

UPDATED TRENDS IN TECHNICAL TEXTILE INDUSTRY: INTERDISCIPLINARY APPROACH AND CUSTOMER ORIENTED PRODUCTS, PURSUING FUNCTIONALITY AND PERFORMANCE

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REZUMAT. Lucrarea prezintă detalii despre cel mai important târg organizat pe subiectul textilelor tehnice, *Techtextil 2017*. Pentru modul de desfășurare, evenimentele conexe, impresiile participanților și statisticile publicate, târgul *Techtextil* certificat FKM a fost considerat ca fiind remarcabil pentru inovațiile în textile la nivel mondial, prin abordarea interdisciplinară și produsele orientate spre client. Percepția generală a experților din textile a fost aceea că, prin evoluție, tendințe și domenii de aplicare a textilelor tehnice, *Techtextil* a fost o demonstrație și o sursă de inspirație pentru conștientizarea industriei textile în îndeplinirea provocărilor viitorului.

Cuvinte cheie: *Techtextil 2017*, târg, industria textilă, textile tehnice, abordare interdisciplinară, clienți

ABSTRACT. This paper presents details of the most important fair organized in the technical textile topic, *Techtextil 2017*. Based on the fair's data, related events, the feedback from the participants and the published statistics, the FKM certificated fair *Techtextil* was considered outstanding worldwide for textile innovations, due to the interdisciplinary approach and customer oriented products. The overall perception of textile experts was that, through the trends, developments and areas of application for the technical textiles, *Techtextil* was an inspiring demonstration of a real awareness of the textile industry in meeting the challenges of the future.

Keywords: *Techtextil 2017*, fair, textile industry, technical textiles, interdisciplinary approach, customers.

1. INTRODUCTION

Defined as ‘textile materials and products manufactured primarily for their technical and performance properties rather than for their aesthetic or decorative characteristics’ [1], technical textiles “can be used individually or as a component/part of another product” [2]. However, nowadays in the worldwide market, an increasing number of technical textile products are combining performances and functionality with aesthetic properties. These specific features are making the textile products very special and extend the interest areas of the technical textiles, by combining diverse materials, processes, components, products and applications [1]. Therefore, there is a global consensus regarding the technical textiles that, it is not about a single coherent industry sector and/or market segment, it is about a large and continuous growing sector that supports other industries, also having an impact upon almost every domain of human economic and social activity.

Consequently, the technical textiles supply chain is multifaceted because the textile industry is transforming into a provider of technical solutions rather than consumer textiles [3, 4]. In conclusion, there is a consensus regarding technical textiles, which are not products delivered by the textile industry anymore, being classified into the well-known twelve main application areas: Agrotech, Buildtech, Clothtech, Geotech, Homotech, Indutech, Medtech, Mobiltech, Oekotech, Packtech, Protech and Sporttech [1,2,4,5].

Regarding the place of the European Union entity in the scientific and technological progress for both, the production techniques and the supply chain management, it is obvious that there is a competition for the world leader in the technical textile production [3, 5, 6]. The technical textile sector registered a positive economic and employment tendency, and is a major contributor to the EU-28 textile industry (clothing excluded). According to the Eurostat and Euratex statistics, the technical textile sector development covered in 2016, almost

15% of the total employment in the textile field, 8% of the active companies in the textile sector and about 23% of the turnover of the sector (obviously with differences between countries). It is notable that, in 2016, the top five exporters of technical textiles were Germany, Italy, France, United Kingdom and Belgium, covering almost 60% of total exports worldwide [4, 6].

In the last 14 years, the technical textiles trade has expanded rapidly, by doubling the volume since 2003 and there are the EU-28-member countries for which, technical textiles represented the highest share of their textile exports, as follows: Croatia, Finland, Denmark, Sweden, Czech Republic and Hungary.

In correlation with this situation, special exhibitions and associated events are providing deep insights into the world of technical textiles, referring to the specific textile production and applications [7]. In this context, the leading international trade exhibition for latest developments and technical applications of technical textiles *Techtextil* was held, from May 9 to May 12 2017, in Germany. Messe Frankfurt organized *Techtextil* fair in parallel with *Texprocess*, which is the leading international trade fair for processing textile and flexible materials [7, 8].

