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Subscriptions: one year, \$24.00 (U.S. Funds) in the United States. All other countries, \$54.00 (U.S. Funds).

Postmaster: Send address changes to Textile Insight, P.O. Box 23-1318 Great Neck, NY 11023

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The leather category offers inspired looks for next season. More footwear coverage starts on Page 26.

TEXTILE INSIGHT®

6 In the Market

Our trade show coverage extends from Munich, Germany to Portland, OR. In news, a management shift at Unifi.

16 Made in USA

David Costello, president of Rising Tide Associates, shares his outlook on the domestic textile and footwear industries for 2016 and beyond.

18 Cover Story

With an eye on innovation, our report uncovers the next generation of performance materials with special attention to smart and sustainable technologies.

24 In the Studio

Contributor Suzanne Blecher consults with three industry specialists about the latest advances in fit, fabrics and the fashion aspect of sports bras.

26 Footwear

Developments in visible tech, reflective materials, foam formulations and colorful leathers were strong trends at the NE & NW Materials Shows held earlier this spring.

28 Strategies

Outdoor apparel brand Avalanche has remained competitive for 30 years, but, states owner Ron Petrucci, "It's a street fight every day."

30 Supply Chain

Companies are re-thinking recycling with waste nowadays becoming a means of increasing corporations' sustainability profile.

32 Trendsetter

Naturalizer's senior design director explains her vision of crafting wearable yet stylish shoes for today's modern woman.

33 Education

Contributor Kathlyn Swantko reports on revolutionary research in the field of self-cleaning technology for clothing.

34 Out of Context

New industrial sewing machines benefit both the sewers, and the supply chains in emerging labor markets – which includes the USA. Kurt Gray states his case.

What Your Textiles Say About You



I'm a sucker for a quiz. You name it, I'm all in, eager to check the multiple choice boxes on any subject matter, whether it's questioning "How Food Savvy are You?" or testing my geo-political smarts in WSJ's weekend news quiz.

I started my career in publishing a million years ago at what were then referred to as "women's magazines." I reviewed cookware and tested recipes for *House & Garden* magazine, wrote snappy updates on health research for *SELF* magazine, and did trend reporting for *Glamour*. But a favorite freelance gig was creating quizzes for *Seventeen* magazine. My assignments typically had a sports-theme with topics such as, "Are You Workout Wise?" and "What's Your Game." (The latter, I'm mortified to read now included this question: "You think a guy is cute, but are afraid: a) if you arm-wrestled him, you'd win; b) he thinks you're gawky looking; or c) your hips remind him of his mother's." What this had to do with discovering your athletic ability, I have NO idea! Perhaps that was never the point.)

Fast forward to my recent interview with David Costello for our Made in USA story. During our discussion about domestic manufacturing the question arose about the year the Berry Amendment was enacted. History was never my strong suit, and my guess was wildly off the mark. But days later while working on the USA article, and over the course of the following weeks when editing other stories, the Berry question got me thinking about how other items in this issue might be quiz-worthy.

You can read about David's company Rising Tide Associates and his outlook on domestic textiles and footwear on page 16. But first, let's find out "What Your Textile Knowledge Says About You:" ●

Emily

1. What year was the Berry Amendment enacted?
A. 1969
B. 1941
C. 1917
2. The eco textile phrase PFC-Free DWR stands for:
A. Dual Wind Resistance without polyester fiber compounds
B. Durable Water Repellant free of perfluorinated chemicals
C. Poly-Fibrous-Content Free Double Wide Regular
3. How many Manufacturing Innovation Institutes have opened in the U.S.?
A. 0
B. 8
C. 80
4. Which performance attribute is *not* inherent to linen:
A. Moisture management
B. Thermo-regulation
C. Shrink resistance
5. What country has the most to gain from the AGOA trade agreement?
A. Afghanistan
B. Africa
C. Antarctic
6. The future of self-cleaning textiles is projected to have:
A. No impact – there is no such thing as self-cleaning textiles
B. Small scale impact
C. Tremendous impact
7. Extra Credit: Who is Penny Pritzker?
A. Textile engineer that advanced use of zinc and copper in materials
B. United States Secretary of Commerce
C. Henry Penny's sister

Answers can be found on page 3.

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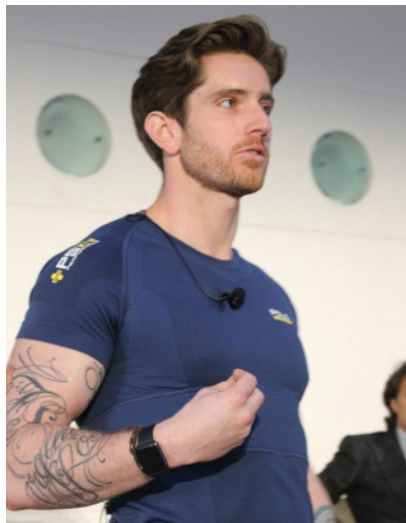
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Imagining Future Textiles as a Technology Delivery System. *By Emily Walzer*

Creating a Cross-Industry Dialogue



Ralph Lauren's new PoloTech smart shirt was given a live workout during the keynote presentation to show its integrated fitness attributes.

Convergence was the order of the day at the recent DC-based Smart Fabrics Summit. With panel discussions, industry presentations and product showcases, the sold-out event looked to foster collaboration of non-traditional partners to create the next generation of smart textiles. For example, the U.S. Secretary of Commerce moderated the keynote panel that brought together high-level execs from Ralph Lauren and Intel to talk textiles.

"We want to build connection between apparel, tech and textiles," said Secretary Penny Pritzker, who described the smart fabrics market as "nascent, but exciting." The "A Business Roundtable on the Future of Smart Fabrics," in addition

"These days we're using rocket science to make high heels and create a new version of what a company is."

AMANDA PARKES, MANUFACTURE NEW YORK

to David Lauren and Intel's Seth Walden, included Mary Hennessy, CEO of The Industrial Fabrics Association International (IFAI), which hosted the Smart Fabrics Summit with the Department of Commerce.

The size and projected growth of smart textiles, along with increasing breadth and depth of product innovation, in combination with the recently announced \$315M Revolutionary Fibers Initiative, has generated considerable buzz around smart fabrics this year. (See Page 18 for more details.)

Smart textiles are a \$1.9B global market with sales projected to reach \$2.25B in 2016, according to a market research overview presented by Jeff Rasmussen, IFAI, who said the U.S. market accounts for 45 percent of worldwide sales, about \$1B, or approximately 2.4 percent of overall GDP.



Josh Teitelbaum, Deputy Assistant Secretary, U.S. Department of Commerce, welcomed the crowd for a full day of smart textile discussion and industry networking.

The Sports/Fitness category is the fastest growing category accounting for 17 percent of the global market; Transportation is the largest segment at 27 percent; Fashion is small at eight percent. However, Rasmussen commented, "Until now we've not paid attention to this (Fashion) market. It's worth watching."

Future population growth and demographic shifts will drive change in how and where we live, states Rasmussen, who envisions smart cities, smart transportation, smart healthcare, smart energy systems and smart education. Says Rasmussen: "Smart fabrics will play nicely in this sandbox."

Hurdles remain, nonetheless. Panelists mentioned a range of concerns including: manufacturing and supply chain issues; protecting IP and gray areas in privacy and data security; and the need for standards.

Connecting Steel Toe Boots with Stilettos

"This is not just about electronics—this is a hard/soft continuum. We're not talking about plastic bracelets," said Amanda Parkes, PhD, chief of technology and research, Manufacture New York. "These days we're using rocket science to make high heels and create a new version of what a company is."

Despina Papadopoulou, founder, Principled Design, who uses the term "wearable eco systems," added, "We need to have an interdisciplinary dialogue, and re-think this fundamental system we live in. We have to realize the different mindsets and product development cycles of an apparel designer and an electronics engineer."

The women were joined by Qaizer Hossenjee, senior director of business development & partnerships, adidas, on a panel moderated by JJ Raynor, special assistant to the President for Economic Policy, National Economic Council. Having

been in this space for a while, Qaizer noted, "Now we don't talk as much about the tech, now it is about the eco system. We're also talking about how this can be done in the U.S. and how to simplify processes for smaller operations."

The adidas sports bra and adidas men's techfit shirt feature Circuitex by Noble BioMaterials. The new Ralph Lauren Tech Polo also uses the Noble product. "We're seeing a lot of interest from a wide variety of companies, from healthcare to tech firms for Circuitex," said Jeff Keane, CEO, Noble. Circuitex technology allows for the entire circuit to be etched onto one piece of fabric.

DuPont, PurThread and Globe Manufacturing also showcased smart product innovation. Other exhibiting sponsors included: Bekaert, Coated Technical Solutions, Directed Vapor Technologies, Eeonyx and Drexel University.

"This (Summit) demonstrates the opportunities that exist for the domestic textile industry. You see that here today with people from Microsoft and Intel in the same room as textile people, as well as Ralph Lauren and Under Armour," said Keane. "But it's still early in the game. We're in the bottom of the first inning."

Nonetheless, many at the conference agreed that the U.S. is playing a leading role. Going forward the belief is that U.S. industries will need to collaborate with each other and with government to innovate as well as come together to set standards and testing methods.

"It's urgent that we develop smart textiles here," said Walden, SVP of new tech at Intel. "Speed is imperative. We're breaking down barriers that keep us from getting ahead, but we can't wait any longer." He and others see China, for example, nipping at America's heels in advancing wearable tech.

Convergence is a big step in the right direction, with business as well as government paying attention to textiles. ●

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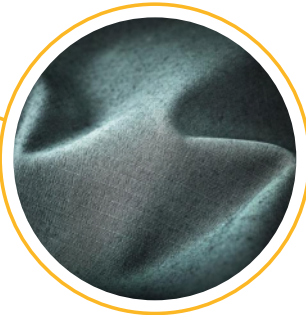
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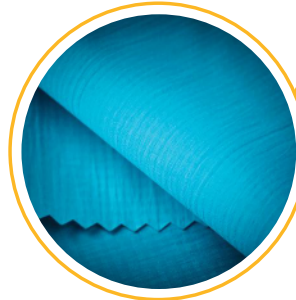
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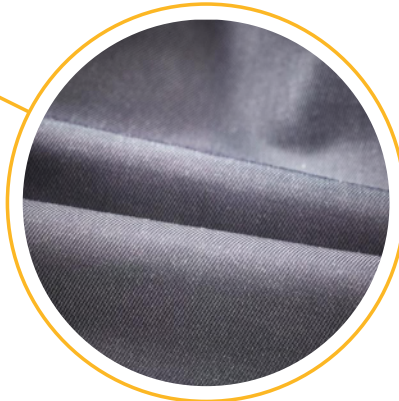
5. CORDURA® UltraLite fabric:

Built from high tenacity filament nylon, CORDURA® UltraLite fabric makes a fashionable and functional adventure-inspired statement when blended with bags or apparel.



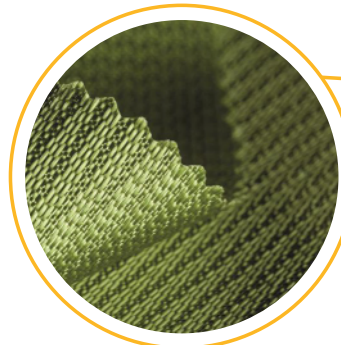
2. CORDURA® Canvas fabric:

Featuring an intimate blend of durable nylon fibers and comfortable cotton, the addition of CORDURA® Canvas fabric to any product design recipe offers a savory and naturally soft texture without sacrificing abrasion resistance.



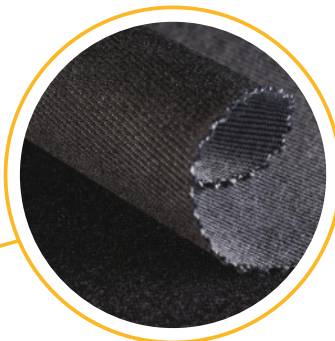
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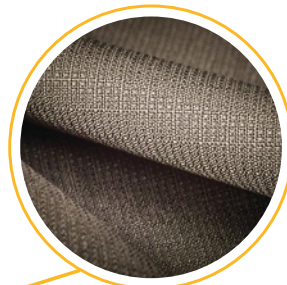
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Headwinds and Tailwinds Are Forecast for “Textiles in Motion.” By Trish Martin

Finding Growth Here and Abroad

The Friday session of the Synthetic Yarn and Fiber Association’s spring conference started on a positive note with Mark Vitner, senior economist at Wells Fargo, projecting the U.S. economy will grow 1.7 percent in 2016 and 2.1 percent in 2017. Vitner expects growth in single-family housing as Millennials start buying. He also sees increases in technology and in travel and leisure as more Boomers retire. Indeed, Vitner asserts consumer confidence is recovering and the economy is on the move.

On the flip side, however, Vitner warned, “The economy is better for consumers than for manufacturers.” He continued, “Textiles should be flat with excess capacity in lower value added markets offsetting investment in higher value added sectors. Energy will remain down.”

The Wells Fargo exec’s presentation was part of an impressive agenda at SYFA’s “Textiles in Motion” event held in Charlotte, NC during April that addressed economic projections and global supply chain shifts affecting the textile industry.

