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TEX INNOVATION

MAGGIO 2017

LA RIVOLUZIONE DIGITALE CHE CAMBIA IL MODO DI FARE IMPRESA

The digital revolution which changes the way of doing business

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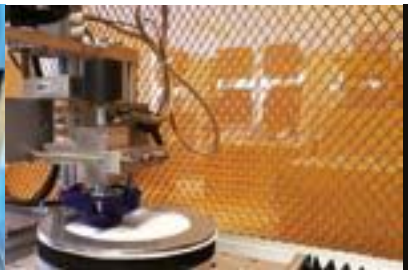
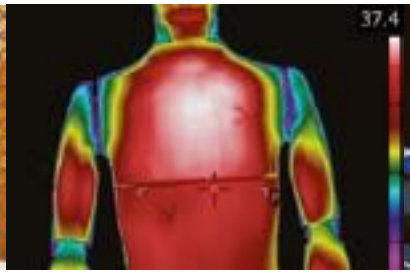

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EDITORIAL

Aldo Tempesti
Managing Director of TexClubTec

In the last few months a tornado is sweeping in Italy, it's called "Industry 4.0" and is triggering everywhere initiatives which are rousing to action politicians, experts, consultants, banks, dragging along operators, as if there was a collective "mantra" from which it's impossible to be excluded. The spark which ignited the "sacred fire" and which, suddenly, mobilized all the productive sector and its satellite activities, was the "National Industry Plan 4.0" by the Government which, in the wake of what's going on in Europe, allocated 13 billions in subsidies for updating production processes in terms of drive towards digitalization. A mobilization which is even more hectic than it was few years ago the phenomenon of nanotechnologies. Even then there was, for someone earlier and for someone later, a great awareness towards what seemed to be a turning point, except that then the aim was to interpret better chemical processes, locating them in a different dimension, which aimed at knowing better reactivity of raw materials. Nowadays the science of nanotechnology is indeed carrying on its evolution, but in its natural dimension, that of chemistry and physics, before the real supply chain, affecting changes in the production sector only marginally and at the end.

This is not the case of "Industry 4.0" for which the future evolution that is preparing manufacture in its entirety will have a much bigger impact.

Thanks to the innovations which are about to affect production processes, factories will not only make what they have been doing for decades, i.e. to work products automatically thanks to robots. Industrial machineries become intelligent, store and rework data, transferring them later to all the company departments. So a new and more efficient production system will grow, which will be able to comply with changes in real time, foreseeing emergencies, reducing energy consumption or correcting product defects promptly.

And all this will imply also some negative aspects: this time not only blue-collar workers will be penalized, who must face competition from robots, but also white-collar workers, whose tasks will be carried out by artificial intelligence. According to a research carried out by the World Economic Forum, 7.1 millions of workplaces will be lost in the mid-term, and only 2 millions will be recovered in the long-term. Since it's not possible to stop technological evolution, Bill Gates suggested to support welfare taxing the use of robots, but this cannot but be seen as a provocation, since innovation cannot be taxed, because we could run the risk of losing it to the advantage of more favorable territories. In order to support this evolution process therefore, not only the production system will have to change, but also the welfare vision and the social system in general.

In Germany, where the concepts of the Fourth Industrial Revolution were theorized and approached according to a global strategy perspective also at political level, companies and the training system, supported by the most authoritative research centers have been preparing to face these epoch-making changes for at least 4-5 years, in terms of processes, company organization, relationships along the supply chain, high-level training. In Italy, instead, this matter began to be dealt only some months ago, and in the wake of "Industry 4.0" everyone is only trying to exploit the possibility of buying/selling new machineries taking advantage of the facilitations offered by the Government Plan, paying a riskily limited attention to all the other problems which we will have to face, and approaching them in a confused way.

Released in 2008 for the first time, **TEX INNOVATION** is the house organ of TexClubTec, the Italian Innovative Technical Textiles Association, that offers a widerange of technical articles about innovative products, technologies and processes, research projects, market analysis and main events about the world of technical textiles and Textiles & Clothing. It is dedicated to all operators, producers, nal users, research centers and authorities, both Italian and international, operanting in the textile sector. It also spreads details about TexclubTec's members, also thanks to the updated technical textile directory, always included in the publication.

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SUMMARY

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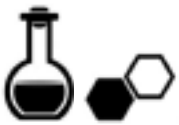
TEXCLUBTEC WORLD

Our services and activities:

Documents and Studies
Periodical newsletters, studies and publications on markets, products and processes of the technical textile sector and Textiles & Clothing. Organization of conferences and workshops on specific technological and market topics.



Research and Development
Participation at research project, co-funded by the European Commission, involving also member companies. Furthermore, TexClubTec is the co-founder of the Italian Technology Platform for Textiles & Clothing.

Standards and Regulations
Archive of standards and regulations and constant normative update on the sector of technical textiles. Furthermore, TexClubTec participates actively to the workshops of the main standard bodies (UNI, EN, ISO).

Promotion
Promotional activities for member companies also through the participation at the most important international fairs, the organization of trade missions and conferences on the most interesting topics for all operators of the technical textile sector.

For further details about our activities and how to become a member, visit our official website www.texclubtec.it or contact +39 02 66118098 or info@texclubtec.it

RECENT AND SCHEDULED EVENTS

Proposte 2017
Cernobbio 3-5.05.2017

Techtextil 2017
Frankfurt am Main 9-12.05.2017

A+A 2017
Düsseldorf 17-20.10.2017

ISPO 2018
Münich 28-31.01.2018

NEW MEMBERS

Accoppiatura di Asolo S.p.A.
Activity : specialized in the creation of products that come from the lamination of different materials: fabrics, polyurethane foams and polyolefin foams (PE, EVA), non-woven fabrics, films, breathable and water repellent membranes.
Via dell'Artigianato, 14, 31011 Asolo (TV)
Phone.+39 0331 715763
www.asoltex.com

Trinovation Italy S.r.l.
Activity: Fashion Design and Industrial Design.
Via dei Carracci, 6/B, 40129 Bologna
Phone +39 0444 737766

PUBLICATIONS

TECNO TESSILI
publication focused on innovative technical textiles Last issue: Contract sector in Far East countries.

MONDO TESSILE
publication focused on Textiles & Clothing
Last issue: Textiles, clothing and application fields of technical textiles in Japan.

RESEARCH

Research projects founded by European Commission

Recently ended project:

MADMAX

Ended on 31/7/2016
Advanced Material Textile for Reinforced Structures for Complex Lightweight Applications.

MULTI TEXCO

Ended on 30/9/2016
Identify performance features and exploit conditions of the new generation of multifunctional technical textiles in the building sector.

BETITEX

Ended on 31/10/2016
Protective textiles against bug bites.

Ongoing projects:

TEXAPP

Sector: Training

Duration: 01.10.2016 – 30.09.2018

Objective: Integrated strategy Initiative for Strengthening the supply of APPrenticeships in TEXtile sector

The Consortium:
• EURATEX - EU level Association – Belgio (coordinator)
• The Huddersfield and District Textile Training Company - UK
• Pirin - Tex EOOD - Bulgaria
• Centro Tecnologico das Industrias Textil e do Vestuario de Portugal (CITEVE) - Portugal
• Textilipari Műszaki és Tudományos Egyesület (TMTE) - Hungary
• TexClubTec – Italy
• The Bulgarian Association of Apparel and Textile Producers and Exporters (BAATPE) - Bulgaria
• Associazione ellenica dell'industria dell'abbigliamento (HCIA) - Greece

ECOSIGN

Sector: Sustainability and design – Training

Duration: 1-11-2015 – 31/10/2018

Website: www.ecosign-project.eu

Objective: Knowledge and Eco design capacity for europeans designers

The Consortium:

Industrial Associations:
• Asociata Auditorilor si evaluatorilor de mediu din industrie – Romania;
• TexClubTec – Italy;
• Asociata Comitet Sectorial Pentruformare Profesionala In Protectia Mediului – CDFPM – Romania;
• Asociacion Empresarial de Investigacion Centro Tecnologico Nacional de la Conserva – Spain;
• Asociacion Empresarial de Investigacion Centro Tecnologico del Muebley la Madera de la Region de Murcia – Spain;

Research centers and Universities:
• Centro Tessile Cotoniero e Abbigliamento S.p.a. – Italy;
• Razvojni Center Orodjarstva Slovenije – Slovenia;
• Aicq Sicev S.r.l. – Italy;
• Institutul National de Cercetare-Dezvoltare Pentru Bioresurse Alimentare – Romania;
• Univerza V Mariboru – Slovenia;
• Servicio Regional de Empleo y Formacion de la Region de Murcia – Spain;
• Center Republike Slovenije za Poklicno Izobrazevanje – Slovenia.

ECOSIGN

Erasmus+

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On 2 December 2015, the European Commission adopted its new Circular Economy Package. The idea is that waste and resource use are minimized, and resources are kept within the economy when a product has reached the end of its life, to be used again and again to create further value.
The challenge arising from this new way of producing things will be to train a new generation of Designer, called Eco-Designer, be able to combine a strong knowledge of materials, processes, standard and laws in a context of circular economy.

For this reason, Ecosign project was launched on 1 November 2015, co-funded by the Erasmus+ Program of the European Union, with the aim to develop a training course for European Eco-Designer operating in the textile-clothing industry, electric and electronics sector, food packaging.

Further information available on the official website **www.ecosign-project.eu**

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INNOVATION

The digital revolution which changes the way of doing business

All can be traced back to a word, "Disruption", the great break: this term, coined in the '90s by Clayton Christensen of the Harvard Business School, borrowing it from the term "cell disruption" which, in cellular biochemistry means the breaking down of a cell which releases at the same time brand new molecules.

By this analogy Christensen wanted to describe that type of innovation which suddenly puts out of the market generations of investments, knowledge and workplaces based on previous knowledge.

Nowadays that type of innovation can be mainly identified with what is called "digital disruption", which is asserting itself as a driving force for change for all kind of enterprises, imposing a rethink about the way of operating on the market also for little and middle-sized enterprises.

The background

Although in the '70s and in the '80s many Italian districts had asserted themselves on the international markets counting on low prices and exportations ensured by the monetary Italian politics, already at the beginning of the '90s it became necessary to face the first effects of the market crisis, with the following reduction of industrial production, relocations in the Eastern countries and in the Far East and disintegration of the supply chain. In the early 2000s, with the explosion of globalization, other signals, more dramatic, arrived, which were perceived by many as signals of the beginning of an unrelenting and inexorable decadence of the Western countries, as drivers of economic development.

However, in view of this, surprisingly Adidas – which had begun to relocate in Asia already 20 years ago - last year announced its intention to produce again in Europe, in Germany, following a paradigm which less than 10 years ago was unthinkable: no more aimed at the research of low-cost labor force, but to the research of robots and super-specialized workers.

This is one of the first concrete signals in the new sceneries, foreseen by "Industry 4.0" which are taking shape in the production of goods and services.

Industry 4.0

Industry 4.0 is an expression which was used for the first time in 2010 by the German Automotive Association VDA, to describe the changes underway in industrial processes, which can be reconnected to a concept of industrial revolution. This evolution will redraw the models of business, production, consumption and of goods transport, based on the integration of physics, biotechnology and digital technology.

This development is considered a real turning point, and due to this it was defined as the "Fourth Industrial Revolution", which arrived after the "First Industrial Revolution" which took place at the beginning of the 19th century thanks to the invention of the steam engine, and which marked the beginning of industrialization. The "Second Industrial Revolution" took place towards the middle of the 19th century and was marked by electricity, labor sharing and mass productions. The "Third Industrial Revolution" took place at the beginning of the '70s of the last century, marked by electronics, information technology and the automation of production processes.

These historic passages were epoch-making also for the textile sector and for its evolution: the first industrial revolution saw the textile sector at the center of the industrialization process with the introduction of the flying shuttle, the hydraulic loom, the steam spinning, the jacquard loom; during the second industrial revolution electric energy, chemistry and petrochemistry modified processes and products increasing productivity and starting the production of viscose, polyester, reactive dyestuffs; the third industrial revolution was marked by the emergence of industrial districts, brands and single-brand chains appeared, relocations started, and for the first time arose the problem of advanced market protection; finally, with the 4th revolution, which is taking place nowadays, it's possible to identify and to give value to new diversification drivers, such as the strategic role of services, the multiplication of niches, reshoring, wearable technology, etc…

"Industry 4.0" – Main features

It's digital integration of the new manufacturing technologies to increase productivity, quality and reactivity to the market, based synthetically on:
- Data collection: fundamental tool, on the basis of which it's possible to give value to the calculating power of the machines.

- Analytical elaboration: methodologies for data elaboration in order to make the best possible use of them.

- Man-machine integration: tools, interfaces, languages to interact with the machines.

- Interaction between digital technology and reality in the production process of goods and services: the aim, after collecting and elaborating them, is to be able to process them in order to "instruct" machines and to produce goods (3D print, robot…).

Moreover, "Industry 4.0" is a process which goes beyond the simple use of robots and digital technologies. It's namely a phenomenon activated by the development of "Internet of Things", i.e. by the technology which allows to connect to the web and to set up a dialogue among many real objects, using Cloud Computing, i.e. the informatic cloud, thanks to which it's possible to access information everywhere, through the Internet, without storing it in the hard disks of computers. Another technology which is used is Big Data, which allows to collect and to analyze a huge amount of data by advanced informatic procedures.

"Industry 4.0" – Disruptive effects

Among the disruptive effects foreseen for the future we find a new approach to production and to commerce, based on the reduction of the immobilized capital thanks to the optimization of the value chains, decision times and reply times speeded up thanks to the availability of information, higher flexibility achieved thanks to a more dynamic structure of production processes, reduction of energy costs fostered by a smart control of plants and a higher ability to adapt to customer requirements.

According to McKinsey the future drivers for value creation will allow a reduction of 30%– 50% of machine standstill, a reduction ranging from 10% up to 40% of maintenance costs, an increase of 45% - 55% in productivity, a reduction of 20%-50% of storage costs, a reduction of 10% - 20% of the costs for quality control, an increase of 85% in the ability to foresee production flows and a reduction of 20%-50% of the time to market.