This paper highlights some of the most relevant aspects regarding the overall unfolding of the International Trade Fair for Technical Textiles and Nonwovens, known as the *Techtextil* fair.

Launched with the motto *Connecting the Future*, *Techtextil* fair was characterized as a textile fair dedicated to the interdisciplinary approach for customer-oriented products, pursuing the overall functionality and performance.

2. TECHTEXTIL 2017 OVERVIEW

2.1. TECHTEXTIL 2017: The involvement of the participants

With a visionary management, Messe Frankfurt from Germany organized a “double fair”:

- International Trade Fair for Technical Textiles and Nonwovens - *Techtextil*, to showcase the most innovative and customized products in the field of technical textiles, together with the potential uses of textile industry products, and with links to all industrial sectors, in pursuing the best solution to assure the products' functionality and performance;
- International Trade Fair for Processing Textile and Flexible Materials - *Texprocess*, as a platform for the latest processing technologies

used for technical textile development and manufacturing.

Together, this year, the two fairs welcomed 1789 exhibitors from 66 countries (up around 8 percent compared to 2015) and over 47500 visitors from 114 countries (up around 13 percent compared to 2015).

According to FKM (the authority for the certification and publication of exhibition data for Germany), the attendance at *Techtextil* only, reached improved figures comparing to the event in 2015, with participants from all over the world, [9]:

- 1477 exhibitors from 55 countries (423 from Germany, followed by three main nations attending as exhibitors: 147 from Italy, 104 from People's Republic of China and 101 from France);

- 33670 visitors from 104 countries (12000 from Germany, followed by three main nations attending as visitors: Italy, France and Turkey).

In accordance with the organizers, all 28-member states from the European Community attended the *Techtextil* fair as exhibitors with the latest developments and technical applications of technical textiles, representing more than half of the total number of headquarters involved worldwide in the technical textiles field, see Figure 2.1.

In this context, it is important to mention that it was a significant increase in headquarters participations from many European countries and the level of internationalization was also remarkable on the exhibitor side.

The worldwide top seven that include headquarters located in the participant countries was reached by Germany, Italy, People's Republic of China, France, Switzerland, Belgium and Spain.

Figure 2.2 confirms a higher and powerful race worldwide and within Europe, for achieving development in the technical textile field.

On the Romanian side, two companies assured the Romanian headquarters participation as exhibitors at the *Techtextil* fair:

- ◆ *Pasmatex* from Timișoara, a company with tradition in the field of narrow fabrics, ribbons, textile bands, woven and knitted elastic bands, printed articles, rigid and elastic girths, woven and printed labels, curtain bands, hook and loop. At *Techtextil*, the company launched the new division *Pasmatech*, dedicated to the technical textile goods for the Clothtech application area.
- ◆ *Minet Nonwovens* from Râmnicu Vâlcea, a company with tradition in the field of nonwovens manufacturing. At *Techtextil*, the company presented some products from Geotech, Hometech and Mobiltech application areas.

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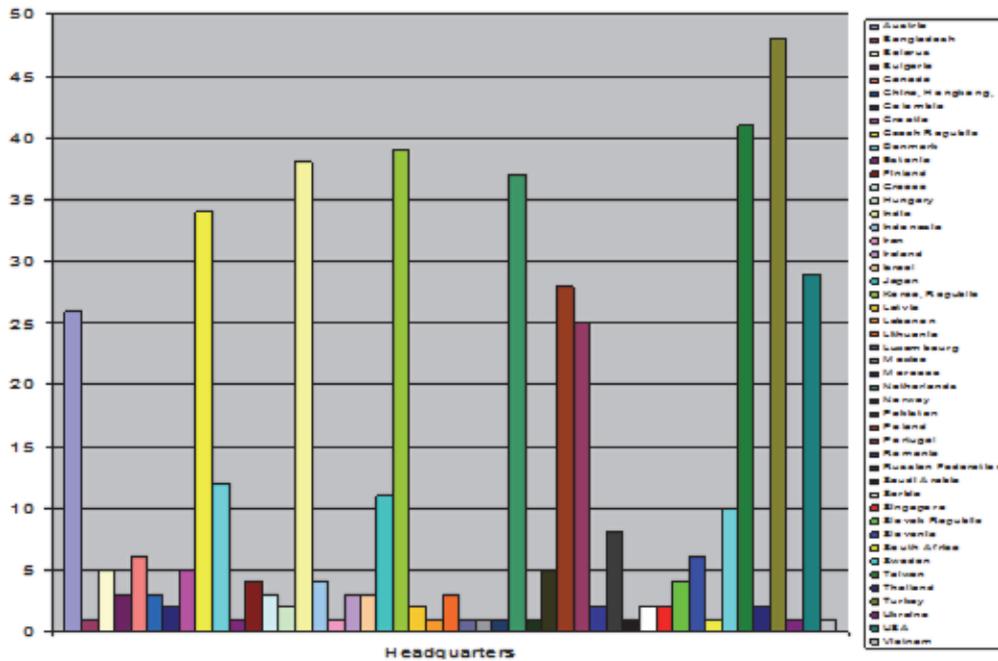


