

## AGOA expo to strengthen US-Africa trade ties in textile

The 6-day AGOA Expo and Trade Fair from September 25 in New York is a business platform committed to celebrate US-Africa cooperation, strengthen bilateral trade relations, promote AGOA key export products and investment opportunities. It is an opportunity for US companies to expand business or introduce new products, services in the 40 African countries.

The trade fair will give opportunity to all beneficiaries of the trade agreement to promote their business including various activities including AGOA Key Exports Products Exhibition & Trade Fair, AGOA Apparel Fashion Week, African Apparel, Textiles & Footwear Exhibition and Skins & Leather Products Made in Africa. The event will also host meetings, roundtables, B2B conferences and workshops to focus on important topics to build capacities, raise awareness, present business opportunities and encourage trade between United States and African countries, organiser Bizness Group LLC said on the website.

AGOA Apparel Fashion Week is a platform for African fashion designers to update their knowledge about AGOA apparel and textile products. They are eligible to export to the United States or to discover the process with the AGOA apparel exports process. AGOA Experts from the US will train participants during workshops and master classes to help them increase their production, have more customers everywhere in America, It is also an opportunity to source, network with US manufacturers, machinery, yarn and fabrics companies, buyers and retailers.

## Turkey eyes Africa at the Istanbul Economic and Business Forum

Turkey has long-standing historical and cultural relations with the African continent, dating back centuries. And, Turkey's decade-long economic boom has been accompanied by a renewed interest in Africa and the trade volume with the Continent has been quadrupled to billion USD in 2017 in 15 years since Turkish strategy on the Development of the Economic Relations with African Countries was prepared in 2003. Turkey's "win-win" approach towards Africa has culminated in this burgeoning relation between parties. This policy focuses on political equality and mutual economic development rather than creating new relations of

dependence, tutelage and exploitation.

In line with Turkey's African Opening policy, DEİK/ Turkey-Africa Business Councils aims to improve Turkey's commercial and investment relations with African countries and the Continent as a whole; as well as increase the share of Turkish companies in the African geography by providing networking platforms to gather the political leaders and senior decision makers in Africa and Turkey, heads of financial institutions, company executives, and investors for new joint ventures, trade partnerships and investments.

In this context, Turkey-Africa the First Economic and Business Forum was held under the auspices of President of the Republic of Turkey H.E. Recep Tayyip Erdogan and the Term Chairman of African Union, President of the Republic of Chad H.E. Idriss Deby Itno on 2-3 November 2016 in Istanbul. The Forum, under the motto of "Unite, Discover, Create", brought together 50 high level officials and 3.000 business people from Turkey and 49 African countries.

This year, Turkey-Africa the Second Economic and Business Forum will be jointly organized by Turkish Ministry of Commerce, AUC and DEİK under the motto of "Building a Sustainable Future Together through investments and joint ventures" on 10-11 October 2018 in Istanbul, Turkey.

## Polyester dyeing auxiliary meets stringent eco standards

A new diffusion accelerant has been released by Huntsman Textile Effects that complies with current textile industry sustainability standards and improves the dyeing performance of polyester fibres including microfibres and blends – even at low temperatures. The new auxiliary will be especially interesting for textile mills that dye polyester-elastane blends.

The move comes in response to the growing demand for new applications of polyester fibre in categories such as athleisure wear and where current diffusion accelerants sometimes contain unwanted chemicals and require additional levelling agents and anti-foaming products that may be hazardous to people and the environment. Kerim Oner, global marketing manager for dyeing auxiliaries at Huntsman says: "We expect this latest offering to change the way that the industry dyes polyester and blends while meeting stringent environmental standards."

## The textile reactor takes its place on the recycling landscape

A multi-year collaboration between researchers within Resource Recovery at the University of Borås, Sweden, and a textile manufacturing company is now yielding results – a new type of reactor made of a textile material has found its way onto the market in different parts of the world. The reactor transforms different kinds of waste into new products, such as biofuel.

To date, the textile reactor has been tested in different markets in the world, and the technology has evolved along the way. The latest market tested is India, where the Swedish company F.O.V. has established a subsidiary that supplies reactors with volumes from five cubic meters to 300 cubic meters. Approximately 30 reactors have been established and technical trials are being carried out with the researchers at the University of Borås.

A first prototype of the reactor saw the light of the day in 2014. Over a few years, it was tested in several research projects. First, attempts were made to produce biogas with kitchen waste in the lab environment, then later with manure. The results were excellent.

Today, textile reactors have been developed and established in several locations around the world to produce biogas on both small and large scales, ranging from a few cubic meters to 300 cubic meter large reactors. They are used so far mainly in agriculture.

## HCM City to host textile, garment expos

HCM City will host four textile and garment and footwear industry exhibitions simultaneously and at a single venue next November.

The 18th Việt Nam International Textile and Garment Industry Exhibition (VTG) will be attended by more than 400 exhibitors, including hundreds of top brands, from mainland China, Germany, Hong Kong, India, Japan, South Korea, Malaysia, Portugal, Taiwan, Turkey, and Việt Nam.

VTG and the Việt Nam International Textile and Apparel Accessories Exhibition will have pavilions and booths put up by the China Textile Machinery Association, the Hong Kong Apparel Machinery Association, the Korea Textile Centre, the Chamber of Commerce and Industry Portugal – Việt Nam, the Taiwan Textile Federation, and the Turkish Textile Machinery and Accessories Industrialists Association.

The top brands at the events will include Bao Lun, Richpeace,

Tajima, and ZSK, who will display their latest embroidery machines, and Heinz Walz, Epson, Grafica, and Sulfet, who will bring printing machines.

The two events will also host several seminars featuring speakers from official departments, foreign affairs and universities who will speak about strategies and practical measures to develop the textile and garment industry.

The Vietnam International Footwear Machinery and Material Exhibition is a new platform for footwear producing equipment and materials. It will showcase footwear machinery, injection machinery, artificial leather machinery, handbag and suitcase machinery, CAD/ CAM system, footwear materials, knitting shoe machinery, and components in the footwear value chain.

The fourth expo will be the 8th Asia International Dye Industry, Pigments and Textile Chemicals Exhibition.

## Maroc in Mode-Maroc Sourcing to highlight Moroccan textile

The Maroc in Mode-Maroc Sourcing 2018 trade fair, which will be held on October 11 and 12, 2018, in Marrakech, will accentuate the growing Moroccan textile industry. Around 200 exhibitors will participate in the segments of fast fashion, denim, knitting, tailoring, lingerie, workwear, leather good, shoes, and accessories of the leading textile trade show.

A project titled 'Circular Textile Cluster' will be presented at the show. It is a project for the development of sustainable production in which high sums are invested in Morocco. The companies Hallotex from Tangier, Textil Santanderina and Vich Industrial from Barcelona, and the Austrian Lenzing Group are involved in the project. The project involves the construction of a spinning mill that processes recycled fibres and a recycling plant in Tangier that is expected to recycle over one million kilograms of textile waste per year. The entire production chain is worked sustainably until the recycling of textile waste, according to a media statement.

The Moroccan Denim Cluster (MDC), also represented at the Maroc in Mode-Maroc Sourcing, together with its partners, will implement a support programme for denim companies, enabling them to make the necessary changes so that the Moroccan denim industry is recognized as a 'sustainable industry' and one to ensure a sustainable economy for future generations. Thirty exhibitors participating in the fair are members of the MDC.



