor Leaf**



Vionic Pro Avery Collection are great features when you think of things being spilled on shoes. Especially for suede, we wanted something you would pick up and say, 'this isn't a work shoe.' It has almost been difficult to tell our story that this is water and oil resistant, because it does not look it."

Leaf: "Laura did a lot of research on what competitors are doing in the market. We combined that with design themes for the season. Our Vio-Motion support is a continuation of what we have in our core line. We combined that with the new Vio-Grip technology, which is a repeating tread pattern where any type of water or oil is transferred out of the bottom surface so there is never any trapped. If you step in a puddle, you won't slip."

Nogueiro: "Interestingly, we found there is no OSHA compliance for shoes. We did ASTM F1677 (MARK II) testing through a third party with other shoes in the market (Crocs, Dansko). We put them on top of water and oil to see how far they move. Ours did really well in comparison."

How are your shoes different from competitors?

Leaf: "It's not only the materials and color, but the range of product. There's a slip-on, a lace up and an alt closure. It's not an all-black to the floor outsole. I also work on active and casuals for Vionic. Pro is great because it's very clear whom we are designing for. There's so much opportunity with technologies."

How are you marketing the shoes?

Nogueiro: "We have a medical rep team. The goal is to market these more heavily in the next six months. Ratings have been really good, especially on the Simmons (athletic-looking) construction. We really want to target nurses with our line."

Tell me about offerings for men.

Leaf: "The Landon came in August 2019. It looks like a running shoe. It has a runner's toe and is more agile and quicker on the go."

Nogueiro: "Men's awareness of the brand is not as high as for women. Women buy a lot more shoes, follow trends and men are just harder to get to."

What's up for next season and the future?

Nogueiro: "For Fall/Winter, we have two new silhouettes for women on the active construction, one with an alt closure and then another lace up. Materials have a bit more depth, some mesh overlays. In the future, I would love to see water resistant meshes. Overall, there's a huge need for Pro. If you walk around the hospital, you see people wearing Nike Free on their feet. You need more support. You walk eight miles a day in the hospital! We're building awareness, building up the line with shoes that look cute and not like work shoes – and that are comfortable."













IN THE MARKET | RETAIL

Retail Refreshed

How to Stand Out as Brick-and-Mortar in a Digital World.

rom Portland, Oregon to Princeton, New Jersey and from Manhattan to Munich, brick-and mortar-storeowners are re-thinking how to attract and engage today's shoppers. Whether it's a new spin on old-school concepts or bridging the gap between shopping and socializing, the savvy retailers represented here are succeeding with fresh ideas tailored to fit a consumer mindset both contemporary and conventional.

Resale Revolution

The reasons range from the ability to buy brands they normally can't afford, or the fun factor of hunting for a unique item, or an increased desire to buy more responsibly, but the bottom line is nine million more people bought second hand clothes in 2017 than in 2016 and strong growth in this category is projected to continue in years to come. According to First Research, there are combined more than 25,000 resale, consignment shops and not for profit resale shops in the U.S, and reports an estimated resale industry in U.S. of \$17.5B.

Buffalo Exchange, based in Tucson, AZ began selling used jeans and flannel shirts in 1974, and now has 50 locations across the country and wears its authenticity well. A little dingy around the edges and crammed with a kooky assortment of apparel, shoes, and accessories, bargains abound at the Portland store. Locally-based brands are easy pickings; Sorel hiking boots, Nike and Columbia jackets, vintage Patagonia apparel, and all manner of backpack styles add to the store's regional flavor. Greene Street Consignment has

grown from a single, family-owned consignment shop in Main Line Philly, to now 10 locations in the greater Philadelphia/New Jersey area. Nassau Street is a main shopping drag located adjacent to Princeton University and makes an ideal setting for Green Street Consignment. Students, young moms with strollers, professors on their lunch hour and locals of all ages are likely not to leave empty handed. A "Designer Display" as you enter the clean, brightly lighted store sets the scene and a spiffed up consignment image carries throughout from a nicely merchandised men's section to racks of top-notch premium brand denim for women.

