1. Opening Remarks
The Chairman, Mr. Loek de Vries (Netherlands), opened the meeting by thanking everybody for taking the time to attend this meeting. He especially thanked the speakers for giving up their time and to share their expertise and knowledge with the attendees.

2. Presentation
Mr. Loek de Vries, CEO, TenCate/Netherlands, gave a presentation on "Entry Strategies in Technical Textiles" with a special focus on Asia and China (document no. 1).

Some key elements and conclusions of the attached presentation were:

a) Drivers of market entry success
- Entry mode: greater control provides more success
- In China joint-ventures are the most popular mode of entry
- Entry timing: early entry of an emerging market means greater success
- Company size: smaller companies are more successful than larger firms
- Economic distance to entry market: more distance means more success
- Cultural distance to entry market: less distance means better contact
- Emerging market risks: less risks mean more effect
- Emerging market openness: a less open emerging market means more success

b) Success elements of an emerging market
From a country point of view, such as:
- Appropriate infrastructure
• Well educated craftsmen and well trained management
• Consistent policies and clear diversity across the country
• No earlier history of capitalism (like India had), so less historic local brand competition

From a **company** point of view, like:

• Level of control on resources and how these are deployed
• Organisational flexibility and entrepreneurial ability
• Wholly owned subsidiaries with high levels of control

c) The **Asian century**

• Demographic dominance translated into economic supremacy
• Multi-polar world – political power shift towards Asia
• More technology and upgrading in Asia

The presentation was followed by a lively discussion on some of the main preconditions as well as challenges and opportunities in connection with entering technical textile markets.

3. **Presentation**

Mr. KK Yeung, KK Yeung Management Consultants Ltd, gave a presentation on the “**High-end Textile Market in China**” ([documents no. 2a and 2b](#)).

He summarized his presentation in the following way: “**With over 45 billion m2 of printed textiles produced annually worldwide there is a pressing need for sustainable manufacturing, as we have seen digital technology provides a range of opportunities to move into sustainable textile manufacturing, developments to digitize finishing and dying processes are well underway. Changing macroeconomic environment and new technologies will trigger a wave of re-shoring, especially in the premium apparel sector.**

*Digital technology is an important source of innovation for textile manufacturing allowing for example for processes to be linking the production process to a range of customer networks through the internet driving purchase activated manufacturing.*”

4. **Presentation**

Ms. Zhao Yan, Professor at Beijing University of Aerospace and Aeronautics, gave a presentation on “**Investigation of Fabric, Carbon Fibre and Graphene**”.

5. **Future Activities**

Due to a lack of time the discussion on the future activities of the Committee until the ITMF Annual Conference 2015 in the USA could not take place. Instead it was suggested that the Secretariat discusses this in the following weeks with the Committee-Chairmen.

December 2014
Market entry strategies
For the textile industry

Ir Loek de Vries, President and CEO of Royal TenCate
ITMF Conference in Beijing, China, Wednesday 15 October 2014

Market preconditions

Preconditions for markets in general, such as:

- Certain governmental bodies need to be in place
- Legal institutions should be available for enforcing contracts
- Enforceable property rights, anti-trust laws and governance rules
- Business trust and social ethos: commitment to keep promises
- Personal relationships, such as the partnerships between technology experts
Company pressure

External company pressure, such as:

- **Global trends** and **market themes**: sources of inspiration and end-user knowledge
- **Market data**: in-depth understanding of the market drivers
- **Growth rate potential**: business development and market growth
- **Competition**: disruptive competitor actions, and securing of competitor customer base

Internal company pressure, such as:

- **Time constraints**: delivering predicted (financial) results
- **Resource limitations**: specialists used in a later stage than the core marketing team
- **Financial pressure**: product launch delay and unpredicted market activity

The perfect competitive market (does not exist)

A **perfectly competitive market** is a market in which economic forces operate without any hinder. For a market to be perfectly competitive, **six conditions** must be met:

1. Both buyers and sellers are **price takers**
2. The **number of companies** is **large**
3. There are **no barriers** to entry (social, political, economic or legal)
4. All companies' **products are identical**
5. There is **complete market information** (prices, products, and available technologies)
6. The selling firms are all **profit-maximizing** entrepreneurial companies (profit driven)

- **Result**: the individual company perceives the demand curve for its product as being **perfectly horizontal**
- **Conclusion**: a company has to strive for monopolistic competition. So find your USP’s and your own market niche
Developing competitive market entry
From analysis to strategies and plans

**PRECONDITIONS FOR COMPETITIVE MARKET ENTRY**

I. **Critical success factors**

II. **Earning drivers and business model**

III. **Market attractiveness** (Porter model)

IV. **Market access**

V. **Growth strategies** (Ansoff matrix and TenCate matrix)

VI. **Lock-ins**
I: Critical success factors
Textiles industry and market entry

1. **Focus in business**: trends, vision, mission, strategy, et cetera
2. **Critical mass**: buying power
3. **Valuable brand name(s)**: internal and external branding
4. **Flexibility**: creating opportunities and taking chances
5. **International operations**: global versus continental markets
6. **Organisation structure**: close connection to the market (local for local)

II: Earning drivers and business model
TenCate: value chain management

- Mass customization
- On demand delivery
- Flexibel low cost processing
- New applications
- New functionalities
- Customized product portfolio
- New ‘business as usual’
- New production techniques

© TenCate
III: Market attractiveness

Porter model: five forces

- Potential entrants
  - Threat of new entrants
- Suppliers
  - Bargaining power of suppliers
- Industry competitors
  - Rivalry among existing firms
- Substitutes
  - Threat of substitute products or services
- Buyers
  - Bargaining power of buyers

IV: Market access

Gannon model: comprehensive decision framework for entry mode choice

<table>
<thead>
<tr>
<th>Industry Variables</th>
<th>Market Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organizational Specific</strong></td>
<td><strong>Marketing Strategy</strong></td>
</tr>
<tr>
<td>- Company size</td>
<td>- Global versus domestic strategy</td>
</tr>
<tr>
<td>- Cumulative international experience</td>
<td>- Life cycle stage of the product in the target market</td>
</tr>
<tr>
<td>- Existence of established affiliates</td>
<td>- Transaction specificity of the product</td>
</tr>
<tr>
<td>- Managerial aspirations and expectations</td>
<td>- Differentiation and comparative superiority</td>
</tr>
<tr>
<td>- Specialized knowledge of segment needs</td>
<td></td>
</tr>
<tr>
<td>- Technical capabilities</td>
<td>- Customer service level</td>
</tr>
<tr>
<td>- Flexibility and response capability</td>
<td>- Product design/development</td>
</tr>
<tr>
<td>- Application engineering; modifications of products to meet customer demands</td>
<td></td>
</tr>
<tr>
<td>- (more customer influence)</td>
<td></td>
</tr>
<tr>
<td><strong>Industry Specific</strong></td>
<td><strong>Target Country</strong></td>
</tr>
<tr>
<td>- Lack of concentration versus fragmentation within industry</td>
<td>- Social cultural distance from domestic market</td>
</tr>
<tr>
<td>- Lack of demand uncertainty</td>
<td>- Political risk</td>
</tr>
<tr>
<td>- Instability of competitors</td>
<td>- Geographic proximity to domestic market</td>
</tr>
<tr>
<td>- Importance of selling activities</td>
<td>- Availability of advanced technology</td>
</tr>
<tr>
<td>- Length of the selling cycle</td>
<td>- Availability of skilled manpower</td>
</tr>
<tr>
<td>- Need for global strategy coordination</td>
<td>- Extent of foreign business community</td>
</tr>
<tr>
<td>- Extent of import barriers</td>
<td>- Restrictions or internal transfer mechanism</td>
</tr>
<tr>
<td>- Importing costs</td>
<td>- Availability of sympathetic opportunities</td>
</tr>
<tr>
<td>- Export requirements</td>
<td></td>
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<tr>
<td>- Access to distribution channels</td>
<td></td>
</tr>
<tr>
<td>- Government policy</td>
<td></td>
</tr>
<tr>
<td>- Product differentiation</td>
<td></td>
</tr>
</tbody>
</table>
V: Growth strategies (1)
The Ansoff matrix: strategic marketing planning