Fig. 2.1. Hierarchy of worldwide countries joining in the Tectextil fair, with less than 50 headquarters.

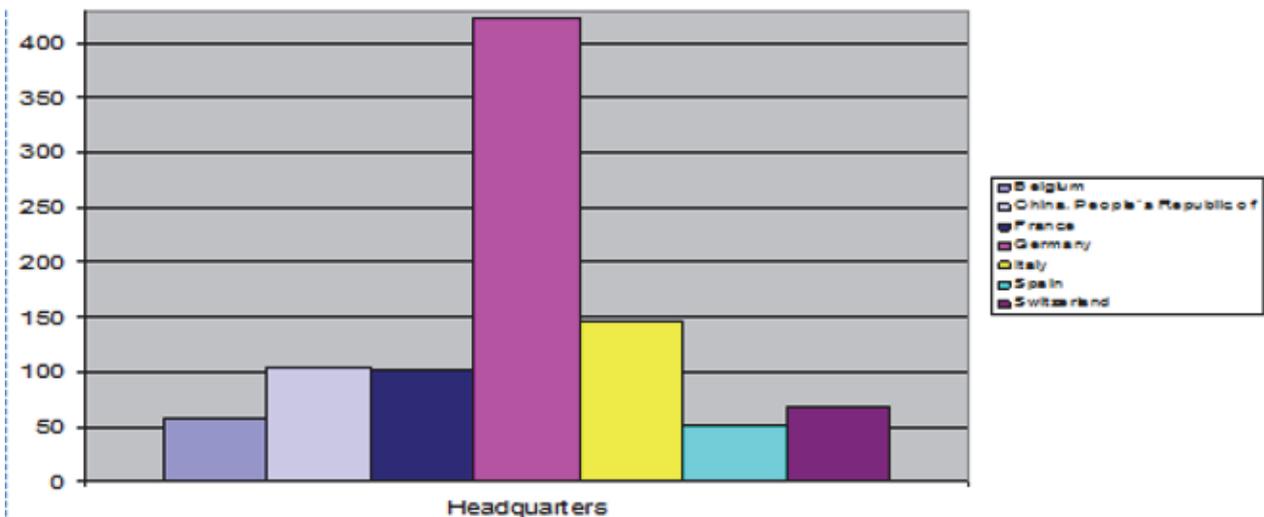


Fig. 2.2. Top seven of exhibitors' countries at Tectextil fair.

2.2. TECHTEXTIL 2017: The products groups

The *Tectextil* fair was organized into eleven product groups and the twelve application areas corresponding to the usual technical textiles classification have been highlighted within those.

The organizers considered that, in accordance with the industry and research trends, the eleven product groups established for *Tectextil* could cover the entire variety of technical textiles and nonwovens, and would fit with the responsibility area of the overall visitors [8].

Many attending exhibitors have shown their achievements in the technical textile field by participating in different products groups. The overall configuration about the eleven product groups and the attending exhibitors that presented their latest

products in the technical textile field is shown in Figure 2.3, as follows:

- Research, Development, Planning, Consulting (121 exhibitors),
- Technology, Processes, Accessories (404 exhibitors),
- Fibers and Yarns (319 exhibitors),
- Woven Fabrics, Laid Webs, Braiding, and Knitted Fabrics (493 exhibitors),
- Nonwovens (191 exhibitors),
- Coated Textiles (363 exhibitors),
- Composites (167 exhibitors),
- Bondtec (141 exhibitors),
- Functional Apparel Textiles (282 exhibitors)

Finally yet importantly, a number of 31 Associations and 9 Publishers joined the Tectextil 2017.