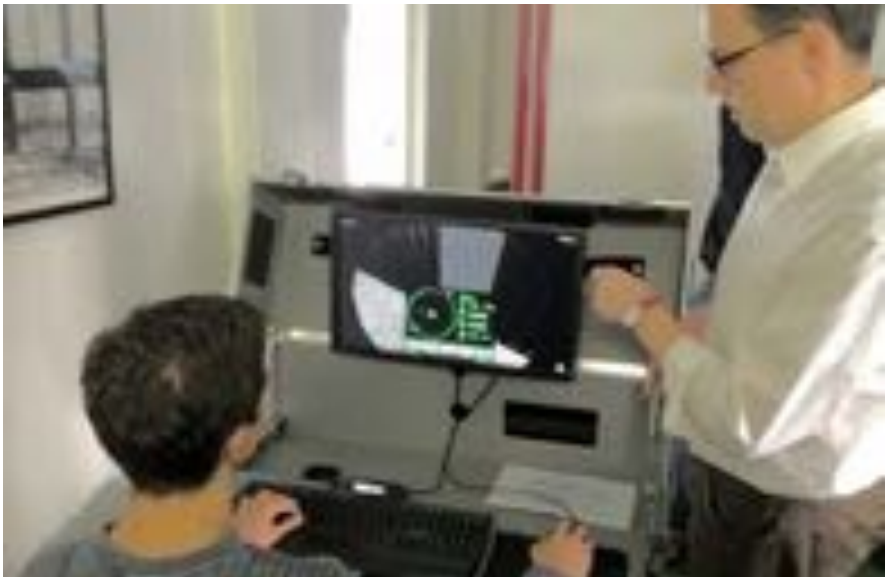
"Industry 4.0" – Examples in the textile sector

Nowadays disruption, even if it's not yet clear, starts to be anywhere: in industrial production new technologies are namely promoting changes which go beyond the simple process automation.
The Camozzi Group is an example of this, since it has created inside its organization Camozzi Digital, a company which is completely committed to developing solutions 4.0 able to combine all the potentialities of IoT and of Cloud.

One of the most innovative solutions, created for Marzoli, a company of the group operating in the sector of textile machines for manufacturing short fibers, aims at offering to the companies in the textile sector a more efficient and a more profitable way to check their production departments, managing their manufacturing cycles "at distance" and starting proper activities of predictive maintenance. In this way the customer can receive the indications necessary to make his factory work in the best possible way, but he can also act proactively in the maintenance.

For the companies of the textile sector which must manage different production plants relocated all over the world the advantage is clear: the possibility to "see" how every single department works in every moment, from whatever place and from whatever device, allows to reduce costs significantly (above all maintenance costs) and machine standstills, improving at the same time the level of customer satisfaction.

A second example is represented by the company CLOUD4WI based in Pisa, which has 72 employees and applies to the physical commercial



Government incentives

During the second semester of 2016 the Italian Government has drafted a line of industrial politics aimed at supporting industrial research widely, through the use of fiscal incentives, in order to promote "Industry 4.0" and the spread of digital innovation.

By the "National Plan for Industry 4.0" (2017-2020) 15 billions Euros have been allocated globally for the year 2017 in order to support investments for "Industry 4.0" and opportunities linked to the 4th industrial revolution, such as digitalization of production processes, enhancement of productivity, training of suitable competences and development of new products and processes.

The set of organic and complementary measures foreseen by the plan, aimed at promoting investments for innovation and competitiveness, are briefly reported in the following tables:

INNOVATION	
Iper and Super - amortization	Supporting enterprises which make investments aimed at the technological and digital transformation of production processes.
New "Sabatini": credit to innovation	Supporting enterprises which request bank financing for investments in machineries and in digital technologies.
Tax credit R&D (Research & Development)	Promoting private expenses to guarantee future competitiveness.
Patent box	Facilitated taxation on incomes deriving from the use of intellectual property. Incentives for positioning in Italy intangible goods which are currently located abroad. Promoting research and development.
COMPETITIVITY	
Guarantee fund	Supporting enterprises which have difficulty accessing bank credit.
ACE	Incentives for strengthening assets of enterprises.
IRES, IRI and cash-basis accounting	Reduction of tax burden for enterprises which invest, leaving profit inside their company.
Salary based on productivity	Promoting increase in productivity shifting wage bargaining at company level.

The importance of competence acquisition in the textile sector

With the impulse which the textile sector has experienced in the last few years due to the drive of technological evolution and according to the sceneries expected by the programs of "Industria 4.0", the topic of personnel competences in the textile sector is taking on a very important role.
There is indeed the need to ensure that this sector can access suitable technical competences. This is particularly important for companies which are looking at sectors which go beyond traditional applications such as, for example, intelligent textiles, or applications in medicine, in the building sector and others.
In this scenery, however, in the textile sector exist two significant aspects which will issue important challenges in the next years.
The first topic derives from the generation change in sectors such as the textile/clothing, made up by a great number of companies and owning significant traditional know-how where, due to the retirement of the baby-boom generation, and lacking the introduction of new and young personnel there is the risk to lose great part of this traditional know-how.
The second topic is linked to the speed of technological changes and to the resulting need to acquire new knowledge, which require more and more specialized competences finalized mainly to new emerging market trends such as:

- Technology and use of advanced textiles in technical applications
- Growing importance of marketing and sales
- Management of the supply chain on the market
- Redistribution of productive and assembling processes
- Growing importance of environmental aspects

Facing these problems, the resulting challenges, nowadays more than in the past, take on a new role, and it becomes a priority, for the future of this sector, to be able to face them successfully.

Cooperation among universities, research centers and industry
Nowadays we are living in an era featuring a hidden lack of interaction between industry and the research world. The cause of this situation can be ascribed to the different timetables set by university activities and activities of the production sector. According to some companies, the universities don't react to their requests rapidly, since they appear to be more interested in examining in depth specific topics for long time, than to engage in research matters with a less wide horizon, but the results of which could be significant for the industry in the present.On the other hand, currently public balances are cutting funds for the research, and the teachers must also commit themselves to the search of resources, therefore universities cannot afford engagement in projects which don't offer an economic return and so long time is spent researching funding for research projects of a wider scope, which however is a long-term process that doesn't produce rapid results.
As regards the textile sector there is also the problem of the reduction in the number of university students who choose this specialization, also in regions where textile industry is present with strong clusters.
In these regions, where competences of this kind still exist, it would be necessary to develop programs to support professional training. This could be aimed at informal links among universities, professional schools and companies, as well as to the development of technical work in the secondary schools or financing programs for apprenticeship. In order to prepare young workers conveniently, we shouldn't forget also the importance to fill the technological gap existing between technology in the

teaching institutions and technology which is really applied in the production sector.
The cooperation between industry and university plays an important role in this sense to face the challenge on the theme of competences since making universities interact with local companies could promote the links and the mutual knowledge between the productive sector and its future labor force.

Attracting the new generation of textile workers
The textile sector however must be able to be more attractive for potential employees, above all for young people.
The sector image is often perceived as an old one. It's necessary to introduce this sector more effectively as a modern, lively and high-tech sector, offering a wide range of application fields and of chances which are much wider than only fashion and design.
Technology could also play an important role, both to prove the high-tech character of this sector and using it to communicate and cooperate more effectively (i.e. social media, on-line courses etc…)
The same companies should consider the importance of introducing themselves by a good image. For example, declaring middle and long-term strategic plans of the company, or interacting with the local authorities to show how this sector has a future and a long-term vision.

Transferring know-how to the new generations
Keeping the know-how in a sector in which the older workers are retiring is a problem. It happens very often that part of the know-how acquired by the company gets lost with the personnel which leaves the company due to seniority. It would be necessary to create retirement plans suitable to ensure to the younger workers the possibility to learn from their wide experience.
Technology could also be used to collect competences and personnel experience (such as for example tutorial videos and detailed procedures for various tasks). This approach could also be used in the production of on-line courses.

Knowledge Managment
Technologies for data and knowledge management have been set up long time ago, their adoption however proved to be slow in the textile sector. To face the challenges in the future and to meet the requirements both of the market and of the legislators, the companies of the European textile sector should count on those competences of knowledge management able to integrate and to manage data concerning the features of the products, their life-cycle, their labelling, etc…

The acquisition of technical competences
In view of the fast evolution of technological and scientific knowledge, if some competences are not present inside the company, they could be acquired participating to projects in the field of the European research plans such as for example Horizon 2020. Interaction with experts of other companies or other branches of knowledge or sectors (coming from universities, technological centers, certification authorities, consumer associations, etc…) could be a good start, aimed at building more permanent cooperation relationships with bodies or companies oriented in the same way towards innovation and more advanced technological horizons.

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To strengthen the supply of apprenticeships in the Textile and Clothing sector

With 1.6 million employees, representing 5% of total manufacturing employment, 173.000 businesses and a turnover of around EUR 165 billion, the European Textiles and Clothing (T&C) Industry is a key manufacturing Industry in the European Union. Its contribution to employment and value added in the European economy is considerable.

On average EU T&C companies employ slightly more than 10 employees in the textile part of the value chain to 8 employees per enterprise in the manufacturing of apparel. Very small companies with less than 20 employees per firm represent 92% of the T&C companies, employ 31,5% of the workforce and contribute for 24,4% of the value added of this industry. This makes the T&C Industry one of the key Industries representatives in Small and Medium enterprises.

Over many years the sector can only result from more technological innovation and better skills of a qualified labour force. The average age of the workforce in the EU Fashion and Textile Sector is far too high and attracting and training new young talent will be essential if companies are to grow and respond to the increasing demand from international markets. Additionally, most EU countries have a high level of youth unemployment. To address this challenge, SMEs need to build their capacities to develop and deliver attractive programmes to prepare young people for entry to the labour market and to secure their future skills base.

However, the ability to design and manage jobs and work processes in ways that embed and enhance learning opportunities calls for a degree expertise that is not likely to be present in the majority of SMEs. Working with young people towards successful completion of an apprenticeship programme requires a level of time and patience along with particular support and mentoring skills in the employing company that, most likely, will need to be developed and supported.

Also SME's and especially micro enterprises, cannot always afford to make staff available to supervise apprentices or to deal with the administrative requirements their training entails. They may not have the staff or the equipment to be able to cover all aspects of the training required for a given occupation. Lack of information, of training culture or of a sense of ownership are usually the factors that prevent SME's in the T&C sector from taking on these challenges

At the same time, qualitative analysis of the needs for improvements, scenarios for apprenticeships implementation, analysis of the roles and responsibilities of all stakeholders and a transnational strategic cooperation approach among stakeholders and companies representatives hasn't been carried out yet, but is needed now maybe more than ever in this crucial for the European Textile Sector period, in order to strengthening the supply of apprenticeships in SME's, making a key step for securing the future and sustainability of the Sector.

Therefore, targeted cooperation among T&C Sector's key stakeholders in European and National level for the identification of solutions and preparing of action plan to improve the supply and quality of apprenticeship and motivation schemes for SME's to take active part is needed.

TEXAPP Project

TEXAPP is a European project coordinated by Euratex, as the European level organisation of the T&C national associations, in order to develop, through the close cooperation between Euratex and its partners - members and affiliates, an integrated approach for fostering and strengthening the supply of apprenticeships in sector's SME's and micro enterprises.
The project addresses the issue of apprenticeships delivery in the fashion sector dominated by SME's and micro enterprises. The objective of TEXAPP is to foster and strengthen the supply of apprenticeships for SME's and micro enterprises active in the sector.

Through close cooperation, TEXAPP project partners will create and provide a structure and tools oriented towards the T&C sector considering the SME's needs and obstacles they face in this regard. The sectoral tool package to be developed aims at assisting SME's in setting up, planning, delivering and ensuring the quality of their apprenticeships, including apprentice assessment. TEXAPP project will act and produce targeted tools for pooling resources, sharing information, exchanging knowledge, developing ideas and learning from each other' experiences.

The following objectives are pursued:

SME's Capacity Building
Development of a "Standard" that describes the capacities and competences required for an SME to manage and deliver an apprenticeship programme successfully. That Standard will detail the level of capability required for key company staff to manage apprenticeship/training programmes, integrate learning into occupational activity and support learners effectively throughout the process.

Set-up of a competence centre for Apprenticeships (TEXAPP Hub)
Design of a competence centre for apprentice as pilot for engaging SME's and micro companies in implementing apprenticeship schemes in line with the corresponding national VET systems. Activities will include the development of a business and organisational model for the Hub and an approach for further training for in-company trainers in the Hub. Good practices of on-going apprenticeship elements that are analysed will also be included in the set-up and training. The TEXAPP Hub will be organised in European level and in national level in each partner country because of the differences among countries, in legislation considering the Apprenticeship system. SMEs are less likely to be able to handle apprenticeships successfully if they working in isolation. They simply don't have the skill range and capacity. So the project through the TEXAPP Hub will boost companies to work together and maybe help each other out with different aspects of apprenticeship programme delivery. So as part of the TEXAPP Hub a 'peer group' will be created, where SME's would exchange ideas and knowledge alongside the programme of training events where they would learn about the apprenticeship model, assessing and mentoring skills etc.

Mobilize SMEs and companies for Apprenticeships
SME'S and micro companies especially with no previous experience with apprenticeships will be identified and information about the attractiveness will motivate Sector's SMEs to get involved in apprenticeships.

Implement an experience exchange for apprenticeships
The setting-up of a community of practice (CoP) for a dialogue for apprenticeships in the Sector will complement the project. This would be a support tool for the exchange of information and experience amongst sectorial stakeholders from different EU countries. Cooperation, experience exchanges for the promotion of apprenticeship will be formed and orientation for the set-up of the TEXAPP Hub will be gained.

For fostering the supply of apprenticeships in an integrated way for the T&C sector, TEXAPP project will act and produce targeted tools for pooling resources, sharing information, exchanging knowledge, developing ideas and learning from each other' experiences. The project duration is 24 months from October.2016 to September.2018 and the Project Partners are:
1. EURATEX (coordinator), Belgium - EU level Association
2. The Huddersfield and District Textile Training Company, UK
3. Pirin - Tex EOOD, Bulgaria
4. Centro Tecnologico das Industrias Textil e do Vestuario de Portugal (CITEVE), Portugal
5. Textilipari Műszaki és Tudományos Egyesület (TMTE), Hungary
6. TexClubTec, Italy
7. Bulgarian Association of Apparel and Textile Producers and Exporters (BAATPE), Bulgaria
8. Hellenic Clothing Industry Association (HCIA), Greece

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Nanoengineered functional textiles

The realization of nanoengineered functional textiles, i.e. textile substrates treated by means of nanostructured materials with the objective of imparting them functional properties, is considered a new frontier in textile technology. The application of nanostructured materials, in fact is potentially useful for the realization of advanced textiles that, keeping their original properties, such as their comfort and esthetical appearance, are characterized by a wide range of new properties, such as water/oil repellence, abrasion resistance, anti-wrinkle effect, UV protection, antibacterial properties, electrical conductivity.

