

industry including waste reduction, fewer wash cycles and the related reduction in environmental pollution. At the event, a book on digital printing and sustainability was also unveiled.

"Last year, Epson outlined its ten-year corporate vision in which we pledged to continue to boost the competitive advantage of our products and achieve growth in new domains by becoming a valued and indispensable partner. Textile printing is one such new domain as we believe the time for digital to replace analog is now. To this, Epson brings unique technological expertise including our original and proprietary Micro Piezo inkjet technology, which we have perfected for digital textile printing and includes our state-of-the-art PrecisionCore printheads," said global president of Seiko Epson Corp, Minoru Usui.

'Digital printing and sustainability' is the third of the Textile Solution Centre book series. It provides an in-depth examination of sustainability applied to the digital printing on textile sector. It starts with an analysis of the economic and cultural background which the technology is now a part – its fashion sector connections and the continually evolving market dynamics. The technological aspects of printing processes are analyzed along with the environmental impact of the technology and an outline of the trends in future developments.

"Inkjet printing is an irreplaceable technology in a textile production system which has to cope with the daily demand for flexibility and customization of production," said Pietro Roncoroni, president of the Textile Solution Centre and of For.Tex, a chemical company working in industrial textile market now part of the Epson Group.

"It is a question of understanding how much digital printing is consistent with the demand for reducing environmental impact and chemical safety that the customers and brands are imposing on textiles manufacturers and printers. Our mission is to study the dynamics and drivers of cultural and technological innovation.

The Textile Solution Centre was established to disseminate digital innovation culture among the textile printing processes. We do this through our training programs for different public sectors: both making our teaching available by running workshops in schools, businesses and research institutes that want the first-hand experience of the potential of inkjet printing and publishing the 'Beyond the Silk Road' book series," explained Roncoroni.

## Performance Days to present topic on thermal technologies

Performance Days, the pioneer in trends of the textile industry, is set to present the topic of thermal technologies at the Performance Forum during the upcoming edition of the popular trade fair.

The fair will present various innovations of fabrics and accessories in functional sportswear and will be held on November 8 and 9, 2017, in Munich, Germany.

Special attention is given to the fabrics equipped with heating elements at the expo.

They promise great potential for new business segments, while also presenting manufacturers with several challenges. The opportunities and risks are the subject of a lecture by attorney Dr. Alexander Duisberg of Bird&Bird LLP.

Lenzing (Tencel) has will show an innovative 3D knitting process in cooperation with the KnitWarm Company, which produces a particularly soft, skin friendly fabric with the Tencel conductive yarns.

The conductive yarns heat up when connected to an electrical source.

Small pushbutton controls close the circuit and connect the cable with the fabric. The fabric is washable and the conductive yarns are not subject to corrosion, but all power supplying cables must be removed prior to washing. The conductive fabric can be applied over the entire surface or sewn on as panels to cover specific areas.

Schoeller Textiles will present its latest E-Soft-Shell. The softshell material is coated with conductive yarn, and can even be custom-cut and supplied by the meter without losing any of its thermal functions. This makes the fabric interesting for all types of commercial applications, with savings on material in production.

Flying Textile's iWarm3.0 will also be a part of the show. In contrast to other systems, the iWarm3.0 has sensors that constantly monitor the inner temperature of apparel and then independently regulate the heating function so that a uniform temperature is attained. For this purpose, the system is controlled via an external app.

The user simply enters the desired temperature in the "system controls", i.e. the smartphone with the app, which then communicates via Bluetooth with the sensors and textile's heating elements.

at an exceptional production rate. At a maximum speed of 1,000 min<sup>-1</sup>, this new high-speed jacquard raschel machine can produce an average of 48 metres of this new upholstery fabric per hour. The machine gauge is E 18 and the working width is 130". Textured, tanglelaced polyester is used as the yarn.

## Messe Frankfurt intensifies its involvement in Africa

Messe Frankfurt is expanding its portfolio of textile trade fairs on the African continent. With its forthcoming cooperation with the two trade fairs Maroc in Mode and Maroc Sourcing, the global market leader for textile trade fairs is expanding its presence in North West Africa.

"In future, our network will extend across important textile regions in Africa and encompass the leading trade fairs on the emerging continent," explained Olaf Schmidt, Vice President Textiles & Textile Technologies at Messe Frankfurt. "With our commitment to Ethiopia, South Africa and, in future, Morocco, we have created excellent conditions to support the positive developments in Africa's textiles industry."

Demographic change, increasing urbanisation and shifts in economic forces – these global developments are promoting the growth of the African economy and having a significant impact on the textiles industry.

According to the UN Economic Report on Africa 2017, Africa has the fastest growing population. The number of working people on the African continent is also increasing rapidly. The largest working population (1.1 billion) in the world is predicted to be in Africa by 2034. These demographic changes are causing personal and business consumption to increase sharply, and this will primarily benefit regional economic markets.

## Uster unveils new textile fibre cleaning system

The Uster Group, a leading high-technology instrument developer of products for quality measurement and certification for the textile industry, has launched the new Uster Jossi Vision Shield fibre cleaning system. The cleaning system will help nonwoven manufacturers highest quality of textile products for medical, personal care, and hygiene applications.

Typically, fabrics for these sensitive applications are made by the spunlacing process, which starts with the fibre raw material in loose stock form. This is where it is crucial to remove any contaminants, before they reach the fabrication process. The Uster Jossi Vision Shield fibre cleaning system is the solution.

It provides maximum detection of contaminants with minimal waste. Located in the ideal position, after fine opening in the blowroom, the system uses latest-technology spectroscopes to pinpoint even the smallest particles of foreign matter in the cotton or man-made fibre raw material. Covering a much wider wavelength than conventional camera systems, Uster Jossi Vision Shield has the power to identify and remove fragments as fine as a single human hair. At this stage in the fibre preparation routine, detection is enhanced, since the fibre tufts have the optimum opening to prevent any small contaminants being hidden inside them.

Once identified, the foreign matter pieces are automatically ejected by the system, preventing contamination of the spunlaced fabric.

Some waste here is inevitable, but Uster Jossi Vision Shield controls this by continuously measuring the speed at which the fibre tufts pass through. It then uses precision valves to time each ejection perfectly, so that only the unwanted contaminant is removed, with an absolute minimum of good fibre being lost. The cost savings for the producer can be significant.

Uster Jossi Vision Shield gives spunlace producers the confidence and security to avoid quality issues in this demanding marketplace.

Its technology can cope with both IR and UV light ranges and it can reliably detect various types of foreign matter. All kind of synthetics and even the finest scraps of white polypropylene – otherwise difficult to pick out – are efficiently removed, using the Uster Jossi Magic Eye in tandem with the Uster Jossi Vision Shield.

## Epson Textile R-Evolution focuses on digitization

The Epson Textile R-Evolution focused on digitisation in the textiles industry. The conference threw light on the economic, organizational and ecological benefits in the

and online retailers, boutique operators as well as buyers and hotel industry players.

