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The international premium magazine for the textile chain

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# We are all connected!

Sales for the global textile industry are estimated to amount to an incredible US\$ 1.8 trillion, with the luxury fashion market accounting for around US\$ 60m of this total. These impressive figures were cited in the Fashion Special No. 1, 2017, published by German business newspaper Handelsblatt. Perhaps just as impressive is the decision by Germany's biggest and most important business and finance newspaper to devote two fashion specials to our industry in the space of just one year.

Reading the German art magazine "Blau", I begin to appreciate just how closely art and design contribute to the success of a fashion brand. Albert Kriemler describes, for example, what inspired him to create the Summer Collection 2017 for his luxury label Akris. "... Blanco y verde it's called, by the artist Carmen Herrera. ... The picture, its pure presence just wouldn't let me go." In the same issue, just a few pages earlier, Christine Macel, the creative mind behind this year's Biennale art exhibition in Venice, speaks in an interview about the lives of artists: "The majority of artists choose this way of life because they want to bear testimony to the special way in which they view the world. ... The work of an artist isn't instantly viable. After all, it's diametrically opposed to the logic of production and profitability."

For the first time ever, this year's Heimtextil in Frankfurt displayed an entire digital (textile) process chain, from the design through to digital printing and automatic cutting, as well as making-up which was integrated within the workflow. The starting point of this entire process is, of course, the design. "Creative designs, developed in-house or provided by design networks on the internet of things, were combined with CAD structures and structures for identifying the cutting and sewing orders," explains Alexander Artschwager of the Centre of Management Research in Denkendorf (DITF-MR). The research institute created this microfactory in cooperation with the trade fair.

## Textile and digitalisation

With corresponding adaptations, the same will be on show at this year's Techtexil/Texprocess 2017 in Frankfurt, which opens its doors in May.

Artschwager: "Consistently applied digitalisation from the initial idea right the way through to the finished product, where possible without interfaces and manual interaction, will pave the way to producing personalised products both regionally and competitively." Digitalisation, Industry 4.0, Microfactories – these days, we are all connected! In this digital age, it shouldn't be forgotten, however, that the design,

the artistic concept, the creative idea will always remain as the starting point.

As a show of support for this segment of our industry, we at textile network will be appearing at this year's Techtexil/Texprocess for the first time in collaboration with the Association of German Fashion and Textile Designers (VDMD), the strongest representative body for Germany's fashion and textile designers. In the same way that we report on everything from the fibre to the finished textile product, including the latest on textile workflows, our designers guide their innovations from the fibre right the way through to the finished product, keeping an eye on colour, form and aesthetics.

At our 'Chill Lounge', we'll be holding open interviews with interesting personalities from the industry and we'd be delighted if you'd join us. We also have several surprises up our sleeves for you at our Stand F86 in the Foyer of Hall 4.1 (between Halls 5/6 and 3)!

It's definitely worth dropping by! We look forward to seeing you there!

I hope you enjoy reading this latest issue of textile network

Yours

*Iris Schlömski*



Iris Schlömski  
editor-in-chief



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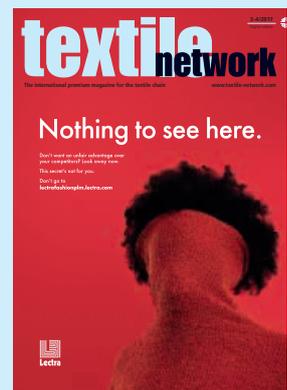
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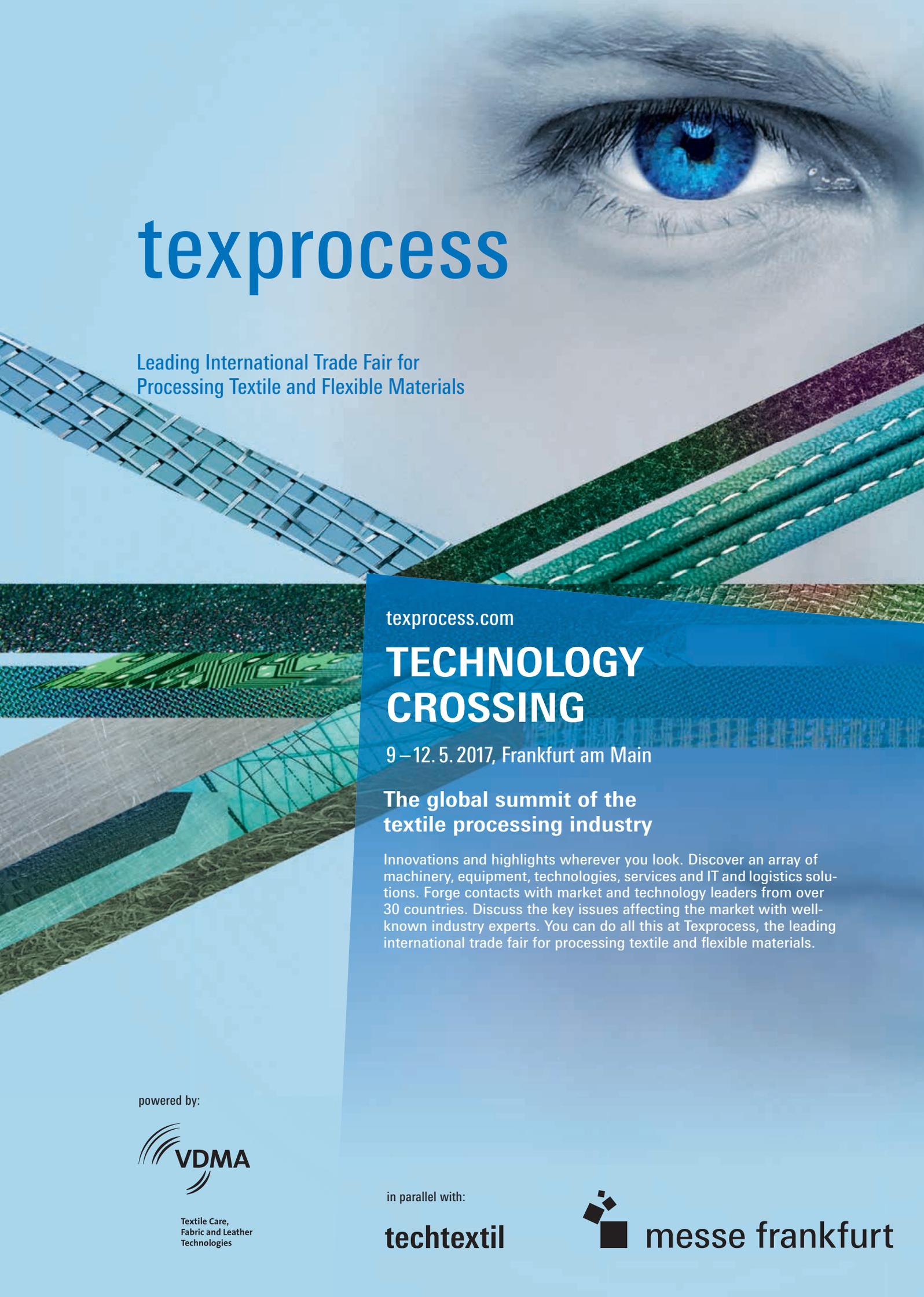
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**Lectra GmbH**

Adalperostrasse 80  
85737 Ismaning  
GERMANY  
Phone +49 89 99626-0  
Fax +49 89 99626-199

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Photo: Messe Frankfurt Exhibition GmbH / Jean-Luc Valentin

Innovative Apparel Show at Techtex: Catwalk for unconventional materials and processing technologies in fashion

## TECHTEXTIL/TEXPROCESS

### Smart textiles on their advance

Fashion and cars have several things in common. They can heat, illuminate and communicate: intelligent textiles – also known as smart textiles. “Smart fashions frequently use technologies that are better known in sectors normally not associated with fashion, for example, architecture, the automobile industry, aviation and the medical industry”, says Michael Jänecke, Brand Manager, Techtex and Texprocess, Messe Frankfurt. Technical textiles offer inspiration for fashion designers and help them expand their horizons. The ‘Monitor Dress’ of Berlin-based designer Lina Wassong for example shows the wearer’s pulse via a circle of LEDs. The key to this is the conductive silver threads from which

the jersey fabric of the dress is made. The silver-coated polyamides are made by Statex from Bremen and otherwise used in anti-static carpeting for aircraft. For human and veterinary medicine, the fibres are made up into silver-coated wound dressings. Used in smartphone cases, they protect the phones of politicians and the police against data theft. For a collection of winter coats, Berlin’s ‘Moon Berlin’ fashion label uses textile heating elements that normally warm up car seats. The ‘Pink Bionic’ collection by Theresa Scholl (Hochschule Niederrhein) is inspired by the ‘Solar Trees’, an architectural element of the German pavilion at Expo Milano 2015. Thanks to integrated organic

photovoltaic cells (OPV), the top can be used to charge a smartphone. It is printed using dye-sublimation technology – a common process in the promotional materials industry. Smart textiles are also well on their way to making an appearance in everyday fashions thanks to companies such as Interactive Wear from Starnberg, which specialise in integrating electronic systems in textiles. Together with fashion designers and labels, they are bringing smart fashion to the market. Interactive Wear took over the wearable electronics activities of Infineon Technologies in 2005 and works together with fashion labels such as Zegna and Bogner.

The complete spectrum of technical textiles for all areas of application, from the automobile industry, via medicine, to sport and fashion can be seen at Techtex in Frankfurt am Main from 9 to 12 May 2017. A focal point of the leading trade fair for the sector is functional apparel textiles and smart textiles. Parallel to Techtex, the Texprocess trade fair presents all stages in the processing chain of textile and flexible materials. Read more about the fairs in our Online Magazine! In our next printed issue we comprehensive report about the highlights of the exhibitors.

[[www.techtex.com](http://www.techtex.com)]  
[[www.texprocess.com](http://www.texprocess.com)]



Photo: Messe Frankfurt

The complete spectrum of technical textiles for all areas of application and all stages in the processing chain of textile and flexible materials can be seen at Techtex / Texprocess in Frankfurt am Main from 9 to 12 May 2017

## A+A 2017

### High demand for floor space

Around 1,900 exhibitors are taking part in the leading fair for occupational health and safety, which will open its doors in Düsseldorf from 17 to 20 October 2017. In its role as the event’s partner country, the UK will be featured with an array of different activities. Compa-

nies from all four corners of the globe have registered, with Halls 3 to 11 already fully booked. During the A+A trade fair, the 35th International A + A Congress will shed light on current topics and challenges facing the industry. In addition to the trade fair and congress, the

event features other well established A + A programme elements such as its forums, “theme parks” and special shows, including the A+A Fashion Show.

[[www.AplusA.de](http://www.AplusA.de)]

Taking place every other year, the A + A attracted around 1,890 exhibitors and more than 65,000 trade visitors back in 2015, achieving the best figures in its history



Photo: A+A



## FESPA 2017

## Future fairs every year

The Fespa Global Print Expo, the flagship exhibition for screen, textile and digital wide-format printing, will be taking place annually from 2017 onwards. This latest decision was made by the Fespa association in cooperation with both exhibitors and visitors with a view to providing the global, highly specialised printing industry with a diverse

annual event that covers all technologies, processes and applications and takes place at different venues. Fespa Digital, which specifically focuses on digital wide-format printing, will be replaced by this new, all-embracing event. Neil Felton, CEO of Fespa, stated: "This new move is hoped to give the global printing community greater clarity and consistency. Our Fespa flagship event has been alternating with Fespa Digital on an annual basis since 2006. Fespa Digital has now reached the point where, in the eyes of the printing industry, it has attained the same standing as the original Fespa." The next Fespa 2017 is scheduled to take place from 8 to 12 May 2017 in Hamburg, and will reflect the full spectrum of screen, digital and textile printing.

[[www.fespa.com](http://www.fespa.com)]

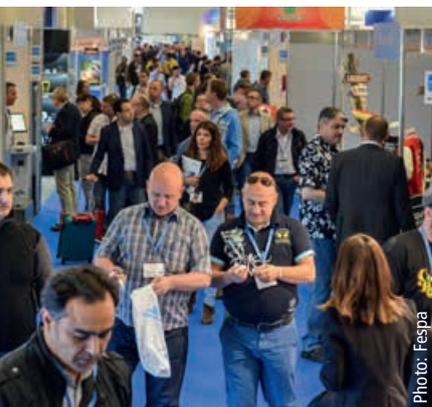


Photo: fespa

The next Fespa 2017 is taking place in Hamburg from 8 to 12 May 2017

## INDEX 2017

## First-hand knowledge of the latest developments

Index 2017, the world's leading nonwovens exhibition, will take place in Geneva, Switzerland from 4 to 7 April 2017. The show will feature over 650 exhibitors and 12,500 visitors, providing a unique opportunity for suppliers and clients from over 100 countries to meet and learn. Online registration is available here.

Visitors and exhibitors will have the opportunity to gain first-hand knowledge of the latest developments in nonwovens and their innovative applications through discussions and tutorials. Exhibitors will showcase the remarkable functional qualities of these versatile materials, with leading industry speakers at dedicated seminars sharing the latest trends and case studies. A rich four-day programme

will feature, amongst others, a seminar programme highlighting target sectors of application for nonwovens, including Transportation, Medical and Healthcare, Geotextiles and Filtration, the latter in the form of the Filtrex conference, taking place in parallel with Index 2017 for the first time. Each of the four sector-specific sessions will be opened by keynote speeches, which will be freely accessible to all Index 2017 visitors. These will discuss the 'Big Picture' environment and identify the key challenges that will shape the future of each particular field. The Index 2017 highlights featuring Dilo, GKD, Norafin, Sandler, Trützschler and other exhibitors can be found in our online magazine.

[[www.index17.org](http://www.index17.org)]

## PSI

## 55th PSI sets records again

With six per cent more exhibitors, nearly eight per cent more visitors and a share of international visitors that's climbed to 57 per cent, PSI continued its growth trajectory and once again posted new records. In total, organiser Reed Exhibitions Deutschland counted 988 exhibitors (prior year: 932) and 18,094 visitors (prior year: 16,810). For the first time, industry customers invited by promotional products distributors were granted access to PSI on the last day of the event.

"If you can't find ideas here, you'll have a hard time finding them at all", Michael Freter,

the visibly delighted PSI director, said. With industry sales of 3.47 billion in the past fiscal year, the promotional products industry asserted itself as a stable fixture in the German advertising market, almost seamlessly continuing the run that led to the current record, which was set last year. Nearly half of all companies now deploy promotional products as part of their marketing campaigns, according to the Industry Barometer, the annual survey presented by the GWW, the umbrella organisation of the German promotional products industry. And the promotional

products industry is looking to the future with optimism. The PSI's latest European industry report, for which the PSI Institute surveyed 1,958 companies in Germany, the Netherlands, the UK, France, Italy and Spain, confirms that notion. Altogether, 76 per cent of suppliers and 67 per cent of promotional products consultants in Europe recorded year-on-year sales increases in 2016. By contrast, 14 per cent of suppliers and 15 per cent of distributors registered a drop in sales. The majority of companies expect sales to grow over the course of the next five years. The figure for

suppliers is 87 per cent, for promotional products consultants 84 per cent.

The next PSI Show will take place in Düsseldorf from 9 to 11 January 2018.

[[www.psi-messe.com](http://www.psi-messe.com)]

[[www.psi-network.de](http://www.psi-network.de)]



Photo: Reed Exhibition

PSI sets records again



Textile trade fairs Spring/Summer 2018

# Market poised for action

Further modest growth in visitor numbers at Europe's most important textile trade fairs for the Spring/Summer 2018 season suggest consolidation and a degree of confidence. And yet the world situation is uncertain, customers are price-sensitive and 2016 was a really tough year.

“We are living in frighteningly changing times,” stressed Lidewij Edelkoort, the Dutch founder of the trend consultancy Trend Union, opening her presentation on the Spring/Summer 2018 season at the German textile trade fair, Munich Fabric Start. Edelkoort, who continues to wield major influence in the world of design, was referring to what the industry and society have been experiencing for several years: new forms of work, the new role of women, gender discussions and new communication channels, to mention but a few of the changes. In addition, as a consequence of sustainability, new types of economy are developing – such as the sharing or circular economy that was brought to the fore recently in Paris-Villepinte, where the Austrian fibre group Lenzing introduced its new fibre, 'Refibra'. This is produced from cellulose – 80 per-

Denim celebrates glamour pop as well as Zen. Seen at ITV (Italy)



Photo: Hövelmann

cent wood cellulose and 20 percent cotton residues – and hence is the first chemically recycled synthetic fibre on the market to be based on cellulose. The fibre producer is thus taking its first steps towards recycling and has closed the gap in the production cycle of its Lyocel fibres.

While textiles in Germany managed to increase turnover by 3 percent according to the German Textile + Fashion Confederation (clothing having recorded a decline of 4 percent in the first eleven months of 2016), the situation in other European countries remains strained.

## Brexit – and then?

The political turmoil is accompanied by great uncertainty. As far as Brexit is concerned, “The world awaits” was how Dudley Wart, CEO Sales at the high quality English producer Laurent Garigue of London, summarised the situation. “Nobody knows if it’s good or bad.” Alongside this, the market is difficult and highly price-sensitive.

In Italy, textile turnover for 2016 remained almost at last year's level, falling by 0.6 percent as reported by Italian institute SMI at Milano Unica. The sector contributes 15 percent of the total textiles and clothing sales. “Last year,” said Fabrizio Mattel of Italian weaving company Warp & Weft, “we maintained the level of the previous year and we are optimistic for 2016.” Others made similar comments. Consolidation was

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Fabrics for a fashion combining folk with oriental

Photo: Texworld

the byword of the 14th Milano Unica (1 to 3 February 2017) in Milan-Rho, which with its 427 exhibitors (300 of them Italian firms) felt the impact of a clash in dates with Munich Fabric Start, recording 44 percent fewer German buyers (see our article on p. 10). Concrete visitor numbers have not been provided. In general, business with Germany is troublesome. After 2015, when export sales to the long-established number 1 trading partner in fashion and textiles fell by 8.9 percent, they slid by a further 3.7 percent last year. Ever since the end of December 2015, China and Hong Kong (taken together) have been Italy's most important export market for textiles, with a value of 294m Euro. It is a tough business, as many weavers in Prato report. They say that constraints imposed by the Chinese authorities are a constant source of problems.