Possible application sectors of these advanced nanoengineered textiles include clothing, furniture, transport, biomedical, protective equipment, electronics.

One of the key factors limiting the commercial exploitation of functional textiles has been the effectiveness and the limited durability of the treatments. As concerning the effectiveness, due to their available high surface area, nanostructured materials have been widely proven as able to impart extraordinary properties to different substrates, including textiles. Moreover, their use is considered a valid strategy to introduce permanent functionalities to textiles, able to last after different maintenance processes, including several home and industrial laundry washing cycles.

Amongst nanostructured materials, polymer based nanocomposite coatings represent one of the most interesting class of systems, able to introduce a wide range of functionalities without affecting the hand, the breathability and the esthetical properties of the treated fabrics. Polymer based nanocomposite coatings are mainly constituted by organic or inorganic nanostructured fillers, with specific functionalities, embedded in a polymer matrix. Basically, by the effective design and application of these coatings, specific filler functionalities are transferred to the treated substrates, while the polymer matrix in which the nanostructured fillers are embedded is able to prevent the release of the nanofiller from the substrate during its use and maintenance. Moreover, by appropriately selecting the polymer/filler pair, a synergistic effect can be obtained, and the polymer matrix can further improve the functional properties of the embedded nanostructured filler. However, there is even more! By combining different functional fillers within a nanostructured coating, it is possible to transfer all the different functional properties of the selected fillers to the textile substrate, thus imparting to the treated fabric multifunctional properties.

Other fundamental parameters to optimize the properties of these nanocoatings is the tailoring of the coating structure at the nanoscale. Some approaches are aimed, for instance, at promoting the effective distribution of the filler within the polymer matrix or at inducing a selective localization of the nanofiller in a specific part of the coating (e.g. on the coating surface, or at the bottom of the coating). Other strategies are based on bioinspired design, trying to reproduce multiscale structures present in biological systems, such as those typical of lotus leaves or duck feathers. Different strategies have been proposed to mimic these multiscale structures. In many research works, the creation of a nanosized surface roughness on the fiber surface by addition of hydrophobic nanoparticles has been proven to be able to impart water repellence to different substrates.

Therefore, different strategies can be used for the realization of nanostructured coatings able to effectively functionalize textile substrates. In this article, two examples of nanostructured functional coatings developed at the Institute for Polymer Chemistry and Technology of the Italian National Research Council (IPCB-CNR) are summarized. These processes are finalized to the realization of hydrophobic/superhydrophobic coatings and electrically conductive coatings, and they are based on two different technologies. In particular, the superhydrophobic coatings have been realized by dip-coating technology applied on a cotton fabric, whereas the electrically conductive coatings have been realized by an electrofluidodynamic process applied onto a polyamide fabric..

Hydrophobic/superhydrophobic nanoengineered coatings by dip-coating technology

Superhydrophobicity is one of the most intriguing properties for textiles. It can be imparted to different fabrics through nanocoating realized though several methods, well summarized in a recent review on special wettability textiles (1). In the last years, research interests on superhydrophobicity have significantly grown, and superhydrophobic properties have been widely explored in textiles for self-cleaning, anti-fogging/frosting and anti-bioadhesion applications. The most common strategies for the realization of superhydrophobic textile surfaces include physical and chemical approaches, such as dip-coating, wet chemical deposition, electro-assisted chemical deposition, spray-coating, sol–gel, chemical etching, chemical vapour deposition, polymer grafting and plasma treatments. For most of these strategies, two main factors are considered to be at the basis of the obtainment of a superhydrophobic surface: an appropriate hierarchical structure and a low surface energy. This is in most cases achieved by applying nanosized particles on the fibre surface to achieve the micro/nanoscale hierarchical structure and by applying fluorinated agents to obtain the low surface energy, whether by pre-roughening and post-chemical treatment or by simultaneous roughening/chemical treatment (one-pot method).

Trying to overcome the use of low molecular fluorinated hydrophobic agents, widely criticized in the last years through campaigns aimed at promoting the use of non-polluting and non-hazardous substances in the textile industry, an alternative approach has been recently developed at IPCB-CNR. In particular, cotton fabrics have been treated by dip-coating with a dispersion containing preformed polytetrafluoroethylene nanoparticles and a polymer matrix with good film-forming properties. The hydrophobicity of both the constituents has allowed the obtainment of nanocoatings with very low surface energy. Moreover, due to the presence of the nanoparticles, the coated fibers have shown a pronounced surface nanoroughness, as illustrated in Figure 1. The wetting behaviour of cotton has been significantly modified, with final high static water contact angle (>150°) and low sliding angle (<10°). The applied nanocoating has not affected the fabric breathability: water vapour is able to permeate almost unperturbed through the hydrophobic textile substrate. The treatment is performed by means of water dispersions containing both the polymer nanoparticles and the matrix, thus avoiding the use of organic solvents, and it is compatible with common industrial textile processes.

Electrically conductive nanoengineered coatings by electrofluidodynamic technology

Realizing electrical conductive textiles is a wide research field as this functional property is the basis for the realization of smart textiles and wearable electronic systems, a class of engineered materials whose application is expected to rapidly grow in the next future in several sectors, including clothing, biomedicine, information technology, energy, transport and furniture. Different strategies have been explored in the last years for the application of electrically conductive coatings onto textile substrates (2). Conductive polymers, such as polypyrrole, have given interesting results. Afterwards, the realization of polymer based nanocoatings containing electrically conductive nanostructured fillers, mainly carbon nanotubes, graphene and reduced graphene oxide, has been the subject of several research works. Several methods have been proposed for the realization of electrically conductive nanocoatings: dip coating technology eventually followed by thermal treatments, chemical vapour deposition, ink-jet printing.
More recently, a new process was designed and developed at IPCB-CNR for the realization of electrically conductive fabrics. The process is based on the application of a polymer nanocomposite coating constituted by graphene nanoplatelets embedded in a bioderived and biodegradable polymer matrix by electrofluidodynamic-processes. Results of experiments carried out on polyamide fabrics have demonstrated that through the proposed approach homogeneous covering of the fibre surfaces, tailored nanostructured texture (see Fig. 2) and high electrical surface conductivity can be achieved, without affecting the hand and the flexibility of the substrate. Moreover, by the proposed process, complex paths with peculiar electrical conductivity can be realized onto synthetic and natural textile substrates, thus indicating that electrofluidodynamic techniques, successful tools widely applied for the realization of biomedical devices, may also represent highly versatile methods to functionalize woven textiles for innovative clothing, e-health and wearable applications.
(1) S. Li et al., J. Mater. Chem. A, 2017, 5, 31-55, DOI: C6TA07984A
(2) A.K. yetisen et al., ACS Nano, 2016, 10, 3042–3068, DOI: 10.1021/acsnano.5b08176

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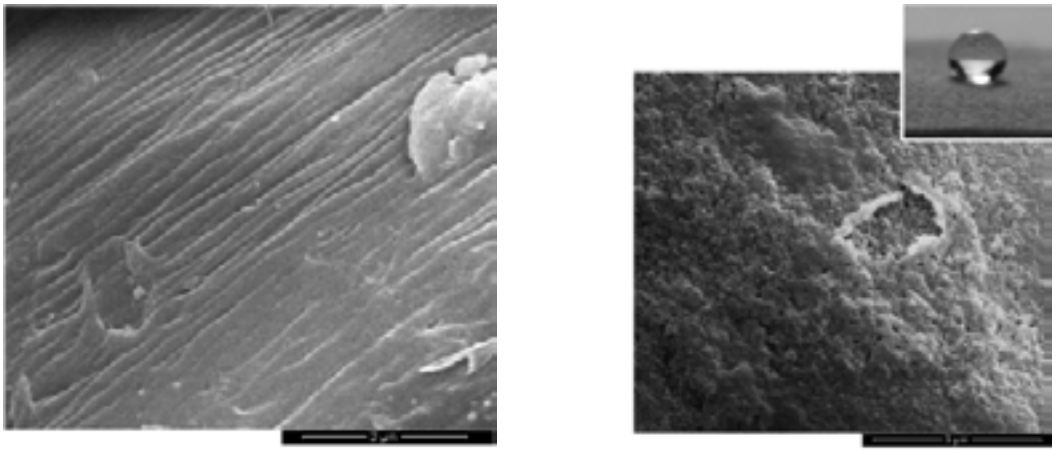


Figure 1: SEM image of the surface of an untreated cotton fiber (left) and of a cotton fiber treated with the hydrophobic nanocoating (right); in the inset, image of the static contact angle of the treated fabric with water.

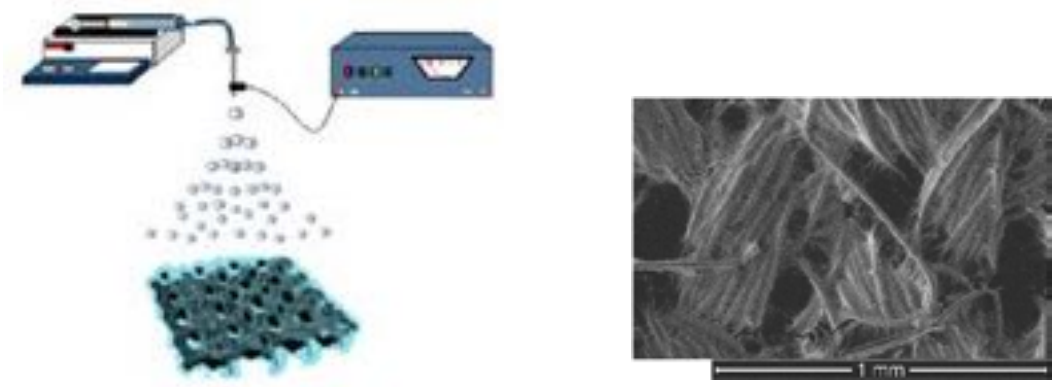


Figure 2: Simplified scheme of the electrofluidodynamic process used for the realization of the electrically conductive nanocoating (up) and SEM image of the treated polyamide textile (down).

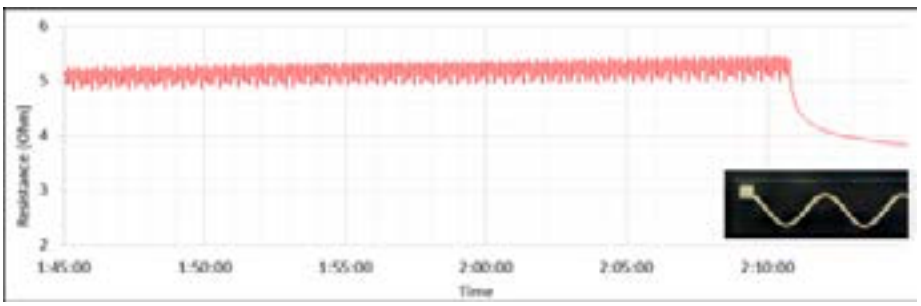
EPTANOVA: stretchable conductive inks for smart textiles

In the domain of Smart Textile, i.e. those fabrics or garments whose task is other than decoration or protection from the environment, an interest is growing in wearable electronics applications integrated into the garments themselves. The more easily deducible potential use is the monitoring of physiological parameters such as heart and respiratory rate or body temperature in the medical or sports sectors. The added value that these solutions offer is the continuous data detection, as this technology assures an intimately and constantly non-invasive contact with the monitored subject, without interfering with his/her normal everyday activities. The components that typically form a smart system are generally the following:
• the sensors that detect parameters and generate low-intensity electrical signals
• the elaborating device needed to process and/or wireless forward them
• the energy sources
• the circuits that transmit the signals of the sensors to the elaborating component, and the power supply if required

The elaborating device and the energy sources can be positioned so that they do not overconstrain movements (maybe on flexible and removable media), whilst sensors – and especially circuits – have to follow the stresses that the fabric undergoes when used (curving, bending, extension) and withstand washing, as well.

Initially, conductive fibres were mainly used for the realization of the circuits. Now, the focus is on the so-called stretchable conductive inks, capable of elastically absorbing the mechanical stresses while keeping a useful level of conductivity. Compared to the meshing of fibres in the fabric, printing actually presents great advantages in terms of economic nature and manufacturing flexibility. Nothing new, since printing is widely used on membrane keyboards, photovoltaic cells and touch screens. Moreover, it is also applied on flexible plastic substrates – and in a few isolated cases on plastic membranes that are subsequently laminated to fabric. The real technological frontier is, however, printing on fabric without the interposition of intermediate layers. This allows maintaining the soft touch and the comfort of the product and encourages the end user's adoption, and in addiction simplifies the manufacturing process.

The technological challenges are manifold. The goal is to limit the inevitable deterioration in conductivity of the circuits within acceptable thresholds, when they are solicited by mechanical stresses, such as repeated elongation, and by washing. To date, adequate levels of electrical conductivity can be obtained by using metallic functionalizing materials such as silver. By their very nature, these materials are anything but elastic and not immediately compatible with the ink resins. Furthermore, fabric is a printing substrate having roughness, porosity and dimensional instability that hinder from meeting the accuracy requirements that are in accordance with the production standards of electronic industry.



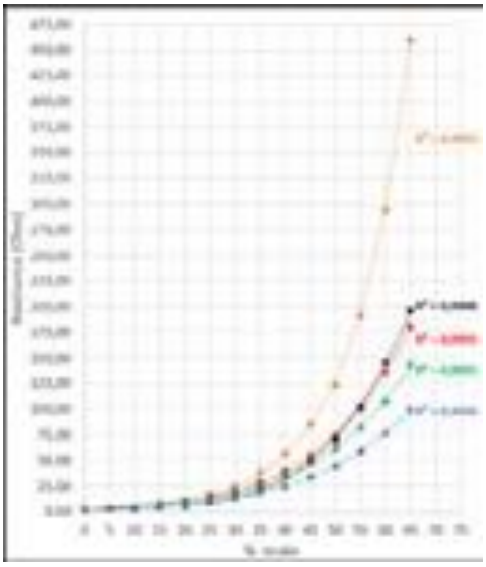
The last 25 minutes of a more than 2 hours non-stop elongation by 10%. The oscillation in the resistance and the definite decay at the end of the test should be noted. In the black box, an example of an examined track is sown.