# World Textile News

## H&M Opens Hydrothermal Recycling Facilities, Calls for Latest Class of Circular

The nonprofit H&M Foundation and the Hong Kong Research Institute of Textiles and Apparel (HKRITA) opened two first-of-their-kind textile recycling facilities in Hong Kong, where HKRITA's breakthrough hydrothermal recycling technology will for the first time be put into practice at scale, and a miniaturized Garment-To-Garment Recycling System is opened for the public. In September 2017, only one year into the four-year long partnership, HKRITA presented a hydrothermal method for recycling cotton and polyester blends into new fibers; blends are the most common type of textile in the world and remain largely unrecyclable.

A year later marks the opening of a pre-industrial-size facility scaling this technology, to invite fashion brands and stakeholders worldwide to see, test and implement the technology within their own operations. As a nonprofit, the H&M Foundation works to drive change for the global fashion industry; HKRITA will license the results widely to make it available to all and enable a bigger impact. In addition, customers can bring their unwanted clothes, and watch the container-sized Garment-To-Garment Recycling System recycle their garments and make new fashion finds.

The Garment-To-Garment Recycling System is the result of a collaboration between HKRITA, the H&M Foundation and Novetex, and located at Hong Kong's The Mills, a newly repurposed former textile mill.

The H&M Foundation is projected to invest €5.8 million

with HKRITA over four years. The investment is made possible through the surplus from the H&M group's in-store garment collecting programs, which is donated to the H&M Foundation. The H&M Foundation allocates 50 percent of the total surplus to research on textile recycling and the other 50 percent to projects focusing on equality and inclusion of marginalized groups.

## Invista targets to add 40,000 tons of nylon 6,6 polymer capacity

Invista has invested more than US\$ 600 million in China to support the nylon market, including a 215,000-ton hexamethylenediamine (HMD) plant and the plant at the Shanghai Chemical Industry Park (SCIP), over the past five years. The company has also created multiple-generation improvements to the technology over the decades, recently setting production records with the placement of its latest technology in the US. Invista plans to add 40,000 tons of nylon 6,6 polymer capacity at its current 150,000-ton polymer plant at the Shanghai Chemical Industry Park (SCIP). Construction is targeted for mid-2019 and production would begin in 2020.

This project aligns with Invista's other recent announcements regarding additional capacity in the nylon 6,6 value chain, including the new adiponitrile (ADN) plant announced for China by 2023, and additional ADN capacity resulting from retrofits of Invista's latest ADN technology at Butachimie, Invista's joint venture with Solvay in France in 2019; and at Invista's Victoria, TX, site, targeted for 2020.

However, those lovely shops have been either replaced by other stores or limited trays of Iranian-made fabrics, arguing to offer imported textile with 'higher quality'.

The first national textile exhibition, entitled Tar-o-Pood (meaning warp and weft), which is currently underway at Tehran's Imam Khomeini Mosalla, is a great opportunity to remind us of the colorful Iranian textiles. The exhibition is currently underway at the venue and runs until January 19.

Textile mills and garment factories, textile wholesalers and producers and manufacturers attend the event, which is organized by the National Islamic-Iranian Fashion and Clothes Foundation.

## Textile and apparel industry in Iran

Like some other Asian countries, Iran boasts ancient history of textile. The country was amongst the first exporters of textiles to other parts of world.

However things go into the reverse during past decades. The textile and apparel industry in Iran was unable to capture the national market as a textile and garment hub.

According to Trade Promotion Organization of Iran during the fiscal year ended March 20, 2017, Iran's textile and apparel exports grew up by 8.1%.

According to the statistics, nearly 5,700 tons of hand-woven Iran carpets, valued at U.S. \$ 345.7 million, were exported during the period.

The country exported with 3,800 tons of apparel items worth US \$ 46.2 million, up 2.6 per cent in volume and 3.9 per cent in value when compared to previous fiscal in 2017.

The Iranian Textile and apparel industry has over 9,000 active units, constituting 11% of all the industrial entities in the country. These units have created more than 2,90,000 direct jobs in Iran.

However, Iran's development plan Vision 2025 has identified textile and clothing as one of the industries, which has a great potential for expansion. The urge for technological advancements and improvement in productivity is mentioned in the plan.

Raw material availability and cheap labor in Iran are great motivation for foreign investors to benefit from this potential in textile industry.

A recent article published in Fiber to Fashion mentioned Ali Yazdani (Chairman of Iran's Small Industries and

Industrial Parks Organization) quoting "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 meters 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 meters".

## Iran Medical Clothing Market 2018

The new report on Iran Medical Clothing Market includes a brief on these trends that can help the businesses operating in the industry to understand the market and strategize for their business expansion accordingly. The research report analyzes the market size, industry share, growth, key segments, CAGR and key drivers. Let's go through the report overview which describe Industry Research 2018 to 2022. The Iran Medical Clothing Market data and analytics accounted a relatively optimistic growth, the past 4 years, market size is estimated from 229 million \$ in 2014 to 2560 million \$ in 2017.

The Iran Medical Clothing Market is expected to exceed more than US\$ 2870 million by 2022 at a CAGR of 123.60% in the given forecast period.

Iran Medical Clothing Market report is a complete guide for new aspirant to understand the market trends and plan the business accordingly. It covers the market landscape and its growth prospects over the coming years, the Report discuss about recent product innovations and gives an overview on potential regional market shares. the Iran Medical Clothing report offers a whole consequential analysis of the parent Iran Medical Clothing Industry, key tactics followed by leading Iran Medical Clothing industry Players and upcoming segments. Target Audience of Iran Medical Clothing Market: (Manufacturer / Potential Investors, Traders, Distributors, Wholesalers, Retailers, Importers and Exporters.)

Major companies present in Iran Medical Clothing market report:

Cherokee Uniforms, Landau, Urbane, Barco Uniform, Dickies Medical, Iguanamed, Peaches Uniforms, Smitten, Wonderwink, KOI, Jockey, Healing Hands, HeartSoul, Fashion Seal



Iran news

# Iran Textile News

## Iran looks warily to China for help as U.S. sanctions resume

From Chinese goods flooding markets to its business people eager for deals as Western business interests flee, Iran likely will further embrace Beijing as an alternative market for its crude oil and financial transactions amid uncertainty over the nuclear deal.

That doesn't mean China offers a safe haven to Iran without conditions. Beijing will try to extract the maximum benefit, analysts say, and there is growing concern that China may take advantage of Iran.

For China, Iran for years served as a crucial gas pump for its rapid economic growth. Up until 2012, Iran was China's third-largest source of crude oil imports, according to the U.S. Energy Information Administration. Now with President Donald Trump's decision to pull America from the accord, Iranians likely see China as one of the few avenues now open to them.

First among China's wants likely is Iran's energy supplies as other U.S. allies cut off their purchases by a November deadline. Nearly a quarter of all of Iran's oil exports went to China in 2017, according to the Energy Information Administration, making it the Islamic Republic's biggest single market. While oil imports from Iran have dropped some 20 percent between May and August, "China will keep any reductions to a minimal level," the Eurasia Group said.

China is really going to be the major savior of Iran because even though other countries say they're not going to comply with U.S. sanctions — India for example — when push comes to shove, they can't afford to risk

their relationship with the United States.

## Hand-woven carpet exports jump 10% in 4 months

Iran's export of hand-woven carpets increased 10 percent in terms of value during the first four months of the current Iranian calendar year 1397 (March 21-July 22, 2018) from a year earlier.