Vitner told conference attendees that interest rates should inch up after the election. He anticipates a rate hike in December but thinks the Fed wants to avoid negatively affecting the dollar and U.S. exports. “They may consider the impact on consumer mortgages before acting,” he said.

He made the point that manufacturing will continue to be a critical part of GDP, although smaller. Many sectors are adding jobs but they tend to be lower paying positions that dampen wage growth, according to Vitner.

Updates on Fiber & Sourcing Strategies

At the conference, Alasdair Carmichael of PCI Wood Mackenzie focused on synthetic fibers. His



“Manufacturing will continue to be a critical part of GDP, although smaller.”
MARK VITNER, WELLS FARGO

“Africa is increasingly attractive. Size, population growth, low wages, and proximity to North America combine to enhance Africa’s potential.”
AARON LEDET, VF CORPORATION

company’s research indicates oil prices have bottomed out. However, overcapacity in other raw material markets will keep synthetic fiber economics somewhat stable even if oil prices rise.

The looming concern for the SYFA crowd, according to Carmichael is, in a word: Sustainability. He believes synthetic fibers are catching the bad press surrounding plastics and the environment. Botanic fiber producers are promoting biodegradability to divert attention from water and land use. Carmichael expects the advertising dollars invested behind the biodegradability message to be considerable.

Aaron Ledet, VP of Americas Sourcing at VF Corporation, shared that, for companies that “chase labor rates,” Africa is increasingly attractive. Size, population growth, low wages, and proximity to North America combine to enhance

Africa’s potential. Ledet alluded to idled infrastructure, especially in shipping, that can come online quickly as demand grows and put lead times from some ports on par with China. Plus, the African Growth Opportunity Act (AGOA) makes the region relevant for US producers, especially as uncertainty about TPP (Trans Pacific Partnership) increases.

Ledet is less optimistic about apparel re-shoring than many U.S. fiber and textile manufacturers would hope. “American consumers are very happy to spend less on clothing,” Ledet claimed. While retail prices have increased 42 percent over the past decades, apparel prices have only climbed by 3 percent. In fact, apparel spending as a percent of household budgets has dropped from 3.5 percent to 2.5 percent.

Further, he noted, that of the \$915 U.S. consumers [on average]

spent on apparel in 2014, they only spent three percent on USA-made garments. Domestic manufacturing bottomed out in 2009 and, although it has increased 45 percent, U.S. labor rates are an impediment, according to Ledet. Labor makes up 30-40 percent of a garment’s cost. The average \$13 U.S. hourly wage is three to 30 times greater than any other country, even with China’s recent increases. Ledet is concerned that minimum wage initiatives will further hinder re-shoring opportunities, especially in California.

That said, VF owns several boutique brands where domestic manufacturing makes good sense. By minimizing labor content through automation, VF engineers have made it possible to manufacture some products in the USA cheaper and faster than sourcing from Asia, Ledet reported. VF’s criteria for U.S. production include businesses with high retail prices, fast-turn service requirements, and, most importantly, customers who value made in USA products.

Ledet illustrated his point with Majestic’s MLB uniform business headquartered in Pennsylvania. The league mandates USA manufacturing but also requires overnight delivery of new custom uniforms for players who switch teams. To achieve this rapid turnaround, VF automated production and implemented quality control innovations to eliminate expensive errors. However, the real key to Majestic’s success is selling high priced replica jerseys to fans so that those generous margins offset the costs of the players’ uniforms.

While VF’s perfect storm of factors that support domestic manufacturing can exist, Ledet just does not see it for VF’s mainstream businesses. “Soon, every piece of apparel in every Walmart and Target in this country will be made somewhere else,” he predicted. ●

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Sustainability Soars

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RECYCLE

Recycled fibers - both natural and synthetic with a performance aspect.

LIGHTWEIGHT

Fabrics continue to go lighter in weight without neglecting strong functional levels.

PRINT

A strong sense of creativity, ranging from multi-functional appeal to new structures and print applications.

SUSTAINABLE

Sustainable solutions continue to develop as a reduction in water, emissions and energy are key for the future.

COLOR

Color is an important aspect as more vibrant tones push through in plain through to double sided contrasting fabrics and bi and multi-colored prints.

COOLING

Cooling technology is increasing in interest, the latest performance to enhance existing functions including quick dry and moisture management.



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From reduced water through dyeing processes, recycled fibers and new natural fiber developments, the textile industry's commitment to creating cleaner processes and environmental protection was a highlight at Performance Days trade fair held recently in Munich, Germany. Key to note, however, is the fact that contemporary sustainability efforts don't diminish the functional aspects of products Performance Days buyers are keen to source.

Carvico and Jersey Lomellina are a case in point. Both mills are collaborating with Econyl and Healthy Seas, in creating a cleaner environment not just on the land but from the oceans, too, by collecting and recycling ghost fishing nets to produce a recycled nylon yarn. According to data there are approximately 640,000 tons of fishing nets in the oceans. Carvico and Jersey Lomellina are producing functional swimwear fabrics with Econyl.

The company Thread features environmental and social responsibility. With plastic bottles collected in Haiti and Honduras, the

waste is washed and shredded in local factories before being made into chips that are brought to North America for processing into fabrics. Thread's efforts not only advance recycling but additionally help provide employment in poor areas. Burlington is a Thread partner.

Sympatex Technologies highlighted its sustainable products during Performance Days, presenting new outer and lining material. Certified according to Global Recycle Standard, the material basis of these laminates is a yarn produced by using recycled PET bottles.

Brugnoli has launched a new range named Br4, consisting of plain and jacquard performance fabrics incorporating Fulgar's EVO fiber, a bio based polyamide made from castor oil. Brugnoli confirmed that 30 percent less water is used in production. The Br4 collection also features a high level of performance.

Water is an essential element in the textile and dyeing process, but an element many companies are looking to reduce. Pepwing is doing just this with its solution dye

master batch Dye Free methods. The concept is to melt polyester with the master batch that involves no water, but results in a colored chip that is then extruded into a yarn. As the dyestuff is melted with the polyester chips there is no color bleeding or migration in the final fabrics. The advantage of this new development is that water consumption can be reduced by 50 percent during the process and fabrics incorporating Pepwing's Dye Free process, creates superior color fastness combined with the fact that the final product will also be recyclable.

Trending: Natural Fibers, Cooling Performance

At Tessile Fiorentina the recycling ethos continues with recycled wool. The recycled wool is obtained from reclaimed wool garments that are collected in Italy and stripped and reprocessed. Grouped into colors, the resulting yarns do not have to be dyed, so not only is this product recycled it is also conserving water. The performance wool collection from Tessile Fiorentina is a blend of recycled wool with polyester and nylon, and fits nicely with the

market's increased demand for high performance wool.

A new fiber making waves is Flocus, derived from kapok seeds. Since its launch last season, Flocus has developed innovative new products from multi blend denim with cotton/kapok/spandex/lyocell through to double knits of cotton/kapok/spandex/nylon. The advantage of kapok over cotton production is that no water, chemicals or pesticide is used as the fibrous content is obtained from the seeds of the kapok tree. Kapok mimics the feel of cotton, and is also being suggested for natural insulation for garments.

Looking ahead to Spring/Summer 2018, the development in cooling fabrics continues. Burlington highlighted its new cooling fabric, MCS.A.C—the latest development in the core MCS base fabrics. It offers moisture management and quick dry. The AC aspect is a finish applied at the fiber level in the form of microcapsules with a life span of 30 plus washes. The microcapsules, consisting of sugar, water and alcohol, burst and release the contents upon friction

and when you sweat, to give a cooling feel against the skin.

Polartec launched DELTA at the show, a collection of fabrics destined for the yoga and active markets. Constructed of polyester, Tencel and spandex, the performance fabrics have a natural but cool touch. In addition, the cooling aspect is inherent to the polyester used, making the performance a permanent aspect.

Dynamic cooling also features at HeiQ with its Adaptive finish. Applied at the padding process of the textile manufacturing, Adaptive gives a cool touch to fabrics and is becoming a popular add-on in giving fabrics a performance aspect through layering technology. For active brands, Adaptive is a cost effective way of adding a higher level of performance compared to cooling yarns.

In addition to eco and performance features, brands also look to aesthetics to add an element of uniqueness. A key trend at Performance Days was textile mills pushing print applications on incredibly lightweight material. Another emerging trend was

58 percent polyamide, 26 percent polyester, 16 percent spandex double sided knit from Schoeller 150 g/sm.



pushing prints to have an added performance aspect as seen at Nan Ya Plastics, with a reflective print applied onto a printed base. Shinkong also pushed the print direction with hyper realistic relief on multi functional ripstop bases weighing only 62 g/sm.

Gunold found another way to achieve uniqueness via its sewing thread collection for stitching and embroidery. New innovations included POLYMET (polyester)

and FILAMET (acrylic) where brands can select from a vast color range and twist in metallic threads to create a unique final product. Another range, SULKY, involves the use of variegated shades in viscose threads, which when stitched in an exposed flatlock detail or embroidered detail create a unique look. This type of customization is appealing to brands, as they are able to create the final thread that is unique to their collections. ●

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Linen 2.0

Versatile, sophisticated, sustainable and thermo-regulating are terms being used to describe contemporary linen as this age old textile takes on a new age identity. “Linen 2.0” was the focus of an event held recently at The New School, Parsons School of Fashion, where textile execs provided an overview of new techniques and innovations happening in linen development, while also sharing a visual presentation of the linen-making process that dates back centuries at European facilities.

“Linen can be classic but can be fashionable, too,” said Silvio Albini, CEO and president of Albini Group, a leading producer of high quality shirting fabrics since 1876 in Italy. “It’s natural, comfortable and the most sustainable fiber in the world. Now we are making linens that are softer and innovating with blends and finishing in new ways that are modern. We are even making denim from 100 percent linen,” said Albini, who spoke to the crowd of about 100 textile professionals, The New School faculty and students gathered at the evening event. He mentioned elevating the thread count in linen shirting to enhance softness, creating blends with silk and other fibers to enhance functional and aesthetic features, as well using a liquid ammonia finish that adds strength and can be

combined with other techniques to promote “iron-free” properties.

Albini Group is the number one shirting fabric maker in Europe with 16 million meters sold every year. The family-owned business has seven global production sites and an employee base of 1400 workers. While cotton accounts for the majority of Albini shirting, “linen is growing a lot,” said the CEO, adding, “Linen is not just for summer anymore. We are doing more lines for year-round wear.”

Marie-Emmanuelle Belzung, director CELC, the European Confederation of Linen and Hemp, outlined many attributes that make linen a good fit for today’s marketplace. She listed eco factors such as no irrigation, no GMOs, and no defoliants required for production. She highlighted performance properties including thermo-regulation, moisture management and that linen is inherently anti-bacterial. In terms of visual appeal, Belzung noted, “Linen has a natural dye affinity and takes deep and vibrant tones, needing little amount of dye stuff to attain color.”

Belzung also reviewed the many production steps necessary in making high quality linen, including a description of “Scutching,” the process of separating, shives and seeds; just one more interesting fact about linen to emerge from an evening full of enlightening information. ●



Unifi Makes Changes in Executive Suite

ONE WEEK AFTER REPORTING ITS THIRD QUARTER results last month, Unifi announced the retirement of its CEO William L. Jasper; resignation of R. Roger Berrier, Jr., its president and chief operating officer; and appointment of two private equity executives to six-month long board seats. Additionally, Unifi promoted its VP of manufacturing, Thomas H. Caudle, Jr., 64, to president, and elected him to the board.

Earlier, Unifi, citing “solid momentum” from establishing new customers and partner for its REPVE recycled yarn program, reported a net profit of \$9.7 million on a 6.8 percent drop in quarterly revenues to \$161.3 million for the period ended March 27. Sales volume in International,

Unifi’s most profitable segment, rose 10.2 percent to more than \$31 million despite a currency swing that caused prices to fall 10 percent. Nylon volume fell 12.6 percent to \$33.9 million on a 4.3 decline in price; Polyester volume was down 3.1 percent to \$94.7 million on a 1.1 price drop.

Unifi’s new directors besides Caudle are James M. Kilts, a former chairman and CEO of The Gillette Company, who founded Centerview Capital in 2006, and Robert J. Bishop, who founded Impala Asset Management in 2004. The terms of both directors expire at Unifi’s 2016 annual meeting in October. The company’s fiscal year ends in late June. —Bob McGee

Demand Rises for Automated, Localized and Customized Manufacturing. **By Debra Cobb**

The Future Is Here

What was once a hands-on, labor-intensive industry is rapidly transforming through 3D simulation, automation, robotics, and digital communications—and not a moment too soon. That was a clear trend at the recent North American edition of Messe Frankfurt’s Techtextil/Texprocess, held in Atlanta May 3-5, where automation providers exhibited products ushering in a new age for textiles and apparel.

Much of the growth in domestic textiles is coming in the area of non-wovens, where end products are too bulky to be shipped long distances; and in textiles for safety apparel, Berry-amendment military apparel, and non-apparel end uses.