EPTATECH, an EPTANOVA Company Business Brand, has met this challenge: it has benefitted from the wide know-how of EPTAINKS in textile printing and has developed stretchable conductive inks for Smart Textile applications. EPTATECH solution is based on the transfer printing technology, which is widely used in textile printing. It consists of printing an ink layer set on a sacrificial substrate – typically made of polyester –, which is removed after heat press transferring on fabric. Transfer printing allows overcoming the fabric dimensional instability problems while printing. For such applications presenting less stringent requirements direct printing is also conceivable.

The ink layer set consists of a silver-based conductive ink, which is spread between two outer ink layers having a protective and electrical insulating function. These are water-based inks that can be screen printed. Through a 55 Th/cm screen mesh an initial resistivity lower than 25 mOhm / sq can be achieved. The diagrams show the typical increase in resistance against stress.

These products are not distributed on a large scale yet, but they are available upon request. During its research and development activities EPTATECH has achieved a specific know-how in printing conductive tracks on different kind of fabrics and is ready to customize its inks. For any further information or to get in direct contact with us, please write to info@eptanova.com and mention “smart textile” in the subject line.

X



The resistance trend depending on the elongation %. A comparison between different conductive inks.

Re-invent the textile coating and laminating industry for tomorrow

Part 1: Sustainable coating technologies

1. Context

In the past 40 years too few technological innovations has been realized and with little differences in textile processes and chemistry. Most textile processes, including coating are too empirical and still too dominated by fundamental craftsmanship. In addition, today's manufacturing environment is being challenged as European governments are requiring strict reductions in emission of volatile organic compounds (VOCs) and hazardous air pollutants (HAP). The actual solvent-based coatings are under pressure due to many ecological (VOCs) and health issues. Solvents as DMF, common used in the breathable PUR-coatings have been identified by the European Chemical Agency (ECHA) to be a substance of very high concern. New waterborne PUR formulations, entirely free of DMF, must provide improvements over the previous system resulting in safer and less polluting conditions for the workers. But for some of the coaters this step is still not enough. Visionary coaters want to take a step further, aiming to use solvent- or water-free technologies. Such forward thinking and innovation are essential for the coating industry to guarantee their future, to move forward, to provide superior products, and do it more in a sustainable way.

2. Sustainability approaches

Sustainability demands in the first place raw material management with focus on the use of REACH-proof and less hazardous chemicals. Such chemicals are needed to meet the stringent chemical regulations. High solid resins and new auxiliaries from renewable resources help end products to perform better and last longer. Such chemicals provide better greater efficiencies in terms of product performance, cost and materials without sacrificing the physical properties, durability and service life of the final textile products. Examples are bio-derivated polyols as eco-alternatives of petroleum-based materials. LEC polymers allowing thermal polymerization at lower temperature compared to the traditional products also contribute to a lesser ecological impact through reducing energy consumption.

Moreover, there is a growing demand for textile products that have been produced using sustainability operations and for producing products closer to the market with shorter lead times, quicker market response and possibility of smaller batch sizes. At the forefront are the savings in natural resources (water and energy) and the reduction of CO2 footprint as well as the generation of new business growth.

An important aspect of sustainability is also product life cycle. Focus is on production of coated fabrics that reduce the environmental impact and coated products that last longer enable society to conserve natural and other resources. And not to forget, for an increasing number of coating companies and retailers/ brandnames, sustainability isn't just a label that is put onto their finished products, it contributes also to the image of a company and related products that the company is offering the customer or consumer.

Therefore emerging coating technologies are at stake in many research institutes, suppliers of coating units and the coating industry itself.

3. Emerging coating technologies

Most promising emerging coating technologies are discussed below:

a. Powder and hotmelt systems (100% systems)

Powder and hotmelt systems are 100% solid-systems and allow economical advantages (no drying and evaporation of solvents or water) and boost the coaters to switch to these technologies. Moreover, by a proper choice in relation to the textile support, solid-systems make 100% recyclable textiles ('closing the loop'-approach) possible. In particular powder technologies are already some years ago introduced in the textile industry with focus on different adhesive and lamination purposes. The powders are first applied on the substrate followed by melting using mainly IR-units.

Today we notice an increasing investment in hotmelt technologies, whereby the thermoplastic material is first melted and subsequently applied on the textile. In particular slot die, multi-roll systems and to a less extend reverse roll-systems are used not only for back coating with adhesives but also for face coating with engineered, functional hotmelts. The compounding is not only limited to compounders but we see an increasing interest within the companies to engineer their own compounds with functional additives (read: FR, AM, chromics…) in order to develop unique coated fabrics and at the same time being less depending of the traditional suppliers of hotmelts.

b. Plasma technologies

Plasma is considered to be the 4th state of matter. Plasma systems are divided in atmospheric and low-pressure plasma systems. Especially the latter is spreading among the textile industry for several applications such as AM (antimicrobial) and oil- and water repellency. Recent developments allow to deposit PFOA and PFOS free repellent (water, oil) nano-coatings with resistance against washing, dry cleaning and abrasion. In contrast to conventional pad-dry-cure processes, where the functional chemicals are applied as a waterborne dispersion, dried and cured, the plasma coating offers a more environmentally friendly alternative. A recent study of

Figure : Low –pressure plasma unit (roll-to-roll system)

Europlasma (BE) showed a substantial reduction in use of chemicals (up to 80 %), energy, CO2 emission (up to 50 % reduction) and a zero water consumption (100% reduction).

Improved plasma equipment design allows to deposit high end liquid repellent nanocoatings on broad variety of materials. The size of the systems is adaptable to the need of the customer: batch processes on finished textile products and large roll-to-roll systems for textiles on rolls before confectioning. The big advantage of this technology is that also finished 3D textile products, such as garments, gloves, footwear or other clothing can be coated in their final, complex shape, which allows optimal protection of stitches, seams, taping, zippers etc. as well. Moreover, low-pressure plasma has proven to be fit for mass production and gives textile users a clear competitive edge.

c. Radiation polymerization

Most conventional coatings need to evaporate water or solvents and are thermal or chemically cured, which means that the polymerization takes place at enhanced temperature, resulting in high-energy consumption.
Radiation coating formulations are free of organic solvents and by choice of material – oligomer, monomer – free of water. Other basic products are photo-initiators (PI), processing and functional additives. The curing can be performed using UV-sources (Ga, Fe or Hg-doped lamps depending on the depth of curing) or UV-LED-systems. The radiation process provides total control of the curing temperature (nearly ambient), making it ideal for heat-sensitive substrates such as PO (PP, PE).
New chemistries, choices of monomers and oligomers as well as radiation sources and coating systems tuned to the textiles being coated, all play a part in the upcoming success of radiation coating, especially in technical textile. However, challenges still involve a number of issues, including odour/smell, possible eye and skin irritation, monomers not always curing properly, some adhesion concerns and some shrinkage problems. Yet, radiation curing will gain hold to provide a more friendly process, turning a traditional wet to a dry process, especially for technical textiles.
Research already demonstrated the feasibility and cost efficiency of radiation-cured systems for technical textiles. Semi-industrial trials show a reduction of more than 85% in VOCs, compared to solvent-based coatings and an energy reduction of more than 90% compared to waterborne systems.
Furthermore, the curing process is extremely rapid (a few seconds), meaning that the coating line could be very compact. A further step could be the curing by means of EB (electron beam), which is more powerful compared to UV or LED systems (80-300keV in stead of 2-10 eV) making it less critical to the selection of additives in the coating formulation and avoiding the need for PI.

A interesting part of the radiation systems is that the process can easily be scaled to meet the customer's production speed, and, due its compact footprint and ease of operation, can be integrated into existing coating lines without major retrofits.

d. Digital coating using waterborne or UV-curable formulations

Digital technology doesn't limit itself to printing, also digital coating are becomes possible. Digital coating is a future-oriented coating

Figure : localized functionalities applied on textile

technology and will have its commercial breakthrough on mid term. The technology is a smart tool for uniform (full coverage) and localized/patterned deposition of functional fluids (conventional and innovative) for a broad range of applications such clothing, interior and especially the often-esoteric field of technical textiles.

Analogue as digital printing, digital coating meets the increased demand for production flexibility, enabling 'on the fly' change of the functionality, quick job turnaround and shorter run productions with run lengths ranging from a few linear metres to some hundreds linear metres. At the same time the technology will enable the textile and garment industry to meet the standard qualities, extra boost the new business models and to compete on cost with (even) low-labour countries.
However, digital technologies technology set the boundaries: the functionality has to be 'jettable', either in single or multiple layers deposited on a textile substrate. The jet technology sets further boundaries for the material properties, fluid rheology of the coating compound. Therefore new printheads are needed capable to jet at industrial line speeds a sufficient amount of chemicals in order to obtain and efficient performance and durability.
Moreover, in combination with new developed UV-formulations and instant pin-curing, coating quantities up to 10 g/m2 and more becomes possible with digital UV-LED systems (layer-on-layer coating).

Figure : future coating processes based on digital coating and in-line UV-LED curing unites (EU-project Digitex)

e. Other dry coating technologies

Other promising technologies are: magnetron sputtering, including reactive sputtering and Multiplexed laser surface enhancement technology (MLSE).

Today, the magnetron sputtering technology is applied on large scale in several industrial branches such as microelectronics or glass industry for self-cleaning windows or anti-reflective coatings.

However, despite its huge potentials, this new vacuum-technology is only limited explored on textile substrates for the nano-coating (15-150 nm) of inorganic particles, inclusive metallic coatings. During the sputtering of a target (for instance, Al, Cu …) surface, leaving particles are deposited onto a textile substrate. The high kinetic energy of the particles provides a good level of film adhesion to the substrate.

By injecting a reactive gas (such as oxygen, nitrogen and carbonic gasses, 'reactive magnetron sputtering') to the discharge one can deposit also inorganic compounds such as nitrides (like gold coloured TiN for scartch resistance, or piëzo-electric AlN) or oxides (such as Al2O3 for smog barrier substrates, or self-cleaning TiO2) on textile supports without damaging the substrate.

MTIC Ltd (UK) developed a novel cost effective and environmentally friendly material synthesis technology for textile applications. Multiplexed laser surface enhancement "MLSE" technology utilises combined high-powered pulsed UV laser and atmospheric plasma to create a high-energy reaction zone at substrate interface promoting rapid synthesis to achieve the required functional treatments. MLSE is a dry process, carried out at atmospheric pressures using safe, inert gases (nitrogen, oxygen, argon and carbon dioxide). The combination of plasma and photonic energy creates material synthesis in the surface of a substrate. A high-power ultraviolet (UV) laser is shaped into a rectangular cross-section providing a consistent power density over its entire length of more than 2 metres. Sophisticated optics refracts the laser beam into the plasma zone. Various applications (read: repellency, FR and antimicrobial) result from changing the power intensity and pulse profiles of the laser and the plasma, and varying the mix of gases.

4. Conclusion

New emerging coating technologies will change and contribute to rethinking and reinventing the production chain. Sophisticated chemistry and technology platforms help coaters to create sustainable products with enhanced physical characteristics, durability and service life. They will revolutionize the actual coating industry and will create tailored made solutions for customers and end-users. Furthermore the strategy must be focused on socio-economic strategies eg. demographic evolution (read ageing population), safety, natural resources, climate and ecological awareness. Other issues deal with future growth potential, business sustainability, ROI (return of investment), market penetration, new business models.

In short, sustainability does not provide a threat, rather it offers new opportunities. It provides an additional driving force for coaters to replace antiquated equipment and for hot emotive sales features. Also not to be neglected, are the related social merits of the approaches, such as better working conditions on the floor and personnel safety (less emission and pollution).

To be continued.

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TECHNEWS

New Generation of Low environmental impact high performance matting agent for Surface treatments.

Matte appearance is a must for several surface coatings. There are so many and different reasons that guide the textile manufacturers and chemical compounders companies to develop matted surfaces: in some markets glossy surface "plastic like" is unwanted because synonymous of poor and cheap quality, in other applications a glossy surface that reflect light differently depending on observation angle creates undesirable shadows and lights, in other situations glossy is associated to artificial, un-natural un-pleasant. Matte surfaces bring the idea to the consumer of natural, comfortable, easy wearing, warm, fashion and technical. In the meantime matte finishing are technically challenging the producers who are developing low environmental impact finishing because the matt performance have to perform during time, different temperatures and weather conditions, usages. Matte finishing surfaces are tested in long lasting performances after rubbing, light and UV fastness, exposure to temperature and humidity. A water-based finishing with low environmental impact, not containing hazardous substances for the environment and that pass the performance tests is complicate to be solved using the traditional matting additive such as silica derivative, wax and similar. Lamberti has developed a full range of solutions for matte finishing performances, designed and engineered with polyurethane technology, waterborne, containing very low volatile organic substances to achieve high performance surface finishing for textile, natural or synthetic leather, PVC.