Photo: Hövelmann

Sumptuous romanticism on fine pleated fabrics. Seen at Knip-dee Singels Stoffe (NL)

Fine graphic patterns are a must in woven, knitted and printed fabrics. Seen at Viscotex (Italy)

### Intelligent textiles

In Germany, Munich Fabric Start (31 January to 2 February 2017) was once again impressive, with a well-attended and successful event that reported an increase in visitor numbers of 1 percent to about 20,100. After a successful consolidation phase, the denim area ('Bluezone') had its duration extended from two to three days again to match that of the remaining trade fair.

In the Keyhouse, as at the Paris fairs Texworld and Première Vision, the Smart Textiles category was also presented. After spending more than

#### Smart Textiles – on everyone's lips

Smart Textiles are presented at the Paris fairs Texworld and Première Vision and now also in the Keyhouse at Munich Fabric Start. After being confined for more than a decade to research and design laboratories, intelligent textiles are now increasingly edging into the public eye.

a decade in the research and design laboratories, these textiles are once more coming to the attention of the public. At Première Vision (7 to 9 February 2017) in Paris-Villepinte, an illustrious round-table discussion took place that included designer Anouk Wipprecht, who has for many years been involved in the topic of 'interactive fashion'; Nelli Rodi, founder of the trend institute of the

same name and also Co-President of R3 Lab, which initiates innovative projects at a European level; and Hilary McGuinness, Global Marketing Director, New Devices at Intel. The brief presentations and ensuing discussion demonstrated that the challenges and questions concerning financing, networking and issues of the future remain the same. What is clear, though, is the technological advance in electronic components with regard to size, flexibility and weight, bringing them ever closer to a textile substrate.

In Paris the fair organisers could breathe again as international buyers returned after 2016's year of horror. With its six trade fairs, Première Vision officially recorded an increase of 2.3 percent to 56,250 visitors. Texworld in Le Bourget, with its 950 exhibitors from 27 countries, officially reported 6.9 percent more visitors, including once again more overseas customers and businesses from America and Asia. Many exhibitors were astonished at the 12 percent increase in the number of French visitors who came to Texworld. For the fourth time, Avantex formed part of the fair, bringing together technology and clothing. It included examples from the 'Techtera' textile cluster in the region of Rhône-Alpes, among others, and of young start-up companies.

[Regine Hövelmann]



Photo: Hövelmann

Milano Unica

# Travelling through time and space



Photos: Erdina



Milano Unica

Nefertiti a Ibiza

The textiles trade fair Milano Unica took its visitors on an exploration of diverse cultures, which woven together create a visual fusion of the past, present and future defining the spring/summer trends for 2018. Radiating with bright, rich colours the "Trend Area" attracted visitors from the distance,

transporting them to a magical dune landscape by the sea, a magnificent oriental temple and a picturesque Italian town.

**Wanderlust**

The textile industry seems to have caught the travel bug: Following Pitti Immagine Filati's "Passengers" yarn trade show,

Italy's biggest textiles fair is embarking on its own fascinating journey. Milano Unica's vision is an innovative concoction of different cultures, languages, space and time resulting in a new modernity that reimagines traditional crafts. Point of departure is the idea of a famous historic figure travelling virtually through places known for their glorious past, unique architecture or vibrant present.

and body. The textile interpretations of this theme are inspired by floral patterns, Egyptian splendour, gold colours and the island's typical interior design features. The results are sumptuous embroidery and appliqués in light or antique gold, soft pleats reminiscent of rolling sand dunes and bright

**The 24th Milano Unica – SS18 trends**

Italy's biggest textiles trade fair took place from 1-3 February 2017 at the Fiera Milano Rho exhibition centre. More than 365 exhibitors from Italy and Europe, 40 exhibitors from Japan and 22 exhibitors from South Korea presented their collections distinguished by high quality and innovative developments.

In addition to the "Trend Village" highlights included the "Magazzini Aperti" showcasing outfits created by graduates of renowned fashion schools using the exhibitors' products, the "Vintage Area" offering hand-picked authentic retro apparel and accessories, as well as the "Aree Sintesi" where exhibitors displayed collages of their most creative products. Special guest countries included Japan and Korea which introduced some of the most interesting developments in the textile industry in a dedicated stand area.

Journeys inspire the three trend themes "Nefertiti in Ibiza" follows the Egyptian queen and iconic symbol of timeless beauty and great intellect directly into the heart of Ibiza's international social scene. The pearl of the Balearic Islands is not only a Unesco World Heritage site; it has become a birthplace of fashion trends and the place to go for young people looking to experience freedom of mind



Milano Unica

colours reflecting Ibiza's vibrant atmosphere.

"Malevich in Sorrento" sees the Russian artist and founder of avant-garde suprematism symbolically immerse himself into the Southern Italian town of Sorrento renowned for its tile and ceramic patterns. Thus, Malevich's dynamic and precise geometrical shapes meet Sorrento's décor in a style characterised by contrasting colour combinations, strong graphics, geometry, colour blocking and innovative stripes. The bold mix of macro and micro patterns breaking away from classic designs in an explosion of colour works parti-

cularly well with cotton and wool fabrics.

"Mollino in Teheran" has the architect Carlo Mollino from Turin explore Iranian culture in Teheran. In a symbolic visual osmosis of east and west the beauty of Persian mosaics is combined with the wooden warmth of Mollino's furniture. The inspirational foundations lie in the round shapes of church windows, the winding minarets of mosques, Arabic calligraphy, the decorative details and organic composition of Mollino's designs as well as the natural elements of Persian rugs.

Fabric manufacturers have channelled this creative impetus into exotic and hyperrealistic jacquards, lace and laser cut appliqués in iridescent oriental colour schemes and wooden tones. Befitting Milano Unica's status as a centre of innovation, it showcases its uniqueness through the "variety of



quality" (Ercole Botto Poala, president) and instils a sense of wanderlust enticing us to dive into a textile world full of

mysterious colours, patterns and textures.

[www.milanounica.it]  
[Neli Mitewa]

MARA'S COLUMN

Ever faster, and in ever greater quantities?

Sighing, we say no again because we already have everything we desire and are constantly throwing away perfectly good clothes. Do I really need or even want 30 T-shirts in my wardrobe and 12 blazers in my collection? Of course, there's nothing wrong with being well dressed for all occasions, but still.

So what do we really want? A new way of thinking in our industry! A new approach: Let's start with the basics which are the same the

world over. Nothing against basics, but ideally they shouldn't take up more than 30 percent of a collection. We have faith in our basics in terms of materials, cuts, colours, fit and accessories. And we like to stick to our favourite companies. As consumers, we always have a need for basics.

And yet, we also have a thirst for fashion! 70 percent of a collection should have its own very individual signature that reflects current trends and captures the spirit of our

times. We need to move away from mainstream fashion that's becoming the same old mishmash all over the world. We want fashion and we want trends. From whom? From those who do it best: professional and well respected and appreciated in-house designers. We don't want companies trying to mimic the work of well-known designers as they try to grab a slice of their cake. We want innovation, true innovation that isn't "toned down" by marketing or buying divisions. If we're bold enough

to create original fashion and to invest in new ideas, we will liberate the fashion industry from the shackles of its all-time low.



Photo: VDMD

Mara Michel, Geschäftsführerin VDMD e.V.

CALENDAR OF EVENTS

**Deutsches Fachkolloquium Textil**

03/28/17 - 03/29/17 | Aachen  
www.aachen-dresden-denkendorf.de

**Index– Internationale Messe für Vliesstoffe**

04/04/17 - 04/07/17 | Genf  
www.index14.ch/en

**Febratêxtil**

04/25/17 - 04/28/17 | Sao Paulo  
www.febratextil.com.br

**Performance Days**

04/26/17 - 04/27/17 | Munich  
www.performancedays.com

**Proposte**

05/03/17 - 05/05/17 | Cernobbio  
www.propostefair.it/en

**Fespa 2017**

05/08/17 - 05/12/17 | Hamburg  
www.fespa2017.com

**Techtextil/Texprocess**

05/09/17 - 05/12/17 | Frankfurt am Main  
www.messefrankfurt.com

**Outdoor**

06/18/17 - 06/21/17 | Friedrichshafen  
www.outdoor-show.com

**Heimtextil India**

06/20/17 - 06/22/17 | New Delhi  
www.heimtextil-india.in.messefrankfurt.com

**Milano Unica**

07/11/17 - 07/13/17 | Milan  
www.milanunica.it

RWTH Aachen

# German Textile Conference 2017 in Aachen



Photo: Philipp Scheffler/DWI



Photo: Helga Thomas/DWI

In cooperation with various project partners, the DWI is developing high-performance filters with nano-fibres

The DWI has great expertise in the field of polymers and is working on coatings and functionalities for textiles with a view to creating "tailored surfaces"

Be it aerospace, high-level sport or developments for the "Smart Home", the range of applications for high-performance textiles and their hybrid components made from plastic, metal or other materials is becoming ever more diverse. Even their surface properties can now be "composed" with great precision. New events such as the Deutsches Fachkolloquium Textil (German Textile Conference) are consciously seeking greater proximity to the surface finishing industry. Using as an example a heated rotor blade from a wind turbine, Dr. Mirko Bauer of Tenowo GmbH, based in Germany's Reichenbach, will shed light on a heated textile that can be incorporated in a plastic composite. The solution, sponsored by the German Federal Ministry of Education and Research, is based on a non-woven that is printed with a conductive ink made from carbon nanotubes.

It can easily be adapted to three-dimensional surfaces and included in fibre composite materials without the need for new tools. The "Smart-Heat-Tex" is characterised by quick response times and high levels of energy efficiency. The principle on which it is based will be transferred to other fields of application such as the aviation and automotive industries. In its new event format, the Deutsches Fachkolloquium Textil aims to provide a national stage for such specialised findings, which are often the result of developments created in a dialogue with scientific insti-

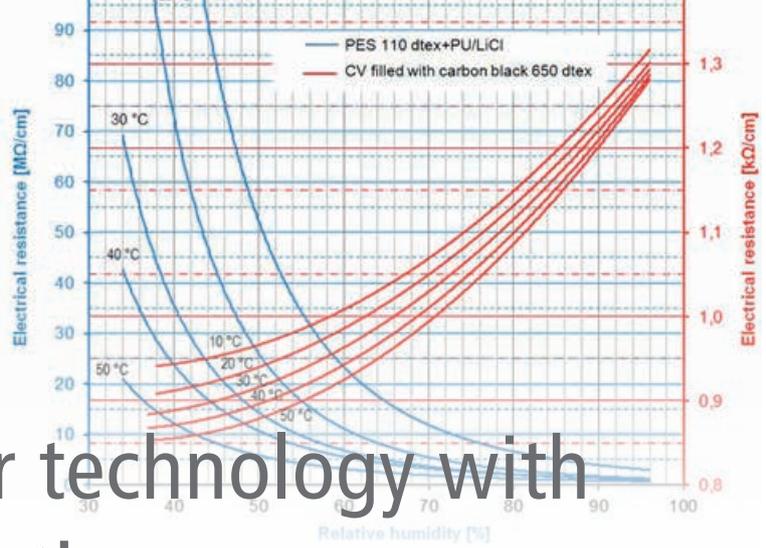
tutions. The conference at the end of March, held in conjunction with the "Aachen textile innovation day", will also benefit experts from fields such as materials science, chemical engineering, finishing and functionalisation. Prof. Dr. Martin Möller of the hosting DWI – Leibniz Institute for Interactive Materials in Aachen, points out just how diverse technical textiles have become in recent decades: "The number of people interested in this field has long since moved beyond the traditional boundaries."

[[www.aachen-dresden-denkendorf.de](http://www.aachen-dresden-denkendorf.de)]

**Deutsches Fachkolloquium Textil provides impetus for the bespoke surfaces of the future**

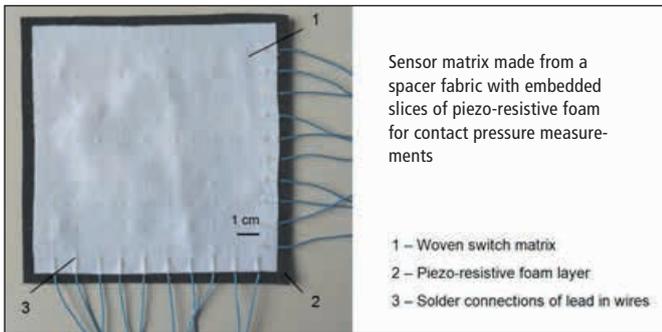
What: Aachen-Dresden-Denkendorf Deutsches Fachkolloquium Textil: Smart Production – Tailored Surfaces  
Where: RWTH Aachen, SuperC Gebäude, Templergraben 57, 52062 Aachen  
When: 28 and 29 March 2017

The graph shows a family of characteristics which can be used to determine the relative humidity via a measurement of the electric resistance of sensor threads. The curves for the two thread types made from polyester (PES) and viscose (CV) are denoted by the blue and red colour, respectively. Intermediate values for various temperatures can be determined with help of interpolation techniques



TITV Greiz

# Textile-based sensor technology with new fields of application



Sensors are a basic requirement and the main initiator when textiles have to be equipped with intelligent functions. A R&D project which aimed at the development and test of textile-based sensors was recently completed by TITV Greiz. Textile-based sensors represent an interesting alternative to conventional equipment since their sensing capabilities arise from the textile material itself.

Especially 3-D textiles, such as knitted spacer fabrics or pile woven fabrics, offer empty space for the integration of sensors and possess an elastic resilience force which can be advantageously used for many sensory applications.

On the basis of a current analysis of the smart textiles market, the focus was placed on measurements of the contact pressure with emphasis on prospective applications in medicine. In addition textile-based temperature and moisture sensors were included in the investigations since they comprise a suitable completion for many adjacent uses. In order to produce textile-

based sensors, fibres or bundles of fibres, ribbons, and other textile substrates were furnished with coatings which act as a resistive signal converter. These sensory coatings can be tailored to any desired sensing capability whereas the textile substrate remains nearly unchanged and keeps up its textile typical behaviour. The variables to be measured were converted via a resistance measurement into an electrical signal.

The textile-based sensors were manufactured using production techniques like weaving, knitting, and braiding. In order to generate a spatially resolved sensor signal a network of electrically conductive threads was incorporated into the textile. The sensorized area remains free from non-textile materials. Force and pressure measurements were carried out using piezoresistive signal converters, moisture was measured via resistance changes caused by hygroscopicity or swelling, and the thermo-electric effect was used for temperature measurements with woven thermo-

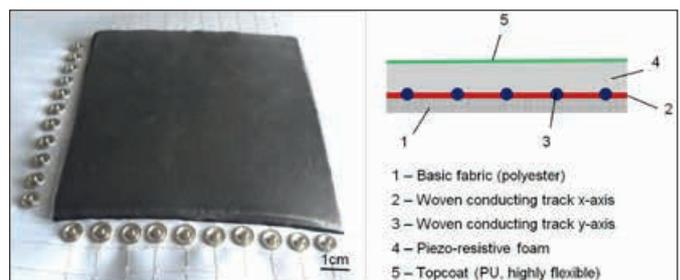
couples. A further part of the R&D project aimed at the connection between sensors and evaluation units, at the minimisation of influences caused by environmental conditions and cross-sensitivities as well as at the reproducibility of the sensor characteristics. Textile typical connection techniques such as tailoring, embroidery, snap buttons, and rivets were applied to transmit electrical signals and for contacting with evaluation units. Solder connection were made using solder alloys with low melting point, e.g. 138 °C for a tin-bismuth solder. The textile sensors were finished with partially applied coatings made of polymer pastes. Typical exposures of textile sensors to mechanical and thermal load were simulated in accelerated tests on laboratory scale in order to derive some reliability-enhancing measures.

Textile-based sensors provide many opportunities to develop new products with functionalities exceeding the capabilities of conventional sensors with respect to both technical parameters (size, flexibility, respon-

se time) and manufacturing costs. The high integration depth of sensor devices and textile opens up new application fields and increases the acceptance of early adopters especially when sensors have to be worn proximal to the body. Textile-based sensors are the starting point for many innovations when physical properties like force, pressure, temperature, shape change or moisture have to be supervised in load bearing belts, medical textiles, wellness requisites, sporting goods, automotive interior, and smart clothing. First applications were put into practice in the form of woven and braided sensors for the two-dimensional supervision of load and moisture in buildings.

The IGF project 18435 BR of the Research Association Forschungskuratorium Textil was funded via the AiF as part of the program to support Industrial Collective Research (IGF) by the Federal Ministry for Economic Affairs and Energy on the basis of a decision by the German Bundestag.

**[Dr. Wolfgang Scheibner]**



Application example of a multilayer woven sensor matrix coated with a piezo-resistive foam with topcoat and push buttons for bonding to exterior devices



Cotton is and remains the most important and popular natural fibre in the world

Photo: Cotton Made in Africa/Aid by Trade Foundation

## Special fibres and yarns, Part 2 - natural fibres

# Sustainable, in demand and fit for the future

Renewable and biodegradable natural fibres are enjoying quite a strong reputation in Germany and Europe. And it is likely to stay this way, as the world is gradually coming to realise that everything depends increasingly on getting better at dealing with scarce resources. Many consumers today are responding to this need by buying textiles and clothing products manufactured from natural materials. From a global perspective, natural fibres are subject to strong competitive pressures from chemical fibres.

In 2015, according to projections from experts at the Discover Natural Fibers Initiative (DNFI), some 98.3 million tonnes of fibre were produced worldwide. Of these, 69.6 percent (68.2 million tonnes) were chemical fibres and 30.4 percent (29.8 million tonnes) natural fibres. As recently as 2008, the share accounted for by natural fibres was 40 percent.