Carolina Nonwovens, a division of National Spinning, recently invested \$13M in a new facility to manufacture air-laid and thermo-bonded acoustical and thermal insulation for automotive, appliance, building, and bedding end uses. Some 85 percent of these non-wovens use recycled fiber, and in many cases replace non-sustainable foam materials.

Poole Company’s EcoSure BioBlast biodegradable fibers for the household wipes market are made from recycled PET bottles and are specifically designed to break down at least 12 times faster over a year in landfill conditions, compared with traditional polyester wipes.

Textile mills including Coville, Minnesota Mills, and Draper Knitting report that FR textiles are becoming a major segment of their business. At Glen Raven Technical Fabrics (GRTF), the latest GlenGuard Hi-Vis FR fabrics featured a patented “no melt, no drip” technology along with new anti-stat protection. “In general, we are seeing an increased demand for the traceability and peace-of-mind afforded by U.S.-sourced FR materials,” commented Rich Lippert, marketing director at GRTF.

Mary-Lynn Langraf, senior international trade specialist for the U.S. Department of Commerce/OTEXA, enthused about the opportunities in the personal protective equipment

market, such as the use of auxetic materials by Advanced Fabric Technologies. Auxetic materials grow thicker when stretched or subjected to impact, and offer a wide range of possibilities for protection from blast or impact, and for the creation of breathable or compressive materials.

Man vs. Machine

While materials grow increasingly technical, sewn product manufacturing is making a quantum leap to meet the demand for automated, localized, customized manufacturing. Footwear manufacturing initiatives such as Under Armour’s Project Glory, Adidas’ Speedfactory, and New Balance’ MB1 are already combining customization and speedy delivery with local manufacturing and cost savings.

Body scanning, sizing studies, garment simulation, and fit prediction tools such as Human Solutions Assyst increase productivity by saving time and material costs. Morgan Technica’s automated and integrated cutting room technologies utilize 3D software to sense how the fabric moves on the body, providing solutions to blocking and pattern placement, managing fabric tension in cutting, and sensing fabric flaws.

Gerber Technology demonstrated its closed-loop Digital Solution network, which transfers data from the design room to its smart machines, capable of executing print-to-cut, made-to-measure, and matching operations. Gerber’s Z1 cutter is up the world of mass customization by scanning to cut digitally printed pieces from a roll of goods.

To be introduced later this year, SoftWear Automation’s Automatic Sewing Machines with Threadvision—robotic seamstresses, if you will—work alongside the company’s LOWRY fabric handling sewbots to fully automate the sewing process.

Bill Grindle, Gerber CMO, put it this way: “We have a vision. We know there will be a time when you can sit at your own computer and create your own avatar, drape your own garment, and order it online, knowing that you won’t have to return it.”



“Brands and retailers want production close to the market; and luxury brands are looking for immediate deliveries,” said Dave Gardner, managing director of the Sewn Products Equipment & Suppliers of America (SPESA). “With consumer trends changing rapidly, automatic cutting and sewing offer the best opportunity for our industry to survive. Advanced technology is essential.” ●

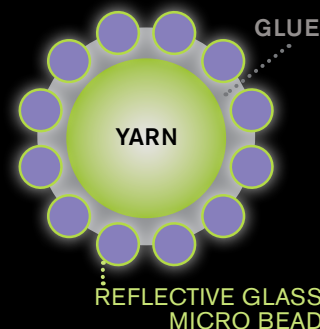
Gerber’s Z1 cutter is ideal for mass customization, having the ability to scan and cut individual printed pieces.

JRC REFLEX HAS DEVELOPED A NEW PATENTED REFLECTIVE YARN



CRY®
COATED REFLECTIVE YARN

The trademark name is
CRY® Coated Reflective Yarn
Patent pending
N° PCT/IB 2015 / 001049



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CRY® Applications:

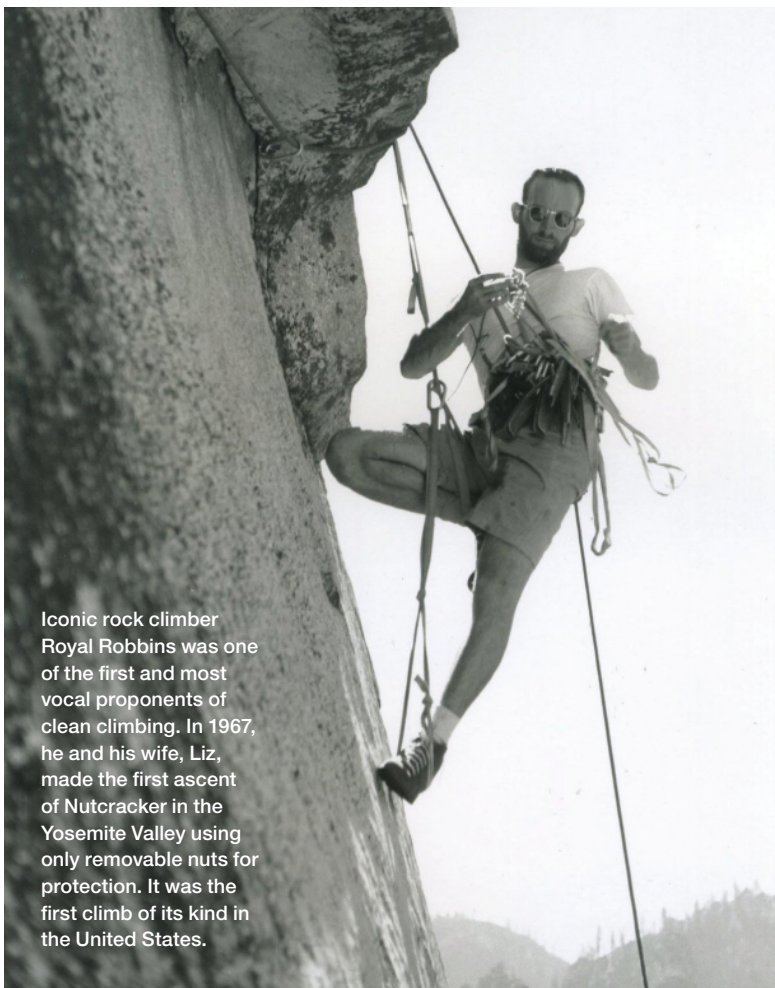
Circular knitting for socks and headwears
Flat bed knitting for knit sportswear
Woven & knit fabrics + embroidery designs

CRY® Range:

Standard: Count 950 dtex | Diameter 250 micron | Gauge 14/15
Mini: Count 450 dtex | Diameter 200 micron | Gauge 18
Unbreakable: Count 750 dtex | Diameter 220 micron | Gauge 14

New and Unique Ways Brands Are Growing Green Initiatives.

Royal Robbins Elevates Company Eco



Iconic rock climber Royal Robbins was one of the first and most vocal proponents of clean climbing. In 1967, he and his wife, Liz, made the first ascent of Nutcracker in the Yosemite Valley using only removable nuts for protection. It was the first climb of its kind in the United States.

Royal Robbins Becomes Bluesign System Partner

Newly appointed Royal Robbins CEO Michael Millenacker is doubling down on the company's founding commitment to environmental preservation by signing on as a bluesign System Partner.

Royal Robbins partnered with bluesign to evaluate and reduce its textile production and manufacturing chain's environmental impacts. Millenacker will work with factory partners to improve performance and reduce impacts in resource and energy productivity, consumer safety, water emissions, air emissions, and occupational health and safety.

"Environmental safekeeping is the core foundation of our brand's heritage," said Millenacker. "We are devoted to continuing and expanding on Royal and Liz's original vision. We are committed to social responsibility and are taking several steps to improve our day-to-day business."

Millenacker served as Royal Robbins' director of sales and marketing in the 1990s, reporting directly to Royal. In late 2015, he returned to the heritage brand after serving as president of Eagle Creek and vice president of sales at The North Face.

Earlier this year, Millenacker signed the Outdoor Industries Women's Coalition's CEO Pledge to support a more sustainable industry built on gender diversity and inclusiveness. ●

Textile Supplier Pertex Expands PFC-Free Offering

Following significant research and development, textile supplier Pertex is now offering an extensive range of non-PFC DWR fabrics that have performance characteristics similar to conventional DWR finished fabrics.

UK-based Pertex, known for its lightweight technical fabrics, reports that it has completely eliminated long-chain (C8) PFC chemistry from its products, moving to a less harmful short-chain (C6) alternative.

"For over five years, we have been supplying fabrics with non-PFC DWR to select brand partners and with that expertise and experience, we are confident that we can achieve performance at a similar level to conventional DWR," said Steve Laycock, Pertex brand director.

According to Laycock, it is clear that there are barriers to overcome in order to make a complete move-away from PFC-based DWR. A key issue still to resolve is that dirt and stain repellency of non-PFC DWR finishes remains less effective than that of a conventional PFC based DWR – possibly affecting the garment lifespan.

"We are committed to further expanding our range of non-PFC products through the continued development of new and existing non-PFC DWR technologies, with the ultimate goal of delivering fabrics with long-lasting performance with minimal impact upon the environment," said Laycock. ●

Rooted in a Make-Local Supply Chain

The North Face continues to advance its made in America initiative, with a Backyard Project apparel collection now in its second season. Started in 2014, with the aim of crafting apparel within a 150-mile radius of the company's San Francisco area headquarters, the new crop of Backyard garments adds styles, domestic partnerships and local textile achievements. Specifically, TNF's Backyard Project involves:

- 10 acres of brown cotton harvested

- 12 bales of brown cotton sent for spinning
- 28,718 yards of fabric knit
- 16,963 garments made
- 118 years of vendor experience in the Los Angeles garment industry
- One country of origin – USA

"The Backyard Project is about connecting with local artisans right here in the USA," said Sumi Scott, director of sportswear, The North Face. In its effort to expand the project, production moved down the coast to bring in LA businesses JC Industries and Care-Tex Industries. Other supply chain partners include U.S. cotton farmer Jim Olvey of The Natural Hue Co. and Ted Sheely, owner of Sheely Family Farm in Stratford, CA. The cotton for this year's Backyard Project was also ginned in California and Arizona and spun into yarn in South Carolina, before being dyed, cut and sewn in Los Angeles. ●

Green Jeans: Levi Strauss & Co. Partners with Aquafil



Continuing its efforts to develop more sustainable denim products, Levi's is partnering with synthetic fiber company Aquafil in a new collection of men's denim featuring Econyl regenerated nylon. Econyl fibers, made from waste materials such as fishing nets and old carpets, help divert trash from landfills and oceans. Giulio Bonazzi, chairman and CEO of Aquafil, was quoted saying, "We envision a world where everyday items don't have to come at the expense of the environment." He continued, "This new partnership is further proof that sustainable materials can be used to reinvigorate products that have been traditionally made. Levi's is redefining the denim industry." ●

The Role of Designer, and Design, in Modern Outdoor. By Emily Walzer

Embracing & Navigating Change

Responsible design with a definite point of view is needed in today's active/outdoor market as the industry adjusts to new business models and an increasingly powerful consumer influence. This approach was a strong theme and discussion trigger throughout the Struktur Event held in Portland, OR earlier this month.

Now in its third year, Struktur is a creative conference focused on the role of the designer in the contemporary world of active/outdoor product. Attendees participated in hands-on workshops, listened to presentations by career veterans as well as industry newcomers, and engaged in lively panel conversation, while also having the opportunity to connect with peers during evening gatherings hosted at outdoor specialty shops in Portland's bustling Pearl District.

New this year, the workshops jump-started Struktur 2016. There were sessions in textile education, color trend development, visual storytelling, sketching ability, and garment construction. Staged at various locations including the University of Oregon Innovation Lab and the Pensole Footwear Design Academy, participants learned new skills and were updated on the latest fiber and fabric technologies and important industry trends. Bemis, Woolmark, Concept III, Promostyl and Autodesk led workshops. Textile suppliers Cotton Incorporated and Cordura were also Struktur sponsors.

Day two of Struktur kicked off with a keynote on "Design that Stands the Test of Time" by Karuna Scheinfeld, VP design, Woolrich. Her thoughtful reflection on personal and professional experiences set the tone for the 2016 conference. Scheinfeld outlined four important factors in product development and stressed how these elements create long lasting, meaningful product and as such are critical to sustainability.

"Quality is the first step toward loyalty," said Scheinfeld, who listed function, beauty and history as other priority components in product design. She added, "Design that stands the test of time equals sustainability."

A deeper dive into sustainability was provided by a panel on "Responsible Design" that included Pater Kallen, design director, Nau; Deborah Alden, managing director, Brooklyn Fashion + Design Accelerator (BFDA); and Andy Fallshaw, co-founder, Bellroy, known for its Carryology brand.

Fallshaw explained his company's status as a B Corporation and stated, "B Corp is especially good for small companies as it is easier to attain in the early stages of growth and will be beneficial going forward." Fallshaw also made a case for using business as a force for good highlighting the Effective Altruism movement and website Givewell.org as prime examples.

Together, panelists had the audience consider sustainability strategies that exist from material selection to product disposal and the designers' role as technology and craft increasingly intersect.

These themes were also addressed in standout presentations given by outdoor execs Carl Moriarty, design director for apparel at Arc'teryx, and Nasahn Sheppard, who is REI's first divisional VP of product design.