ROLFLEX OP series: Inherently matte water-based polyurethane polymers. Aliphatic waterborne polyurethane dispersions, solvent free and low Volatile organic compounds dispersions with about 30% solid content

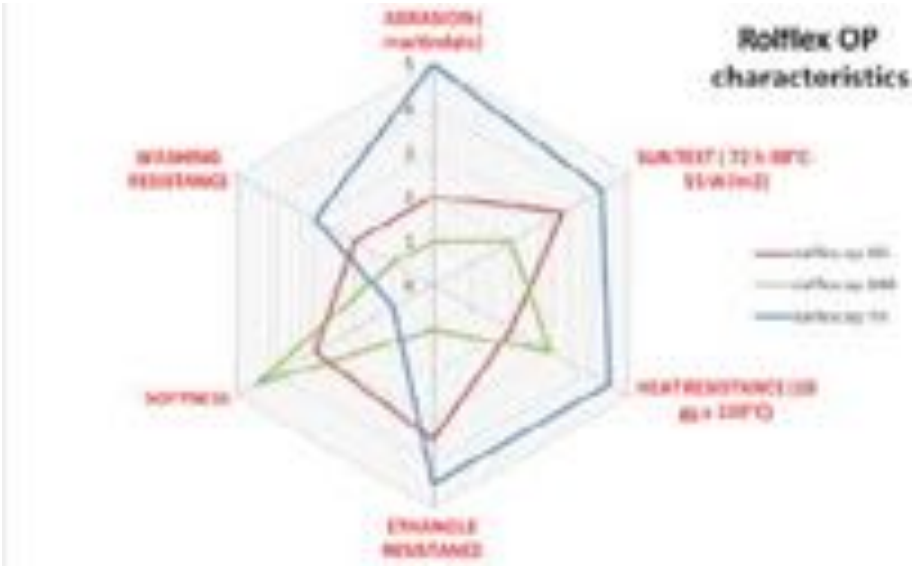
DECOSPHAERA®: Polyurethane micro-beads, aliphatic inhert polyurethane micro-beads, available at different particle size from 8 to 30 micron in three different grade (fine, medium, coarse) both in transparent and white/colored versions

TYPICAL ADVANTAGES AND DISADVANTAGES OF DIFFERENT MATTING SYSTEM:

AGENT	ADVANTAGES	DISADVANTAGES
Silica	Low cost Matting performance at low quantity	High "cloudy" matting effect (low transparency, white shift shade), Polishing effect, Tendency to settling
Wax and derivatives	Touch modification, Easy to use	Overprint problems, Migration and separations, Not suitable for low gloss values
Decoshpaera® beads	Very low gloss at several reflection angles, Transparency, No polishing effect, High Rubbing Fastness High Scratching Fastness	Not suitable for dry thickeness below 10 microns Gummy and Harsh touch Need a binder to incorporate the beads
Rolflex OP	Ready to use homogeneus waterbased binder, Does not separe, No need to be mixed with other binders, Low polishing effect, Different touch range Low Gloss suitable for printing and embossing	Performance strictly depends on type of resins Physical and mechanical fastness could have to be tailored by formulation

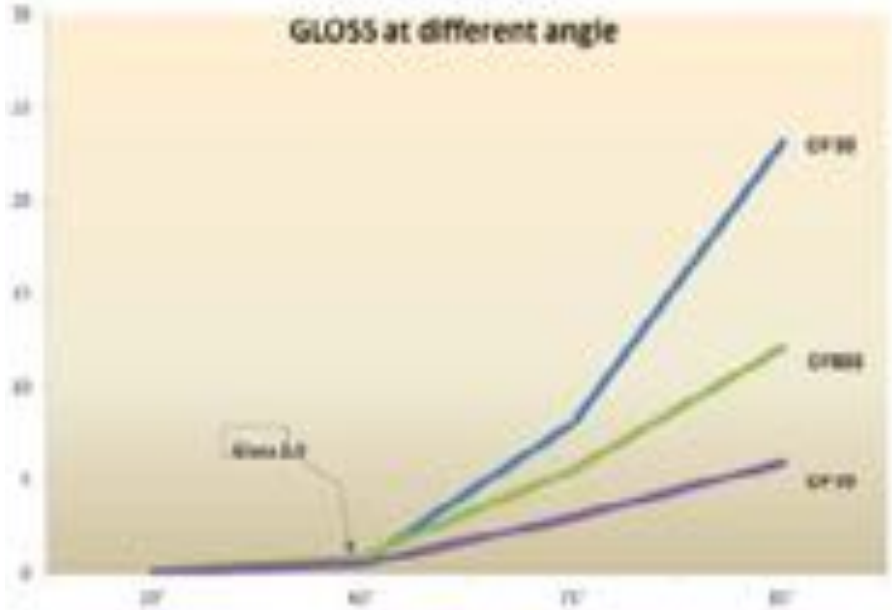
Rolflex Waterborne polyurethane dispersions
Rolflex OP 80,
Rolflex OP 888,
Rolflex OP 99

Are chosen depending on the characteristics of the final article/recipe.
The previous figure shows the main goals of each product. To compare them at the glance they are compared using a single scale where 1 is the worst and 5 the best result.



Abrasion resistance: measured by Martindale 100000 cycles 12Kpa.
Ethanol resistance: done by crockmeter 10 cycles.
Washing resistance: done on pure cotton coated and washed 5 times at 60°C in domestic washing machine.
Sun resistance: done by sun-test 72 hours at 90C 55W/m2 exposure.
Heat resistance: done by heating the sample at 100C for 10 days.
Visual assessment and/or grey scale.

DECOSPHAERA® polyurethane beads are suitable for solvent-borne, water-borne and UV-systems. They enhances matting efficiency (same gloss at several angle), allows to achieve the absence of polishing, the scratch resistance and no haze. They are easy to be formulated by simple good stirring and eventually by the addition of some dispersing agent (Fluijet® of Lamberti).
Decosphaera® are perfectly mixable with all the Rolflex® waterbased polymer range



DECOSPHAERA® GRADES:

FINE	
Decosphaera 8-20	Transparent
Decosphaera FAV	Transparent
MEDIUM	
Decosphaera 15 F	Transparent and coloured
COARSE	
Decosphaera 30 F	Transparent
Decosphaera 30-50	Yellow, red, blue
Decosphaera 90	Transparent, white and black

Authors:

Marco Luoni, R&D manager Textile and Coagulation application Laboratory. Lamberti s.p.a.

Gabriele Costa, BU manager Soft Coatings Compounds, Textile Coatings and Synthetic Leather. Lamberti s.p.a.

Textile comfort: test and innovation

Centrocot promotes the development and characterization of high performance textiles connecting unique features as well as breathability, muscle support and freedom of movement, with the aim to support the industrial needs about the valorization of their products.
All the performances stated before represent the comfort provided by a clothing which becomes fundamental part of the complex and delicate mechanism that control the well-being of human body.
The comfort of a garment is an essential structural element because it was demonstrated that the lack of well-being and comfort of use could negatively affect physiological activity performed by human body as well as the thermoregulation. Indeed, the comfortable clothing is able to promote the maintenance of body temperature reducing the amount of required energy to keep it steady under varying climatic conditions and different activities carried out by wearer. Furthermore, the comfort state of a garment depends also on lightness, easiness in movement necessary to perform the specific activities and above all the capability to allow the evaporation of wearer's sweat through the dissipation of heat in excess produced during the progress of physical activity.

If on one hand the comfort definition is easy to understand and report, on the other hand the objective measure of comfort provided by a garment could be very difficult. Indeed, to estimate the features and performance of a fabric, Centrocot not only focuses on the evaluation of sensory and thermo-physiological properties, but it aims to give them an objective, scientific and engineering value.
Centrocot developed a Comfort Index (IC) to aware the market on the comfort performance and to more easily inform the consumer on the innovative performance of fabric or garment. The comfort Index not only evaluates the fabric properties but correlates them to all factors that affect the perception of comfort. In this contest it shall be taken into consideration the following variables the final use of the product, the type of activity performed by the user, the context in which the activity takes place and the wearer's subjectivity.
To better understand the developed tests, the Comfort Index could be divided into two contributions:

- **Thermo-physiological contribution** related to heat and sweat considering the micro-system defined by body and fabric
- **Sensory contribution** based on the subjective sensations due to the garment wearing depending on physical-structure features of fabric.

In particular, regarding the thermo-physiological comfort, two situations need to be considered. The first one is correlated to mild physical exertion, during which the body produces sweat in the form of water vapor. The second one is related to an intensive physical effort that leads to production of liquid sweat.
On the other hand, the analysis of sensory comfort is based on the study of surface structure and morphology of a fabric and on the link between the textile and the human body.

To classify the wellness provided by a garment to the wearer, Centrocot developed an arithmetic algorithm able to correlate the fabric performances with the end-use and the surrounding in which the activity is carried out.

In this contest and although the textile comfort is a relevant parameter for any type of clothing, Centrocot, according to its expertise, identified three different textile sectors for which the analysis of comfort is essential for the success of a product:

- personal protective equipment (PPE) and in general wor kwear
- sportswear and technical clothing
- underwear and textile used in direct contact with the skin

CLASS	LEVEL	LIMIT
3	Excellent	0 < IC < 0.33
2	Good	0.33 < IC ≤ 0.67
1	Acceptable	0.67 < IC ≤ 1

The thermo-physiological properties, selected by Centrocot and considered essential for the evaluation of textile comfort, are:

Thermal Resistance

Determines the thermal insulation provided by the fabric

Evaporative Resistance (breathability)

Defines the fabric resistance to passage of vapor sweat during a physical activity

Buffering Index

K_f: represents the liquid sweat absorbed by fabric from skin
F: measures the amount of liquid sweat absorbed by fabric and released to surrounding as vapor

Moisture Management Index

Denotes the fabric capability to manage liquid sweat (intensive physical activity) as well as absorption, spreading, etc

Drying Time

Means how long a wet fabric returns dry again after an intensive physical activity

Water repellency

Denotes the protection provided by a fabric against weather.

Air permeability

Defines the fabric resistance against the passage of air.

About sensory comfort provided by a fabric, Centrocot based its analysis on expertise defining specific test methods for evaluation of properties below:

Friction coefficient

I_k: assesses the adhesion of fabric on body during sweating

Absorption time

Means the time during which a liquid drop remains on a fabric in contact with skin. Fabric hydrophilicity is measured considering the capability to absorb the produced sweat during an activity through absorption, desorption and wicking

Hairiness

Evaluates the tactile sensation due to the contact between fabric and skin (silky hand, soft hand, harsh hand, if it provides irritation, etc)

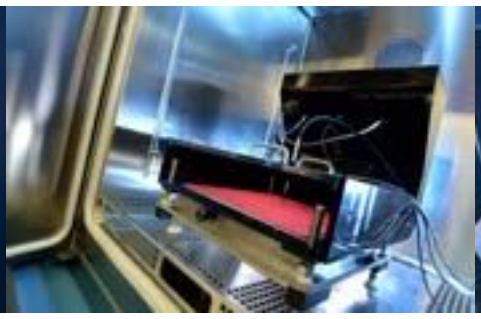
Bending angle

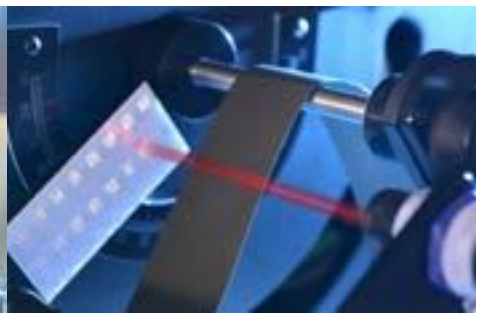
Assesses the fabric stiffness providing an indication of the garment fit

Furthermore, Centrocot wanted to widen the characterization of textile products focused on comfort performance using the thermal sweating manikin that faithfully reproduces the human body, his heat and perspiration. This innovative device allows to measure the thermal insulation and breathability of a garment considering its whole structure and making-up analyzing all elements as well as embellishments, stitching, inserts and ergonomics. The thermal sweating manikin works inside a walk-in thermal chamber able to reproduce different environmental conditions varying the room temperature, relative humidity and wind speed.
In general Centrocot services focused on textile comfort is designed for:

- manufacturers of technical fabric, PPE, underwear, sportswear that are used in outdoor or indoor environment
- companies making textile finishing
- producers of waterproof membranes
- companies interested to evaluation of sampling and supply as well as involved in the definition of technical specifications and guideline

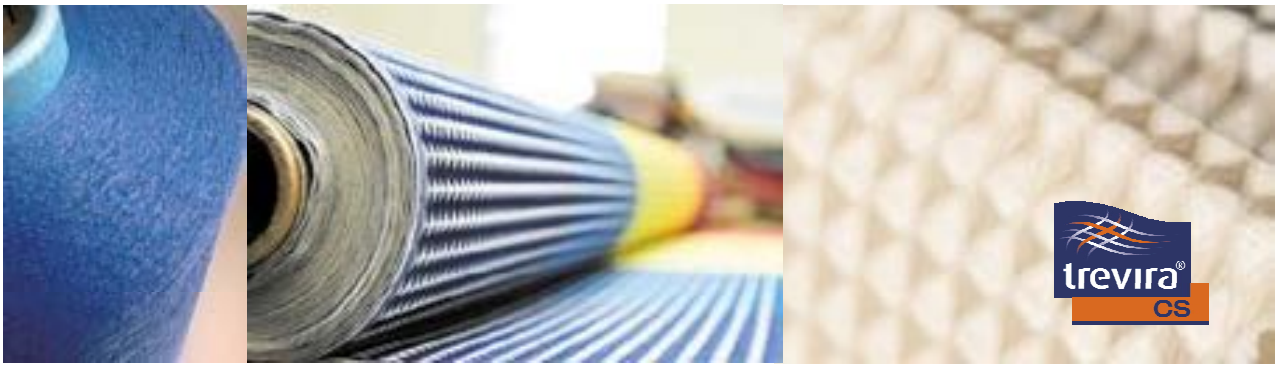
With the scope of developing and improve its activities Centrocot introduces itself as a partner for the research and development of products and processes that aim to enhance the textile comfort to increase competitiveness.





Trevira

www.trevira.com



Specialty yarns for acoustic textiles and interior solar shading

Polyester fibres and yarns manufacturer Trevira GmbH offers a wide variety of specialty products for textile and technical applications.

One specialty with a rapidly growing demand is the portfolio of hybrid yarns for stiffened materials. A special polyester filament, with a modified melting point, is combined with another yarn. Textiles made from these components can be shaped almost at will, but in a controlled manner, and they can be fixed in every conceivable form. In the composites segment, blends of Trevira low-melt yarns with glass and/or carbon filament make it possible to create high-performance thermoplastic composites or prepregs, e.g. for automotive applications.
In their flame retardant version (100 % polyester), these yarns form the basis of solar shading fabrics or acoustic textiles. These materials experience a growing importance in the contract sector, not only in open plan offices, but in public facilities as well, such as schools, nurseries, auditoria and conference rooms, foyers and restaurants. Sound absorbing elements like panels, partitions, canopies and wall pictures can also improve the total acoustics of an area, especially when their surfaces possess a three-dimensional structure. This causes a change in direction of the sound waves (a break of reflection) on the fabric surface, thus helping to create a better acoustic atmosphere indoors.
The single material composition (100% Polyester) means that the fabrics can be recycled. They can be processed in a variety of energy saving ways, and they are both dyeable and digitally printable. This makes them an interesting alternative in both ecological and economic terms, since a stiffening coating of acrylate, for example, becomes superfluous. The yarns are also available in a range of spun-dyed variants which make an additional dyeing process unnecessary.