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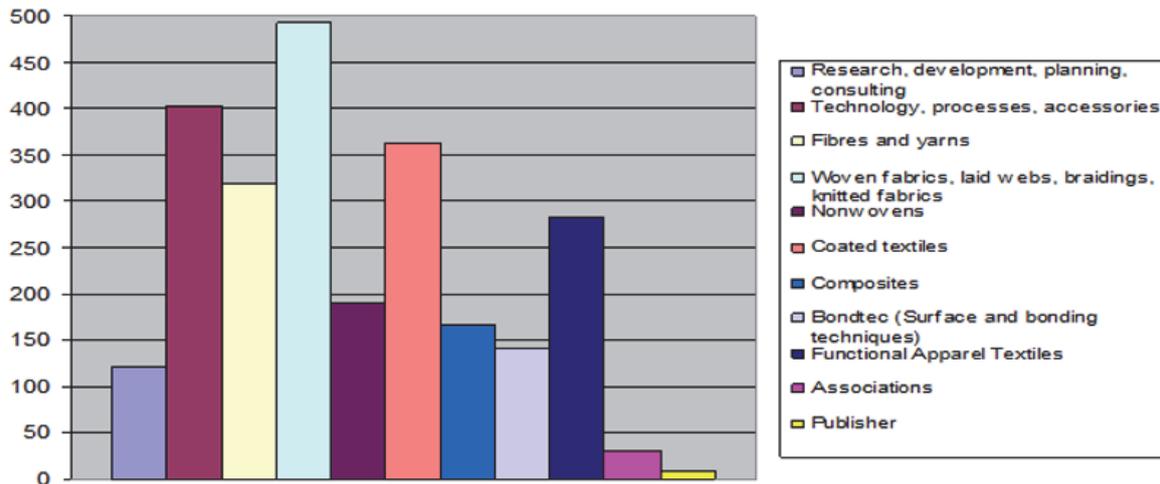
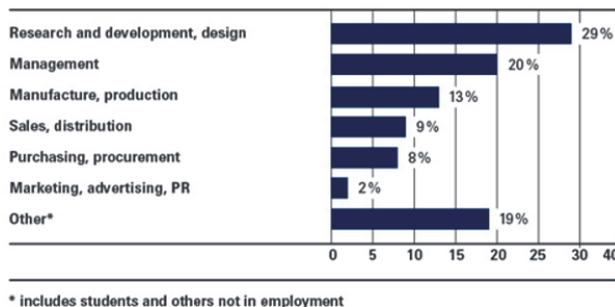


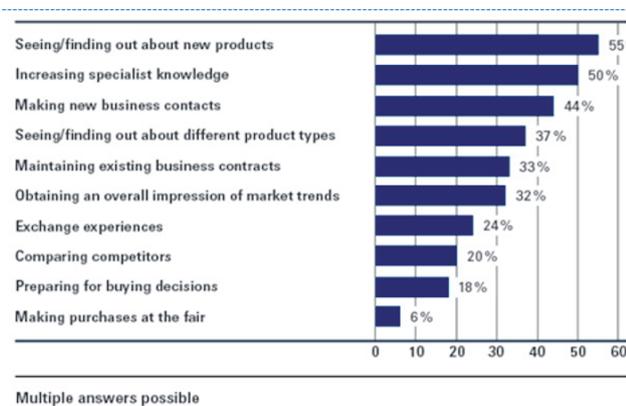
Fig. 2.3. Exhibitors that attended Techtexsil by products group interest.

In terms of the trade visitors profiles, the Figure 2.4 shows that, from the 33670 visitors from 104 countries, around 50% were trade visitors involved in management, research, development and design, around 30% were trade visitors involved in manufacture / production, sales / distribution / purchasing and marketing activities, and around 19% of the trade visitors were students and non-employees.



* includes students and others not in employment

Fig. 2.4. Visitors that attended Techtexsil and their field of activity [9].



Multiple answers possible

Fig. 2.5. Visitors at Techtexsil and their objectives [9].