Re-thinking Where We Manufacture & How We Sell

Sourcing strategies and the steep ascent of online selling were other areas explored at Struktur 2016.

The panel, "Made in? American vs Overseas Manufacturing," was moderated by Susan MocarSKI, founder of Cleverhood. Panelists included Matt Molletta and Muriel Bartol, founders of Swrve; Ryan Foust, Danner footwear designer; Carl Moriarty, Arc'teryx and Tracey Cottingham, Outdoors by Design.

Three company founders par-

ticipated in the panel "The Rise of Direct-to-Consumer" who reported both the challenges and opportunities in this new world order of retail. Abe Burmeister, Outlier; Kelly and Will Watters, Western Rise; and Jeff Popp, MHM and Co. Alition all continue to fine-tune their websites and product offering to parallel contemporary consumer buying behavior.

In both cases, it was clear that no longer does one size fit all whether it relates to sourcing materials, production locales and/or reaching the end consumer. Panelists continue to evaluate hybrid type supply chains, in order to service a today's fast-paced market.



"It boils down to how can we make the production process smarter," stated MocarSKI. However, designers nowadays also grapple with how to take advantage of global efficiencies yet strive to foster a made-in-USA aesthetic.

The issue for suppliers is how to create a more responsive supply chain that aligns with the needs of online operations and start-ups.

Struktur is about sparking inspiration. Provocative presentations by graphic artist Aaron James Draplin, DDC, and Mike Monteiro, Mule Design certainly got attendees' creative juices flowing. A performance by Zoe Keating, a San Francisco-based musician and composer who uses a cello and a small box of electronics to create a one-woman avant-garde orchestra inspired a standing ovation to close the conference. ●



From top: Promostyl's workshop challenged designers to create color palettes; panelists discussing "The Changing Role of the Designer" include, from left, Jason Belaie, IDSA, Karuna Scheinfeld, Woolrich, D'Wayne Edwards, Pensole and Julianne Gauron, Manufacture NY; Sam Ward and Michelle Rose are co-founders of Struktur Event.



ON THE SIDE OF THE GOOD

Taking an Integrated and Innovative Approach to Government Relations. By Emily Walzer



David Costello wears many professional hats on a daily basis. Depending on the project he may don a cap as business executive, industry advocate, lobbyist, co-author of U.S. patents in the area of advanced materials, and/or active board member of the Appalachian Mountain Club, The Conservation Alliance and The Trustees of Reservations. We caught up with Costello recently to talk about his company Rising

Tide Associates, his non-profit organization the Warrior Protection and Readiness Coalition, and learn his views on made-in-America manufacturing. He brings 20 years of marketing and external affairs experience to his work developing federal, state and commercial business opportunities for corporate and non-profit clients. Here we ask Costello to elaborate on his expertise within the domestic textile and footwear industries and share his outlook for these markets in 2016 and beyond.

How is Rising Tide distinctly different from a traditional government relations practice?

Whereas others focus on one element, be it government or lobbying, Rising Tide offers a broad scope of experience and expertise. My background is in business and manufacturing, both in product and business development. We also bring to the table government relations, public relations, and strategic development experience and apply all this to a problem a client may have. We understand how to grow a business and truly believe in USA manufacturing. When I go into a plant I get excited. There is nothing more important than touching and feeling the product to help continue the innovation.

Can you share some examples of projects you're currently involved with?

We work with Vibram USA and also Wolverine Worldwide (which includes Saucony) in the footwear space. With them we are engaged in making a completely USA-made athletic shoe, something that has not been done in a very long time – like decades.

The Army issues a uniform kit that includes everything from towels, boots, socks, underwear to helmets, and everything in that kit, from the yarn forward, is 100 percent American made except for athletic shoes. The Department of Defense (DOD) got away from this in the early 2000s as footwear production went overseas.

We've been involved on the private development side to figure out how every stitch of components can be made domestically for three years, and even longer since the original concept. Because the DOD is slow to change, we had to advocate and lobby on the behalf of this change and worked with a broad spectrum of armed services committees in the Senate and the House of Representatives. People are shocked when they find out you can't get USA-made athletic shoes. We rolled all these factors together to get the policy changed and we figured out all the development. Saucony will do this in Big Rapids, MI where Wolverine has a 100-year legacy of building shoes. American warfighters will have American made athletic shoes within the next year or so, which will benefit them and benefit the U.S. makers. The added benefit is we can take these technologies and apply them to other types of footwear – to make a lighter weight combat boot, for example, and we really like that story.

What is your position on the Berry Amendment and why do you believe it is important to textiles as well as to other products?

The Berry Amendment came into place in 1941 to maintain the industrial base here and it's been the law of the land since. It helps to protect and maintain capabilities in textiles and allows innovation to flourish. We focus on expanding the application of the Berry Amendment because right now it only applies to the DOD and there are a number of companies that would not be in business without



David Costello
Rising Tide Associates

We got nine companies in the industry to advocate for thoughtful spending for basic funding for military programs.



INSIDEINSIGHT
PODCAST

To listen to a
podcast interview
with David
Costello, visit
InsidInsight.com

the Berry Amendment. For example companies providing specialty items like combat armor made out of Kevlar. It's important so we are not dependent on unfriendly competitors making our products. You don't want to be dependent on China and/or Russia – both big producers for these kinds of things – for your ballistic vest for instance. That is probably not in the best interest of the United States.

Tell us about the recent passage of the U.S. Defense Act for FY 2016. What does it mean for domestic industries?

The National Defense Authorization Act is an annual Defense bill that has passed every year for the last 50 years. This is the one that must pass; it sets the policy and spending levels for the DOD for the fiscal year we are in. The other component is that there has been a lot of trouble in recent years with sequestration that occurred in the U.S. government – which never should have happened, but did, with the net effect of greatly reduced spending, in all agencies, including the DOD. Last year they passed a set two-year deal that relieves some of the pressure from sequestration. It made good governance better. We're now working on the FY17 bill that will fund the year that starts in government in October.

You co-founded the Warrior Protection and Readiness Coalition (WPRC) in 2009. How has the non-profit evolved?

Over the years we have developed great relationships within management of the Armed Services. Leadership was concerned how to be prepared in the future. So we got nine companies in the industry to advocate for thoughtful spending for basic funding for military programs to keep warfighters protected. Now there are 40 member WPRC companies, making everything from ballistic goggles, to helmets, to camo textiles for clothing, footwear, socks, et cetera. From big companies like Burlington Industries to tiny companies like Wild Things. At our recent legislative Summit we brought 50 company leaders to DC and we went to Capitol Hill and had 70 meetings in two days. We went before Congress and talked about how this industry can work together to provide jobs and sustain capabilities domestically.

What about the current political scene and the candidates' influence on defense budgeting in the next four years?

What will be great for our membership, and for our industry and for our country in general, is when this election is over! What happens at the presidential level will affect the down-ballot candidates, meaning the Senate and the House and that can cause change. Our job is to not only continue to work with people we know but work with new people and advance our mission to educate and advocate for the U.S. industries and make sure things are taken care of. ●



Hi-Viz personal protective equipment (PPE) with reflective tape is just one example of the fibers, fabric, and apparel Tersus Solutions can process.

DETECTING PERFORMANCE

TODAY'S SEARCH FOR NEWNESS UNCOVERS DIVERSE POSSIBILITIES

Imagine ballistic strength materials as comfortable as your favorite t-shirt. Imagine being able to clean a paper towel without changing its characteristics. Imagine shoes integrated with conductive inks that relay biometrics with every step you take. Imagine execs from Microsoft and Intel swapping ideas on wearable tech with textile folks from North Carolina at a government-sponsored lunch. And here's the real kicker, imagine \$300M in private/public funding dedicated to the developing functional fabrics.

These are good days for U.S. textiles. The industry has three major factors working in its favor this year: Investment, Innovation and Interest. Combined, these variables are propelling fabric development to the next level of creativity and competitiveness inspiring the next generation of domestically made performance materials.

Not bad for an industry once considered on its last legs. Writes Jeffrey Zients in the April 1st edition of the White House blog: "Today's announcement is adding new innovation and new hope to an industry that some thought would not be able to persist in America. Textiles manufacturing, once a poster child for job-loss and offshoring, is now making a comeback. Fueled by revolutionary new technologies, the American textile industry is adding jobs for the first time in decades, has increased shipments by 14 percent since 2009, and has grown exports by 39 percent since 2009."

He's referring of course to the big, buzzy news announced

this spring about the Department of Defense (DOD) selection of MIT as the hub for the Revolutionary Fibers and Textiles Manufacturing Innovation Institute that will invest over \$300 million to accelerate U.S. manufacturing recovery and strengthen domestic leadership in functional fabrics. Called the Advanced Functional Fabrics of America (AFFOA) Alliance, the non-profit is constructed as a consortium of industry, academic and government partners focused on reinvigorated U.S. manufacturing via advanced research and development.

Here we highlight some of the latest developments in performance textiles with special attention to smart and sustainable technologies.

GET GROWTH

Revitalizing Our Domestic Industry

"It pleases me to report that the U.S. textile industry is on sound footing," said Jeff Price, CEO, Milliken & Company in his State of the Industry address at the recent National Council of Textile Organizations (NCTO) meeting in Washington, DC. "Between 1995 and 2009, our industry

DETECTING PERFORMANCE

suffered through a historic and heartbreaking contraction that impacted countless workers and communities. The last six years, however, have been different. Emerging from the depths of a severe national recession, the U.S. textile sector has rebounded.”

The challenge going forward, according to Price now is both to sustain this “impressive recovery and to find viable ways to generate a new era of growth.”

GET SMART

Exciting Times For Wearables

Smart textiles are projected to be a major contributor to industry growth. Category innovations were introduced at the recent Smart Textiles Summit including highlights in the advancement of conductive inks for mainstream end use, and integrated, multi-purpose systems for professional garb. DuPont, for instance, now has a complete offering of stretchable, washable electronic inks enabling a manufacturing-ready approach to delivering comfortable, functional smart clothing and footwear. The inks feature exceptional stretch performance and endurance through multiple wash cycles.

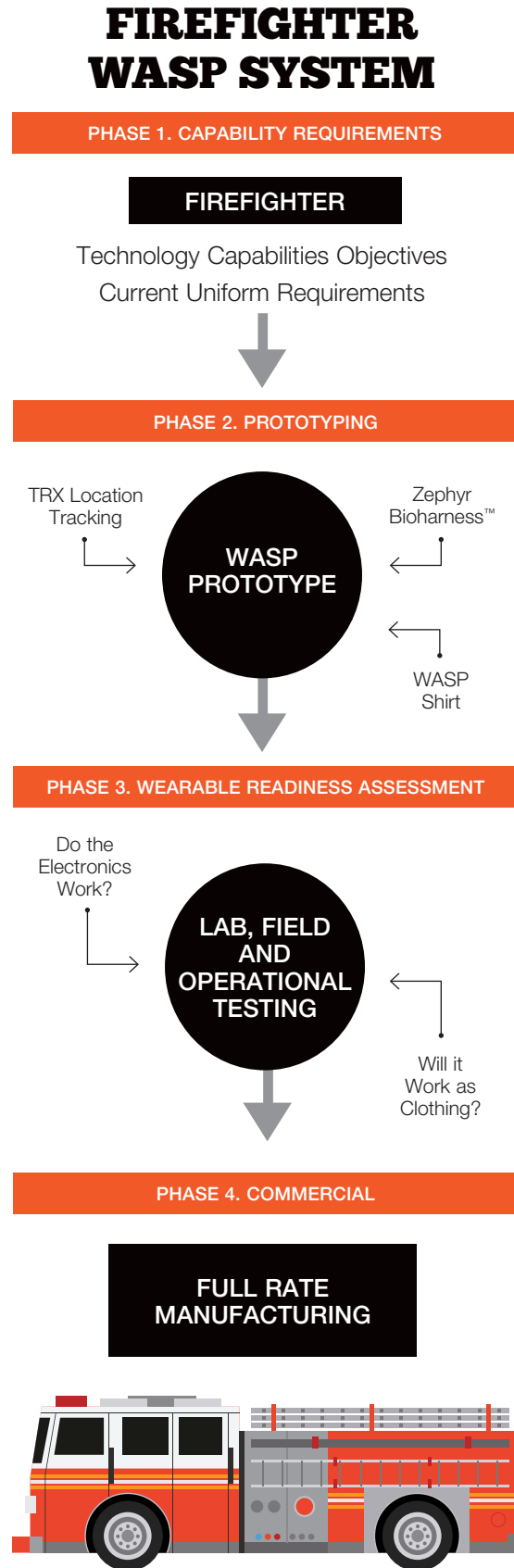
Unlike other wearables, the DuPont product is familiar territory for textile businesses. “People are familiar with screen-printing and familiar with laminating,” says Steven Willoughby, a marketing manager for advanced materials with DuPont Electronics and Communications. “Also these inks do not require the need for new machinery.” Nor do they require special printers.

Willoughby’s presentation at the recent Smart Fabrics Summit showcased t-shirts that looked and felt like a typical technical top: the shirt was lightweight, soft and form-fitting. The inks, printed directly on fabrics, can be designed to route the circuit in any way, using a standard screen-printing process.