"According to the customs statistics, exports of Iranian handmade carpets have increased by 10% over the [year's first] four months," said Abdollah Bahrami, the head of the National Union of Cooperatives of Iran's Carpet Manufacturers. He didn't mention the value of exports but noted, "Last year, our exports were about \$400 million, up 20% from the preceding year, and on average, from [the Iranian year] 1395 onward, we had 15 to 20% growth each year."

Persian carpets are sought after internationally for their delicate designs and their good quality. The country's official figures show the carpets have a significant share in Iran's non-oil exports.

## Tehran exhibit lends color to Iran's textile industry

The large vibrant stores filled with domestically-produced textile and their special odor has created a common memory for people in Iran over the past decades.

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# INTERNATIONAL APPAREL & TEXTILE FAIR

FASHION-FABRICS, GARMENTS, ACCESSORIES, HOME TEXTILES & MORE

press  
release



## INTERNATIONAL APPAREL AND TEXTILE FAIR GEARS UP TO BRING FORTH DESIGN & INNOVATION IN THE UAE WITH ITS NOVEMBER 2018 EDITION

IATF, the industry's biggest showcase platform in the MENA region, with more than 140 exhibitors from various countries around the world, is now selling its final spaces for its upcoming edition, which will be held from 12 – 14 November, 2018.

Organized by Nihalani Events Management, IATF will bring together manufacturers and their agents along with some of the most influential buyers and designers in the MENA region. The event will provide an extensive platform to connect and network with industry professional, create long and promising professional relationship and giving all exhibitors an opportunity to expand their business boundaries.

The trade show attracts some of the world's largest manufacturers of fabrics and leading print design studios. Our exhibitors are mainly from India, UK, China, Japan, Taiwan, Turkey, Hong Kong, Thailand and so on.



The 8th edition of International Apparel and Textile Fair witnessed a significant increase of 44% in attendance of visitors and 27% increase in exhibitors. UAE ranks the third largest country in terms of textile exports, making International Apparel and Textile Fair a much needed show in the region. The show had attracted around 3,000 buyers who were mainly from the UAE and GCC region. While a number of visitors came from Kuwait, Oman, Saudi Arabia, and Qatar, other buyers came from all across Asia, Africa, Europe, USA and Australia. IATF continues to prove itself as the one-stop platform to showcase the latest developments and emerging technology for in the textile and apparel industry.



**Choose the original – Choose success!**

Frankfurt, 25 September 2018

Fritz P. Mayer, Vice-President of VDMA Textile Machinery Association, cordially invites you to the

**VDMA Press Conference @ ITMA ASIA 2018**

**15 October 2018, 13:00 – 14:00 hrs, VDMA booth Hall 1 F57.**

Following the press conference all participants are invited to a networking and lunchtime snack.

Representatives of numerous VDMA member companies will briefly present highlights of their technology portfolio:

ANDRITZ, Autefa Solutions, BRÜCKNER, Groz-Beckert, Herzog, Kaeser Kompressoren, KARL MAYER, Küsters Textile, Lenze, Mahlo, Mayer & Cie., Monforts, Neuenhauser, Oerlikon Textile, Saurer Spinning Solutions, Textechno, Trützschler, WEKO Weitmann & Konrad

Topics include automation, performance improvement, quality, sustainable solutions (raw material, energy, water saving), industry 4.0, digital AR/VR services, platforms, software, ...

Original technology is a key-stone of innovation. It has the potential to successfully turn visions of entirely new possibilities in the textile production into reality.

An emotional and inspiring example of today's success coming from yesterday's innovation is our visual analogy: Famous Neuschwanstein Castle in Germany. Register for our press conference and find out why the epitome of a "medieval castle" is an original. What role did modern craftsmanship and creative engineering play?

Thomas Waldmann  
Managing Director

**Choose the original –  
Choose success!**



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**TMAA member companies who are participating at ITMA Asia + CITME 2018, include:**

**Eltex of Sweden AB**

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. Our 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.

[www.eltex.se](http://www.eltex.se)

**ES Automatex Solution AB**

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.

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

**Eton Systems AB**

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.

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

**IRO AB**

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.

With a worldwide network of representatives, IRO sales and after-sales support ensures complete customer confidence in our products.

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





**IRO (H3 C01)** will be displaying their wide range of yarn feeding equipment, that are optimized to meet the demands of advanced modern weaving machinery. The feeders incorporate innovative energy efficient permanent magnet motor design and incorporate developments such as easy “plug and play” for connecting intelligent accessories and an improved threading-up system.

**Eltex (H3 C10)** will have their new Eltex EyETM Yarn Tension Monitoring System on display. The system monitors the yarn tension on all positions in real-time and you are able to immediately detect any fault position. Eltex EyETM greatly helps increase the quality of warp beams. The result is fewer problems, not only when warping, but also in the next step when weaving or tufting. The system is suitable for applications such as warping, winding, etc.

**Eton Systems (HS B14)** will show their unique concept for material handling, developed to create efficiency, increase production and full traceability. The machines incorporate a real-time information system and the necessary tools to improve the manufacturing processes through powerful software programs. When visiting their stand at ITMA Asia + CITME you will also understand how the Eton systems are integrated on the mill floor.

**ES Automatex (H5 D04)** deliver high performance automated systems with high reliability, designed to meet specific customer requests. Are you looking for intelligent, automated sewing units for home textile, bags or garments then make sure you visit ES Automatex.

The Swedish companies are very excited to be participating in the ITMA Asia + CITME show. The show is an excellent platform to view the latest technological developments. Furthermore, the show offers an excellent marketplace for making valuable business contacts with new partners and customers as well as strengthening existing ones. TMAS has been a part of the show in the past and we have been very happy with the results. We are certainly looking forward to this year's show in Shanghai.

## **We are TMAS**

**TMAS, Textile Machinery Association of Sweden**, initiates and coordinates joint activities such as networking meetings and other events designed to provide export opportunities for the member companies. The association represents and supports companies in major international exhibitions, distribute market information and serve as a platform for exchange of ideas and experiences. TMAS 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. Work with us, and together we will lead the textile and garment industry into the future. Get to know us better at: [www.tmas.se](http://www.tmas.se)

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

Mrs. Therese Premler-Andersson, Secretary General Textile Machinery Association of Sweden  
Phone: +46 734 455 451, email: [tmas@tebab.com](mailto:tmas@tebab.com)



Press release



## TMAS members set to showcase the latest innovations in Swedish machinery at ITMA Asia + CITME 2018

The highly inspiring, exciting platform for the world to view the latest technological developments, ITMA Asia + CITME is happening in Shanghai, China. This time, Swedish machinery producers will be proudly represented by four TMAS members: IRO, Eltex, Eton systems and ES Automatex. TMAS, the Textile Machine Association of Sweden, has nine members, each at the forefront of their own specific segment, and with a long and successful history and a passion for textile manufacturing.

China has been and is an increasingly important market for the Swedish machinery producers. Not surprising, since the country is one of the most important production hubs in the world today. The dramatic technology drive shaping the Chinese textile industry is setting the agenda with automation and sustainability being the key drivers. As TMAS member companies are at the forefront of automatization and innovative production processes, they look forward to working closely with Chinese customers on this exciting journey towards next-generation solutions.

Swedish producers invest heavily in R&D especially because technological innovation is so inbuilt in the corporate culture of Swedish companies. At the show we will see inbuilt intelligence and utilization of data for customized production developed to meet real customer needs.