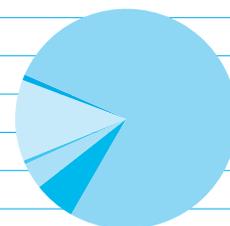
Natural fibres are divided into two types, depending on whether they are of plant or animal origin. Cotton, flax or linen, hemp, sisal, kenaf, jute, abaca, coconut and nettle are the predominant plant fibres, while wool and silk are the most important fibres of animal origin. Within the natural fibres sector, cotton has

the largest share by a considerable margin at 76.6 percent or 22.9 million tonnes (source: DNFI). Jute production accounts for 3 million tonnes (10%), wool 1.2 million tonnes (4%), bast fibres such as coconut

1 million tonnes (3.6%) and flax 320,000 tonnes (1.1%). For the same period in 2015, production of raw silk accounted for just 170,000 tonnes, representing a 0.6 percent share of all natural fibres.

Global natural fibre output in 2015\*

	in Tonnen	Prozent
Cotton	22,890,000	76.6
Flax	320,000	1.0
Jute, Kenaf	3,553,800	11.8
Silk	170,000	0.7
Pure wool	1,163,000	3.9
Other**	1,791,634	5.9
<b>Natural fibres</b>	<b>29.888.434</b>	



\* Forecast \*\* Abaca, ramie, sisal, hemp, kapok, coconut and bast fibres

Quelle: DNFI

## Cotton

Cotton is grown in 80 countries around the world and occupies 2.5 percent of all the arable land on the planet. It supports 250 million people, principally in the developing countries. On average, it produces a harvest of 732 kg per hectare. According to the Bremen Cotton Exchange, though, yields vary enormously. They are currently at their highest in Australia, Turkey, Israel, Brazil and China, at 1,500 to 2,000 kg/ha; while the lowest yields are in African countries such as Zambia, Kenya, Zimbabwe, Nigeria and Tanzania, at 143 to 217 kg/ha.

There are many reasons for this, reflecting widely varying production conditions in the different countries. At the one end they are the result of cattle-drawn ploughs, intensive manual work and a dependency on rainy seasons; at the other end of the spectrum, production relies on computer-controlled agri-technology, with efficient artificial irrigation methods and detailed soil analysis. Political systems, religion and culture also have a major influence. Nonetheless, however great the differences may be, efforts are being made everywhere to expand cotton cultivation in ways that are ecologically and sociologically sound, and above all economically sustainable over the long term. In the last 20 years, for example, American cotton growers have increased the efficiency of their water

Wool, though far less widely used than other natural fibres such as cotton, is the leading fibre of animal origin across the world



Photo: Pixabay

consumption for artificial irrigation by about 80 percent. Australia, too, is reporting productivity increases of 40 percent in water consumption. Israel is similarly a pioneer in exemplary irrigation management; methods of drip irrigation were introduced there as long ago as the 1970s. Up to 75 percent of the water used by farmers for cotton cultivation is filtered recycled water from storage tanks, which has reduced water consumption in cotton agriculture by 30 percent. Similar successes are also to be found in the use of pesticides. In Australia, the targeted introduction of an integrated pest management (IPM) scheme has so far led to a reduction of 89 percent in the use of insecticides. Reports of success are emanating from initiatives in Africa and Asia for the cultivation of sustainable cotton. Seen from a neutral standpoint, all of the methods being used, from organic to traditional cotton cultivation, are pursuing the same goals in ecological, social and economic terms, but at different speeds. It is a truism, but long-term success ultimately depends in every case on efficiency and profitability, as well as on the quality of the end products.

## Wool

The appeal of sheep's wool lies in its extraordinary resilience and

elasticity, which synthetic fibres struggle to match. Wool is divided into three quality levels, ranging from super-fine Merino wool, which is comparable to cashmere, down to coarse wool. Some 37 percent of the world's production can be classified as 'fine wool', 22 percent as mid-range wool and 41 percent as coarse wool.

Wool is produced in over 100 countries, on some half a million farms, with a large number both of small-holdings and large-scale businesses. The major producers are Australia, Argentina, China, India, Iran, New Zealand and Russia, followed by South Africa, Britain, Uruguay and Peru. About one-fifth of the world's production comes from Australia. The largest importer of raw wool is China, followed by Italy, and the value of wool products sold at retail is estimated to be US\$ 80bn.

Advertisement



Cotton is easy to process and versatile. It is familiar as a strong fibre that is comfortable to wear and easy to blend with other fibres



Photo: Bremer Baumwollbörse



Photo: www.cashmere.org

Important fibre products made of animal hair include cashmere, mohair, camel hair and vicuña, each with its own particular properties. Pictured here: cashmere goat

- ▶ About 51 percent of all wool goes into clothing, whilst a third is used to make home and household textiles, carpets and furniture. Coarse wool is used mostly for technical applications such as heat and sound insulation. As a sustainable and biodegradable product, recent discussion of wool has focused on aspects such as animal protection, health and husbandry. The practice of 'mulesing' (removing the skin around the tail of the sheep without anaesthesia) and the use of pesticides to combat bug infestations in the wool are frequent topics. Through their 'principles of ethical wool production', associations such as the International Wool Textile

Organisation (IWTO) are developing guidelines for considerate practices in sheep husbandry. As in cotton cultivation, so too in sheep-rearing and thus wool production, fibre from purely organic sources is available.

### Linen

The flax fibres used in the production of linen are cultivated principally in Europe – in France, Belgium, the Netherlands, Poland, Lithuania and Germany, as well as Ukraine, Russia and Belarus – but also in Egypt and China. European linen accounts for about 80 percent of global production by volume; the European linen industry consists of some 10,000 businesses across 14 countries. These form a professional network covering the entire production chain from farmers to wholesalers. Conscious attention is being paid to the maintenance of ecosystems in European flax cultivation. According to the European Confederation of Linen and Hemp (CELC), flax requires no artificial irrigation – rainwater is sufficient – and only small amounts of fertiliser and pesticides. Alongside traditional methods of flax cultivation, there are now a number of businesses growing flax using organic approaches. "Top quality linen is antibacterial, kind to the skin, hygienic,



Photo: Europäischer Gesamtverband Leinen und Hanf (CELC)



Global production of silk amounts to less than 200,000 tonnes of filaments, with an average value of US\$ 700,000

breathable, moisture-absorbent and healthy," says the Bielefeld-based Gesamtverband Leinen e.V. (General Linen Association). The chief customers for flax fibres are fashion and home textiles, which account for 90 percent of production. The remaining 10 percent goes into composite products for sports equipment and the automotive industry, for example.

### Silk

Silk production, which involves managing the silkworms, harvesting the cocoons and unravelling the filaments, is particularly labour-intensive: it is estimated that about 800,000 people work in the production of silk threads. India is the second largest producer, after China, but in Thailand, too, silk is produced all year round. Most production takes place in the southern and north-eastern parts of the country, once the rice harvest is over.

Top quality linen has an antibacterial effect and is kind to the skin, hygienic, breathable, moisture-absorbent and healthy

According to the Leipzig-based company Seidentraum (which means 'silk dream'), the quality of the raw material is crucial to the quality of the end product. The raw material where silk is concerned is the silk cocoon. Different types of caterpillars produce different qualities of silk. In first place is mulberry silk, made by the mulberry silkworm, which produces the best quality silk. The name comes from the plant on which it feeds, the mulberry bush, whose leaves represent the



Photo: fotolia



Photo: fotolia

only source of nourishment for the caterpillars. Silk produced by organic means is now becoming available. According to the suppliers, the biodynamic method of cultivation improves environmental conditions and thus quality of life in general. Such production also requires more manual labour, a positive outcome for the work-hungry rural populations of India and China.

### Nettle, hemp, jute, kenaf

Plants that until now have seldom been considered, such as the nettle, are now becoming a focus of interest both in the textile industry nationally and internationally, and among various designers. Alongside hemp and fibre flax, at the beginning of the second world war in Germany stinging nettles were one of the most important domestic fibre crops but they later fell into obscurity. With new processing methods, though, today they can be made into fabrics comparable to cotton in terms of fineness, with what the experts say are 'good' textile properties.

According to the nova Institute in Hürth, near Cologne, hemp, jute and kenaf are being used increasingly for technical applications. This is especially true in the production of bio-composite materials for the automotive industry, where they are used in fittings or for insulation. The CO<sub>2</sub> impact of such materials is

Plants that until now have seldom been considered, such as the fibre nettle, are now becoming a focus of interest in the textile industry nationally and internationally

between 20 percent and 50 percent lower than that of fibre glass composites (glass or mineral fibre).

### Welcome blends

The properties of natural fibres can be enhanced in various ways according to requirements by blending the yarns or fabrics to improve their usability and thus their attractiveness to consumers. This is true not only of blends of natural fibres including wool/silk, cotton/wool, linen/cotton and many others, but also of natural and man-made fibre blends such as cotton/viscose, wool/viscose, cotton/polyester and wool/polyamide, to name but a few. Nowadays, woven blends of natural fibres with elastic yarns are seen to provide a real win-win situation.

Stretch jeans are a case in point – highly regarded by many women and nowadays also by men. Last but not least, an innovative international recycling industry is developing, in which single-fibre textile and clothing products are recycled and reworked into new yarns and fabrics. Natural fibres such as cotton and wool are especially suitable for such processing.

[[www.baumwollboerse.de](http://www.baumwollboerse.de)

[[www.ICAC.org](http://www.ICAC.org)

[[www.dnfi.org](http://www.dnfi.org)

[[www.cottonanalytics.com](http://www.cottonanalytics.com)

[[www.mastersoflinen.com](http://www.mastersoflinen.com)

[[www.gesamtverband-leinen.de](http://www.gesamtverband-leinen.de)

[[www.IWTO.org](http://www.IWTO.org)

[[www.nova-institut.de/](http://www.nova-institut.de/)

[[http://faostat3.fao.org/](http://http://faostat3.fao.org/)]

[Rainer Schlatmann]

Part 3 in the upcoming edition is devoted to the topic of fiber research!

### Cashmere: a digression

Cashmere, regarded as one of the most valuable natural fibres of animal origin, comes from the long and silky wool of a goat. It is named after its home region of Kashmir, where the goats live on the high plateaux of the Himalayan mountain range, 5,000m above sea level. Cashmere wool has been processed into high quality textiles in the region since about 1000 BC.

Below the summer fleece, the animals grow a fine, soft under-layer of wool to protect them against the icy winter winds of the high plains. At the turn of the season early in the year, this wool is combed out or shorn, providing the valuable cashmere with a fineness of 13 to 16.5 micrometres. Each animal provides just 150 g of cashmere a year and gross annual production worldwide is believed to be about 15,000 tonnes. Important producer countries nowadays are China, Mongolia, Iran, as well as more recently Australia, New Zealand and Scotland.

The global supply chain feels it has been thrown into turmoil (Layoutbild fotolia)

Photo: fotolia

USA

# “Trump Shock” runs deep among global ...

US President Donald Trump and his “America First” policy has sent shockwaves through the global supply chain. No sooner had we digested the unnerving prospect of Brexit, than we were knocked sideways by the so-called “Trump Shock”, as the billionaire’s election victory has been dubbed. In terms of value, the USA is a far more important market than the UK. The USA is considered to be the biggest in the world for textiles and apparel – again in terms of value.

The global textile trade is concerned to say the least. Does Trump intend to create a protectionist climate in the USA and in doing so trigger a trade war with catastrophic effects for suppliers and buyers? Of course, the irony is that Trump’s goal to protect American jobs will achieve precisely the opposite, undermining and destroying many of them. Textile network has conducted an analysis of the situation, casting its view to Bangladesh, Pakistan, China, Turkey and Africa. What all these countries have in common is a deep-seated concern that exporting to the USA may become more difficult in the future.

Will Trump create a protectionist climate in the USA, triggering a trade war with disastrous consequences for suppliers and buyers?

## Bangladesh

Experts in Bangladesh believe that the USA will struggle to sustain its own labour-intensive textile and apparel sector in the long run due to a distinct lack of skilled workers. The wages of American workers, they continue, are so high that it would be unprofitable for the industry to produce textiles and apparel in the USA. Should textile and apparel production return to the USA, the products manufactured there will be so expensive that the average consumer will no longer be able to afford them. The result: high inflation, weak demand and job losses.

## Pakistan

According to figures from Pakistan’s Bureau of Statistics, the country’s textile exports have dwindled since their peak of US\$ 13.7bn several years ago to US\$ 12.5bn in 2016. During his election campaign, the US President also threatened to levy punitive tariffs on imports from various countries with a view to creating jobs in the USA. Several textile and apparel suppliers from Pakistan stated at Heimtextil 2017, that they



Photo: pixabay

First the Turkish Lira was plunged into freefall, followed by a period of recovery. It now appears to be tumbling back into freefall once more. The Turkish Lira is currently under massive pressure (Source: finanzmarktWelt.de)

had nothing to fear “at the moment” as an agreement covering long-term shipments is still firmly in place. Abid Latif, Managing Director of Lahore-based Lahore Business International, which supplies, among others, cotton yarn, grey fabrics and bed linen, told textile network: “The American economy is on the path to growth. The American market is very attractive for us. We hope to be able to enjoy unhindered access to this market long into the future.”

## Turkey

Turkey’s textile exporters have already lost their traditional markets among their neighbours. Syria, Iraq,



Photo: fotolia

China, the world's biggest textile supplier, has likewise voiced concerns over the US Administration's import policies. Pictured here: Yuyuan Garden, Shanghai



### Good to know

Turkey ranks as Europe's biggest producer of apparel. In 2015, the country's total textile exports totalled around US\$ 14bn; this includes US\$ 2.8bn worth of home textiles.

In 2015, China's total textile exports amounted to US\$ 284.2bn. In the first quarter of 2016, they contracted by 5 percent to US\$ 90bn against the same period the year before.

Yemen, etc are all in crisis. Although hopes are still alive in Iran, Turkish exporters have the USA very much in their sights, but are wary of the potential consequences of the Trump Administration's future policies. They emphasise, however, that campaign rhetoric is usually very different from the stark realities of everyday government. With regard to President Trump, they firmly believe that pragmatism will gain the upper hand over intractability.

The political situation both at home and in its neighbouring countries is critical. Many buyers from the West are currently steering clear of Turkey. As a result, many Turkish exhibitors at Heimtextil Frankfurt and Texworld New York were keen to forge new contacts with buyers from North America. Oguz Tekstil, headquartered in Adana, says that exports to the USA have already become more complicated and difficult. The textile manufacturer produces around 3 million metres of fabric every month. These fabrics are first shipped to China where they are processed into finished products which are subsequently sent to the USA. However, Sales Director Oyku Akyil believes it is still too early to make any reliable forecasts in terms of exporting to the USA. Talking to textile network, Murat Atilla Bulut, Deputy Managing Director of Tetsiad, the Turkish Home Textile Industrialists and Businessmen's Association, stated that Turkey's main export market is Europe, followed "supposedly" by Russia. However,

The Agoa Programme has enabled 38 countries in Sub-Saharan Africa, including Kenya and Ethiopia to expand their textile production and to create new jobs

Russia is currently facing a payment crisis which is being fuelled by sanctions. As a result, it has slipped off the ranking of Turkey's Top 20 biggest importers. As a consequence, the USA has developed into the second biggest market for Turkish products. Bulut states: "Not surprisingly, many Turkish exporters are wondering how President Trump's import policy will evolve." Meanwhile, several Turkish exhibitors at Heimtextil in Frankfurt said they were "delighted" with the contacts they had forged with buyers from North America. Some are planning to manufacture their products in Africa in a move to benefit from the Agoa Programme (Africa Growth and Opportunity Act) which allows products to be exported to the USA tariff-free.

### China

China, the biggest textile supplier in the world, has also expressed its concern over the US Administration's import policy. Chinese textile suppliers are moving their production to Vietnam, Laos, Bangladesh and even Africa (Ethiopia, Kenya, etc). Zhang 'George' Tao, Secretary-General of the Sub-Council of the Textile Industry for the China Council for Promotion of International Trade stresses that the Chinese textile industry has seen double-digit growth in the last ten years. "We are currently posting a 6.5 percent growth rate for our exports. The greatest challenge we face is weak demand

in Europe and the USA," states Tao. 37.4 percent of total textile exports from China were absorbed by the US market in the 2014/15 financial year. For 2016, he expects to see a further decline in textile exports. Chinese companies have developed a strategy for the American market: they are moving their production sites to the USA and intend to increase their presence there by snapping up textile factories. Tao seems convinced that the States of Georgia and North Carolina will try to attract Chinese investment. Indeed, "Chinese labour costs are already three times higher than in Vietnam and five times higher than in Bangladesh."

### Africa

African textile manufacturers and foreign suppliers such as from India, China and Turkey, that produce in African countries, such as Ethiopia and Kenya, can export to the USA tariff-free within the context of the African Growth and Opportunity Act – Agoa. The Agoa Programme has already enabled 38 countries in Sub-Saharan Africa, including Kenya and Ethiopia, to increase their textile production and in doing so create new jobs. The Agoa Programme was first introduced by US President Bill Clinton and was extended for a further ten years by the US Congress in 2016. However, many Africans still do not know what President Trump's intentions really are.

[Manik Mehta]





Photos: Strumpfwerk Lindner GmbH



Strumpfwerk Lindner GmbH

# East German hosiery factory continues to thrive

Following an extremely successful financial year in 2016 with growths in sales and staffing levels, Strumpfwerk Lindner GmbH, based in Germany's Hohenstein-Ernstthal, is set for further expansion in 2017.