Hall 8.0 will be dedicated to bedding. Exhibitors include Irissette, Billerbeck and Frankenstolz as well as newcomers Mascioni and Dún or Fior. The area will also feature numerous international suppliers of bathroom textiles and accessories. The Asian premium area for household textiles can be found in hall 10.2. Yunus Textile Mills and Synergy Lifestyles are returning. New will be Vini Exports, which will also present its new bedding and table linen collection in hall 10.2.

Home collections by international fashion labels such as Joop Living or Marc O' Polo and Esprit (licensee Van Es Home) will be located in hall 11.0.

In addition, many key exhibitors will also be presenting their new products in lifestyle-oriented vignettes in hall 11.1. Among them: Schlossberg, Collection Stiegler and Curt Bauer, Kas International, Martinelli Ginetto, Sorema and Welspun.

Heimtextil is scheduled Jan. 9 to 12.

## Clerici Tessuto to show EVO yarn-made textiles at PV expo

Clerici Tessuto, a leading textile manufacturer working for the luxury sector, is set to present its first eco-sustainable textile collection featuring beautiful organic silk and wool fabrics, made with Italian firm Fulgar's EVO yarn at the Premiere Vision Paris expo. The global event for fashion professionals will be held from February 13 to 15, 2018.

Clerici Tessuto textile collection at the expo is GOTS certified and are next-generation high-tech fabrics. Clerici Tessuto has chosen the innovative EVO yarn, produced by the Italian company Fulgar, to offer high-end fabrics combining maximum performance with high durability and little impact on the environment, in line with Clerici Tessuto's commitment to sustainability.

EVO by Fulgar is a yarn made from castor oil - not for feeding plant that grows spontaneously. A totally renewable resource that does not require high amounts of water nor subtracts land for human or animal food.

Suitable for any textile application, EVO by Fulgar is ultra-light, super stretch and extremely breathable, dries quickly and does not need ironing, has thermal properties and natural bacteriostatic: a whole range of distinctive values

and benefits that ensure maximum comfort and unmatched performance, while retaining an intense eco-awareness. Stefano Bernasconi, managing director at Clerici Tessuto said, "The collaboration between Clerici Tessuto and Fulgar is a good example of product innovation, an important step on the way to ensuring environmentally responsible solutions for a sustainable present and a better future."

Alan Garosi, marketing manager at Fulgar said, "We are very pleased to have been chosen by Clerici Tessuto as a partner for its innovative and eco-sustainable collection. We hope that this partnership is the beginning of a long and fruitful collaboration."

## Karl Mayer launches raschel machine for upholstery fabrics

Karl Mayer, Germany's leading textile machine developer, has launched the new high-speed jacquard raschel machine, Rascheltronic, to produce stable upholstery fabrics. The textile companies are using the Rascheltronic machine to produce stretch and non-stretch textiles with functional zones, especially making it a hit among manufacturers of home textiles.

The model used is designated the RSJC 5/1 EL. The fabrics feature an attractive, graphic design with open-work constructions, and are extremely heavy for Rascheltronic fabrics. The final fabrics weigh between 330 and 400 g/m<sup>2</sup>, depending on the arrangement of the weft lapping. In some designs, the weft runs along the holes, which therefore remain open, and does not join any stitch wales. In other patterns, the ground bars with the weft add to the openings, which affects the appearance and characteristics of the textile. The warp-knitted textiles, with the partially filled-in openings, are denser and more stable in every direction. All the fabrics also have the appropriate abrasion resistance values for use as upholstery fabrics. The results of abrasion tests carried out by textile developers at Karl Mayer lie within the average range of the specific requirements of most manufacturers.

The performance of these durable warp-knitted fabrics has also attracted the attention of shoe fabric producers.

Further reasons for the success of the Rascheltronic include its high level of flexibility, since the EL feature enables different patterns to be worked easily one after the other



# World Textile News

## India's largest textile machinery show in 2017 from Dec 7

The largest textile machinery exhibition in India for the year 2017, ITMACH India, will be held in Gandhinagar, the capital of Gujarat state, from December 7 to 10. The exhibition, spread over 40,000 square metres of area, will host over 350 exhibitors from 10 countries showcasing excellence and innovation in textile machinery and technology.

Machinery from each segment of the textile industry, including spinning, weaving, knitting, dyeing, printing and processing, will be displayed during the show days. Participating companies include Saurer, LMW, Premier, Amsler, Rotorcraft, Jingwei, Pacific, Picanol, Itema, Staubli, Haijia, Rifa, A.T.E., Fong's, Perfect, Rimtex, Palod Himson, SPGPrints, Embee, Premier Evolvics and several others.

Serving as an accredited B2B platform for the textile industry that supports adoption of technology; enhance investment, building capacity and knowledge sharing, the four-day fair will see participants from several countries. Along with a strong contingent of Indian exhibitors, companies from Germany, Switzerland, Italy, Belgium, Netherland, Turkey, China, Taiwan, South Korea and Japan will present their latest technological innovations to visitors.

"Visitors will get to learn about the latest trends, developments and opportunities to share their knowledge and fine-tune their ideas. In short, the mega event will ensure that a plethora of business ideas are discussed, and dynamic business networking is facilitated," the organisers K and D ITMACH Expositions LLP said in a statement.

ITMACH India would present an ideal opportunity for investors and machinery marketers to interact for new investments within the country, the statement added.

## Heimtextil 2018 to shine spotlight on home textiles

A broad range of finished products are set for debut at Heimtextil come January.

And for the first time, the roster will include items for pets. The new "All About Pets" section will present textiles and accessories for four-legged companions.

"The number of exhibitors that include textiles for animals in their portfolio has grown steadily over a number of years," noted event organizer Messe Frankfurt. "Heimtextil is meeting this growing interest for the first time in January by providing an area for textiles and accessories for animals." Located in Galleria 0, this new section will feature an assortment of beds for dogs and cats, pillows, cozy blankets and more. Exhibitors will include Darling Little Place and Studio, Lex & Max and Volentis, among others.

General home textiles will be shown in Halls 8 to 11, where nearly 1,500 international manufacturers will present their new collections from the bed, bath and table segments across nine hall levels.

"This means that Heimtextil now offers the world's largest selection of bed linen and bedding, mattresses, bathroom textiles and table and kitchen linen," said Meike Kern, director Heimtextil/Messe Frankfurt.

The products aim to service bedding dealers, wholesalers

providers like hotels, design centers and training institutes. Brands from Italy and other countries will also participate in the industrial park, as per Yazdani. He added that the private sector of Iran is responsible for developing the manufacturing and trading spaces, while the public sector will develop its infrastructure. About 3,000 to 5,000 square metres of area is dedicated to each of the service and production unit. Close to 30 trillion rials (\$791.139 million) will be invested to develop an area of 1 million square metres, said Yazdani. Investors from countries like China, Italy, Turkey and South Korea have shown their interest in the ongoing project.