Outdoor Opportunities

Globetrotter is appealing on multiple levels. Literally, the Munich store features 1000 different brands spread across four floors that include a rain chamber for testing outerwear, a climbing wall and a paddle pool. Boutique shops within the store (Arc'teryx, Icebreaker, Fjallraven and Hestra) create cozy corners for shopping. Customers can take advantage of Globetrotters' extensive travel department, as there is space to sit, water to sip from an eco-friendly water station, and leisurely browse travel guides and maps. A sophisticated approach to merchandising and a Zen-like atmosphere offers a welcome relief from Munich's urban bustle.

Evo's Portland, Oregon location

alone makes for a great story. (Evo also has locations in Denver, Seattle, Whistler and Salt Lake City.) Housed in the historic 120-year-old former Salvation Army headquarters in the SE district of Portland, the Rose City location of this action sports specialist also offers several other cool talking points: an exceptional bike presence including onsite servicing, a surf meets ski meets skate mash up culture that allows for new and unusual brands on display, and an art gallery space. Lots of specialty outdoor stores promote "community" but it's the real deal at Evo. The store hosts events and gatherings year round, however, even on a sleepy Monday afternoon visit, handfuls of customers were content to linger chatting amongst them self and the store associates.

Softgoods brands of note: T-shirts by Richer Poorer and Mollusk Hemp, Vissla hoodies, outerwear from Burton, Nikita, and 686, and Polyanna and Neff knit beanies.

Department Store Demise - NOT!

Call it crazy, but Nordstrom's new flagship store in Manhattan has fast become a go-to destination. Its opening in October garnered significant buzz in a city that has seen beloved department stores shutter – Lord & Taylor last Spring and Barney's in December are two recent examples. What's the appeal? The new Nordstrom store is not on Fifth Avenue, the traditional department store mecca, and even long time New Yorkers will likely enjoy trekking to a different locale to shop. This makes the store visit something of an adventure. Then there are the Mobile Charging Station and the Express Service department - two of several au courant features - catering to today's on-the-go shopper. Plus the Shoe Bar where visitors can sip a martini while trying on a pair of Sam Edelman boots. Not to mention a visually beautiful store with exceptional customer service. No Nordstrom card on hand? No problem. Want the purchase sent to Charlotte for pick up? No problem. Exchange if the item doesn't fit? No problem. Sold!

The German retailer Ludwig Beck levels up the lowly "notions" category that once was standard issue retail fare, to a DIY haven for handcrafts. Employees of the lively full service Haberdashery & Wool department advise on all topics, with products ranging from custom zippers and buttons to embroidery needles. There is a variety of wool available and an extensive range of sewing thread. Even if textiles are not your thing, the colorful displays and experiencing how Ludwig Beck puts a progressive spin on heritage lifestyle is reason enough to stop in. A key takeaway here is millennial interest in this category; "sewists" is a new term for sewing enthusiasts, for example, following on the heels of "makers" for those who enjoy crafts. Established fabric and crafting retailer, Joann recently launched a Creator Studio concept store near corporate headquarter in Columbus, OH and H&M has started selling "repair kits." Ludwig Beck showcases a trend that translates easily stateside.

TRENDINSIGHT

Which Textiles Matter Most in a Winter Workout Wardrobe



CONSUMERS ARE STICKING WITH THE tried and true when it comes to dressing for the elements this season. Across the board our survey results show that "weather protection," "layering," and a "waterproof/breathable shell" are what counts most for today's active outdoor individuals. For instance, a whopping 93 percent of respondents said that a "waterproof/breathable shell" is their most important winter apparel workout essential.

Interesting, too, along these lines is that the traditional hang tag remains popular. For example, when asked, "Does the hangtag information affect your purchasing decision making in any way, 60 percent of survey takers said, "Yes".

Buzzy industry topics like ecoconscious materials and up-and-coming categories such as commuter wear and winter bike apparel, are not yet high priority among survey takers. Consider that close to half of respondents (49 percent) had no idea if their winter workout essentials were made of recycled materials. Of those who did, a recycled polyester baselayer top ranked highest, followed by recycled mid-layer fleece.

Another indicator that consumers are content with the textile status quo this winter: Over half of survey takers (57 percent) report that they do not plan to purchase a new jacket and instead will wear the same jacket they wore last year. ■

The survey, conducted by MESH01, included 164 respondents, men and women active in sports and outdoors, ages 18 to 60.



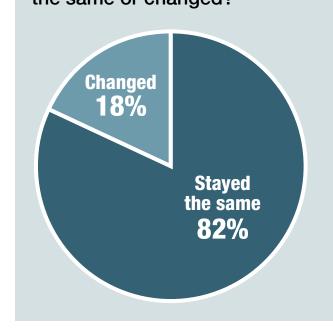
SEIZE THE TREND!