“Within five years, smart clothes will outsell smart phones,” predicted Willoughby.

Globe Manufacturing Company introduced Athletix, a new firefighter suit that integrates physical data with 3D location tracking. The “WASP” system, which stands for Wearable Advanced Sensor Platform, protects firefighters while allowing them to go deeper and stay longer in emergency situations.

Clare King, president of Propel, LLC, has been working on the complex development project



for years, having to create her own incubator to ensure the high performance capabilities of this smart wearable system since none existed at the time she began her research. She collaborated with Globe, TRX systems, Worcester Polytechnic Institute, Skidmore college, United States Army/Natick and U.S. Department of Homeland Security.

“The key is to wear and forget,” says King, whose RI-based company is dedicated to the development of transforming textile related technologies for the U.S. military and firefighters. This goal is accomplished in the WASP system that is comprised of a comfortable, yet functional base layer shirt, Zephyr Bioharness and TRX location tracking.

These and other emerging wearable textile technologies are exciting, however, execs stress that industry standards surrounding smart textiles need to keep pace with innovation. “It has gone way beyond flame retardants to cyber security,” commented Jeff Weiss, senior advisor to the Secretary and Global Regulatory Policy within the U.S. Department of Commerce who moderated a Smart Fabrics Summit panel on “Smart Fabrics Standard – Building a Foundation for Growth.”

Panelist Alpesh Shah added: “We’re all really just platforms and personal area networks. It’s no longer just your fingerprint for cryptography, but your entire body. We are now the connected person.” Shah, Sr. Director of Global Business Strategy and Intelligence at IEEE Standards Association, and others agree that standards need to be in place for ethical reasons concerning privacy but also for fundamentals like smart textile laundering.

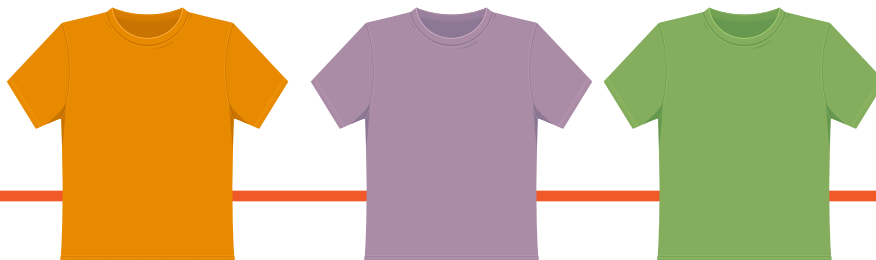
Panelist Sandeep Khatua is actively involved with the AATCC and ASTM working on committees to evolve standards surrounding smart textiles, with a focus on attributes like washability. This concern will be a topic of discussion at the June meetings of the AATCC, said Khatua, director of Technical Services for Softlines at the Bureau Veritas Consumer Product Services.

Beyond instituting standards, other concerns exist when it comes to smart textile development. For example, there’s protecting Intellectual Property (IP) in smart fabrics, creating a cross-industry dialogue, and advancing supply chain compatibility between electronics and textiles. Not to mention how tomorrow’s wearable tech wardrobe will affect our daily

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lives. For instance, will the future include having to remove your smart shirt as you go through the airport security line?

GET CLEAN

Tersus Solutions Advances Textile Processing

Textile product development is one thing, but let's not forget about processing. And let's not forget about the critical role water will continue to play in the future, and especially in the area of washability when it comes to the advancement of wearable technologies.

Water-based cleaning has dominated textile manufacturing and maintenance for centuries, but a Colorado company is re-defining textile processing with a water-free innovation. Tersus Solutions relies on liquid carbon dioxide to clean fabrics using a technology that requires less energy, less chemistry and creates no effluent waste, addition to being water-free. According to the company, the Tersus method guarantees fiber integrity, color fastness, and technical functionality while reducing the environmental impact of laundry.

The company is targeting industrial laundry, military and the outdoor market. The business already has the backing of Patagonia, and has just announced a launch with a big industrial laundry operation in Europe that specializes in workwear and personal protective equipment.

Tersus' integrated solution consists of patented hardware, propriety chemistry and software. The process involves very low temperatures and requires only 20 minutes and no drying time. The key of course is replacing water with liquid carbon dioxide – which is converted from gas via pressurization. But also important is how the business offers a new way of looking at performance textiles.

“Using liquid carbon dioxide creates new opportunities, it's not just a water replacement,” explains Frank Kvietok, director of application development at Tersus Solutions. “You have far more material compatibility when you take water out of the equation, there's no wetness to remove.”

Consider a Kevlar vest for military use, for

BY THE NUMBERS

2015 U.S. employment in the textile supply chain:

579,000

The value of shipments for U.S. textiles and apparel: increasing 14% since 2009 to a total of

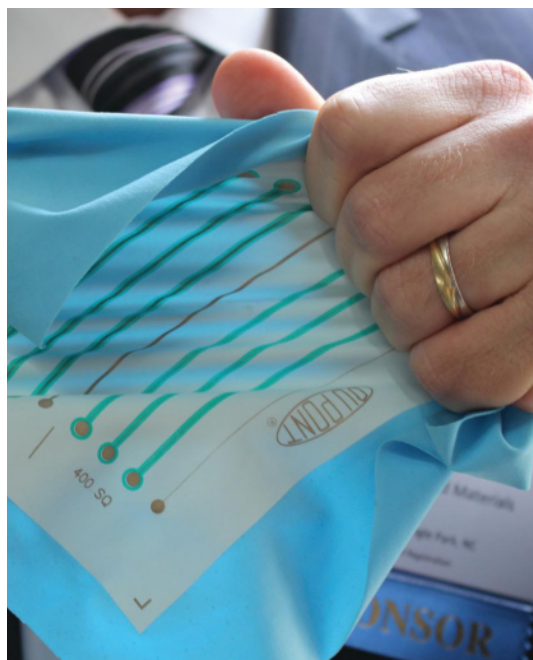
\$76 BILLION

2009 U.S. exports of fiber, textiles and apparel:

↑38%

In the last year for which data is available, Capital expenditures for textile and apparel production totaled

\$2 BILLION



example. It's hard to get water out of a ballistic material so these vests are washed infrequently. Over time, however, the material gets stiff (and stinky!) and very uncomfortable for the soldiers. “But with this technology, the material can be cleaned and result in improved wearability of soldier gear and garments,” says Kvietok, who worked previously at American Rec as director of advanced development.

The technology also opens the door in terms of treatments. Kvietok gives as an example a thick synthetic insulation. Traditionally you could treat the surface of the fibers but not penetrate deeper without encountering extreme difficulties removing the water. Tersus technology would eliminate this limitation.

What also sets Tersus Solutions apart is that it has integrated textile processing. “No one previously put all the components together and delivered it in a turn-key type fashion,” Kvietok explains. “We provide all the tools – machines, training, chemistry and the programming – and can custom design applications desired by a partner company. A new brand/apparel partner may want to clean, or coat, and we will design a test program and then scale up.”

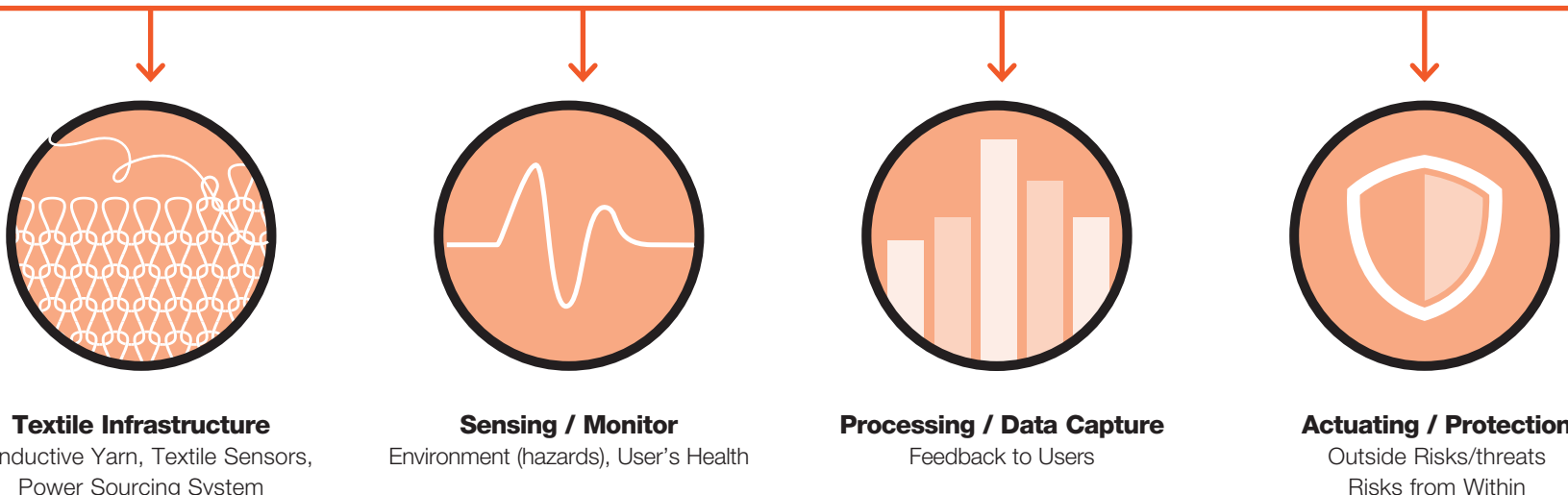
The relationship with Patagonia started with cleaning the firm's Encapsulation jackets, but has grown to now include a Tersus Solutions machine in the Patagonia Reno, NV facility. For outdoor companies investing in “re-new, re-use” strategies, Tersus Solutions tech provides a second life garment treatment.

“Cleaning is just the cornerstone,” says Kvietok. “And the eco aspect opens the door, but this tech is smart economically, too.”

Removing limitations of water in the processing gives designers more freedom in terms of advancing performance as well as aesthetic properties as well as gives businesses the ability to expand the range of materials used. “We can clean a paper towel – so it brings to mind what can be done with non-wovens,” Kvietok states. “Now you may want to use fibers that couldn't before. Just think of the possibilities.” ●

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Three Takes on Sports Bra Innovation from Three Industry Specialists. By Suzanne Blecher

Three for Three

LaJean Lawson, Ph.D. Sports Bra Scientist and consultant to Champion Athleticwear



Champion SmoothTec



LaJean Lawson

“So many more bras have padding and shaping because that’s what women want.”

What do you think is entailed in the making of a great sports bra?
“There is no piece of apparel more difficult to design because the function and aesthetics have to be there. In contrast to any other kind of bra, it really falls into the category of industrial design because of the physical and functional work that it has to do. It has to keep the breasts from overreacting to force in high impact exercise. As breasts get larger, they get heavier so you need a stronger infrastructure. There are strong sociocultural stereotypes about what the optimal size and shape of breasts are. Those have to be respected in how a bra looks and feels.”

What excites you in terms of technology in the sports bra space?
“What’s recently been the breakthrough is Champion’s SmoothTec, which reduces stitching between the band and cup. We’ve done enough research to know where women chafe in relationship to the band on their bra. We’ve brought the same technology (originally from Hanes Intimates) to some of our bottoms.

As for the future, there are inward-facing issues like how women feel in a sports bra. These are the practical needs. More recently, there has been dramatic growth in the outward-facing dimension, which is how do I look in my sports bra? So many more bras have padding and shaping because that’s what women want.”



Champion Warrior



Champion SmoothTec

What changes or updates will we see in sports bras in the future?

“The lines will continue to be blurred between athleisure and athletics. The challenge is to insert aesthetics into the substantial functional demands of a sports bra. The other thing I’m seeing comes from footwear, it’s more customized and there is the trend of forming things in 3D. For sports bras and support, this is important because there are areas that need to be stretchier and areas where you need more ventilation.” ●

Rebecca duRivage-Jacobs, Bra Product Line Manager, Brooks Moving Comfort Collection

What do you think is entailed in the making of a great sports bra?

“Maximum Comfort: Sports bras shouldn’t poke, punch, itch, chafe or irritate, no exceptions. We choose materials and trims that are soft to the touch; textiles that have the ideal stretch, rigidity and recovery to mold effortlessly to the body and quality materials that perform.

Universal Fit: We strive to represent real runners and active women through our sizes, currently ranging A-F cup and 30-44 band. Our bra interiors encapsulate and support each breast individually and are sculpted to fit her natural shape.

Optimal Support: When we test our bras, both in the biomechanics lab and on the run, we are not just testing for performance. We are looking holistically at breast movement, which we marry with her qualitative perception of the bra. How she feels in the bra is more important than lab data.”

What excites you in terms of technology in the sports bra space?

“3D Stretch Print is one technology we’re excited about as a brand that provides lightweight, conformable support, therefore minimizing layers in a sports bra. We currently use it in our Elite Crop for our athletes and it will also be used in the Glycerin 14 this fall season.”

What changes or updates will we see in sports bras in the future?