Trevira CS Silver Club customer Hohmann GmbH & Co. KG (Germany), a manufacturer of high-end furnishing textiles with more than 100 years of experience in weaving craftsmanship, has introduced innovative three-dimensional honey-comb weaves made from the Trevira hybrid yarns on broad jacquard looms. The fabrics with their exceptional look and feel have an architectonic impression. They are suitable for furniture, solar shading and acoustic panels.

Symbolising acoustics: The Hohmann House at Orgatec, Cologne 2016.

www.trevira.de, www.hohmann-weberei.de

RadiciGroup: Eco-design of products for a circular economy

Every year millions of tonnes of raw materials become new products and products that our company uses to improve the quality of human life. Europe, probably because it has almost exhausted its raw materials, realized that they are not endless, that this consumption will lead to a loss of opportunity for future generations. Based on these considerations, the European Commission approved a series of initiatives to realize the so-called Circular Economy, a system that provides for reusing and recycling resources and that from linear becomes circular for truly sustainable development.

RadiciGroup is fully committed to circular economy. In a circular economy the value of products and materials is maintained for as long as possible. Waste and resource use are minimised, and when a product reaches the end of its life, it is used again to create further value. Through its recycled and recyclable products in particular, RadiciGroup intends to contribute to a sustainable industrial system, in which CO2 emissions are low, resources are efficiently used and competitiveness is maintained. This transition can radically transform economy, bringing major economic benefits and contributing to innovation, growth and job creation. The first and fundamental element of this process is the eco-design of products.

To RadiciGroup, Ecodesign means considering, at the design stage, a product's environmental impact throughout its whole life cycle. This has a high potential to facilitate improved environmental performance in a cost-effective way, including resource and material efficiency. Flexibility should be sufficient to enable this strategy to be integrated in product design while taking account of technical, functional and economic considerations.

RadiciGroup has always operated with great focus on the environmental impact of its activity: concretely, as is also promoted by the European Community, which introduced the PEF (Product Environmental Footprint) via Recommendation 2013/179/CE, RadiciGroup is committed to keeping record of the full life cycle of its products and processes, from the extraction of the raw materials up to the end of the useful life of the products, providing data and information comparable and verifiable by third parties: a responsible product management starting from product formulation, documented for each production stage. Using transparent communication, in terms of both method and structure, for the disclosure of product environmental impact through EPDs (Environmental Product Declaration).

A completely transparent approach that, if adopted by all operators within the market, would be of benefit to the whole European system.

Today, RadiciGroup is one of very few groups on the market which control their entire productive process, from the polymer chemistry to the production of synthetic fibres or engineering plastics: an integration which means process streamlining and improvement of product performance and which results into the so-called "short supply chain", with reduced environmental impact, thanks in part to the recycling of materials.

The challenge the Group will face in the coming years is undoubtedly tied to the complete recyclability of synthetic fibers. The environmental strategy of RadiciGroup, supported by the know-how acquired over 75 years of history, has the objective of ensuring that all products of the textile sector are recycled mechanically and become a new plastic material suitable for technical and industrial use. RadiciGroup has for some time been working together with certain customers in the definition of formulations which make the finished product recyclable and retransformable for the production of other products. Today, the real challenge for large companies– therefore also for RadiciGroup – is making available innovative materials and new technological solutions filled with new significance, tied to sustainable development.

SO.X-VERSUS®
RX-PROTECTIVE CLOTHING SYSTEM

The first sterile surgical gown with radiation protection

The first ionizing radiation protection garment on the market that can be supplied sterile and certified as a medical device. The SO.X-Versus® fabric is covered by industrial patent.

The originality of the SO.X-Versus® fabric lies firstly in its structure, thanks to the coupling of UNI EN 13795 compliant fabrics and a special radiopaque foil, resulting in an extremely malleable multilayer fabric that can be sanitized with industrial washing processes, sterilized in a steam autoclave, and is impermeable to liquids and microorganisms.

BODICE

CLOSED APRON

OPEN APRON

www.depsrl.it

www.sox-versus.it/en/

INNOVATION AND PERFORMANCE

For years, the consumption of technical textiles is continuously growing, showing a dynamism and evolution unthinkable in a recent past.
In fact, the use of high performing textiles is not restricted to certain industrial sectors but it is spreading to a number of increasingly wider applications; recent advances in materials science, chemistry and physics are bringing the textiles to a new role, such as to make it potentially available for use in more and more diversified fields as well as, in certain applications, the replacement of non-textile materials used so far.
The standardized manufacturing today can no longer be the norm, final consumers and different market sectors are increasingly demanding customized products, and it can be observed a more evident market segmentation.
In fact, a recent survey carried out among technical textile manufacturers showed that a significant part of the turnover is generated by innovative and newly developed products.
In this framework, in the following table, some examples of performing and newly developed products by TexClubTec's member companies are provided.

Argar S.r.l

Product Name	Product Type	Performance/Features	Application Fields
PP8272	Cotton/polypropylene/conductive fibres Knitted fabric	Antistatic, avoid formation of unpleasant odours, breathable, high comfort, sweat management.	Workwear.
WS128	Compound based on fleece fabric + PTFE Membrane + Knitted fabric	Resistance to air permeability, thermal resistance, breathability, resistance to water penetration. Available also antistatic.	Workwear.

Famas S.r.l.

Product Name	Product Type	Performance/Features	Application Fields
Geosafe	Fabric coupled with 100% basalt needlefelt	Flameproof, thermal insualtion, use between -150° e +750°C.	Industrial, Building,offshore platform, naval.

Filidea S.r.l.

Product Name	Product Type	Performance/Features	Application Fields
Sparco racing suit	Aramidic yarn	Light weight, breathability, fireproof, comfort	Racing

Giardini S.p.A.

Product Name	Product Type	Performance/Features	Application Fields
Nappina Eco SF 4Y1	Water PU coated textile	Solvent free, eco.	Shoes, leather goods.
Mycro Suede Eco (DGT)	Solvent free mycrofibre	Solvent free, eco.	Shoes, leather good, clothing.

Lorenzi S.r.l.

Product Name	Product Type	Performance/Features	Application Fields
Lyliane SafeXtreme®	Textile	High abrasion resistance, durability,salt water and UV resistance, fireproof. Thermal control technology resists temperature changes from -40° C to +250° C.	Shoes, furnishings.
HiMelt® 3DMX	Textile 3D look	High abrasion resistance. Looks like fabric, No Fray. Wide range of technical 3D look.	Shoes, furnishings.

Pontetorto S.p.a.

Product Name	Product Type	Performance/Features	Application Fields
Art 239/NE-ON/8773/M/CAR/350/BF	Plain farbic (cotton/modacrylic)	Flame retardant (EN 11612:2015 limited flame spread A1, Heat transmission B2, radiant heat C2), antistatic windproof membrane, dyed in High Visibility colour	Workwear
Art 193/NE-ON/6000/M/180S/HR	Softshell fabric	Hig Visibility industrial laundering (ISO 30023:2010)	Workwear for cool environment.

Servizi Ospedalieri S.p.a.

Product Name	Product Type	Performance/Features	Application Fields
SO.X-Versus	Laminate fabrics	Ionizing radiation protection.	For health.

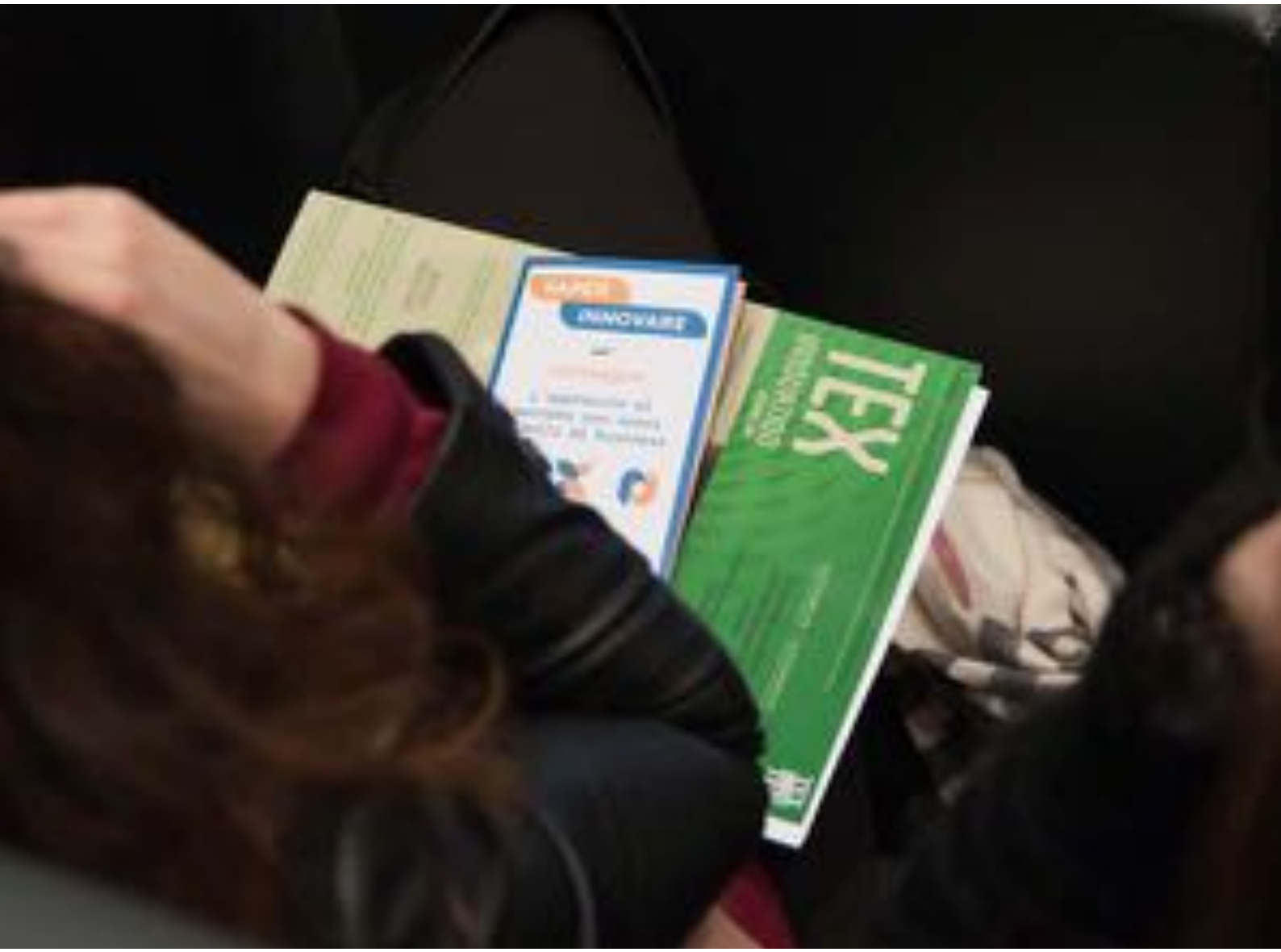
Ta.li S.r.l.

Product Name	Product Type	Performance/Features	Application Fields
Ultrapell	Polyester/cotton fabric, coated with PU resins	Durability, high abrasion resistant, flame retardant.	Furnishings.

Testori S.p.A.

Product Name	Product Type	Performance/Features	Application Fields
Super Spark Blocker	Needlefelts	Spark resistant based on the innovative use of a special acrylic fiber blend.	Filtration in severe applications: Steelworks, Foundries, Non-ferrous metals.

NETWORKING



Innovative business models for market approach

Three successful examples
in the technical textile sector

An important international conference under the sponsorship of the Lombardy Region was held in Milan on 23 February, organized by TexClubTec and by Giotto Industrial Networking, concerning new business models for fast-developing specialized market segments such as technical textiles. Starting from companies or institutions which were able to build their success precisely on the understanding of market trends and on the capacity to interact effectively, their examples have been discussed and analyzed with the support of teachers of the "La Cattolica" University, with the aim of highlighting and extrapolating in general concepts, which can be widely applied, examples which, sometimes, instead run the risk of appearing as particular and unrepeatable cases.

The conference

Examining the experience of several companies which recently achieved important results it's possible to prove that their success is not only due to technological aspects or to creative products, but also to the ability to intercept the signals of change emerging from the market and to the capacity of interpreting and managing them in a new way, using original formulas.
The conference opened with an introduction held by the City Councillor responsible for Economic Development Parolini who highlighted the commitment of the Lombardy Region to support with several initiatives the clothing/textile sector and to promote innovation and interaction among companies also through international initiatives.
Prof. Fiocca's following speech got to the heart of the matter, through the illustration of the concepts which nowadays became the reference point of marketing, i.e. on one side the need to be able to observe markets and to have a close relationship with customers, and on the other side, concerning organization, the enhancement of team working and of building relationships among companies.
Not neglecting, moreover, the role played by the relational aspects, which became fundamental to manage complex situations (due to plenty, variability and vagueness) or occasional situations (due to the uncertain repeatability in the future).
These themes were examined in depth during three sessions based on the introduction of three cases, which were not chosen at random, but which were the result of an analysis begun at the "La Cattolica" University and carried on by a continuous debate between managers and academics.

Market observation and trend analysis

It's fundamental for a company to be able to intercept the needs emerging from the market, both through the recognition of hidden needs and through the anticipation of possible solutions. This is what it means to be "customer oriented", as Prof. Tunisini highlighted. Anyway, to be "customer oriented" requires an open-mindedness by the company, which on one side should be able to enhance competences and technologies and on

the other side should look for new application segments on which to be oriented. It means also to be able to change from a company which offers products/technologies into a company which offers personalized solutions meeting the needs of every customer.
Proof of this, i.e. of a company which was able to face successfully the challenge of becoming "customer oriented" is the English company TFP (Technical Fiber Products) which was introduced by Martin Thompson.
At the beginning, this company worked in the paper sector and subsequently was able to diversify its production transferring its know-how to the non-woven sector, even to very light products (up to 2g/mq) offering a wide range of advanced high-quality products.
The particular attention paid to the market and the cooperative approach with customers and sector partners brought to the fine tuning of more than 100 product modifications and to 30 new developments which are currently underway. Thanks to this, 44% of TFP sales belong to very advanced sectors such as aerospace and defense.