The objectives of the trade visitors are shown comprehensible in the Figure 2.5, and as a feedback for organizers according to FKM certification,

96 percent of all participants gave top satisfaction marks regarding the accomplished objectives proposed when they chose to attend the *Techtextil* as trade visitors.

An important aspect highlighted by FKM, was about the trade visitors from the education side (students and teachers) who also perceived the *Techtextil* to be an event full of intensive knowledge sharing, and rated their participation in the trade fair as one with very good outputs.

2.3. TECHTEXTIL 2017: complementary events

The *Techtextil* fair covered comprehensive topics for all trade participants, in order to offer them an overview of the latest developments in the technical textile sector. This was assured through insights into the whole textile value chain and highlighting the pillars of the field [8].

Complementary to the *Techtextil* exhibition, successful projects consisted of some special events:

1. *Innovative Apparel Show* was an event during every day of the fair, which combined innovative apparel textiles and new processing technologies with a display of high-tech textiles. Created by the international colleges of fashion and design from Europe, this show presented their visionary designs for technical textiles, fashioned with modern processing technologies for outstanding outfits.
2. *Techtextil Symposium* (the 19th edition) on the topic of the two leading international trade fairs, *Techtextil* and *Texprocess*, was an informative and visionary expert forum focused on technical textiles and functional garment fabrics with miscellaneous applications.
3. *Techtextil Innovation Award* was an event open to *Techtextil* exhibitors, but also to other

companies, institutes, universities and individuals, meant to honor outstanding ideas and future-oriented developments in the field of technical textiles, nonwovens and functional apparel textiles.

4. *Student Competition "Textile Structures for New Building 2017"* (the 14th edition) intended to focus on sustainable solutions for textiles as a building material, promoting the exchange of ideas and knowledge between young academics (students of civil engineering, product design and related disciplines) and young professionals, and the industry.
5. *Young innovative companies* (the first edition) organized in cooperation with the German Federal Ministry for Economic Affairs and Energy, which actively advances the worldwide marketing of future-oriented German products to discover ideas, developments and projects from German startup companies that could grow into international competitors.
6. *"Living in Space"* event organized in cooperation with the European Space Agency (ESA) and the German Aerospace Centre.
7. Containing the *"Space Habitat"* and *"Material Gallery"*, this event illustrated the wide range of applications for technical textiles with reference to the aerospace industry, by showing high-tech textiles and textile-processing technology, from and for the aerospace sector.
8. *"European Digital Textile Conference"* by WTiN (the first edition) approached topics on the latest product developments into digital printing technology, for the functionalization and decoration of technical fabrics, starting

from fashion fabrics to military equipment, sportswear and automotive products.

It should be noticed that, in the same context of the amazing complementary events at the Tex-process trade fair, was presented the *"Digital Textile Micro Factory"* as a live demonstration of fast-fully networked textile production chain for apparel.

From the design stage to digital printing, automatic cutting out and fabrication, this overall concept was based on the specific customer requirements, allowing serial production and the production of smaller batches for individual products.

2.4. Techtexil 2017 and application areas

Techttextil could be characterized as a textile fair that emphasized the need of an interdisciplinary approach when it comes to customer-oriented products.

In this context, the latest ideas, developments and products for manufacture, processing and application in the technical textile field have been covered in accordance with the twelve application areas, corresponding to the usual technical textiles classification [8].

The Table 1 shows a comprehensive analysis about the sharing of application areas, with details regarding the topics, exhibitors' participation, target groups/visitors and the products range presented at the fair.

Based on the data presented in Table 1, the Figure 2.6 shows the division across areas for the overall participation of the 1477 exhibitors from 55 countries, at *Techttextil* 2017, with a number of 5004 products for all application areas of technical textiles, which indicates a great development of the technical textile topic.