“The lines within formal bra categories continue to blur. Hybrid products that can transcend function are seeing lots of success. Many women are replacing their traditional underwire lingerie styles with more comfortable and durable sports bras. Just like sportswear; sports bras, lingerie and the swim market are all taking cues from one another. In our UpLift Crossback, we incorporated a swim clasp closure for ease of on/off, instead of a hook and eye to offer a unique visual that would read more like a swimsuit than a traditional lingerie bra.” ●

Rebecca duRivage-Jacobs

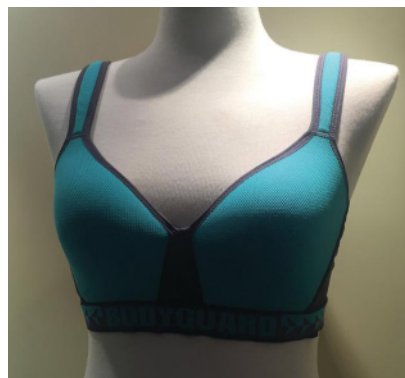
“Just like sportswear; sports bras, lingerie and the swim market are all taking cues from one another.”



Brooks Elite Crop



Ria Stern, Global Marketing Director, Hyosung Textiles Division



Good People Bodyguard

What do you think is entailed in the making of a great sports bra?

“Comfort, fit, support and great performance are critical for consumers. Sports bras have evolved from small, medium and large sizing in the early days to a fit that reflects more of the band size and cup size

associated with regular bras. Also, brands are engineering bras to accommodate larger bust sizes as well as different levels of support. In terms of textiles, Hyosung has developed new fibers like MIPAN aqua-x which delivers moisture management, quick dry and cooling. We also just launched Freshgear, offering wicking plus odor neutralization so consumers can go from the gym or a run to pick up groceries, meet friends or pick up the kids from school with confidence.”

What excites you in terms of technology in the sports bra space?

“Brands have embraced technology to make every aspect of the consumer fit and wear experience in sports bras better. Narrow bands and fabrics are softer, smoother

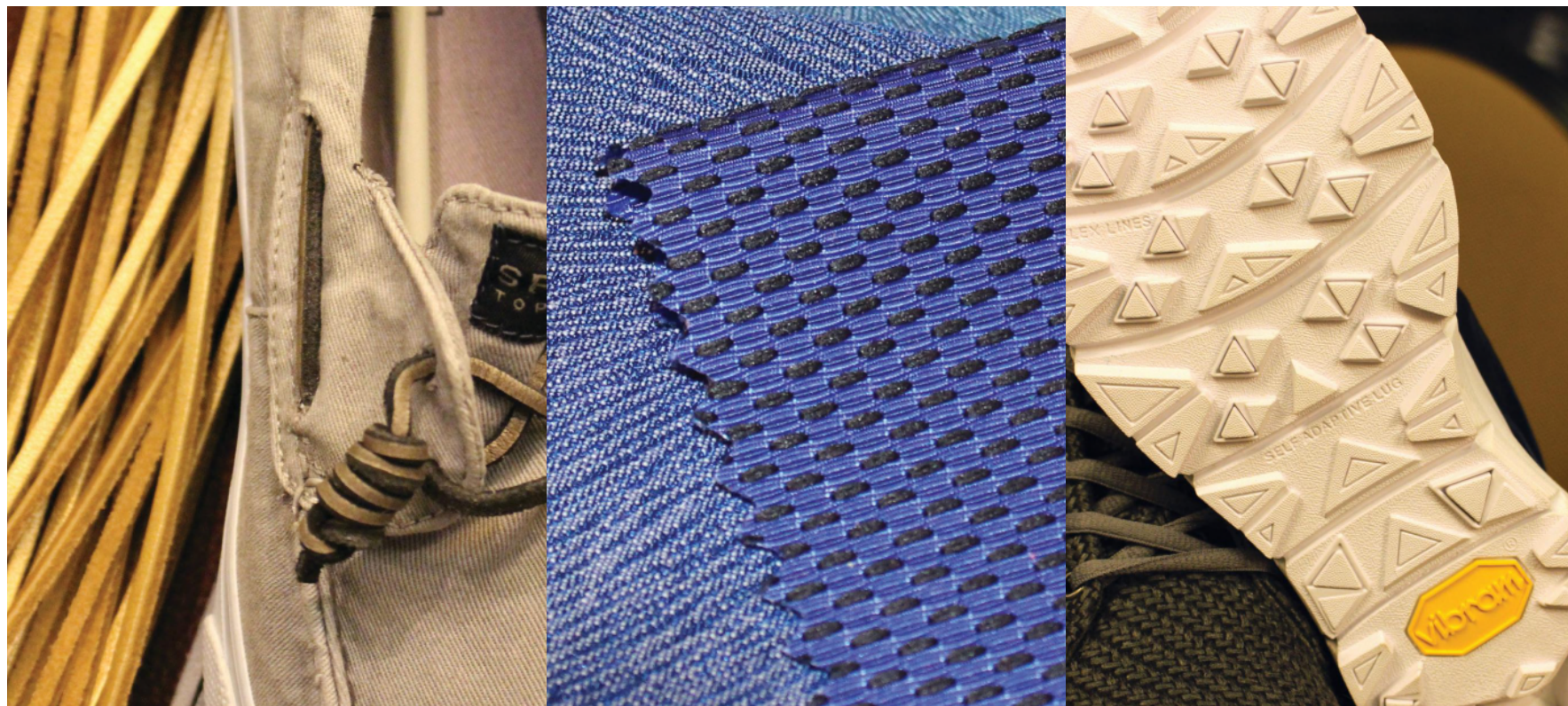
and more comfortable. Bra cups are molded and reflect more sizing for a natural contoured fit where the consumer can choose right bra for different levels of performance from yoga to running.”

What changes or updates will we see in sports bras in the future?

“We have seen a trend in the use of spacer fabrics in bras (instead of molded cups) for increased breathability, so this is likely to be incorporated into sports bras. In our S/S18 trends, we are seeing the trend to lighter and lighter weight fabrics for layered tops with sports bras underneath that are meant to be seen. Many brands are using mesh patterns and sheers in tops for coordinating with color/printed sports bras.” ●

Comfort Is Key but Function Is Fundamental at NE & NW Materials Shows. *By Emily Walzer & Jennifer Ernst Beaudry*

East Coast / West Coast Observations



Major themes ran the gamut from touchy-feely type textiles strong on comfort to

high-tech performance materials used in urban silhouettes at the NE & NW Materials Shows held earlier this spring. Developments in visible tech, reflective materials, foam formulations and colorful leathers were also strong trends at the bi-coastal fairs. Indeed, there's something for everyone at these down-to-business shows that draw buyers from a slew of leading brands hunting for newness in footwear fabrics.

Attendance was up, and the atmosphere upbeat at both the NE & NW events. In Danvers, Massachusetts, Converse execs arrived in a van, a large team from New Balance prowled the aisles and buyers for Puma, Timberland, Clarks, Rockport, Orvis and even Tory Burch were on the scene. It was similarly lively across the country in Portland, Oregon at the NW Materials Show. Exhibitor participation was up about 25

percent over last year according to show organizer Hisham Muhareb.

Buyer attendance was also impressive with execs from a long roster of leading athletic, outdoor and lifestyle brands spotted in the hall.

"There's the need for comfort, and the need for good looks and the need for function – but also qualities like durability and resilience," commented Jane Lim of Mogae Textile. The Taiwanese textile firm previewed a strong showing of quilted and heather looks, along with innovative TPU yarns in meshes for molding.

Lim and others noted that spacer fabrics have momentum for the season ahead. Updates on this traditional textile include stretch, softness and performance properties such as moisture management.

New foams are also feeling it; the latest products ooze comfort as well as draw the eye to graphics or molded designs.

Wovens that feature intricate patterns and evoke a sense of place or cultural vibe were showcased at Tai Ruey Fong. "These textiles can take you places," said company

representative Drew Hansen. "You wake up in Revere, Massachusetts on a cold morning, but then put on shoes made with these great fabrics and you are someplace far away."

Leading Edge Leathers & Bright Ideas

The leather category has captured the imagination of consumers and leather vendors are responding with inspired looks. There's color, texture, sheen and shine and there's rustic and raw. From USA vendors like Auburn to Asian specialists like Shanghai Richini Leather Ltd, (SRL), the forecast calls for ideal leather weather for the season ahead.

At Tai Ruey Fong, periwinkle and cornsilk blue are trending for FW '17; SRL highlighted lots of green, in all shades, from olive to emerald. Olivia Daher, sales and marketing, SRL, states: "We're seeing a lot of veg-tanned leathers and shades of brown, as well as fall pastels. And there's still a lot of emphasis on finishing."

Christopher Moseley, sales director USA, Simona Tanning,



Simona Tanning Inc. executives Christopher Mosely (left) and Steven Rotter at the NW Materials Show.

From left, Auburn leather shoelace; New looks from Faytex; Vibram Arctic Ice outsole provides traction for icy conditions; Jones & Vining rubber rice outsole.



Attendance was up, and the atmosphere upbeat at both the NE & NW events.

explained, "There are more soft leathers out there, and people are still wanting metallics, and different actions on the leathers."

Reflective also continues to advance. At Sunnlyte, for instance, customers are asking for reflectives, iridescents, and "more and more" for gradients in this category. These materials tie into the visible tech trend, and the popularity of visual aesthetics, however, reflective also crosses over into performance and bumps into wearables as well. New reflectives have enhanced patterning, color shifting properties and overall greater sophistication of presentation.

Like smart fabrications, smart strategies are also emerging as companies increasingly broaden their scope and capabilities. Firms do not want to be pigeonholed

into a particular niche component. Rather the current approach is to create a one-stop shop for product and services. Ingredient companies are now being re-envisioned as brands with diverse offerings. "We want to be a 'one-stop shop,' to make it easier for the brands. We've expanded our offering of uppers and have developed ways to tell our story that is helpful to designers," said Cindy Stangl, president, Faytex.

In every category, from sole design to uppers, as well as foam formulations, buyers want something "customized" to their exact needs and vendors are responding. Buyers view these brand-specific materials as a way to differentiate in today's crowded and competitive marketplace. Properties like resiliency and durability are priorities: weight, stretch and density are important, too. However, less is "off the shelf" and more is "custom-order." What's hot is how today's tech is perceived; more often designers want "visible tech" so consumers can see the performance, not just benefit from it.

Consumers are also looking for high-tech, "outdoor" type performance in something they can wear around without looking like they belong on the mountains. "Brands are embracing athleisure and functional fabrics, ones that consumers can use throughout their day. It's a new urban way of living," explained Fawn Knadler, Schoeller Textil USA.

"And they're obsessed with great materials, and they're looking for material stories," added Schoeller Textil USA president Stephen Kerns. The company has brought this ethos successfully to apparel within the urban outdoor category and senses the trend gaining traction now in footwear, too. Schoeller's Cosmopolitan collection for 2017, for instance, blends natural fibers with synthetics to create fully functional fabric with multi-sensory appeal. The trend now is a push for "more and more" in every textile. ●

IT'S WHAT'S INSIDE...

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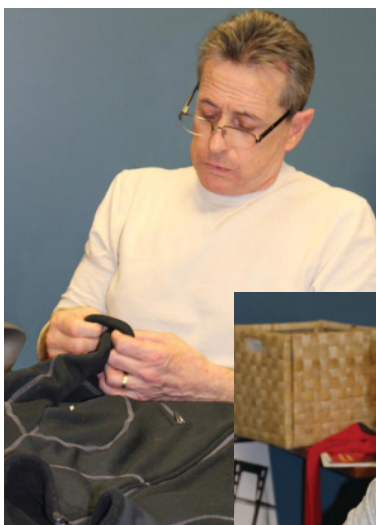


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For this Boston-Area Apparel Firm Growth Is a “Street Fight Every Day.” By Emily Walzer

Staying Strong



Avalanche president Ron Petrucci and his son Ron Petrucci Jr., EVP.



Work is life and life is work at Avalanche, or so it seemed at a recent visit to the family-owned and operated outdoor apparel company. During a Fall '17 strategy session in the company's new offices located on the North Shore of Boston, it was all hands on deck as family members and staff discussed product and developed ideas for fabric, trims, colors, and styles — down to the nitty-gritty of pocket placement — for next season's merchandise. While professional and productive, with a close eye on budget specifications, the atmosphere around the conference table had the feel of Sunday supper at the relatives: Dad, Mom, son, daughter and a few friends gathered to catch up, share opinions and banter.

Ron Petrucci founded Avalanche in 1987, and grew the business quickly over the next 15 years to become a successful multi-location apparel operation. At a highpoint, Avalanche had five Boston-area sewing facilities churning out a mountain of fleece outerwear. About 35,000 jackets were produced weekly during its production heyday and Avalanche was Malden Mills' fifth largest account.

Petrucci still heads Avalanche, a \$40 million company. He works closely with a 22-person staff that includes his wife, his children Ron Jr., executive VP, and Talia, production director, and his brother Dan, CFO and licensing director, based in the company's New York City showroom. Ron's wife Marie is retail director and oversees the

“How do we evolve this, how do we make this better?”

Ron Petrucci Jr.