After investing more than half a million euros in new knitting machinery at its production facility in West Saxony, in other production technology and a heat recovery system in 2016, plans are in the pipeline to commission 36 knitting machines and corresponding sewing technology in spring 2017. The number of staff looks set to rise from 60 to 84. Established as long ago as 1890, this family-run business specialises in the production of socks, legwear, arm sleeves and bandages for fashion, preventive healthcare, medicine and sport. In early 2016, Strumpfwerk Lindner GmbH snapped up Venocare-Med GmbH, a wholesaler specialising in medical textiles, whose headquarters have since been moved from the Black Forest to Hohenstein-Ernstthal. The company supplies chemist's, medical supply stores and hospitals with products such as DVT, compression and support tights and socks; medical wrist, knee and ankle bandages; socks for diabetics and patients suffering from atopic eczema; anti-tick socks, special Hallux-Valgus socks (for "hammer toe") and a diversity of sports bandages. In the field of

product development and testing, the company collaborates with several research institutes such as the Thuringian Institute of Textile and

Plastics Research (TITK) in Rudolstadt, the TITV in Greiz, the STFI in Chemnitz and the Department of Sports Equipment Technology at the

## Smart sock for applications in medicine and sport

A sock fitted with electronic sensors measures the kind of weight load and acceleration on the foot when running. Researchers at the Chair of Sports Apparatus Engineering at the Technical University of Chemnitz and Lindner have joined forces to develop their "smart sock". The collated data which can be recorded via an app on a smartphone or tablet, provides information on one-sided stresses to the foot. If the foot is being exposed to excessive strain, the app triggers an alarm. Since it also records moisture levels and temperature, the technology paves the way for applications in pain and trauma therapy, rehabilitation and diabetology as well as professional and amateur sports. "In comparison with measuring methods in or around the shoe, our solution has the advantage that the sensors can be used practically barefoot, as footwear is no longer needed to collate the necessary data," explains Prof. Dr. Stephan Odenwald. Not surprisingly, the electronics have to be sturdy and lie snugly against the foot. To this end, Lindner has developed a process, in which the sensors are sandwiched between two textile layers; an additional gel insert prevents any slippage. The prototypes have been successfully trialed and have triggered widespread interest among experts. All that remains is to prepare the smart sock for its market launch.



Photo: TU Chemnitz

Thomas Lindner and Markus Hill from the Chair of Sports Apparatus Engineering at the Technical University of Chemnitz testing the sensors on a smart sock

Strumpfwerk Lindner GmbH is the longest running family-owned hosiery factory in Germany. Thomas Lindner's great grandfather founded the company in 1890. In his day, he was revered as a pioneer of a world-famous tradition. In the 1920s, almost three quarters of global hosiery production came from the textile region of West Saxony.

Technical University of Chemnitz. Thomas Lindner, Managing Director, keenly points out that the products endowed with health functions are all certified and comply with European CE standards.

**Product innovations**

A relatively new innovation from Lindner are medical compression arm sleeves, designed to accelerate healing in breast cancer patients who have undergone surgery or radiotherapy. The breathable textiles are equipped with stitched-in rubber studs that exert moderate pressure to stimulate human tissue. This constant light massage is triggered by everyday movement and so sti-

mulates the lymphatic vessels in the arm, allowing the lymphatic fluid to drain away more effectively, thus lowering the risk of lymphoedema. Oedemas of this kind do not usually manifest themselves until one or two years after breast cancer surgery, and occur most commonly in the arms. Lindner: "We developed our own stitching technique for the manufacture of our arm compression sleeves. All the necessary stitching tests were carried out by the Textilforschungsinstitut Thüringen-Vogtland (TITV) in Greiz." Anti-tick socks, another innovation, have been developed in cooperation with the TITK in Rudolstadt. The scientists have succeeded in applying the

active anti-tick ingredient Permethrin to Lyocell cellulose fibre yarns that lend themselves to hosiery production. The plating technique used at Lindner made it possible to keep the yarn with the anti-tick product on the outside. Consequently, the yarn touching the skin does not contain any of the active ingredient. The result is that ticks can no longer cling to the socks, causing them to fall off. To enhance a sense of freshness and comfort for the wearer, a special silver yarn is used for the sole of the foot, preventing the development of bacteria and fungus.

[[www.lindner-socks.com](http://www.lindner-socks.com)]  
[Stefan Möbius]



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Roma Strickstoff-Fabrik

# Innovation and tradition from Balingen

**Roma, a knitting mill in Germany's Balingen, produces high-quality knitted fabrics for a diversity of different applications. Technical and heated textiles account for around 60 percent of output. The remainder constitutes womenswear, workwear, toys and art and craft products.**

Back in 1958, when Rolf Mayer founded the company, life was all so different: in the early days, the company focused exclusively on the home apparel market. As the latter's demise loomed on the horizon, Roma was quick to respond, going in search of new applications for its stretchy and durable knitted fabrics.

As the saying goes, seek and you shall find. And so it was that the company ventured into new markets, including the automotive industry. Ever since this change of tack, Roma's knitted fabrics have been used to cover various parts of a car's interior such as door panels, columns, parcel shelves, ceilings and draught-stops. Particularly dense, yet stretchy tubular fabrics serve as paint-spray protection for exhaust systems. Manufacturers of high-quality office and home furniture likewise appreciate the quality of Roma's knitted fabrics using them, among others, to cover partition walls and shelves. In terms of the requirements of each application area, the technical textiles from Roma are continually being optimised and further developed. To this end, the company collaborates with various research institutes such as the Institute for Textile Technology and Process Engineering Denken-



Photos: Roma



dorf (ITV Denkendorf), the Institute for Special Textiles and Flexible Materials (TITV Greiz) and the Hohenstein Institutes. Particularly in recent years, this continual research and development work has led to the identification of many new applications for technical textiles.

Jutta Mayer-Reichart, who heads the family-run company in the third generation, sees this as the secret to the firm's success: "The fact that we serve customers from a diversity of different industries and countries makes it easier for us to cope with fluctuating demand in any area." In addition, Jutta Mayer-Reichart insists that the company has always been committed to the

Roma has around 40 different knitting machines

On the left side: product example acoustic fabric / loudspeaker

Below: product example heated skiing helmet

maxim of 'Quality rather than quantity': "We produce exclusively in Germany because it's our conviction. Our skilled and motivated staff are key to achieving and maintaining our high quality standards as well as being central to the innovative strength of our products. These factors are at the heart of our long-standing and loyal customer base, coupled with our quick delivery times and the additional range of services we offer."

The more traditional applications for knitted fabrics such as womenswear and workwear are still important pillars of Roma's business model, as Sabine Haigis, Division Manager Womenswear, points out: "Every year, we launch two main fashion collections and several smaller follow-up collections."





Our customers are well-known clothing makers who appreciate our high quality and diversity." Accordingly, Roma produces jacquards, ajours, cloqués and fine rib fabrics in various fabric blends. In the case of hooped fabrics, the enterprise can achieve up to five colours. Highly elastic cuffs and waistbands and plain fabrics in weights up to 450g/running metre as well as knitted braces and grey fabrics for gloves are in high demand particularly among manufacturers of high-quality workwear.

### Electronic entertainment and elastic heated knitted fabrics

Roma's special acoustic fabrics are characterised by high levels of sound permeability combined with opaqueness, making them ideal for covering loudspeakers. On request, the knitted fabrics can also be made permeable to infrared rays for remote controls and thus be used as an attractive cladding for entire sound systems. Acoustic textiles from Roma are also widely used in the field of architecture and stand construction for trade fairs: sound permeability and opaqueness can be modified to fit the application. The three-dimensional design of the knitted fabrics can bring about high levels of sound absorption. When used for wall panels, noise levels can be significantly reduced in areas such as open-plan offices or restaurants. Roma has patented a process in which a highly flexible, conductive yarn is worked into a circular knitted fabric. The yarn is connected to

an electricity supply via a thin, woven metal strip. Depending on the design of the fabric, temperatures ranging from 30°C to 100°C can be achieved even in the low voltage range from 3 to 24 Volts. There is no risk of sustaining an electric shock, nor of pollution caused by electric smog. Given the material's high elasticity, the homogeneous and rapid release of heat and the diverse design options with respect to fabric texture and structure pave the way for an infinite number of applications for heated textiles. Such texti-

"The combination of processing methods and different materials gives rise to a vast array of technical specifications and applications for our knitted fabrics."

Jürgen Reichart, Head of Technical Textiles

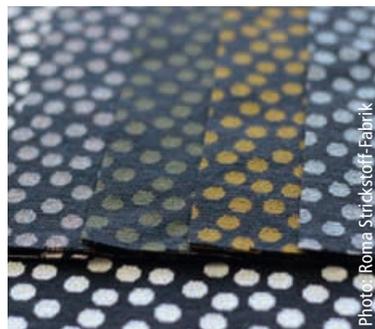
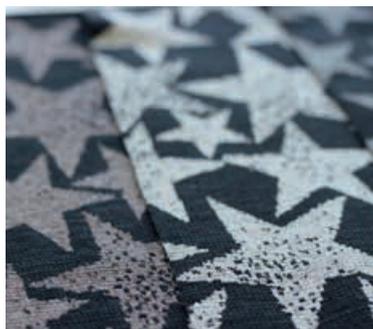
les can, for example, prevent the proliferation of dust mites in mattresses for allergy sufferers or, in a heating system for patients in hospitals, they can guarantee a steady and constant supply of warmth during operations. Using suitable rechargeable batteries, various mobile applications have been developed including a heated horse rug, a heated ski helmet and a heated waistcoat. Used in curtains and carpets, heated textiles can neutralise the cold and help create cosy warmth in mobile homes. Campco's well-being line for mobile homes is rounded off with heated seats and beds which, likewise, include the products from Roma. Even though the path to

launching a product is long and rocky, the members of the family-run company always ensure they stay on the ball when they have a successful innovation in the making. One such example are its heated textiles for plant cultivation. The textiles are placed around the roots of the plant and supply them with warmth. Used in greenhouses, they help save energy, as the ambient temperature can be drastically lowered without sacrificing yield. The prototypes developed during a research project impressively demonstrated their benefits in practical trials conducted by the college of landscape gardening and agriculture in Stuttgart Hohenheim (Staatschule für Gartenbau und Landwirtschaft). However, exposure to mineral-rich fertilisers caused the prototypes to perish over time. Jürgen Reichart is examining and testing numerous ways of solving this problem

### High-quality toys

In the toy and art and craft sector, Roma lives up to the high quality standards of European manufacturers. Plain, hooped and patterned fabrics in pure cotton, as well as chenille and terry fabrics in different colours and designs lend themselves as basic materials to high-quality toys and clothing for babies and toddlers, as well as doll's clothes, cuddly toys and fabrics for tailoring and sewing. In principle, Roma has all of the products in this segment tested for toxic substances in compliance with Standard 100 by Oeko-Tex, Product Class I (products for babies and toddlers up to three years of age). In addition, Roma is certified in compliance with GOTS (Global Organic Textile Standard). In the toy and craft segment, the cotton fabrics are all organic and GOTS certified.

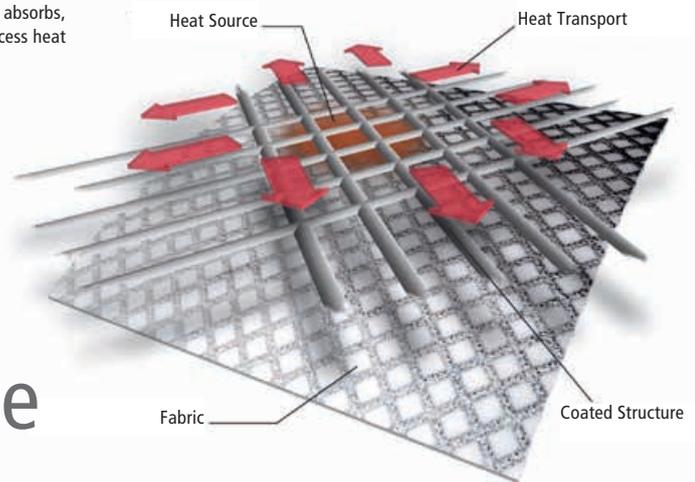
[[www.roma-strickstoffe.de](http://www.roma-strickstoffe.de)]  
[Rose-Marie Riedl]



Product example knitted fabric for womenswear

Photo: Roma Strickstoff-Fabrik

The Outlast technology absorbs, stores and releases excess heat



## Outlast

# Proactive with Xelerate

Outlast, the global leader in phase change materials (PCMs), launches its new advancement: Xelerate, a further developed fabric that significantly enhances and boosts standard PCM-performance. Xelerate's secret lies in the incorporation of "heat spreader" technology that absorbs and spreads heat more quickly, making the PCM process even more effective.

Martin Bentz, Managing Director of Outlast Europe GmbH in Heidenheim, explains: "We wanted to find a way to make our PCM technology even more powerful." The answer was to combine PCMs with heat spreaders to create Outlast Xelerate. "This technology allows heat absorbed by the PCM to be spread across a larger area. This in turn enhances the PCM's melting and crystallisation processes, making the material more active and effective," Bentz elaborates.

Head of R&D at Outlast Europe, Volker Schuster, adds: "Tests in our lab have shown that this new technology can increase thermal conductivity by up to 30 percent." With Outlast Xelerate consumers can feel even more comfortable with the best heat and moisture management system on the market keeping perspiration under control.

Originally developed for Nasa to protect astronauts from temperature fluctuations in space, Outlast's technology utilises phase change materials that absorb, store and release heat. Thus, moisture and heat can be optimally regulated, demonstrably reducing perspiration and proactively achieving a balanced body temperature.

"Simply put," says Bentz, "the Outlast technology basically works the same way as ice in a glass of water. As the ice melts

### Proactive temperature regulation

Outlast Xelerate is not based on wicking technology, which pulls sweat away from the skin. Instead it proactively intervenes even before perspiration occurs by directly managing the microclimate between the skin and the Outlast material. Average body temperature is at 36.6°C.

While the body's internal core temperature (e.g. of the heart or kidneys) remains within narrow physiological margins at approx. 37°C, the surface temperature of the skin and limbs is lower at 28°C-33°C depending on the body region. Temperatures above or below the normal level of 36.5°C-37.4°C indicate fever or hyperthermia, respectively. Outlast's technology minimises peaks of hot and cold and achieves a constant temperature matching the individual wearer's comfort zone.

it changes from solid to liquid, absorbs heat and therefore cools the water. PCMs apply that same principle. When the skin gets too hot the heat is absorbed, and as it cools down the stored heat is released again." In a nutshell, Outlast is synonymous with less overheating, less getting cold, less

sweating, even heat distribution and actively balanced temperature.

"Not too warm, not too cold – just right". The slogan coined by Outlast Technologies LLC based in Golden, Colorado, is more apt than ever.

[[www.outlast.com](http://www.outlast.com)]  
[Ilona Schulz]

Outlast Xelerate – a new development by Outlast.

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Managing Director Eckhard Bräuninger showing the "Bacteria Ex" system textile at the production facility of textiles manufacturer Spengler & Fürst, Crimmitschau



Photo: Spengler & Fürst

SPENGLER & FÜRST

## Hightech textile system destroys killer germs in hospitals

An innovative textile known as "Bacteria Ex" from the German textiles manufacturer Spengler & Fürst, based in Crimmitschau, can check the spread of methicillin-resistant (MRSA) and other life-threatening bacteria in hospitals and care homes. Laboratory trials have revealed that the high-tech textile system that contains silver is capable of destroying all-known strains of MRSA within the shortest of time frames. The first large-scale trials are currently in the pipeline. "Trials for 'Bacteria Ex' are being prepared at the University Hospital in Dresden and the Elbland Hospital in Meißen and will last for several months," says Managing Director Eckhard Bräuninger.

The spread of bacteria can be aided, among others, by bed linen, patients' linen, staff uniforms, towels and curtains. Although the textiles are disinfected during the wash cycle, they are often recontaminated as soon as they are used again. The linen and clothing made from the new textiles made in Crimmitschau can be laundered industrially, whilst preserving their bacteria-killing properties throughout their service life. For the textile to function properly, a closed system encompassing the weaving, making up, clinical application and certified laundering, needs to be in place. Partner Brändl Textil, based in Geyer in the Ore Mountains, has been charged with making up the textiles and distributing the "Bacteria Ex" textile system.

[[www.bacteria-ex.de](http://www.bacteria-ex.de)]

[[www.healthtextil.de](http://www.healthtextil.de)]

[[www.spengler-fuerst.de](http://www.spengler-fuerst.de)]



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Sun protection

# Sophisticated in design and technology

Sunny prospects for awnings, sun blinds and shades. Not only industry and business associations, but also manufacturers and the trades are posting healthy growths for 2016 in the field of sun protection. "The home textiles sector can continue to pin its hopes on the construction industry," reports the German Industrial Association of Finishing, Fabrics, Yarns and Technical Textiles (IVGT). "Besides renovation and refurbishment work on existing homes, the number of new builds grew significantly in Germany in 2016. Market researcher, Ifo-Institute, esti-

mates that around 299,000 new homes were completed in 2016, corresponding to an increase of almost 21 percent compared to 2015. Not only is interior design gaining importance but so are residential outdoor-living spaces. The industry is responding to this increase in interest by offering corresponding products such as awnings." Manufacturers at home and contract textiles fair, Heimtextil, which drew to a close in January, were left with a sense of optimism as they look to the year ahead. The German association of blind and sun protection manufac-



Photo: MHZ Hachtel

The self-adhesive textile Squid from MHZ is very easy to use

urers (Bundesverband Rollläden und Sonnenschutz (BVRs)) has revealed double-digit sales increases for the first half of 2016. A member survey conducted by the BVRs showed that almost 90 percent of companies expect sales for the rest of the year to have at least remained the same, with 42 percent anticipating an improvement. Interior sun protection is rapidly rising in the popularity stakes. "Interior sun protection helps prevent rooms from heating up too much whilst protecting furniture from sun damage," states Andrea Papkalla-Geisweid, Technical Advisor of the BVRs. Intelligent solutions include the Duette homeycomb pleats from Alugard. They create an effective climate zone protecting against aggressive heat, and reducing the absorption of heat around the windows by up to 78 percent. In the winter months, the climate zone can cut heating costs by up to 12 percent. According to the BVRs, current surveys indicate that the Smart Home field will have grown by 20 percent by the end of 2017. This sector is in a position to offer increasing levels of comfort, flexibility

and freedom thanks to improved networking and cross-industry collaboration. MHZ Hachtel, for example, features a new pleated model with a remote-controlled drive equipped with rechargeable batteries. As a result, the complex installation of electrical wiring and controls is a problem of the past. Even rooms with no power supply at all can be fitted with these battery-driven systems. Dutch supplier Coulissee took the opportunity at Heimtextil to announce its collaboration with Somfy. "We're responding to the growing demand for home comforts," says Jay Hijmering, Director DIY. "We'd like to open up our automation technology to a larger target group, whilst offering our customers and the end consumer a comprehensive global range of services for all Coulissee motors." Teba produces wire-free fabric Roman blinds with options such as wire-free assembly, remote control, smartphone, radio receiver and sun and temperature sensors.