The apparel industry has the potential to create the highest number of jobs, said Hamid Kalantari, deputy minister of cooperatives, labor and social welfare. The MoU was signed between Iran's Small Industries and Industrial Parks Organization, Cooperative Investment Guarantee Fund, ministry of cooperatives, labor and social welfare, Iran's Clothing Association, and Tose'e Ta'avon Bank

## iran textile industry spotlight

Iran has a rich textile history. Archeologists can date the country's textile production back at least 6,500 years. In those early years Persia produced tapestries and carpets for domestic and international markets, which were particularly renowned for their elaborate designs and colors. To this day, Persian carpets are still considered among the most beautiful and well-crafted in the world; many are also regarded as artistic works and showcased in museums and private collections.

Not only is the textile industry an important part of Iranian history and culture, it also plays a key role in the country's economy. Iran is the 36th biggest exporter of textile products in the world. Today, the industry represents 13 percent of all industrial jobs in Iran, most of them concentrated in carpet production.

Iranian companies produce a range of textile products, including carpets, blankets, knitwear and fabrics, using processes such as dyeing, weaving, spinning and printing. Most fabrics are made with domestically produced cotton, although in recent years an increasing amount of cotton is being imported. This low cost of ingredient sourcing provides the country a comparative advantage in textile production. Another advantage for the industry is low labor costs. A study published in 2011 in the Iranian Economic Review found that worker pay in the textile industry was more than 7 percent lower than the average wage for other industries. In part due to these benefits, as well as the strong appetite for Iranian carpets around the world, Iran is a major carpet producer

and exporter, making over \$300 million from exports in 2015.

The industry, however, is not without challenges. Ageing machinery and a dependence on the import of foreign machines and technology caused the industry to suffer throughout the twentieth century. The country also saw a significant drop in foreign investment after the Iranian revolution. Since then, sanctions have had a significant impact on the Iranian textile industry - particularly after President Bill Clinton restricted all trade with the country in 1997 and again years later when President Barack Obama restricted trade via sanctions, including ban on carpets of Iranian origin from entering the U.S. As a result, sales and employment in that sector decreased.

Since the signing of the JPCOA and subsequent lifting of sanctions in January 2016, the industry has seen a revival. The country is attracting foreign investors, and production has been stimulated by a renewed demand coming from the U.S. and other Western countries. The industry is also buffeted by an improvement in living standards; with more money in their pockets, Iranians are spending more money on clothes. The government is further backing the industry. The Ministry of Industries, Mining and Trade has recently announced a plan to invest in a new industrial town focused on apparel manufacturing in Tehran's suburbs.

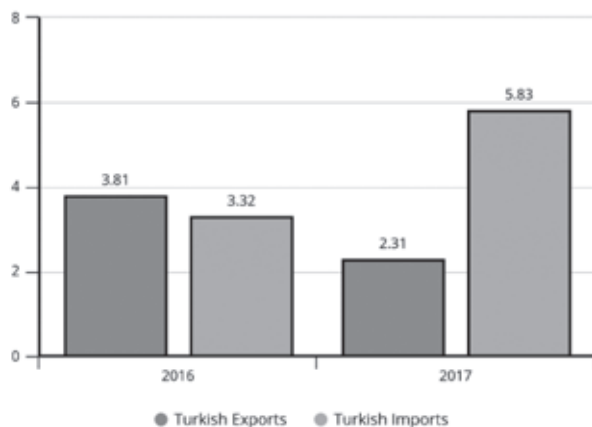
## Turkish apparel brand LCW makes Iran production hub

Turkish firm LC Waikiki (LCW) is the first major foreign apparel manufacturer to officially start cooperation with Iranian garment players. LCW negotiated with Iranian authorities for eight months and surveyed over 70 units. The first phase will see LCW place orders with select Iranian apparel makers worth around 20 million euros in the next year and a half. Shortlisted Iranian company Ronak Jean has received LCW orders and has been making clothes for the Turkish brand labeled 'Made in Iran' for the past few months, according to a report in an Iranian English-language business daily. The initiative is expected to create about 5,000 jobs in Iran. Most of the apparel ordered are produced in Iran for export and only a small share is for domestic sale, director general of textile and clothing department at the ministry of industries, mining and trade Afsaneh Mehrabi said.

Mehrabi added that planning and implementation of next phases depend on the result and success of the first phase, but the ultimate goal is the establishment of an independent apparel factory in Iran by LC Waikiki. LC Waikiki was launched in France in 1988. After 1997, it operated as a Turkish brand.

list accordingly throughout the year. So what the ministers sign in December is open to change. Trade between Iran and Turkey was further facilitated after the governors of the two countries' central banks signed an agreement on October 19 to use their national currencies to do business with each other. As per the agreement, the banks have allocated 5 billion lira (\$1.4 billion) and its equivalent in rial to their respective agent banks to be used as letters of credit with a repayment period of one year for both countries' traders. The agreement will considerably reduce the costs for both countries' traders, as they will no longer need to use intermediate currencies since the specified agent banks are allowed to finance bilateral trading via international payment tools such as letters of credit and remittances in their local currency. Bank Melli Iran and Turkey's Ziraat Bank have been determined as agent banks to manage the allocated funds and issue letters of credit.

**Iran-Turkey Trade  
(billion USD)**



Turkish Statistical Institute  
BEAM [venngage.com/beam](http://venngage.com/beam)

## Iran Unveils Carpet Woven for 2018 FIFA World Cup

A rug woven by an Iranian artist, which is dedicated to the 2018 FIFA World Cup in Russia, has been unveiled in Iran.

The rug woven by Hossein Kazemi Hamed has been unveiled in the Iranian northwestern city of Tabriz in East Azarbaijan Province. According to a Farsi report by the Young Journalists Club, the Iranian artist had sent similar rugs to the host countries of the five previous rounds of FIFA World Cup as well.

## Iran H1 Hand-Woven Carpet Exports Up 13%

More than \$150 million worth of hand-woven carpets were exported from Iran during the first half of the current Iranian year (March 21-Sept. 22), registering a 13% rise compared with the corresponding period of last year, the head of Iran's National Carpet Center said. "We are looking to add new markets, including China, South Africa as well as Chile and Brazil in South America, to the existing ones. The Chinese market is very significant for us in that the country was itself one of our biggest rivals and now is among our top 20 customers of the product," Hamid Kargar said. "Last year, exports amounted to \$359 million. With about \$90 million worth of purchases, the US was the main importer of Persian carpets over the period. Persian hand-woven carpets are exported to 80 countries," he added.