*"We know and understand the Chinese market, and we realize the trends for the future that will shape the Chinese textile and garment industry. We work in close collaboration with our customers and understand the market drivers. This enables us to constantly drive innovative breakthroughs in order for our customers to stay competitive,"* said Mikael Äremann President, TMAS.

The demands on machine producers are much more than just supplying a machine or technology. As a supplier you must understand and be prepared to integrate interface with procurement, administration, production and stock handling systems in order to create a complete, intelligent system and efficient processes for the customer. This means that, as a machine builder, you have to work closely with your customers to find the best solutions for all the different products and processes within the textile and garment industry, which Swedish companies have proven themselves to be very good at. We have been able to give the Chinese customers ideas on efficiency, quality improvements, reduced waste and how products can be adopted to fit automation.

*"Swedish machines always deliver groundbreaking technology that will allow the customers in China to be flexible and innovative in their solutions to their customers. Local production and assembly of machinery are other Swedish ways to improve the customer experience and increasing demand for customized solutions,"* said Therese Premler- Andersson, Secretary General, TMAS.



# Reiners + Fürst presents latest TURBO rings and enhanced travellers at ITMA Asia 2018



Reiners + Fürst  
Rings and Travellers

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The latest generation of TURBO spinning rings provide excellent results especially for Compact and Siro-Compact yarns. Since the introduction of this further milestone by leading German ring and traveller manufacturer R+F more than 25 Mio units of TURBO rings have been installed and contribute to the customers' success. The enhanced surface allows increasing machine efficiencies by up to 10% – especially when producing yarns of sensitive fibres or with highest spindle speeds.

Managing Director at R+F, Mr Benjamin Reiners said, "The new TURBO rings with benefits including low yarn hairiness, longer service life and increased machine efficiency by up to 10% are extremely beneficial for the demanding Chinese spinners."

"We have been in the Chinese market since more than 25 years and R+F products are well accepted by the textile industry. We are overwhelmed by the positive feedback for TURBO rings by Chinese spinners," Mr Reiners added. At ITMA Asia 2018 Reiners + Fürst will also present new ring travellers for 100% Viskose, as well as Modal, Micromodal und Tencel. The end-users benefit from low yarn hairiness and longer traveller service life.

World-wide R+F customers achieve highest efficiencies of the ring frames benefitting from unique traveller surface treatments for optimized spinning conditions of each application.

Customers especially value the professional service and support R+F is providing particularly for finding solutions of increasingly complex applications. Visitors are invited to stop by at R+F's booth at ITMA Asia: H 1 – Stand D 10



## About Reiners + Fürst:

R+F is a leading manufacturer of premium spinning rings and ring travellers with a long tradition as a family-owned business now managed by the 4th generation. R+F successfully implements the policy of in-house manufacturing for setting premium quality standards Made in Germany. The inventions of R+F mark several milestones for highest efficiencies and yarn qualities over extended service life in the history of ring spinning. Customers from more than 90 countries benefit from R+F's continuous product innovations and service for over 70 years.

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many business agreements signed, applications to participate in the ITM 2020 has increased. Companies that have completed their applications on the first day started counting days to experience the stir of ITM 2020 in Istanbul. The number of booths rented and the expansion booth sizes by companies are precursors of new records to be broken by the ITM 2020 in terms of number of visitors and participants.

#### **Event Extended to 5 Days Upon Heavy Demands**

In the surveys conducted during the ITM 2018 Exhibition, participants and visitors had stated that the duration of the event did not suffice for such a large organization.

With the increase in number of exhibitors, diversity, booth sizes and the number of machines displayed by the companies resulted in investors and delegations pointing out that the duration needed to be extended for them to visit the exhibition fully and finalize their agreements. Upon heavy demands on this issue, the ITM 2020 Exhibition was extended to 5 days. The next ITM event will take place in Istanbul between 2-6 June 2020.

On the other hand, the HIGHTEX International Technical Textiles and Nonwovens Exhibition, which is the one and only organization in its industry, will be held concurrently with ITM 2020.

#### **ITM 2020 to Continue Becoming the Meeting Point for the Global Textile Industry**

The ITM Exhibitions are attracting visitors thanks to it taking place in Istanbul – the heart of world trade–, convenience of transportation and accommodation, Turkey's having common cultural values with the new textile investors from the Middle East and the Far East countries, the absence of visa issues. The positive feedbacks from the companies and the sales success of the companies indicate that the ITM events, acting as a bridge between the Eastern and the Western textile worlds, will continue to be the meeting point for the world textile industry in 2020 as it has been in the past.

#### **You can follow us on the following links to join the ITM 2020 social network:**

<https://www.facebook.com/itm2020/>

<https://www.instagram.com/itm2020>

<https://www.linkedin.com/company/10116202/>

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release

# HEAVY DEMANDS FOR PARTICIPATION AT **ITM 2020** FOLLOWING ITM 2018'S GLOBAL SUCCESS

**ITM International Textile Machinery Exhibitions, which brings together the leading brands of the world textile industry, has proved itself to be a "Global Trademark" with the country diversity in terms of the number of participants and visitors. Preparations started for the ITM 2020 with the synergy of the global success achieved at the ITM 2018 breaking a record with 58,942 visitors from 94 countries.**

**There are huge demands from the world's textile technology leaders to participate in the ITM 2020. The ITM 2020 will be held at TÜYAP Fair and Congress Center between June 2-6.**

With huge participation from many countries and Turkey since the moment it opened its doors to the industry representatives, the ITM 2018 Exhibition made an indelible impressions with the high number of visitors. Hosting 1.150 companies from 64 countries for 4 days, the

ITM 2018 recorded a 16% increase in number of general visitors, a 38% increase in number of international visitors and a 20% increase in country diversification compared to the previous event.

Being the meeting point for leading textile technology brands for their global launches, the ITM 2018 has gotten full marks from participants. Hundreds of company representatives in post-event evaluations pointed out the importance of the exhibition for the global textile industry by stating that thanks to ITM they have been able to meet with their customers whom they could not meet due to visa problems.

## **Increasing Applications for ITM 2020 Herald New Records**

Following the success of the ITM 2018, with both domestic and foreign companies having realized sales worth of millions of euros, and

Global Print Expo 2018 and FESPA Mexico, we are looking forward to introducing it at FESPA Eurasia this year. The textile market in Turkey is huge, so we are hopeful that the introduction of this new feature will be as successful as it has been in Berlin and Mexico.” For more information on FESPA Eurasia 2018, the show features and to pre-register to attend, visit [www.fespaeurasia.com](http://www.fespaeurasia.com) and use code EURM801 for free entry.