[[www.ivgt.de](http://www.ivgt.de)]  
[Ilona Schulz]

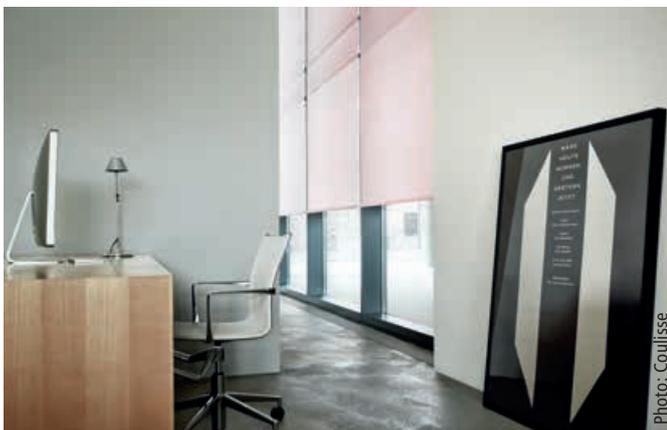


Photo: Coulissee

Coulisse features shades in current pastels

### MHZ commits to environmental protection

Plastic waste in the oceans is a massive problem all over the world. The idea of collecting plastic waste that has been washed up on the shore and processing it into new products is a controversial topic.

MHZ Hachtel is the first company in the sun-shade sector to commit to this idea as it expands its collection of regular and panel fabric blinds to include the woven Greenscreen Sea-Tex textile, which is made from 50 percent recycled ocean waste. The collected waste is processed into single-variety granules. This gives rise to a yarn that is used as the weft yarn in the Greenscreen Sea-Tex textile.



Photos: Messe Frankfurt

A total of 2,963 exhibitors from 67 countries took part in the event, with the largest exhibitor groups coming from China (549 including Hong Kong), India (391) and Germany (322), and the overall number climbing 3.5 percent on the previous event

## Heimtextil Frankfurt 2017

# Confidence and insecurities

Considered by many as an industry barometer, home textiles fair Heimtextil provided a stage for much discussion in January 2017. War in Syria, Iraq and Yemen, Brexit and the election of the property tycoon, entertainer and billionaire Donald Trump as the 45th President of the United States of America gave exhibitors and trade visitors plenty of food for thought and discussion, as they considered the impact all these factors may have on the international textiles industry.

The majority of exhibitors were satisfied with the outcome of the fair, even though many were unable to benefit directly from the German buyers. The only Malaysian exhibitor Fernex Sdn. Bhd. from Kanang, in the state of Selangor, exhibited bed linen and mainly cushions. "We are presenting five new cushion collections here in Frankfurt. One of them is made from washable polyurethane foam. Our cushions are branded with Outlast and can regulate temperatures themselves," states Lee Kheang Lim, Marketing Director of Fernex Sdn. The medium-sized company has a production facility in Johor Bahru and a second site in the Chinese metropolis Shanghai. During the fair, the enterprise forged contacts mainly with buyers from Europe, the Middle East and Korea.

The strong presence of Asian exhibitors shows that Asia will continue to play a strong role in the global textile trade long into the future. China and India took the lead with 521 and 391

exhibitors respectively, squeezing Germany's 322 exhibitors into 3rd place. German textile makers produce around EUR 3bn worth of home textiles every year. Large exhibitor groups were also recorded from Turkey (245), Pakistan (218), Taiwan (65), South Korea (23), Bangladesh (23) and Japan (18); even Iran put in an appearance with three exhibitors. The Turkish company Guleser Tekstil specialises in upholstery and drapery textiles made mostly from natural fibres, with a special focus on cur-

tains and upholstery textiles in the medium price bracket. Producing around 2,000 designs every year, the company based in western Turkey's Bursa, sees the UK as an important market that currently absorbs 50 percent of its exports. "Our buyers in the UK will probably have to increase their prices in the wake of Brexit," says Deputy Managing Director Engin Ocak. "Our sales agents in the UK are expecting prices to increase by 10 percent. We've already responded by reducing our prices." Guleser is not so much in direct

competition with Turkish companies but rather with Italian suppliers, claiming that his prices are lower but the quality is equally as good. He has set his sights on tapping into the Iranian market. Olaf Schmidt, Vice President Textiles and Textile Technology with Messe Frankfurt, stated in an interview with textile network: "Heimtextil is an extremely international affair as it attracts buyers from all four corners of the globe"

[www.heimtextil.messefrankfurt.com]  
[Manik Mehta]

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Storytelling

# Social responsibility – a successful PR strategy

**Who doesn't like a good story? Especially when it is not only beautiful but true. Businesses engaged in social and environmental activities thus have a fairytale blueprint at hand, including victorious heroes and heroines saving the day.**

Zalando cancelled its first Bread&Butter event at Berlin Tempelhof in January 2016 to instead provide space as accommodation for refugees. Other textile retailers and manufacturers, such as Otto, S.Oliver and Peek&Cloppenburg, have also supported refugees through their own projects. At the same time, numerous fashion companies work directly in and with developing countries and conflict areas in order to help the local population. Whether their aid comes in the form of donations in kind, initiatives or foundations (Adidas, H&M, Reimei AG), their efforts really come to

Charitable initiatives, however, are not a prerequisite for many fashion labels committed to sustainable and fair production. Transparent business policies and management can also be a form of storytelling that allows consumers to learn about manufacturing processes, the ideas and people behind the product and the materials involved. These are often stories about fair working conditions and of men and women who have been given an opportunity. Transparency, therefore, can be another effective and powerful marketing tool.

fruition when they genuinely effect change, in combination with a credible marketing and PR strategy.

## Storytelling

### – good triumphs over evil

Dramatization works not only in literature. It is a smart and effective tool in promoting products and creating a brand image. As the insurmountable becomes surmountable readers, audiences – and consumers – experience a kind of triumphant euphoria. When businesses communicate and spread these stories across different media they can reach and interactively engage audiences and (potential) consumers through different channels. Thus these stories directly contribute towards brand images and charge them with a positive connotation.

Toms, an American company founded by Blake Mycoskie in 2006, is an exemplary success story of storytelling. On his travels through Argentina, Mycoskie passed through a village where children did not have shoes. His desire to help them inspi-



Photo: Toms

With the "One for One" initiative Toms helps children in need

red his business idea based on a simple principle: for every pair of shoes he would sell he would donate another pair to those in need. The "One for One" initiative carries a message that is "relatable, clear and universal, which also helped us build a loyal fan base in Germany," says Jeana Park, Marketing Manager at Toms Germany. Social Media such as Facebook, Twitter and Instagram have played a key role in their success. According to the company, they have sold in excess of 60 million shoes in over 70 countries to date. Since 2011, new items such as watches, bags and sunglasses have expanded their product range as

well as the number of aid projects with the help of more than 100 partnerships. Current initiatives include access to drinking water, safe childbirth, eye operations and electricity. "We believe it's inspiring and effective to have our projects as closely related to our products as possible. It is easy and simple. You purchase something from Toms for yourself and at the same time you help a person in need," Park explains.

### Example: Patagonia

Patagonia follows a similar strategy. For Black Friday 2016, the Californian outdoor company announced its slogan "100 percent for the Planet" through its website, various social media sites and other online platforms as well as in stores worldwide. All proceeds that day went to environmental charities. The official Black Friday statement on the company website read: "At Patagonia, we will grow and deepen our resolve to protect what we love. We will fight harder and smarter, and use every means at our disposal to prevail for the sake of the country, the planet, and the wild places and creatures that need our voice." The outdoor specialist has continuously proven that its environmental commitment is not a one-off marketing gimmick, but has been a cornerstone of its company policy and business strategy for decades. "1 percent for the Planet", an initiative

started by Patagonia's founder Yvon Chouinard, for example, has supported environmental activists with 1 percent of sales profits since 1985. Patagonia's message is clearly and enthusiastically received by its customers. With their help the company donated an astounding US\$ 10m on Black Friday. A key factor in Patagonia's – and Toms' – success is credibility, because real fairy tales still make for the best stories.



Screenshot Folkdays

The Swiss organic cotton specialist Remei AG employs a different but nonetheless interesting storytelling strategy. On their website, an interactive model of the entire textile supply chain engages customers. For every step in the production process the site introduces a different person involved in the textile industry. Mr Babasaheb from Kolhapur, India, for example, tells us about working in a spinning factory, his daily routine and also his hobbies. These stories are all about identity and relatability. They create a connection between the consumer and the company and thus increase the associated value of a product. Other



Patagonia's Black Friday cross-media campaign

Remei AG supports people in Tanzania through its bioRe foundation



Photo: Remei

sustainability oriented fashion companies such as People Tree, Mud Jeans or hessnatur and even smaller start-up labels like Folkdays and Jan'n June are also successful in taking their customers on a journey that brings them closer to their products.

What all these examples demonstrate is that at the centre of every good story is a heroine, not the product. The companies themselves write the stories that let consumers get to know their employees, root for them, be inspired by them and become engaged. If these stories then also tell how the lives of people in need have been improved they become more than just entertainment. They are authentic and genuine, which manufactured advertisement campaigns can not compete with.

[Rebecca Espenschied]

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## Africa's Sourcing Market - part 2

# Well on the way

**For the two sister-islands of Madagascar ('Mada') and Mauritius ('Mu'), an increasingly interesting configuration is starting to appear. Mauritius has well-established logistics, a high level of skills and training in the field of clothing production, and excellent connections to customers both in the USA and in Europe; and Madagascar, its large but economically aid-dependent sister, can take advantage of these benefits. The initiatives of companies involved in the region are already working in this direction.**

Thus one of the largest suppliers of single-jersey products to European markets, Mauritius-based CMT (Compagnie Mauricienne de Textile), returned to Madagascar in September, after turning its back on the island state in 2002 due to its political instability. Now, CMT is operating a fully equipped sewing business in the capital city, Antananarivo, which by 2017 is expected to be employing a total of 2,000 workers.

Businesses such as the Cotono weaving mill (part of the Socota textile and clothing group) in Antsirabe – and others too – provide the basis for a local supply of fabrics. Cotono alone is already producing some 12 million metres of cotton fabric a year and thus represents the largest local supplier to businesses in the Export Processing Zone (EZP). Massive investment is also currently taking place in weaving and finishing plants, expanding capacity still further. Another equally good example is the Aquarelle Group. Part of the Mauritian clothing producer Ciel Textile, Aquarelle operates four clothing operations in Madagascar, employing a staff of 17,000, and is likewise planning to expand capacity and efficiency still further. Meanwhile, Nouvelle Lingerie (NLM), a manufacturer of high quality underwear, is making the most of the opportunities presented by the Group's combination of production facilities

both in Madagascar and in Mauritius. NLM Group Ltd, which specialises in the design and production of lingerie, corsetry, loungewear and bathing and beachwear, decided early on to take advantage of the production potential offered by Madagascar, not least on account of its low wage costs.

### NLM: a prime example

As well as supplying high quality and, from the point of view of production technology, demanding underwear for French brands such as Absolute Pomme, Princesse Tam Tam, Empreinte and Jolies Mômes, and for UK-based Gilda & Pearl, the company NLM also produces its own successful collection, Aima Dora. It gained its position in the market above all through the expertise and wide-ranging experience that it was able to offer to industrial and trading customers in Europe and the US – extending from the design stage and technical documentation to

prototyping and mass production, and even to POS. The existing agreement on duty-free trade from a number of African countries (see Part I) is also benefiting NLM's export business.

Partners in the market and (via Aima Dora) end consumers benefit equally from the specialist knowledge that has developed within the company since the founding of Nouvelle Lingerie Mauricienne Ltée in 1988. An in-house department for quality assurance, along with other measures, ensures that before they are delivered, 100 percent of the goods produced are inspected, in accordance with AQL 2.5/10.

NLM's monthly production capacity is about 120,000 items, while purchase prices for the bras and briefs are between 25 and 40 Euro. The minimum order size, according to Marketing Director Alma Stanonik, is about 2,000 items. She quotes a total production time for the more demanding products of 14 weeks

Digital management of the material transportation unit under vacuum, ensuring stability and accuracy of cut throughout the feed: pivotal aspects of the investment in the Gerber Z7 cutter in 2013



Photo: Gerber

NLM seamstresses master the most delicate of working processes while using highly elaborate materials for the various lingerie brands. Holly from the company's own Aima Dora collection



Photo: Holly/NLM

## Project Sekool

Nouvelle Lingerie is not alone in seeking to benefit from the potential offered by the large but desperately poor sister-island of Madagascar. For this reason, it has created Project Sekool to support school education in particular. According to the UN, five out of six Madagascan children do not currently attend school. NLM's Sekool initiative has built and equipped a school not far from the factory and provides support in the family environment to ensure daily attendance and progress. In addition, the 'Art of Education' project has recently been launched, supporting children in both sporting and artistic activities.

from receipt of the order, including developing and agreeing the design as well as acquiring all of the materials and trimmings – all available from the company as part of its full service offer. Attendance at *Première Vision*, *Fabric Asia* and *Interfilère* is therefore a compulsory element of NLM's programme.

### Computer-aided solutions: A must for Mauritian businesses

In the emerging African sourcing markets, use of automated solutions in clothing production and product development is still in its infancy; Mauritian businesses, on the other hand, have been consistently investing in the precision, efficiency and quality of computer-aided systems

since the turn of the century, if not before. Rising labour costs have provided sustained support for this development, which has long been essential on 'Mu' for maintaining competitiveness, assisted by a strong local presence of the leading supplier of relevant technologies, who is also a valuable source of service and training.

To ensure that its product and pattern development produces a perfect fit, the NLM Group relies on *AccuMark* software from *Gerber Technology*; its parametrics are generated entirely "using this excellent CAD tool" – a direct quotation from the company. For essential tension-free alignment, too, the company depends fully on *Gerber Technology*, through the use of the automated fabric spreader *XLs50*. "With the *Z7 Gerber* cutter and preinstalled *AccuNest* software for optimisation of the spreading arrangement, we can achieve the degree of material utilisation, not to mention precision, that we expect from automated tailoring," adds *Joël Desnoix*, who moved from *DIM* to the *NLM* team in January 2016, bringing with him 30 years of experience with *Gerber* and other systems.

In response to high levels of demand in the market, *Nouvelle Lingerie* underwent a reorganisation in 1999 designed to double its production capacity. As a result of research, it was decided to split production ac-

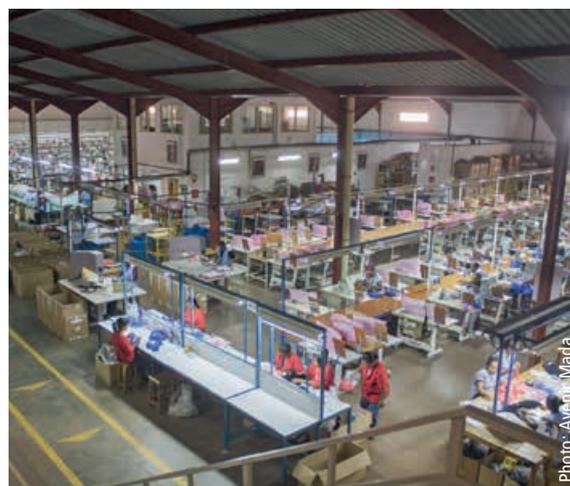


Photo: Avenir Mada

A total of 20 production lines ensure the necessary high degree of flexibility at *Nouvelle Lingerie*. View of production at *L'Avenir* on Madagascar

ross two sites, resulting in the founding of *L'Avenir S.A.R.L.* and of a subsidiary on the neighbouring island, *Oldac S.A.R.L.* "Madagascar possesses a highly talented workforce that enthusiastically embraces training and is ready for action," Australian *Alma Stanonik* tells *TN*. "For sure there are a few imponderables," she remarks, "but on the whole they are manageable and at worst they have their compensations in comparison with any of the alternatives." In addition, she acknowledges, the recruitment of skilled workers is becoming an increasingly difficult undertaking. The *NLM* Group currently employs a workforce of 700 on the two islands. Part I of this series appeared in *textile network* issue 1–2/2017, page 24 onwards.

[Margarete Y. Gaerner]

#### Relevant associations and cluster organisations in Africa

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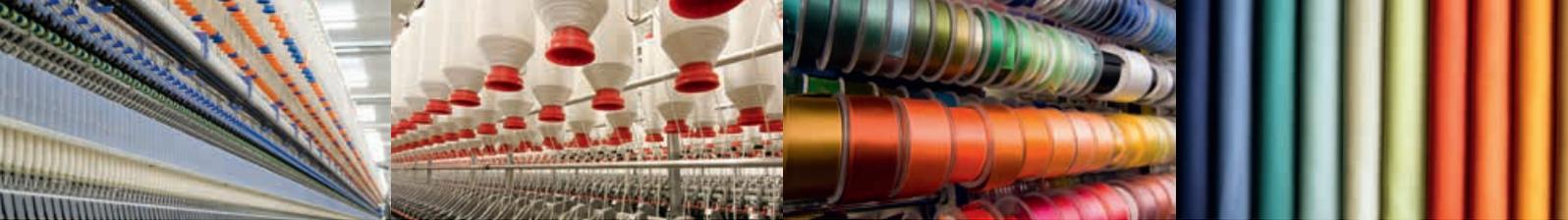
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# IVGT

IVGT - Association news

## Ecotech textiles on the rise – IVGT at Techtextil 2017

The slogan chosen by German textile association IVGT – “IVGT – The Network for the Textile Industry” - will form the focus of all its activities at this year’s trade fair in Frankfurt. With more than 60 exhibiting members, the association will once again constitute the biggest coherent group of textile producers in Frankfurt. To enable visitors to find its member companies and their product segments more easily, the association provides the “IVGT Quickfinder” which indicates their location in the exhibition halls. An updated and extended edition of the Suppliers Guide of Technical Textiles Germany will also be distributed there. This guide comprises a list of suppliers for companies processing, using and consuming technical textiles and covers all 12 market segments and fields of application that make up the technical textiles market.