Avalanche store located a few streets from the offices in downtown Salem, MA, which daughter Loni helps manage. Says Petrucci, “We are a small group, where everyone wears a ton of hats.” (And own a small pack of dogs — most right at home in the Avalanche offices.)

During the strategy meeting Ron Jr. often asks, “How do we evolve this, how do we make this better?” Or he chimes in, “I love this (pant), but it's not selling — let's update it.” He's looking for newness, yet mindful of costs.

In the meeting, Daniella Maury, director of design, and Rachel Brown, design manager, both contribute to the free-flowing conversation and

field comments from family members. Maury previously worked with The North Face; Brown came to Avalanche from L.L.Bean. While staff opinions vary and each person around the table has personal favorites and strong ideas on what works and what doesn't, there is consistency to the Avalanche strategy centered around blending performance and affordability. Ron Sr., adds, "We are an outdoor brand no matter what we do."

Evolve & Adapt

"This industry has changed at least five times over the years we've been in business, from the people who run the business to retail in general," says Petrucci. "Stores like Bradlees are gone. E-commerce is big."

The Petrucci family has its roots in Boston area manufacturing, going back to a ladies sportswear company called Turtle Bay started by Tony Petrucci, and where Ron Petrucci helped out as a youngster. Later Ron Sr. teamed with his father Tony during the 1970s to form Petrucci Jeans, based in Everett, MA, making garments for an assortment of retailers. That business morphed into a company called Advanced Cutting Corporation based in Medford, MA.

A turning point came in 1986 when Malden Mills approached Petrucci about making a garment with a new fabric the company called Polar Fleece. Petrucci made samples, and strong sales quickly followed. Retailers keen on the newfangled lightweight yet warm material included Nordstrom, TJ Maxx and Kittery Trading in Maine.

Ron, Sr. founded Avalanche in 1987 with Malden Mills' fabric (Polar Fleece) a major part of the line and the aim of bringing this military grade fabric to the mainstream.

Soon Petrucci opened five factories in different cities around Boston with hundreds of sewers busy making upwards of 35,000 jackets a week. Tony ran production, while Ron did sales. "I remember seeing mountains of jackets waiting to go into trimming in the mid-90s," recalls Ron, Sr. "That was the best feeling."

Unfortunately it didn't last. As the textile industry decamped to Asia, Petrucci had to close factories to keep afloat. "I had to watch as our huge cutting room tables were loaded into trailers destined for the junk yard," Petrucci says. "That was a really low feeling." By 2005 only the factory in Lynn, MA was operating; it closed a few years later.

New Phase, New Opportunities

This spring Avalanche was named "2015 Soft Goods Vendor of the Year" by MC Sports. Missy Arends, buyer for the Midwest retailer stated, "The Avalanche product design and creativity never disappoint and are always right on trend with our consumers' demands, resulting in strong sell through values for us. Their team listens to our needs and always delivers. We have been proud to watch the Avalanche business grow and be able to grow with them along the way."

A core customer for 20 years MC Sports, like

Olympia Sports, Big 5, Dunham's and Cabela's are established Avalanche partners. "They are a very loyal base; staying with us through thick and thin," Petrucci says.

In addition to the MC Sports award, there are other business bright spots this year for the company. Avalanche is seeing licensing opportunities gaining traction. The company is currently working with Argento on pet and outdoor tech accessories, and working with Pacific Trading Co/Haselson on children's outerwear.

"Licensing is the future," comments Petrucci.


The apparel maker is also excited about developing a new women's activewear collection slated for Fall 2017 introduction designed with better department store distribution in mind.

Slowly shifting production to new regions, including Vietnam and South America, along with finalizing deals with two sales organizations in key regions are also on the agenda for Avalanche in 2016.


Learning how to adapt and evolve while keeping true to its core values has kept Avalanche competitive for the past 30 years despite a drastically changed market for domestic fleece apparel makers. States Ron, Sr., "We have to pound our drum as hard as we can. It's a street fight every day." ●



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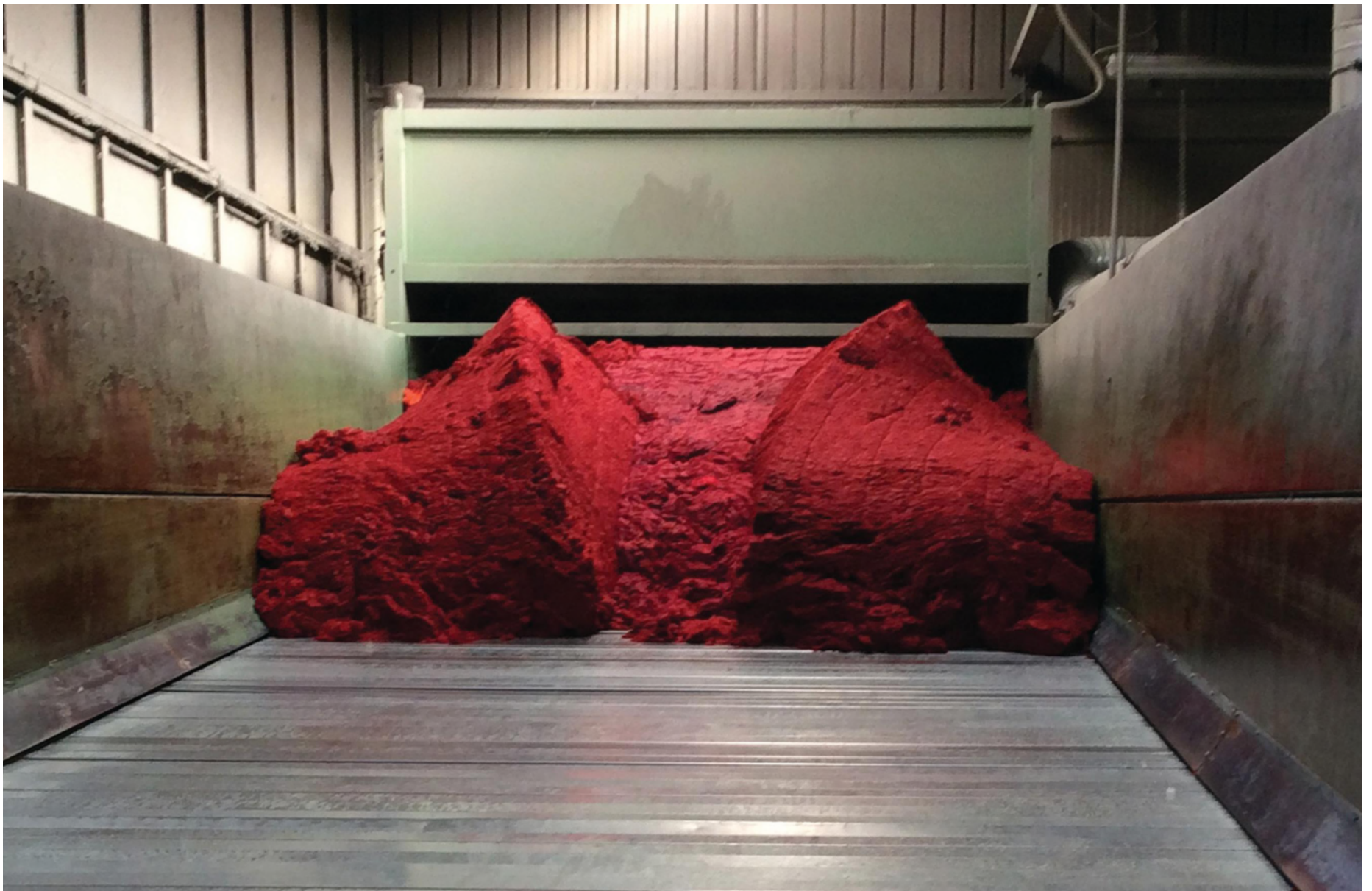
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Top, shredded and combed material from worn sweaters gathered for recycling, shown below.

FINDING VALUE IN

RECYCLING

HOW ONE MAN'S WASTE BECOMES ANOTHER MAN'S NEW PRODUCT. BY KARLA MAGRUDER

Traditionally waste is not thought of as a valuable raw material. However, the three companies featured below think otherwise. Giotex uses postindustrial mill waste; Becagli/Calamai uses post-consumer waste; The Renewal Workshop uses both methods in a new model. Our focus here is in on the recycling process and corporate mission, as each deserves attention as a way to increase a company's sustainable profile.

Giotex USA

Giotex is the leading and largest producer of the Textile Exchange Global Recycled Standard (GRS) certified recycled cotton yarn in North America. The business is based on pre-consumer material sources, according to Steven Usdan, co-founder, Giotex, with offices in the U.S and Mexico. "Waste/by-products are generated from the field through ginning, spinning, knitting/weaving, dyeing, and cutting. Giotex recycled cotton is fiber that is recovered from fabric scraps and waste produced while making clothes and other textiles. It is collected and sorted according to grade, color, and quality. Waste material is then subjected to a precision cutting process that breaks the fabrics down into finer and finer particles until it is reduced to a fiber state. Once in a fiber state, the recycled cotton is filtered, cleaned, and regulated into a uniform bundle of sliver that can be processed by spinning into useable yarn."

Recycled cotton is made at substantially less cost than virgin cotton, according to Usdan and other recycled cotton companies; it is made with already dyed cotton and uses no additional dyes, chemicals, fertilizers and water. This material is considered "waste" by Federal Trade Commission (FTC) definition because converting fabric waste to fiber/yarn meets the FTC definition of recycling while the process transforms materials diverted from its intended function/use.

Giotex products are short-staple fibers so the best



Calamai/Becagli president Bernardo Calamai, right, with his staff.

spinning range of yarns is coarse to mid counts. It can be used for t-shirts, socks, sweater, fleece and woven fabrics like duck and canvas.

The extraction of cotton fiber from finished fabrics/articles for the purpose of spinning yarn came to prominence at the end of WWII due to resource shortages.

Calamai/Becagli

This Italian company has been making fabric from recycled garments for three generations and can use wool, polyester, nylon and cotton.

The wool sweater process today is much like it was in the past. Sweaters are collected in the United States and Europe and sorted first by fiber content and color, then buttons, then zippers and all trims are removed. Next comes re-fiberizing, a clean mechanical recycling process.

Shredded sweaters are treated with a process called Carbonizzo that dissolves away any cellulosic material and cleans the wool. The clean bales are sent through carding equipment turning them into

fibers. The end use requirements define how fine the fibers are shredded and the number of times and speed they need to pass through the machines.

The next step is for the fibers to be run through equipment that combs them to create consistent fiber length and softness. It is then turned into sliver. This can then be used to spin yarn or go directly into piles and fleeces or other kinds of recycled knits and wovens.

In the past all production was done using 100 percent post consumer waste in the form of wool sweaters as the raw material. Today that number is about 30 percent of the company's total business using 80 percent blends of regenerated fiber in their fabrics.

Calamai/Becagli is currently working toward getting GRS certification. Because the fibers are from an unknown origin, certifications such as Bluesign are not possible at this time.

The Renewal Workshop

An entirely new option for recycling garments is The Renewal Workshop, a business based in Hood River, OR, developed by Nicole Bassett and Jeff Debby designed "to solve the issue of what to do with garments at their end of life" according to Bassett.

The company is designed to take garments that have been returned, damaged, over-produced or anything deemed unsellable. The facility will clean, sort and repair apparel that can then be sold by the brands, by wholesalers to retailers or on-line. The goal is to solve the garment end of life problem.

Brands pay a partnership fee to have their unsellable products managed through renewal, upcycling or recycling. Brands have the first right to purchase their renewed garments. If garments are sold through other avenues, brands receive a percent of sales.

A positive consequence of the process and benefit for brands is the gathering of valuable product use and sustainability data during the renewal process. Additionally this gives brands the opportunity for a perfect End of Use score in the Higg Index. ●

Naturalizer's Senior Design Director Angelique Joseph Discusses Wearability and Style. *By Suzanne Blecher*

Queen of Comfort

In 1927, during a time of cultural shifts, Caleres Inc. launched a women's footwear line combining current fashion with comfort features. The Naturalizer brand became one of the first options that women could turn to for feminine footwear that until then, had been hard to achieve. With shorter hemlines came more stylish shoes and the freedom for women to wear what made them happy. Today the brand is no different, with Angelique Joseph designing. With nine years of intimate apparel design experience at May Department Stores (now part of Federated Department Stores) under her belt, she says, "I know trends and have a lot of experience with the intricate pieces and designs in intimates." *Textile Insight* talks to Joseph about style and wearability.

What makes Naturalizer stand out?

For sure, we know that our customer is a modern woman. She has a very busy lifestyle. She's got to juggle a lot, so she needs to be comfortable. She's not the one to be wearing high stilettos and she's not going to buy on comfort only. She definitely is about style. Our customer has said that it's very hard to find a comfortable and stylish shoe. That's where we're really winning. We really pay attention to what's happening in the market. It has to be stylish and comfortable, specifically in that order.

In designing, what are some of your favorite materials to use?

I love working with leather. That's the majority of our line. When I play around with textiles, I like to have an exotic – a croco or something reptilian. For Fall/Winter 16, we tried to play around with pony hair for a different texture and multi-dimensional look. I always try and make sure that we have some diversity. We've also played with some more vintage leathers and suedes than we have in the past. We have a small collection going after the 1920s/1940s workwear-inspired stuff with vintage-y outsoles, suedes and some more burnishing at the toe. The bottom of the shoe has a heavier tread. That's a bit new for us.