Kargar explained that exports to the US have been gaining momentum after five to six years of "zero" exports to the country, due to the ban imposed on the import of Iranian carpets in September 2010. International nuclear-related sanctions against trade with Iran were lifted in January 2016, as part of a landmark nuclear deal the country signed with world powers the year before. In exchange, Iran agreed to limit the scope of its nuclear program. According to Kargar, direct exports from Iran to the US resumed in February 2016. "Iran is the biggest exporter of hand-woven carpet with a 30% share in global markets," Kargar told Financial Tribune at the 26th Iran Handmade Carpet Exhibition held in Tehran's International Permanent Fairgrounds in late August.

## First apparel industrial park to come up in Iran

Iran is slated to get its first ever apparel industrial park which will be set up by the public, private and cooperative sectors of the country. The park is being established with an aim to meet domestic demand and boost exports. A memorandum of understanding (MoU) has already been signed between various parties of the country in this regard.

The industrial park will come up near Imam Khomeini International Airport in Tehran and will be spread over an area of 190 hectares. It will be extendable to 300 hectares, said an Iranian news agency quoting Ali Yazdani, Chairman of Iran's Small Industries and Industrial Parks Organization during the MoU signing ceremony. The first phase of the park has already been designed and the development has started for the second phase. It will have around 300 apparel manufacturing units in addition to other service



# Iran Textile News

## Iran-Turkey Trade Sees 14% Growth

Trade between Iran and Turkey stood at \$8.15 billion during nine months since the beginning of 2017, according to the latest statistics released by the Turkish Statistical Institute.

The figure indicates a 14.24% rise compared to same period of the preceding year, according to numbers released by the Turkish Statistical Institute.

Iran's exports during the nine months amounted to around \$5.84 billion, 75.7% more year over year. In return, Turkey exported \$2.31 billion worth of goods, compared to \$3.81 billion in the corresponding period of last year, indicating about 65% decline.

In September, the neighboring countries exchanged more than \$899 million worth of commodities, of which Turkey accounted for about \$218 million, down from \$456.21 million in September 2016; and Iran accounted for the remainder \$681 million, up from \$358.57 million in the same month of last year.

A review of the past six years ending March 20, 2017 shows Iran's trade with Turkey peaked in the last Iranian fiscal year (March 2016-17) at \$5.92 billion

Last Iranian year, Iran exported \$3.19 billion worth of commodities to the neighbor, registering a staggering 143.19% increase compared to the year before. This is while Iran's imports from Turkey stood at \$2.72 billion, going down by 1.08% year-on-year.

Commercial exchanges between the two countries reached their lowest level during the six-year period in the fiscal 2015-16 at \$4.07 billion, when Iran's exports stood at \$1.31 billion,

down by 33.51% YOY, as imports from Turkey amounted to \$2.75 billion, down 21.81% YOY.

Iran and Turkey are signatories to a preferential trade agreement since 2014. According to the head of Iran-Turkey Studies Center and Secretary-General of the two countries' commercial council, Jalal Ebrahimi, the two sides have 265 categories of goods under their PTA, of which Iran accounts for 140 and Turkey for 125 categories in the list.

Turkey's Minister of Economic Affairs Nihat Zeybekçi and Iran's Minister of Industries, Mines and Trade Mohammad Shariatmadari plan to add 60 categories of goods each to their preferential trade agreement in December, Ebrahimi told the Financial Tribune last week. The lion's share of what Iran is going to add to the agreement is petrochemical products.

Turkey has requested to add vehicle spare parts, electric and mechanical machinery and equipment, aluminum products, iron and cast iron products, steel, construction stones, apparel and textile and cellulose products like paper, cardboard and wooden products, among other things, to the list.

Iran intends to add 30 categories of petrochemical products, polyester, copper products like cables, aluminum, ferromolybdenum and other iron alloys, direct reduced iron, pellets, cold-rolled coil, steel bars, zinc and its artifacts, floorings and synthetic fibers in return.

Specialized commissions from the two countries affiliated with Iran's Ministry of Industries and Turkey's Ministry of Economic Affairs will regularly study the effect of PTA on their respective markets and add or omit goods to/from the

**Eltex of Sweden AB** ([www.eltex.se](http://www.eltex.se))

Eltex is a leading company in weft and yarn supervision. The core activity is to develop yarn break sensors and tension monitors together with OEM customers. Close cooperation between Eltex and the machine makers is essential for the business. This is the basis for the market leading position the company has today. Knowledge of yarn break detection and tension monitoring, combined with the machine makers know-how ensures that the sensors have the highest performance and quality.

**ES Automatex Solution AB** ([www.esautomatex.com](http://www.esautomatex.com))

We specialize in automated machines for the home textile industry. We promote new machines from our partner Automatex Inc. in Canada for this industry segment. Today, we can offer solutions from full-scale production to small specialized production. We also trade with refurbished automatic sewing machines from AKAB of Sweden AB. This offers full flexibility regarding customer requests and requirements, tailored to their investment budget.

**Eton Systems AB** ([www.etonsystems.com](http://www.etonsystems.com))

Eton Systems globally provides material handling systems consisting of individually addressable product carriers, automatically finding its way to the correct operation. The systems are designed to eliminate manual transportation and minimize handling, radically increasing the time for adding value to customer's products. Eton Systems is the innovator and world's leading supplier of the Unit Production System (UPS), a productivity and management system developed specifically for use in the apparel, home textile and light product industries.

**IRO AB** ([www.iroab.com](http://www.iroab.com))

IRO is the market leader in the development and production of yarn feeding equipment, manufacturing and supplying a comprehensive range of yarn feeders and accessories for the textile industry. IRO products are developed with the most advanced technologies and resources, which coupled with unrivalled expertise and experience ensures the production of high quality products at a competitive price. IRO feeders utilize the latest high-tech "Permanent Magnet Motor" technology, which IRO offers as a unique, customized solution for applications also outside of the textile industry, competitively priced even in small quantities.

**ACG Kinna Automatic AB** ([www.kinnaautomatic.se](http://www.kinnaautomatic.se))

We are a leading manufacturer of textile machinery for fully automated production lines for quilts, pillows and bed sets. From fabrics to finished packed product. The company's goal is to increase profits for our customer through machines and production lines that make the process more efficient and to simplify the daily work for our customers. ACG Kinna Automatic offers a wide range of tailor made machinery and production lines, mainly for the home textile industry, worldwide.

**Svegea of Sweden AB** ([www.svegea.se](http://www.svegea.se))

Svegea offers the most complete line of Collarett cutters, Slitting machines and Bias Cutting range. The machines are world renowned for their ability to produce the highest quality trim at top speeds. The Svegea product range provides solutions for all knits, t-shirts, children's wear, bias/ waistband and home textile manufacturers.

**Texo AB** ([www.texo.se](http://www.texo.se))

TEXO is one of the world's leading manufacturers of weaving looms for production of Paper Machine Clothing and Industrial Technical Fabrics. More than two thirds of the looms for the paper industry have been supplied by TEXO. The company also provides customers with rebuilds and retrofits of existing looms, which helps them increase productivity and meet their quality demands. TEXO operates on the global market with offices in Europe, Asia-Pacific & the Americas.