The product index has been appearing at Techtextil for sixteen years and is printed in six languages. The latest edition now also includes manufacturers of eco-tech products and services for the first time.

On the first day of the fair, the IVGT will be holding two 60-minute Hotspot Tours, each featuring six manufacturers. This gives member firms the opportunity to present their main exhibition highlight. Furthermore, the IVGT has once again invited textiles students studying at university to take part in an information and panel discussion on 10-11 May in Frankfurt.

On the second day of the fair, the German, Austrian and Swiss manufacturers organised within the “Tape + Braiding” section of the IVGT will meet for an evening networking meal. On the third day of the fair, the IVGT is staging its traditional meeting for the European

Technical Textile Club, in collaboration with the manufacturing associations Clubtex from France, Texclubtec from Italy and Fedustria from Belgium.

Well prepared for Techtextil and Texprocess 2017. On 25 January, all IVGT members exhibiting at Techtextil and Texprocess, were invited to a preparatory event in Frankfurt. The participants were given important advice on marketing and advertising opportunities

as a means of optimising their communication with the press. It has since been announced that several member companies will be showing their products in the Material Gallery in the special “Living in Space” exhibition area in Hall 6.1.

IVGT members, partners and attendees are welcome to visit the IVGT stand F47 at the centre of Hall 3.1 from 9 to 12 May 2017.

[[www.ivgt.de](http://www.ivgt.de)]

The last Techtextil in 2015 posted a significant increase in eco-tech textiles. The push on environmental protection, disposal and recycling has since spread from the fashion market to the field of technical textiles. The application of recycled materials in composite components is becoming more widespread in all four corners of the globe. Recently published market surveys forecast that eco-tech fibre textiles will have amassed a market volume of more than 75bn Euro by 2020. Europe is leading the way, accounting for an estimated total market share of more than 40 percent. Sporting goods maker Adidas has already seized upon this trend, producing its first trainer from recycled maritime waste.

100 YEARS PETER DORNIER

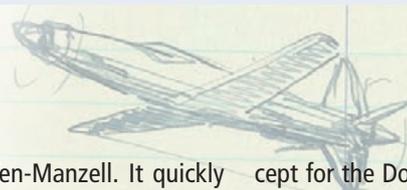
### “From human flight to flying threads”

He was not only at home in the world of textile machines but also in the world of aircraft construction – as exceptional design engineer and entrepreneur who was far ahead of his times: Peter Dornier. The second eldest son of aeronautical pioneer Claude Dornier would have been 100 on 31 January. Ideas, designs, trials, Peter

Dornier was born into this world of aircraft construction in Friedrichshafen, Germany on 31 January 1917. Already as a young person, he started creating design drawings which he then kept together with his notes in his sketchbooks. Already during his training his father assigned him tasks at the Dornier Factory in Frie-

drichshafen-Manzell. It quickly became apparent that his unconventional ideas gave important impulses to aircraft construction. One example as a young engineer was when his father involved him in a project for high-performance aircraft for speed records. Together with chief engineer Eugen Jäger, he developed the con-

cept for the Do 335 which was the fastest propeller aircraft in the world at its time. For this achievement he was 1944 awarded a prize from the Lilienthal Society. Later in the Sixties he gave decisive impulses for the development and construction of the Do 31. Read more about the life of Peter Dornier in our online magazine.



Hand-drawn sketch of the Do 335 from Peter Dornier's notebook

The two Managing Directors of Christoph Liebers GmbH & Co. KG, Thomas Liebers and Michael Starke (rights) proudly presenting their first Nano



Christoph Liebers

# Nano surpass all expectations

Customer tests demonstrate high energy saving potential (up to two thirds less oil consumption); significantly less wear and tear; and greatly reduced abrasion Gaimersheim/Bavaria. It has been over a year since the knitting element specialists from Gaimersheim in Bavaria introduced their revolutionary world first. The new sinkers, called 'Nano', not only shimmer like gold, but also stand out due to a surface covered with microscopically small cavities, thus enabling the protective oil film to remain on the sinker constantly throughout production. A range of clients have now tested Nano in production. "The responses we have received from our clients exceed all expectations," – Michael Starke, Managing Director of Christoph Liebers. Nano-

sinkers have won people over in all relevant areas, for example cleanliness, wear and savings. Thomas Keck, head of R&D, raves about them, saying: "We are delighted by the convincing test results which impressively verify which savings potentials and production advantages the newly developed Nano-technology provides."

## High energy saving

He reports that fitting machines with Nano has already yielded an energy saving of 12 percent. Furthermore, Nano prevent torque peaks and fluctuations in the speed of rotation. Nano also offered a particular advantage in so-called "Jogg-Mode". Here, while with conventional sinkers stitches are often skipped as they are starting up, Nano are able to move forward stitch by

stitch easily and without any problems.

Impressed, Daniele Tempestini, owner of Tessiture Tempestini (Italy), states: "The wear and tear of the sinkers with Nano-technology is much less than with normal conventional sinkers. The contamination of the knitted fabric has also been reduced." As proof, Tempestini sent both a Nano and a conventional sinker to Bavaria. Both exhibit the same production term, but whilst in the case of the standard sinker significant wear is noticeable, the Nano sinker seems almost as good as new.

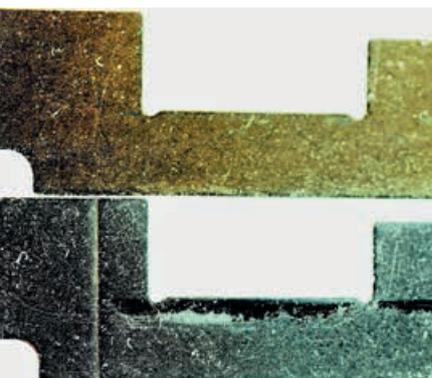
On the topic of wear and tear, Willy Hermann Superfine from Austria, has also tested the Nano-technology. Carl-Heinz Balazic, Knitting Manager of the world famous fine knitting company adds that "the wear and tear of sinkers with Nano-technology is much less than with normal conventional sinkers. We have tested this in our Mayer MV4 3.2 E44 with Polyamid Elastan. This can be seen obviously by comparing the side surfaces after 1,800 working hours." Two aspects of production with Christoph Liebers Nano are mentioned by Sascha Stefanowic, Knitting Manager for the renowned experts in circular knitted fabrics Aurula (Hu-

ber Holding), also from Austria: "We could reduce the oil consumption of our Mayer MV4 E34 by 66 percent. If you detract the reduced costs of a good knitting oil from the sinker price, the sinkers are nearly free of charge. Also the dirt accumulation in the sinker ring has been reduced in a big scale. We can also do our periodic maintenance much faster."

Less maintenance and less wear were also important topics for the women's underwear manufacturer Speidel, from Germany. The Knitting Manager Albert Mauz states: "The slots of the sinker ring stay more clean than with normal sinkers. The usual deposits on the bottom of the slots have disappeared. The sinkers are running smoother. We will see, whether we can change our maintenance cycle because of Nano-technology."

Christoph Liebers's sinker specialists also expect further insights from the collaboration with one of the leading machine manufactures, which is currently taking on the testing of the Nano-technology in its large diameter circular knitting cylinder. We may be excited to see what changes Nano-technology will bring to the sinker market.

[[www.liebers.de](http://www.liebers.de)]



Nano (top) and sinker after 1,800 hours in use at Willy Hermann Superfine GmbH, Austria



Tempestini, Italy shows the lower wear with the comparison patterns – Nano-technology (bottom)

Photos: dtb-media

MIMAKI

**New app for inspirational printing**

The new Mimaki News App features industry news from all over the world and sheds light on the latest products on the market. In doing so, customers are always kept in the loop about the latest technologies and trends. Some sections are

reserved exclusively for Mimaki and spotlight new products, business highlights, blogs and the most recent press releases. To inspire users to be creative, a virtual gallery features eye-catching, innovative and imaginative products that have been

made with Mimaki systems. The app has been developed in collaboration with the "World of Print" trade magazine and can be downloaded for free in the Apple App Store and through Google Play.

[[www.mimakieurope.com](http://www.mimakieurope.com)]

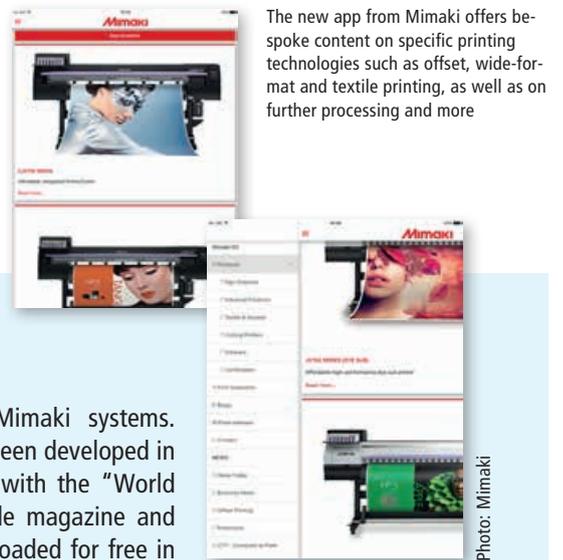


Photo: Mimaki

Digital Printing aroused much interest at Heimtextil – Flyeralarm, one of Germany's biggest online printers has just become one of Kornit Digital's new Allegro customers



Photo: Kornit Digital Europe

HEIMTEXTIL

**Textile printing adds flexibility to design and production**

At Heimtextil Epson featured a printing machine designed for printing widths of 160/180cm, 220cm and 320cm, which paves the way for the quick production of individual textile designs on an industrial scale. Epson also exhibited the 64" Sure-Color SC-F9200 sublimation printer, which has been developed for the production of small to medium-sized print-runs on high-quality textiles as well as for the indirect printing of hard materials, such as placemats, cups, mugs, cutlery and vases etc.

Digital roll-to-roll printing is currently arousing plenty of attention in the industry. Kornit Digital from Israel, whose stand at Heimtextil in Frankfurt resembled a nursery, presented the "Allegro" roll-to-roll printing system, for which it received several orders. Flyeralarm, one of the biggest online printers in Germany, and likewise a new Allegro customer, seized the opportunity at Heimtextil to show off its newly acquired capabilities (e.g. digitally printed textile products in cotton).

USTER

**Right-first-time quality**

For effective evenness testing of filament yarn, only sensors with the highest performance levels can provide the precision data required. The Uster Tester 6-C800 features a new digital Capacitive Sensor CC offering greater sensitivity, accuracy and reliability than ever before. With this new Capacitive Sensor, filament producers can be sure that their yarn quality will be right first time, every time. The Uster Tester 6-C800 also offers several completely new features to improve filament quality monitoring. A unique automatic twist scan facility

makes twister settings easier. The Knowledge Based System (KBS) enables users to trace the cause of quality problems on the spinning machine quickly, without the need for extra settings or input from the machine supplier. Measurement results for the famous Uster value Cvm are presented as easy-reference graphics, with diagrams, spectrograms and histograms. On top of all that, designed-in ergonomics make it simple, even for untrained operators, to tackle any potential quality issues with confidence.

[[www.uster.com](http://www.uster.com)]

The Uster 6-C-800 features a new digital Capacitive Sensor CC



Photo: Uster



Impressionen Lighthouse

Under Armour

# Textile production of the future

Just recently, Under Armour, the sporting goods producer from Baltimore, Maryland, USA, was ranked by Forbes as the sixth most innovative company in the world. Jami Dunbar, Vice President, Lighthouse Apparel by Under Armour, gave an impressive talk at the "Lectra Fashion Forward Event 2016" in Bordeaux, shedding light on the ideas behind the Lighthouse.

## What is the lighthouse?

In answer to this question, Jami Dunbar states: "It's our vision for tomorrow's production, it's our new production and design centre in the heart of Baltimore." The underlying idea can be described as follows: Product designers, technical designers, manufacturers, institutions and universities assemble

at the Lighthouse to research and work on new technologies and methods. Dunbar continues: "The production of apparel and footwear is still based on technologies that are a hundred years old. At the Lighthouse, we come together to develop new technologies so that we may manufacture products on a smaller scale, enhance efficiency and quality, and bring products to market more quickly."

## Building new on old

Under Armour's Lighthouse project revolves around developing innovative processes for innovative products. "It's then that we start thinking like entrepreneurs," says Dunbar. In effect, the objective is to "spotlight" efficiency, quality, response times etc.

One of Lighthouse's defining characteristics is its tenacity in questioning the status quo – such as: "What would happen if designers could work directly with production?" At the Lighthouse, best practices are first introduced to the pilot lines for apparel and footwear which are located alongside each other. The technologies for the different sectors are examined in detail, allowing the unknown to become known and the processes of experimentation to continue. "We test and test and test. If the processes run well, we incorporate them in the pilot lines. If they run well there too, we roll them out in our factories," says Dunbar.

The Lighthouse accommodates a research laboratory for virtualisation – containing everything the 3D heart desires from a body scanner to other 3D technologies. Other highlights include a 3D printing lab, in which textures and small parts such as buttons and facings can be created overnight, and a space for modern production, in which designers can experiment with and implement their designs.

The strategy and portfolio development team puts to the acid test all the proposals and plans developed at the Lighthouse and if they are found to be sound, they are transferred to existing production processes. The Lighthouse can, therefore, be seen as the home of optimisation, new processes and a new kind of global production process.

## Localised production and consumption

"We're striving for a new level of optimisation," says Dunbar, continuing: "We devise a principle on how to construct materials and components. It's a kind of modular system that enables us to make our products simpler, more beautiful and more useful. We examine

the entire product development process. Let me explain by way of example: Let's say we start by observing and analysing the athlete in motion together with our product. How much faster could we do this, if we could fully rely on virtual technologies? This is why we use the innovative solutions from Lectra to connect virtual processes with back-end automation."

## How do we revolutionise?

In answer to this question, Dunbar states: "The Lighthouse brings together pioneers who work on innovative products and processes. We believe in cooperating with the "Best in our Class", which includes companies such as Lectra, 3DMD and BMS. We aim to create new production technologies that can be used all over the world." Continuing, she sheds light on Under Armour's main objective: "We want to use the Lighthouse to pave the way for the localised manufacture of our products wherever they are being sold," concluding: "It no longer makes sense to pursue the cheapest labour around the world.

[[www.underarmour.de](http://www.underarmour.de)]

[[www.lectra.com](http://www.lectra.com)]

[Iris Schlomski]

## Local-for-local

"That means we're developing the best practices for our brands which are then implemented in our companies and partner companies: We produce in the USA for the USA, in Europe for Europe and in Brazil for Brazil."

Jami Dunbar



Impressions Lighthouse

Photos: Under Armour



Do you want more information  
about China and Les Enphants?  
Please visit [textile-network.com](http://textile-network.com)

Les Enphants

## Digital fashion for kids “Made in China”

Low quality and cheap labour were yesterday. The rising standard of living in China and higher consumer expectations demanding current, high-quality and affordable fashion are forcing the industry to adapt its strategies. Today, Chinese fashion labels are investing in quality and digital technology. Les Enphants takes the lead and gets European support on board. The Shanghai-based company is one of the biggest kids clothing and sportswear manufacturers and sells its products in 1,600 stores, some of which are brand owned. In order to meet rising customer expectations, Les Enphants had to streamline its production chain. On the one hand, product development had to be accelerated in order to keep up with ever-changing trends and cut down on the time to market. On the other hand, the aim was to increase product quality, but at no additional cost. To achieve its ambitious plans, Les Enphants decided to implement a PML (product lifecycle management) strategy across its entire supply chain and found its perfect match in Europe at Lectra.

### Know-how from Europe

Lectra's fashion PLM solution for Les Enphants is based on a modular and service-oriented structure with an intuitive user interface and a platform designed to seamlessly integrate with any internal company applications. In addition to modules for the management of collections, scheduling and accounting, the PLM platform

features process-oriented applications for design, model and pattern creation. This allows designers at Les Enphants to bring their visions to life digitally with the help of a 3D software.

The PLM's modular structure makes it possible for all company departments to access and work with the same data, quickly distribute important information, simplify communication between individual teams and thus speed up product development. Additionally, standardised operational processes reduce and streamline time-consuming production steps. This allows Les Enphants to react instantly to emerging trends and increased demand, for example, by preparing last season's best-sellers in as little as half an hour and going into production the same day. Previously, this process could take several days due to necessary

product information not being centrally stored and accessible. PLM solutions also provide better control over production costs. A transparent and comprehensive overview of all relevant information, from quotes on materials to production time, gives companies the tools to accurately and precisely calculate the amount of fabric, yarn and accessories needed, saving time and money in the process.

### Tailored Transition

Switching to a PLM platform came with its own challenges for Les Enphants, including re-training staff. Implementing the system required some time while fixed and tight deadlines still had to be met. In order to make the transition as smooth as possible, Lectra sent a team of service experts to analyse the operational processes beforehand, whilst introducing

employees to the new system and supporting Les Enphants every step of the way. Essential for the successful implementation was the close collaboration with the project managers involved and most of the staff became familiar with the new system within three months. For Les Enphants PLM is a long-term solution. The company's future relies on several separate, sometimes remote teams working closely together, making a digital exchange of information essential.