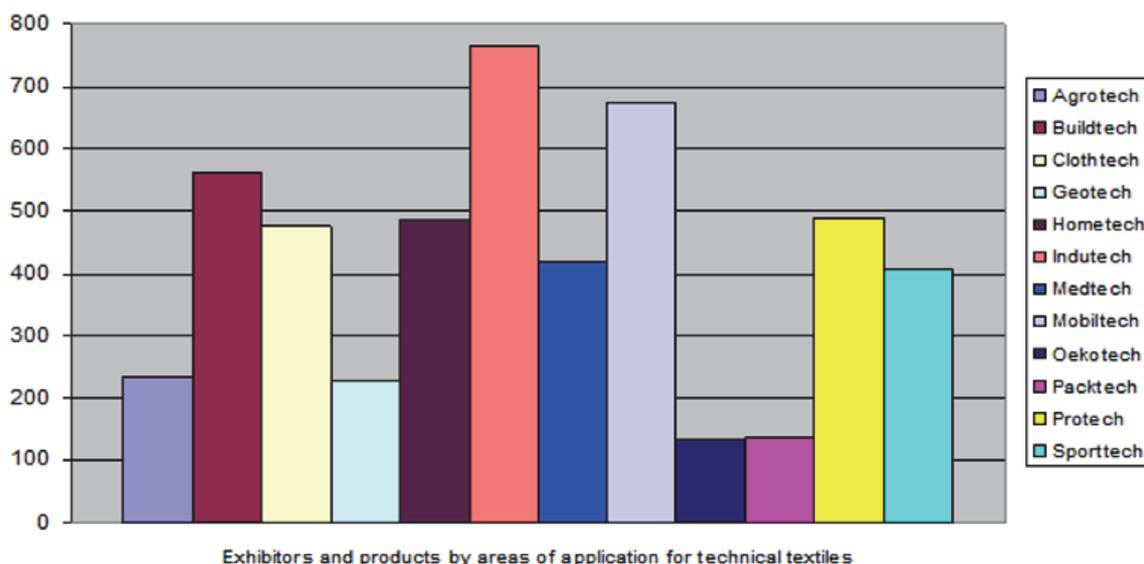


Fig. 2.6. Products division across the application areas of technical textiles at Techtexil 2017.

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Table 1. Technical textiles application areas at Techtexil 2017

Application areas		Details for Techtexil 2017
Agrotech (Agro-textiles) <div style="text-align: center;">  </div>	Topics	<i>Horticulture and landscape gardening, agriculture, forestry, animal husbandry</i>
	Exhibitors	233
	Visitors-Target groups	Agricultural engineers, landscape architects, agricultural institutions and large-scale organizations
	Products range at the fair	Agrotech general (goods with direct implication in the agro-technical practice) <ul style="list-style-type: none"> • Soil covering material for horticulture and agriculture • Textile drainage /irrigation systems, Forestry textiles • Woven / knitted fabrics for providing shade • Greenhouse equipment, Textiles for market gardens • Sealing sheets for water tanks and liquid manure tanks • Flexible/rigid container systems, Water tanks • Temporary agricultural buildings, Lifting and conveying systems • Textiles for landscaping and for earlier harvesting
Buildtech (Construction textiles) <div style="text-align: center;">  </div>	Topics	<i>Membrane construction, light-weight and solid structures, civil engineering, industrial construction, temporary constructions, interior construction, earthworks, hydraulic engineering and road construction, agricultural construction</i>
	Exhibitors	560
	Visitors-Target groups	Architects, construction engineers, building sponsors, investors
	Products range at the fair	Buildtech general (textiles or composite materials used in the construction of permanent and temporary buildings as well as structures) <ul style="list-style-type: none"> • Textiles reinforcement for concrete and other precipitation hardening masses • Lightweight construction materials and temporary constructions • Textile formwork materials and facade substructure systems • Cold, heat or sound insulations, Pneumatic structures, • Textile roofing and roofing sheets, Tents and tent frames • Membranes for lightweight plane load bearing structures • Exterior and interior textile noise barrier walls • Sunscreen textiles, Textile heating systems • Textile air distribution and air conditioning systems • Pipe renovation methods based on textile hoses • Textiles for soil stabilization • Fire protection and rescue equipment, Visual protection systems • Textiles and composites for interior fittings and furnishings • Textile-reinforced components, moldings, pipes, containers
Clothtech (Clothing textiles) <div style="text-align: center;">  </div>	Topics	<i>Functional apparel, clothing, shoes</i>
	Exhibitors	474
	Visitors-Target groups	Fashion designers, developers, shoe and clothing manufacturers
	Products range	Clothtech general (textile components - principally hidden -used primarily in garment applications, with specific functional applications) <ul style="list-style-type: none"> • Clothing (sewing threads, interlinings, zip fasteners, elastic narrow fabrics, tapes, Velcro, labels, webbings, shoulder pads) • Wind and weather protection clothing (umbrella cloth) • Shoes (shoes laces, shoes interlinings)
Geotech (Geo-textiles)	Topics	<i>Road construction, civil engineering, dam and waste site construction</i>
	Exhibitors	227
	Visitors-Target groups	Road and civil engineers, construction companies, public authorities and local government