### About FESPA

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### FESPA Profit for Purpose

The shareholders are the industry. FESPA has invested millions of Euros into the global printing community over the last seven years, supporting the growth of the market. For more information visit [www.fespa.com](http://www.fespa.com)

### FESPA Print Census

The FESPA Print Census is a global research project to understand the wide format, screen and digital print

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Forthcoming FESPA events include:

- FESPA Eurasia, 6-9 December 2018, (IFM) Istanbul Expo Centre, Istanbul, Turkey
- Asia Print Expo, 21-23 February 2019, BITEC Exhibition Centre, Bangkok, Thailand
- FESPA Brasil, 20-23 March 2019, Expo Center Norte, São Paulo, Brazil
- FESPA Global Print Expo, 14-17 May 2019, Messe München, Munich, Germany
- European Sign Expo, 14-17 May 2019, Messe München, Munich, Germany

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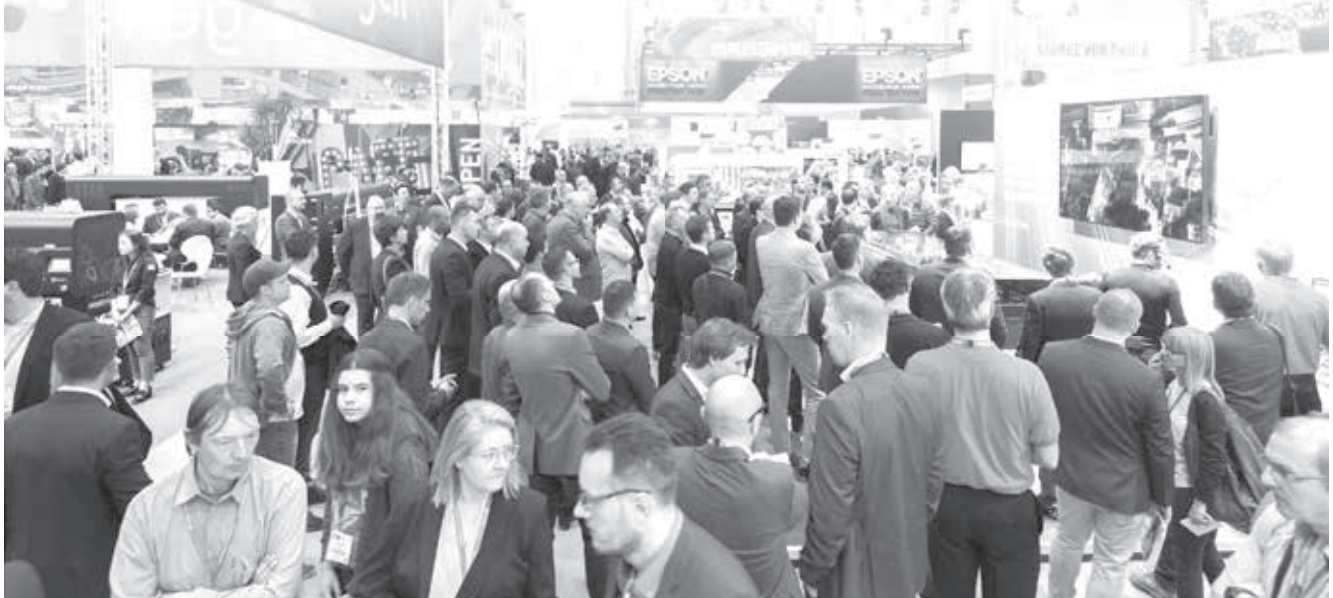
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# FEATURES CONFIRMED FOR FESPA EURASIA 2018

FESPA has confirmed its features programme for FESPA Eurasia 2018, which will take place from 6 to 9 December at the Istanbul Expo Centre in Istanbul, Turkey.

Visitors to FESPA Eurasia will be able to experience, for the first time in the region, Print Make Wear Istanbul as well as returning features, the World Wrap Masters Eurasia and signage demo workshop.

## Print Make Wear Istanbul

Following its successful launch at FESPA Global Print Expo 2018 and a popular response at FESPA Mexico, Print Make Wear will make its debut at FESPA Eurasia comprising live demonstrations of the latest in fast fashion production and garment decoration.

Visitors to Print Make Wear Istanbul will be able to experience the entire garment production process from design through to the finished garments, and given the opportunities to engage directly with experts to learn more.

Print Make Wear Istanbul will highlight both digital and screen print technologies including the latest design and workflow software, direct to textile printing and a live screen printing automatic and manual production illustrating the latest special effects.

## FESPA World Wrap Masters Eurasia

FESPA's worldwide vehicle wrap event, the World Wrap Masters returns to Eurasia. Sponsored by Hexis Graphics, Mimaki Eurasia and Car Wrapper 3D, World Wrap Masters Eurasia will offer regional wrap installers the opportunity to showcase their expertise and creativity to the global wrap community, while competing to be crowned the winner.

16 contestants will battle it out in the competition, which will take place daily during the four day show, where they will wrap a variety of objects. On the first two show days visitors can take part in onsite training opportunities from international and regional wrap professionals, where they will share top tips and expert advice.

Confirmed judges and trainers for World Wrap Masters Eurasia are Carlos Ruiz from Spain and Kiss Laios, two time world champion from Hungary.

The winner of the FESPA Eurasia leg will win a trip to FESPA Global Print Expo 2019 in Munich, Germany (14 – 17 May) where they will compete against other regional winners for the title of World Wrap Master. Last year's Eurasia champion, Ivan Tenchev from Bulgaria, went on to win the World Title at the final in Berlin, Germany.

## Signage Demo Workshop

Organised by FESPA's national Association, ARED, the signage demos will showcase the latest in both traditional and modern sign-making techniques including sign writing techniques, neon and LED signage production. The programme for the Signage Demo Workshop will be available nearer the show and will take place every day of FESPA Eurasia.

Michael Ryan, Group Exhibition Manager, FESPA comments: "The features programme is a great addition to FESPA Eurasia and offers regional print service providers and sign-makers a chance to experience, and be involved in growth areas. The World Wrap Masters and signage demo workshop always prove to be popular at FESPA Eurasia so we are excited to see these return in 2018.

"After the huge success of Print Make Wear at FESPA



wait and that the results of the elections enlivened the investors back, but sudden fluctuations in the exchange rate reversed this process.

Stating that they would continue to work to reach their year-end targets, Çağlıyan finished his words saying; "We do not want to withdraw during the crisis period. The best way to flip a crisis is to work harder. Sign İstanbul will be useful for this.

Our new brand, Plamac, will be an attractive option for potential buyers waiting to invest. We will grow together with the market, we will offer solutions that will grow the market.

With our rich product portfolio and strong technical support, we are ready for this."

You can learn more about Pigment Reklam's rich product range and services from their official website; <http://pigmentreklam.com.tr/>

#### **Pigment Reklam**

Pigment Reklam was established in 2010 relying on 10 year experience in advertising industry. The company carries on sales and marketing of high tech products and advertising materials requested by the industry. In addition to swissQprint, Plamac and WIT-COLOR UV digital and solvent printers, Pigment Reklam also provides services of printing heads, dyes,

spare parts, consumable materials and second hand machine sales, while it has a strong technical service. Pigment Reklam also carries on graphic segment distributorship of leading cutting technologies brand, bullmer.

Offering technical services for global brands including Vutek, HP Scitex, Gandi JetI AGFA, DGI, Seiko, OCE, Durst, Virtu and Infinity with an expert team educated abroad, Pigment Reklam provides certified ink sales and all kinds of spare parts for Spectra, Xaar, Konica, Epson and Seiko heads. At the same time, the company enables to have PANTONE code with ICC Profile manufacturing in obtaining correct colors in printing which is mostly an ignored topic in Turkey. Having a young and innovative vision, Pigment Reklam presents very crucial products for operator and human health to the market.

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Saying that Pigment Reklam is an ambitious supplier in environment and human health friendly UV printing technologies, Çağlıyan also explained that they have got the results they expected from the market with their solutions. Çağlıyan expressed that they will provide information about their solution to the large number of visitors at the Sign İstanbul fair and the advantages they will provide to them; "We are developing solutions to achieve better quality and sustainable growth in the market. Plamac is a brand that serves this purpose.