Many Chinese fashion producers are affected by the change in consumer patterns, e-commerce and fast fashion. China is on the path towards digitalisation of the clothing industry and acceleration of product development. In the land of the setting sun, high-quality digital production is rising.

[[www.lectra.com](http://www.lectra.com)]

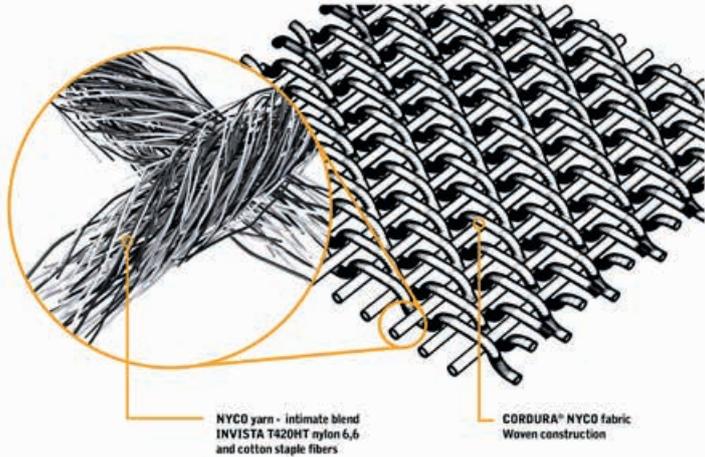


Founded in 1993 and based in Shanghai, Les Enphants is one of the world's biggest manufacturers of kids' clothing and sportswear with 3,000 employees



Photos: Les Enphants

Debuts Strongest Nylon-6,6 Staple  
Fiber Ever Produced by Invista



INVISTA

### Cordura Brand Announces Durable Fiber Breakthrough

For five decades, Invista's Cordura brand has been shaping the world of military gear, workwear and outdoor apparel. In its 50th anniversary year, Invista's Cordura brand has made a cutting-edge breakthrough in designing and commercializing the strongest nylon-6,6 staple fiber ever produced by Invista.

This intensive two-year-long research and design process resulted in a state-of-the-art, patent-pending high tenacity fiber designed to enhance the core strength of Cordura fabrics. With the introduction of the new high tenacity Invista T420HT fiber technology, Invista's scientists and technicians have successfully achieved one of the largest leaps in its nylon-6,6 innovation pipeline which dates back to the initial commercialization of the fiber at the company's flagship Seaford, DE staple nylon 6,6 production facility.

"At Invista, an on-going dedication to innovation is in our DNA," said Anthony Green,

global Cordura brand business director. "Our latest T420HT technology launch is one in a series of new qualifying Cordura brand fiber breakthroughs to come as we continue to push the boundaries of durable possibilities."

Already adopted by a major international military, Cordura Nyco (Nylon/Cotton) fabric blends based on new Invista T420HT high tenacity fiber are undergoing extensive wear trialing for next generation combat uniforms. Invista T420HT fiber has a mission to create a new generation of durable, yet lightweight fabrics – such as Cordura Nyco Extreme and Cordura Nyco Tactical fabrics – to be used in many applications like military uniforms, outdoor apparel and workwear. Dickies is the first consumer brand to adopt the new fiber in its Dickies PRO with Cordura fiber technology workwear collection, which will be available online Fall 2017.

[[www.cordura.com](http://www.cordura.com)]

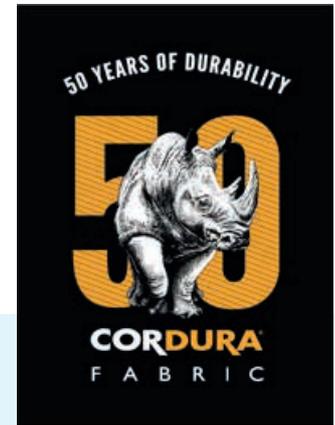
50 YEARS CORDURA

### Happy birthday you cool brand!

Throughout 2017, the brand will be celebrating its 50 year love affair with durability with the launch of its new anniversary microsite designed to showcase the brands, mills, collaborations, and innovations that have been a part of its durable journey. Since 1967, the Cordura brand has been working with industry leaders who have helped sculpt and evolve fiber and fabric technologies, pushing the boundaries of innovation. The passion and experience that its

valuable authorized mills, brand customers and collaborative partners dedicate have helped build its reputation for high quality, durable fabrics. "As we celebrate our 50th anniversary, we want to honor those who have been with us along the way," said Cindy McNaull, global Cordura brand and marketing director. "Our new microsite allows us to not only tell our own story, but is also a platform for others to share their experiences and memories."

[[www.cordura.com/50years](http://www.cordura.com/50years)]





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Alex Vogt



Jana Kern

Photos: Kern Kommunikation

## Book tip

# “At the end of the day, it’s about shaping the future positively”

Jana Kern and Alex Vogt have published a book entitled “Future.Fashion.Economics” which sees itself as a guide for forward-looking, responsible business thinking in the fashion industry. textile network invited the two sustainability experts to talk about their new work.



Photo: DFV

Future. Fashion. Economics. re-interprets our understanding of sustainability. The authors create a link between innovative ingenuity and a new way of thinking, painting a future-looking picture of tomorrow’s fashion and textile industry

**Textile network:** You’re predicting a fundamental shift within the textile industry towards greater innovation and sustainability. What in your view will trigger this paradigm change?

**Alex Vogt:** We think the trigger for change will come from outside. Over the next few years, digitalisation will be the biggest trend to hit the industry. But there are many other aspects that look set to transform the textile supply chain as we know it – one need only think

of 3D printing, concepts such as Cradle to Cradle and Manufacturing on Demand, or intelligent fibres and completely new fibre raw materials.

**Textile network:** You describe these developments in the context of seven future scenarios.

**Jana Kern:** We asked ourselves what the fashion world could look like in the year 2025. As we looked to the future, it soon became clear that so many different aspects will come into play and so we decided to pick out seven major developments and look at them in greater detail. We mainly focus on the new relationship between innovation, new technologies, a new set of values and the concept of »Thrivability« as opposed to sustainability. This gives rise to recommendations on how companies should act.

**Textile network:** What kind of recommendations?

**Alex Vogt:** At the end of the day, it’s about shaping the future positively. This is the only way for fashion companies to differentiate between innovation and incremental improve-

“Companies that want to inspire their customers have to tune into the zeitgeist and values of a new generation – Generation Y or the millennials.”

Jana Kern

“It doesn’t have to be as dramatic as an environmental collapse or a fundamental change in values – something as simple as technical progress has the power to turn the fashion industry upside down.”

Alex Vogt

ments, to implement holistic approaches, to overcome linear supply chains, and to achieve a net positive impact – in a nutshell: to deconstruct processes and reinvent them.

**Textile network:** You say that if this change in thinking doesn’t take place, the fascination of fashion will outlive itself. Why?

**Jana Kern:** The population explosion combined with today’s production methods would lead to massive price increases fuelled by finite raw materials for conventional textile fibres, whilst also contributing to environmental disasters, social unrest and revolts.

**Alex Vogt:** Without technical innovation, fashion wouldn’t be able to keep pace with the developments of our times. It would fail to inspire and delight people. It would no longer appeal or “speak to” the “phygital prosumer”. Being an entrepreneur in the fashion industry would no longer be an attractive proposition.

**Textile network:** So, what do you suggest?

**Jana Kern:** Constant further developments, innovation and technical advancements coupled with open-mindedness, information sharing and collaboration.

**Alex Vogt:** The fascination of textiles is created by new materials and technological innovation. Organically based, recyclable substances are increasingly replacing environmentally harmful fibre technologies from finite resources. At the same time, 3D printing is rapidly gaining ground in the fashion industry and the market for smart textiles is growing as well. It’s really very exciting!

**Textile network:** What do you mean with supply circle?

**Jana Kern:** We believe that solving the problem of limited resources goes beyond the simple scenarios of reduction and going without. We think the answer lies in re-using existing resources, and switching from primary to secondary raw materials, thus incorporating circular business practices. The Circular Economy is going to turn the fashion industry completely on its head in the near future, triggering a radical rethink along every part of the supply chain.

Ms Kern, Mr Vogt, many thanks for talking to us.

The questions were asked by Iris Schlomski.

The first book in the world to specifically examine how the textile retail trade can respond effectively to the push on sustainability!

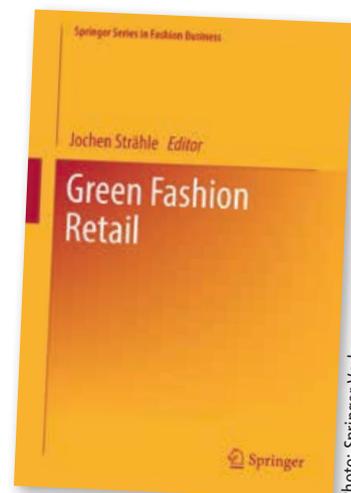


Photo: Springer Verlag

## BOOK TIP

### Green Fashion Retail

“Green Fashion Retail”, a book by Prof. Dr. Jochen Strähle that recently appeared in the “Springer Series in Fashion Business”, provides theoretical and practical approaches to incorporating sustainability within the fashion retail trade. The series is edited by Professor Dr. Tsan-Ming Choi of the Hong Kong Polytechnic University. The English-language work offers a solid understanding of how sustainable aspects can be included in business models in the fashion retail trade and is

the first book in the world to specifically examine how textile retailers can respond effectively to the push on sustainability.

Theoretical and practical approaches show how sustainability can have a positive impact on the strategies of fashion retailers and marketing experts. Divided into four main sections, and based on various research questions, the book provides its readers with hands-on advice on how to make marked improvements and incorporate the concept of sustainability into any business model within fashion retail.

Talking to textile network, Professor Dr. Jochen Strähle stated: „In my view, sustainability is key to the future success of our industry. We have to change attitudes and move

away from the hippy muesli image of sustainability by embracing more innovative approaches. Having said that, this field is so diverse and complex that people usually just focus on single aspects of sustainability. In addition, many approaches fail to meet the real needs of the retail trade. So, the idea behind this book was to combine these different areas into a single concept whilst providing case studies that are relevant to the trade. The intention is to enable companies to draw their own conclusions and to be inspired into action.”

[Green Fashion Retail  
by Strähle, Jochen (Ed.)  
ISBN 978-981-10-2440-5]

Professor Jochen Strähle is an international fashion management specialist, who was educated at the Friedrich-Schiller University in Jena, the Universidade de Coimbra and the University of London /Paris. He is highly regarded as one of the most influential forces in the field of fashion retailing and is a well-known fashion management expert on TV and radio. Prior to his professorial appointment at Reutlingen University, Prof. Dr. Strähle was CEO of the biggest online fashion retailer in Central and Eastern Europe. He has written five books about his experiences in several managerial roles in the fashion industry around the world. Today, he works as a Professor for International Fashion Management at the Faculty of Textile & Design at Reutlingen University.



Photo: Hochschule Reutlingen

## LANXESS

### Textile dyeing without effluent

Bleaching and dyeing textile fibers and fabrics without causing any environmental pollution through effluent? “Minimal liquid discharge” (MLD) and “zero liquid discharge” (ZLD) – i.e. the minimization or complete avoidance of liquid waste – are already a reality. Thanks to highly efficient water treatment processes that combine reverse osmosis with ion exchange. Reverse osmosis elements of the Lewabrane brand and Lewatit ion exchange resins from the Lanxess specialty chemicals company play a key role in this. The textile and leather industries with their traditionally high water consump-

tion and often severely polluted effluent, represent a major challenge for experts in disposal technology and drinking water production. This is especially true in some parts of Asia, where these industries are nowadays concentrated. Above all in the large industrial centers, a vast number of people have to be provided with a regular supply of clean drinking water. A study from 2009 showed that, by 2030, water requirements in India will be twice as high as the available fresh water resources. This de-

monstrates clearly that it will be impossible to get by without water recycling.

“Water treatment is a significant global challenge and at the same time an attractive growth market,” said Jean-Marc Vesselle, Head of the Liquid Purification Technologies (LPT) business unit at Lanxess. The market for reverse osmosis membrane elements is currently projected to grow at an above-average rate of 10 percent annually in the coming three years. In the case of ion exchange resins, future growth is predicted to average four percent per year.

Lanxess offers important products for better water quality

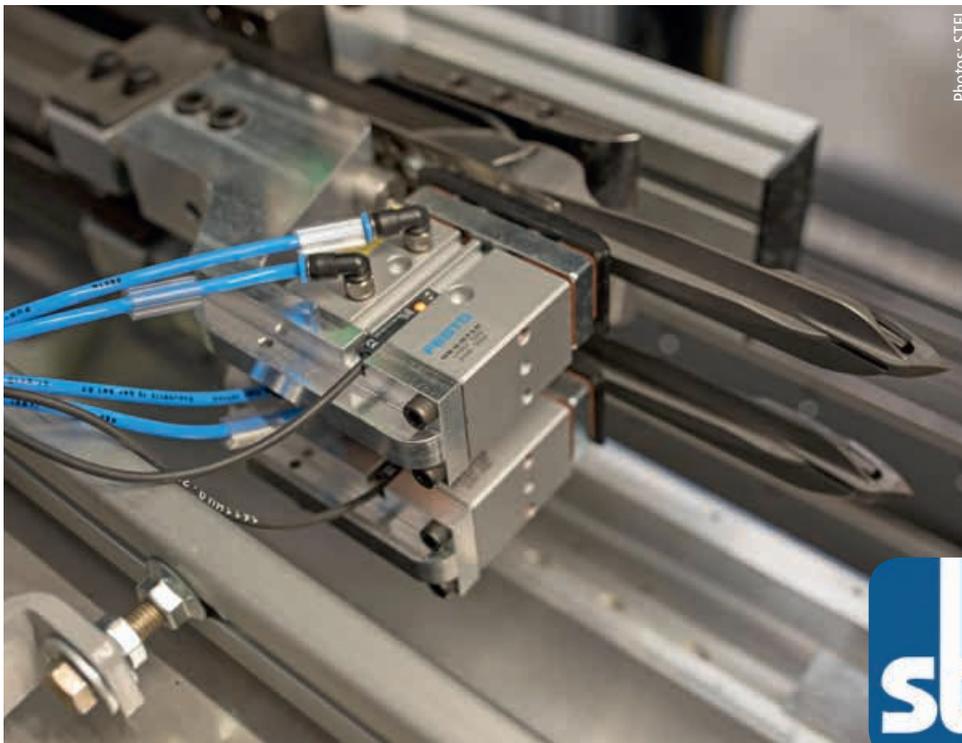
[[www.lanxess.com](http://www.lanxess.com)]



Photo: adpic

Exclusive Series: Industrie 4.0 explained - part 2

# Digitization is finding its way - Smart Maintenance



Photos: STFI

materials like carbon or glass fibers, could rapidly increase the wear of a production system. Especially thread-guiding elements are affected. At the same time, the condition of the production facilities influences the quality of the product. By the way of example, the state of the guide needles on a knitting machine could be mentioned having a great influence on the quality of the knitted fabric.

## Strategies for maintenance

Many textile machine manufacturers already offer the service of remote diagnosis to identify problems and to assist customers in maintenance activities. To initiate these activities different strategies are used. The corrective maintenance describes the initiation of measures after

the failure or damage of a machine component. Compared to everyday life of a car owner, this would be the case with a light bulb of a headlamp. The difference to an oil change is obvious, which has to be carried out at defined intervals, even before the used oil has a negative impact on the engine. This preventive measure previous to the occurrence of a failure is part of the so called preventive maintenance strategy. Another opportunity is the predictive maintenance, wherein the necessary dates for implementing measures are determined based on data. In the context of digitization and the increasing amount of data acquisition and evaluation this strategy co-



In the last magazine issue we took a closer look at the topic of networked production. To guarantee a high technical availability of production facilities, which are almost in use 24/7, an efficient maintenance strategy is required. According to DIN 31051 this includes the processes of maintenance, inspection, repair and improvement. Maintenance describes all measures to preserve the desired condition of production facilities in order to avoid disturbances. Inspections are carried out to determine and assess the actual condition. In case of determination of any deviations from the desired state, repair measures have to be initiated to recover the desired condition. The

Sensor for monitoring the gripper opening and thus detection of drop in air pressure

fourth process of a maintenance strategy is the improvement, which includes all technical and administrative measures, which conduce to additionally increase the reliability, maintainability and safety of the production facilities.

## Specifics of textile machines

In textile machines all highly dynamic elements as well as elements, which are in contact with the textile, require a particular monitoring. Individual materials, such as high-tech

Part 3 of this series will be published in the next issue of textile network and addresses the topic of "human machine interaction".

mes to the fore. At the present state of development this strategy is time intensive and makes great demands on analysis and evaluation technology as well as on the qualification of the personnel. Therefore, it should be mainly used, if cost-intensive components are applied or a high availability has to be guaranteed.

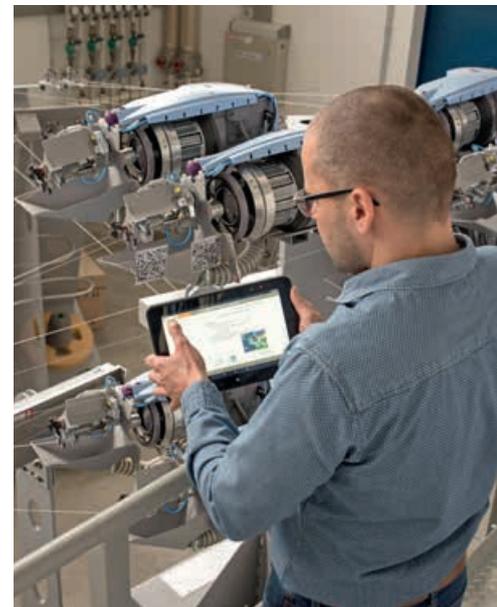
### Industrie 4.0 approaches for maintenance

Condition monitoring in combination with business intelligence is an Industrie 4.0 approach, which helps to reduce the inspection activities by using plant condition monitoring based on machine data and sensor technology. Collected data are processed by means of data analytics, i.e. described, analyzed and used for forecasts or predictions. In this way anomalies can be identified by the analysis of the interrelations of the data. Thus, at an early stage the inspector can be advised that the production result is deteriorated by component wear. Likewise systems that follow this approach support giving guidance with regard to machine and organizational adjustments. Another Industrie 4.0 approach, which allows a predictive maintenance, is the autonomous regulation of operation parameters for the realization of orders even in case of anomalies in the semi critical range. A machine will be able to complete an order, even though machi-

ne components should have to be replaced. This is realized by an autonomous machine down-regulation and an adjustment of the setting, so that the lot can be completed.