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Application areas		Details for Techtexil 2017
	Products range at the fair	Geotech general (technical textile products used in geotechnical applications pertaining to soil, rock, earth etc.) <ul style="list-style-type: none"> • Subsoil reinforcement, Landscaping, Soil sealing, • Drainage systems, Earthworks and road construction • River-bank and coast reinforcement, • Water engineering • Pipe renovation methods
	 Geotech	
Homotech (Domestic textiles)	Topics	<i>Furniture, upholstery, interior design, carpets, rugs, floor coverings</i>
	Exhibitors	485
	Visitors-Target groups	Furniture producers, interior designers, project planners and architects
	Products range	Homotech general (textile components used in household applications, from blinds used in the houses to the filter products used in the vacuum cleaners) <ul style="list-style-type: none"> • Textiles and composites for interior fittings and furnishings • Carpets, Sunscreen textiles, Awning material • Upholstery fabrics, Ceiling and wall coverings, Fire blocker • Textile-reinforced structural components and moldings
Indutech (Industrial textiles)	Topics	<i>Filtration, cleaning, mechanical engineering, chemicals industry, electrical installation industry</i>
	Exhibitors	765
	Visitors-Target groups	Users, designers, processors from the mechanical engineering, chemical and electrical industries
	Products range at the fair	Indutech general (technical textile products used in the manufacturing sector) <ul style="list-style-type: none"> • Textile sheet products for reinforcing purposes • Textile-reinforced structural components, moldings, pipes and containers • Textiles for use in hot/ cold /corrosive medium • Antistatic textiles, Sound-insulating products, Advertising materials • Textiles for the electronics industry and data systems technology • Textile-reinforced motor parts, Hoses and textile-reinforced pipes • Lifting and conveying systems, Rigid and flexible containers • Pneumatic hollow body systems, Filters / filtration • Sorption systems, Seals and fibre-reinforced sealing compounds • Textiles for the painting and coating sector • Textile-reinforced armored materials, Closure systems, • Substrates for coating, film lamination and gumming
	 Indutech	
Medtech (Medical textiles)	Topics	<i>Hygiene, medicine</i>
	Exhibitors	419
	Visitors-Target groups	Manufacturers of medical supplies, research institutions, hospitals
	Products range at the fair	Medtech general (goods which includes textile stuff used in hygiene, healthiness and private care, as well as surgical end use: implantable, non- implantable, healthcare and hygiene products, extra-corporeal) <ul style="list-style-type: none"> • Hygienic fleeces and dressing material • Textile-reinforced prostheses /products for surgery • Operating sheets, Hospital bed linen and blankets, Medical pillows • Textile articles for hospital and institutional demand • Doctors' and nurses' clothing, Equipment for rescue service • Textiles for medical equipment /for monitoring/for precaution
Mobiltech (Transport textiles)	Topics	<i>Cars, ships, aircraft, railway, space, travel</i>
	Exhibitors	674
	Visitors-Target groups	Constructors, designers, engineers, suppliers