We will continue to offer technological solutions that can be achieved without sacrificing quality to all professionals in the printing industry from start-up to advanced development level. The key concept for us is accessibility. We will show that we have a broad and robust reachability on the market with both our solutions and our institutional structure as Pigment Reklam."

Serkan Çağlıyan also announced that there will be presentations of the 3rd generation machines (Oryx 3, Impala 3, Nyala 3, Impala 3S and Nyala 3S) that swissQprint introduced for the first time this year at the FESPA.

### **The market will get used to fluctuations in exchange rates**

Serkan Çağlıyan said that the mobility in foreign exchange rates felt in July and August were

troublesome for import-based industries. Voicing that the digital printing is almost entirely an import-oriented industry, Çağlıyan noted that a certain mobility in the exchange rates was already expected; "This sudden increase both in dollar and euro exchange rates was actually giving signals. However, the Turkish economy has a truly incredible character. It can adapt to new realities very quickly.

It can start the growth cycle with a quick jump from the point where you think the economy hit the rock bottom. Turkey has a robust financial system that has the power to quickly overcome these difficulties."

Çağlıyan stated that the market would be rapidly adapting to these new levels in the exchange rates and that it is inevitable that sales figures will decrease in the first period. Çağlıyan continued his words as follows; "At a time when macroeconomic balances are shifting, we will try to maintain our relationships with our current customers and to adapt to this new era. Investors are adhering to a wait-and-see policy and we will provide them with the necessary support in this process."

### **First half of 2018 was very active**

Recalling that 2018 started fast and the positive expectations about the end of the year were dominant, Serkan Çağlıyan underlined that the market was quite dynamic in the first months. Çağlıyan said that the election process in June directed the investors to

## Pigment Reklam is Attending Sign Istanbul 2018 with Their New Brand Plamac

Pigment Reklam will launch the Plamac brand at Sign Istanbul 2018 exhibition, continuing its mission to present innovative UV printing technologies to the market. Attractive solutions for several flatbed and roll to roll applications will be presented to visitors during the exhibition.

Pigment Reklam is participating at Sign İstanbul 2018, which will be realized in TUYAP between 20th and 23rd of September, with innovations in UV printing field. Pigment Reklam, which has represented many important international brands, primarily swissQprint and bullmer, preferred the Sign İstanbul for the first launch of its new brand Plamac. Plamac UV printing solutions with flatbed and roll to roll printing models will attract industry professionals throughout the exhibition. Visitors will be able to see the innovations in the Pigment Reklam booth in Hall 12 No D20.

Serkan Çağlıyan, owner of Pigment Reklam, said that they decided to rejoin Sign İstanbul, which is considered to be the most important activity of the region for industrial advertising and applications, after a certain period of time, because they want to reach every area where UV printing solutions are used. Çağlıyan; "As Pigment Reklam we have a wide booth area and a concept that is easily accessible for every exhibition.

In our 160 m2 booth area, visitors will be able to easily see our machine working and examine printed samples. We want to emphasize that we are also accessible in our day-to-day business plans as well as we are at the exhibition."



### Plamac launch at Sign İstanbul

Reminding that they offer UV digital printing solutions to the market and they are in a strong position in the market, Serkan Çağlıyan underlined that they constantly improve their product portfolio. Çağlıyan said; "We offer the Plamac brand to Turkish market now. With the flatbed and roll to roll UV printing solutions required for several industries and applications, Plamac comes with a competitive price and quality advantage.

We will exhibit Plamac's Pegasus, Morpho and Starfire series printers at the exhibition. These solutions are ideal for all applications where the advertising, leather industry, glass, wood, tension ceiling and textile printing applications are used. In Sign İstanbul we aim to meet investors and professionals from all these markets."

Recalling the constant increase in demand for industrial printing, Çağlıyan expressed that industrial demands were prominent for interior prints as well as in outdoor works.



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## Forthcoming FESPA events include:

- FESPA Africa, 12-14 September 2018, Gallagher Convention Centre, Johannesburg, South Africa
- FESPA Mexico, 20-22 September 2018, Centro Citibanamex, Mexico City, Mexico
- FESPA Eurasia, 6-9 December 2018, (IFM) Istanbul Expo Centre, Istanbul, Turkey
- Asia Print Expo, 21-23 February 2019, BITEC Exhibition Centre, Bangkok, Thailand
- FESPA Brasil, 20-23 March 2019, Expo Center Norte, São Paulo, Brazil
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## FESPA EURASIA 2018 BUILDS MOMENTUM FOR SIXTH EDITION

### 82% of visitors consider FESPA Eurasia the most important event in the region

FESPA Eurasia 2018, the region's leading event for screen, textile and digital wide format, returns to Istanbul, Turkey from 6 to 9 December 2018.

2018 will be the sixth edition of the exhibition, which has gone from strength to strength, growing its visitor audience by 25% since the first event in 2013. The last FESPA Eurasia, which took place in 2017 attracted 8,761 unique visitors. Roz Guarnori, Exhibitions Director at FESPA comments: "Since the launch of FESPA Eurasia in 2013 we have developed our visitor proposition for the show, bringing both new and previous attendees to the show each year. The fact that more and more visitors are staying for longer than one day demonstrates that visitors are engaged with the exhibition and its relevance to the market. That's reflected in that over 82% of visitors consider FESPA Eurasia to be the most important show in the region to attend for their business."

Visitor data from FESPA Eurasia 2017 demonstrates the quality of visitors the event attracts; 93% of visitors to the event are decision makers or are involved in the decision making process. The data also shows that the average budget per visitor was €134,678, with 80% confirming they had plans to buy at the exhibition or within 12 months.

Exhibitor, FPI Tekstil commented on the internationality of the audience and quality of visitors; "We were extremely pleased with FESPA Eurasia 2017. It gave us the opportunity to meet with market leaders and decision-makers from Turkey, Europe and North Africa. FESPA proved once again to be the right place for growing our business." Abdul Moghith Alkhawam – FPI Tekstil

This year's event will take place at a new venue, Istanbul Expo Centre (iFM), occupying two halls – 9 and 10. The exhibition centre is located near the city centre and has multiple travel connections making it

an easy journey for visitors from Turkey and further afield. The move to the new venue for 2018 has enabled FESPA to offer more competitive rates for exhibitors, with savings of up to 40%.

FESPA Eurasia is hosted in partnership with FESPA's Turkish Association, ARED, which means that the event will effectively reflect the needs and challenges of the regional Eurasia market. Roz continues: "Being a Federation of national Associations is one of our unique selling points. We work closely with our Associations to ensure that our events are tailored to the needs of the local audience. ARED runs the exhibition on the ground, ensuring that it will be relevant to today's print service providers in Eurasia. FESPA's global expertise in wide format print exhibitions will ensure that FESPA Eurasia 2018 will be the key event for speciality printers locally and further afield, and will continue its position as the region's premier event in this market."

With the opportunity to meet and network with both leading and local manufacturers and access to free educational features, FESPA Eurasia is the most effective business event for both speciality print exhibitors and print service providers in Eurasia in 2018. For more information on FESPA Eurasia 2018, visit: [www.fespaeurasia.com](http://www.fespaeurasia.com)





Note that there are natural “dips” in the attenuation graph at these wavelengths.