The importance of network

However, in order to be able to benefit from the advantages deriving from knowing market trends, a company needs also suitable relationships with the external world. Clemente Bottani of the Giotto Industrial Networking spoke about it, highlighting that even though every company needs direct or indirect relations with other entities (companies, institutions, organizations) until the '80s marketing didn't pay much attention to the role played by relations among companies. This situation changed with the Uppsala School which began talking about relational marketing in the "business to business" markets, highlighting that suppliers and customers don't exchange only physical products, or tangible resources, but also intangible resources, such as know-how and various kinds of knowledge (technical, technological, market knowledge etc…)
The more the market is complex or the company size is reduced, the more relationships are necessary, exactly because no company has enough resources inside its organization to be competitive, but it needs to integrate its "strengths" with those of other realities in its environment. The need for "network" emerges also according to the global dimension achieved by business, to the change of the consumption models and to the greater and greater complexity of innovation. Inside the technical textile sector one of the most complex sectors (both from the technological point of view and from the application point of view) is that of compounds, in which it's fundamental to be able to access material and immaterial resources.
Johann-Peter Scheitle of the company Carbon Composites & V., a German network which groups companies active in the composite sector, described the problems they have to face. It's a very complex network, widespread vertically and horizontally, ranging from carbon fiber producers to great companies in the automotive sector, or to the aerospace sector. Its wide range includes also plant producers, companies which produce composites, and also universities and research institutes.
Aim of the network is to add to the system productive and analytical assets, competences and know- how at the various levels of the value chain.

Organization and marketing strategy

In view of what we mentioned above, the corresponding implementation cannot but pass through a suitable organization, meant as central element of every marketing strategy, central point of listening in the market signals, and active interface which can allow the company to affect reality. Prof. Manara examined in depth this topic, highlighting the importance of the definition of the possible innovation typologies, such as Incremental Innovation (innovation which takes place gradually in time), Radical Innovation (Innovation which implies important changes in the pre-existing technology), and Disruptive Innovation (Innovation which draws and creates a new technological path). However the choice of the kind of organization aimed at supporting innovation becomes particularly critical for international companies, which must find the most suitable combination between global integration and adjustment to local markets.

Proof of this, i.e. of a company which was able to build in a suitable way an organization which can meet both regional and global requirements is the company Lenzing, as described by Carlo Covini. This company, the core business of which is the production of cellulose fibers was able

to globalize producing in different countries (from Austria to the USA, from Great Britain to Indonesia, from the Czech Republic to China), and aiming at diversified application sectors (traditional textiles, technical textiles, nonwoven, flame retardant textiles) paying a particular attention to sustainability. Investments in research (in 2015 amounted to 1,5% of sales for a total amount of about 30 million Euros) allowed to obtain 1500 patents and brought about a 40,5 % of incomes gained from the sale of special fibers.

The technical textile sector

The day ended with an overview, introduced by Aldo Tempesti of the TexClubTec, of the technical textile market and of its trends, such as the recognition of new applications for textile materials, the setting up of high added value articles produced by innovative technological processes, the customization of products, the rationalization of resources by technologies with a lower environmental impact, products aimed at health and safety.

We must highlight, as real confirmation of the topics dealt during the conference, what emerged recently from a survey carried out by the Italian Technological Platform for the Textile/Clothing sector, i.e. that the main obstacle to innovation, as textile companies in most cases indicated, is "the difficulty to identify partners in the same production and supply chain".

Finally, it was also discussed the topic of formation and of the professional profiles which will be requested by the sector in the future. A technologically advanced manufacture will bring about a productive system based more and more on the high competence and less and less on the high intensity of labor force.

Currently, the operators amount to 1,7 million, 170,000 of which (10%) represent the highest professional profile. In 2025 the operators will amount to 1,5 millions, 600,000 of which (40%) will represent the highest professional profile.

Therefore, due to the loss of the competences requested, to the reduction of the labor force owing to seniority, and to the lack of new generations with qualified professional profiles in new technologies in Italy we run the risk of facing the not entirely negligible problem of textile development in the future.

Regiotex: a European Initiative to build Regional Excellence in Textile Innovation

With a combined annual turnover of € 169 billion and a direct employment of more than 1.6 million people in over 170,000 manufacturing companies, the Textile and Clothing sector has an important impact on jobs, economic growth and sustainability on Europe as a whole. For several regions across Europe this sector remains a top 3 industrial employer and in many medium-size town or industrial districts the sector supports even the majority of the local economy.

The textile sector has always been a very innovative sector which has reinvented itself several times throughout its long history. Today, more than ever, innovation for growth is based on advanced technologies, new textile applications, digitization, circular economy, resource efficiency and new business models. As the companies compete more and more on a global scale, access to know-how to accelerate the implementation of innovation and transformation strategies, is crucial. But, as appropriate knowledge becomes increasingly specialized and resources to recreate the same knowledge elsewhere become scarce, collaboration between regions will become of great value.

Borders create barriers but innovation does not stop at the borders of a region. The creation of a favorable and stimulating environment for cross-border collaboration, where and when it makes sense, can create opportunities for companies, universities or research organizations. Working cross-border can be a first step for a company to engage more globally. Several examples across Europe of regional or local level collaboration initiatives driven by a solid cluster (industry, research & public authorities) have proven their excellent economic and social benefit.

REGIOTEX INITIATIVE

Textile innovation today spans virtually all sectors and markets and even in regions which traditionally did not have a strong presence of the textile and clothing sector you can find many surprising examples of industrial application of advanced fibre-based materials, high-tech textile manufacturing processes or fashion-inspired creativity. This creates ample opportunity for textile innovation to be linked to Smart Specialisation strategies in many regions, but also an obligation for textile innovation stakeholders to better organize themselves and clearly articulate their research and innovation potential to regional authorities.

With the revised EU Regional and Cohesion Policies for the period 2014-2020, Europe's regions will have some €110 billion available to spend on research and innovation-related activities based on their regional Smart Specialisation Strategy (RIS3). It is expected that these top-down RIS3 policies and programmes will reach the greatest impact on regional industrial competitiveness, innovation performance and job creation potential if they are implemented in a close partnership with the regional innovation actors.

The RegioTex initiative brings together stakeholders from the textile, clothing and related industries, their research, technology and education providers as well as public authorities in a joint effort to develop and implement strategies that will facilitate and accelerate the emerging industrial renewal in traditional manufacturing regions across Europe. The goal is to strengthen the regional textile innovation capacities and to establish effective European collaboration and learning between regional actors.

The ojectives of Regiotex are;

- Support regional authorities to better identify the challenges and harness the potential of textile innovation for industrial renewal, new competitive manufacturing value chains and sustainable high-quality manufacturing jobs.
- Encourage and enable "textile regions" to invest part of their EU structural funds into effective textile-related innovation support .
- Develop and strengthen regional industry innovation support structures (clusters, association, technology, education & training centres…) .
- Build an active EU network of textile regions for learning and to facilitate bilateral and multilateral business and innovation collaboration.
- Develop effective cross-regional funding instruments to support EU collaborative research, innovation or training projects by regional or national funds where EU funds are inappropriate or lacking.

Based on this approach, a stronger, better funded and more effective regional industry innovation support structure will have a positive impact on the EU Textile and Clothing industry as a whole and its national and European stakeholder organisations.

Strategy – united in diversity

Acknowledging the fact that the industry differs across regions, and that this diversity represents a strength, the Regiotex initiative has adopted a variable geometry approach. The aim of this approach is to help the participating regions in identifying partners with similar innovation agendas or complementary capacities.

4 broad thematic priorities and 3 cross-cutting themes have been select

Regiotex presentation at annual Euratex conference in Bruxelles

President SMI Claudio Marenzi, President Italian Tecnological Platform for Textile and Clothing Alberto Paccanelli and Filippo Zucchi at the meeting with President of Lombardy Region Roberto Maroni to join Regiotex

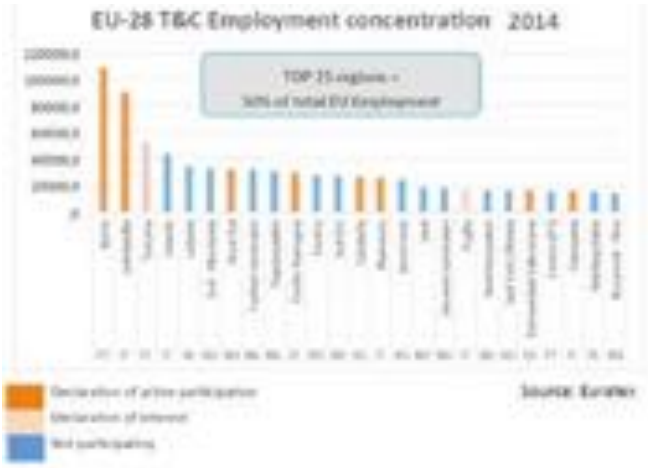
ed. The thematic priorities aim to bring some structure in the diversity of strategic strengths found in regional clusters. The 3 cross-cutting themes bring into focus the activities that can be developed between regions.

High-tech processes & application	Smart modernized manufacturing & service capacity	Creativity & design-driver businesses	Sustainable & circular industry capacity
Strengthen regional innovation capacities & cross-regional technology transfer			
Develop the regional skills base and modernize the education and training infrastructure			
Open new business opportunities for SME's through cluster collaboration and new European value chains			

High-Tech Processes & Applications	Smart, modernized manufacturing & service	Creativity & design-driven businesses	Sustainable & circular industry concepts
• Processing high-performance fibre and textile-based materials • Applying advanced manufacturing technologies • Combining textiles with other materials/ components • Developing products for high-added value markets •Examples: light-weight materials for transport, multi-functional medical textiles, smart textiles for sport and protection	• Resource-efficient textile manufacturing operations • Digitised textile & clothing production and supply chain management • Modern, high-efficiency textile assembly/ confection plants • Knowledge-based added value services to supply chain partners • Examples: efficient quick-response short run fashion and interior textile production for leading brands, mass-customization & made to measure production, high-quality products for niche markets (e.g. protective clothing)	• High-level fashion design for premium, luxury or designer markets • Highly specialized, deep knowledge based artisanal production • Virtual reality, digitally enhanced creativity & consumer co-creation • Examples: integrated designer-maker spaces or fashion labs, , local fashion material supply capacities for designers (digital printing etc.)	• High-tech post-consumption textile recycling and re-processing • Exploitation of regional bio-based feedstocks for new textile applications • Experimentation of new sustainable design, production & consumption models • Examples: Regional textile waste collection & processing structures, regional agri/forestry, biotech and industrial processing clusters, regional textile design, making, rental, repair and service networks
• For regions with existing textile & confection capacities & competitive labour costs	• For regions with existing textile & confection capacities & competitive labour costs	• For Europe's fashion and design "capitals" and their surrounding regional supply eco-systems	• For Europe's leader regions in sustainability, circular economy and eco-innovation

GOVERNANCE

The initiative will be led by industry, research and public body from those regions that have formally committed to the initiative: A high-level group of representatives from the public authorities, the private sector and the research and education community from the committed regions will be set up to oversee the overall political and strategic directions of the initiative and a support group of key representatives from the operational level of the main stakeholder organisations will be set up to implement the operational action plan of the initiative.



Top 25 European regions Textile and Clothing employment concentration

Maggio/May 2017

ELENCO SOCI -MEMBERS

Ecotessili Environment | Medicale Medical Textiles | Trasporti Transports | Agrotessili Agrotextiles | Edilizia Building | Abbigliamento & Calzature Clothing & Footwear | Geotessili Geotextiles | Arredamento Home Textiles | Industria Industrial Textiles | Protezione Protection | Sport Sportswear | Imballaggi Packaging

A. Molina & C. S.p.a.

Production of natural and polyester filling materials, special downproof fabrics, filled manufactures for bedding. Fabric and filling materials for outdoor use.

Produzione di materiali naturali e in poliestere per imbottitura, materiali speciali a tenuta piuma, prodotti di imbottitura per biancheria da letto. Tessuti e materiali per imbottitura per il settore outdoor.

Cairate (VA)
Phone +39 0331360920
molina@molinapimini.it
molinapiumini.it

Alfredo Grassi S.p.a.

Founded in 1925, Alfredo Grassi S.p.A. produces protective work garments and uniforms with an UNI EN ISO 9001: 2000 Quality Assurance system.

Fondata nel 1925, Alfredo Grassi S.p.a. produce di abbigliamento protettivo e uniformi da lavoro in linea con il Quality Asscurance System UNI EN ISO 9001:2000.

Lonate Pozzolo (VA)
Phone +39 0331303063
grassi@grassi.it
grassi.it

Accoppiatura di Asolo S.p.a.

Asoltex is specialized in the creation of products that come from the lamination of different materials: fabrics, polyurethane foams and polyolefin foams (PE, EVA), non-woven fabrics, films, breathable and water repellent membranes.

Asoltex è specializzata in articoli che nascono dall'accoppiatura di diversi materiali: tessuti, schiume espanse poliuretaniche e poliolefiniche, non tessuti, film e membrane impermeabili e traspiranti.

Asolo (TV)
Phone +39 0331 715763
Fax +39 0423 950432
info@asoltex.com
asoltex.com

Alsco Italia S.r.l.

Rental, sale, customization, repair and cleaning of workwear, ppe and flat linen; hi-tech treatment of garments for cleanrooms, restricted areas and or; rental of professional dust mats.

Noleggio, vendita, personalizzazione, ripristino e lavaggio di abiti da lavoro e biancheria piana; Trattamenti ad alta tecnologia dei capi per cleanroom, aree sterili e sale operatorie; Noleggio di tappeti antipolvere e tecnici; Servizi di Igiene Ambienti.

Milano (MI)
Phone +39 02 89400523
alsco.milano@alsco.it
alsco.it

ACIMIT

ACIMIT (the Association of Italian Textile Machinery Manufacturers) groups the Italian textile machinery manufacturers and represents an innovative sector including 300 companies and 12,000 employees.

ACIMIT è l'Associazione dei costruttori Italiani di Macchinario per l'Industria Tessile; e rappresenta un settore fortemente innovativo di 300 aziende 12.000 addetti.

Milano (MI)
Phone +39 02 4693611
info@acimit.it
acimit.it

Area 52 S.r.l.

Producer of plain and circular knitted fabrics with the following performance: high visibility, flame-resistant, anti-static, water and oil repellency, chemical resistant.

Produttore di tessuti piani e di tessuti a maglia circolare aventi le seguenti performance: alta visibilità, flame retardant, anti-statici, olio e idro repellenti, protezione chimica.