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Application areas		Details for Techtexsil 2017
	Products range at the fair	<p>Mobiltech general (visible components and concealed components, as noise vibration and harness components, tire cords, liners, etc.)</p> <ul style="list-style-type: none"> • Aerospace/ Rail vehicles/Automobiles/ Ship building • Textiles for covering plastic surfaces, Textile-reinforced rubber products, Sound, heat and cold insulations • Passenger safety systems, airbag, Upholstery fabrics, Carpets • Tires, Balloon envelopment, Interior cladding, • Ceiling/ wall coverings, Covering materials and tarpaulin systems • Intake air filter and air distribution systems, • Protective covers for aircraft, water vehicles and land vehicles • Equipment for security and military vehicles
	 Mobiltech	
Oekotech (Ecological -Protection textiles)	Topics	<i>Environmental protection, recycling, waste disposal</i>
	Exhibitors	134
	Visitors-Target groups	Environmental protection engineers, safety engineers, employees of environmental protection agencies
	Products range at the fair	<p>Oekotech general (textiles is dedicated in ecological engineering goods to safe landfills against leakage of metropolitan or harmful waste and for protection in chemical/oil Industries) Soil seals</p> <ul style="list-style-type: none"> • Textile drainage systems, Erosion prevention textiles • Textiles for protection against hazardous substances • Mobile containers for temporary storage of water or contaminated liquids , Landfill textiles • Textile noise barrier systems, Filter systems for clean air and water
	 Oekotech	
Packtech (Packaging textiles)	Topics	<i>Packaging, protective covering systems, sacks, big bags, container systems*</i>
	Exhibitors	137
	Visitors-Target groups	Shipping and logistics companies, developers, designers and buyers from industry and the distributive trades
	Products range at the fair	<p>Packtech general (flexible packing material made of textile used for packaging a variety of commodities for: industrial, agricultural, consumer and other goods)</p> <ul style="list-style-type: none"> • Packaging materials, Sacks and Big Bags • Protective cover systems for short- and long-term conservation • Mobile containers for temporary storage • Flexible and rigid container systems
	 Packtech	
Protech (Protective textiles)	Topics	<i>Personal safety and property protection</i>
	Exhibitors	488
	Visitors-Target groups	Safety engineers, manufacturers of protective clothing, safety officers
	Products range at the fair	<p>Protech general (textile goods and associated stuff used in the manufacturing of a variety of protective clothing for people working in hazardous atmosphere)</p> <ul style="list-style-type: none"> • Protective clothing, Heat protection clothing • Weatherproof and winter proof clothing, Fire blocker • Chemical protection equipment, Equipment for rescue service • Cold store clothing and low-temperature clothing • Fire protection equipment, Survival equipment, Object protection • Person-protection equipment, Textile reinforced armoring • Equipment for security services and the military
	 Protech	
Sporttech (Sports textiles)	Topics	<i>Sport and leisure, active wear, outdoor equipment, sports equipment and outfits, sports footwear</i>
	Exhibitors	408
	Visitors-Target groups	Designers, outfitters and manufacturers of sports articles and outdoor equipment

Application areas	Details for Techtexil 2017
<p>Products range at the fair</p> 	<p>Sporttech general (fabric used in sports / leisure purpose to ensure incorporation of special characteristics demanded by the athletics & the leisure activities for better performance, independence of movement and comfort).</p> <ul style="list-style-type: none"> • Textile-reinforced sports equipment, Weather and wind protection • Person-protection equipment, Sports equipment, Sportswear • Sports shoes, Active wear, • Outdoor Safety (Monitoring/Positioning)

3. CONCLUSIONS

In the last 14 years, the technical textiles trade has expanded rapidly, by doubling the volumes since 2003 and there are many EU-28 member countries for which, the technical textiles represented the highest share of their textile exports.

In this context, distinct exhibitions and associated events offer a profound vision into the world of technical textiles, referring to the specific textile production and applications and so it was *Techttextil 2017*, considered as the leading international trade exhibition for latest developments and applications of technical textiles, organized by Messe Frankfurt in Germany.

According to the FKM certification, the very good mood at the fair was emphasized by the visitor poll on the economic climate in the textile sector, since around 42 percent of *Techttextil 2017* visitors described as good the current economic situation (compared to 32 percent at the *Techttextil 2015*).

Nowadays, the sustainability and the transparency to assure overall functionality, safety and performance, must be perceived as a competitive advantage, owing the constantly growth of the consumers influence to trends, developments and potential areas of application for the technical textiles.

This paper highlights some of the most relevant aspects regarding the International Trade Fair for Technical Textiles and Nonwovens, *Techttextil*.

Launched with the motto *Connecting the Future*, the *Techttextil* fair was characterized as a textile fair that emphasized the role of an interdisciplinary approach for customer oriented products, when the overall functionality and performance are mandatory to be achieved.

In accordance with the *Techttextil* motto, the general perception of the textile experts when concluding their impressions about the fair facts, can be expressed by the following statements: “...was one of the most relevant user-fairs for textile innovations...”, “...in nowadays exigent world, if any industry is fit for the future, it’s the textile industry...”, “...an impressive demonstration of its great innovativeness and preparedness to meet tomorrow’s challenges...”

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