Do you have a favorite shoe in the line?

For Fall, we have a shoe called the Fortunate. It's a newer direction

for us. It has fringe – which is not new – but for us, it is. Although fringe is out in the market, we have it in a comfortable footbed and bottom where it comes with style hand-in-hand. When I thought about doing fringe, I got a lot of kickback. I wanted to approach it from a way that wasn't necessarily trend-driven. You can pull it out a year from now and it will still be relevant.

You also have the @work line that launched last year. Can you give me a snapshot?

For @work, we teamed with OrthoLite to have a collection of shoes designed for women in the service industry and healthcare where they are thinking about safety, comfort and even some style features. The OrthoLite footbed has this multi-density foam insole that offers long-lasting cushioning and delivers on moisture-control and anti-microbial benefits. These are for women that are on their feet all day. We have gotten great feedback. We're realizing after we've been in the stores that it's also been going beyond the service industry. Women are just picking it up because it's a great walking shoe. Maybe she's commuting from the subway to work or from the bus stop, and it's just easy.

What inspired the idea for a work line?

It goes back to our heritage and history where we were the first company to develop a woman's last for a woman. We want to stay true to that. This collection has to be softer, not heavy, and be comfortable. If you think about the competitors we're up against in this category, the nice thing about our shoes is that they are a little bit more feminine. Also, our price point is very competitive. We saw that there was an opportunity if we could get to a certain price point. That's really helping us.

Any future goals for the @work line?

Just to get it out there even stronger. It was a test in the beginning, but it's resonating. I think we need to now just push through and get it on to more feet. I think we have something that's a really good idea here.

What are you looking to do with the Naturalizer line in the future?

Just elevating the style a little more. We have to get some more interesting materials, keep in mind specific silhouettes and recognize that not every trend is for Naturalizer. For example, rocker-chic isn't for us. And that's okay. We are for that modern, 39-year old woman with a classic look. She's not overly trendy, but wants to look relevant. ●



From top: The Fortunate is a favorite with fashion editors. Reptilian prints are popular with consumers. Shown here is the Florence. The Venecia is from the @work collection. The Venue Mary Jane is a top pick by flight attendants.



Pioneering Scalable Self-Cleaning Textile Research. By *Kathlyn Swantko*

Let There Be Light!

The impact of self-cleaning clothes “is tremendous,” according to Dr. Rajesh Ramanathan, a vice chancellor research fellow in material science at Royal Melbourne Institute of Technology (RMIT) University in Melbourne, Australia. “Our self-cleaning technology that utilizes a spot of sunshine is eco-friendly, and will save energy and water,” he says.

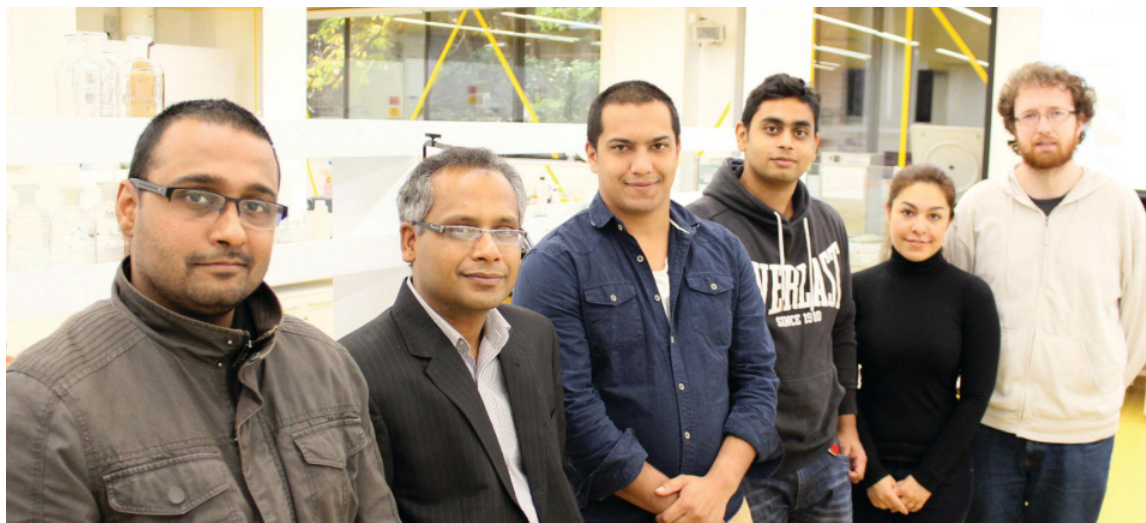
Ramanathan and his researchers have developed an inexpensive, efficient and scalable way to grow special nanostructures that can degrade organic matter when exposed to light. Their work paves the way towards nano-enhanced textiles that can spontaneously clean themselves of stains and grime, simply by being put under a light bulb or exposed to sunlight.

The research team began working on the project about four years ago under the direction of Dr. Ramanathan in the Ian Potter NanoBioSensing Facility and NanoBiotechnology Research Lab at RMIT. An important reason for selecting textiles as the research template was its light absorption ability. “Textiles have a 3D structure and are great at absorbing light, which is an essential component in our research,” explains Ramanathan. “Using light as the stimuli speeds up the process of degrading organic matter.”

How the Technology Works

RMIT’s research involves the development of a process that is similar to the dyeing processes currently used by the textile industry. The team worked with copper- and silver-based nanostructures, which are known for their ability to absorb visible light. The team’s approach was to grow the nanostructures directly onto the textiles by dipping the materials into several solutions, which resulted in the development of stable nanostructures within 30-45 minutes.

“During the process, as the nanostructures are exposed to light, they receive an energy boost that creates ‘hot’ electrons,” cites Ramanathan. “These energetic ‘hot electrons’ release a burst of energy that enables the nanostructures



to degrade the organic matter.”

The RMIT team’s research disclosed that within less than six minutes, some of the nano-enhanced textiles spontaneously clean themselves. Because of the efficiency of the process, the team believes that it would be very easy for the textile industry to incorporate this method into their existing textile finishing process. The team is looking to extend its research toward a wider variety of fabric types, as well as to test the ability of the nanostructured textiles for degrading different kinds of stains. Self-cleaning clothes that only require the use of light will be an eco-friendly way to potentially change the consumers’ dependence on energy and water for washing garments.

Ramanathan says, “Our current aim is to collaborate with a variety of industries to further advance our technology. We plan to test our nano-enhanced textiles with organic compounds that could be more relevant to consumers, to see how quickly the textiles can handle common stains like tomato sauce or wine. Since the process is relatively simple to implement, we believe that the technology should be an easy adaptation for many industries!” ●

RMIT’s self-cleaning fabric team, from left: Dr. Rajesh Ramanathan, Prof. Vipul Bansal, Mr. Samuel Anderson, Mr. Dipesh Kumar, Ms. Mahsa Mohammadtaheri and Dr. Matthew Field.



RMIT University’s research on self-cleaning textiles, contact Rajesh Ramanathan at rajesh.ramanathan@rmit.edu.au

Kathlyn Swantko, president of the FabricLink Network, created TheTechnicalCenter.com and FabricLink.com.

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Sewing Machine Tech **Tsunami**



trimming at the end of the sequence, along with needle-up and presser foot lift, all will save a big chunk of table time.

These machines are made for entry-level sewers like me. By eliminating so many decisions the operator doesn't need to memorize dozens of operations, and perform each perfectly. More skilled sewers in the factory are free to perform more difficult tasks because the basic construction steps are being monitored by the machines, not the line leaders.

Global apparel manufacturing has relentlessly searched to make product at the absolute lowest price in the least amount of time with the highest quality needed. The big companies that make industrial sewing equipment realized that a lot of the most basic guesswork involved in production can be eliminated by computerizing the machines at the most basic level.

FOB pricing goes down with decreased labor costs and increased speed. Lowering cost and skill at the same time is a manufacturing double-double and just what the apparel industry needs as the supply chain moves to emerging labor markets that lack a robust apparel manufacturing sector. That includes my little production space in Broomfield, and the United States in general.

For apparel production to re-shore to the U.S., manufacturers will have to accept the lifestyle and skill level of the American sewer. Innovations like smart sewing machines go a long way towards filling that gap. ●

I'm about to buy a new sewing machine, which isn't really news, except this one is actually "new." Technology has caught up to industrial sewing machines allowing them to produce a higher quality product, in less time, with lower skilled workers. That'd be me.

The new machines have the motor, sensors, and a simple computer residing directly inside the machine case. This kind of machine is known in the trade as being an "automatic," meaning it knows where all its moving parts are, i.e., if the needle is up or down, etc.

Automatic machines have been made before in a number of different ways, but mechanized sewing has always been difficult, expensive, and essentially unchangeable.

What's different is today's digital machines can quickly learn the sequence needed to sew a label on a pair of jeans or top stitch a five sided pocket. They can sew an exact distance, back-up to reinforce the seam, cut thread, then lift the foot; all in a single operation. Different weights of materials are automatically compensated for as the feeding mechanisms self-adjust and the machines now time themselves as well, making technician visits less frequent.

The new machines are relatively inexpensive and will memorize and recall hundreds of different sequences, making a single unit extremely versatile. New school electric servo motors provide the go-power while using a fraction of the energy of the old clutch

style monsters. Servos are more powerful, blessedly silent, and the speed can be controlled easily for a novice, yet another big advantage. Different than the ornery and hard to master mechanical beasts of yesteryear this new class of machines act like more of partner with the sewer.

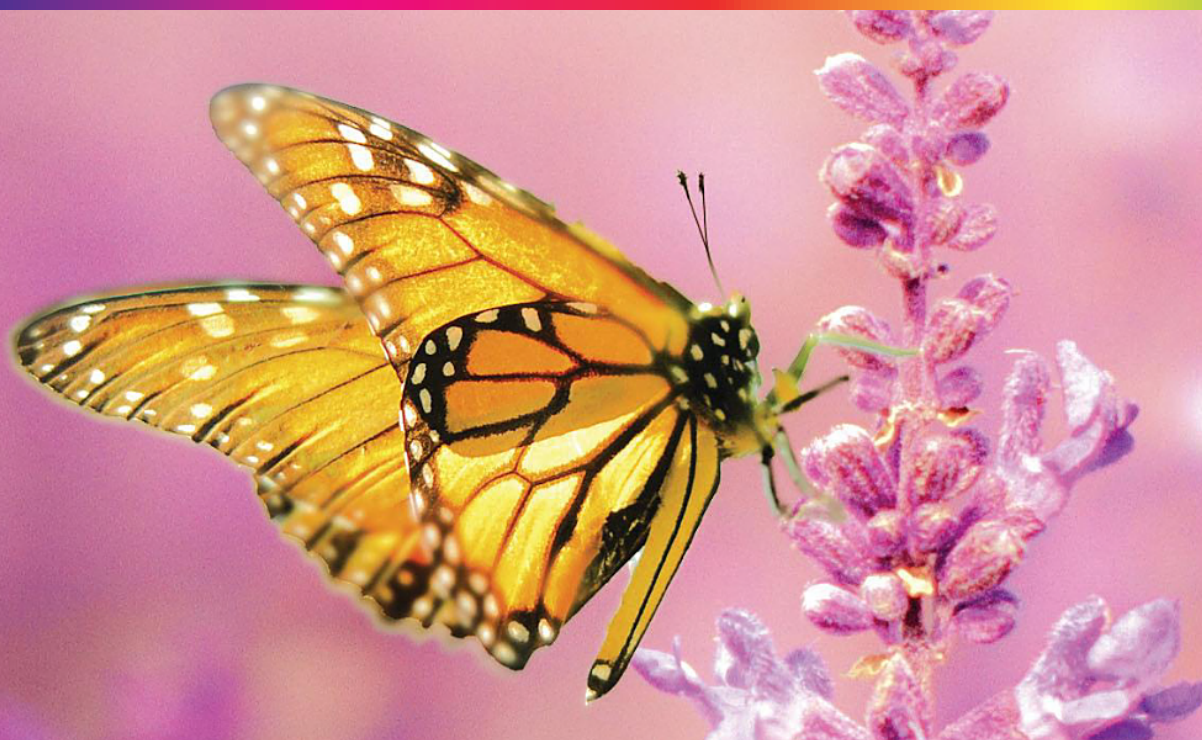
Quality and speed increase because the machine has an idea of what it is going to do before it sews, and it will repeat those stitches, in the right length and order, forever. There is less down time because the machine requires less service, i.e., it can self-adjust in order to feed different materials. The big plus is the operator is now alerted before the thread runs out, making bobbin changes more effective and less difficult. Auto thread

Disclaimer: Mr. Gray always messed-up his mother's sewing machine while trying to patch his jeans, and he still can't be trusted with needle and thread. The publisher, with reason, doesn't necessarily share his views. Send Mr. Gray a note at: simplygraydesign@gmail.com or see full color photos on Instagram: [@simplygraydesign](https://www.instagram.com/simplygraydesign)

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