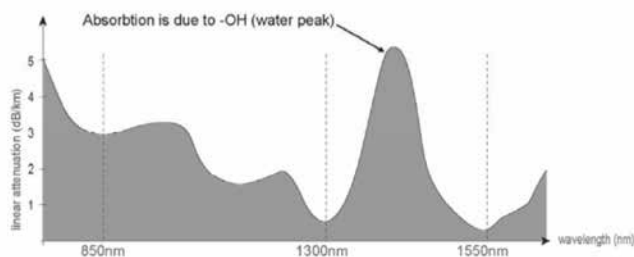


Figure 8: Attenuation vs. Wavelength of Optical Fiber

Bandwidth is a measure of the data-carrying capacity of an optical fiber. It is expressed as the product of frequency and distance. For example, a fiber with a bandwidth of 500MHz-km (Megahertz kilometer)) can transmit data at a rate of 500MHz along one kilometer of fiber. The bandwidth of single mode fibers is much higher than in multimode fibers. The main reason for the lower bandwidth in multimode fibers is modal dispersion.

In multimode fibers, information (ABC) is propagated in fiber according to N modes or paths (see Figure 9), as if it were “duplicated” N times (for example, in the diagram,, the mode 3 path is longer than the mode 2 path,, which are both longer than the mode 1 path). If information is too close, there is a risk of overlapping (“smearing”) the information, and then it will not be recoverable at the end of the fiber.

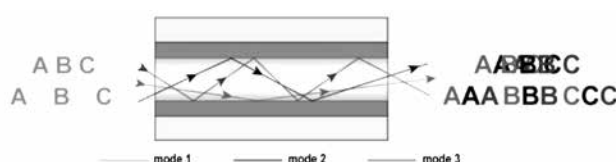


Figure 9: Modal Dispersion in Multimode Fibers

Modal dispersion can be alleviated to a large extent by grading the index of refraction from the middle of the core to the cladding (graded index fiber), thereby equalizing the paths (Figure 10). In a step index fiber, the index of refraction changes abruptly from the core to the cladding. To help reduce modal dispersion, fiber manufacturers created graded-index fiber. Graded-index fiber has an index of refraction which gradually increases as it progresses to the center of the core. Light travels slower as the index of refraction increases.

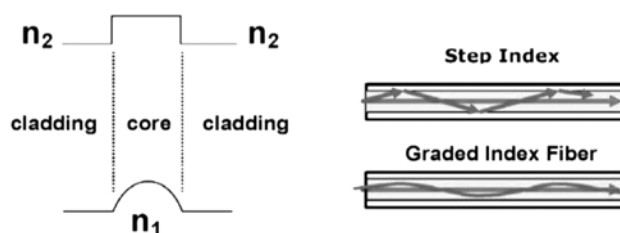


Figure 10: Graded Index in Multimode Fibers

Figure 11: Single Mode Propagation Unfortunately, the optical fiber construction shown in Figure 3 is fragile. Thus, for most applications, the fiber must be made into a cable.. There are many ways to construct a cable (tight buffer, loose tube, gel filled, distribution, breakout, etc).

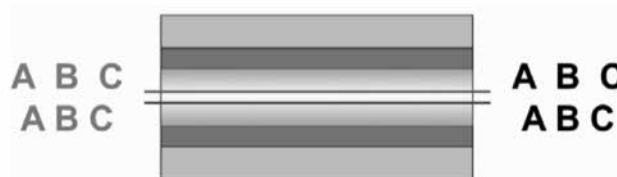


Figure 11: Single Mode Propagation

Unfortunately, the optical fiber construction shown in Figure 3 is fragile. Thus, for most applications, the fiber must be made into a cable. There are many ways to construct a cable (tight buffer, loose tube, gel filled, distribution, breakout, etc). However, in our single fiber cable example (see Figure 12) and (Figure 13 )show multiple optical fibers.

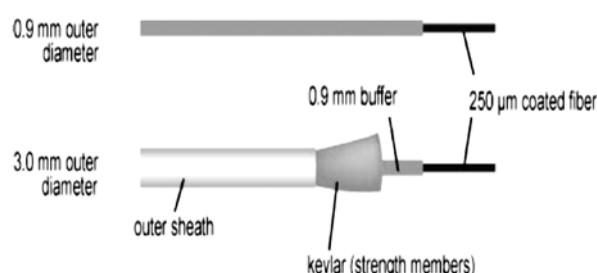


Figure 12: Construction of a Single Fiber Cable

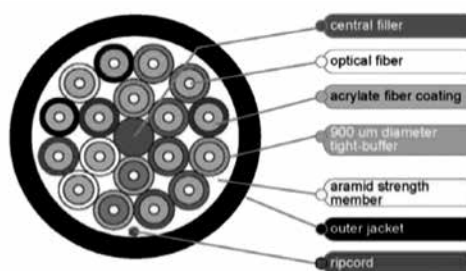


Figure 13: Example of the Construction of a Multi-Fiber Cable

## II.2 Optical Fiber/Cable

In this section, we discuss the structure and properties of an optical fiber, how it guides light, and how it is cabled for protection.

An optical fiber is made of 3 concentric layers (see Figure 3):

**Core:** This central section, made of silica or doped silica, is the light transmitting region of the fiber.

**Cladding:** This is the first layer around the core. It is also made of silica, but not the same composition as the core. This creates an optical waveguide which confines the light in the core by total internal reflection at the core-cladding interface.

**Coating:** The coating is the first non-optical layer around the cladding. The coating typically consists of one or more layers of polymer that protect the silica structure against physical or environmental damage. The coating is stripped off when the fiber is connectorized or fusion spliced.



Figure 3: Optical Fiber Construction

- **Buffer (not pictured):** The buffer is an important feature of the fiber. It is 900 microns and helps protect the fiber from breaking during installation and termination and is located outside of the coating. The light is "guided" down (see Figure 4) the core of the fiber by the optical "cladding" which has a lower refractive index (the ratio of the velocity of light in a vacuum to its velocity in a specified medium) that traps light in the core through "total internal reflection."

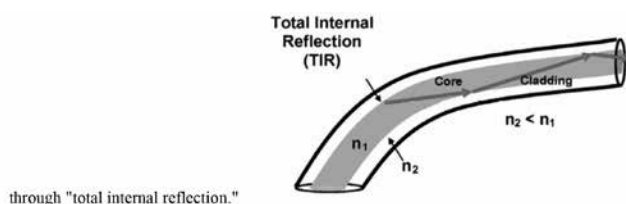


Figure 4: Diagram showing Total Internal Reflection

In fiber optic communications, single mode and

multimode fiber constructions are used depending on the application.. In multimode fiber (Figure 5), light travels through the fiber following different light paths called "modes." In single mode fiber,, only one mode is propagated "straight" through the fiber (Figure 6).

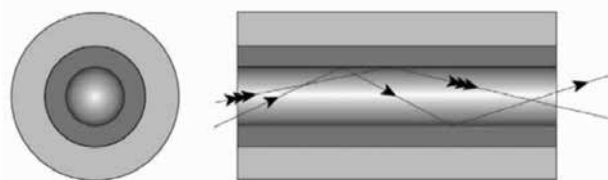


Figure 5: Multimode Fiber Light Propagation

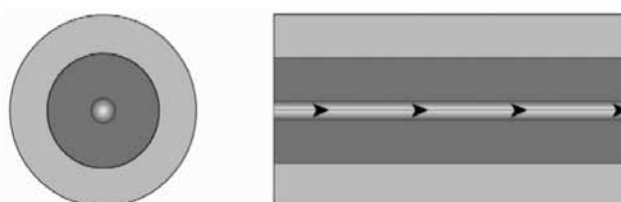


Figure 6: Single Mode Fiber Light Propagation

Typical multimode fibers have a core diameter/cladding diameter ratio of 50 microns/125 microns (10-6 meters) and 62.5/125 (although 100/140 and other sizes are sometimes used depending on the application). Single mode fibers have a core/cladding ratio of 9/125 at wavelengths of 1300nm and 1550nm.