Trend Insight Consumer is a feature within *Textile Insight* that delivers research conducted on the MESH01 Platform. MESH01 collects data from a select panel of sports enthusiasts. For information on the Mesh1 Platform, contact Brian Bednarek at 603-766-0957 or brian.bednarek@mesh01.com. For more information on *Trend Insight Consumer* and how your company can participate, contact Jeff Nott at 516-305-4711 or jnott@formula4media.com.

When shopping for **winter workout apparel** and footwear, please rank the factors that most influence your purchasing decisions.

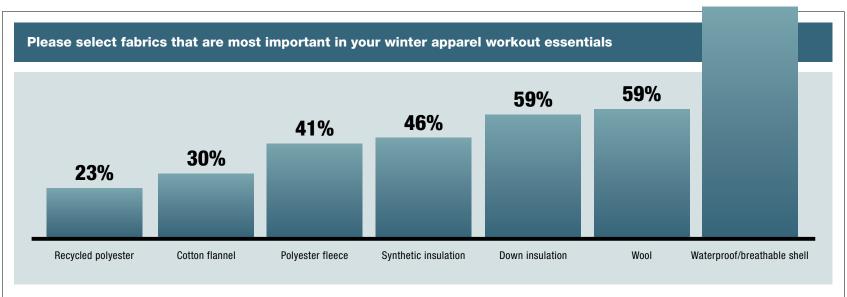


Compared to 3-5 years ago, have these factors remained the same or changed?

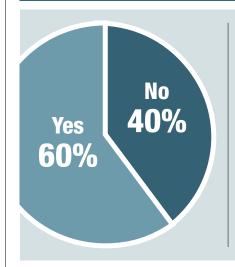




93%



Does the hang tag information affect your purchasing decision in any way?



Selected Comments

Important not only to learn what the product is made from, but also manufacturing and material origin, and to some extent marketing the product for specific uses. **Male 27**

Sometimes a feature will catch my eye. Female 29

I don't care about that hang tag unless it's from a cheap retailer. **Male 26**

If it's apparel, I tend to look for better quality of materials. And I lean more towards brands that are eco-friendly. **Female 39**

I read about the function, but the feel and fit is my final decision. **Female 40**

The hang tag will typically list all the features

and if I see something I like... Female 28

Information on temperature rating is helpful and guidelines on appropriateness for use. **Female 36**

The more technical information that isn't marketing talk is good and helps me make a decision. **Male 58**

I want to know to what degree temperature I am protected. **Female 30**

I like when the hang tag suggests the gear is for specific sports or athletes, e.g. backcountry skiing. **Male 34**

The hang tag will tell me the most important feature, and if it's what I'm looking for, then I

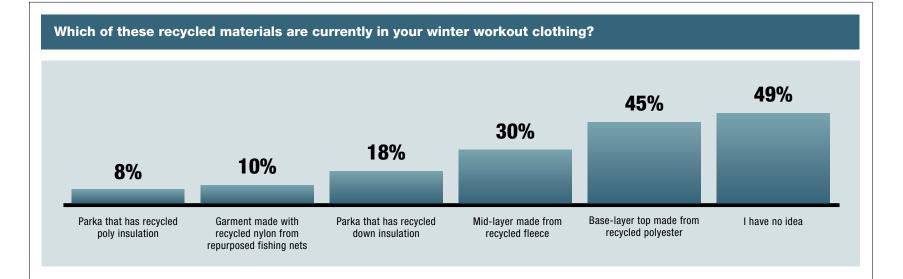
will consider the purchase. Female 46

I use it to look at weatherproofness and ratings for temp, durability, etc. **Female 29**

