



# TEXDATA

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## Will there be a digital revolution in textile printing?

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# Dear Reader,

the summer is over and now there are just a few months until the textile machine industry's biggest event, ITMA 2015 in Milan. Very soon our full focus will be on covering the power parade with all of its innovations. But we are not there yet and we have decided to use the familiar quiet in the run up to the ITMA for a topic, which, as one of the larger - if not the largest - growth markets of the textile industry, will be sure to catch the attention of plenty sectors of the textile industry. We want to talk about digital textile printing or 'inkjet printing' - our top theme for this issue. With our main article "Will there be a digital revolution in textile printing?", we want to give everyone (even newcomers) an overview of the technology on the market and for specialists we have put together some of the latest information.

For a look at the current state of technology before the ITMA, we have assembled a list of the manufacturers running the top machines in the individual parts of inkjet printing in the article "Will there be a digital revolution in textile printing?". The theme focus is rounded off as usual with exclusive interviews with the leading figures of the industry. Here, we are pleased to have been able to conduct an interview with Fabio Gromo from the company durst and Jos-Notermann from SPG Prints, two experts in digital textile printing. And, as one of only three selected magazines, we are proud to present you an interview with the CEO of EFI, Mr Guy Gecht and the CEO of EFI Reggiani, Dr Ambrogio Caccia Dominioni. Both answered questions on the EFI takeover of Reggiani and gave us a glimpse at the industry's new super heavyweight.



We also offer an extensive review of the double trade fair for Texprocess and Techtexsil and have also rounded up some impressions of the stands and applications of the exhibitors.

In our column, Country Focus, we take a look at Indonesia. The country has developed in the shadow of China and India into a significant country for textiles and has been one of the driving forces of the global economy for years with its high economic growth of around 5 %.

Finally I have a personal and very sad news. Our sales representative Mr. Uwe Köhler had passed away suddenly and unexpectedly in August. Uwe Köhler was our business partner and friend and all TexData people are very sad about this bereavement.

Best regards  
Oliver Schmidt



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***Will there be a digital  
revolution in textile printing?***



**T**here is virtually no segment within the supply chain of textile production that offers growth potential similar to digital textile printing. There are multiple reasons for this. Firstly the technology should still be classed as new as it still has a great deal of innovative potential to offer. As a consequence the technology still has relatively low market penetration at this time. It is primarily only present in niches while experts estimate its total share of the textile print market as considerably less than five percent. 95% of an established and growing market could be captured by applying a simple strategy of predatory competition when an homogeneous and flexible or more cost effective technology is successfully introduced and marketed on an industrial scale.

So much for the theory. The reality looks different however at least up to now as digital technology although having numerous advantages in the form of flexibility, speed, batch sizes and ecology contains a number of significant disadvantages in relation to its analogue counterparts. There is a chance that could soon change. In March this year a Wallstreet online article entitled 'Second wave of digital textile printing technology adoption to drive growth' was published. Other publications spoke of the 'next big thing', 'phase 2' or 'ready for industrial applications'.

Current growth figures also clearly reinforce this message: The business generated 23% of global growth in 2014 according to data provided by WTIN. A study by Smithers Pira - a worldwide authority on the packaging, paper and print industry supply chains - on 'The Future of Digital Textile Printing to 2019' delivers similar results. It shows digitally printed textiles (in value) for the period 2012-2014 growing at an average of 19.6 % and projects a similar average value of 20.1 % for growth in the coming years to 2019.

That is a remarkable figure and one which is likely to be repeated up to 2027 considering it only requires a 50% penetration of the total printed market by digital printing. That is without taking the intrinsic growth of the printed textile market into account. It also illustrates clearly why it is becoming such a coveted market. That is reason enough to take a closer look at the digital printing industry, the ideas behind it, the market, the technology, the players, the marketing and the applications. Many textilers should be interested as such massive changes within an important segment of the textile industry is likely in the medium term to affect other areas e.g. by enabling designers to intensify their use of technology, increasing work with patterns which in turn puts the dye works under pressure.

Let us start with a short definition. Digital textile printing refers to digital printing of all kinds of textile production and denotes a category of printing processes that enables the transmission of a printed image from a computer to a printing machine without the requirement of a static printing form.

Printing on textiles is more complex than on paper as the different print substrate (such as cotton or polyester) requires special colouring and treatment methods. Digital print uses the ink-let procedure which fundamentally distinguishes it from the classical textile printing procedures as the colours are applied by spraying a jet of ink. Various subordinate techniques and types of ink are involved in the application process. Principally a distinction can be drawn between two different techniques. The first is the sublimation print or transfer print where the motif is transferred indirectly onto the textile material. A sheet of paper or special foil is first printed inversely with the appropriate colouring agent (sublimation ink spray) and then transferred to the substrate material using a thermo transfer press in a reprint transfer procedure by applying heat at temperatures of up to 230° C. This printing procedure originating from the 1960s has been adjusted to accommodate the capabilities of the ink jet printing procedure.

Then there is the textile direct printing procedure. Special ink is printed directly onto the textile material by using a computer connected to an ink jet printer and then fixed permanently by applying heat or chemicals. As this is the procedure actually designated as digital textile printing involving in addition the processing of large quantities of textiles then it is worth us taking a closer look at the procedure. Some extracts from the book 'Ink Jet Textile Printing' by Christina Cie which appeared in the Woodhead Publishing Series in Textiles in 2015 provide a very comprehensive and clear overview of the technology while also serving as a compendium for reference.

A differentiation is made in the direct printing of textiles between flatbed und roll-to-roll handling. Roll-to-roll means that a roll of fabric unravels to a flat length to pass through the various stages of the printing process and is then wound onto another roll, ready for storage, transportation, and use. This procedure conforms with the textile industry and as such should best represent the aim of industrial production.

Many machines print with multiple passes over the textile for sufficient coverage, but some companies are experimenting with single-pass printing by diagonal or full-width arrays. In the array, the print head holds and controls the flow of ink through the nozzles and is therefore another significant component of any ink jet printer. Different types deliver ink "continuously" or drop by drop as a "drop-on-demand" system, via the thermal action of heating the ink or the application of pressure by piezoelectricity. Each type has its strengths; one size does not fit all, but must be suited to the substrate and its final use.

Digital textile printing uses fixed colours in contrast to screen printing where colours are specially created to match the pattern for printing. As a rule those familiar colours of cyan, magenta, yellow and black (CMYK) used by the office printer are supplemented by other colours. This is necessary as the basic four colours are often not wide enough whereas the supplementary colours enable the range to be improved and expanded. Exceptions are even found here with many different approaches and beliefs.

Besides colour, the chemical composition of the ink has an important role to play. Different fibers of the fabric such as polyester, nylon, cotton, silk require a special type of ink chemistry and the production process needs to fit requirements for the type of ink.

Inks are divided into four main groups: reactive dyes, acid dyes, pigment inks und disperse dyes.

Reactive dyes require alkali to literally react with the fiber and thus currently offer the best and most durable or “fast” colors, due to the type of chemical bond formed between this dye molecule and the fabric. They also cater to the widest range of fabrics (cellulosic, protein, and synthetic nylon), which makes for ease of use. Acid dyes utilize acids in their production and application. They are popular for dyeing protein fibers and nylon and give a good range of colors. Disperse dyes do not dissolve, but “disperse” through water. This category includes “sublimation” dyes. Referring to something as a dye or dyestuff tends to imply that the substance will dissolve in water or fluid. Pigments do not dissolve but instead are suspended as very small particles in a fluid carrier. Ink types could also be defined as water (aqueous) based or solvent based (usually using oil or alcohols). Changing dye types and substrates takes time. It is one of the few areas in which downtime occurs with ink jet printers, improved by having more than one dye type accessible to the printer.

As previously mentioned there is no contact during the inkjet printing procedure as the ink droplets are applied directly to the material.

Control over the formation and delivery of the ink drop is crucial, for the ink “drop” becomes the printed “dot” as it lands on the substrate.

This brings us to the print head being the component substantially responsible for the success of digital textile printing as it regulates and controls the resolution, quality and speed of printing. The print head comprises: ink chamber, ink channel, ink outlet or nozzle, an “actuator” which is a thermal heating element or piezoelectric material and filters and sensors to monitor the quality of the ink drop. A nozzle is a microscopic orifice, made with precision as the shape and size will affect the uniformity of the drop. The number, positions and the arrangement of the nozzles in the “array” are significant for speed and resolution.

Resolution is described as dots per inch (dpi) being the number of dots it is possible to spray onto the surface of the textile material. As a general rule the higher the resolution the greater the quality of the printed image. The speed is reduced commensurately. The latest print heads are capable of up to 2,560 nozzles/colour and a maximum resolution of 2400 dpi. Some manufacturers have developed their own print heads as for example d.gen in Israel or durst in Italy, others work together with specialists as e.g. SPG Prints currently does with Fujifilm. Kyocera and Ricoh are two other print head specialists. Epson, the Japanese company, has a very wide portfolio including offering complete machines of their own as well as supplying print heads for other manufacturers such as MTEX. In addition Epson works in the ‘industrial segment’ cooperating closely with the Italian manufacturer Robustelli.

Other very important aspects of digital printing as with screen printing is the preparatory treatment and finishing of the textiles. Describing the variety of problem-solving approaches provided by both procedures would however exceed the scope of this article. The book 'Ink Jet Textile Printing' also contains a good overview of this subject. Let us take a brief look at fixing. Promotion of the formation of chemical bonding between colorant and textile substrate to fix the print mostly involves, in varying proportions; heat, moisture, pressure, and time. No simple formula can be given for fixing inks, as there are too many variables to be considered. Possible processes for fixation are for example "wet" heat (steam), "dry" heat, pressure (heat press) and heat by IR lamps or UV lights.

We should not forget the software that feeds information and controls the machine either. Broadly the software is responsible for colour management which encompasses all the processes involved in the application of colour to the textile material as the designer intended. Colour is complex as it is not really a fixed property but rather created through light greatly influenced by the perception of the observer. Colour management becomes difficult mainly due to the RGB and CMYK colour systems as they are applied to both computer screens and to printing systems as well as problems caused through considerable deviations within the systems. A prerequisite therefore for an exact colour match is the calibration of the systems. As stated in the earlier description the colour range is expanded by adding more colours to CMYK as well as improving the exact permutation of a specific colour.

Color "models" such as RGB and CMYK can be described as "device-dependent," so the default red or magenta depends on the device or ink that is generating that color. Rather than negotiating between these different methods, a better system is the use of a neutral "color space." Such a system is offered by the International Color Consortium (ICC) based on the mathematical system originally developed in 1936 by the company CIE for the reproduction of colours. It works as a translator or intermediary in a "profile connection space" using "look-up tables" (LUT) as reference for the different embedded languages used by input, display, and then output devices.

A sub type of direct printing of textiles is DTG print, an abbreviation for 'Direct to Garment'. In this process the motive is printed directly onto the finished garment for example a T-shirt, which is the most common application. While the market for batch size 1, being the self-designed T-shirt for own use, has been saturated by numerous internet providers such as Spreadshirt in Germany, the idea itself continues to show great potential for medium size lots.

For example it could be interesting for events such as the Expo to offer not only a uniform shirt at souvenir stands but to increase the number of motifs. Printers such as the Epson DTG SC-F-2000 or the Kornit digital Avalanche manage almost 5000 T-shirts in 24 hours. Flexibility plays a big role here as it enables testing in sales and just-in-time production.

In summary it can be said that there is not just the one digital printing system but rather many different technical approaches using a common idea of spraying ink on textiles as required with the support of a machine. Individual mechanical solutions are not always comparable with each other within one segment. The starting point in the choice of a machine depends therefore mainly on the operational purpose desired, meaning depending on the question of which textiles in what range and number need to be produced. It is then necessary to choose the machine where the machine components, print head, ink, preparatory and after treatment and software collaborate optimally. Before we look in more detail at the current market situation and the latest status of technology we should briefly recall the historical development of digital textile printing.

## Historical development

Christina Cie recorded the beginning of ink jet printing in her book with initial ideas going back to the 19th century. The author refers to various approaches all started in the 70s of the last century as the beginning of digital printing on textiles: for one the problem-solving approach by Imperial Chemical Industries (ICI) for digital printing of carpets, for

another the development of the forerunner of the injection printer, the Millitron, by the American company Milliken between 1972 and 1974 and thirdly the patent registration of a type of inkjet printer called the Elektrocolor by the company Textima in Zittau (then East Germany).



Epson DTG SC-F-2000

The year associated with the birth of the ink jet printer as it is commonly known is recognized today as 1991. That year saw the Dutch company Storck with ICI exhibit a digital printer called the Trucolor at the ITMA which they had mutually developed under the EUREKA program. Cie writes: „Dr John Provost from ICI and Wim Prinsen from Stork were awarded the 2009 Millson award for innovation for the development of the first commercially

available ink jet printer for textile fabrics (AATCC, n.d.). For many, this is considered to be the first commercially available ink jet printer for textiles.”

The idea of rapidly producing samples with the help of a digital textile printer quickly appealed to the industry. Its application for larger quantities was in contrast not suitable due to the low production speeds. That situation changed at the ITMA in Birmingham in 2003 where for the first time the new machines for the production of rolled goods at high speeds were exhibited.

The DreAM printer, with a speed of 150 sqm/h and introduced in the previous year, is considered to be the first industrial textile printer. It was developed by the Italian manufacturer Reggiani in cooperation with the Swiss company CIBA and the Israeli company Aprion. The subsequent ITMA in Munich in 2007 exhibited ever more powerful developments in various technical approaches, segments and areas of application with the ITMA in 2011 recognized by experts as the significant step in industrial production based on the digital ink jet procedure although market penetration still showed no change. The machines exhibited there like the Spheue from Storck (now SPG Prints) (up to 555 m<sup>2</sup>/hr), the Kappa 180 from durst (600 m<sup>2</sup>/h), the Osiris from Xennia (600 m<sup>2</sup>/h), the Monna Lisa EVO printer from Robustelli (675 m<sup>2</sup>/h) and the Colaris from Zimmer (up to 732 m<sup>2</sup>/h) showed impressively that speed and throughput fulfilled the criteria required for economic production.

## Market segments and market situation

The market is already highly segmented solely by reason of the various technologies. Other segments arise from classic applications such as garments and home textiles as well as numerous individual and customized applications such as the printing of T-shirts in medium batch sizes or the printing of material for flags and similar advertising material designated generally as 'soft signage'.

The market is primarily differentiated though by the throughput of the machines and then classified into sampling, low, large und industrial.

The market share of the number of individual machines in the market confirms that digital textile printing currently still plays a subordinated role in the value added chain of the textile industry as the share of the main segments high and industrial are very low at 10% und 0.1% (WTN estimate). Sampling machines are well in the lead here with more than 60% followed by the low segment with 30%. Figures support the estimation of experts that the mainstream textile industry is using digital textile printing where previously there were excellent advantages for them: that is the very fast and simple manufacture of samples and the production of small series batches for the upscale and luxury market.



DReAM: the first industrial digital textile printer

The study by Smithers Pira mentioned earlier quotes a total of around 650 million square metres of digitally printed fabric for 2014. The study estimates that total digital textile printing output will rise to 1.6 billion square metres annually by 2019. This includes displays (soft signage, etc and direct-to-garment – DTG).

WTIN records in their analysis a higher figure of 954 million sqm and the share of fabric produced by industrial digital printers of 300 million sqm which would be almost a third. The 'low' segment is to have produced 100 million sqm in 2014.

A system producing 1000 sqm/h for 10 hours and 200 days comes to just over 2 msqm per year. 300 million sqm per year would require 150 systems resulting in a market share of 0.1% as a total of 150,000 systems covering all segments in the global market.

Let us try another approach. The latest systems manage 4000 sqm/h resulting in a figure of 8 msqm per year if we follow our assumption. The growth prognosis by Smithers Pira of about 1000 msqm per year of digitally printed textiles by 2019 would as a result require 120 new industrial printing machines.

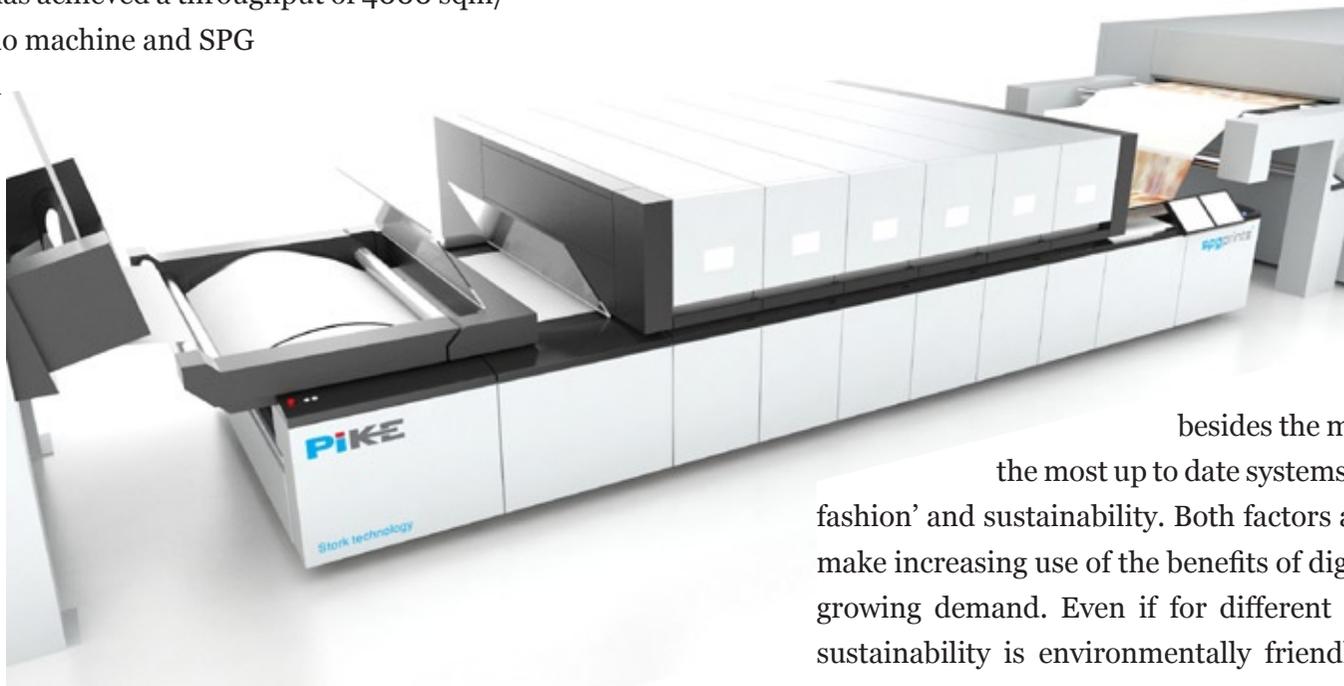
John Ingraham in his article 'Digital Textile Print Speeds: Altering the Textile Printing Myth' for the Digital Textile Review explores the question of why industrial systems have only played such a subordinate role so far.

He initially examines the argument of too low throughput meaning the amount of printed textile surface per time unit. In contrast to WTIN John sees a throughput of 2 sqm/min as a minimum size for a worthwhile industrial investment. That is 120 sqm/h which a few machines are able to deliver since the ITMA 2011 in Barcelona.

John's analysis is trying to disprove a lack of speed as the reason for the missing demand in the market and in conclusion puts the question as to what this reason might otherwise be.

What John has not taken into consideration in our estimation is the core question of whether the market for printed textiles has grown so much that investments would at all be made in additional machines. Only a comparison of new investment would clarify whether preferences still lie with classic screen printing machines or are already with industrial digital printing machines.

Should there be a lack of demand for additional machines then existing processes that have been running for years need to be replaced with new machines and at this point simply drawing level with the old technology is not sufficient to initiate new investment despite some smarter value added aspects of digital textile printing. New technology needs to decisively improve productivity overall in order to displace the cashcows of the printing companies that have often already been written down. Some manufacturers have now arrived at this stage. As a result the Italian manufacturer MS has achieved a throughput of 4000 sqm/h with the MS LaRio machine and SPG Print from Holland



One of the latest digital textile printers: the SPG Prints PIKE (will be presented at ITMA 2015)

has announced the launch of a new machine called Pike for the end of 2015 that is capable of reaching 4440 sqm/h in production mode reaching a peak of 75 m/min with a width of 1850 mm. Both machines provide a level of productivity thirty times John's assumption and still five times that of the WTIN definition for industrial systems. When the value is compared with the DReAM from 2002 one sees that the throughput of 75 m/h achieved then is achieved today in the minute: that is an escalation actor of 60 in slightly less

than a decade. There are other growth factors besides the marked increase in productivity of the most up to date systems. The ones that stand out are 'fast fashion' and sustainability. Both factors assume that brands and retailers make increasing use of the benefits of digital textile printing and generate growing demand. Even if for different purposes. The main concern of sustainability is environmentally friendly production. It is a voluntary commitment by many brands and retailers who have set themselves challenging objectives in this area.

This is where digital textile printing clearly scores points over the classical procedure through savings in colouring agents and above all in water consumption. Numerous inks have been certified by Oeko-tex or even GOTS.

The field of fast fashion is concerned with short cycles and a short time-to-market. Customers are not only offered the spring/summer and autumn/winter collections but also frequently and rapidly changing collections trying to deliver the latest trends quickly to the POS in the form of goods. The batch sizes are markedly smaller, the supply chain is short and the warehouse needs to be cleared again quickly for the next collection. These are requirements which digital printing optimally fulfills. In addition the range of the collections is increasing, meaning that it is possible for many more designs to actually enter production as the number of articles no longer has the economic significance once attributed to a minimum batch size.