**For more information or to book an interview with one of the participating companies, contact:**

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More information about the Swedish Textile Machinery Association can be found at: [www.tmas.se](http://www.tmas.se) or [www.tmas.se/vi/](http://www.tmas.se/vi/)

**TMAS, Textile Machinery Association of Sweden**, initiates and coordinates joint activities such as networking meetings and other events designed to provide export opportunities for member companies. The association represents and supports companies in major international exhibitions and events, distribute market information and serve as a platform for exchange of ideas and experiences. TMAS was founded in 1997 and consists of nine members: Eltex of Sweden AB, IRO AB, ACG Nyström AB, Texo AB, Svegea of Sweden AB, Kinna Automatic AB, ES Automatex, Solution AB, Eton Systems AB and Baldwin Jimek AB.



*The Vietnamese textile industry has all the right pre-requisites to sustain healthy, long-term growth. "The Vietnamese people are resilient and hardworking, with many who are educated and conversant in English. The country has a long history of overcoming challenges and adapting to change," said Mr. Mikael Åremann.*

*"Indeed, workers are increasing their skills with every year, and companies are fast realizing that progress that took several years in China is now taking much shorter time in Vietnam," Mr. Åremann continued.*

The challenges and demands of Industry 4.0 are also transforming the global textile industry. Therefore, environmental and social sustainability, and the importance of smart solutions is of the highest priority for TMAS companies. The goal of all member companies is always to achieve better performance and efficiency while maintaining the highest levels of quality. TMAS is bringing world-leading Swedish innovative expertise of smart industries into Vietnam, which will make Vietnam highly competitive globally.

*"TMAS is reflective of Sweden's reputation for reliability, quality and world leading technology. R&D is important and TMAS companies have a solid track record for ensuring their customers achieve long-term profitability and growth. Building smart, sustainable solutions is in our DNA, and we will definitely meet the drive for innovation in Vietnam," said Mrs. Therese Premler-Andersson.*

It has been estimated production in the Vietnamese textile and clothing industry will increase by an average of 12-14% between 2016 -2020. Export is expected to reach US\$ 50 billion by 2020, rising from US\$ 28 billion in 2016.

TMAS is certain that the time is right for a Swedish-Vietnamese collaboration that will lead to a win-win both now and well into the future. The result is an investment in the Vietnamese market through local TMAS representation.

The objective is to provide relevant and precise support and service to TMAS customers. Here, Mr. Tran, with his local market experience and insights gathered from in-depth research and analysis, will prove to be a real asset to TMAS customers.

*"I am excited about the tremendous possibilities open to the Vietnamese textile industry, especially by having TMAS as a partner. I am convinced that each and every one of the member companies has a vital role to play in ensuring the growth and success of textile companies here in Vietnam," said Mr. Tran. "I look forward to enabling TMAS to be a key driver of success for Vietnam, and through Vietnam to the region, and the world."* Mr. Tran concluded.

**The Vietnamese textile industry is naturally eager to capitalize on the textile boom. The 17<sup>th</sup> Vietnam International Textile and Garment Industry Exhibition, VTG, is designed to portray this positive business potential. This is also where the world can experience the reliable quality and innovative heritage of Sweden through Swedish textile machinery and accessories manufacturers. The textile machinery exhibition will be**

**held in in Saigon Exhibition and Convention Centre 22-25 November 2017 in Ho Chi Minh City. Visit TMAS at stand 637.**

#### **TMAS members**

9 companies are members of TMAS, each in the forefront of their own specific segment, with a long successful history and a passion for textile manufacturing.

##### **ACG Nyström AB** ([www.acgnystrom.se](http://www.acgnystrom.se))

We offer solutions within cutting, sewing, embroidery, garment printing and product life management for textile products. The product range extends from the simplest needle to large complex machines for industry. The company often has a unique role as the link between the world's leading equipment manufacturers and customers in the important development process.

##### **Baldwin Jimek AB** ([www.baldwintech.com](http://www.baldwintech.com))

Baldwin's areas of expertise are SMART Process Automation Solutions with focus on: Spray Applications Systems, Impregnation and Remoistening Systems, Fluid Treatment including Filtration, and UV and Infrared / Hot Air technology. We offer our customers a broad range of market-leading technologies, products and systems that guarantee and enhance the quality of industrial produced products with a focus on improving the economic and environmental efficiency of the production process.



www.tmas.se

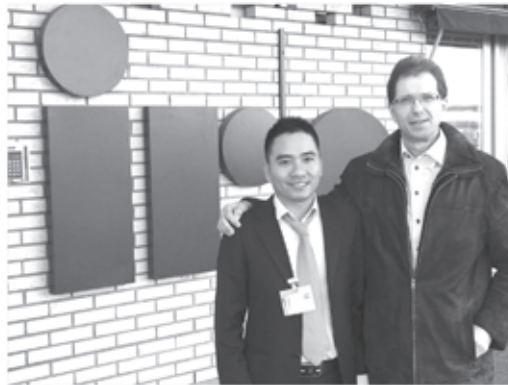


Press release November 2017

## Textile Machinery Association of Sweden is ready to weave success and growth in Vietnam.

TMAS, Textile Machinery Association of Sweden, has established a local office in the 7<sup>th</sup> district of Ho Chi Minh City. Heading the office is Mr. Tran Phuoc Thanh, Business Development Representative for TMAS in Vietnam.

Mr. Tran comes with experience from the Vietnam National Textile and Garment Group. He has also gathered insights into the industry and undergone training in Sweden, from the Swedish textile machinery makers and their customers. Mr. Tran is strategically positioned to market Swedish machinery as well as drive sales and support for TMAS companies in Vietnam.



*Mr Thanh Tran Phuoc, Business Development Manager TMAS Vietnam, Mr Mikael Äremann, General Manager IRO AB and President of TMAS*

*"TMAS is positioned for the long-term in Vietnam. The country is emerging as the new global production center of textile products. We want to be part of this exciting growth and expansion. We believe we have a lot to offer in terms of our knowledge, expertise and innovative technology," said Mr. Mikael Äremann, president, TMAS.*

TMAS helps support member companies to compete in the global textile industry with leading edge production equipment and technology. TMAS member companies are all well-established leaders in various areas of the textile manufacturing process. The companies offer a unique combination of production expertise, textile manufacturing knowledge, and superior products and services.

The textile industry is growing dramatically and Vietnam has been identified as a hub for the Asian textile industry in the next decade. The main reason for this is the increasing cost levels in China, causing many textile and garment brands to relocate in Vietnam. In fact, TMAS companies in Sweden have already started realizing a notable increase in demand for their products and services.

*"TMAS companies are the perfect match for the Vietnamese textile industry. We are a relatively small, tight-knit group of companies, each specializing in a different key area along the manufacturing process. Our size allows us to be flexible. We work closely with our customers, we listen and adapt quickly to their changing needs as they respond to market demands," emphasized Mrs. Therese Premler-Andersson, Secretary General, TMAS.*

Textile companies in Vietnam are looking for ways to be competitive, and the country is clearly demonstrating that it has the capacity and stamina to deliver. TMAS is committed to enabling the Vietnamese textile industry to flourish well over time.