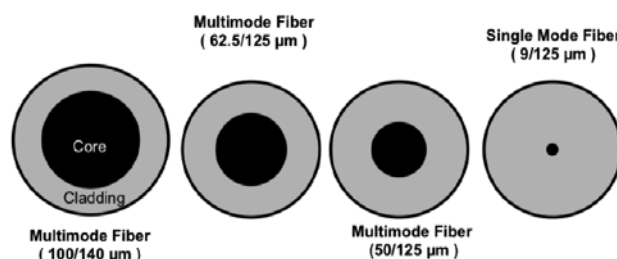


Figure 7: Popular Optical Fiber Core/Cladding Diameter Ratios

Light is gradually attenuated when it travels through fiber. The attenuation value is expressed in dB/km (decibel per kilometer). Figure 8 shows the attenuation as a function of the wavelength.

As discussed in Section II.1, the typical operating wavelengths are 850nm (nanometers) and 1300nm in multimode, and 1300nm or 1550nm in single mode.

### Increased bandwidth:

The high signal bandwidth of optical fibers provides significantly greater information carrying capacity. Typical bandwidths for multimode (MM) fibers are between 200 and 600MHz-km and >110GHz-km for single mode (SM) fibers. Typical values for electrical conductors are 10 to 25MHz-km.

### Electromagnetic/ Radio Frequency Interference Immunity:

Optical fibers are immune to electromagnetic interference and emit no radiation.

### Decreased cost, size and weight:

Compared to copper conductors of equivalent signal carrying capacity, fiber optic cables are easier to install, require less duct space, weigh 10 to 15 times less and cost less than copper.

### Lower loss:

Optical fiber has lower attenuation (loss of signal intensity) than copper conductors, allowing longer cable runs and fewer repeaters.

### No sparks or shorts:

Fiber optics do not emit sparks or cause short circuits, which is important in explosive gas or flammable environments.

### Security:

Since fiber optic systems do not emit RF signals, they are difficult to tap into without being detected.

### Grounding:

Fiber optic cables do not have any metal conductors; consequently, they do not pose the shock hazards inherent in copper cables.

### Electrical Isolation:

Fiber optics allow transmission between two points without regard to the electrical potential between them.

## II. Fiber Optic Link Components

In order to comprehend how fiber optic

applications work, it is important to understand the components of a fiber optic link. Simplistically, there are four main components in a fiber optic link (Figure 1).

- Optical Transmitter
- Optical Fiber/Cable
- Connectors
- Optical Receiver

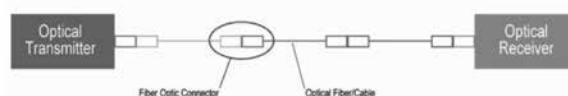


Figure 1: Simple Fiber Optic Link

### II.1 Transmitter

The transmitter converts the electrical signals to optical.. A transmitter contains a light source such as a Light Emitting Diode (LED) or a Laser (Light Amplification by Stimulated Emission of Radiation) diode, or a Vertical Cavity Surface Emitting Laser (VCSEL).

LED: Is used in multimode applications and has the largest spectral width that carries the least amount of bandwidth.

VCSEL: Is also used in multimode applications with a narrower spectral width that can carry more bandwidth than the LED.

LASER: Has the smallest spectral width, carries the most bandwidth, and is used in single mode applications.

These sources produce light at certain wavelengths depending upon the materials from which they are made. Most fiber optic sources use wave lengths in the infrared band, specifically 850nm (1nm=10<sup>-9</sup> m), 1300nm and 1550nm. For reference, visible light operates in the 400-700nm range (see Figure 2)

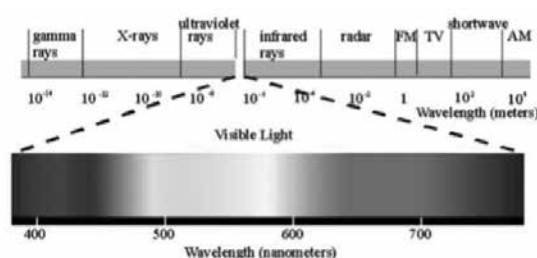
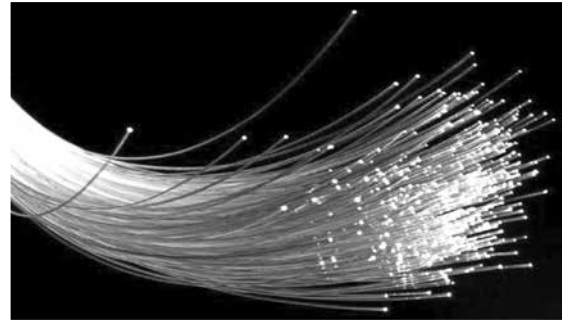


Figure 2: Electromagnetic Spectrum



Dr. F Nayeb Morad



# Fiber Optics

## Why fiber optics?

The utilization of fiber optic data transmission for industrial automation and process control has become increasingly popular over the past decade.

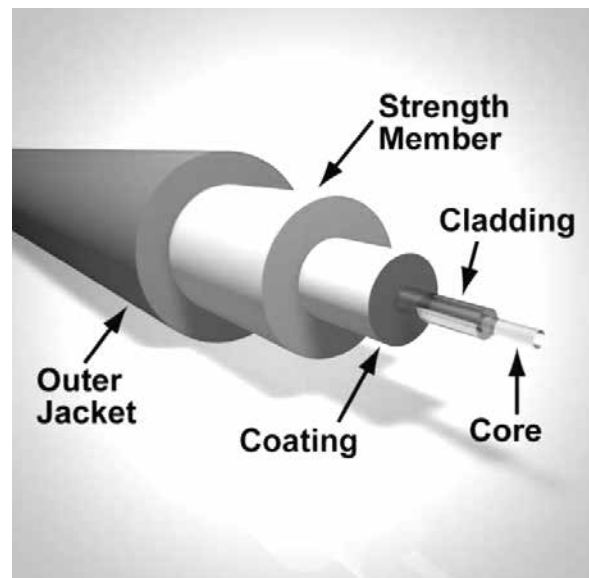
A basic fiber optic system, using an optical transceiver circuit and fiber optic media, offers a wide array of benefits that are not available with traditional copper conductors.

### Advantages of fiber optic data transmission technology

- High data rate and wide bandwidth
- Immunity to EMI/RFI and lightning damage
- No ground loops
- Low attenuation (data loss)
- Longer distance – up to 3 miles (5 km) with Multi Mode fiber and over 15 miles (25 km) with Single Mode fiber
- Small cable diameter fits almost anywhere – requires less duct space
- Light weight
- No sparks if cut – ideal for Hazardous Area applications
- No electric shock hazard
- Secure communications
- Flexible networking topologies
- Corrosion resistant
- Longer life expectancy than copper or coaxial cable

- Economical total system cost

**Fiber optics**, which is the science of light transmission through very fine glass or plastic fibers,, continues to be used in more and more applications due to its inherent advantages over copper conductors. The purpose of this article is to provide the non-technical reader with an overview of these advantages, as well as the properties and applications of fiber optics.



### I. Advantages

Fiber optics has many advantages over copper wire including: