

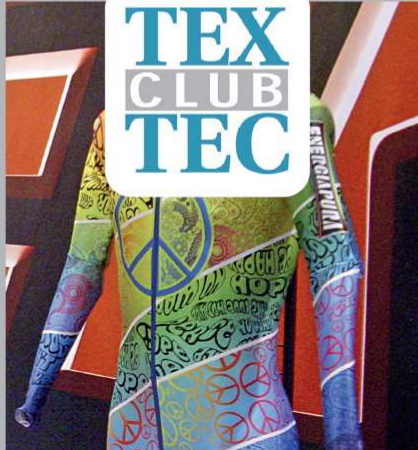
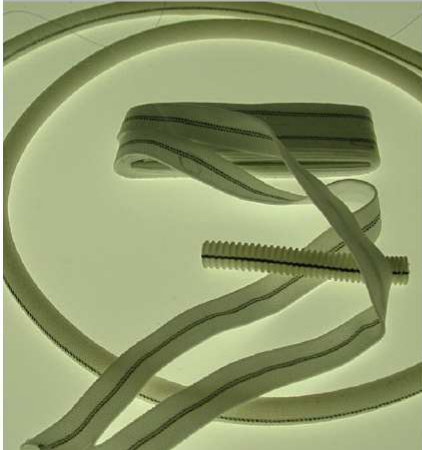


# nano itattex 2011

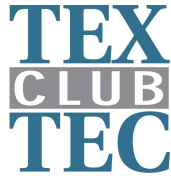
**Milano**  
**23-24 novembre 2011**

Grand Hotel Villa Torretta

**Mercati, Innovazioni di prodotto e  
tecnologie emergenti per il settore  
Tessile Abbigliamento**



**TEX  
CLUB  
TEC**



**NANOITALTEX 2011**  
**Milano 23-24 Novembre 2011**  
**Grand Hotel Villa Torretta**

**Mercati, Innovazioni di prodotto e tecnologie emergenti per il settore  
Tessile Abbigliamento**  
*Markets, product innovations and emerging technologies  
for the textile-clothing sector*

**23 NOVEMBRE 2011**  
**9.30 -10.00 Registrazione/Registration**

**Introduzione e apertura dei Lavori – Conference Opening**  
**Andrea Parodi – Presidente TexClubTec**

**10.00 – 12.30**      **Coordinatore: Aldo Tempesti (TexClubTec)**

**Panoramica attuale e prospettive a livello mondiale per il tessile abbigliamento.  
Opportunità, rischi e problematiche per gli operatori italiani del tessile tecnico.**  
*Situation and perspectives of World Textile and Apparel Industry. Opportunities,  
risks and problems for the Italian operators of the technical textile sector.*

Gli scenari economici del dopo crisi. Da Occidente a Oriente e da Nord a Sud. Ma non subito.  
*Economy scenarios after the crisis. From West to East and from North to South. But not in a short  
while*

**Francesco Daveri (Università di Parma e Sda Bocconi)**

Panoramica sugli attuali consumi di fibre tessili nel mondo  
*New Horizons in the Textile and Clothing worldwide production. Overview about the actual  
world textile fiber consumption.*

**Dieter Eichinger (Lenzing)**

Investimenti a livello mondiale nel settore meccano tessile.  
*World evolution and new scenarios for textile machinery investments*

**Mauro Badanelli (Acimit)**

Trend e visioni per il settore del tessile tecnico. Fattori influenzanti la crescita delle Aziende Italiane  
(opportunità, rischi, problemi)  
*Technical textile: trends, visions and factors affecting the grow of Italian companies  
(opportunities, risks, problems)*

**Andrea Parodi - (Film Man Made Group - TexCubTec)**

## 12.30- 14.00 PRANZO-LUNCH

14.00 -16.00      **Coordinatore: Michael Jaeneke (Messe Frankfurt)**

### **Potenzialità del tessile tecnico nei mercati extra-europei *Evolution of technical textiles in the extra-European market***

Potenzialità e Tendenze del mercato dei tessuti tecnici in Russia  
*The Potential and Trends of Technical Textiles market in Russia*  
**Igor V.Salomakhin (Russia-Europe Textile Alliance/RETA)**

Potenzialità e Tendenze del mercato dei tessuti tecnici in USA  
*The Potential and Trends of Technical Textiles market in USA*  
**Relatore da definire**

Potenzialità e Tendenze del mercato dei tessuti tecnici in China  
*The Potential and Trends of the Technical Textiles market in China*  
**Li Leng Shen (China Nonwoven & Industrial Textiles Association/CNITA)**

Potenzialità e trend del mercato dei tessuti tecnici in India  
*The Potential and Trends of the Technical Textiles market in India*  
**Mukesh Vijaywargi (Klopman International)**

## 16.00 - 16.20 COFFEE BREAK

16.20 – 18.30      **Coordinatore: Mauro Badanelli (Acimit)**

### **L'innovazione nel meccanotessile. Concetti, tecnologie, processi *Textiles Machinery Innovation: concepts, technologies, Processes***

Industria tessile e produttori: una sinergia di sviluppo sostenibile  
*Textile industry and manufacturers: synergy for sustainable development*  
**Valerio Zaffalon (Flainox)**

Tecnologie innovative di tintura di nano e micro fibre  
*Innovative dyeing technologies for nano and micro fibers processing*  
**Lucio Corbellini (Noseda)**

Tessuti tecnici: tecnologia per il suo tessimento  
*Technical fabric and its weaving technology*  
**Paolo Pezzoli (PTMT)**

La stampa digitale e il plasma  
*Plasma and the digital printing*  
**Napoleone Spampatti (Reggiani)**

## 24 NOVEMBRE 2011

**9.00 -11.00**            **Coordinatore: Paolo Canonico (Saati)**

### **Prodotti avanzati ed applicazioni innovative** ***Advanced products and innovative textile applications***

Realizzazione ed utilizzo di microcapsule: il conferimento di nuove proprietà ai tessuti  
*Elaboration and use of microcapsule to give textiles new properties*  
**Xavier Almeras (Devan Chemicals)**

Monofilamenti per applicazioni tecniche  
*Monofilaments for technical applications*  
**Herbert De Breuck (Luxilon)**

Tessili intelligenti per la protezione dal fuoco  
*Smart and intelligent textiles for fire prevention*  
**Vladan Koncar (ENSAIT)**

Stimoli ed opportunità nel settore delle strutture composite  
*Composites structures challenges*  
**Christophe Binetruy (Ecole des Mines de Douai)**

## **11.00 - 11.30 COFFEE BREAK**

**11.30 – 13.30**            **Coordinatore: Solitario Nesti (Nextectology)**

**Protezione dal fuoco. Trend tecnologici e recenti sviluppi nel settore del comportamento al fuoco dei tessuti**  
***Fire protection. Technological trends and recent Developments in the sector of textile flame retardancy***

**11.30 - 12.30**

**Sviluppi nell'impiego di materiali intumescenti per l'ottenimento di fibre poliestere e polipropilene FR, utilizzabili nei settori dell'edilizia e dei trasporti: il Progetto INTIMIRE.**

***Developments for a new generation of Flame Retardant fibers New fire retardant and flame resistant polyester and polypropylene fibres, for building and transport upholstery, based on intumescent flame retardancy concept. The INTIMIRE Project.***

Standard e normative Europee per edilizia e costruzioni in Europa per protezioni da fuoco  
*Standard and legislation for building and transportation in Europe for fire protection.*  
**David Hong (Crimp)**

Scenario ed obiettivi del progetto INTIMIRE  
*Context and objectives of INTIMIRE project*  
**Carole Magniez - (Ensaït)**

Risultati e stato dell'arte del progetto

*Results obtained, comparison with state of art.*

**François Rault (Ensait)**

**12.30 - 13.30**

**Recenti sviluppi nel settore del tessile flame retardant**

*Recent Developments in flame retardant textile applications.*

Spalmature FR Funzionali per tessuti tecnici. Alcuni esempi per applicazioni a base acquosa

*Functional coatings for Technical Textiles - Selected examples for water - based applications*

**Dirk Grafen (Huntsman Textile Effects)**

Nuova fibra Nomex® per la protezione dall'arco elettrico: tessuti intelligenti che reagiscono a condizioni termiche estreme

*New Nomex® for Electric Arc: Intelligent fabrics that react under extreme thermal conditions.*

**Silvio Tonus (Du Pont Protection Technologies)**

Bioactive Trevira CS

*Bioactive Trevira CS*

**Anke Vollenbroker (Trevira)**

## **13.30-15.00 PRANZO – LUNCH**

**15.00 – 17.30**

**Coordinatore:**

**Problemi ed esigenze nella gestione della conoscenza all'interno delle Aziende  
Opportunità e soluzioni offerte dai risultati del Progetto PASSAGE**

*Problems and needs in enterprise knowledge management. Solutions and competitive advantages using PASSAGE Project tools*

Importanza del mantenimento del know how tecnologico aziendale come fattore competitivo. Il contesto del progetto PASSAGE.

*Role of the technological know how as competitive factor of the companies.*

*The context of Passage project*

**Aldo Tempesti (TexClubTec)**

Identificare, formalizzare, immagazzinare e gestire conoscenza aziendale.

*Identifying, capturing, storing and managing of industrial Knowledge.*

**Athanase Contargyris - IFTH**

Utilizzo degli strumenti informatici disponibili per aziende ed associazioni. Dimostrazione pratica

*The Capability Management Platform available for enterprises and associations.*

*Technical demonstration.*

**Claudio Buffo (Sol-Tec)**

Esperienze e considerazioni nell'utilizzo pratico della Piattaforma Passage con le Aziende.

*Experiences and considerations in the real use of Passage Platform with enterprises.*

**Josette Lemasson (IFTH)**

Opportunità riscontrate in Francia da un ente pubblico nel settore della formazione.

*Verified advantages by french public Body involved in training activities.*  
**Laurent Vandendor (Forthac)**

## **17.30 - 18 CHIUSURA LAVORI/ END OF CONFERENCE**

E' prevista una traduzione simultanea italiano-inglese e viceversa  
Per aggiornamenti sul programma: [www.texclubtec.it](http://www.texclubtec.it) - [www.nanoitaltex.org](http://www.nanoitaltex.org)

Simultaneous translation Italian-English and viceversa will be available for all conference  
To be updated about the programme: [www.texclubtec.it](http://www.texclubtec.it) - [www.nanoitaltex.org](http://www.nanoitaltex.org)

**Abstract  
Relazioni  
in ordine alfabetico**

## **Elaboration and use of microcapsules to give textiles new properties.**

**Lecturer : Xavier Almeras, Devan Chemicals NV, Belgium.**

**Co-authors : Raquel Vieira, Devan-Micropolis, Portugal. Patrice Vandendaele, Devan Chemicals NV, Belgium.**

### ***Abstract***

The Devan group is focused on creating innovation in the textile finishing industry for niche markets leading to added value in the end product.

Devan Chemicals has developed a new patented technology which focuses on a novel mechanism for binding microcapsules to textile fibres. The new technology enables the capsules to be bound through functional reactive groups, using conventional textile processing, including padding, exhaustion and spray. The chemical bond which is formed between the capsules and the fibre confers excellent wash durability for the lifetime of the textile product.

eSSENTIAL™ is a fragrance finish based on encapsulating perfume that are released with the breakdown of the capsule because of the rubbing. Insecta™ is a repellent technology for mosquitoes. The repellent active components are released with time because of the shear stress. This technology allows to decrease the amount of active component with increasing the efficiency compared to classical treatment.

THERMIC is a thermo-regulating finish based on encapsulating phase change materials (PCM) and is one of the technologies applied using the new reactive technology.

PCMs change their physical state (solid-liquid and vice versa) within a defined temperature range, responding to changes in the ambient temperatures. PCMs absorb heat when the ambient temperature rises and store the energy inside the capsule. Conversely, this stored energy is released as heat-energy as the ambient temperature cools down.

A unique feature of THERMICTM permits the application to be made without the use of binders, nor does it need to be incorporated within a man-made fibre. The new application method brings other benefits over more conventional approaches such as: higher thermal capacity; improved handle; permeability to air; and application to any fibre type.

THERMICTM responds to temperatures changes at the surface of the skin and the environment by absorbing and releasing heat, thus increasing comfort by keeping the body at a constant temperature for longer. This feature opens up new horizons for thermoregulation and thermo-comfort through textiles in applications for apparel, bedding, upholstery, and building insulation.



## **Investimenti a livello mondiale nel settore meccano tessile**

**Mauro Badanelli**

ACIMIT - Associazione Costruttori Italiani di Macchinario per l'Industria Tessile

### ***Abstract***

Dopo la crisi economico-finanziaria del biennio 2008-09, il 2010 ha segnato per il commercio internazionale delle macchine tessili un recupero dei livelli registrati ante-crisi. Sono aumentati gli investimenti nei principali mercati del meccanotessile mondiale. Cina, India e Turchia hanno infatti osservato una crescita nella domanda di macchinario tessile. Ma al traino sono cresciute anche le importazioni degli altri mercati asiatici e dell'America Latina.

L'analisi presentata evidenzia alcune tendenze del commercio internazionale del settore nel periodo 1995-2010. Le dinamiche del mercato internazionale hanno rivoluzionato la geografia dei settori a valle. Il graduale spostamento delle produzioni tessili verso i Paesi asiatici non solo ha comportato un'analoga modifica dei flussi commerciali del meccanotessile, ma anche uno sviluppo delle locali industrie produttrici di macchinario (*in primis* quella cinese), che hanno eroso la quota di mercato detenuta dai principali Paesi esportatori del settore: Germania, Italia, Giappone e Svizzera.

Dal lato della domanda l'Asia acquisisce un peso crescente nel commercio mondiale del settore, grazie alla delocalizzazione delle produzioni tessili verso quei Paesi. Non di meno resta importante anche la quota delle importazioni detenuta dai mercati occidentali (Unione Europea e Stati Uniti), dove restano ancora concentrate le produzioni di alta qualità e quelle riguardanti il tessile innovativo.

# **Stimoli ed opportunità nel settore delle strutture composite (Composites structures challenges)**

**Sebastien Comas Cardona**

Ecole des Mines (Douai, France)

## ***Abstract***

Fibre-reinforced organic composites are widely used in aeronautic, automotive, marine or wind energy applications. The challenges facing those industries are numerous and field-oriented. For instance, automotive companies expect to manufacture high performance and light part at the lowest cost, but also at a incredibly high rate (one part per minute). Such final rate implies all partners of the supply chain to provide adequate materials within an equivalent rate. The challenge is therefore shifted to the textile and fibre preform manufacturers. In aeronautic or wind energy fields, the challenge lies more in the large dimensions and thicknesses of the parts to manufacture. The amount of material involved in one part does not tolerate any failure in manufacturing. For instance, a windmill blade can weigh easily few tons (of glass fibrous reinforcement and organic resin), therefore no one can afford to waste even a single part. During composite manufacturing, variability occurs. Uncertainties are present in various forms: process control, materials (fibrous reinforcement and organic resin)... Parts of the composite manufacturing challenges are directly related to estimating the amount of variability present along the manufacturing chain and evaluate their influence on the final part performance. Examples and implications of the textile sectors will be given.

# Identifying, capturing, storing and managing of industrial Knowledge

**Athanase Contargyris**

IFTH (FR). CEDECS (FR)

## ***Abstract***

Introduction first demonstrates how technical know-how is one of the key comparative advantages on which EU industries can build strategies for facing globalisation challenges. Main presentation is devoted to PASSAGE project's methodology, which is offering to industrial SMEs in Textile and Clothing in Italy, France, Greece, Bulgaria and Romania solutions to better understand, identify, capture, store and manage their know-how needs in a systematic way. The presentation will focus on the following steps recommended for performing such tasks, why and how they should be performed and what results are obtained at each step:

- 1) To assess SME positioning in the market, make its SWOT analyses and clarify strategies needed to face them and which job positions in the company will play a role or will be affected by these strategies
- 2) To identify and describe the (strategic) job positions affected, and the know-how they possess and position them towards target job positions and standard job profiles required and the know how they should possess
- 3) To assess which is the critical know-how of these (strategic) job positions and how it can be affected by (or affect) strategic decisions or threats in order to decide if and which appropriate measures should be taken (preserve, acquire, transfer)
- 4) To identify who in the company (or outside) should be involved in the preservation, acquisition or transfer of the job profiles needs
- 5) To organise the capture of know-how which need to be preserved, acquired or transferred, in a way it can be retrieved for the serving the purpose targeted
- 6) To maintain and retrieve the know-how to transfer it or to valorise it in new contexts

# **Innovative Technologies for the Dyeing of Nanofibres and Microfibres**

**Lucio Corbellini**

Nosedà Srl

## ***Abstract***

The background. The continuous evolution and innovation in the sector of textile fibres (microfibres and nanofibres) and their growing utilization in the main application fields in Italy and Europe such as clothing textiles and technical textiles, the ever increasing demand for load flexibility, application versatility and reduction of the energy costs in production are the driving force for the further development of and research on innovative finishing technologies.

The prerequisites. After ten years from the beginning of the cooperation between Nosedà and its Japanese partner Hisaka, and after having developed together the long-tube jet models CUT SR (synthetic fibres) and CUT MF (natural fibres and natural/synthetic blends), the new long-tube jet model CUT SP was presented at Itma in Barcelona; this model was developed in Japan for the rope dyeing of synthetic nanofibre and microfibre clothing fabrics (PES, PA, PU and others) and is going to be built, developed and marketed starting from October 11<sup>th</sup> by Nosedà in Italy and Europe.

Main features. High performances (up to 600 mt/min and higher). Load flexibility (from 100% up to 20% of the nominal load). Extreme applications (PES/PA 15-30 den nanofibres and microfibres).

Special features. Optimised hydraulics to ensure double-rope processing. Internal vat to ensure uniform and orderly vat storage. "No internal reel" to optimise the circulation of the roll, minimise tension, and eliminate the risk of fibre waste (relative speed between reel/fabric).

Beam dyeing. Along with rope dyeing, Nosedà has further developed and widened the application range (microfibres and technical fabrics) of the last generation of beam-dyeing machines AcquaZERO ® for the beam dyeing of fabrics with variable loads at constant and absolute minimum liquor ratios (depending on the fibre).

Applications. During the presentation, nanofibre and microfibre samples (clothing and technical fabrics) processed with these innovative technologies will be shown.

## **Gli scenari economici del dopo crisi. Da Occidente a Oriente, da Nord a Sud. Ma non subito.**

### **The post-crisis macro outlook. From West to East, from North to South. But not now**

**Francesco, Daveri**

Università di Parma and Sda Bocconi

#### ***Abstract***

La crisi finanziaria ed economica cominciata nel 2008 è ancora in pieno svolgimento. L'epicentro è ora in Europa, dove la sopravvivenza stessa dell'euro è messa in dubbio. Ma, durante la crisi, sotto traccia, è in corso di svolgimento uno spostamento di asse economico da Occidente ad Oriente e da Nord a Sud che sta modificando alla radice il mondo in cui viviamo.

La forza dei numeri – della demografia, dell'economia - è con l'Asia e con i paesi emergenti dal Sud del mondo. Ma questo processo, per quanto accelerato e reso più drammatico dalla crisi, avverrà comunque con gradualità. Il che ha importanti implicazioni sulle strategie di posizionamento e di riposizionamento delle aziende nel mutato scenario mondiale

*The financial and economic crisis, that started off in 2008, is still going on today. Its epicenter is now in Europe, where the survival itself of the euro is questioned. Yet, during this crisis, a somehow overlooked change of axis - from the West to the East and from the North to the South - is also ongoing. This is just the beginning of change that radically reshape the world where we live.*

*The force of numbers – both demographic and economic – is with Asia and the other emerging countries in the rest of the world. But nevertheless this process, however accelerated and made more dramatic during the crisis, will take time to occur. This bears important implications for the positioning and repositioning strategies of firms in the changing economic scenario.*

## **A new generation of technical monofilaments**

**Herbert De Breuck**

Luxilon Industries NV

### ***Abstract***

Luxilon industries is a Belgian extrusion company, specialised in technical monofilaments. Main activities are:

- sports: nr1 for tennis strings for professional tennis players
- technical textiles: special yarns for technical textiles (bonding yarns, fluorocarbons,...)
- medical: sutures, yarns for implants, meshes and orthopaedics,...

The latest new products and ongoing R&D will be presented.

- Luxicool: cooling filament, using polymeric composition to create a cooling effect. Patented product to use for temperature regulation (protective clothing, sportswear). Applications: sportswear, bandages, compression suits,... This product is the winner of the Avantex Innovation prize 2011 in the category 'Comfort' at Tectextil Frankfurt.
- Thermoform: Luxilon developed a patented thermoformable material. With this material, in combination with standard textile materials, you can form and shape fabrics by applying heat of 60 – 70°C. This creates light weighted fabrics that give structural support. Multiple applications in orthopaedics, composites, sports, ...this product has won the Innovation Prize at Tectextil 2009 for 'New Materials'.
- Sterilux and Sterilux: yarns for medical use (sutures, surgical mesh, braided and other implants). Raw materials are pure homo-polymers. All products are conform USP and FDA regulation. The presentation explains how to manage the Regulatory affairs for these of products. Luxilon develops, together with partners, new yarns based on resorbable polymers for implants and scaffolds. Luxilon is either coordinator or partner in 4 EU R&D projects on new fibres based on biopolymers for implants.
- R&D topics: even being SME, we put a lot of energy in R&D. 7 EU projects are ongoing. Luxilon is closely cooperating with R&D centres and Universities all over Europe and with polymer suppliers, mainly their R&D departments.

This presentation gives an interesting example of an SME, originating from the classical textile sector, creating innovative products by focusing on R&D and international cooperation.

# **New Horizons in the textile and Clothing worldwide production. Overview about the actual world textile fiber consumption. A Vision of Cellulose Fibers in 2020**

**Dieter Eichinger**

Lenzing AG

## ***Abstract***

The declining availability of resources is currently one of the big challenges for the world economy. In the textile industry we are seeing a similar obstacle. The expected growth in fiber demand due to population and per capita increase cannot be met by the supply of natural, synthetic or cellulosic fibers. It is therefore essential to understand the biggest changes in the market and the key indicators helping to predict future megatrends.

This presentation is designed to give an outlook into the cellulose fiber world of 2020. A shortage of resources is forcing retailers to raise prices and identify new alternatives for conventional resources. A closer look at the end-consumer needs provides the link between market requirements and required fiber performance. Cellulose fibers are providing excellent comfort level which is key for the consumer and exceptional innovation potentials in respect to fiber functionalities. With TENCEL technology new applications and products can be developed and are a platform for innovation.

Along a close market evaluation, mega trend observation based on the Kondratieff theory, provides an insight on the sixth predicted long economic cycle, moving from information technology to the new wave of psychosocial health. The growing importance of the quality of life will bring new opportunities and importance to the cellulose fibers as a lifestyle product.

The future brings many challenges but most of all great opportunities for cellulose fibers. Understanding the market and the respective players will be the key to success.

# **Functional coatings for Technical Textiles - Selected examples for water - based applications**

**Dirk Grafen**

Huntsman Textile Effects

## ***Abstract***

The production of technical textiles is driven by specifications and norms in consideration of environmental and economical aspects. It is important to provide eco-friendly, energy-efficient and sustainable solutions. An important or probably the most important requirement is flame retardancy as functional property.

Many standard coating formulations still contain halogenated chemistry to cover the requirements with good performance and attractive price. Environmental concerns and the ban of different halogenated FR-additives urge textile manufacturers and chemical companies to offer halogen-free solutions.

If it is not possible to use inherent flame retardant or flame-resistant textiles there is nothing else than using a suitable finishing or coating. Next to the selection of the right chemicals, the ground fabric and possible processes with available machinery are essential to fulfil the specs.

In case of coating there are options to work with different application technologies like paste- or foam coatings using recipes based on single components or tailor-made compounds. These compounds already contain adequate polymers and fillers which are ready-to-use.

Different examples of important end use segments like automotive, home textiles, building/ construction and filtration are presented.



# STANDARD AND LEGISLATION FOR BUILDING AND TRANSPORTATION IN EUROPE FOR FIRE PROTECTION

David HONG  
CREPIM

## ***Abstract***

Flame retarded materials are widely used in plastics for public buildings, transport and electrical installations. The European Union's will to achieve the free movement of goods and services in Europe led to the creation of two major standards: the Construction Products Directive (CPD) and the Interoperability of the European Railway System Directive. This new way of thinking will conduct in a short time to the replacement of the national standards by the EC directives. To meet requirements for performance through the material tests and environment, the improvement of materials has to continue. Depending on the compounds, FR material act by delaying ignition or by depriving the fire of fuel or lowering the temperature. The world of the flame retardants is changing (REACH, RohS directive, manufacturer specification...) and so are the fire standards. The French laboratory CREPIM will present the new tests and new classification.

For building sector, the European classes of reaction to fire performance for construction products excluding floorings are based on four fire test methods: the non-combustibility test (EN ISO 1182), the gross calorific potential test (EN ISO 1716), the single burning item (SBI) test (EN 13823), and the ignitability test (EN ISO 11925-2). The same test methods, excluding the SBI test, are used for floorings with the addition of the radiant panel test (EN ISO 9239-1).

For railway sector, In the EN 45545-2 norm, there are usually 3 tests: Cone calorimeter test (ISO 5660-1), smoke chamber test (ISO 5659-2) and panel radiant test (ISO 5658-2).

# **The potential and trends of the technical textiles market in the USA**

**Michael Jänecke**

Messe Frankfurt Exhibition GmbH, Germany

## ***Abstract***

Many people still consider the USA the biggest single market for technical textiles in the world. How was this market affected by the crisis in 2008/2009? How is the development since then? What are the trends and key markets these days? The presentation will provide answers including information about the actual situation and perspectives.

# Textile electronics and flexible displays

Vladan Koncar  
ENSAIT - GEMTEX

## **Abstract**

The textile structures with integrated electronics may be realized using two different approaches. The first one uses traditional textiles with integrated miniaturized electronic components. The advantage of this approach is that electronic components are already available on the market, on the other side their integration is not easy and interfaces between electronic parts having metallic contacts and flexible conductive fibres or fabrics (organic in many cases) are not yet sufficiently reliable and efficient. The second approach consists in developing textile organic electronic parts, fully compatible with "traditional" textile structures. In this case there are no problems related to compatibility and reliability is not any more a problem. Therefore, fully textile organic electronic circuits may be realized.

Interest in textile transistors has been growing rapidly in recent decade. According to articles published until now, fibre transistors can be divided into two families: wire thin film transistors (WTFTs) and wire electrochemical transistors (WECTs). The advantage of WTFTs is the short response time ( $<1 \mu\text{s}$ ), meanwhile the magnitude of the voltage required to control the gate is as high as several tens of volts. On the other hand, the required control voltage for WECTs is only 2~3 V. However, the large switch time, more than several tens of seconds, scales down WECTs technology to quasi-static applications. The difference between proprieties of WTFTs and WECTs result from different insulating materials between the gate and semiconductor layers. For conventional organic field-effect transistors, the insulating material is obtained from inorganic oxide (i.e.  $\text{SiO}_2$ ) or polymer dielectrics ( $\sim 10 \text{ nF/cm}^2$ ). Meanwhile for electrochemical transistors, the insulating layer is realized by the liquid or gel electrolyte ( $>10 \mu\text{F/cm}^2$ ). The excellent high capacitance of electrolytes results from the formation of electric double layers (EDLs) at interfaces, which can be exploited to induce a very large charge carrier density ( $>10^{14} \text{ cm}^{-2}$ ) in the channel of an OFET at low applied voltages.

In terms of the geometry pattern of wire transistors, WTFTs integrate the dielectric layer, the semiconductor layer and three electrodes (gate, source and drain) in one wire filament. As a result, the possibility and processability of integration of such transistors into textile fabric is easy to realize by simple physical contacts between different yarns. However, in order to guarantee the width-length ratio of the channel as large as possible, the deposited layer should cover the filament all around. Therefore, the filament should be continually rotated during the evaporation process. Furthermore, in order to assure the electrical performance, the thickness of different layers should be carefully controlled. Sometimes, the mask of deposition is also necessary. Hence, this complicated multiple layers deposition makes WTFTs unsuitable for the large-scale production.

Concerning textile actuators, a new method enabling colour change in textile structures has been developed. Currently, in colour change, various solutions may be found in the literature. They depend mostly on stimuli that are supposed to trigger the change. Thermochromism is already well-known in textile. In this article a novel technique based on electrochromism applied to flexible textile structures has been carried out. Numerous experiences have been realized on flexible substrates such, as PET films. The aim of our study was to adapt that technology to textile structures. Therefore a sandwich structure containing a thin spacer fabric with electrochromic compound (Prussian blue) and two electrodes; bottom and upper (transparent) has been set up and produced. This structure is able to generate, if powered with low voltage, reversible colour changes. The switching time is approximately 5 seconds at 4.5V voltage.

# **Experiences and considerations in the real use of Passage Platform with enterprises - the use of the knowledge capture tool**

**Josette LEMASSON**

Distingo Conseil (FR)

## ***Abstract***

Presentation of the features and tools developed in the program PASSAGE and their experiment inside the company TXM (Maine et Loire - France). The subject of the experiment was the specification and capture of know-how of two jobs in the field of clothing: a logistic platform agent and a cutting operator.

The features implemented successively concerned:

- The construction of job profiles of the operators involved
- The identification of the "internal experts", holders of the know-how
- Data collection and formalization of knowledge
- data input in the PASSAGE platform

The experiments have validated the general concept and overall design of the tool. They also detected a set of difficulties in their implementation, which resulted in recommendations for change. These tests have driven major evolutions of:

- the presentation and navigation menus within the platform,
- the editing specification of the stored data,
- learning tools for the transfer to other employees or business partners.

These experiments also contributed to a thorough examination of the exploitation scenarios of the platform by companies, but also by professional organizations or agencies for training and advice.

# China Nonwovens & Industrial Textiles - Current & Future

Li Lingshen

China Nonwovens & Industrial Textiles Association

## **Abstract**

Analysis on the situation of China nonwovens and industrial textiles, the prior area of China nonwovens and textiles industry during 2011 to 2015, the market space and industry policy of China nonwovens and textiles industry.

Mainly contents:

### 1. Development of China Nonwovens & Industrial Textiles Industry

1.1 Classification marks of China nonwovens & industrial textiles

1.2 Major factors that promoting a rapid development of China nonwovens & industrial textiles

1.3 Development of China Nonwovens & Industrial Textiles of 2006 to 2010.

1.4 Development of Priority Areas of China Nonwovens & Industrial Textiles from 2006 to 2010.

### 2. Development Priorities of China Nonwovens & Industrial Textiles of 2011 to 2015

2.1 Development Plan for Priority Application Field of China Nonwoven & Industrial Textiles

Textiles for medical and health use

Textiles for filtration and separation

Textiles for civil engineering and construction

Textiles for transportation

Textiles for security and protection

Textiles for structural enhancement

### 3. Market Space and Industrial Policy of China Nonwovens & Industrial textiles

3.1 Total output of fiber processing of China nonwovens & industrial textiles

3.2 Total output of China nonwoven fabric fiber processing

3.3 Total output of fabric processing in key application field of China nonwovens & industrial textiles

Textiles for medical and health use

Textiles for Filtration and Separation

Textiles for Civil Engineering and Construction

Textiles for Transportation

Textiles for Security and Protection

Textiles for Structure Enhancement

3.4 Government Policy for Assisting the Development of Industrial Textile Industry

### 4. Conclusion

## Context and objectives of INTIMIRE projects

Carole Magniez Labalette  
ENSAIT

### Abstract

The INTIMIRE project targets the **production of new fire retardant and flame resistant polyester (PET) and polypropylene (PP) fibres, films and upholstery end products** based on the original **intumescent flame retardancy concept**. These products will offer a technical solution to the evolution in requirements defined in upcoming European norms for upholstered furniture and railway transportation. They also must offer improved durability and thermomechanical properties.

INTIMIRE's first motivation is to address specific problems faced by European SMEs textile industries. They are connected with the evolution in the strict EC regulations and standards for fire retardant products:

- the regulations for materials used in railway transportation: ST EN 45545
- the novel standards of upholstered furniture: norm NF D 60-13

None of the textile products available today, achieves the following points: the criteria of new norms, the environment preservation and the requirement of consumer (comfort, price, design, ...).

The current approaches in **developing flame retardant upholstery fabrics** are no longer sufficient when novel requirements need to be fulfilled such as:

- an exclusive use of fabrics with a low rate of heat release
- an avoidance of the use of fabrics that spread the fire to other elements with burning droplets.
- a use of fabrics able to prevent ignition of the underneath layers (foam, or stuffing) even at intense flames (e.g. in railway application against vandalism using flames).



Figure 1 Evolution of standards for seats

In order to achieve the criteria of the new standards, it is mandatory for upholstery fabrics to offer a much higher level of fire protection than what had to be fulfilled up to now. The standard flame retardant polyester fibres and certainly the existing flame retardant PP fibres (using halogen based flame retardants) will not be able to fulfil all these requirements.

## **Le ultime frontiere applicative dello Starlight FR**

**Roberto Parenzan**

Noyfil Sa – Radici Group

### ***Abstract***

Il rapido cambio del mercato e le nuove esigenze hanno portato anche i produttori di filati a trovare soluzioni per aiutare i clienti a sviluppare sempre nuovi articoli ed applicazioni.

Radici Group negli ultimi anni ha svolto un'attività di ricerca per dare un filato ed un servizio che rispondesse alle richieste di qualità e versatilità.

Lo Starlight FR raggiunge, in termini gamma prodotto, un poliestere standard ed aggiunge anche nuove funzionalità che lo rendono estremamente adattabile alle piu' svariate applicazioni, da quelle outdoor a quelle in ambito ospedaliero, senza tralasciare la versatilità tipica del filato Starlight.

La possibilità da parte del cliente di scegliere le caratteristiche del filato Starlight FR, senza partire da una lista prodotto, permette di adattarlo al progetto da realizzare, ampliando quindi la gamma dei tessuti finali.

# **Trend e visioni per il settore del tessile tecnico. Fattori influenzanti la crescita delle Aziende Italiane (opportunità, rischi, problemi)**

**Andrea Parodi**

Presidente TexClubTec

## ***Abstract***

Inarrestabile ulteriore scivolamento delle localizzazioni manifatturiere del tessile tradizionale verso il Far East.

Al contrario il tessile tecnico riesce a tenere le sue produzioni in Europa.

Motivazioni:

1. Supply chain coesa, dove prevale un modello di partnership e dove i valori di organizzazione aziendale presenti in tutti i membri della catena sono ritenuti elemento fondamentale per la continuità di un business e il suo ritorno economico.
2. Sinergie tra il mondo della ricerca e il mondo dell'industria.
3. Inelasticità della leva prezzo.

Ampi margini di miglioramento per le aziende italiane in termini di quote di mercato nell'ambito del tessile tecnico europeo.

Motivi della situazione attuale e ambiti su cui puntare per il miglioramento:

1. Persistente forte attenzione al tessile tradizionale.
2. Scarso rapporto mondo della ricerca e mondo dell'industria.
3. Limitate dimensioni delle aziende e conseguente capacità di gestire investimenti importanti e tempi di ritorno anche molto lunghi.
4. Incapacità a orientare l'azienda verso un marketing specifico.
5. Scarsa competenza tecnologica: pochi Ingegneri dei materiali o Ingegneri chimici in azienda.

Una considerazione finale ed una esortazione: puntare sul tessile tecnico come una delle chiavi per il ritorno alla crescita economica del nostro paese.



# **Experiences and considerations in the real use of Passage Platform with enterprises - organisation and use of the strategic diagnosis**

**Jacques PRONO**

IFTH (FR) - Distingo Conseil (FR)

## ***Abstract***

Presentation of the general organization of the diagnosis developed and implemented on the PASSAGE platform to assess SME strategic position and projects. These data are used to deduce the job positions affected and the associated management decisions needed. The successive steps of this diagnosis involve:

- to assess the SME position on the market, by expressing its strategic activities and selecting data representing the business situation of the SME,
- to make a simplified SWOT analysis based on the selection of most impacting opportunities and threats for the future,
- to select appropriate strategic decisions and projects to cope with these events,
- to deduce from these decisions and projects the most affected job positions, depending on the organisation of the SME
- to define entry data for the strategic workforce planning of the SME

The experiment was conducted with the head of the company TXM (Maine et Loire - France). The manager validated the value of the tool and the relevance of the approach. Tests revealed also some concerns over the relative complexity of the tool, which may require in some cases an accompaniment during the discovery step. Some technical aspects evolved also afterward.

# **The Potential and Trends of Thechnical Textiles market in Russia**

**Igor Salomakhin**

Russia-Europe Textile Alliance (RETA)

## ***Abstract***

The Russian market of technical textiles has recovered from the last economic crisis and is developing faster from year to year. There are many signs that the economy in Russia is currently very favourable for major technical textile markets. Russia has climbed from being the 19th biggest car manufacturer in 2009 to 14th in 2010, outrunning the UK, Italy, Poland, the Czech Republic and Turkey by units produced. It represents the year-on-year growth of 93.5% - 1.4 million cars and light vehicles in 2010 - the highest growth anywhere in a year, when the global industry was trying to escape the recession. There are quite a few signs that such a boom can happen in construction in Russia and this more rapidly than anywhere else. There have been a number of important contracts from the Russian government, most significant ones in connection with the Vladivostok APEC Summit in 2012, the Sochi Olympic Games in 2014 and the FIFA World Cup in 2018. The Russian construction sector will be greatly boosted by the need to build stadiums, buildings, hotels and the necessary transport infrastructure for these events in the coming few years. Following fast developing sectors of the Russian technical textiles market should be mentioned as sectors with the highest priority: textiles for the automotive industry, textiles for the building sector, geotextiles, protective textiles, medical textiles, textiles for agriculture and other industry sectors. However, it is still a big challenge for western companies to enter the Russian market. RETA in cooperation with Messe Frankfurt assists the European companies on their way towards entering the Russian textile market. A part of this assistance is the familiarization of European companies with distribution structures, local production capacities, legal and fiscal framework conditions etc.

# Importanza del mantenimento del know how tecnologico aziendale come fattore competitivo. Il contesto del progetto Passage

**Aldo Tempesti**  
TexClubTec

## **Abstract**

Nell'ambito della pesante congiuntura negativa attraverso cui sta passando l'intero settore produttivo europeo, uno dei trend più evidenti, con effetti drammatici per tutti i settori industriali, è la crescente competitività dei paesi a basso costo del lavoro

Un ampio dibattito si è sviluppato sul modo di individuare soluzioni e strategie per contrastare tale situazione, tuttavia due strumenti, stanno assumendo oggi il ruolo di veri e propri driver strategici: **innovazione, ricerca e sviluppo** (quali strumenti per la messa a punto di nuovi prodotti e servizi) e **sviluppo di risorse umane** (quale strumento in grado di seguire l'evoluzione dell'innovazione tecnologica, mantenendo nello stesso tempo il know how strategico già acquisito )

Per quanto riguarda in particolare il tema delle risorse umane, nei prossimi anni, il problema del mantenimento della forza lavoro e della sua professionalità sarà un argomento all'ordine del giorno per migliaia di aziende europee. Infatti, parallelamente al continuo invecchiamento della popolazione, altri fattori di perturbazione dei mercati esistenti stanno emergendo, come ad es. la crescente migrazione di lavoratori dai paesi di origine verso i paesi a migliore retribuzione, od il diminuire degli investimenti produttivi e di ricerca nelle aree più industrializzate.

Il rischio più grave è la perdita di una conoscenza scientifica, tecnologica e professionale che se andasse perduta, potrebbe richiedere, nel futuro, molti anni per poter essere ricostruita

Diventa quindi obiettivo prioritario per l'azienda poter disporre di un sistema di strumenti in grado di essere un'efficace risposta a:

- Perdita di conoscenze dovute alla riduzione del numero degli addetti, alle ristrutturazioni, alla chiusura di aziende, od alla loro delocalizzazione verso paesi a basso costo del lavoro
- Necessità di incrementare le proprie conoscenze per essere competitivi nelle attività quotidiane, ma contemporaneamente acquisire il know how necessario per l'utilizzo di nuove tecnologie e processi, correlati alle evoluzioni in atto in ogni settore
- Necessità di poter trasferire velocemente tali conoscenze a potenziali partner (esternalizzazione di attività, subcontracting, servizi a clienti, ecc. )

Su tali basi è stata realizzata la piattaforma Passage nell'ambito di un progetto europeo che ha visto la partecipazione di associazioni industriali di cinque paesi, in sinergia con i centri di ricerca e con il supporto di un certo numero di PMI, Si è creato così un sistema di servizi via web legati alle necessità di conoscenza in termini globali di filiera produttiva, di analisi dei bisogni, e di previsione e gestione di quelli che saranno i ruoli professionali strategici.

**Nuovo Nomex(r) per la protezione contro l'arco elettrico: tessuti intelligenti che reagiscono a condizioni termiche estreme.**

***New Nomex(r) for Electric Arc: Intelligent fabrics that react under extreme thermal conditions.***

**Oriol Rofes / Silvio Tonus**

DuPont International Operations s.r.l

***Abstract***

Rischi Termici comunemente presenti nell'industria sono calore & fiamma, schizzi di metallo fuso, flash fires e arco elettrico. Indumenti di protezione termica sono quindi necessari in una grande varietà di industrie quali piattaforme di foraggio offshore, industrie petrochimiche chimiche e farmaceutiche, enti elettrici, elettricisti e fonderie

Nomex® ha una riconosciuta esperienza di protezione della gente contro questi rischi , grazie all'eccellente combinazione di performance, confort e durabilità.

Gli innovativi tessuti Nomex® sviluppati e brevettati da DuPont sono concepiti per reagire in modo più efficace alle estreme condizioni termiche di un arco elettrico e di flash fires.

Thermal hazards commonly found in the industry are heat & flame, molten metal splashes, flash fire and electric arc. Thermal protective clothing is therefore needed in a wide variety of industrial uses: from offshore drilling platforms, petrochemical, chemical and pharmaceutical industries to electric utilities, electricians and foundries.

Nomex® has a proven track record in protecting people against these hazards thanks to its superior combination of performance, comfort and durability.

The new Nomex® innovative fabrics patented and developed by DuPont are designed to react in a more efficient way to extreme thermal conditions of an electric arc and flash fire.

## **Verified advantages by French public Body involved in training activities.**

**Laurent Vandendor**

Forthac Ouest Atlantique

### ***Abstract***

In France, in the sector of Fashion industry, know-how transmission is carried out according to oral tradition without formalization. SMEs facing a significant acceleration of staff departures at the end of their career, they are exposed to the risk of losing their know-how, tips and tricks and innovations of use. For their part, "jobs" training organizations are also facing the retirement of their instructors and the same issue of technical know-how loss to which are added the risks of loss of teaching expertise.

Finally, facing the crisis, industrial companies in the sector protect more and more the confidentiality of key know-how, becoming, by their scarcity, a real lever of competitiveness.

It was therefore necessary to offer conservation/transmission tools and methods of this industrial know-how.

For a few years now, the national accredited collection organism for branch training (OPCA) dedicated to that sector, associated to the Forthac, has launched a number of initiatives to answer most urgent cases and has also followed training operators in their methods professionalization.

Passage project has made possible the development of an organized offer of tools creating a real methodological thread as well as operational tools (procedure sheets). Once guided, the SMEs are able to take over the method of know-how transfer and duplicate it on all their company's key and strategic know-how.

As part as exchanges between the Forthac and Passage actors, the national accredited collection organism for branch training (OPCA) wishes to further study the development of the platform tools to promote them at a national level to Fashion industry companies.

Using the learning methodology of the actors of the French industry, the Forthac wishes to develop a "certified" program of training for conservation and transfer of critical competitiveness.

# **The Potential and Trends of the Technial Textiles in India**

**Mukesh Vijaywargi**

Klopman International

ITTA – INDIAN TECHNICAL TEXTILES ASSOCIATION.

## ***Abstract***

The Indian Technical Textiles Market Potential is huge – is like an ICEBERG what is hidden is much more than what is visible.

The presentation aims to show case these and also high light the challenges and trends that a company in the field has to face.

India is a GROWTH market – in this field and is just on the take off stage.

Players wanting a share of this growth must be prepared for a long haul as the market moves up the maturity and awareness path.

Though the textile ministry has taken many proactive steps to encourage the sector – but to benefit from it – a lot of work in building awareness and enforcing usage has to be done by the company them selves- this has been so far the lesson learnt by early entrants in this sector.

# **Industria tessile e produttori : una sinergia di sviluppo sostenibile**

## **Textile industry and manufacturers: a synergy of sustainable development**

**Valerio Zaffalon**

FLAINOX – dyeing and finishing machinery

### ***Abstract***

La presentazione toccherà i seguenti punti:

Chapt. 1 - Industria tessile e costruttori di macchinario tra presente e futuro, tra riscaldamento globale e green economy : quale ruolo?

Chapt. 2 - Il carbon foot print ovvero il calcolo delle emissioni di CO<sub>2</sub> e gas a effetto serra : misuratore dell'attività e indicatore energetico di base per conoscere i consumi e contenere i costi produttivi.

Chapt. 3 - Analisi del ciclo di vita di un prodotto/macchinario : life cycle assessment.

Chapt. 4 - Effetti e benefici dell'eco-engineering, design e sourcing : dal panico al pane

Case story 1 - "NRG", importanza della riduzione del rapporto bagno in tintura

Case story 2 - "Multi-Plus", quanto incide il consumo elettrico in una macchina di finissaggio tessuti

Conclusioni - sviluppo sostenibile significa innovazione, risparmi e aumento della competitività nella salvaguardia dell'ambiente.