V: Growth strategies (2)
The TenCate matrix: technology owner is helped into market globalization thanks to the demand in an innovative end-market
VI: Lock-ins
Textile industries and market entry

- Be aware of lock-ins to understand market changes:
  - **Functional lock-ins**: inherent in the production structure of capital and supply chains, like:
    - Technical inflexibilities = specific equipment or techniques
    - Fragmentation of the supply chain
  - **Cognitive lock-ins**: related to the inability to understand changes because of a lack of knowledge, lack of experience, or tunnel vision, due to:
    - Lack of context aware and responsive management
    - Knowledge monopolies within the organization
  - **Institutional lock-ins**: due to a political setting that resists change, such as:
    - Regulated markets and / or protectionism
    - Labour relations
    - Regional environment

---

**Market entry strategies**
Root model: elements of an international marketing strategy

1. Identifying products and business models offering the target product (market)
2. Setting objectives and skills
3. Dividing the entry matrix: target, strategy, strengths, or investment
4. Designing the market plan: forms of commercial distribution, etc.
5. Consideration: monitoring ongoing business entry strategy

Entry operations

Target market
Drivers of market entry success

In China

- **Entry mode**: greater control provides more success
  - In China, **joint-ventures** are the most popular mode of entry
- **Entry timing**: early entry of an emerging market means greater success
- **Company size**: smaller companies are more successful than larger firms
- **Economic distance** to entry market: more distance means more success
- **Cultural distance** to entry market: less distance means better contact
- **Emerging market risks**: less risks mean more effect
- **Emerging market openness**: a less open emerging market means more success

Success elements of an emerging market

In China

From a **country point of view**, such as:
- Appropriate **infrastructure**
- Well educated **craftsmen** and well **trained management**
- Consistent **policies** and clear **diversity** across the country
- No earlier history of capitalism (like India had), **so less historic local brand competition**

From a **company point of view**, like:
- **Level of control** on resources and how these are deployed
- **Organisational flexibility** and **entrepreneurial ability**
- Wholly **owned subsidiaries** with high levels of control
The Asian century

21st century

- Demographic dominance translated into economic supremacy
- Multi-polar world – political power shift towards Asia
- More technology and upgrading in Asia

Protecting people
High end textiles in China
An industry in transition: implications and opportunities

Mr KK Yeung, Chairman, KK Yeung Management Consultants Limited
ITMF Conference Beijing, 2014

China’s 12th five-year plan: Focus on value and sustainability
Anticipating macroeconomic changes by enabling shift in industrial structure

Industry Restructuring
Apparel, Home and Industrial Textiles
Technical Textiles – focus non-woven
Chemical Fibers and filament yarn

Regional
‘Go West’
Relocate to developing countries
Strengthen industrial bases

China Textile Industry
Domestic Demand
Export Competitiveness
Sustainability

R&D
high-tech new fibers, spinning and weaving, printing and dyeing, high-performance technical fabrics, energy-saving, modern apparels, new textile machineries
**Snapshot: China’s Textile Export market 2014**

**Exports per Region**

- APAC: 46%
- Europe: 17%
- North America: 6%
- Latin America: 6%
- Africa: 23%
- Oceania: 2%