## EDANA OPENS REGISTRATION FOR OUTLOOK™ ASIA 2018

### Event provides unique meeting place for the nonwovens industry in the Asia Pacific Region

**6<sup>th</sup> November 2017 – Brussels** - EDANA, the leading association and voice of the nonwovens and related industries, has opened registration for the 4<sup>th</sup> edition of OUTLOOK™ Asia, 14 – 15 March 2018 in Singapore.

Asia's premier nonwoven personal care and hygiene products conference is recognized as the ideal platform for key professionals around the globe to network, do business and catch-up on the exciting potential of the Asia Pacific region.

The programme will cover current and future product trends, consumption and purchasing trends, economic outlooks, market data, material and product technology developments, regulatory affairs and sustainability issues. Additionally, the conference offers delegates product presentation slots, sponsorship opportunities and ample networking time. Finally, EDANA is also very pleased to announce the return of the OUTLOOK™ Asia Award for its third edition.

“With a convergence of favourable megatrends in the region, prompting a growing demand for and increasing local production of hygiene products, Asia Pacific is a key region for the on-going growth of the broader nonwovens industry” said Pierre Wiertz, General Manager of EDANA. “The region's diversity offers both local and international businesses opportunities for development.”

Registration for this event is now open. For further information and details on how to register please visit <https://www.edana.org/education-events/conferences-and-symposia/event-detail/outlook-asia-2018/>.

#### About EDANA

EDANA helps its members to design their future, serving more than 250 companies in the nonwovens and related industries, across over 40 countries. Its mission is to create the foundation for sustainable growth of the nonwovens and related industries through active promotion, education and dialogue.

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## CEMATEX CONTINUES TO PROMOTE INNOVATION EXCELLENCE WITH GRANT FOR ITMA 2019 RESEARCH INSTITUTIONS

20 November 2017 – Underscoring its commitment to innovation, the European Committee of Textile Machinery Manufacturers (CEMATEX) will continue to promote excellence in research and development at ITMA 2019. The CEMATEX Research & Innovation Grant will help defray participation cost of eligible educational and research organisations at the Research & Innovation (R&I) Pavilion by at least 50%. Mr Fritz P. Mayer, President of CEMATEX which owns the ITMA exhibition, announced: "Innovation has always been key to the global competitiveness and sustainability of textile and garment makers. Research and development plays a critical role to help the industry develop new competitive advantages."

He added, "ITMA is an ideal platform to foster collaboration among researchers, businesses and investors. An ITMA 2015 survey revealed that more than 90% of the R&I exhibitors were able to establish new business relations and open up new markets. Hence, we are glad to continue to support these exhibitors with the CEMATEX grant for the third time."

DITF Denkendorf, one of Germany's largest centres of textile research, has been a regular ITMA participant. Prof. Dr.-Ing. Götz T. Gresser, Member of the Board, said: "Our research activities span the entire textile value chain, from raw material to final product. As ITMA also covers solutions for the whole value chain and attracts an international audience, it provides an excellent environment for us to share our research, observe the latest market developments and meet potential partners. We are looking forward to another successful participation at ITMA 2019."

The R&I Pavilion will showcase cutting-edge textile and related research and development projects and serve to encourage collaboration among companies, research centres and universities to develop novel materials and technologies to transform the textile, garment and fashion industry.

### Speakers Platform

In addition to providing outstanding opportunities to research organisations and universities to share their R&D achievements, the R&I Pavilion also provides an excellent platform for participating institutes and guest industry speakers to share their latest knowledge and projects at the Speakers Platform.

Dr Jon Rust, Interim Director of Zeis Textiles Extension in North Carolina State University of Textiles, enthused: "Taking part in the ITMA Research & Innovation Pavilion has helped to profile our university to a global audience. The Speakers Platform offers an additional channel to raise awareness of our research projects and facilitate knowledge transfer. With ITMA 2019 theme being 'Innovating the World of Textiles', we are anticipating a more exciting exhibition."

The Speakers Platform at the R&I Pavilion will feature 20-minute presentations based on the following topics:

- Raw materials and manufacturing technology
- Automation and digitalisation: Creating new opportunities in the textile and fashion industry
- Technical textile innovations and manufacturing technology
- Sustainable textile and garment manufacturing in the circular economy

The R&I Pavilion at ITMA 2015 received good response from both academic and commercial organisations. It featured 40 exhibitors from 16 countries and incorporated the European Textile Research & Education Pavilion. A total of 43 speakers from various leading institutes and universities shared their insights and research projects. Organisations keen to participate in the ITMA 2019 R&I Pavilion or apply for the CEMATEX grant can visit [www.itma.com](http://www.itma.com) or email [application@itma.com](mailto:application@itma.com). ITMA 2019 will be held from 20 to 26 June at Fira de Barcelona, Gran Via venue. More than 50 per cent of the space has been booked since application for exhibition space started in May. The exhibition will showcase the latest technologies and sustainable solutions for the entire textile and garment manufacturing value chain in 19 chapters. In addition to machinery, exhibits will also include fibres, yarns and fabrics, as well as leasing and finance services.

### About CEMATEX & ITMA

The European Committee of Textile Machinery Manufacturers (CEMATEX) comprises national textile machinery associations from Belgium, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland and the United Kingdom. It is the owner of ITMA and ITMA ASIA. Considered the 'Olympics' of textile machinery exhibitions, ITMA has a 66-year history of displaying the latest technology for every single work process of textile and garment making. It is held every four years in Europe.

### About ITMA Services

Headquartered in Brussels with a subsidiary in Singapore, ITMA Services is the appointed organiser of ITMA 2019 and future ITMA branded exhibitions. It is managed by professionals with extensive experience in organising ITMA and other major trade exhibitions around the world. It aims to maintain and expand ITMA's unique selling proposition and relevance to a global audience.

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Issued by CEMATEX and ITMA Services

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gymnastics and swimwear where body skin flexing and stretching are inevitable. Lycra T9026 requires still effort for the same extensibility.

**Dacron:**

4Channel Polyester a generic term for a high performance four channel fibre engineered to move moisture and speed the evaporation of perspiration. It is a superior fabric for wicking action, drying time, moisture absorption and transport.

**Regenerated fibres for Sportswear**

**Tencel:**

Tencel is the generic name of Lyocell. Lyocell is a natural, manmade fibre produced in an environment friendly process from wood pulp that has become popular in clothing. The moisture management of tencel is unique when compared to synthetic fibres and allows for peak performances in sports. The excellent moisture absorption is perfect for the skin and thus guarantees well being at a very high level.

**Bamboo:**

Bamboo fabrics are made from pure bamboo fibre yarns which have excellent wet permeability, moisture vapour transmission property, soft hand, better drape, easy dyeing, splendid colours. It is newly founded, great prospective green fabric(6). Bamboo fibre has a unique function of anti bacteria, which is suitable to make underwear, tight t-shirt and socks. Its anti ultraviolet nature is suitable to make summer clothing.

**Soybean:**

soybean protein contained in the fibre remakes a superior, soft hand endowed with both moisture absorbency and permeability, which makes best application in knits and innerwear. Finishes with an antibacterial agent, health care functionalities are also given. It has great potential in its use in high grade knits and innerwear (7).

Sportswear manufacturers have intensified competition in the pursuit of functions. During these recent several years, sportswear has taken on a new look as lifestyle wear. Accordingly, function required for sportswear on the whole has changed to meet these requirements. The demand of the times is functions with comfort in mind.

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## TYPES OF FIBRE USED IN SPORTS WEAR

### **Polyester:**

Polyester has outstanding dimensional stability and offer excellent resistance to dirt, alkalies, decay, mold and most common organic solvents. Excellent heat resistance or thermal stability is also an attribute of polyester. It is the fibre used most commonly in base fabrics for active wear because of its low moisture absorption, easy care properties and low cost. Polyester is essentially hydrophobic and does not absorb moisture. However, most Polyester used in base layer clothing is chemically treated so that they are able to wick moisture.

### **Polypropylene:**

Polypropylene cannot wick liquid moisture. However, moisture vapour can still be forced through polypropylene fabric by body heat. Polypropylene has the advantage of providing insulation when wet it can melt at medium heat in home dryers. Polypropylene is claimed to be a proved performer in moisture management due to its hydrophobic nature and has very good thermal characteristics, keeping the wearer warm in cold weather and cold in warm weather(4).

### **Nylon:**

Nylon fibre characteristic include lightweight, high strength and softness with good durability. Nylon also quickly when wet. Nylon is good fabric choice when combined with PU coatings. Nylon has a much higher moisture regain than polyester and therefore has better wicking behavior. It is most often used in tightly woven outerwear, which can trap heat because of low air permeability. It is also used in more breathable knitted fabrics, where it can perform well.

### **Cotton:**

Cotton garments provide a good combination of softness and comfort. However, cotton is not recommended for use in base layer clothing because of its tendency to absorb and retain moisture. When wet, cotton garments cling to the skin causing discomfort. During SASMIRA's trials for wicking of cotton treated with hydrophobic finishes showed good wicking properties(5).

### **Viscose Rayon:**

The viscose rayon is not preferred next to skin as it holds water (13 % moisture regain) in sportswear. The outer layer of knitted hydrophilic portion of the twin layer Sportswear can be of viscose rayon, which absorbs 23 times more moisture than cotton. The wicking behavior improves by incorporation of some hydrophobic finishes.

### **Special Fibres Hygra20 :**

Unitika Limited has launched Hygra, which is a sheath core type filament yarn composed of fibre made from water absorbing polymer and nylon. The water absorbing polymer has a special network structure that absorbs 35 times its own weight of water and offers quick releasing properties that the conventional water absorbing polymer cannot do. Hygra also has superior antistatic properties even under low wet conditions. The main apparel applications include sportswear like athletic wear, skiwear, golf wear etc.

### **Killat N23:**

Killat N from Kanebo Ltd is a nylon hollow filament. The hollow portion is about 33 per cent of the cross section of each filament due to which it gives good water absorbency and warmth retentive property. The manufacturing technology of Killat N is very interesting. The yarn is spun as bicomponent filament yarn with soluble polyester copolymer as the core portion and nylon as the skin portion.

### **Lycra25:**

Lycra, a truly synthetic fibre of long chain polymer composed of at least 85% segmented polyurethane, finds wide range of end users such as swimwear, active sportswear, floor gymnastics because of its comfort and fit20. Adding Lycra to a fabric gives it stretch and recovery, particularly in

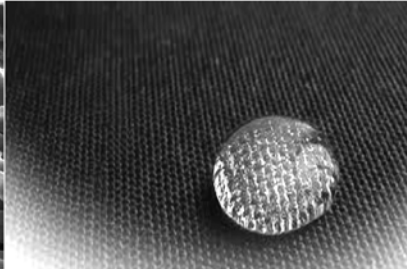
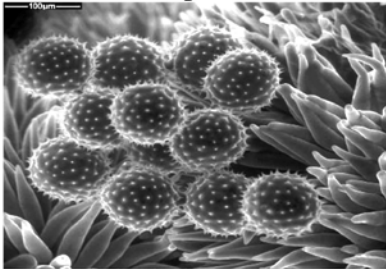


## PROPERTIES OF SPORTS TEXTILE

- 1.Sports textile must have comfort ability, easy to wear, easy handling.
- 2.Sports textiles fabrics have a very high electrical conductivity, so they can permit the effectual dissipation of electrical charge.
- 3.It should be light as best as possible.
- 4.Filaments fabrics are made highly effecting in moisture management & thus they can wick the moisture as known as sweat away from the body & keeps body dry.
- 5.Sports textile should have good perspiration fastness.
- 6.As this sports fabric has a special property well known as heat conductivity make possible to feel the user cooler in summer & warmer in winter.
- 7.Garments manufactured from sports textiles fabrics, keeps the normal stability of body comfort, because these fabrics are ultra breathable, fast drying and possess outstanding moisture managing properties, which rapidly wick moisture away from the body.
- 8.These garments are also very less in weight & feature elasticity properties, which provides immense comfort and independence of movement.
- 9.Keeping a normal level of bacteria on the skin offers a high level of comfort and personal hygiene, especially during athletic activities.
- 10.Sports textiles fabrics remove UVA and UVB rays that are dangerous to the skin, and guarantees an improved level of defense compared to the majority general natural and manmade fibres.
- 11.It also provides superior strength and durability.
- 12.The athletics & the leisure activities for their better performance in the sports.

## REQUIREMENT OF ACTIVE SPORTSWEAR

### Functional Properties



Active sportswear requires super lightweight, low fluid resistance, super high tenacity and stretch ability. Critical features include thermal retention, UV resistance, cooling capacity, sweat absorption and fast drying, vapour permeability, water proofing to provide relaxation without fatigue. Aesthetic properties Sensitivity of softness, surface texture, handle, luster, colour variation, transparency and comfort in sports wear are important factors.

**Protection:** From wind water and adverse weather

**Insulation:** Protection from cold

**Vapour Permeability:** To ensure that body vapour passes outward through all layers of the clothing system.

**Stretch:** To provide the freedom of movement necessary in sports(3).

## CHARACTERISTICS OF SPORTSWEAR

- Optimum heat and moisture regulation
- Good air permeability
- Wick ability
- Dimensional stability even after wet
- Durable
- Easycare and Light weight
- Soft and pleasant touch and produces cooling effect.