There are also Industrie 4.0 approaches which support the assistance of maintenance processes detached of the chosen maintenance strategy. Thus, the inspection, i.e. testing, measuring and evaluating, could be supported by context-specific and location-specific information. Inspection sequences and measured states including indications of the degree of wear (e.g. thickness of a cutting device by optical detection) are displayed to the inspector on mobile devices. The same way maintenance tasks such as cleaning, lubrication and adjustment processes can be assisted by giving information about the lubricant/cleaning agent. This may be related to composition and handling as well as to the selection process. Furthermore repair measures, such as component replacement or repair, can be supported by interactive instructions on mobile devices to carry out the activities faster and in higher quality. These solutions can be transferred to business models enabling remote inspections, remote maintenance and assistance during and creating new services in the future. One example is the company Karl Mayer with its app Karl Mayer Connect, which provides functionalities for

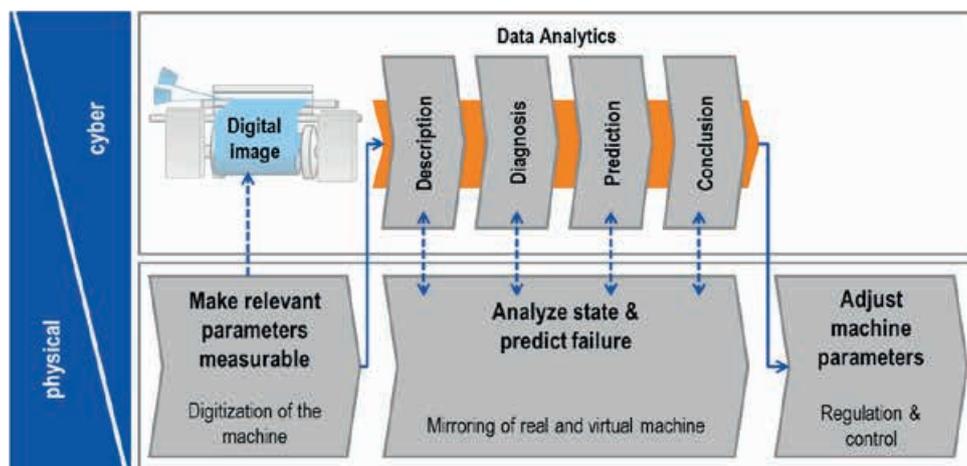
Assistance in the maintenance of the weft accumulator



support, analysis, operation and maintenance as well as spare parts management. In this way, the Karl Mayer service can be contacted via the scanning of a QR code, in which the current machine state including errors is encoded. According to the booked service level, a Karl Mayer service technician can set up a remote access to the machine and support the machine operator. Furthermore, the app allows recall information on the current production data regarding production speed and machine runtime along with machine operators shift data. Due to the "check parts" feature spare parts can also be ordered and for delivered goods seal of authenticity can be verified. With this app Karl Mayer significantly increases the service level and keeps customer proximity, which was explained in Part 1 of the Exclusive Series: Industrie 4.0 explained – Digitization is finding its way as a part of the Industrie 4.0 development processes ("decentralization and service orientation").

[Sten Döhler, Dirk Zschenderlein, Sächsisches Textilforschungsinstitut Chemnitz e.V. (STFI), Andreas Merkel, Futuretex Management GmbH Chemnitz]

Data evaluation & analysis (see Standpunkt-papier Industrie 4.0, WGP, 2016)



## USER FORUM

**Smart textiles inspire medtech innovations**

The first smart textiles are making a big entrance on the market – conductive, thermal, protective and power-generating features make intelligent surface textiles the perfect component for a range of innovative medical engineering developments by medium-sized enterprises. “Textiles with brains” developed at the Institute of Textile Technology and Process Engineering (ITV) in Denkendorf offer enormous potential for medical applications as well as within the fields of automotive engineering, architecture, clothing, energy technology and interiors, says Götz Gresser, head of the ITV. “We have been working on smart and functional textiles such as force transmitting fabrics, light emitting textiles as well as light conducting multiaxial fabrics for more than a decade.” With an expected annual growth rate of 20 to 30 percent globally, smart textiles have attract-

ed the attention of small and medium-sized businesses as an alternative addition to their product portfolio.

The Zella-based knitwear manufacturer Zella GmbH, in partnership with the IMMS Institute for Micro-Electronic and Mechatronic Systems, Ilmenau, has developed a “smart jacket” with an integrated wireless textile keyboard for people with restricted movement, wheelchair users and cyclists. This innovation makes it possible to operate and control devices, doors or mobile phones with the press of a knitted button on the outside of the jacket. The jacket can be washed like any other knitwear and will last for years, according to Zella’s CEO Gottfried Betz. However, the smart jacket represents just one for the many possible applications of the patented Knitty-fi technology. Future uses could include the integration of wireless controls



IMMS development engineer Sven Engelhardt testing the smart jacket

for electric vehicle components in car seats, the control of entertainment systems via sofa cushions or an intuitive kill switch as part of smart workwear. While Zella is getting its jacket ready for production, Betz would welcome further partnerships with OEMs wanting to incorporate Knitty-fi into their own designs.

Texible GmbH, a spin-off of the University of Innsbruck in Austria, is working on the application of functional textiles in products for the elderly. Among the first items estimated to go into production in 2017 are incontinence bed protectors with moisture sensors and an op-

tional alert function, and a retrofit fall mat sensor. Managing Director Thomas Fröis believes that smart textiles could benefit the wellbeing of users as well as improve many aspects of healthcare in general. The fifth “Smart Textiles” user forum showcased new revolutionary surface materials and provided a networking platform for scientists and small and medium-sized business from Austria, Germany and Switzerland from 8 to 9 March 2017 in Wolfurt (Bregenz, Austria). More in our online magazine.

[[www.itv-denkendorf.de](http://www.itv-denkendorf.de)]  
[Hans-Werner Oertel]



Melina Buda (l.) and Hannelore Fischer are employed at Alterfil Nähfaden GmbH, Oederan. The company supplies clothing manufacturers and producers of technical textiles both in Germany and abroad with high-quality sewing threads of all kinds

## VTI

**East-German textile industry posts marginal climb**

The association of north-east German textile and apparel manufacturers (Verband der Nord-Ostdeutschen Textil- und Bekleidungsindustrie e. V. (vti)) has revealed that the east German textile industry recorded a marginal one percent improvement in sales on the year before, with total sales amounting to 1.82bn Euro in 2016.

At its customary annual press meeting in Chemnitz on 6 January 2017, the association’s Managing Director highlighted the difficult economic situation

facing east Germany’s textile and apparel industry which is predominantly made up of SMEs.

The exorbitant rise in energy costs was cited as the most pressing issue. Fortunately, exports witnessed an increase to 40 percent of total sales despite the dramatic decline in business with Russia in the wake of EU sanctions and the fall in the value of the rouble. Indeed, innovative products were at the heart of several success stories on international

markets. Already accounting for around half of sales, technical textiles endowed with additional functions and textile composite materials are and will continue to be the main engines of growth. Approximately 30 percent of sales are generated by home textiles and 20 percent by clothing.

A total of 16,000 people are currently employed by 350 mostly medium-sized textile businesses in the federal states of Saxony and Thuringia.

[[www.vti-online.de](http://www.vti-online.de)]



## IWTO

### Wool Industry seeks to increase market share

The annual Wool Round Table of the International Wool Textile Organisation (IWTO) took place at the end of November on the campus of Citta Studi in Biella, Italy. More than 120 members from the international wool community gathered for the three-day event.

Educators from around the world highlighted the current opportunities in textile education, and emphasised the need for collaboration between industry and universities. At the end of the event, it was concluded that: "Market education for young wool professionals and wool sheep farmers will be very important moving forward and should, therefore, play a key role in wool's sustainable future." IWTO President Peter Ackroyd opened the event and remarked: "We have a central message in wool: sustainability and environmental excellence. The wool-growing countries are dedicated to education; the question is how can we carry this forward to the full benefit of students and industry."

Educators underlined the need for corporate investment in industry-led research projects, where government funding currently falls short. This type of collaboration is necessary in order to develop the skills that are relevant to the future of the industry. The IWTO made a pledge to the educators present to continue its focus on education at future events and proposed special rates and working groups to support wool textile education in the future.

Participants also heard from young woolgrowers farming in Australia, New Zealand and South Africa. The challenges

and opportunities for economic growth through wool sheep farming were evident in all presentations, along with a true commitment to eco-friendly farming practices. Passion for the land they manage and the animals they live with stood out as a common element across all three wool-growing countries.

#### Interesting for outdoor and activewear

Wool is becoming more and more interesting for outdoor and activewear. The European Outdoor Group explained how outdoor apparel brands would like to incorporate more wool in their next-to-skin base layers, a key segment of the outdoor apparel market. This market values the benefits wool-on-skin can bring to their customers, but it requires the wool chain to supply hard and fast evidence of sustainability, best practice in animal welfare and eco-friendly farming practices, before committing to growth in this area. The outdoor industry sees itself – and is seen by consumers – as a steward of the environment, explained Dr Pamela Ravirus, Head of CSR and Sustainability for the European Outdoor Group. Sustainability was also the focus of a presentation by Lorenzo Dovesi, COO of Benetton Group, who shared Benetton's vision of a wool-rich future, moving away from the fast-fashion model. IWTO President Peter Ackroyd very much welcomed this new business model and the move towards slow sustainable fashion, where wool will play a significant role.

[[www.iwto.org](http://www.iwto.org)]

[Ingrid Sachsenmaier]



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In der Fakultät Textil & Design ist zum Wintersemester 2017/2018 oder später folgende Professur zu besetzen:

### W 2 - Professur Lehrgebiet: Smart Textiles Electronics Funktionelle und interaktive Textilien (Kennziffer 012/2017)

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Unsere Studenten sollen durch Sie zu neuen Kompetenzen zur Entwicklung und Herstellung von funktionellen und interaktiven Textilien, insbesondere solche mit integrierten elektronischen Komponenten, erwerben und zum anderen in Grundlagen der Ingenieurwissenschaften ausgebildet werden. Sie stellen die vollständige Abdeckung des Lehrangebots in Ihrem Lehrgebiet ggf. auch durch Koordination von Lehrbeauftragten sicher.

Ein wichtiger Aspekt Ihrer Tätigkeit wird neben der Lehre die interdisziplinäre Zusammenarbeit im Lehr- und Forschungszentrum „Interaktive Materialien“ (LFZ-IMAT) sein. Somit besteht auch die Möglichkeit, sich in der Forschung zu engagieren.

Wenn es für Sie nicht nur Profession sondern auch Leidenschaft ist, junge Menschen fachlich und persönlich für Führungsaufgaben der Textilindustrie vorzubereiten, freuen wir uns auf Ihre Bewerbung.

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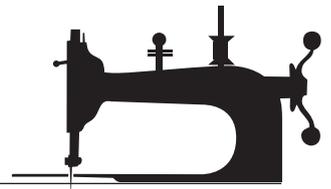


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96011 Bamberg/Germany  
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Fax: +49 951 861-158  
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**Managing Director:** Ulrich Stetter

**Head of editorial office:** Sabine Stenzel

**Head of online editorial office:** Daniel Keienburg

**Manager sales / distribution / marketing:** Christian Matthe

**Editor-in-chief:** Dipl.-Ing. Iris Schlomski  
Phone: +49 5527 979440  
Fax: +49 5527 979441  
Nordhäuser Straße 34  
37115 Duderstadt/Germany  
i.schlomski@meisenbach.de

**Editorial Staff:** Anja Menzel (Assistenz)  
Phone: +49 951 861-117  
Fax: +49 951 861-170  
a.menzel@meisenbach.de

**Contributing:** Iris Schlomski, Regine Hövelmann, Neil Mitewa, Mara Michel, Wolfgang Scheibner, Rainer Schlatmann, Manik Mehta, Stefan Möbius, Rose-Marie Riedl, Ilona Schulz, Rebecca Espenschied, Margarete Y. Gaerner, Sten Döhler, Dirk Zschenderlein, Andreas Merkel, Hans-Werner Oertel, Ingrid Sachsenmaier

**Advertising Sales:** Bernd Raitchel  
Phone: +49 951 861-145  
Fax: +49 951 861-161  
b.raitchel@meisenbach.de

**Advertising Administration:** Matthias Fichtel  
Phone: +49 951 861-169  
Fax: +49 951 861-161  
m.fichtel@meisenbach.de

**Responsibility:** Responsible according to the German press law for Editorial: Dipl.-Ing. Iris Schlomski for Advertisement: Bernd Raitchel (both: Franz-Ludwig-Straße 7a, 96047 Bamberg/Germany)

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Phone: +49 951 861-101  
Fax: +49 951 861-158  
vertrieb@meisenbach.de

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Reader's service textile network  
Franz-Ludwig-Straße 7a  
96047 Bamberg  
Phone: +49 951 861-101  
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The next issue of **textile**network will be published on 27<sup>th</sup> April 2017 and these are some of our topics:

**Techtextil/Texprocess**

In our big trade-fair special, we take a closer look at the most important trends and the exhibitors' main innovations at this year's twin fairs Techtextil and Texprocess, running in Frankfurt am Main from 9 to 12 May 2017. Even before the fair gets under way, you will gain important insights into what will be on show where, and which special offers, events and special areas are not to be missed.



Photo: Messe Frankfurt Exhibition GmbH / Jean-Luc Valentin



Photo: istock

**Digitalisation in the supply chain**

Working in cooperation with the IFC, a subsidiary of the World Bank, and BNP Paribas, the sporting goods maker Puma has launched a programme designed to give its suppliers access to interesting financing opportunities. Using a joint network in the Cloud, Puma's programme creates financial incentives for suppliers to improve their environmental, social and occupational health and safety standards. This project would not be possible without digitalisation.

**A growth market – Smart Textiles**  
Dubbed the "oldest industry" in the world, the textile industry is being revolutionised by digitalisation, creating new opportunities for innovative and extended business models, particularly in the field of smart textiles. The sports and fitness sector, for example, is expected to expand by a further 40 percent by 2020. The industry is changing!



Photo: Miha bodytec

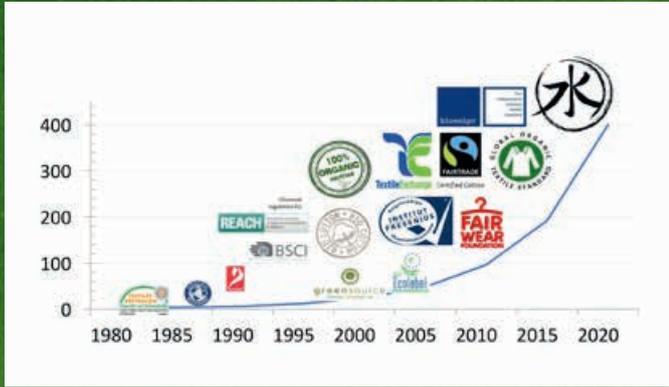
**Allgäu yarn producer invests in the future**

Zimmermann, based in Weiler-Simmerberg, ranks among the world's leading producers of elastic and technical yarns and is constantly pushing the boundaries of what is technically possible thanks not least to its innovative ingenuity. The yarn specialist is continuing down the path it has set



Photo: Zimmermann

out on, offering exciting products from high-quality raw materials to individually developed special yarns from one source.



Increase of possible certifications in textile sustainability area



The Sustainable Textile School aims to raise awareness for this topic among students and professionals

## Global Sustainable Textile School 2017 Independent Scientific Textile Platform

Event platform for experts and students to create a common space for training, knowledge transfer and further education with a focus on sustainability in the global textile industry. Sustainability as a key to the conservation of resources and improved efficiency is becoming an ever more important cornerstone and competitive advantage for textile manufacturers. The Global Sustainable Textile School 2017 aims to increase awareness for this topic amongst professionals and students and provide them with

expert insight across the entire textile supply chain. Additionally, a series of events over the next few years will be organised for international professionals and students in the textile industry to create a central platform for innovation, knowledge exchange, training and further education in sustainability. Thus, companies will be able to directly implement sustainability solutions and meet future challenges. The programme is designed to share and generate know-how about sustainable topics amongst participants from all

branches across the production chain, from fibre to store. Content and expertise will be provided by international specialists from all industry sectors, looking at specific areas of the textile industry and its manufacturing processes through a sustainable lens. The seminars and workshops will cover many different steps of production, including chemical management and different forms of wet processing.



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Photo: Rudolf GmbH

The Global Sustainable Textile School 2017 is not intended for and will not include any product advertisements from participants. Under the auspices of Euratex, the Chemnitz University of Technology and the Gherzi Textil Organisation will manage the framework, organisation and certification of industry participants for the Global Sustainable Textile School 2017.

[[www.sustainable-textile-school.com](http://www.sustainable-textile-school.com)]

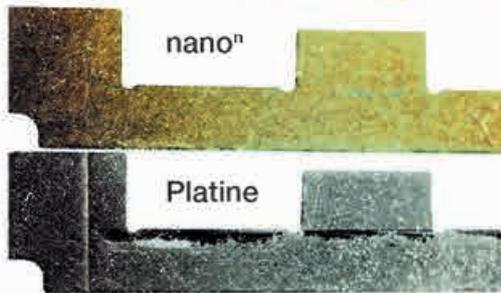


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