**Top Export Growth Markets (y-o-y)**

1. Vietnam: 73.4%
2. Kazakhstan: 54.7%
3. Malaysia: 45.8%
4. Russia: 31.3%

<table>
<thead>
<tr>
<th>Export Destination</th>
<th>Export amount $US Bln</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>31.3</td>
<td>14.9%</td>
</tr>
<tr>
<td>Japan</td>
<td>19.9</td>
<td>9.5%</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>14.5</td>
<td>6.9%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>9.3</td>
<td>4.4%</td>
</tr>
<tr>
<td>Russia</td>
<td>8.2</td>
<td>3.9%</td>
</tr>
<tr>
<td>Germany</td>
<td>7.9</td>
<td>3.8%</td>
</tr>
<tr>
<td>UK</td>
<td>6.9</td>
<td>3.3%</td>
</tr>
<tr>
<td>UAE</td>
<td>5.9</td>
<td>2.8%</td>
</tr>
<tr>
<td>Other</td>
<td>106.2</td>
<td>50.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>209.5</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: China Chamber of Commerce for Import and Export of Textile and Apparel (CCCT)

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**Domestic Market Opportunity**

Growth prospects for China’s Domestic Textile market

**Consumer Spending on clothing p/p per annum**

**China**

- Untapped Market Potential: US$1,560Bln
- P/P
  - Urban: USD 63
  - Rural: USD 290
- 2012: 25% of West

**Germany, UK, USA**

- USD 1,400 p/p
- 2012
Digital application adoption

Digital revolution ongoing apparel with

- Labels
- Textiles (apparel)
- Ceramics (tiles)
- Graphics
- Laminates
- Furnishing
- Wall covering
- Technical Textiles
- Smart Textiles

Technology Adoption Life Cycle

Key Applications for High-end Textiles

Apparel / ‘Fast Fashion’

Technical Textiles

Industrial Textiles

Interior décor and furnishing
Benefits of Digital
Time to market, reduced production costs and increased productivity

- Reduced production costs
  - Efficient use of consumables
  - No requirement to produce new screens
  - Minimal set-up costs – short runs are economical
  - Cost per print same for 1, 10, 100, 1000, 10,000
  - No requirement for inventory
- Increased productivity
  - No time for set-up – printer is always printing
- Faster response
  - Print on demand
  - Just-in-time customisation/personalisation
  - Much quicker introduction of new designs
- Applicable to all types of fabric

Digital Sustainability
Reduced environmental impact

- Minimising water usage
  - Ink, processing, washing – up to 60% less water used
  - More stringent waste water regulations being implemented
  - Less dye in effluent from wash-off procedures
- Reduced materials
  - Colorants, functional materials, water
  - Materials only used when needed
  - No excess application of dye reduces need for water treatment
  - No waste of ink No made-up ink wasted due to short pot life or over stock
- Reduced energy consumption
  - Lower ink coating weight means less energy required to dry printed layer
  - Accurate deposition means ink fixation rate is higher so less washing needed
2013 Worldwide Digital Textile Printer Unit Placements by Ink Type

China: Sublimation Printers are the mainstream with large number of printer manufacturers

Total Units 1,944*

* Excluding soft signage & direct to garment units


Textile Printing Market Overview (Cont’d)

Digital Textile Printer Installations

- APAC: 48%
- EMEA: 35%
- North America: 9%
- South America: 8%

Digital Textile Printing by Application

- Garments: 54%
- Décor products: 40%
- Industrial Materials: 6%

Document No. 2a, K.K. Yeung
Digital Textile inks

- **Reactive inks**
  - Suitable for cotton and cotton/polyester blends
  - High optical density, even in single pass applications
  - High stability and fixation

- **Disperse inks**
  - For durable printing on polyester
  - Direct and sublimation

- **UV cure inks** (designed for sun awnings)
  - Broad outdoor application
  - Weather fastness 7-8

Digital Finishing

- **VAT dye inks**
  - For durable printing work wear
  - Camo prints military (infrared demands)

- **Hydrophobic finish**
  - Single sided hydrophobic

- **Functional coatings and other finishes**
Functional materials

- Hydrophobic
  - Comfort of cotton material on skin side
  - Water and dirt repellent function on outside

- Dirt repellant/self-cleaning
  - More efficient coating when applied with inkjet
  - Single-sided application important

- Antimicrobial/anti-fungal/anti-insect
  - Selective deposition, efficient usage
  - Slow release technology
  - Materials used cannot be in skin contact
  - Single-sided application vital

Functional materials II

- Flame retardant
  - Highly coherent coating very important
  - Single side coating allows lighter weight

- UV blocking (anti-sunburn)
  - Coating needs to be away from skin

- IR blocking
  - Insulating fabrics – tents, clothing

- Electrically conductive
  - Antennae incorporated into clothing, tents
  - Communication with electronic devices

- Solar energy harvesting
  - Tents, awnings, etc
  - Low cost manufacturing essential
Smart Garments
Digital Functionality

- Multi functionality
  - Single sided application possible
  - Two sides can have different functions
- Patterning – place function where you want it

Vibrant designs
Hydrophobic coating
Functional devices

KK Yeung Management Consultants Limited

Thank You!
Introduction

Good morning Ladies and Gentlemen!

Just a background information on my company: We are based in Hong Kong and set up in 1983. Since then, we have served over 40 joint ventures in China involving 2 billion US dollars of industrial investments.

Our main service theme cover strategic, efficiency, corporate restructuring and recovery, preparation for IPO in Hong Kong and technology introduction.

Our Technology Department deals with the following:

1. To introduce innovative and proven world-class technology for client.
2. To engage technology to enhance mid-term and long-term profitability through partnership, consortium or tender of large-scale projects.

The sample projects handled by our Technology Department including the following currently active projects:

1. Organic waste treatment facility.
2. Street lighting / commercial lighting heat-sink technology.
4. Copper indium di-sulphide deposition on a mile long copper strip technology.
5. Optic fibre technology.
Introduction on China Textile Industry

China’s textile industry is set to undergo significant changes in the next five year planning period due to changes in the macro-economic landscape. In the domestic market, the shift to a more consumer led economy present huge opportunities in textiles and clothing (including technical textiles). China’s clothing retail market is set to soar as the government acts to offset falling export growth; this is welcome news for high end textile printing applications.

The challenge is to increase the volume of high end textiles in China’s product mix and promote sustainable development. Strong Chinese government support for textile sector is aimed at upgrading the textile industry to support this transition into the higher end of the value chain. China’s 12th five year plan for textiles focusses on industrial restructuring to enhance export competitiveness and meet growing local demand for apparel, home and industrial textiles. The proportion of Technical textiles in the product mix should rise to 25% with a specific focus on non-wovens, and the proportion of chemical fibers is set to reach 76% of total processed fibers by 2015. Further competitiveness of Chinese textiles and apparels in the world market will come from development of key processes, technologies and machinery – main technology themes are high added value, high-tech, specialized, functional, environmental friendly and intelligent products. Ambitious sustainable development targets have been set to eradicate outdated processes, technologies and machineries.

China: Global Textile Powerhouse in transition

China is textile and garment export champion of the world, China accounts for roughly 45% of apparel and fabric exports worldwide, in 2013 China’s exports are nearly seven times higher than no. 2 India at USD$274 billion. China’s percentage of garment export is even more impressive at 60% of world volumes. About 11.7% of total China exports are in Textiles and Garments, therefore it is no surprise that Textiles continues to be regarded as a pillar industry for the Chinese economy.

China’s export share in labor intensive garment manufacturing share will shrink as wages continue to increase, driving global fashion and protective apparel companies towards low labor cost countries like Bangladesh, Sri Lanka, Vietnam, Cambodia, and Pakistan. Early signs of a shift in apparel manufacture have been seen in EU and US clothing import trends. In 2013 China’s share of EU clothing imports from all sources in value terms fell from 41.7% to 40.1%, having fallen
sharply in the previous year. China’s share of US clothing imports from all sources fell from 37.8% to 37.3%. This trend is set to continue in the years to come.

**Domestic market opportunity**

The potential for growth in China’s domestic market is huge. Consumer expenditure per head on clothing in China is small – despite significant expansion in recent years. In 2012 it was only US$290 in urban areas and just US$63 in rural areas compared with an average of around US$1,400 in Germany, the UK and the USA. If expenditure per head in China were to climb to US$1,400, then domestic demand for clothing would be US$1,560 bn per annum greater than it is at present. This additional demand would more than compensate for any likely fall in exports, given that it equates to about nine times China’s clothing exports to all destinations in 2013. It is no surprise therefore, that apparel brands and retailers are expanding their operations in China in order to capitalize on an expected upsurge in domestic demand.

One of the biggest opportunities in Chinese retailing lies in E-commerce, later in this presentation we will see how technological developments will enable mass customization and on demand delivery, driving further development in this regard.

**Textile Going Forward with Digital Technology**

Industrial inkjet technology is one of today’s disruptive technologies and a key enabler for digital manufacturing – the ability to fabricate products based on digital information. Inkjet has become the dominant technology in the digital graphics industry, and nearing mainstream for the ceramic tile industry. Digital printing of fabrics has been available for some years. In the past few years, however, the garment and the décor industries’ demand for greater flexibility, range of designs, and focus on the environment have been a catalyst that is driving the growth in digital printing adoption. Key application areas for high end textiles are apparel, home textiles & furnishing, industrial textiles (such as outdoor fabrics) and technical textiles (such as protective fabrics). Digital technology will play an increasingly important role in China’s textile industry transition.

Currently there is a revolution under-way at the premium end of the apparel market for printed fabrics, where the use of digital technology allows for faster and lower cost design introduction. Enabling retailers to respond to the demand for ‘fast fashion’, in which new collections will be in store 3-4 weeks from the design phase and the majority of product lines are ordered tactically during the seasons. The key
market drivers are the need for economic short print runs, faster and more frequent design changes, increased number of niche products, and increased demand for personalization to add value. The move to customer driven manufacturing implies that manufacturing will move closer to consumption. The Chinese domestic apparel market developing rapidly as domestic consumption increases, and represents a huge opportunity for digital technology providers.

The benefits of digital also apply to other textile markets. For home furnishing the need for ‘fast fashion’ is not apparent but the design benefits of digital (such as fine detail and complex color gradients and shading) will be the key factor in market pull for digital textiles. In soft signage we will see replacement of PVC with polyester fabrics. Perhaps the biggest opportunity of all is technical and industrial textiles, where digital technology will allow for combination of decoration and functionality. I will come back to this later in the presentation.

Environmental considerations

The textile industry is the largest industry in the world in terms of water consumption, the fashion industry alone accounts for about 70million tons of wastewater per year. Vast amounts of water and power are used at every stage of textile wet processing, from de-sizing, scouring and bleaching through dyeing and printing to finishing. Reducing water and power consumption is one of the highest priorities in the textile industry today.

The use of digital technology enables major reductions in the use of materials, water, and energy; up to 60% less water usage and 75% less power usage, and up to 90% of inks and functional materials. Materials are only used when needed; there is no excess application of dye leading to increased water treatment, and no ink wastage. Energy reduction is achieved due to reduced need for drying and washing and efficient use of functional materials increase product life.

Digital Textile Printing

The market for digital textile printing is diverse and encompasses a range of print providers; these can be roughly divided into two groups. On the one hand you have the traditional fabric printers who produce high volumes of fabrics using a range of technologies, such as silk screen, rotary printing, paper transfer, as well as digital printing. On the other hand there are new entrants into the textile market, such as wide format printers who are looking to expand their business into textiles, and
small fabric producers primarily using sublimation printing to create fabrics and garments.

In 2013 the number of textile printing system installations is estimated to be 1,944 units worldwide, of which 490 units in the high speed / high-volume environment predominantly used for garment and décor fabric manufacturing, the remaining printing systems were mostly in the sublimation category. Asia Pacific accounted for 48% of units in all speed categories, followed by 35% in Europe, Middle East, & Africa, the Americas accounted for 17%. 54% of these units produced garments, 40% décor products, and 6% industrial materials.

2013 was a strong year for dye sublimation printer placements, driven partly by the growth in sports apparel and fast fashion sector and the opportunity it gives the wide format printing sector to expand into polyester based fashion, apparel, and fabric printing markets. These sublimation devices were predominantly low-end printers that cannot fulfill the needs of global textile production; developments are underway to increase manufacturing speed in this segment.

Digital printing equipment manufacturers are focusing their efforts on markets such as China, which is retooling to accommodate brand needs for timely and environmentally friendly processes. There is a strong push from Chinese companies to develop digital technology, to feed the large home market. The real opportunity for Chinese textile machinery industry is the conversion of traditional screen printers to include digital technology in their manufacturing processes.

**Digital Textile Inks**

With the growing textile market the demand for textile chemicals is witnessing robust growth in Chinese market. Textile chemicals are used during wet processing of fabrics in order to enhance the physical characteristics and improve aesthetic properties of the fabric which in turn increases the quality of the product. The demand for textile chemicals is expected to increase significantly supported by increasing urbanization, growing textile consumption in the country and augmenting textile exports from China.

Textile chemicals are broadly divided into colorants and auxiliaries, with the former segment capturing majority share in 2013. The North Western and South Central regions in China are expected to boost the country's textile manufacturing industry. Consequently, the cumulative market share of these regions in the China textile chemicals market is forecast to increase in volume consumption.
Developing and manufacturing of digital inks for industrial markets has a strong focus on the textile markets. Reactive ink range is currently being used by ink manufacturers across the globe and receives positive feedback with regards to its color vibrancy and reduced ink usage. Recently released sublimation ink range follows the same strategy of high performance and comparatively low ink usage to save on cost of colorants and reduce impact on the environment.

High performance and high functionality textile auxiliaries are mainly used in the manufacturing of technical textiles for example used in automotive and protective fabrics applications (FR treated Cotton is the mainstream in the Chinese protective fabrics market), as the demand for technical textiles grows so will the market for auxiliary chemicals. It is in the digital finishing area where breakthrough technology using top quality Digital Textile inks will play an increasing role to capture high-end textile market.

Digital Printing AND Finishing

Digital finishing is a breakthrough technology that allows for functional materials to be deposited onto the substrate, changing the functional and physical properties of the textile material. New products and processes such as UV-cure inks are used for the manufacturing of functional fabrics such as sun awnings, parasol-, and tent fabrics.

A wide variety of functional material finishes can be applied such as hydrophobic, dirt repellent/self-cleaning, antimicrobial/anti-fungal/anti-insect, flame retardant, UV and IR blocking. Major benefits of digital finishing are derived from multi functionality, precision application of functional materials and environmental and energy savings.

Smart Textiles: development and future applications

Digital technology enables manufacturing of smart and interactive textiles. These are advanced fabric products incorporated with electronic components such as sensors for various applications such as health monitoring, heat management, actuation and response, and communication.

Through precise deposition of electrically conductive materials, electronics can be embedded into the material allowing for applications such as antennae incorporated into clothing and tents. New materials technology will also allow for solar energy harvesting to be incorporates into garments, awnings and tents.
Summary

With over 45 billion m2 of printed textiles produced annually worldwide there is a pressing need for sustainable manufacturing, as we have seen digital technology provides a range of opportunities to move into sustainable textile manufacturing, developments to digitize finishing and dying processes are well underway. Changing macroeconomic environment and new technologies will trigger a wave of re-shoring, especially in the premium apparel sector.

Digital technology is an important source of innovation for textile manufacturing allowing for example for processes to be linking the production process to a range of customer networks through the internet driving purchase activated manufacturing.

Thank you for your attention.