The consequence of this might be that more products meet with the consumer's liking or fewer products in number do not have any relevance.

The production margin would rise with the lower number of articles offered at reduced prices in a sale. At the same time it is possible to quickly reproduce articles that are selling especially well. Other business models are conceivable for example where the customer is sent the finished article within a minimal period of time after trying on the sample.

# See you in Milano



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All in all there are indeed many factors indicating that digital textile printing is to kick off a competitive process of displacement in the near future.

## Player

A method of keeping an overview of the manufacturers in the market is to take a look at ITMA 2015 in Milan, the world's largest textile machine trade fair, as all the significant players are represented. 102 exhibitors are to present their machines and solutions in a 'digital printing' segment especially created for the growth industry. Companies were included that are generally well known in the printing industry such as Epson or Konica Minolta as well as companies specialized in textile printing. Leading companies in the field of digital textile printing machinery are for example Zimmer from Austria, Durst, MS, EFI Reggiani, La Meccanica and Robustelli from Italy, Colorjet from India, Kornit digital from Israel, Epson and Konica Minolta from Japan, Mimaki and SPGPrints from the Netherlands, Mtex from Portugal and d.gen from the Republic of Korea.

## Countries

In contrast to many areas of the textile industry, European digital textile printing is not only qualitatively but also quantitatively in a very strong position while also considered a leader in its field. Equally powerful are China and the USA.

WTIN estimates market share in Europe for digitally printed materials at around 40% and that of China at around 20%. The remaining 40% is spread among all other countries. The study 'The Global Textile Printing Market' by Global Industry Analysts from 2015 sees other shares and gives 40% to Europe and 40% to China. The last 20% were divided into around 8% for the USA and 12% for the rest of the world. Konica Minolta identifies Italy in its press release as the country with the greatest demand for digitally printed textiles: "While Europe accounts for majority of the global digital textile printing market, most of the European digital textile printers are located in Italy. In the Como region, long renowned as a cluster of high-grade apparel manufacturing within Italy, textile printers have noticed the advantages of inkjet technology at an early stage and started to install inkjet textile printers." Turkey continues to be very strong in Europe with strongly growing output and globally some of the most powerful systems domiciled in the country, Spain, where mainly Inditex has embedded digital printing in its powerful production of fast fashion, France, where high quality SME business has achieved good growth rates of 20% respectively in the last three years and Germany, home to some very large printing companies.

## Takeovers and concentration

The last few years have shown that enormous momentum has built up in the manufacturing industry for digital printing machines for textile applications.

The market which has up to now been characterized by medium-sized companies is changing as a result of takeovers by larger players and investment companies. The latest example is the takeover of the Italian manufacturer Reggiani Maccine by global player EFI, a stock exchange registered company. EFI is a worldwide provider of products, technology and services leading the transformation of analog to digital imaging. Based in Silicon Valley, with offices around the globe, the company's powerful integrated product portfolio includes digital front-end servers; superwide, wide-format, label and ceramic inkjet presses and inks; production workflow, web to print, and business automation software; and office, enterprise and mobile cloud solutions. The newly formed EFI Reggiani incorporates the powerful hardware produced by Reggiani with the equally advanced software and top class service from EFI. In addition EFI has excellent marketing for the textile machinery industry and will invest fresh capital in EFI Reggiani, enabling EFI Reggiani to be superbly placed in the market.

## Other manufacturers are also moving into position.

In June 2015 Epson Italia, which purchased a 50% stake in For.Tex in 2012, completed the buyout in a move to strengthen Epson's digital textile printing business. Both companies have worked closely in the digital textile printing business since 2003 as part of Epson's joint development of the Monna Lisa digital textile printer with Robustelli.

In October 2014 Konica Minolta announced that it has entered into a definitive agreement with Verga, an Italian inkjet textile printer sales company, under which Konica Minolta acquires Verga. Through the acquisition, Konica Minolta has established Konica Minolta IJ Textile Europe S.r.l. (Headquarters: Bregnano, Como, Italy), its first overseas sales subsidiary for industrial inkjet business, aiming to enhance the sales and services organization in the inkjet textile printer markets in Europe and within its proximity, with a great growth potential. Furthermore Konica Minolta had launched an office for industrial inkjet business in Shanghai, China, in the summer of 2014 and to driving its business initiatives in China.

And in July 2014 Investcorp, a global provider and manager of alternative investment products, announced its agreement to acquire SPGPrints Group from funds managed by Bencis Capital Partners for an enterprise value of €240 million. Closing of the transaction is expected following clearance from the relevant competition authorities. Carsten Hagenbucher, a Principal in Investcorp's corporate investment team in London, said: "There are many parallels to other portfolio companies in which we have invested and we look forward to applying such knowledge to SPGPrints, particularly with respect to digital inks." These takeovers are not surprising as the estimated growth of the market should provide investors with good returns. Providers now need to stake their claims to the future and keep pace with the technological competition. This demands and requires investments in marketing and R&D and consequently a large amount of money.

## Associations

ESMA founded in 1990 represents the interests of the textile printing industry. ESMA was founded as an Association of European Manufacturers of screen printing equipment and supplies. ESMA is an organisation, funded by its members to work on behalf of its members to the ultimate benefit of their customers.

ESMA Members account for the majority of supplies of machinery and consumables made to the specialist printing industry in Europe. In 2000 ESMA offered membership to companies manufacturing machinery and consumable supplies for the Digital Imaging process. Since this decision was taken ESMA has become the European voice for not only Screen Printing but also for Digital Imaging, following the steady growth of Digital membership. ESMA's objectives are to promote the adoption and correct use of the various specialist printing processes through exhibitions, the press, public relations, technical training and research into the specific requirements of printing and processes. The Association is committed to developing higher technical standards for specialist printing processes, and to meeting European legal requirements for health, safety and environmental issues. Each of these objectives is handled by a separate committee. ESMA's membership includes most of the major European manufacturers of specialist printing equipment and supplies serving markets worldwide.

## Trade fairs and congresses

Besides the classical printing industry trade fairs such as DRUPA and FESPA and those of the textile machine industry such as ITMA Asia, ITMA, ITM and India ITME other textile trade fairs offer space for digital printing machines in order to exhibit their machines to trade fair visitors and textile industry exhibitors. As an example the Messe Frankfurt created a dedicated area for the technology in the trade fair grounds for the Heimtextil 2015 so that the growing significance of digital printing for home textiles was provided with more space. Numerous exhibitors such as dgen, Durst, Epson, Hewlett Packard, MS, MTEX and Xeikon have presented their technology and their machines to visitors from the industry.

“We had a very international public and good discussions with companies not only from Europe but also from Australia, Asia, USA and Latin America”, Richard Barrow, Senior Product Manager at Epson Europe summarized. “Our position in Hall 4.0 functioned well as visitors were attracted to the immediate vicinity of trends and the digital print area and were especially interested in the latest developments in design and production techniques”. The Korean company d.gen was a magnet for the public during our visit as their presentation of their direct-to-fabric machine working non-stop was a great hit with the visitors. Andrea Negretti, the worldwide business manager was hardly able to keep up with the visitors' questions.

One could form the subjective impression that direct printing of material is in closer proximity to the home textile industry than the detour via paper. D.gen is very powerfully positioned in the home textile segment and offers a well suited solution to the requirements of the industry in the 'high-segment' with the Teleios G5 P delivering output at 90 sqm/hr with a 3.3 m production width at 1200 dpi.

Epson appropriately for the Texprocess set up the whole process as the focal point of its presentation and not the machines. The objective was to demonstrate how it is possible to accomplish even the most challenging requirements when combined with the right components and partners. Together with caddon and ColorDigital, the German Institute for Fashion (DMI) and Epson jointly presented an innovative solution for a global, true-colour workflow. "With DMIx®, the German Institute for Fashion – in collaboration with partner firms caddon and ColorDigital – has developed a standard that is revolutionising the digital workflow for the representation and processing of colours, patterns and materials, across the globe", Epson said at the presentation. Through the use of multispectral technology by caddon, for the first time, DMIx is offering an efficient method of transferring the visual impression of a mood board into colour production, through a reliable process.

The partners demonstrated on the booth how data on colour and surface materials can be integrated into a digital workflow with the DMIx® standard, and optimally reproduced across different materials.

For the first time, ColorDigital also presented a cloud-based solution, which enables networked working processes with multispectral data based on DMIx®. Renowned fashion label Basler had created an extraordinary designer evening dress from the new BASLER Glamour In Shape collection exclusively for the event, which was produced and presented live – from creation through to printing and the cutting pattern made to match, all the way to the physical prototype. ColorDigital demonstrated the complete application, from the multispectral sourcing of colours and objects, to the true-colour output of a cutting pattern onto paper or textiles, just as in the 3D simulation. Here, the innovative capabilities of DMIx® partners caddon, EFI™ and Assyst are utilised.

Within this workflow, the Cad.Assyst software by Assyst, a company within the Human Solutions Group, and an Epson Stylus Pro 4900 with EFI™ Fiery® XF 6 RIP were used for the design proofs. Assyst is part of the Human Solutions Group. The German market leader in clothing technology thus supports fashion labels in developing customer and market-oriented products. The cutting patterns produced were printed in true-colour by an EPSON SureColor SC-F7100 dye-sublimation printer, and fixed with a calender machine.

All in all it was an impressive presentation which also demonstrated how it is possible to enthrall trade fair visitors with a very successful application. In July the Messe Frankfurt announced an additional fair for digital textile printing for Paris.

The press release describes their reasons as follows: “The arrival of digital textile printing on an industrial scale is revolutionising the sourcing of fashion prints, optimising product development programmes, shortening delivery times, cutting excess stock and, for the first time, facilitating restocking of best-selling items during the season.

The creative potential of this technology has been evident to designers in Paris, Milan, London and New York for several years, but recent developments have allowed it to shed its „luxury“ label and move towards ready-to-wear, a sector in which some retailers and leading world brands have recognised its potential. The growth of world production of digitally-printed textiles is estimated at more than 20% per year.” Aware of this development, Messe Frankfurt France is preparing to launch Avanprint, a new exhibition platform which will allow pioneers of the technology underlying the most recent industrial revolution to make direct contact with the retailing world, which will take advantage of it.

Avanprint will take place at Le Bourget, Paris from 15 to 18 February 2016, alongside Texworld and ApparelSourcing Paris, which have already been crowned with success and recently joined by Avantex. Forecasts: 35 exhibitors occupying approximately 2000m<sup>2</sup>. Important industry congresses are the Digital Textile Conference’ which take place several times a year at various locations and TheIJC which started in 2014. The next ‘Digital Textile Conference’ is on the 15th of November parallel to the ITMA in Milan.

The event organizer writes: “The ITMA Digital Textile Conference, jointly organised by ITMA and WTiN will offer details insights into these innovations across applications that include fashion, home and technical textiles. With the theme ‘The Next Stage: Latest Advances in Production Inkjet Printing’, the ITMA Digital TextileConference 2015 will deliver a comprehensive presentation of the most important new developments in a convenient 1-day format.” The program is already available and is divided into presentations on markets, countries, sustainability, technology, trends and applications. TheIJC (The Inkjet Conference) is to take place in Düsseldorf, Germany for the second time already from the 7th to the 8th of October. Industry and academic leaders speak about the latest advances and future technological developments driving digital print, focusing on inkjet engineering and inkjet chemistry.

## The future of digital textile printing

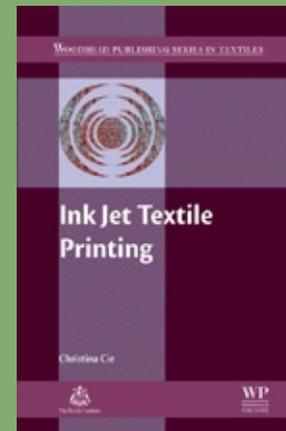
When we subject this article to a short review then the future of digital textile printing looks very rosy. That however is not new and the rosy-coloured glasses could again be the cause. Since the introduction of the Trucolor by Storck prints there has been one prognosis after another predicting the breakthrough and a booming market. This time however it must be said that the technological advances of the last few years have been massive and that the technology in the meantime has reached a stage where it is superior to screen printing technology at almost all levels allowing it to be classified as groundbreaking.

Coupled with increasing demand by the market, brands and retailers, changes to the textile industry, new business models and improved independence of the manufacturer in choosing consumer materials clear prerequisites exist indicating that the era of digital printing has finally arrived.

It still remains to be seen how technological development progresses. Is there also a variation on Moore's law on the doubling of the number of transistors in integrated circuits, the basis of the digital revolution, for digital textile printing? Does the boost from technology provide for a doubling of the throughput for print systems every two years? Those are questions best left for the distant future. It is initially sufficient to contemplate the near future where the ITMA, in its position as the world's most important textile machinery trade fair, is certainly able to answer all the current questions and provide insights into the latest up-to-date systems for digital textile printing.

**Read part two in the next issue 4 / 2015:**

**An overview about current inkjet printers of leading digital textil printer manufacturers including ITMA presentation preview.**



## Ink Jet Textile Printing, 1st Edition

Author : Cristina Cie  
 Imprint: Woodhead Publishing  
 Print Book ISBN : 9780857092304  
 eBook ISBN : 9780857099235  
 Pages: 202

Covers the process of ink jet textile printing, how ink jet textile printing developed and how it has affected the textile industry.

<http://www.elsevier.com/books/ink-jet-textile-printing/cie/978-0-85709-230-4>

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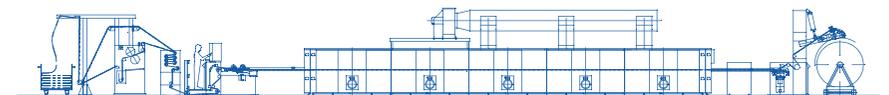
Krantz Syncro shrink dryer compartments are there in the world and 2 of them we will present at ITMA 2015. Why? The Krantz Syncro is the best shrink dryer in the world and provides premium fabric qualities because minimal residual shrinkage values can be secured. Furthermore the tumbling process enables an optimal grip, inner softness and a great development of the volume of the fabric. And there will be new features and modifications you have to discover!

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**Still the peak in finishing machinery.**

*Interview with:  
Mr. Guy Gecht  
EFI CEO*

**efi**

***“We always be proud of having the best machines in the market when it comes to speed and quality.”***



*and  
Dr Ambrogio Caccia Dominioni  
Managing Director EFI Reggiani*

*“Now with the new generation of machines  
we can do more for our customers”*

*With Reggiani you opened the door to new technologies and -probably much more important- to a huge new market: the textile industry. What are your targets for this market and what makes EFI in combination with Reggiani an excellent partner for the textile industry?*

**Mr. Gecht:** We think that it is great market where the move from a long run analogue the short run to the digital inkjet is very compelling. We have done that and we are doing it in other industries like the labels and ceramic tiles. Textile seems to be a very big and exciting market where people actually appreciate the color management, the software and the quality thinking the EFI stands for. And then we had discussions with Dr. Caccia and his family and his team and we felt that we have an unique opportunity to create a globally leader together with Reggiani that we bring to the market. Not just to continue to bring to the market the best printing machine that Reggiani has been doing for the last few years, but also to bring the other offers of the EFI which is software color management, the ability to automate and do things in a lot more efficient way.

So we felt like it is a phantastic opportunity, a very good match between the two companies will put immediately the EFI Reggiani a global leader and very different from the other players.

**Dr. Caccia Dominioni:** I can confirm that we at Reggiani felt to take a good opportunity to be part of the group and support the new technology representing a global leader in textile.

Representing textile is more than the spread between salary and the tradition of machines and we felt that in the next 10 years the situation is changed to the requests of the green economy and key technologies which will bring more quality to the market. At Reggiani as a global supplier digital machines, analogue machines and finishing, pretreatment and post-treatment, are in the focus. We think that with the EFI we can increase our business with the knowledge and strength in the software and chemical sphere. At Reggiani we suppose that our future and partnering with the EFI as a shareholder was the right decision because we believe that the EFI has the power and the strategy to become a global player also in the market for textiles. Textile is a unique opportunity because it is a big market and the industry goes for digital.

*With the takeover the name of Reggiani has changed to EFI Reggiani. Is it just a new name or how much EFI we will find in EFI Reggiani in 2 years from now?*

**Mr. Gecht:** I would say you know obviously in two years if customers don't see the benefit of Reggiani and EFI being together then obviously we failed. Because we recreate some unique offerings to customers in textile industry.

So you will find technology from the Reggiani team developed inside the EFI offerings of today and you will find the EFI technology, things like software color management and inkjet technology inside Reggiani.

The goal is to make this one plus one equal a lot more than two. So clearly that's how we work forward as one unique company. As far as the branding as we mentioned we are calling it the Efi Reggiani. Efi tried to be a simple company with focus on customers, and we are going to bring the new business goal so you are not going to see a lot of printing efforts. Customers know exactly who Reggiani is or EFI so you will find the combination is going to be as simple as calling it EFI Reggiani.

**Dr. Caccia Dominioni:** We are proud on the Reggiani independent knowledge and the idea is to work one to one strategically as a team and take advantage to work together. We think that there are big opportunities for us because we have strong occupation in the area of textile but we see that there are huge opportunities for us with the EFI technology to enlarge the scope of market to areas where the EFI is already strong and we are excited to go on with that.

*The earnout details are up to 50M Euro (\$56.2M USD1) cash earnout over 2\_ years based on revenue growth and profitability. In the textile industry this a short time. What is your plan to achieve these goals?*

**Mr. Gecht:** Of course it is a short time like in many industries. The goal was to make sure that there is no negative implication from the merger. And both sites are committed to grow the business of course from an entire sales perspective doing more for customers and with that of course to continue to grow from prosperity.

So this was just part of the agreement between us that we will work together to continue to grow until the next thirty month.

The customers will continue to see involvement and investment excitement and all that it is a sign that now it is one company. And it is also a commitment from me to my global director and to my show that we will recommend to support the business with involvement of Dr. Caccia to make sure that we are in a position to do more for the customers and the only way we will grow in the business with customers that they buy more and that means a little feel like this merger was a very good thing from this prospect. So I think that this a very good agreement for all of us to work to get to do more for customers. And I think we continue the good momentum that Reggiani built in the last years into the next thirty months. I think that we have a much stronger base in the next thirty months and the next 10 years.

**Dr. Caccia Dominioni:** It is the step number one to meet good expectation, but we are in a great position to have a much better period. We all think we are in a first stage of the future of a new technology in textile. We are talking about digital with a lot of new solutions coming out this period that will give us a long commitment to set together. No doubt this is a first check or checkpoint but we are successful and we are not making mistakes and I believe we will have a long period of cooperation.

*Dr. Caccia Dominioni, what do your customers tell you about now belonging to EFI and where do they see the advantages for their business?*

**Dr. Caccia Dominioni:** Generally replying is not so easy because there is vacation period in Europe. No doubt that all our key clients are expecting that in this global market there are new actors that attend. In the way they are afraid they can use a bit of human relations and try to get something out of new relations. In the decision taking with the EFI we are looking that the EFI is giving preference to human cooperation that we all can give better service to the clients. No doubt that we have to be careful because the world is changing and we have to fix that the American organisation and the way European afterwards is not so easy sometimes. However, we think this is a good opportunity and we think that all our clients will see finally for them this can be used to their advantage. I think in the future the global player will win and the single machine maker cannot follow. We are in a new area where the technology changes in a dramatic way. Now with the new generation of machines we can do more for our customers and give them a faster reply and this makes customers happy.

**Mr. Gecht:** I met a couple of customers in China last week and they all are very pleased with the combination of the EFI and Reggiani and the best of both worlds. What Dr. Caccia said upon the relationship to the customers is a part the EFI is very proud of. In our industries relationship to new customers and just existing customers is something you have to continue to build and an important factor of growth.

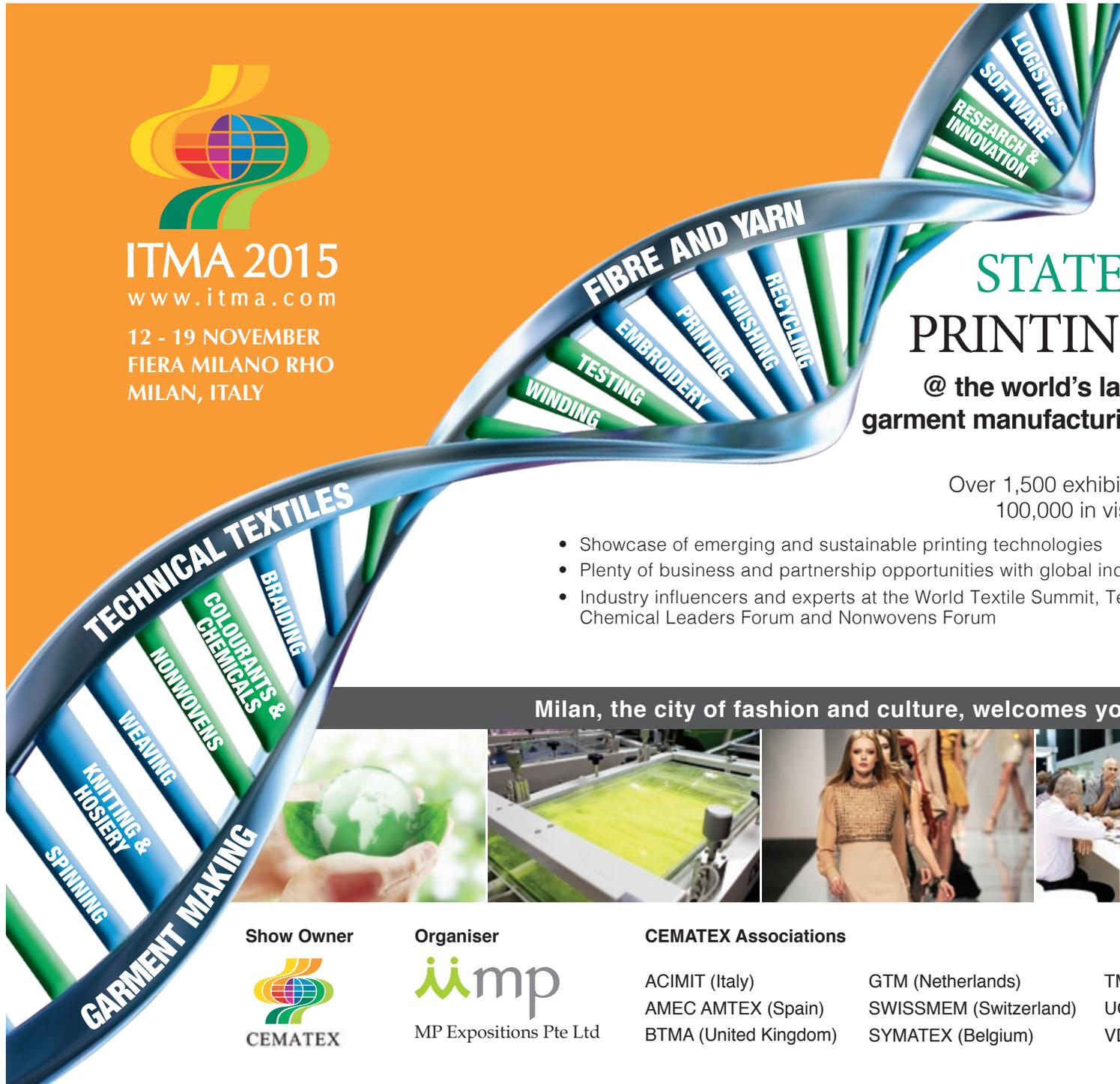
In the last five or six years we had the fastest growth in our industry and the reason is because we take good care of our customers. So I think people should expect everything they got from Reggiani and maybe more in the future.

*Latest studies predict a big growth for industrial textile printing. A few weeks ago a competitor has introduced a new industrial printer with an incredible output of 4320 sqm/h, what is a new benchmark. Mr. Gecht, Dr. Caccia Dominioni, can we expect from EFI Reggiani a machine with similar productivity in the near future?*

**Mr. Gecht:** Without sharing exactly the roadmap I can tell you if you follow EFI we always be proud of having the best machines in the market when it comes to speed and quality. And you can expect that together with Reggiani we will have the best line-up for the machines for production all the way to what people need: very high speed with very high quality in the future.



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***Interview with:  
Mr. Fabio Gromo***

***Executive Sales Manager,  
Worldwide Textile Division,  
Durst Phototechnik AG***



***“Durst definitely will leading this digital era with the new ALPHA series of machines dedicated to the textile industry.”***



*On your website it is stated that: “Durst is the world’s leading supplier of digital inkjet printer systems for industrial applications”. What facts do you base this claim on?*

**Mr. Gromo:** Durst is the world’s leading provider of digital inkjet printing systems for industrial applications. The machines’ high performance capabilities, their outstanding print quality, reliability and flexibility are the Durst’s cross-industrial unique selling points. In the last ten years Durst has played a significant role in the adaptation of digital print technologies for manufacturers of large format print, ceramics, labels, glass, soft signage and textiles. Our printing systems and our environmental-friendly water-base inks technology have the potential to influence the existing market situation and to allow our customers to benefit from new market opportunities. That’s why we are confident, that Durst is and will be the top specialist for industrial inkjet applications.

*In the industry you only hear good things about Durst. As of this year you are now the Executive Sales Manager Worldwide for the Textile Division at Durst, and you come from this line of business. What makes Durst stand out? What is its special quality, and where do its unique strengths lie?*

**Mr. Gromo:** Durst is an high-tech company with an outstanding level of vertical integration, which I have never seen in the market before.

This is not just a machinery assembling company outsourcing all components, Durst researches, develops and produce in-house industrial printing systems and provides technological process know-how from a single source. In the textile sector, Durst is the only manufacturer who has really the technological expertise in inkjet technology and the R&D department in Lienz (Austria) simply dispose of the most advanced equipment like two electronic microscopes and all inks laboratory machines to study and test everything.

Since Durst had entered the textile sector in 2011, they have intensified their efforts and have continued to develop the inkjet technology in collaboration with leading textile producers, to achieve the best solutions for the digital textile print and to increase their textiles competence, which includes also the fabrics pre-treatment, the ‘green inks’ and carriage systems, as well as the working efficiency and the best print quality at a speed which is actually unrivaled among the multi-pass machines based on different print heads platforms.

I am definitely very pleased to be now part of this development and I trust that my deep knowledge of the textile markets and processes and the customers’ requirements will be of benefit for Durst.

*The headline of the March edition of Wallstreet online was: “Second wave of digital textile printing technology adoption to drive growth”, others are talking of the “next big thing”. Do you share this assessment, and how do you view the development of the markets in Asia, Europe and the USA in general? How is the landscape evolving in the textile printing industry?*

**Mr. Gromo:** The headlines are the results of the take-over operations in the past few months and explain the new dynamics and growth potentials of digital textile printing, which is expected to be huge. The actual level of digitalization is between 1% and 10% depending on the region and the market segments, but we do expect higher demand of inkjet printing systems, as the usage of fabrics is no longer limited to traditional applications in household textiles, décor, garment and fashion apparel. And the production requirements for short runs, high quality, fast delivery and reactions on trends are the accelerators.

The new generation of digital printers and ink systems make it all possible, the ink prices are at an attractive level for the users and pre-treatment and finishing for digital printing are no longer issues, and in some cases are not even anymore necessary, like for our new one-step pigment technology for inkjet printing.

*What about something more specific? You have machines from the high and industrial segment, such as the Kappa 320 with an operational width of 3300mm and a printing speed of up to 890 sqm/hour, which focuses on home textiles, and the Kappa 180 V2 with an operational width of 1900mm and a printing speed of up to 580 sqm/hour that is specially designed for apparel. How much demand is there in the various areas, and what requirements do your customers ask to you?*

**Mr. Gromo:** For the digital production of textiles, Durst have offered two models: Kappa-180V2 and Kappa-320. The market demand for our industrial high performance printers, featuring both the same inkjet technology based on Durst ‘Quadro’ symmetric print heads, is getting larger and larger according to the growing awareness of all the textile customers that our machines can print the most difficult designs with the best print quality in bi-directional print mode at much higher speed than the others, with no banding either dithering affecting the print quality.

In this way our customers do enjoy a better profit due to larger production output and best print quality with no waste of fabric. Many other unique technical features complete our special printing machines.

*Why do your customers opt for Durst machines in the end? Are there any particularly specific criteria that are stated time and again?*

**Mr. Gromo:** Digital inkjet technology from Durst provides the solution to the current challenges faced by the textile industry: increased flexibility, greater productivity, higher efficiency, better print quality, more difficult designs, more colors and a greater margin of profit as a result. At the same time the Durst inkjet technology reduces production costs, production times, the amount of energy required and the burden on the environment. Durst water-base inkjet technologies are an economical and ecological evolutionary step and offer greater added value in comparison to traditional production methods and to many existing printing systems.

*With the latest model Rhotex-180TR, Durst has expanded its textile direct printing portfolio with dye-sublimation technology. The reason was this technology makes it possible even for those not involved in the industry to start printing on sublimation paper and carry out the subsequent transfer process with a calender. Then, at the end of June, Durst announced that at the request of many of your customers, Durst now offers an optional „Direct-printing kit“ for the Rhotex-180TR. Did this concept fail to bear fruit, meaning other new players also wanted the direct printing technology developed by Durst, or did these demands originate from your existing customers?*

**Mr. Gromo:** Flexibility is a USP of all Durst printing systems, and therefore we are continuously developing new solutions for our customers. In the early 2015, Durst introduced dye-sublimation technology with the dual-use Rhotex-180TR, coming after its ‘bigger sister’ Rhotex-HS based on 330cm wide width polyester printing, but also suitable for wide paper printing. This dual-use sublimation technology makes possible, even for those not involved in this industry, to start printing on sublimation paper or on polyester fabrics and carry out the subsequent transfer printing or even the color thermo-fixation process by means of a calender.

At the aim, as requested by many customers, Durst now offer an optional kit for the Rhotex-180TR to make available the direct printing on all pes fabric. Direct printing is relevant not only for flag materials, but also for standard textile materials where the intermediate step with paper can be avoided. With this “dual-use kit”, installable in 5 minutes only, our Rhotex-180TR has been promoted to a „multi-function printing system“, for coated and uncoated materials, in applications ranging from sportswear to decor textiles and curtains, to soft signage too.

*The progress of technology in the field of digital textile printing is enormous. What is your view on the current status of Inkjet-Printing technology, what will it be like in 5 years time, and how did you arrive at this appraisal?*

**Mr. Gromo:** When it comes to digital printing, there are different expectations in the market: for many the production speed is crucial, but quality and efficiency, arises only through mastery of the processes. Therefore, we will present at ITMA 2015 the new ‘ALPHA’ series of machines by Durst, integrating advanced solutions that will dramatically simplify the digital workflow and the process technology. The expertise, for example, in color management speeds up the whole production process and makes the production more economical, eliminating the long sampling stages to achieve the color matching. Another expectation is the flexibility of printing on different textile substrates to produce a wide variety of fabrics with the same ink system and to bring a kind of ‘universalization’ in pre- and post-processes. In five years the gap between first movers, the digital pioneers, and other companies, the followers, will no longer be so serious and everyone will have found his own niche.”

*The ones who get into a new technology at an early stage gather valuable experience; the ones who get into the act later get better technology for their money. Has it already become necessary for textile printing companies to set up a digital printing division, since they will otherwise lose contact and thereby customers?*

**Mr. Gromo:** Digital textile production is complex and needs expertise in digital workflow processes. Not only in the printing process but also in digital design, color management, RIP and a deep knowledge of the substrates.

As with all textile printing systems, the material must be pretreated to achieve optimum printing results. If properly pretreated, the ink droplets are orderly positioned onto the fabrics without dispersing or spreading uncontrollably. Post-treatment is also critical for good results, as every fiber has different properties and responds differently to the various types of post-treatment, such as steaming, washing and calendaring. Therefore we don’t only provide printing systems but also services to lead our customer, since the beginning, to get them their production up and running. Then they are also able to present to their customers the advantages of digital printing and to perceive growth opportunities. Therefore I have to notice that in my opinion digital printing is a ‘must-to-enter’ sector for all textile companies in order to not miss the appointment with the worldwide textile revolution that is happening nowadays

*In recent times there have been several takeovers by corporations and financially strong investors. This brings a lot of fresh investment money into companies. Money that can be used for research and development and for marketing, in order to stake long-term claims in the growth market. Will the competition get tougher, or will market growth suffice for everyone for a while longer?*

**Mr. Gromo:** As mentioned before, there have already been a few acquisitions in the market; but sometime not even with the biggest investments and fresh capitals the success can be guaranteed for the future.

Anyway Durst is positioned as leader in many different market segments and at the same time we observe with interest what is happening around us. Anyway I believe that the market growth at this stage, in the digital textile, is large enough to bear the growing number of followers producing inkjet printers, but not forever: only the best companies with the most advanced technologies will survive on long term.

*The entire textile industry is looking forward with excitement to the ITMA in Milan in November. Cematex is underlining the value and potential of digital printing technology by giving it its own dedicated chapter for the first time. Isn't there also a huge expectation of the exhibitors on the part of the organizers and visitors, and how is Durst dealing with that?*

**Mr. Gromo:** ITMA Europe is the leading trade fair for the worldwide textile industry and defines the direction for the next four years. The coming years will be 'the digital years' and Durst definitely will be there and leading this digital era with the new ALPHA series of machines dedicated to the textile industry.

*The motto of the ITMA is "Master the art of sustainability". The digital textile printing industry is deemed to be sustainable anyway, because dyes are used in low doses, the inks are often environmentally friendly and there is little resulting waste. How do you approach the issue of sustainability?*

*Is it already enough for you to point out to interested parties, that, by way of example, a global market-leader such as Mascioni, a company famous for its high environmental standards, chose to work with Durst?*

**Mr. Gromo:** Sustainability is a key driver in all our market segments. For example we introduced the revolutionary "Durst Water Technology" to the Large Format Printing industry, a long-term strategy to offer digital printing systems with aqueous inks as an alternative to UV and solvent-based ink systems. In the textile printing we are member of the Italian Association of Textile Machinery Manufacturers (ACIMIT) and our textile printing machines are all certified with the European 'Green Label' available only for those matching the strict standards of the real sustainable technologies. The 'Green Label' states all energy requirements, water and chemical consumption, CO2 footprint and production efficiency of the textile printing machines and these figures are all certified by the independent organization 'RINA'. Moreover we obtained the 'GOTS' certification for the reactive ink system (Kappa Ink R) and, according to many International Organizations, the Global Organic Textile Standard (GOTS) is the most demanding seal of approval for the entire textile production chain.

*A slightly more personal question to finish with: what would you like to achieve through your work at Durst?*

**Mr. Gromo:** Satisfaction to move things in the right way and direction.



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# The Next Stage: Latest Advances in Production Inkjet Printing

ITMA 2015 is expected to showcase new technologies representing a step change in the capability of industrial digital textile printing and further expanding the commercial opportunities in this already booming sector.

The WTiN Digital Textile Conference @ ITMA will offer details insights into these innovations across applications that include fashion, home and technical textiles.

## 15th November 2015

Registrations open.  
[www.digitaltextileconference.com](http://www.digitaltextileconference.com)

Event  
Organiser



A portrait of Mr. Jos Notermans, a middle-aged man with short brown hair and blue eyes, smiling. He is wearing a dark suit jacket, a light pink shirt, and a pink and white striped tie. The background is slightly blurred, showing a white wall with a framed picture of a person in a red and yellow costume.

***Interview with:  
Mr. Jos Notermans***

***Commercial Manager  
for digital textiles, SPG Prints***

***“Every visitor to the SPGPrints booth will see that SPGPrints is the leader and pioneer in the textile printing industry!”***

*SPG Prints has introduced the first digital printing machine, the Trucolor, in 1991 and this makes SPG Prints a real pioneer of the industry. Is this tradition the motor for the ambition to be always a pioneer and develop machinery at the spearhead of technology?*

**Mr. Notermans:** SPGPrints is the inventor and market leader for traditional rotary textile printing. From that position, it is not more than logical that we are also a pioneer in the logical next step of digital printing. We started digital developments 28 years ago in 1987, with the launch of the Trucolor in 1991, as you know. The famous saying ‘The pioneers get the arrows and the settlers take the land’ has been very true for us: we have gone through a lot of experiences because we were the first to conquer this new land, and some of the companies that followed us have taken benefit from our initial efforts.

*You have announced to present a new spectacular single pass digital printing machine at ITMA in Milan, the Pike. Both, technical data and performance are amazing. It delivers a maximum productivity of more than 4000 sqm, has a native resolution of 1200 x 1200dpi, offers variable drop sizes from 2-10pl and has a jetting frequency of 32 kHz. Compared to your last development, the Sphene, and other machines in the market the new Pike is a milestone. What was the initial idea for this development and was there something like a technical vision?*

**Mr. Notermans:** We recognized already around the turn of the century that fundamental new ink jet technology developments (including electronics and data handling) would be necessary and time is needed to develop these. Therefore we decided in 2006 to start developing single pass printing in the graphic side of our business (digital label printing), as the printing widths are smaller so less challenges are there in number of printheads and amount of data handling. In 2009 we launched the first single pass printer for digital label printing, the DSi.

Since then, we have taken single pass printing to the next level and scaled it up to textile widths and made it applicable for the harsh textile environment.

*You have presented the Pike to a couple of customers in a sneak preview and probably have got their first feedback. What did they say about the machine?*

**Mr. Notermans:** The feedback was unanimous positive. The customers recognized the ‘rotary’ look and feel of the machine, saw the unrivalled image quality and were extremely positive about our ‘no print head headache’ program. The main issue for all digital printers today is the high costs of printheads, that brake too often and on an unpredictable and unfortunate moment.

Our Archer®-technology, the total solution of printheads, electronics, ink delivery and maintenance system and last but not least: PIKE inks, provides a much longer lifetime of printheads, a very easy exchange of failing printheads and above all, with no additional costs; printheads are delivered free of charge with the inks in a total package that is matching market price standards.

*Why do you think will the Pike stand for the final breakthrough of digital textile printing on an industrial level?*

**Mr. Notermans:** The ‘Total Cost of Ownership’ calculations that we do with the potential customers on a very detailed level, comparing all costs of conventional versus digital printing, on a realistic level, shows that the costs of digital printing justify rotary printers to convert a significant percentage of their conventional printing to digital, plus it provides them with new business opportunities that gives them incremental business on top of what they are doing today. So yes, definitely PIKE will help to accelerate industrial digital textile printing.

But there is more, we will show on ITMA also a multiple pass printer (scanning printer) based on the same Archer®-technology of printheads, electronics, ink delivery and maintenance system as we use in PIKE.

So it offers a printer in the several 100 m<sup>2</sup>/hr for some 100k€ that is currently the mainstream investment in the digital printing market, but with a quality that has not been seen before in this industry.

This, combined with a similar ‘no printhead headache’ program as in PIKE, will stimulate the digital printing market also at customers that cannot afford or don’t have the volume to fill a PIKE, that can easily print 5-10 million meters per year.

*According to a lot of different studies the market for digital printed textiles will grow by around 20% during the next years. The forecast up to 2019 is an additional 1 billion sqm of digital printed textiles. This is a large quantity, but on the other hand 150 systems with the power of the Pike would be enough to produce this amount. What are your targets in the market and why will many textile printers will make their decisions for the Pike?*

**Mr. Notermans:** Not all printing volume will be done with single pass machines. A commission printer, who prints on a large variety of fabrics with relatively low volumes per fabric, will choose for a scanning solution with probably multiple machines, depending on the capacity need. So the projected growth will be produced on a mixture of single pass machines and scanning machines.

### *What do you expect from ITMA in Milan?*

**Mr. Notermans:** ITMA will be seen as the establishment of single pass printing, as this will be the highlight of the show and seeing such an impressive digital printing speed will remain in everybody's mind.

But besides that, textile printing companies will realize that digital printing will help them to fulfill the requirements given by their customers and brands that focus on sustainability. Besides the single pass solutions they will also see numerous new scanning machine solutions offered so they will realize that everybody who wants to go into digital printing, can go into digital printing. At the SPGPrints booth we will show that we have a full gamut of machine solutions, but also provide with the highest quality inks in the market.

We have inks not only for our own machines, but for almost every printer available in the market. We will also display our conventional solutions in engraving and our newest rotary screen inventions.

Every visitor to the SPGPrints booth (Hall 18, E103) will see that SPGPrints is the leader and pioneer in the textile printing industry!

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**Summary**

**Symposia and Reasons to Celebrate**

The 2013 symposia on 13 November in Ho Chi Minh City (Saigon) and on 13 November in Hanoi generated great interest amongst Rieter customers. In addition, during the Vietnam visit space was also found for honor and prestige.

**More**

**Shaping the future - Oerlikon Barmag at the JEC 2014**

Modern solutions for modern material - different components for manufacturing compound materials will be the focus of the Oerlikon Barmag stand at this year's JEC trade fair in Paris. Between March 11 and 13, the machine and systems builder will be informing visitors about new and proven products and services in pump construction and about orders for specialty yarns at the composites industry trade fair (stand number: P66 / Hall T2).

**More**

**Rieter with significant increase in new orders and sales**

Rieter recorded a pleasing trend in business in the 2013 financial year. The improvement in its market position enabled the company to post significant growth in both order intake and sales. Order intake of 1.259.4 million CHF was 50% higher. Sales below 1.200.5 million CHF, equivalent to an increase of 17%. Rieter had a backlog of orders in hand of some 765 million CHF at the end of 2013. This will ensure a high capacity utilization until well into 2014.

**More**

**Schönherr and Stäubli demonstrating innovative developments at DOMOTEX Hannover**

The leading trade fair for floor coverings was held in Hannover from 11-14.01.2014. 1.290 companies from 57 different nations showcased their latest products and collections at the Hannover Exhibition Center, having attracted a total of approximately 45.000 visitors from

# *Best print results in digital textile printing*



*„Ink-jet pretreatment“ research project points the way for reproducible qualities*

**D**igital printing in razor-sharp photographic quality and colours, which are true to nature: What we know as standard on the ink-jet printer on our own desk has not been achieved by a long shot in textile printing. In the last few years digital textile printing has increasingly been gaining a foothold, for print designs can be quickly and flexibly realised.

The interplay of printing inks, textile materials, type of advertising and the chemical pretreatment of the goods is however complex. Each tiny modification has an effect on the printed image. Print resolution and edge sharpness, colour depth, colour fastness and the screen printing behaviour of the fabric are the properties, which have to be mastered, in order to obtain good printing results.