Dr. F Nayeb Morad

## TEXTILES IN SPORTS



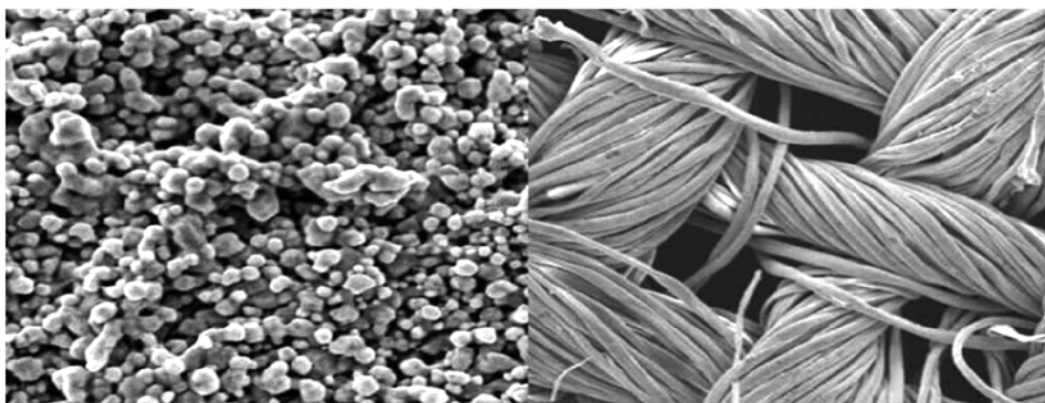
Technical textiles enable the production of materials which are stronger, breathe like skin, waterproof like rubber and at the same time ecofriendly and highly economical. The revolutionary new textiles used in sports and leisure industry are popularly known as sports textiles. Today sports demand high performance equipment and apparel. In recent years, development in active sportswear fabrics has been progressing to perform high functions and to achieve comfort. The sports textiles sector includes specialist apparel for specific sports each with its own particular functions. The sportswear manufacturing textile industries not only keep their eyes on market diversification for fibrous materials but also on textile science and technology. The use of innovative textile science and technology in the manufacturing of sports and leisurewear fabrics is continuously enhancing day by day to fulfil the requirements for athletics and leisure activities for their better performance in the sports.

The performance requirements of many sports goods often demand widely different properties. The contributing factors for developing active sportswear fabrics are: polymer science, fibre science, production techniques, lamination and finishing techniques to obtain sophisticated fibre, modified structure of yarns and fabrics. This paper emphasis on the literature related to fibre properties and workings done in development of sportswear have been reviewed.

Health is state of complete physical, mental and social well being and not merely the absence of disease or infirmity. Regular Physical activity has a positive impact on major health risk factors , such as high blood pressure, high cholesterol, obesity and stress. Physical activity for nations is a cost effective method to improve public health across populations. Thus participation in sports activities has increased remarkably owing to health and physical fitness. Sportswear is not just used by athletes while performing, but is becoming a major part of everyday clothing during morning walks, jogging, yoga, stretching exercises and daily fitness activities because of quality comfort of sports clothing. It has been reported that only 30% of the sportswear manufactured is utilized by active sports person(1).

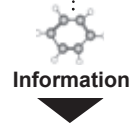
Selection of fibres or fabrics for manufacturing active sportswear is one big factor influencing performance, efficiency, ensuring protection, and physical comfort. Technological developments have lead sportswear to a state of virtual insanity. The sports textiles sector includes specialist apparel for specific sports each with its own particular functions. The performance fibres, yarns, fabrics and finishes developed for this specialist sector are increasingly transferring to the mass market in the high street. The performance requirements of many sports goods often demand widely different properties from their constituent fibres and fabrics, such as barrier to rain, snow, cold, heat and strength and at the same time these textiles must fulfill the consumer requirements of drape, comfort, fit and ease of movement(2).

Among the contributing factors responsible for successful marketing of functional sportswear has been made in the fibre and polymer sciences and production techniques for obtaining sophisticated fibre, yarns and fabrics





# CONTINUOUS DYEING PROCESS WITH PIGMENTS



Since when pigments have been introduced into the Textile market there was a mutual interest to enlarge their usage in as many as possible fields of application. Furthermore it seemed that processes which involved pigment were more simple than processes that involved dyes. That was and still is. Nowadays pigment processes claim for almost 50% of the entire textile production widespread in many countries around the world.

Why pigments became so popular in a very short period of time? Three reasons can easily answer to this question: simplicity; reliability; cost effectiveness.



Even if printing with pigments on textile was firstly requested, no longer many customers were looking for an application of pigments also in a dyeing process. Since then many chemical producers started to develop their own system and Lamberti was and still one of them. Lamberti has been successfully developed auxiliaries and pigments preparation for pad-dry process since early 80's. Furthermore our R&D Team is still working up to date all of our chemicals to the newest regulations, always with high technical strength as a first priority.

## Which are the advantages of Lamberti's Continuous Dyeing Process with pigments:

- It is simple but with a very good shade reproducibility;
- It is an economical system but it can provide high quality standard articles;
- It is possible to print on fabrics dyed with pigments process and cure both in the same time;
- It is possible to combine dyeing and finishing (ex. softeners, anti-crease, etc) in one step;
- Great saving in water (no washing off process is needed after dyeing), energy and chemicals;
- Greatly increase the productivity;
- Greatly reduce the amount of wasted water disposal;

- Articles dyed with Lamberti's Continuous Dyeing Process with pigments showed good hand feel and satisfactory fastness properties;
- Very good levelness and very little migration alongside the stenter pins:



Terry fabric

Knitted fabric

Bed sheets & Table cloths

## What kind of textile fabrics can be processed by Lamberti's Continuous Dyeing Process with pigments?

Home textile is the main segment in which pigment dyeing is involved. Woven or knitted fabrics composed of cellulosic (ex. Cotton) and other fibers (ex. Pes/Co) are commonly used.

## What kind of equipment can be used for Continuous Dyeing Process with pigments:

It's well known that differently from dyes, pigments have no direct affinity to textile material therefore exhaustion process cannot be done. The most common equipment are:

- Pad – Stenter (with or without IR pre-dryer)
- Pad – Thermosol

## What kind of chemicals are involved in Lamberti's Continuous Dyeing Process with pigments?

Recipe for continuous pigment dyeing system by pad-dry process consists of the following products:

**Migration inhibitor:** It guarantees dyeing levelness avoiding side to side and front/back change in color strength;

**Dyeing Binder:** purpose built thermally binder with a very high mechanical stability. Binder is thermally crosslinkable. Dyed fabrics in light to medium shades are fast to wash, dry and wet crock, light (selection of pigments have to be previously done);

**Emulsifier:** it mainly works as a liquor stabilizer and as an anti-sticky chemicals in order to avoid binder film formation on the pad rollers;

**Pigment preparations:** high concentrated water dispersion pigments selected in many hues for pigment dyeing.

Issued by Lamberti's Textile Technical Assistance Team