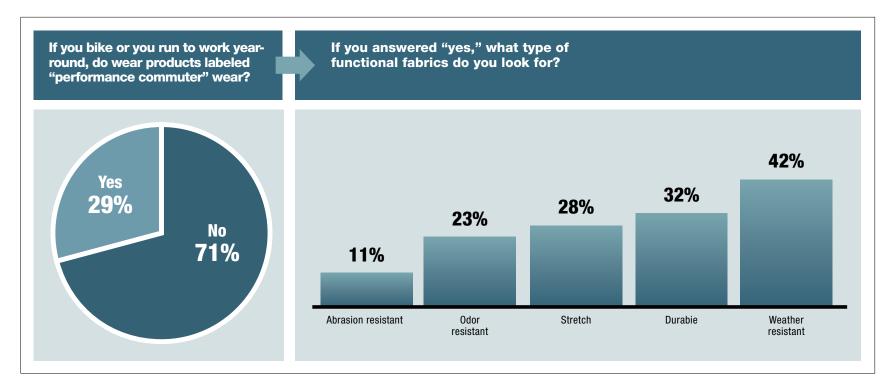
Claims on hang tags inform me of a product's benefits, so depending on what I'm using the garment for, I do look at hang tags for performance features. **Female 34**

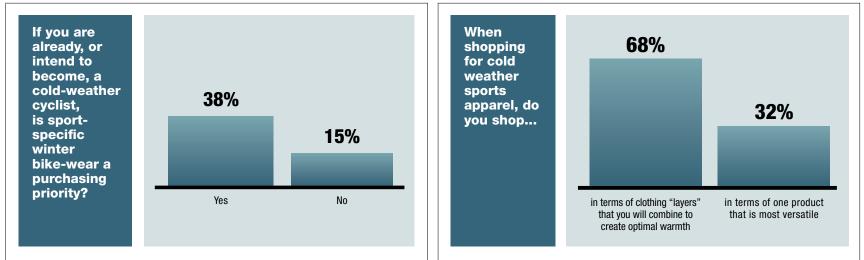
I like getting the product specs and details on a hang tag. There's nothing more frustrating than having to get my phone to Google a product while in a store. **Male 33**

When waterproof/windproof is easy to identify, I am more likely to purchase. If I have to search for it and don't find it, then it is no sale. Female 36



TRENDINSIGHT







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EDUCATION | UNIVERSITY OF BRITISH COLUMBIA

Research Develops Process to Recycle Waste Cotton into High-Value Nanofibers. By Kathlyn Swantko

A Load off the Landfill

mong textile materials, cotton is the most abundantly produced natural fiber, with "more than 28 million tons of cotton produced worldwide each year," explains Dr. Addie Bahi, materials engineering research scientist at the University of British Columbia (UBC). "In addition, the recycling rate for cotton is estimated to be around five percent, significantly less than the overall textile recycling rate of 15 percent."

To address this issue, Dr. Bahi, along with Frank Ko, lead researcher in advanced fibrous materials and UBC Professor of materials engineering and their academic team, began their lab-scale project of converting cotton production waste and discarded cotton apparel into high-value nanofibers. Phase One of the project began in 2018, assisted by a BC-based ecologist, and a local manufacturer of outdoor apparel supplying the cotton fabrics. Financial support was provided by a grant from the Natural Sciences Engineering Research Council of Canada.

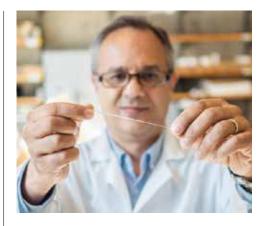
The focus of UBC's research is the development of a chemical process to convert the cotton waste into high-value nanofibers. To accomplish this, the waste cotton fabric was chopped into tiny strips and soaked in a chemical bath to remove all additives and artificial dyes from the fabric. The resulting gossamer-thin material was fed into an electrospinning machine, which produced very fine, smooth nanofibers. "While the process itself is relatively simple," cites Ko, "we are thrilled that we've been able to prove that a high-value product can be extracted from something that would normally go into a landfill where it would eventually be incinerated."

The pre-treatment of the cotton consists of a two-level treatment: A scouring process to remove impurities (i.e. oil, soluble impurities, and other chemicals) to produce a hydrophilic, clean cloth, and a bleaching process to whiten the textile and remove the dyes.

After removing the contaminants, the fabrics are ground into a fine powder, which can be dissolved and used for electrospinning, which is a non-mechanical technique used to create nanoscale fibers electrostatically from polymer solutions or melts, according to Bahi.

Project Goals

The ultimate goal is to replace the existing solvent lab process with an environmentallyfriendly scaled-up version. While the team has limited its initial research to converting 100 percent cotton waste into nanofibers, future plans are to begin working on cotton blends and manufactured textiles as well. In recent years, the scientific importance of polymeric nanofiber, along with the technological and economical advances in nanocomposites, has caused an explosive growth in research activities on nanofibers.