## Pretreatment of goods improves the print image

Before a textile can be printed with coloured ink by the ink-jet process, it passes through a goods pretreatment, during which an impregnation is applied to the surface of the fabric. This consists primarily of thickening agents and chemical additives and controls the wetting behaviour of the ink drops striking the fabric. Impregnation reduces the dissemination of the drops.

The defined sorption behaviour of the impregnation means that the ink drop is absorbed in a controlled manner and from there reaches the surface of the fibres, on which it is fixed.

The reduction in dissemination of the drop means that the printed image has sharp printed edges and high resolution. In practice the complex interaction of printing ink and substrate causes problems, for there is no standardised data basis for the many influence quantities. Good print qualities have been based hitherto on the experience of the developer of inks and pretreatments, as well as on the operator.

## Basic knowledge gained from laboratory trials

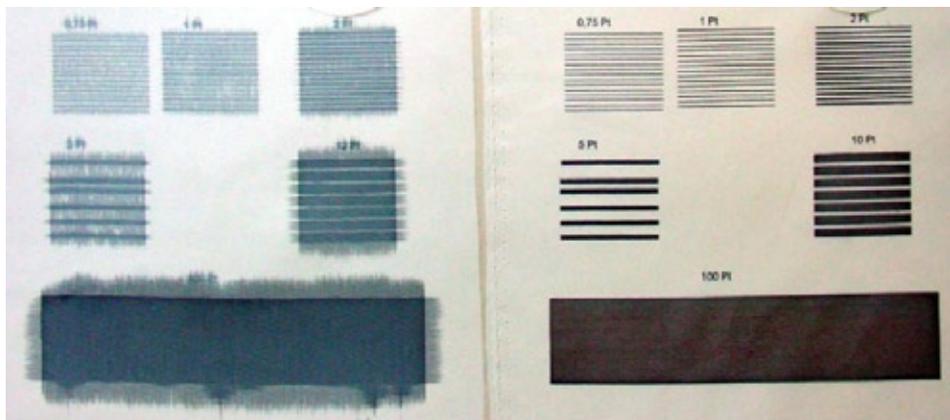
The aim of the research project jointly undertaken by ITCF Denkendorf, DITF-MR and TITIV Greiz is to put the pre-treatment of goods for ink-jet printing on a secure data basis.



Printing inks for ink-jet printing

A range of laboratory trials should achieve a better match of substrate and ink. For this purpose various configurations are being characterised at the ITCF by means of their physical parameters, such as surface tension, viscosity and wetting behaviour and are being printed on textiles, which have undergone different pre-treatments.

The impregnations are being chemically modified so that they receive the best possible wetting properties together with the printing inks and the textiles used. The determination of the rise in height is used as the measuring method: A textile is soaked in a water-based dye solution. It is observed how far the water-based solvent and dye stuff fronts spread over time on the textile.



Print trials on polyester showing a variety of print qualities.

This enables conclusions to be drawn both as the affinity of dyes to specific textile materials and as to the hydrophilic properties and the wetting rate. The results can be correlated with the print resolutions and show reliably what the result of pretreatment of the goods must be, in order to prepare to the best extent possible a specific textile material for printing.

Image-guided measuring methods provide information on the wetting kinetics of a single drop of ink and make it possible to identify in detail the effects of the slightest modification in the formulation of the ink and configuration of the impregnation.

Ultimately the readings obtained in the laboratory shall be compiled in a database. The ideal combinations of ink, pretreatment and textile should be available consistently from this database - the operator will be able to reproduce these results.

# *An amazing Techtextil 2015 showed innovations in all segments*



**W**hen the Techtexil 2015 closed its doors after four more than interesting days one had to come to the conclusion that this exhibition once again underscored its unrivalled position as the world's leading trade fair for technical textiles and nonwovens. As in 2013 there has been a deeply satisfied exhibition organisation team, excited visitors, delighted exhibitors and a good mood in the sector. The worldwide flagship fair for technical textiles and nonwovens sets unequivocal new records on both the exhibitor and visitor sides. 1,389 exhibitors from 52 countries (2013: 1,322 / 48), an increase of four percent over the last event, presented new products for all product groups and areas of application for technical textiles and nonwovens.

Around 28,500 visitors from 102 nations (2011: 27,500 / 98), also an increase of about 4 percent, ensured busy exhibition stands and numerous contacts throughout the fair. With the addition of Hall 6.1, the area occupied by the fair rose to 57,000 square metres (2013: 53,100 square metres). "Techtextil shows the future of the textile industry. Once again, the numerous innovations presented by our exhibitors demonstrate what is possible with technical textiles and nonwovens today, tomorrow and the day after tomorrow. Techtexil confirmed its global character with a jump of seven percent in the number of international trade visitors", said Detlef Braun, Member of the Executive Board of Messe Frankfurt GmbH.

All in all, the percentage of guests from outside Germany rose to 59 percent (2013: 57 percent). A growth of 4% among exhibitors and especially among visitors despite not quite fortunate general conditions due to the nationwide rail strike (as a marginal note: many international visitors could hardly believe Germany also has strikes) clearly indicates the interest among the industry continues to increase for this growth market.

Which comes as no surprise, since technical textiles and nonwovens hold an immensely broad field of solutions and in addition offer material properties which make them superior over any other materials, e.g. weight, recyclability, stability or flexibility. And although Techtexil 2015 had a lot of innovations to marvel at, we still wish to state this field is still in the early stages of development. "Techtextil shows the future of the textile industry. Once again, the numerous innovations presented by our exhibitors demonstrate what is possible with technical textiles and nonwovens today, tomorrow and the day after tomorrow. Techtexil confirmed its global character with a jump of seven percent in the number of international trade visitors", said Detlef Braun, Member of the Executive Board of Messe Frankfurt GmbH. All in all, the percentage of guests from outside Germany rose to 59 percent (2013: 57 percent). Over 5,500 trade visitors to Techtexil came from the concurrent Texprocess. 273 exhibitors (2013: 270 excluding 'Source it') and almost 13,500 international guests (2013: 12,128) came to Frankfurt for the Leading International Trade Fair for Processing Textile and Flexible Materials. Together, the two fairs welcomed 1,662 exhibitors from 54 countries and almost 42,000 trade visitors from 116 nations.

## A host of innovations and a positive atmosphere

The focus of Techtextil 2015 was on new applications, technologies and materials. The exhibitors presented a broad spectrum of products including textile-integrated LEDs, electrodes and sensor systems, three-dimensional interlaced structures and woven fabrics, as well as new coating systems for multi-functional finishes. These technologies permit an ever-wider range of applications for textiles in a variety of sectors, including lightweight construction, roof building, automobile interiors and functional apparel and underwear.

Sustainability continues to be an important theme for the sector. Thus, biopolymer-based fibres, textiles for open sea biomass cultivation, durable and recyclable fibres were among the subjects covered by the well-attended lectures of the Techtextil Symposium. Numerous nonwoven innovations were also presented. The exhibitors showed, inter alia, glass-fibre, polyester spun-bonded and heating nonwovens, as well as water-jet bonding technologies for the Clothtech, Geotech, Hometech, Medtech and Mobiltech application areas.

We would like to introduce you to a small selection of innovations, focusing on textiles.

## A small sample of innovations

We'd like to start with one exhibit Detlef Braun personally ennobled a trade fair highlight: a multifunctional jacket of Ploucquet. The head of Messe Frankfurt showcased the jacket to the international press and was also able to demonstrate a lot of innovations on a handy mass product. The multifunctional jacket of Ploucquet comes with an innovative heating, communication and lighting system. It is the result of the successful technology combination of both companies and proves that synergies can create intelligent concepts and solutions. At Techtextil **Sympatex** and **Ploucquet** have combined their expertise to introduce their wide-ranging product portfolio in the area "technical textiles and applications".

Another product in the centre of attention was the new breathable inner glove by Sympatex®. This inner glove is made of the compact semipermeable "guaranteed green" Sympatex® membrane and was launched for the first time in the "Medical and Industry" sector. The breathable glove can be worn under occlusive and impermeable protective gloves that are used in professional practice. Hands remain dry even when the gloves are worn over a longer period of time. A moisture diffusion prevents the skin from swelling due to occlusion, and skin irritations are strongly reduced. In comparison with other material combinations, certain "healing properties" of the glove have also been proven in regard to skin irritations that were induced in a standardized way.

Furthermore Sympatex showed “art protection & restoration products”, a specific laminate range to meet the growing demand for the gentle treatment of art objects and furniture and caravan roof lining laminates, which can be used for the inner lining of folding caravan roofs (VW T5, for instance). A two-layer and a three-layer velours laminate is assembled to create an interior tent. This material combination offers the ideal thermal insulation in all weathers.

Sympatex CEO Michael Kamm told us that Techtexil is the ideal meeting point to present the know-how combination of both companies in the areas “membranes, laminates and finishings” to a broad public of experts and that he is very comfortable with the feedback from customers and visitors concerning the innovations and the quality of the products.

The US company **Noble Biomaterials** introduced their X-Static technology. Made with 99.9% pure silver, X-STATIC® enhances products with permanent anti-odor and antimicrobial performance. X-Static permanently bonds textile fibers with a layer of silver. This naturally inhibits the growth of bacteria in apparel and textiles, keeping odors in check and gear smelling fresher.

X-STATIC® also has natural temperature regulating properties, reflecting heat back to keep you warm and evaporating moisture faster to keep you cool. X-Static seems to be a very interesting product for companies which produce textiles and apparel for the health sector.

**Schöller** from Switzerland presented a wide range of their technologies. In the focus was the Schöller pyroshell™ – the permanent flame protection on synthetic fabrics. With pyroshell™ dependable protection from heat and flames is now also possible on synthetic fabrics and ensures outstanding safety and visibility in all EN ISO 20471 colors. Its use on elastic fabrics, and now also with membranes, provides greater freedom of movement and comfort in day-to-day work.

Furthermore Schöller presented their ecorepel® technology. The textile finish ecorepel® biomimics the natural impregnation water repellent function ducks and all water fowl use by producing an oily secretion that makes their plumage repel water. ecorepel® imitates this natural protection as a highly functional and odorless high-tech finish. It is based on long paraffin chains that wrap themselves spiral-like around individual fibers, filaments or yarns in a very fine film. This reduces surface tension so that water droplets and even mud with significantly higher surface tension run off simply. The breathability is not affected and the feel remains pleasantly soft. ecorepel® is easily biodegradable in accordance with OECD 302 B (80–100 %) and complies with the bluesign® standard and has passed Oeko-Tex® Standard 100.

And Schöller introduced a jacket made from a new kind of functional material for denim which is visually similar to jeans. Customers can choose the colour themselves.

**Outlast** showed their latest innovations in the field of Phase Change Materials (PCM). Outlast® technology utilizes PCM that absorb, store and release heat for optimal thermal comfort. Outlast PCMs are suitable for many and varied areas of application. Together with the renowned fiber manufacturer Thai Acrylic Fibre Co. Ltd., Bangkok/ Thailand, both partners they have succeeded in developing a new generation of a PCM acrylic fiber with Outlast® technology. This new fiber provides four times the performance and offers perfect climate comfort for apparel and home textiles.

The Austrian fiber manufacturer **Lenzing** presented an innovative shoe concept with the Lyocell fiber, TENCEL®. “It all started with shoe laces,” Marina Crnoja-Cosic, Lenzing Segment Manager of Technical Textiles”, said at the press conference. As a result of Lenzing’s initiative and strong interest on behalf of manufacturers, more and more shoe components were developed, many of which are already in use in commercial products.

“Now the goal is to launch a shoe on the market in which all of the component parts are made with TENCEL®”, Crnoja-Cosic continued. “Innovative shoe manufacturers are searching for eco-friendly and sustainable materials. TENCEL® has a good reputation when it comes to sustainability and, particularly when it comes to shoes, the moisture management function, which TENCEL® fulfils to perfection, is a must,” Crnoja-Cosic explained in more detail.

The Austrian company, Legero, is searching for new possibilities in the field of sustainability and is at the point of commercializing a new shoe concept called VIOS. In this shoe, TENCEL® shoe laces are used for sustainability and work is already underway to further extend TENCEL® to additional components. “For us a partnership with Lenzing AG is a logical step on the way towards ecological responsibility since, due to our joint passion for sustainability, we are able to produce things which did not appear possible at first glance,” Stefanie Stolitcka, Sustainable Development Manager at Legero, explained to the press.

**Kermel** from France presented KERMEL X-Flash® and named it a new reference in the field of abrasion resistance. According to Kermel it is the ideal protective fabric for industrial protective clothing which is subject to extreme mechanical stress. Alongside the inherent flame resistance which guarantees permanent flame protection, it meets numerous standard requirements. This characteristic renders it a multi-norm protective fabric which can withstand even the toughest challenges. Furthermore Kermel showed a wide range of apparel for fire protection. The French Ambassador visited Kermel and was very interested in the properties of Kermel Tech fibres for technical applications such as hot gas filtration.

It’s almost natural virtually all big textile machine builders had a stand at the trade fair. They used the opportunity to exchange views with customers, present new production methods and ideas, and further functioned as contacts for any tricky questions related to production the producers of technical textiles were asked by customers at their stands.

The road to concrete statements is short. As a magazine with focus on supply chain and production we want to have a closer look on some of these textile machinery manufacturers and their exhibits and solutions for technical textiles and industrial nonwovens.

## Textile machine manufacturers at Tectextil

**Saurer Allma**, as a traditional participant at Tectextil focussed on the TechnoCorder TC2 with interesting developments in FlexiPly and the new 830 mm spindle gauge.

Demonstrated at the fair was a machine section with the new FlexiPly facilities and the larger spindle gauge for processing coarse titres. FlexiPly opens up new market opportunities in the field of hybrid yarns. The Allma two-for-one double twisting machine TechnoCorder TC2 for industrial yarns is characterized in particular by its high flexibility. Self-sufficient spindle technology enables individual settings for each spindle; the separate spindle drives are set via integrated IPC at the control cabinet.

FlexiPly enables the creation of new hybrid constructions. Innovative hybrid yarns are used for industrial textiles with new properties. Thus, for example, hybrid yarns can be used in tire production or mechanical rubber goods (MRG). Hybrid yarns previously produced on ring twisters are now much more economical to produce on the TechnoCorder TC2.

The Manmade Fibers Segment of the Swiss **Oerlikon** Group placed the information focus on safety and environment. The solution provider with its two brands – Oerlikon Barmag and Oerlikon Neumag – offers numerous technologies for manufacturing industrial yarns, fibers and nonwovens. Industrial yarns are considered to be the ultimate discipline in filament manufacturing. High tenacities, extreme dimensional stability, tremendous durability along with a large range of titers – although the demanding production process promises high-margins, it is however also simultaneously a huge challenge both for the yarn manufacturer and the systems constructor. With a production window of between 50 and 12,000 den per filament, **Oerlikon Barmag** industrial yarn systems cover an extremely-wide titer range. Depending on the application and the required yarn characteristics, the systems produce ‘strong’ yarns for all applications: from high-tenacity high-modulus yarn for safety belts, HMLS yarns for tire cord all the way through to low and ultra-low shrinkage yarns for tarpaulins. **Oerlikon Neumag** offers systems for manufacturing monofilament and bicomponent fibers in batch sizes of 5 tons per day.

Furthermore Oerlikon presented the latest development for tape production: The EvoTape and WinTape were shown in a Virtual Reality Showroom in 3D. With the **EvoTape**, a process for manufacturing tapes has been developed that has literally revolutionized the process used to date: depending on the configuration, the systems output can be increased by up to threefold. The EvoTape operates with a cold pre-drawing process with an approx. 1:3 ratio. In the subsequent, second drawing stage, the tapes are ‘lighter’; they take on the heat from the hot-air oven more easily.

These two drawing stages result in superior process stability, reaching the same tenacity values with higher speeds or superior properties at the same speed. The splitting of the drawing process also ensures a low overall draw ratio. As the cut width of the overall drawing is defined, this is also reduced. Consequently, more tapes can be manufactured, which – in addition to the higher process speed – increase the system's output. Overall, the specific energy consumption per kg of output is therefore considerably reduced. EvoTape offers cost advantages as a result of greater process stability.

WinTape stands for more output and less waste. Higher speeds reduce the package running time. This, in turn, requires an automatic winder. The automatic WinTape precision winder supplements the EvoTape concept in the take-up stage. Electronic crossing angle(s) ensure(s) perfect package build with optimum quality for the downstream further processing. As the tapes dwell in the yarn guide during package transfer, automatic take-up of folded tapes is possible.

Further plus point: with two parking positions for full packages, the system configuration for carpet backing fabrics can operate for 24 hours without package transfer, hence simplifying shift work. Furthermore, identical package running lengths, which are common in an automatic take-up concept, reduce waste. Operating the WinTape in conjunction with the EvoTape systems opens up further benefits offered by the new precision winder: production waste occurring during package transfer can be directly routed back to the extruder.

For **Itema** from Italy technical textiles are a growing and promising market and Itema is proud of being part of it. Itema is the only manufacturer in the world to provide the top three shuttleless weft insertion technologies: rapier, airjet and projectile. In the center of interest at the ITEMA booth were two machines which are especially designed to fulfil highest demands from weavers of technical textiles: the P7300HP Projectile Weaving Machine and the R9500 Rapier Weaving Machine.

The R9500 is the backbone of Itema and offers the widest application range. It is simple to operate and maintain producing unsurpassed quality and high added value. The newly developed FPA – Free Positive Approach – weft transfer offers a race board with no guiding elements in the shed and is the key to versatility and flexibility. The FPA features extremely wide yarn, weaving ranges from fancy yarns up to Nm 1, filament up to 5000 dtex or mono-filament up to 0.4 mm. It is the perfect solution when weaving with the widest mix of yarns or in case of technical textiles with the finest 10 den yarn or with high tenacity, multiple pick insertion fabric. With new additions specifically for technical textiles the rapier weaving machine R9500 has been tailored for airbag and fiberglass weaving.

The P7300HP is a high-performance, all-purpose projectile weaving machine. It is unique in the world. With the P7300HP weavers can fulfil any and all of their various requirements with utmost precision and individual flair. The mature projectile weft insertion technology is suitable for any weft material: from spun yarns made of natural and manmade fibres to filaments and tapes.

This machine is available from 220 cm up to 655 cm always first choice for weavers who want to weave the widest fabrics and specialty fabrics.

It was more than comfortable with the fair because they had a new record in stand visitors and great interest for both machines and also for their airjet weaving flagship A9500p, the premium version, which was launched at ITMA Asia 2014.

**Lindauer DORNIER** took the opportunity to inform about machines for upmarket high-tech textiles for the protection of people and the environment such as functional textiles for solid matter, wet and air filtration as well as shading. The Bavarian-Swabian family enterprise offers with its weaving machine system family comprising the rapier and air-jet machines an innovative and sustainable machine concept for the production of upmarket high-tech textiles. The prerequisite for this excellent machine concept are creative engineering work and weaving technological know-how. Approx. 8% of the annual turnover are therefore deployed for research and development. With the product line “DORNIER Composite Systems®“, introduced in 2014, the company combines the competences of the operating divisions weaving machines and specialty machines in order to be able to offer trendsetting installations for the production of technical fabrics made of high performance fibers. When further processed, these textile semi-finished products become efficient composite materials used as a central component in many lightweight constructions.

Applications are to be found not only in aviation and aerospace but also increasingly in the fields of mechanical engineering and construction, architecture, automobile industry as well as lifestyle.

Innovations in the textile sector but also in the plastic process engineering are combined by “DORNIER Composite Systems®“ and efficient processes for the composite technology developed out of it. Thus, Lindauer DORNIER GmbH offers weaving machines specifically for the production of textile surfaces for composite technology: DORNIER rapier weaving machines with a positive controlled center transfer, weaving machines for 3D structures as well as DORNIER tape weaving machines. In parallel, a tape production line for the application-specific production of thermoplastically fixed or consolidated tapes is available. The production of the resulting high class end products requires that all production-related stages perform together with greatest precision.

**Picanol** was at the Belgian Lounge and had the idea to create a place to communicate and exchange ideas with customers and partners in the business by using a large info booth. As a global leader in the industry of weaving machines, Picanol enjoys growing success in the market for technical textiles. Picanol presented break-through solutions in different fields like Wide weaving ( up to 540 cm ), Heavy weaving, OPW-airbags, Agro-textiles, Carpet-backing etc. and offers technical weavers highly customized solutions for very specific applications, based on machine platforms that are also applied in mainstream applications.

In this way, also technical customers enjoy state of the art technology and performance, combined with the evident advantages the leading position offers them: large R&D resources, streamlined high quality production and assembly processes and a worldwide sales and services network. Moreover, Picanol has also invested more than 40 million euros since 2010 in its assembly and test facilities, dedicated machining capacity and a state of the art training center for both customers and its own staff.

**KARL MAYER** presented themselves as an expert partner in the development of innovative solutions, which are setting new standards in many areas of everyday life and industry. On the stand there was a meeting room in the shape of a tower with a spiral entrance made entirely from warp-knitted spacer textiles. The 3D textile has a special construction to enable it to act as a sound-absorbing material and was designed to create a peaceful sanctuary. A big topic at KARL MAYER were textiles made from carbon and glass fibres for reinforcing composite materials. A futuristic installation demonstrated the process from production on the machine to resin treatment. We observed that many people visited the booth to see the the Swing rocking chair designed by the Paulsberg Design Studio. This comfortable chair is made from concrete with a reinforcing material made from a biaxial carbon-fibre textile. The chair showed what attractively shaped products can be produced by combining a reinforcing textile with the right matrix material and people had the opportunity to watch a video to learn everything there is to know about processing textile reinforcement into furniture.

KARL MAYER warp knitting machines offer a very wide area of producing technical textiles for many applications for example, among others, in the building industry, medical and health sector, agriculture, aircraft construction, the automotive industry and of course functional fabrics for sports. For this sector KARL MAYER presented a collection of functional fabrics from warp-knitted textiles which demonstrated all their special features in terms of performance enhancement, perspiration wicking and heat management – from shirts to shoes.

**Stäubli** has been one of the world's leading manufacturers of high-speed textile machinery since more than a century and today is in a position to offer first class textile machinery dedicated to the production of technical textiles. Weavers who count on Stäubli high-performance machinery benefit from features like high reliability and flexibility will be able to take the lead on the market of technical textiles with innovative and creative products for countless applications. Stäubli showcased two machines that fit especially well in the production process of technical textiles. The Unival 100 – a single-end control Jacquard machine offers more benefits for sophisticated technical textiles such as automotive and aeronautic textiles, technical textiles in the sports, industrial, medical sectors, and new fabric constructions, even with glass fibre, carbon, and Kevlar. And the MAGMA T12 warp tying machine for technical yarn ties monofilaments, coarse multi-filaments, PP ribbons, bast fibres, coarse staple fibres, and many other fibre types. It has been developed for universal application ranging from coarse technical yarns to medium yarn-count range. Its rigid design includes an optical double-end detection system.

Furthermore a selection of technical fabrics including spacer textiles were shown that have been produced in conjunction with Stäubli products such as dobbies, Jacquard machines, warp drawing-in, or tying equipment.

It is our opinion that it is very good news for the technical textiles industry that a company with such a strong focus on quality is now more active in this sector.

**Groz-Beckert** demonstrated how to achieve not only better quality, but also improved efficiency in the production of technical textiles. The benefits of Groz-Beckert products and their positive impact on the textile value chain were explored in depth by a very large number of visitors to the booth. For technical weaving, Groz-Beckert presented several weaving accessories. The technology sector demonstrated the advantages of the specially designed ALtop hybrid heald frames, which have proven themselves as an economic plus in the manufacturing process with their bend resistance and long service life. With a large number of healds, the product sector Weaving demonstrated solutions for the processing of sophisticated materials such as carbon fiber, fiberglass or aramid. Products like the TWINTec heald enable a continuous and low-wear weaving process that has positive effects on productivity. The product sector Felting demonstrated very successful which Groz-Beckert felting needles were most suited to production of specific filtration felts. By the help of a selection menu the user got an expert needle recommendation and also a set of sample needles into the bargain. Nice idea! And the product sector Knitting presented its expanded range of knitting products.

The range of compound needles and system components is gradually being extended with the addition of knitting modules for tricot machines. For Groz-Beckert, the double fair represented a successful encounter with existing and potential customers from every sector of the textile value chain

The German flat knitting machinery manufacturer **STOLL** presented samples about various applications such as medical soft goods, sports items, wire fabrics, composite implementations, upholstery fabrics, protection apparel etc. And they will show the brand new Stoll ADF 32 W multi gauge E 7.2 machine with its integrated presser inlay system for weft reinforced fabrics allowing woven like fabric appearances and reinforcements w./o. restricting the versatility of the Stoll ADF machine generation.

Mr. Hanel from **Monforts** explained to us, that technical textiles have their own special requirements profile when it comes to finishing. For example, they react strongly to humidity or temperature differences. Monforts has concentrated its research activities in this area. For example, the company now offers a modified stenter frame that is used for airbag coatings. Furthermore Monforts offer special machines for specific impregnation processes that are required for composite materials. These are fibre types such as glass fibre, basalt or carbon, which are connected by a plastic matrix such as resin and are used in lightweight construction in particular.

A Monforts system produces water filter membranes, for a manufacturer in Southern Germany, that are required for safe drinking water supplies. The company has also sold machines for glass fibre fabrics and is also working on an offering to produce carbon fibre prepregs. And it has already opened up a whole new business area with its special finishing machines for composite materials. In Upper Franconia, Germany, a Monforts stenter has been installed for the production of high temperature filters based on felt. The Monforts variable Montex 8000 stenter can operate at high temperatures of up to 320°C and high weight process materials without difficulty.

“This stenter has all type of coatings completely under control,” said Hanel, adding “and it is the coating which makes the essential difference in the case of Technical Textiles”.

This is quite a big number of activities in the field of technical textiles and Monforts people had many discussions with customers at their booth. And Monforts presented a machine: the new Montex Allround modular coating head. The patented, new Montex Allround is a modular, interchangeable coating system for technical textiles which offers considerable benefits to manufacturers of coated technical textiles – and not least in respect of its flexibility. The modular coating heads of the system can be quickly and easily changed by a specially-designed undercarriage from the side of the unit, allowing it to be adapted for different applications, or, for easy cleaning purposes of the coating head outside the machine range.

There are modules for knife and slot die coating, in addition to those suitable for flexure, gravure and rotary-screen printing. Special modules for powder scattering and spraying are also available. The unit can be enclosed with a special casing when the handling of fabrics treated with organic-, or even toxic- solvents is taking place.

The Montex Allround, which incorporates a spreading unit and a pulling device along with the selected coating head, allows for the tension-free coating of the substrate along a greatly-reduced web path and a very short period of ‘open’ coating prior to it entering the dryer; ensuring significantly less chance of contamination. The shortest possible distance between the coating head and the stenter infeed ensures the highest quality coating results.

**Brückner** is a pioneer in the field of finishing technical textiles and offers a wide portfolio of solutions for many different applications. Brückner stenters can operate with very high temperature and this is important for the quality finishing of many technical textiles. Brückner introduced a new booth design to the audience with a look and feel for a more sustainable future. Mrs. Ruckh, Head of Marketing at Brückner, told us that Brückner was very comfortable with the exhibition and had interesting discussions about special finishing solutions nearly the whole time. Customers are very happy about Brückner’s new technology centre in Leonberg and appreciate to test new ideas in the centre with the help of Brückner engineers.

**Thies Textilmaschinen** highlighted its latest range of machines for the treatment of technical textiles and offered expert advice on dyeing aspects of technical textiles. The machines process a wide variety of yarns, fibres, nonwovens and fabrics suitable for various technical textile applications: for example Aramide fibres which are used for security wear and top-end, bullet-proof automobiles. In the center of discussions at the booth were the iCone machine for yarn dyeing and three machines for fabric dyeing: the HT- Jigger, iMaster H<sub>2</sub>O and the soft-TRD SIII.

The newly developed dyeing machine “iCone” treats yarns, fibres, flakes, cables, ropes and belts. The new technique enables dyeing in short fleet. Obtaining uniform dyes and the required fastness is self-evident. Due to the new energy-efficient (ee) functions the “iCone” is able to colour in a more cost effective and environmentally friendly way.

Another field of application is the discontinuous bleaching of cellulose fibres for medical purposes and/ or any other fibres such as polyester, acrylic and polyamide. In the Thies product portfolio one can find the corresponding presses, centrifuges and dryers.

The Thies HT-Jigger is used for dyeing fabrics, nonwovens or space fabrics. The HT-Jigger offers stepless tension and material speed control with an economical dye trough. It has been designed to offer uniform dyeing in short liquor ratios. Suitable to process textiles at temperatures up to 143°C, the HT-Jigger is recommended for the treatment of crease sensitive, permeable and non-permeable fabrics; to offer optimum flexibility for finishing of all modern fibres.

Key applications are the automotive sector with, for example, treatments of vehicle interiors or industrial sectors, which use filter materials.

For applications where water consumption is an important consideration, together with other possible energy savings including steam, electricity plus chemicals and dyestuffs, the recently introduced iMaster H<sub>2</sub>O dyeing machine is already proving successful with, for example, several automotive fabric producers. The notable process times of the iMaster H<sub>2</sub>O dyeing machines facilitate higher production capacities.

**Santex** from Switzerland had also the focus on coating and presented the Caviscat scatterer, which can be combined with other machines of the Cavitec brand to form complete coating and laminating solutions. The grit is fed via a funnel shaped trough on the scatter roll underneath. An oscillating brush scatters the material through an oscillating sieve onto the moving web material. The quantity can reach up to 4,000 g per minute and meter material width. In the next step an infrared heater melts the scattered grit, which is therewith connected to the base material web. An additional layer can be laminated onto the base layer if needed. The scatterer is suited for all kind of grit from fine powder to pellets of 2,000 µm size. Depending on the material and the scatter quantity different types of scatter rolls are used. Simultaneous scattering of two different materials at the same time is also possible. The Caviscat scatterer, which is available with working widths from 500 mm to 7,000 mm, guarantees exact and even coating of the web material. The scatterer is ideally suited for applications in the field of technical textiles.

**DiloGroup** provided extensive information about production lines made in Germany and machine concepts from the DiloGroup companies DiloTemafa, DiloSpinnbau and DiloMachines. A major focus of the equipment is to improve operation efficiency, web quality and uniformity with positive effects on all staple fibre bonding processes. All these elements are part of the “Dilo – Isomation Process” and aim at an even web mass for reduced fibre consumption as raw material is the biggest cost factor in textile production. Reducing waste and optimizing fibre consumption is also a main goal for a more sustainable future. DiloGroup is the premier builder and supplier of complete nonwovens lines made in Germany for staple fibre nonwoven production. Each line is specifically engineered to customer needs. Unfortunately it was not possible to talk to Mr. Dilo because he never stopped talking to customers and giving them the expertise of one of the best nonwovens machinery experts of the world.

**AUTEFA Solutions** presented the „Automatic Needle Exchanger 2.0“, which has experienced an enormous boost of innovation within the last two years and hardly reminds on its predecessor model, which was shown at Techtextil 2013. In two years of development work the mechanical components of the Automatic Needle Exchanger was completely redesigned. Thus the operating speed could be increased nearly by a factor of 4 to 1,500 needles/h, which is about 50% higher than the performance of qualified human specialists.

Together with the large capacity of the needle magazine of more than 10,000 needles and the optionally available needle board magazine for up to seven needle boards, an efficient and fully automatic operation during a complete production shift is possible. The Automatic Needle Exchanger is suitable for needle boards of all producers, in widths of up to 2.000 mm x 400 mm. Further dimensions are available as optional features. The device enables the needle exchange for all complete needle boards or individually definable areas without any restriction to needle density, needle design or needle type. The exchange is possible even in one board. In addition the system is capable of detecting and exchanging broken and damaged needles.

The **Trützschler** companies' participation at this year's Techtextil show was focused on efficiency and quality. Various examples of Trützschler Nonwovens' complete line concepts and technologies out of one hand were demonstrated. Multimedia and interactive presentations informed on line layouts, machinery, applications and end products.

A special topic was the cooperation with Voith Paper in the area of wet-laid and spunlaced nonwovens. Although flushable wipes were the main application, tailor-made solutions for other end products were discussed at the big booth, too.

With requirements for greater energy efficiency and lower carbon emissions becoming more and more prominent, Trützschler Nonwovens' second focus was on new and efficient drying technologies.

The Streamliner, introduced during the last ITMA show, is a spiral-shaped drum dryer with highest evaporation capacities. The model is best used in nonwoven lines producing extremely moist and high density nonwovens - it passed the acid test in a production line last year. Another pillar of the dryer and oven program is the re-designed multi-drum dryer. The new, modular model is optimised in several respects which result in significant reductions in both thermal and electrical energy consumption. And there was an introduction of a new product in the field of technical nonwovens: Trützschler Card Clothing is offering new metallic wires for roller cards application on doffer and condenser.

Trützschler Man-Made Fibers brought the small but technologically challenging segment of short staple fibers into focus. One of the most important quality requirements of short fibers with a length of under 3 to 6 mm is absolute length uniformity - Trützschler's staple fiber technology fulfil this requirement for both standard and high-performance polymers. Here the technologies presented come to full circle since short staple fibers are often blended with other fiber material for typical wet-laid products such as nonwovens wallpaper, high-quality tea bags and battery separators. Especially for medium and coarse fibres, e.g. for geo-textiles needle-punched webs, new and already field-tested tooth geometries are available, providing enhanced process stability and low maintenance. The joint competences regarding machines and card clothing guarantee an optimum set up. The experienced service technicians are operating world-wide to ensure excellent results even for special applications.

To conclude our brief review we'd like to take a closer look at some solutions from the producers of nonwovens.

The **Sandler** booth was a veritable magnet for about 600 visitors from the nonwovens industry, industry and politics. The nonwovens manufacturer from Germany welcomed the audience to the „textile building“ for a mini-break in the world of nonwovens. Visitors were offered a first-hand look at the diverse areas of applications for Sandler nonwovens and a chance to be inspired by the fascination with nonwovens.

Sandler highlighted applications in construction. In walls and roof, nonwovens of the fibercomfort® product family created well-tempered rooms and pleasantly quiet conversational acoustics despite the bustle of activity at the booth. In the showroom the nonwovens proved their functionality in a drywall for individual room design and as pipe insulation that adjusts flexibly, perfectly insulating even bends. fibercomfort® nonwovens insulate heat and sound. The textile materials were also sought after for application in office acoustics and interior design, winning over the professional audience with excellent sound absorption and easy processing. A cycle of reusable materials placed special emphasis on recycling and sustainability, demonstrating how fibercomfort® nonwovens set standards in this area as well. Made from 100% polyester, they contain recycled raw material and are easily recyclable themselves, even after years of use. Owing to these properties, visitors even compared fibercomfort® insulation nonwovens with materials made from natural fibres such as wood or flax with regard to their sustainability.

Furthermore Sandler exhibited sample collections which showcased a wide product range for the automotive industry, filtration, construction, technical insulation, hygiene products and wipes. Visitors from the automotive industry were particularly interested in Sandler's lightweight, recyclable absorber nonwovens for interior and exterior applications, nonwovens for moulded parts and upholstery nonwovens for comfortable seating.

**Freudenberg Performance Materials**, the merger of the two successful Business Groups – Freudenberg Nonwovens and Freudenberg Politex Nonwovens, had their first public appearance at the Techtexil. The leading nonwovens producer presented under the motto “Innovative. Global. Sustainable” new solutions in the area of advanced wound care, batteries and fuel cell components, interlinings, sound absorption and technical packaging. During a press conference Freudenberg PM gave an overview about their comprehensive portfolio for advanced wound care which has been complemented by hydrophilic foam solutions. The latest products from the nonwovens specialist absorb wound exudate and create an ideal environment for wound healing. They protect the wound from drying out, from cooling and ensure an unhindered exchange of gases and water vapor, thereby accelerating the wound healing process. In the center of the wound care stands the powerful Hydro Active Nonwoven. It can absorb wound exudates of up to 25 times of its own weight. Freudenberg PM has built up the advanced wound care segment very systematically by strong investment in R&D. They started in 2009 with their first M-Web as component.

In 2011 the first hydro active nonwovens followed and in 2013 the SAF layers for multilayer dressings. Latest developments have been the PVA gelling nonwovens in 2014 and the PHT foam in 2015 which was driven by the acquisition of Polymer Health Technology Ltd.

Furthermore as one of the leading companies in the roofing sector, Freudenberg PM exhibited Terbond®. Terbond® is a polyester fiber nonwoven manufactured with spunbonded technology, which is mainly used as a reinforcement for bituminous roofing membranes in commercial buildings. This solution is available in numerous weights and capable of meeting a wide range of technical requirements.

And last but not least, Freudenberg Performance Materials underlined its approach of global technical and creative leadership in interlining with a new printed interlining. The company offers special interlinings which can be printed with a customized design and laminated to the outer fabric. Freudenberg offers a service for lamination where additional features can be added, such as water-repellent characteristics.

As usual, Techtexil was also a suitable backdrop for presenting special awards.

## Walter Reimers Stiftung (foundation) awarded young scientists

Every year the Walter Reimers-Stiftung offers one promotion prize in the dissertation category and one in the diploma or master category. With this distribution key, VDMA Textile Machinery takes into account the different demands of these academic works. The prizes are completed by the creativity prize for young talents which honours especially clever seminar papers. This year's prize-winning papers are best practice examples and range from technologies for the fabrication of fibre composites over a modelling approach of a parachute to the development of textile implants for the treatment of bone fractures. Peter D. Dornier, chairman of the Lindauer DORNIER Board of Management and chairman of the Walter Reimers-Stiftung honoured the laureates.

“The content of all elaborations falls within the field of technical textiles and perfectly meets Tectextil and the final products shown there. They prove that the textile machinery industry is a real high-tech section and the starting point for innovative products and applications,” explained Mr. Dornier.

The promotion prize in the dissertation category endowed with 5,000 Euros has been awarded to Dr. Wolfgang Trümper of TU Dresden. In his dissertation he shows how preforms for fibre-reinforced composites in 2D and also 3D can be produced by flat knitting technologies.

The promotion prize of 3,000 Euros in the diploma category has gone to Jan Fleischmann of TU Dresden. His subject was the modelling approach of a reserve parachute. Moritz Eger, also of TU Dresden, has been rewarded for the best student research with the creativity prize endowed with 2,000 Euros. In his project he devoted himself to the development of a textile reinforced osteosynthesis implant for the treatment of bone fractures.

And of course the winners of the 13th Tectextil Innovation Award 2015 have also been chosen and were honoured for outstanding achievements and new developments in six categories during the official opening ceremony. An international jury of experts selected eight projects in six categories for the coveted Tectextil Innovation Award. They include printers for three-dimensional woven structures, embroidered electrodes for long-term ECGs, algae-based snow, an artificial womb and maritime textile for cultivating kelp.

## The Tectextil Innovation Award winners

One of the winners in the ‘new technology’ category is Sosa Fresh for its 3DWeaver, a 3D printer that can produce three-dimensional woven structures step-by-step. The other winner in this category is Emil Stutznäcker for its high-performance sewing technology with automatic handling in the sewing area, which can produce preforms, i.e., multi-layer woven and nonwoven fabrics for textile-reinforced lightweight structures, at the record speed of around 3,000 stitches a minute.

The Techtexil Innovation Award in the ‘new product’ category goes to the Empa Research Institute for an embroidered electrode that can be used for long-term ECGs and thus takes account of the growing demand for textiles in medical applications.

Two companies have been singled out for the Award in the ‘new concept’ category: Switch Embassy for a washable LED screen that can be used in many areas of application, from clothing to interior furnishings, and the ITV Denkendorf Research Institute for BioGlizz, a biological alternative to artificial snow, which is based on an algae-covered textile layer.

The winner in the ‘new application’ category is the Hohenstein Institute for Textile Innovation with ARTUS, a technical textile that can be used as an artificial womb for premature babies and, inter alia, reproduces the mother’s movements and heartbeat.

The ‘new composite’ category has been won by a technology that makes it possible to weave fibre-reinforced 3D structures in T and LI forms that can, for example, contribute to weight reduction in automobiles and machinery. The new process was developed by the Forschungskuratorium Textil e. V. textile research association.

In the ‘new material’ category, the jury gave the award to Sioen Industries for developing a maritime textile that makes it possible to cultivate kelp and alternative, sustainable biomasses.

## Feedback from visitors

The rating for the fair given by visitors remained on a high level in 2015: 97 percent said Techtexil was good to very good (2013: 96 percent). The current economic situation in the sector was also seen in a very positive light. Thus, 92 percent of all visitors said they consider the current economic situation to be satisfactory to good (2013: 87 percent) whereby the mood among international visitors improved significantly over the previous event. The response of the exhibitor side was equally good. 87 percent of exhibitors said they had achieved their goals for the fair (2013: 90 percent); 94 percent see the economic situation in the sector as being satisfactory to good (2013: 88 percent).

## More international exhibitors and visitors, especially from the USA and North and East Europe

15 countries were represented by a joint stand or pavilion at Techtexil 2015 (2013: 13): Belgium, China, France, Great Britain, Italy, Canada, Portugal, Spain, South Korea, Taiwan, the Czech Republic, Turkey and the USA. New were pavilions from Switzerland and Tunisia. On behalf of the British pavilion, Alan Little, Association Director of British Textile Machinery Association: “This was our very first time at Techtexil. In all we were represented by 21 firms. Techtexil is a very rewarding trade fair.

We are very satisfied with the way the fair was organised and noted a very high visitor quality.”

After Germany, the biggest visitor nations were, in chronological order, Italy, France, Turkey, Great Britain, the Netherlands, USA, Spain, Poland, Switzerland and Belgium. Significantly more visitors came from the USA, Spain, East and North Europe and South Korea. “The industry in America is gaining significant momentum again, as shown not only by the number of visitors but also by the excellent booking situation for Techtexil North America Houston at the beginning of June”, said Michael Jänecke, Brand Manager, Technical Textiles & Textile Processing.

The increase in the number of international trade visitors was also noticed by many exhibitors. “Our stand had many visitors. Our colleagues were constantly talking to people. The public here on the stand was very international, not just from Europe, but from Asia and other regions, too. For us Techtexil is a very important platform, to maintain contacts and to keep our ear close to the market”, said Ulrike Schlenker of Karl Mayer Textilmaschinenfabrik GmbH (Germany). Dirk Kroll, Head of Internal & Online Communications at ContiTech (Germany), confirmed this saying, “Once again Techtexil has been a success in 2015. For us it is a leading trade fair and platform for communication with our customers. We had a large number of top-flight meetings, a good many of them with new potential customers. The visitors were well informed and asked precise questions about our products.”

## Exhibitors delighted with the addition of Hall 6.1

Over 140 exhibitors presented their innovations focusing on functional apparel textiles and smart textiles in Hall 6.1, which had been integrated into the fair for the first time this year. In addition to national pavilions from Portugal, South Korea and Tunisia, trade visitors could also see the Techtexil Innovation Award exhibition with eight award-winning developments.

Nike IHM Inc. (USA) was very pleased with its first presentation in Hall 6.1. “This was our first time at Techtexil. It was a very interesting show. The rate of visitors was very good. There was a good exchange of information, and we learned a great deal”, said Sales and Marketing Director Mike Barrett.

Dr Jan Zimmermann, Director, Forster Rohner Textile Innovations (Switzerland), also confirmed the numerous new contacts to be made in Hall 6.1: “For us, Techtexil is the most important trade fair to show a varied range of intelligent textile solutions. We were able to hold initial interviews in particular with many potential partners, as well as existing customers, and to launch new developments. Meetings and talks with research institutions also show us the international state of technology and provide an incentive for new joint ventures.”

Also to be seen in Hall 6.1 were nine young and innovative German companies on a joint stand sponsored by the Federal Ministry for Economic Affairs and Energy (Bundesministerium für Wirtschaft und Energie – BMWi). Christian Nagler, Technical Director of QMilch Deutschland GmbH, said he was very pleased with the number of visitors: “We had many regular customers on our stand, but a whole lot of new contacts, too. As part of the market launch for our QMilch fibre, we used the fair to select the market. We have founded a large number of partnerships and are thus building up a network.”

## Innovative Apparel Show back in 2017

Techtextil 2015 was supplemented by a comprehensive programme of events including the 18th Techtextil Symposium, the 13th Techtextil Innovation Award with eight award-winning products and the 13th ‘Textile Structures for New Building’ competition for students, which also honoured eight projects by young talents. All winning projects were to be seen in special shows in Halls 4.1 and 6.1, which proved to be highly popular among trade visitors.

Another magnet for visitors was the first ‘Innovative Apparel Show’, which attracted around 500 trade visitors per show to the catwalk on all four days of the fair. At the same time, the visitors were invited to vote for their favourite model. The winner was Maria Valdez from Mönchengladbach.

Prof Anne Schwarz-Pfeiffer of Hochschule Niederrhein, University of Applied Sciences, explained what makes the winning model so special: “Made of three-dimensional spacer fabrics, the dress represents a perfect symbiosis between interesting functional materials and creative joining technologies. Maria uses ultra-sound welding technology to develop visual and haptic design features for experimental fashion design.” It is planned to hold the Innovative Apparel Show again in 2017.

## New sequence of days for Techtextil 2017

Techtextil was extended by a day for the first time. The bulk of exhibitors are in favour of a fourth day. One of them, Simon Lee, President of Hysong Corporation (South Korea), said, “Techtextil is one of the most important fairs for us. This time, it was better than two years ago. We have welcomed the facts that it has been extended by one day. In this way we had more time for important meetings with customers.”

Thus, Techtextil 2017 will also last four days. At the request of many exhibitors, however, the sequence of days will change to Tuesday to Friday. “We see the new duration of the fair as a pioneering step for this future-oriented sector. After all, technical textiles rank among the few branches of industry with continuously positive economic perspectives. Based on increasing use in branches of industry where fibres used to be unheard of, a double-digit rate of growth is forecast for technical textiles, nonwovens and composites until 2017”, said Detlef Braun.

“Together with our expectation to welcome even more exhibitors and visitors to the fair in 2017, the Tuesday to Friday sequence of days offers a number of important advantages: more time for detailed discussions, the opportunity to visit Texprocess and the chance to use the weekend from the Friday”, adds Michael Jänecke. Thus, Techtextil 2017 will be held at the Frankfurt Fair and Exhibition Centre in Frankfurt am Main from 9 to 12 May 2017 (Tuesday to Friday).

## Conclusion

Techtextil once again managed to outdo its previous trade fair two years ago and in our opinion this high level will continue for many years to come. The reason is quite simple: technical textiles remain a big growth market which produces many new uses, on one hand a lot of creativity and self-drive from the industry, and on the other hand due to external necessity such as the desire for sustainability. Technical textiles are materials which offer significant advantages for a lot of uses and more and more of these potentials are tapped over time. In light of this growth the entire industry will be very happy to have a service provider as professional and innovate as Messe Frankfurt organise this important trade fair.

# techtextil & texprocess Impressions



Mrs. Brigitte Zypris, Parliamentary State Secretary in the Ministry of Trade, held the opening speech. Mrs. Zypris talked about the rising importance of technical textiles.



The opening ceremony has been done by Mrs. Zypris, Olaf Schmidt, Vice President Textiles & Textile Technologies of Messe Frankfurt, Elgar Straub, Managing Director VDMA garment and leather and Detlef Brown, member of the Management board of Messe Frankfurt.



All winners of Techtexsil Innovation Award 2015 and the Texprocess Award.



Every year the Walter Reimers foundation gives awards to young scientists. At Techtexsil the President of the foundation, Mr. Peter Dornier, handed the prizes to the winners.



Autefa Solutions presented the Automatic Needle Exchanger 2.0. Mrs. Söll told us, that the visitors were delighted about this machine, because it is a real jump in automation for the labour intensive needle exchange process.



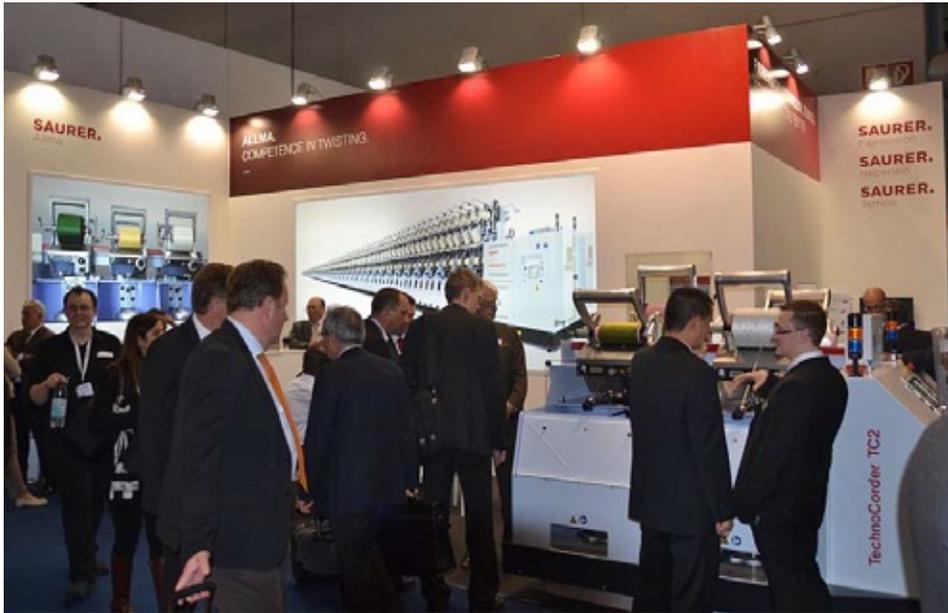
As always there were many visitors on the Dilo booth and discussed their requirements. A major focus of Dilo's machine concept is to improve operation efficiency, web quality and uniformity with positive effects on all staple fibre bonding processes.



The Trützschler companies focused on efficiency and quality and demonstrated various examples of Trützschler Nonwovens' complete line concepts and technologies out of one hand by multimedia and interactive presentations.



Oerlikon Manmade Fibers with its two brands – Oerlikon Barmag and Oerlikon Neumag – informed about numerous technologies and latest innovations for manufacturing industrial yarns, fibers and nonwovens. Heart of the booth was a Virtual Showroom in 3D.



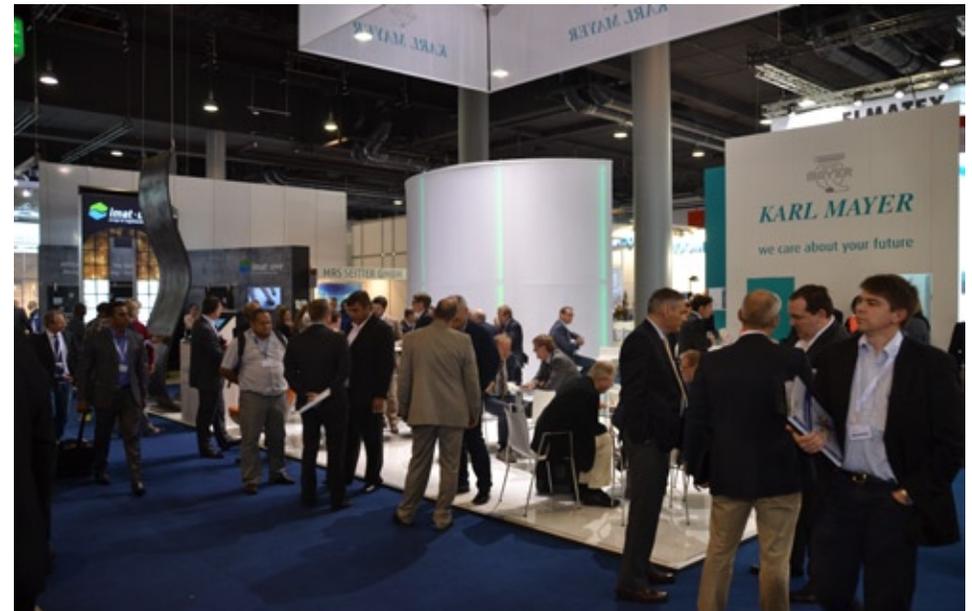
Saurer Allma showed the TechnoCorder TC2 for industrial yarns. This machine allows a very wide configuration with many parameters is characterized in particular by its high flexibility. Mr. Andrej Raisich demonstrated the easy handling of the machine.



Lindauer Dornier presented high-tech textiles for the protection of people and the environment such as functional textiles for solid matter, wet and air filtration as well as shading woven on its weaving rapier and air-jet weaving machines.



Communication and Press Relations Officer Mrs. Nadine Dairin and Product Manager Technical Textiles Veronika Stingl from Stäubli explained the weaving expert's solutions for producing technical textiles.



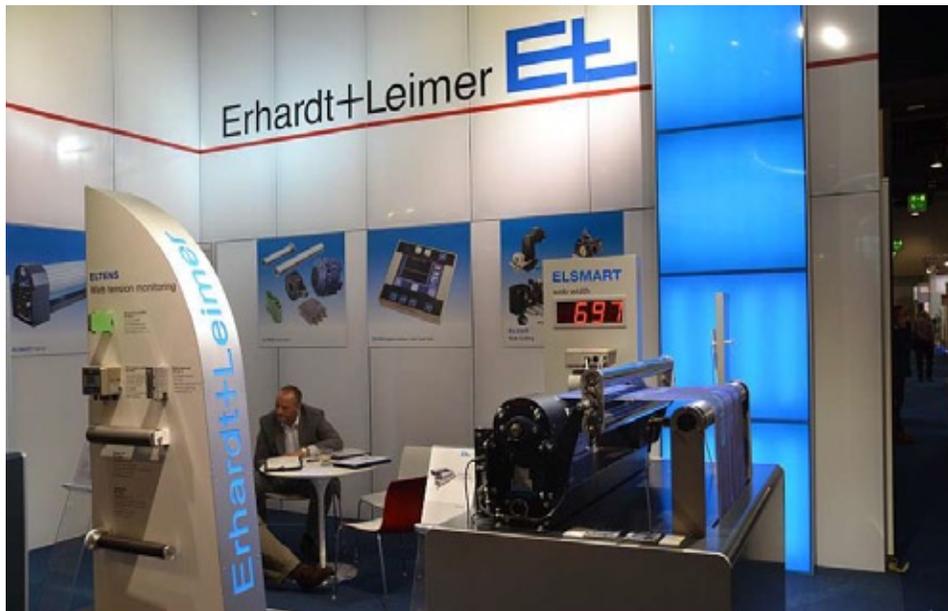
Karl Mayer presented warp-knitted spacer textiles and products made from CFRP like a bike. An attraction was the Swing rocking chair designed by the Paulsberg Design Studio. It is made from concrete with a reinforcing material made from a biaxial carbon-fibre textile.



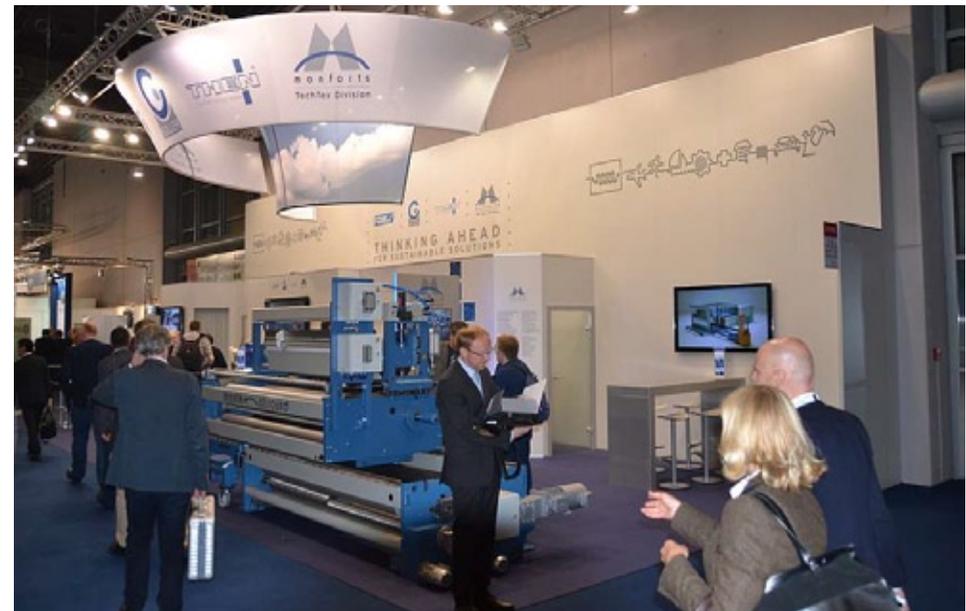
Groz-Beckert had the focus on their core competence and presented a range of high performance needles for different use in the field of tufting, sewing, knitting and weaving and demonstrated the unmatched quality of their needles and service concepts.



Brückner came to Techtextil with a new booth design. Brückner is very strong positioned in the finishing of technical textiles and offers solutions which address highest demands like drying with a temperature of more than 300 degree.



Erhardt + Leimer presented their segmented roller guider system ELSMART. The broad range of E+L products comprises tailored solutions for web guiding, web tension measurement and control, measuring and inspection tasks and print image monitoring.



Monforts presented the patented, new Montex Allround. This is a modular, interchangeable coating system for technical textiles which offers considerable benefits to manufacturers of coated technical textiles.



Thies was the visitors favorite in all questions of dyeing of technical textiles and informed about their latest innovations in sustainable dyeing machines.



Santex had the focus on coating and presented the Caviscat scatterer, which can be combined with other machines of the Cavitec brand to form complete coating and laminating solutions. It is suited for all kind of grit from fine powder to pellets of 2,000 µm.



Mahlo presented innovations in the areas of process control and automatic straightening systems for technical textiles and related industrial fields. On display at the show was the traversing control system Qualiscan QMS-12.



Stefanie Stoltzka from Legero and Dr. Marina Crnoja-Cosic from Lenzing presented the new Legero shoe made in parts from Tencel. Tencel is a sustainable material and both women want to develop a sustainable shoe complete made from Tencel.



Under the motto “Innovative. Global. Sustainable” the newly formed business group Freudenberg Performance Materials showed its solutions like “Advanced wound care”, “Waterproofing roofs”, “Acoustics Nonwovens in Cars “and Printed Interlinings.



Gerber showed their latest solutions in the field of IT and cutters. People were very interested in Gerber’s new Accumak v10 software. Today, AccuMark CAD systems are used by more than 15,000 customers, including many of the world’s leading fashion brands.



The Human Solutions group had one of the biggest booths. The main topic was 3D and all its advantages for the textile industry. Many Visitors tried the brand-new apps and tested the Fashion Cloud GoLive , which is fully tailored to the needs of the apparel industry.



Epson demonstrated an innovative solution for a global, true-colour workflow. Gerd Müller-Thomkins (DMI), Alexandra Reinhart (Basler), Jennifer Knäble (TV-Moderator) and Frank Schenk (Epson) explained the process. Jennifer wears the produced designer evening dress.

Register  
Soon



**Frank Henke**  
Global Vice President of Social & Environmental  
Affairs, adidas Group

**Helga Vanthournout**  
Expert consultant, Sustainability and  
Resource Productivity, McKinsey

**Paula Oliveira**  
Director, Interbrand

**Alfonso Saibene Canepa**  
Supply Chain and Sustainability Director,  
Canepa SpA

**Linda Keppinger**  
Global Materials Director, Nike Inc.

**Roger Yeh**  
President, Everest Textile Co Ltd

**Ajay Sardana**  
Vice President & Global Head-Customers,  
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## *Outstanding software solutions at Texprocess 2015*

**O**ver 13,300 trade visitors from 94 countries, an increase of ten percent over the previous edition, and 7,600 visitors from the concurrent Techtexsil came to Texprocess to discover the world's biggest range of new software solutions, processes and technologies for the garment and leather technology sector. The proportion of international visitors, i.e., from outside Germany, rose by 58 percent (2013: 52 percent) while the level of visitor satisfaction climbed two percentage points to 96 percent. Altogether, 273 exhibitors from 33 countries took part in the Leading International Trade Fair for Processing Textile and Flexible Materials in Frankfurt am Main from 4 to 7 May 2015 (2013: 270 exhibitors excluding 'Source it').

“Texprocess is clearly the leading fair for the sector. This year, our exhibitors were more pleased than ever before with the quality of visitors and the contacts made with their target groups. Numerous direct business transactions were concluded. We also saw impressive exhibition stands and fascinating product demonstrations.

Here at Texprocess, trade visitors were able to discover more innovations than ever before in the fields of design, cutting, sewing, joining, knitting, embroidery, finishing and textile printing”, said Detlef Braun, Member of the Executive Board of Messe Frankfurt. “Only Texprocess brings together the sector from all around the world, and only at Texprocess are the very latest developments on show.”

Around 7,600 guests from the concurrent Techtexil visited Texprocess. A total of 1,389 exhibitors from 52 countries (2013: 1,330 exhibitors from 48 countries[1]) and around 28,500 trade visitors from 102 nations (2013: 27,418 from 97 nations) attended the Leading International Trade Fair for Technical Textiles and Nonwovens. Together, the two fairs welcomed 1,662 exhibitors from 54 countries and almost 42,000 trade visitors from 116 nations.

## High level of satisfaction among international trade visitors and exhibitors

Visitor growth came primarily from outside Germany while the number of German visitors remained constant despite a railway strike lasting several days. After Germany, the top visitor nations were, in chronological order, Italy, Romania, Poland, Portugal, Turkey, France, Great Britain, Spain, Bulgaria and the Russian Federation. There was a significant increase in the number of trade visitors from Bangladesh, Bulgaria, Egypt, Poland, Portugal and Sri Lanka. In addition to the garment, filtration and leather industries, many international trade visitors from the automobile and furniture manufacturing sectors came to discover the numerous new products at Texprocess.

VDMA Garment and Leather Technology, the conceptual partner of Texprocess, sees the third edition of the Leading International Trade Fair as a positive signal for the sector. “We have never before experienced such a good atmosphere at Texprocess. Texprocess has significantly increased its lead as the foremost trade fair for a highly innovative sector”, said Elgar Straub, Managing Director, VDMA Garment and Leather Technology.

The estimates of the economic situation in the sector also improved noticeably: 88 percent of visitors (2013: 86 percent) and no less than 94 percent of exhibitors (2013: 80 percent) rated the current mood in the industry as satisfactory to good.

## Focus on 'Industrie 4.0' and sustainability

“No hardware without software’ was the main theme of Texprocess 2015. More and more companies are banking on modern IT solutions with 3D visualisation to adapt their designs, sewing and cutting technologies to individual customer requirements. At the same time, modern technologies, such as 3D design and virtual prototyping, help make processes more reliable, as well as automate and make them faster – an important prerequisite for the sustainable production of apparel and technical textiles. “Accordingly, the subjects of ‘Industrie 4.0’ and sustainability dominated Texprocess more than ever before”, commented Elgar Straub.

This was a good reason for us to have a very special look on the presented software solutions. A leading company in this area is the **Human Solutions Group** which are the companies Human Solutions, Assyst and AVM Solutions. Our highlight was the Fashion Cloud GoLive, which is fully tailored to the needs of the apparel industry. The Cloud is particularly useful for companies that have a decentralized structure, because vital information is always available for all those who need it, regardless of location.

Data, functions and software functionality are provided centrally, depending on the task. Productivity increases at each site and IT costs can be reduced at the same time. The Cloud can be used for real time access to cutting data and synchronizing the data from local CAD systems, PLM, piece placement, file conversion, order optimization and size & fit optimization as software services, automated data synchronization between PLM, ERP and mobile sales software, etc.

Furthermore the group presented a 3D world of its latest developments in digitalization and the virtualization of worksteps in the apparel industry. In the focus of the presentation were technological solutions that can be used for design, conception, product development and retail throughout the entire process chain of the apparel industry. The 3D software Vidya offers excellent simulations of fabric, cut piece and the human being. Vidya has established a very strong position in collection development, fulfilling complex visualization requirements. This means that companies can generate significant time and cost savings today in product development for up to two-thirds of all their model designs, e.g. in prototyping - not to mention the added value in other areas such as sales and trading. Feasibility studies have shown that the benefits of the optimally matched solutions of the Human Solutions Group enable earlier delivery of up to eight weeks. The 3D data is integrated into development, manufacturing and marketing via the management systems of Assyst and AVM.

“3D simplifies work processes enormously for every company in the apparel industry.

It enables a virtual product development, one that simulates the human being, the cut and the fabric in extremely high quality”, told us the managing director of Human Solutions Dr. Seidl.

Another leading company in this sector is **Gerber Technology**. Gerber was one of the first to introduce CAD Pattern Making Software for the apparel industry. Today, AccuMark CAD systems are used by more than 15,000 customers, including many of the world’s leading fashion brands. Gerber has a history of bringing forward innovations and technologies that optimize customers’ design and manufacturing processes.

Gerber’s latest software AccuMark ® V10 is an intelligent pattern design, grading, planning and marker making software solution. In addition to digital printing capabilities and other features that increase productivity throughout the system, AccuMark 10 also offers a fully integrated 3D solution for garment development and pattern making as an optional module.

The 3D solution is leveraging sophisticated 3D graphics and animation technology called Blender. The technology has been used widely in the animation, movie, video game and simulation industries. Its broad spectrum of modeling, texturing, lighting and simulation capabilities make it one of the most popular Open Source 3D graphics applications in the world.

“Virtual sampling is the answer to reducing time and cost in development and sample making,” said Mary McFadden, director of CAD product management with Gerber Technology. “Combined with our AccuMark 10 software, 3D technology makes it possible to reduce and even eliminate process steps and interactions among design, sample making and merchandising teams, to help designers optimize their time and speed up important feedback cycles. Our rapid development cycle will elevate AccuMark beyond current available systems.”

And Yvonne Heinen-Foudeh, Marketing and Communications Director Europe, Middle East, Africa of Gerber Technology, came to the following conclusion about Gerber’s participation at this years Texprocess:

“Definite market rewards go to the further integration of software and hardware solutions, of the kind we provide for example through our cut-ticket option for direct communication between sectional-image development – material-rig and cutting system within GERBERSuite”, said Yvonne Heinen-Foudeh, Marketing and Communications Director Europe, Middle East, Africa of Gerber Technology. “Texprocess went outstandingly well for us – without a pause across the whole four days.”

‘Industrie 4.0’ is closely linked with the subject of digitalisation in the sector. Innovative technologies are the key to complete integration and speeding-up of the entire process of shoe and garment manufacturing.

Gerd Müller-Thomkins, Managing Director, German Fashion Institute (DMI), added, “Given a market that is becoming ever more complex, the main task facing leading exporting countries today in the development and global production chain of clothing is more than ever one of speed and cost efficiency, while concurrently optimising products and processes. Texprocess has offered us the right platform and requisite attention to demonstrate innovative technology and applied ‘Industrie 4.0’ to a large international trade public on our joint exhibition stand with Epson and ColorDigital.”

## Trade-fair duo in line with the market’s demands

The trade-fair duo of Techtexsil and Texprocess was once again an unrivalled platform where manufacturers were able not only to make high-grade contacts to the whole textile and apparel sector but also to processors and users. The exhibitors of Texprocess agreed they were very pleased that the two events are held concurrently.

## Great response to the programme of events and exhibitions

Texprocess offered trade visitors and exhibitors a multi-faceted programme of events and exhibitions.

With a well-attended programme of lectures, the Texprocess Forum attracted numerous visitors, especially to the panel discussions on the Tuesday and Wednesday of the fair. Also extremely satisfied were the participants of the Texprocess Campus and the exhibitors of the IT@Texprocess area. The internationally renowned Texprocess Innovation Award was presented to four important innovations and developments for the third time.

Another magnet for visitors was the first ‘Innovative Apparel Show’, which combined technical textiles with innovative processing technologies. Besides a catwalk presentation, spectators had the chance to vote for their favourite models. The winner was Maria Valdez from Mönchengladbach. Prof Anne Schwarz-Pfeiffer of Hochschule Niederrhein, University of Applied Sciences, explained what makes the winning model so special: “Made of three-dimensional spacer fabrics, the dress represents a perfect symbiosis between interesting functional materials and creative joining technologies. Maria uses ultra-sound welding technology to develop visual and haptic design features for experimental fashion design.” It is planned to hold the Innovative Apparel Show again in 2017.

At the request of many exhibitors, Texprocess 2017 will be held on a new sequence of days (Tuesday to Friday) at the Frankfurt Fair and Exhibition Centre in Frankfurt am Main from 9 to 12 May 2017.



## *ShanghaiTex still important for business in China*

**T**he 17th ShanghaiTex International Exhibition on Textile Industry, still one of the world's most prestigious textile machinery exhibitions and an important biennial industry event in China, was successfully concluded on 18-June at Shanghai New International Expo Center, Pudong, Shanghai, PR China. In spite of the inclement weather with heavy rains in Shanghai during the show period, a large number of exhibitors and visitors from around the globe were participating. According to statistics, the 4-day Show (Jun 15 - 18) recorded 55,049 local and international trade visitors and buyers from 66 countries and regions, of which 6% were overseas buyers. If you compare the number of visitors with the 100,000 visitors of the last ITMA Asia 2014, you have to say, that this was really good.

The 17<sup>th</sup> ShanghaiTex International Exhibition on Textile Industry, still one of the world's most prestigious textile machinery exhibitions and an important biennial industry event in China, was successfully concluded on 18-June at Shanghai New International Expo Center, Pudong, Shanghai, PR China. In spite of the inclement weather with heavy rains in Shanghai during the show period, a large number of exhibitors and visitors from around the globe were participating.

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The Show has been widely supported by recurring and new exhibitors, over 1,200 exhibitors from 23 countries and regions presented their latest machinery, equipment, technology, as well as innovative ideas onsite.

In the spinning sector leading companies were among the exhibitors.

**Savio** was proud to presenting their new digital yarn layering technology (drumless) now available for Polar winding machines.

This technology completes their product portfolio and Savio now can offer a very complete Polar family, in order to meet all customers' requests in terms of flexibility and productivity. Savio exhibited a Polar 12 winding units machine especially studied for dyeing process and fine counts: 6 units were equipped with manual bobbing feeding (L version) and 6 units were equipped with manual package feeding (R version). This allowed customer to see the different configurations he could obtaining choosing Polar model. Extremely popular all over the markets, Savio Polar round magazine model has been recently developed to max 80 positions and gathers all the innovative solutions for the high quality demand, for both yarn and package output with any downstream process. This automatic winder summarizes all the expectations of the markets thanks to the various innovations in terms of technology, quality output, simplified maintenance and energy saving.

In terms of flexibility and productivity, the manual feeding winder is a reply to those spinning mills using ring spinning frames with different bobbin sizes, for different counts and fiber.

This winder can easily process different yarns and counts, allowing a very flexible production planning, since there is no rigid assignment of yarn allotments from ring spinning frames.

In Hall E1 **Rieter** presented the 4 end spinning technologies, as well as the 4 Rieter Com4® yarns and their application in fabrics and end products. Furthermore the new RSB-D 24 double-head autoleveller draw frame was shown.

This innovative machine achieves a high productivity of 2 x 1 100 m/min and features independent machine sides as well as autolevelling functions. Each head therefore produces exactly the same quality and productivity already known from the RSB-D 45 single-head draw frame. On the Rieter booth Mr. Reto Thom (Head Sales Rieter Machines & Systems) welcomed the VIP delegation of the China National Textile & Apparel Council (CNTAC), led by the Vice President Mr. Yang JiChao. Rieter's long-standing commitment to sustainability was highly commended by the VIP guests.

**Bräcker** presented the latest two new spinning rings redORBIT und OPAL®. The redORBIT and the OPAL® rings are the answers to the demands of today's fast paced spinning industry, where the spinning mills have to work with very tight cost control, whilst adapting quickly to the ever faster changing markets.

**Graf** provided the opportunity to visually demonstrate the precision of the well-proven Graf card clothings. The numerous visitors could thus be convinced of the high-quality products first-hand.

**Novibra**, a leader in spindle technology presented their wide range of spindles. The high-speed spindle and modern clamping crown CROCodoff attracted attention during the exhibition. As the quality demand for textile components is increasing faster than ever before, the products from Novibra presenting highest quality of spindle are becoming more and more popular in China.

**Suessen** presented the new compact spinning system EliTe®Advanced for short staple fibres and the Top Weighting Arm HP-GX 4010plus for roving frames. The outstanding features impressed the visitors. They were extremely interested in the possible savings in energy, consumables and maintenance effort as well as in the increased yarn production, lower ends-down rates and improved yarn quality parameters provided by the new system.

The **USTER** booth at ShanghaiTex was easily recognized by its distinctive tall funnel, guiding visitors to a red-carpeted world of quality testing and monitoring. The 196 square meter display was presented in the form of islands, each highlighting a particular application, with a total of 13 of USTER's latest instruments on view. From the USTER viewpoint the recent ShanghaiTex 2015 was a multi-faceted success: important contracts were concluded and new deals have been initiated.

For example a spinner in Shandong signed a contract for one USTER® AFIS PRO 2, one USTER® TESTER 5, one USTER® TENSOJET 4, one USTER® CLASSIMAT 5, one USTER® ZWEIGLE HL400 and a foreign fiber upgrade for the USTER® QUANTUM 3 yarn clearers on 300 winding positions. Besides concrete business there were also more visitors at the USTER booth, up 7% on the previous edition. Walter Kiechl, the new Chief Operating Officer of Uster Technologies in China, noted: "It was busy on our booth during the first three days of the show, with special interest in our fiber cleaning system.

The USTER® JOSSI VISION SHIELD attracted the high attention, and our statistics showed that more than a third of visitors expressed serious interest in this instrument – as well as in USTER’s Total Contamination Control, which was launched in 2014. The interest in the USTER® JOSSI VISION SHIELD and USTER’s Total Contamination Control concept is a good indication that contamination is a serious concern for spinning mills in China. Discussions with visitors and customers showed that our Total Contamination Control solution matches this trend.” The missing participation of the big weaving machinery manufacturers at Shanghaitex shows us that for some sectors Shanghaitex has lost its attractiveness.

The plan of most of the visitors specialising in warp knitting and warp preparation was to go and see what **KARL MAYER** was exhibiting first. The stand of this renowned manufacturer in the Knitting & Hosiery Machinery Zone in hall W1 was eye-catching, even from some distance away.

Huge lights made from textile-covered tubes poured light in an alternating play of colours onto an 600 m2 area where the machines, décor islands, partitioned areas for holding discussions, and meeting points were all located.

The stand, with its exclusive anthracite colour scheme stood out effectively from the mainly white stands of the other exhibitors – a futuristic design that was saying: high-tech systems are on show here.



Saurer welcomes you to ITMA 2015, Milan, Italy  
12 – 19 November 2015  
We are located in Hall 2, Booths B109 and B104

## SCHLAFHORST. MARKET AND INNOVATION LEADER.

The Saurer Group Business Unit Spinning brands Schlafhorst and Zinser, have been pioneers in the production of staple fibre yarns for over 100 years. The ring spinning specialist Zinser is leading the market with the widest range of ring spinning applications. The market and innovation leader Schlafhorst with the product brands Autocoro, BD and Autoconer completes the entire spinning line right up to the quality package. Thanks to the unique process competence, Schlafhorst & Zinser are the partners of choice for successful textile companies. With production in Germany, India and China as well as an international service and consultancy team, Schlafhorst & Zinser fulfill the mission: to make spinning mills across the globe more efficient, productive and economical.  
saurer.com

**SAURER.** **SAURER.**  
Schlafhorst Zinser

More specifically, KARL MAYER was showing in Shanghai its sizing technology for the warp preparation sector, the new TM 4 TS EL terry warp knitting machine for processing spun yarns, an HKS 4-M with an even better cost:benefit ratio than the previous model, and the MJ 59/1 S - a Jacquardtronic® Lace machine with a special bar configuration. They all demonstrated their efficiency during operation and convinced a large audience.

“As expected, there is a rather subdued demand from China but on the whole one can observe a great interest in Karl Mayer’s innovations and can see customers’ willingness to invest in new machines“, explained Oliver Mathews, Sales Vice President of the Warp Knitting Business Unit, being pleased with the successful start of the fair. Already on the first day of ShanghaiTex KARL MAYER managed to sell one of its newly developed machines”, said Oliver Mathews.

The exhibitors highly appreciated the professionalism and business value of ShanghaiTex2015, below are some testimonials from exhibitors:

Walter Kiechl, the new Chief Operating Officer of Uster Technologies in China, noted: “It was busy on our booth during the first three days of the show, with special interest in our fiber cleaning system. The USTER® JOSSI VISION SHIELD attracted the high attention, and our statistics showed that more than a third of visitors expressed serious interest in this instrument – as well as in USTER’s Total Contamination Control, which was launched in 2014.”

Oliver Mathews, Sales Vice President of the Warp Knitting Business Unit of KARL MAYER mentioned, “just on the first day our stand was well attended at all times. The visitors come from the important textile regions of Southeast Asia and the Middle East - i.e. from China and mainly from India, Indonesia, Korea and Vietnam. However, not only the number of visitors is o.k. but also the general mood at the trade fair”.

In order to promote in-depth communications between exhibitors and buyers, organizers of ShanghaiTex have launched tailor-made one-to-one business matching program this year. Many renowned buyers have participated, including Anta, QiaoDan, Decathlon, New Balance, C&A, H&M, to name a few. The business matching was highly appreciated by both exhibitors and buyers as they considered the meetings fruitful.

**The next ShanghaiTex will be in October 2017.**

# *Quantifiable advantages for textile companies.*

*E3 – triple added value.*

**E**<sub>3</sub> is the name of the new brand for Saurer's aggressive innovation philosophy. It was unveiled the first time at ITMA ASIA 2014. The E3 campaign means triple added value for customers with factors Energy, Economics and Ergonomics. The triple added value of Saurer products is an integral element of Saurer's innovation philosophy.

E3 also helps the customers of Schlafhorst to improve their competitiveness, increase sales and profit and capture new, lucrative market share.



E3 – TRIPLE ADDED VALUE.

E3 is being followed up by Schlafhorst in a consistent manner. In developing its products and services, the manufacturer of spinning and winding machines is gearing itself to the relevant targets of the spinning mills:

Energy, Economics, Ergonomics. The customer's yarn production should consume less energy, generate a higher economic return and make fewer demands on operators.

## Autocoro 8: double-digit cost reductions and productivity increases

Innovative technologies are pivotal to E3. The revolutionary single-drive technology of the Autocoro 8 is an example of this. The Autocoro 8 opened up new horizons for the rotor spinning mill with this innovation, smashing the barriers imposed by central belt drives and revolutionising rotor spinning.

The single drive is of supreme importance for energy efficiency. The rotor drive accounts for half of the energy consumed by conventional rotor spinning machines. As rotor speeds increase, energy consumption goes through the roof on belt-driven machines.

Mills that increase their productivity by increasing the speed on centrally driven rotor spinning machines are risking the economic efficiency of their production, and only the Autocoro 8 liberated spinning mills from this destructive predicament.

## Energy.

The Autocoro 8 is synonymous with ground-breaking efficiency. With its revolutionary single-drive technology and new energy-optimised motors the machine uses 20 % less energy than the most energy-efficient conventional belt machine at the same rotor speed. The saving is even greater at high rotor speeds. This has made double-digit cost reductions possible, thus economies on a scale that hasn't been seen in the industry for years.

The specific energy requirement per kilogram of yarn, e.g. for a weaving yarn of a count of Ne 20 (Nm 34) spun at a rotor speed of 160,000 rpm, is less than 1 kWh on the Autocoro 8. Since the savings are greater as the speed increases, this opens up new scope for companies to increase productivity and economy at the same time. It is simply a textile-technological matter of what speed the Autocoro 8 operates at.



With E3 Schlafhorst is helping spinning mills to utilise the potential of the innovative single-drive technologies on the Autocoro 8 to the full.

## Economics.

The Autocoro 8 achieves maximum efficiency, more profitable packages and other economic successes with innovative operating options such as Seamless Lot Change and PilotSpin, which eliminate idle running when changing lots and winding sample packages. Integrated piecing at the spinning position using SyncroPiecing reduces waiting times and increases machine efficiency.

Higher take-up speeds or spinning settings with more frequent piecing cycles thus become economically viable. DigiWinding packs at least 10 % more yarn onto each package with the same package diameter, normally signifying better machine utilisation and also 10 % less packaging, 10 % lower shipping costs and 10 % fewer logistical staff in the spinning mill. With double-digit productivity increases and cost reductions, the Autocoro 8 substantially increases the profitability of rotor spinning at a stroke. The competitiveness of Autocoro spinning mills is increased.

## Ergonomics.

On an automatic rotor spinning machine, ergonomics means lean management and lean operations above all. The symbol display at each individual spinning position communicates directly with the operators and accurately signals where and how they must intervene if a malfunction occurs.

This saves time and the need to walk down to the central operating unit at the machine head. The Autocoro 8 also executes smooth lot changes automatically without any manual intervention. When spinning several lots at once, the Autocoro 8 even detects incorrectly inserted tubes autonomously, so that human operating errors can be detected and corrected promptly.

The individual spinning position technology also cuts the amount of cleaning and servicing required, as the spinning positions on the Autocoro 8 can be serviced individually section by section without having to shut down the entire machine. Instead of having to make entire cleaning brigades available on a one-off basis to clean and service a complete machine, spinning mills can adapt their processes to lean maintenance, which saves up to 60 % of the servicing effort. A single spinning position can also be dismantled easily for servicing and overhauled conveniently and quickly in the workshop without bringing the entire machine production to a halt.

New servicing processes without production stoppages can be implemented. The intelligent flexibility of the Autocoro 8 cuts the planning outlay for operating sequences considerably, making operational management as a whole more ergonomic. This relieves the load on managers and facilitates new organisational structures. E3 is the new orientation aid on the market for companies when it is a question of operating textile machinery with the maximum efficiency in terms of energy, economics and operating processes.



## Country Focus:

by Oliver Schmidt

# Indonesia

**I**n this edition of our series ‘country focus’, we want to take a look at an interesting textile country: Indonesia. Over the past few years Indonesia has continuously shown a strong rate of economic growth over 5% and it is now on the list of countries that are expected to follow in the footsteps of China as drivers of the global economy, with their extremely high economic growth and young population. At least in the long term. Reason enough to take a closer look at their development with a focus on textiles and clothing.

Indonesia is a sovereign state in Southeast Asia and is the world’s fourth-most-populous country with an estimated population of over 255 million people. Das Land verteilt sich auf 17.508 Inseln. With 1,904,569 km<sup>2</sup> Indonesia is the 15th largest country in the world and shares land borders with Papua New Guinea, East Timor, and Malaysia. Other neighbouring countries include Singapore, the Philippines, Australia, Palau, and the Indian territory of the Andaman and Nicobar Islands. The capital Jakarta has 9.6 million inhabitants and is on the island Java, on which more than half (58%) of the country’s inhabitants live.

Indonesia consists of hundreds of distinct native ethnic and linguistic groups. The largest ethnic group are the Javanese. A shared identity has developed, defined by a national language, ethnic diversity, religious pluralism within a majority Muslim population, and a history of colonialism and rebellion against it. Indonesia's national motto, „Bhinneka Tunggal Ika“ („Unity in Diversity“), articulates the diversity that shapes the country. Despite its large population and densely populated regions, Indonesia has vast areas of wilderness that support the world's second highest level of biodiversity. The country has abundant natural resources, yet poverty remains widespread.

Indonesia's republican form of government includes an elected legislature and president. The president of Indonesia is the head of state and head of government, commander-in-chief of the Indonesian National Armed Forces, and the director of domestic governance, policy-making, and foreign affairs. The president appoints a council of ministers, who are not required to be elected members of the legislature. Indonesia has 34 provinces, of which five have Special Administrative status. Indonesia's declaration of independence was made on the 17th August 1945, on 27th December 1949, this was recognised by the Netherlands after a civil war. The country is a founding member of ASEAN and a member of the G-20 major economies.

In 2014 Joko „Jokowi“ Widodo DK followed on Susilo Bambang Yudhoyono (2004-2014) as the President of Indonesia. He was Governor of Jakarta from 2012 to 2014 and Mayor of Surakarta from 2005 to 2012.

And he is the first Indonesian president not to have emerged from the country's political elite or as an army general.

**N**ow let's take a look at the economy. In the GDP rankings for all member states of the United Nations and the World Bank, Indonesia is in 16th place with 889 billion USD and contributing 1.1 percent of global economic output, just ahead of the Netherlands and just behind Mexico. Indonesia is a highly developed country and is the largest economy in Southeast Asia and a member of the G-20 major economies. The country's per capita GDP in 2014 was 10,641 USD according to IMF figures. Here, Indonesia lies in 102nd place in IMF statistics, behind Namibia and ahead of Sri Lanka. Within the Asian countries, Indonesia is in 11th place.

The Gross Domestic Product (GDP) in Indonesia expanded 4.67 percent in the second quarter of 2015 over the same quarter of the previous year. GDP Annual Growth Rate in Indonesia averaged 5.38 percent from 2000 until 2015, reaching an all time high of 7.16 percent in the fourth quarter of 2004 and a record low of 1.56 percent in the fourth quarter of 2001.

According to the World Bank in the last three years the growth rate was constant on a high level (2012: 6,0%; 2013: 5,6%; 2014:5,0%). Indonesia belongs to the “Next Eleven”, a group of eleven countries identified by Goldman Sachs investment bank and economist Jim O'Neill in a research paper as having a high potential of becoming, along with the BRICs, among the world's largest economies in the 21st century.

And the country is part of the MINT economics, an acronym referring to the economies of Mexico, Indonesia, Nigeria, and Turkey and popularized once again by Jim O'Neill. In a column for Bloomberg View O'Neill wrote: "Policy makers and thinkers in the MINT countries have often asked me why I left them out of that first classification. Indonesians made the point with particular force. Over the years I've become accustomed to being told that the BRIC countries should have been the BRIICs all along, or maybe even the BIICs. Wasn't Indonesia's economic potential more compelling than Russia's? Despite the size of its relatively young population (a tremendous asset), I thought it unlikely that Indonesia would do enough on the economic-policy front to quickly realize that potential."

In the first quarter of 2015, year-on-year GDP grew 4.92 percent. In the second quarter it grew 4.6%, the lowest figure since 2009. Anything less than 6 per cent and Indonesia cannot absorb the new entrants to its labour market each year. The rupiah weakened further, with its exchange rate per US dollar, falling to Rp 14,000 in August 2015, the lowest level in the last 17 years. The year-on-year inflation in June 2015 was 7.26 percent, higher than in May (7.15 percent) and June last year (6.7 percent). According to World Trade Organization data, Indonesia was the 27th biggest exporting country in the world in 2013 with a share in world total exports of 0.47 percent. The WTO reports that in 2013 Indonesia exported goods worth a total of 183 billion USD (-3%), compared with imports worth 187 billion USD (-2%), thus generating a trade deficit of 4,000 million USD.

Indonesia's most important trading partner is Japan, which accounts for 14.8% of exports and 10.3% of imports, followed by China with 12.4% and 16.0% respectively. Other important export markets for Indonesian products are the European Union (28) (9.2%), Singapore (9.1%) and the United States (8.6%). Other major suppliers of imports to Indonesia are Singapore (13.7%), the European Union (28) (7.4%) and Malaysia (7.1%).

Indonesia has a mixed economy in which both the private sector and government play significant roles. The industry sector is the economy's largest and accounts for 46.4% of GDP (2012), this is followed by services (38.6%) and agriculture (14.4%). However, since 2012, the service sector has employed more people than other sectors, accounting for 48.9% of the total labour force, this has been followed by agriculture (38.6%) and industry (22.2%).

Furthermore the country has extensive natural resources, including crude oil, natural gas, tin, copper, and gold. Indonesia's major imports include machinery and equipment, chemicals, fuels, and foodstuffs, and the country's major export commodities include oil and gas, electrical appliances, plywood, rubber, and of course textiles. And this is our keyword to bring us to the textile industry. According to the WTO statistics from 2013, Indonesia is one of the top 15 textile exporting countries, currently in 12th place.

The industry, combining textiles, leather goods and footwear, employs about 1.5 million workers.

The country exported USD\$ 4,632 million (+2.0%) worth of textiles and USD\$ 7,692 million (2.2%) worth of clothing in 2013 and thus had a 1.5% share of worldwide textile exports. Textiles and clothing had a combined proportion of 6.9% of the country's total exports. The country exported USD\$ 4,725 million (+2.0%) worth of textiles and USD\$ 7,670 million (-0.3%) worth of clothing in 2014. But in 2011 textile exports grew by 16% and compared to this, the most recent development of exports doesn't look quite so good. Especially as many other countries have had high growth in the export of textiles over the past few years. For example, in 2013 exports grew by 23% in Vietnam, 10% in Thailand, 7% in Pakistan and even 24% in India.

So let's look a little more closely at development over the past few years. Even in 2012, the Indonesian textile industry was aiming high. Indo Intertex News wrote: „Indonesia's textile industry is expecting to benefit from the slowdown in the Chinese textile sector, which is going through a crisis after the Government lifted subsidies and incentives provided to the sector. The Chinese textile sector is also finding it difficult to find skilled workforce amid rising labor costs. This provides good opportunity for the Indonesian textile industry to capitalize on the situation and compete with China made goods, according to the Indonesian Textile Association (API - Asosiasi Pertekstilan Indonesia).” And Indonesia Investments had issued a road map for the further growth of the Indonesian textile economy in April 2013, which aimed for the impressive market share of 4-5% of global textile exports.

They went on to say: „About 1.80 percent of global demand for textiles and textile products is met by Indonesian textile exports according to Indonesia's Ministry of Industry. The value of the country's textile exports is estimated at USD \$12.6 billion. However - and in line with Indonesia's economic expansion - the ministry targets to meet four to five percent of overseas textile demand. The ministry asked the Indonesian Textile Association (API) to prepare a roadmap together for expansion.” However, possible difficulties have already been noticed in Indo Intertex News' report. They continued: „However, API said the high lending rates for the textile industry and the planned increase in electricity tariff from April this year are impediments for the sector's growth. It said the Government should find solutions to these two aspects for sustainability of the country's textile industry, in view of the fact that the country's textile sector can employ up to 15 percent of the total workforce.”

In fact, the Indonesian textile industry has not been able to maintain its boom over the past few years and has even underperformed when compared to other industries and to GDP growth. But first things first. Lets have a look at some numbers. The Indonesian textile industry comprises of around 2900 textile companies according to information from the administration. The industry is still concentrated in the western end near the capital Jakarta, but eastern and central Java are becoming increasingly important. According to information from the API, the companies produced USD\$ 20.6 billion worth of textiles and clothing in 2011 and USD\$ 20.2 billion in 2012. Exports fell from USD\$ 13.3 billion to USD\$ 12.6 billion and domestic sales grew from 7.4 billion to 7.6 billion.

The Bank of Indonesia has slightly different figures, which put the above findings into perspective. They give similar figures for exports in USD\$ but see a continual growth for the total output of the industry from Rp 143,385 trillion (IDR) to Rp 156,634 trillion (IDR) in 2012 (+4.27%) and Rp 172,423 trillion (IDR) in 2013 (+6.06%). One explanation for the decline in exports is provided by the decline of the rupiah compared with the US dollar in 2013, which after a four-year constant of around 9,000 rupiah per US dollar, shot up to 12,000 rupiah per US dollar. Currently the rupiah has an exchange rate of 14,321 rupiahs to the dollar.

But, in addition to this currency turbulence, the Indonesian textile and clothing industry has had to overcome numerous challenges over the last few years. Among them are raised wages due to the introduction of the minimum wage, which was raised in 2013 and 2014.

Furthermore costs for electricity were also risen in these years. This made textiles and garments more expensive. On the other hand imports of cheaper Chinese products of comparable quality rose in the last years. Domestic demand for textiles is also suffering due to increasing inflation and the decreasing spending that accompanies this.

There are further problems with infrastructure, raw materials and production methods.

Infrastructural problems are predominantly in the energy provision sector with sudden power cuts, and in logistics.

Many large connecting roads are in poor condition and ports already in the difficult location of an archipelago are dealing with further problems: the turnover rate is too slow.

With regard to raw materials, cotton is causing the most problems for the textile industry. Indonesia only has 9,000 hectares of land for the growing of cotton and thus it must import 99% of its cotton. Cotton is sourced from a range of countries – led by Brazil, the US and Australia – to be spun in Indonesia and then either exported as yarn or further processed into cloth and garments. Furthermore the supply chain for cotton is poorly organised among the textile companies as the import goes through intermediaries, predominantly from Malaysia, making the goods more expensive.

And with regard to furnishing companies with machines and production systems, despite lots of investment in the last few years, there are still rather a lot of companies who are using machines which are decades old and in need of major modernisation. The government has supported modernisation by providing financial incentives to help textile and clothing companies to invest in new machinery. Technological cooperation between local and foreign companies and the transfer of knowhow are also promoted.

On top of all of these problems there is the fact that other countries in South East Asia see a future in textiles and with lower wages and lower production costs; they are at an advantage for exports.

The best example here is Vietnam, which had 3.3% of global textile and clothing exports in 2014. Vietnam is simply implementing its Vision 2020 programme more consistently with 15% growth in exports and is considerably further along in trade agreements with the EU and US. The competition situation is good in the US, for example. While Indonesia was already in sixth place in the year 2000 for imports of textiles and clothing to the USA, Vietnam made the leap to third place in 2013 from the lower end of the league table. And the EU? After Free Trade Area negotiations between the EU and a group of ASEAN countries proved difficult, in December 2009, the EU decided to pursue negotiations towards free trade agreements with individual ASEAN countries, beginning with Singapore and followed by Malaysia and Vietnam. Indonesia currently enjoys trade preferences with the EU under the Generalised Scheme of Preferences (GSP).

Let's take another look at some important organisations, companies and events for the Indonesian textile industry. The Indonesian Textile Association (API) was established in Jakarta by a number of textile entrepreneurs on June 17th 1974. API is a textile organization covering the whole textile industry sector ranging from mainstream to downstream industry (the making of fiber and filament, texturising, spinning, weaving, knitting/embroidery, dyeing/printing/finishing, batik, garment, and other textile articles as well as trade of national textile products).

A large Indonesian garment maker is Pan Brothers, which manufactures brands such as Nike, North Face and Lacoste.

In 2014 the company had a revenue of 338.5 million US\$ and a net profit of 10.1 million US\$. Also in 2014 the firm had outlined plans for a \$70m, three-year expansion to help it tap the growing demand for garments in South-east Asia's emerging markets. The biggest company is Sritex who describe themselves as the leading vertically integrated textile & garment company in Southeast Asia. Sritex had sales of 589 million US\$ in 2014 and a total comprehensive income for the year of 44,7 million US\$.

A big fair for textiles and garments is the Inatex exhibition which comes together with Indo Intertext for textile machinery and Technitex for technical textiles and nonwovens. The next triple fair will be from 20th to 23rd April 2016 in Jakarta at the Jakarta International Expo.

It would be more accurate to say that the Indonesian textile industry is in crisis than that it is in the middle of a strong expansion. How do the solutions for giving the textile economy new strength and reaching the high goals look now? If you keep up with the Jakarta Post, there are a few signals. For a start, in May API chairman Ade Sudrajat announced investments of USD\$ 230 million in the textile industry. Some of this was provided by Pan Brothers. The rest was from foreign investors. On 26th August 2015, Pan Brothers inaugurated four new factories to be operated by its subsidiary, PT Eco Smart Garment Indonesia (ESGI). Pan Brothers' move to open multiple new factories received positive responses from both the central government as well as the regional government of Boyolali due to its prospective impact.

In his remarks, Minister of Industry, Mr Saleh Husin, expressed his support as well as his ministry's hope for other companies to follow in Pan Brothers' footsteps. Meanwhile, parliament member Ms Endang Srikarti Handayani pointed out the estimated 12,000 new jobs that have been created by the presence of the factories in addition to helping spur economic growth in the region.

So one solution is investment. A further protection. In July 2015 import duties on numerous goods, including clothing, were increased to make demand for domestic production more attractive again. And last but not least President Joko Widodo has reshuffled his cabinet to boost growth on 13th of August 2015.

But numerous other activities are at the head of the agenda. The Jakarta Post reported the following in July 2015: „The Industry Ministry is encouraging the TPT and footwear industries to spur on export sales. To that end, the ministry is providing various stimuli and incentives. First, it is offering additional incentives including the easing of obtaining raw materials for textiles and textile products through the lowering of government-borne duties (BMDTP) for importing some industrial materials. Second, it is providing ease of access to financing as mandated by Act No. 3/2014 regarding industry. Third, it is developing a buffer stock for the cotton industry. Fourth, it is undertaking inter-ministerial coordination in order to promote domestic trade. Fifth, it is carrying out efforts that directly promote exports.

In this regard, the ministry plans to open up opportunities for cooperation in the form of free trade agreements (FTA) with countries that buy Indonesian garments. With particular regard to FTAs, the Industry Ministry has confirmed the government's commitment to establishing partnerships that provide the maximum benefit to national industry.” If you weigh up the pros and cons, it still makes for a difficult prognosis for Indonesia as a textile country. On the one hand the country has committed itself to a high goal, to replace China as the leading nation for the export of textiles and clothing in 2030. It has excellent demographics and thus has good chances as a producer and on the market. On the other hand there is a wide range of problems that must be solved very quickly and sustainably to enable a continuously high level of growth. But if Indonesia wants to become the country for textiles, it must invest accordingly. In infrastructure, modern machines and training. And the country should consider another development and take relevant funding into consideration. With the quantities of newly created fibres, cotton is developing laterally, while quantities and demand for chemical fibres is growing ever stronger. And whether the future for a country that barely grows any of its own cotton and is dependent on imported cotton, could become more and more difficult as countries like Brazil, for example, build up a cotton supply chain, should at least be questioned. If you want to drive in the fast lane, you should perhaps focus on man-made fibres, because these are predicted to be in increasing demand and have rapid growth until 2030. The upcoming ITMA in Milan offers a good opportunity to talk with the global market leaders for chemical fibre production systems on their latest solutions, for example Oerlikon Man-Made Fibers.

# Textile research as a contribution to sustainable management of raw materials



## Making ideas and visions take flight

**In 2002 the National Sustainability Policy was formulated by the Federal Government. Under the heading, ‚Perspectives for Germany‘ tangible tasks and aims were defined to establish sustainable economic activity at all levels of society. Sustainability means no longer removing more resources from a system, than can be regenerated. The application of sustainable principles is necessary in order to ensure a decent quality of life for present and future generations.**

The Federal Government takes stock every 4 years. In progress reports it informs about continuing development in policies and measures. These encompass all relevant areas in society such as financial policy, mobility, consumption, management of natural resources, social policy and research. In this, research is accorded a predominant position. New research initiatives on issues of sustainability should not simply offer approaches to solving global challenges such as climate change and scarcity of energy and raw materials, but should also offer solutions to the over-exploitation of natural resources

At the same time these initiatives should ensure the future sustainability of the country through the use of new technologies and the dissemination of innovations. The Federal Government has defined as ‚future projects‘ topics, which lie at the heart of the development policies of the future. One of these topics describes the use of renewable raw materials as an alternative to oil.

The Institut für Textilchemie und Chemiefasern Denkendorf [Institute for Textile Chemistry and Chemical Fibres Denkendorf] has become involved in several research areas of this project for the future. Individual projects are cited to show how research can serve two purposes at once. The use of new, natural raw materials goes hand in hand with the development of new processes and facilities. Chitin and chitosan coating with ionic liquids: Chitin is a renewable raw material and is the most frequently employed biopolymer in the world. Some 40,000 tons of chitin are accumulated each year throughout the world as a waste product of the crab and shrimp fishing industry. Chitin and more particularly the chitosan derived from it have been used for several years now in scores of areas of industry.

## News from iTV Denkendorf

They are used in the food and pharmaceutical industries, as a fertiliser and in the treatment of sewage, to cite only a few examples.

The fact that chitin is insufficiently soluble has hitherto complicated its use in textile products. With the aid of the relatively new group of elements, the ionic liquids new possibilities for the technical processing of chitin are being created at the ITCF Denkendorf. The result is transparent, flexible, purely biological films, which are used as textile coatings. By using appropriate coagulation processes the structures and properties of these films can be targeted. In the first instance they represent a purely biological, sustainable alternative to the established coatings made as rule from plastics based on fossil oil.

### C-fibres from new material

For more than ten years research interest at the ITCF has been focussed on the development of carbon fibres. Together with improving physical specific values and making the production process more economically viable this research area is focussing on sustainability. Whereas the predominant benchmark for industry has hitherto been the use of polyacrylonitrile (PAN), in the last few years alternative reactants have also been under consideration. Therefore, various studies and research projects at the ITCF have been examining the use of lignin.

This purely vegetable substance is one of the most frequently found organic bonds. Lignin has already successfully been converted into a polymer, which can be spun; the first fibres have been spun from it to produce carbon fibres. These fibres are being optimised in further research projects.

These projects are targeted at producing technically high performance fibres with special properties from renewable raw materials.



Yarn and granulate of PLA

### Yarns and textiles from biopolymers

Polylactic acids (PLA) are synthetic polymers, which are completely biodegradable. Lactic acid as a starting product for these synthetic materials can be produced by the bio-technological

fermentation of carbohydrates (sugars and starches) or synthetically on the basis of petrochemical raw materials. Products made from PLA can thus be presented in a closed biological recycling cycle.

PLA can be 'compounded' for further technical processing, in other words, prepared with additives. This preparation produces PLA blends - synthetic materials, which are tailor-made for specific applications.

One specific compounding at the ITCF Denkendorf represents a first step in the production of bio-degradable agrotexiles. It should become possible to spin out the modified raw material in the melt spinning process and it should show further improved properties such as in crystallisation behaviour. In a second step it was possible to optimise the extrusion and winding process.

The result is a yarn which is safe to store and good to work with in further processes. In the first instance it was possible to process it as a prototype for a planar fabric and this has in the meantime been produced for commercial use by a partner in industry. These are merely few examples from ITCF Denkendorf's wide spectrum of research; they show that the protection of resources is not just a declaration of intent by the Government. Intention has already been put into practice - in research, in the economy and at the heart of society.

## Aid for people with movement disorders

With its industrial partner ITV develops orthoses to facilitate movement

**An innovative input orthosis is helping people with problems of neuron motor control and symptoms of paralysis to deal better with everyday situations and to participate in daily life. The Dynamics Competence Centre (DCC) Company and the Institut für Textil- und Verfahrenstechnik Denkendorf [Institute of Textile Technology and Process Engineering Denkendorf] (ITV) are developing the orthosis as part of a research project, which is being promoted by the Central Innovation Programme of the Federal Ministry for Economic Affairs and Energy.**

If the central nervous system is damaged, the posture of the skeletal muscles cannot be controlled. The consequence is improper motion and excessive movements or symptoms of paralysis. Almost two million people in Germany are affected.

## News from iTV Denkendorf

Hitherto orthopaedic technology has predominantly manufactured aids for contracture prophylaxis and for joint stabilisation in the form of aids for standing, walking, sitting and gripping. Corsets are intended to ensure at least that secondary spinal curvature does not become aggravated. The disadvantage of these orthoses is that they are inflexible and stiff and thus block movement, rather than promoting it. Moreover, they deprive joints of the variety of degrees of freedom, in particular the ability to make rotational movements. Therapists make the criticism that this leads to the degradation of the already weak musculature and increases the instability and the too high or too low muscle tension.

DCC and ITV have grasped these ideas and are developing flexible, receptor activating partial and whole body suits - known as input orthoses. These are dynamic orthoses, which by the targeted application of pressure on the nerve cells (mechanoreceptors) improve awareness of the surrounding area and of the person's own body. They support control of posture and movement by an interactive sensory feedback system. In this way the research project is creating a synergy effect between therapeutic and orthopaedic approaches.

The aim of the development project is to increase body perception. Thus, for example a child with severe muscular hypotonia can stand only with the help of another person. An appropriate back brace allows her to raise herself from the floor and to keep her balance while playing. This reinforced central stability is achieved by activated mechanoreceptors, which improve body perception.



Girl with severe muscular hypotonia. Thanks to foot orthoses and a back brace she can stand independently and has her hands free for play. (Photo: DCC)

With the aid of the input orthoses the patient actively changes the position of her body from the malposition to the physiological midway position. Individually coordinated (mechanically defined) highly elastic materials and seams have been developed for the orthoses for each patient. Wearer trials show that the reset forces of the highly elastic fabrics, which have been developed, in combination with the surface friction and the pattern construction, which is specific to each patient, can be individually adapted. Traction-extension measurements in the laboratory confirm these insights.

It is important that the orthosis is comfortable to wear, so that the patient accepts and uses the treatment. Therefore the highly elastic fabrics are to a great extent breathable and exchange heat in accordance with the surrounding conditions. Both the mechanical textile properties and the performance characteristics, such as wash resistance, abrasion resistance and compression stability, are important.

The current research results are positive: the input orthosis is suitable for children and adults without age restriction and improves the treatment of neuron-motor restrictions and diseases of the muscles and skeleton. The interplay of textile structure, pattern and manufacture results in the introduction of a successful medical device on to the market for medical devices and aids. The research project will be concluded at the end of 2015 and it is anticipated that the product will come on to the market at the end of 2016.

## Identifying emergency service personnel in an emergency situation even in poor visibility

**In an emergency situation it is imperative that emergency service personnel are highly visible. The tactical vests in current use are made visible only by passive light effects such as daylight-reflective or fluorescent surfaces. These work only in daylight, UV light or if an artificial light source is directed at them. In twilight, darkness or in dense smoke or mist this principle fails to work.**

Therefore, in collaboration with partners such as S-Gard, the protective clothing manufacturer, the Institute of Textile Technology and Process Engineering (ITV) in Denkendorf has developed a self-luminous protective vest. This vest makes it possible to identify the function of each person in a large scale operation even in poor visibility.

## News from iTV Denkendorf

For this purpose monochrome and multi-coloured light diodes are integrated directly into the protective clothing. In order to be able to activate and programme the LEDs quickly, a radio interface has been developed, which reacts quickly to changes in the operational situation. The LEDs and the textile bus system for data communication can be left in the vest when it is washed. Only the little electronics box containing the accumulators or batteries must be removed before washing and this takes only a slight movement of the hand. The LEDs operate for a minimum of 8 hours, before the accumulators must be changed.

S-Gard, the project partner, presented the developed demonstrators with great success at this year's Interschutz Trade Fair in Hanover.



New self-luminous tactical vest for fire service presented at Interschutz 2015

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