Bahi states, "Due to the significant upside potential of chemical recycling methods, our research was done to determine the chemical recycling methods that are environmentally benign and economically viable. At this stage, our method is suitable for any 100 percent cotton fabric constructions. Going forward, we plan to modify our process for blends as well."

End-use applications that have high potential to be impacted by UBC's research include formation of nanocomposite fibrils and yarns: electroactive nanofibers for ultrahigh sensitive sensor/electrode applications; bioactive nanofibers for biomedical applications; and nanofibers that can convert and replace petroleum-based carbon fibers for lightweight structural applications.

Kathlyn Swantko, president of the FabricLink Network, created www.TheTechnicalCenter.com for Industry networking and marketing of specialty textiles, and www.fabricklink.com for consumer education involving everything fabric. Contact: kgswantko@fabriclink.com

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Dr. Addie Bahi shows the valueadded nanofiber created through **UBC's new cotton** waste conversion process. This represents one of the first successful attempts to make nanofibres from fabric scraps. For more information, contact: Dr. Addie Bahi at: addie. bahi@ubc.ca, 604-822-2676, or Frank Ko. frank.ko@ubc. ca, 604-822-2738.

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OUT OF CONTEXT Insulated Reality



By Kurt Gray

INSULATION IN THE CLASSIC SENSE IS THE sum of two parts: dead air space and some kind of substance that creates little voids where motionless air rests. The dead air space is important because, next to a total vacuum, still and dry air is as close to a perfect lightweight insulation as the natural world gets.

The apparel industry measures insulation values with a benchmark Clo Test. It was originally intended to measure the amount of clothing necessary for an adult human to sit inactive in a nice, warm, dry and draft-free room. A Clo measurement of zero is the equivalent of being naked and a Clo of one equals the clothing necessary to be comfortable while resting at room temperature. The test results are linear and additive and mostly useless in relation to the outside world, however, they are the only test numbers we have.

When we wear insulation outdoors the conditions often are not nearly as nice as those in the lab. Outdoor outerwear has to deal with three things in the real world that don't factor into insulation testing at all — humidity, wind and cold air.

Water conducts heat pretty well and a humid atmosphere, such as air with a lot of water vapor in it, supercharges the effect of the outside temperature on the human body. When it is really hot and humid the conditions become muggy and miserable. The heat is oppressive because the hot, moist air is literally touching you. In cold and wet environments the same thing happens in reverse; body heat is conducted away from you by cold humid air. Great examples of this are riding outside on the deck of a Puget Sound ferry in the winter, or walking across downtown Chicago on any given night in January.

Cold air has a physical limitation that greatly impacts staying comfortable over time. Super cold air has a very low absolute humidity. That means the amount of water vapor the air can

Staying Warm is About a Lot More than Test Results hold is tiny and no matter what you do it isn't going to hold anymore. The warm toasty environment inside your outerwear has trouble "breathing" water vapor into the sur-

rounding atmosphere in these circumstances. When the humidity from the body reaches the outer shell of the apparel system the vapor is forced to immediately condense. The insulation gets wet and the shell gets frosty. Cold weather campers know this phenomenon all too well.

Now throw in the evaporative cooling that comes with windy conditions, and cold, wet

weather becomes a recipe for serious discomfort. Water has this weird physical trait where it can absorb huge amounts of energy without changing from a liquid to a gas. When water evaporates it takes this latent heat energy with it. What that means to you and me is that when wind blows across wet skin, or wet apparel, it takes massive amounts of heat with it. Cold wind is the biggest heat thief out there.

There's one other thing I should bring up. Humans are made mostly out of water. We breathe out water vapor, our skin is moist and we sweat when we get too hot. Like when we exercise in insulated garments. We can't do much about the first two, but avoiding the third is the key to cold weather comfort. Water is what makes insulation systems fail. Windy, cold, and humid environments, combined with damp clothing and sweat soaked skin, will easily create conditions that conduct heat away from the body faster than it can be replaced. The Greeks have a fancy word for this, they call it hypothermia.

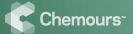
Disclaimer: *Mr. Gray* sleeps with a couple of fur covered heat thieves and he theorizes that they are in some way powered by this stolen energy source. Textile Insight's Publisher may not share in his opinions or choice of bedtime companions.



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