Vidor (TV)
+39 0423 985231
info@area-52.it
www.area-52.it

Alcantara S.p.a.

Alcantara S.p.A. produces the registered trademark material Alcantara®. This material is used in different sectors, mainly automotive, interior, fashion and accessories, yachting and hi-tech.

Alcantara S.p.A. produce l'omonimo materiale di rivestimento a marchio registrato Alcantara®. Questo materiale viene utilizzato in diversi settori, principalmente nell'automotive, arredamento d'interni, moda e accessori, nel nautico e nell'hi-tech.

Milano (MI)
Phone +39 02580301
info@alcantara.com
alcantara.com

Argar S.r.l.

High Tech and innovative Certified Protective Knitted Fabrics and Accessories, addressed to several specific purposes, intrinsically featuring antistatic, flame retardant and high visibility functions, antibacterial and stain resistant treatments.

Argar srl produce in Italia tessuti a maglia ed accessori tessili certificati destinati alla realizzazione di abbigliamento di protezione individuale per l'utilizzo professionale, tecnico e sportivo

Bienate di Magnago (MI)
+39 0331 350137
info@argar.it
Sales@argar.it
www.argartechnology.com

C.B.F. Balducci S.p.a.

Design and development, production and trading of work clothes, clothing complements and PPE. Trading of accessories and shoes

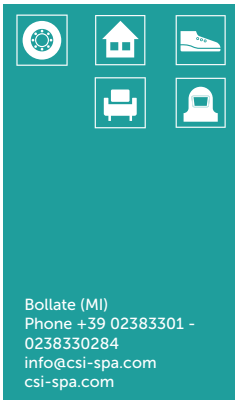
Progettazione e sviluppo, produzione e commercializzazione abiti da lavoro, complementi di abbigliamento e DPI. Commercializzazione di accessori e calzature.

Montecassiano (MC)
Phone +39 0733.290384
info@cbfbalducci.com
cbfbalducci.com

CSI S.p.a.

Certification and Behaviour Analysis Center. CSI is a company of IMQ holding. Construction, Fire, Phisic/Chemistry, Mechanical, ATP, System Certification

Centro di Certificazione e analisi di comportamento. CSI fa parte del gruppo IMQ. Settori applicativi: Edilizia, Fisica, Chimica, Meccanica, ATP, Sistemi di Certificazione.

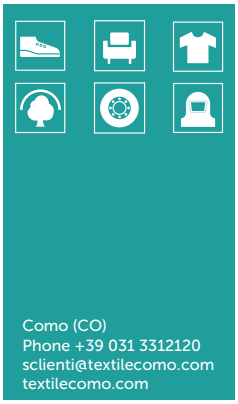


Bollate (MI)
Phone +39 02383301 - 0238330284
info@csi-spa.com
csi-spa.com

Centro Tessile Serico S.p.a. Consortile

Testing Laboratory for physical-mechanical, chemical, dyeing, eco-toxicological, flammability and comfort tests, interesting for textile-clothing industry. Faulty analysis. EC Certification for PPE (Personal Protective Equipment). Carrying-out of research an innovation projects.

Laboratorio di Prova per test di tipo fisico - meccanico, chimico, tintoriale, ecologico, di reazione al fuoco e comfort di interesse per il settore Tessile - Abbigliamento. Analisi delle difettosità. Certificazione CE di DPI. Realizzazione di progetti di ricerca e innovazione.

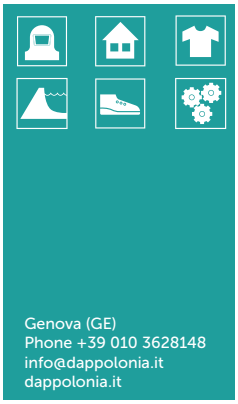


Como (CO)
Phone +39 031 3312120
sclienti@textilecomo.com
textilecomo.com

D'Appolonia S.p.a.

Innovation consulting services for boosting growth opportunities in the textile sector (Roadmapping, Technology Transfer, Technology Intelligence, Market Analysis and Business Modelling, IPR securing).

Servizi di consulenza per l'Innovazione per stimolare opportunità di crescita nel settore tessile (Roadmapping, Trasferimento Tecnologico, Technology Intelligence, Analisi di Mercato e Business Modelling, Protezione della Proprietà Intellettuale

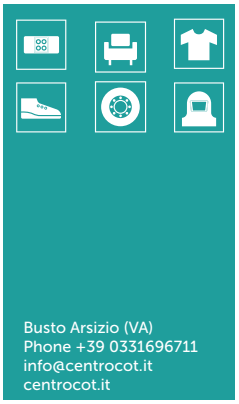


Genova (GE)
Phone +39 010 3628148
info@dappolonia.it
dappolonia.it

Centro Tessile Cotoniero e Abbigliamento S.p.a. (CentroCot)

Technical activities as regards testing research, experimentation, training and consultancy. Innovative instruments and technical-scientific skills, binding and voluntary marks acknowledge at both national and international level.

Attività tecnica di prova, ricerca, sperimentazione, formazione e consulenza. Attrezzature altamente innovative, alte capacità tecnico-scientifiche. Rilascio di marchi cogenti e volontari riconosciuti a livello nazionale ed internazionale

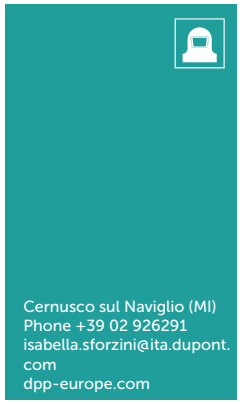


Busto Arsizio (VA)
Phone +39 0331696711
info@centrocot.it
centrocot.it

DuPont de Nemours italiana S.r.l.

Aramid fibres - Nomex® and Kevlar® - for protective apparel. Tyvek® and Tychem® for chemical and biological protection.

Fibre Aramidiche - Nomex® e Kevlar®, per abbigliamento protettivo. Tyvek® and Tychem® per protezione da agenti chimici e biologici.

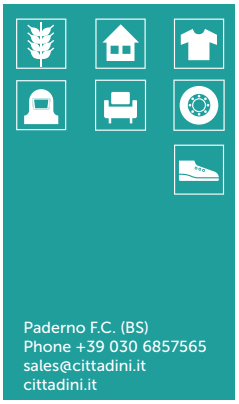


Cernusco sul Naviglio (MI)
Phone +39 02 926291
isabella.sforzini@ita.dupont.com
dpp-europe.com

Cittadini S.p.a.

Nets weaving, knotted and knotless, nets for fishing, aquaculture, agriculture, sport, building, fashion nets for clothing and accessories. Twisting process and texturization of high tenacity yarns in PES, PA, PP, mono and multifilament and high-tech fibres.

Tessitura reti, con e senza nodo, reti da pesca, per acquacultura, agricoltura, sport, edilizia, reti per abbigliamento e accessori nel settore moda. Torcitura, aumento di torsione e testurizzazione di filati ad alta tenacità in PES, PA, PP, mono e multifilamenti e fibre hi-tech.

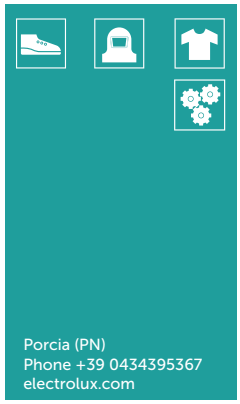


Paderno F.C. (BS)
Phone +39 030 6857565
sales@cittadini.it
cittadini.it

Electrolux Italia S.p.a.

Electrolux is a global leader in household appliances and appliances for professional use, selling more than 50 million products to customers in more than 150 markets every year. The company focuses its innovation on extensive consumer insight.

Electrolux è leader globale nel settore elettrodomestici per uso professionale e domestico. Agni anno vengono venduti più di 50 milioni di prodotti in 150 mercati. L'innovazione si basa su un'attenta analisi delle necessità dei consumatori.

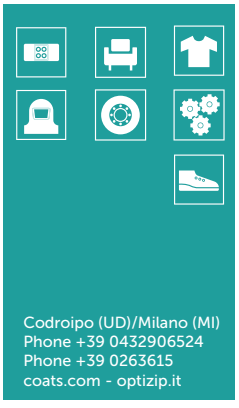


Porcia (PN)
Phone +39 0434395367
electrolux.com

Coats Thread Italy S.r.l.

Coats offers: a) wide range of zips suitable for all kinds of industrial textiles applications in the apparel and specialty sectors; b) high performance Corespun, general purpose spun polyester threads and specialty use thread

Coats offre una vasta gamma di cerniere adatte per tutti I tipi di applicazioni tessili industriali. Inoltre offre una gamma di Corespun ad alte prestazioni, filo in poliestere per usi generici e specifici.

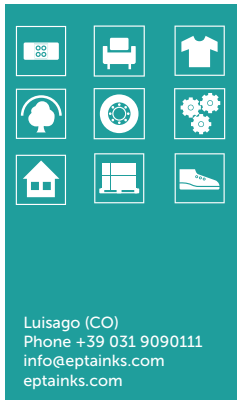


Codroipo (UD)/Milano (MI)
Phone +39 0432906524
Phone +39 0263615
coats.com - optizip.it

Epta Inks S.p.a.

EPTA INKS designs, develops, manufactures inks for different printing technologies, suppling solution to different industrial application like Textile, Habitat and Packaging.

EPTA INKS progetta, sviluppa, produce inchiostri per diverse applicazioni e tecnologie di stampa, fornendo soluzioni performanti in differenti settori industriali quali il Tessile, Habitat, Signage ecc.



Luisago (CO)
Phone +39 031 9090111
info@eptainks.com
eptainks.com

Eurojersey S.p.a.

Sensitive® Fabrics by Eurojersey are patented range of fabrics made in Italy, ideal for lingerie, swimwear, sportswear and readytowear marlets thanks to their unique qualities.

Sensitive® Fabrics di Eurojersey sono tessuti brevettati fatti in Italia, ideali per il settore intimo, bagno, sport e abbigliamento grazie alle loro performance uniche.

Caronno Pertusella (VA)
Phone +39 02 966541
info@eurojersey.com
eurojersey.com
sensitivecosystem.it

Filartex S.p.a.

Specialized in corespun and coreyarn. Cotton spinning system of traditional and technical ring-spun yarns, made of natural, synthetic and artificial fibres with antibacterial and antistatic properties.

Sistemi di filatura del cotone tradizionali e filati ringspun, con fibre naturali, sintetiche e artificiali dotate di capacità antibatteriche e antistatiche. Specializzati in Corespun e Coreyarn.

S. Pancrazio (BS)
Phone +39 030 7401612
Italy: filati@filartex.it
Abroad: yarns@filartex.it
filartex.com

F.lli Giovanardi S.n.c.

Technical textile for industry, advertising, architectural business, transports, marine, agriculture, outdoor and leisure. Acrylic textiles for solar protection, natural fabrics for garden furniture and umbrellas. Metal accessories and tools for the marine business and truck body work.

Tessili tecnici per industria, pubblicità, architettura tessile, trasporti, agricoltura, nautica, outdoor e tempo libero. Tessuti acrilici per protezione solare, tessuti in fibre naturali per arredamento da giardino e ombrelloni. Accessori metallici e strumenti per il settore nautico e dei trasporti.

Villimpenta (MN)
Phone +39 0376 572011
info@giovanardi.it
giovanardi.it

Filatura C4 S.r.l.

Carded yarns made of natural and synthetic fibers, with particular attention for wool, flame retardant and recycled fibers, to be used in contract/home furnishing/upholstery applications , protective clothing and industrial textiles.

Filati cardati di fibre naturali e sintetiche, con particolare attenzione per la lana, le fibre antifiamma e quelle riciclate, destinate a settori come l'arredamento contract and home, l'abbigliamento protettivo e tessuti industriali.
.

Serravalle P.se (PT)
Phone +39 0573 527698
info@filaturac4.it
filaturac4.it

Famas S.r.l.

Technical fabrics with high quality standard. UNDERCLOTHS FOR DECATIZING: SATINS AND MOLLETON WRAPPERS really important in the finishing of wool and blend wool cloths

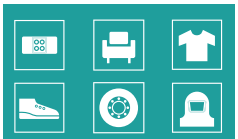
Tessuti tecnici con alti standard di qualità. Molletoni e satini, molto importanti nei processi di decatissaggio dei tessuti di lana.

Trivero (BI)
Phone +39 015 756593
info@famas.it
famas.it

Filidea S.r.l.

With a wide range of spinning technologies, Filidea is one of the few textile companies in the world able to offer a unique and integrated portfolio of technological and performance staple yarns.

Grazie alla differenziazione degli impianti, che coprono l'intera gamma di tecnologie di filatura disponibili, Filidea è una delle poche aziende tessili in grado di offrire un portfolio unico e integrato di filati da fiocco ad alte prestazioni.



Biella (BI)
Phone+ 39 015 8486200
info@filidea.com
filidea.com

Fil Man Made Group S.r.l.

Cotton System spinners of performing spun yarns, mostly synthetic -100% and blends – using Compact, Core Spun, Open End, Ring, Siro Spun and Vortex technologies for Protective Apparel, Furnishing, Technical & Filtration and outdoor.

Filatura cotoniera di filati high performance, prevalentemente sintetici –100% e misti – mediante tecnologie Compact, Core Spun, Open End, Ring, Siro e Vortex per abbigliamento protettivo, arredamento, tecnici e filtrazione ed outdoor.

Signoressa di Trevignano (TV)
Phone +39 0423 2864
info@fmmg.it
filmanmadegroup.com

Filmar S.r.l.

Woven tapes in Italy. HOME TEXTILE - pleating curtain tapes and trimmings and accessories; MEDICAL - bandages and products for orthopaedic items; INDUSTRIAL and AUTOMOTIVE - special tapes in polyester, glass, aramidic fiber, carbon fiber, Teflon, Nomex.

Produzione di nastri. Arredamento (nastri arricciati per tende, passamanerie e accessori), Medicale (bende medicali e prodotti per fasce ortopediche), Industria e Automotive (nastri in poliestere termoretraibile, vetro, fibra aramidica, carbonio, Teflon, Nomex).

Caselle Torinese (TO)
Phone +39 011 9961080
info@filmar.net
filmar.net

Fil.Va S.r.l.

Fil.Va has been known for decades as a leading company in the market of the synthetic monofilaments. Thanks to its internal engineering research department, Fil.Va has continued to improve the qualitative standard of its production.

Da decenni Fil.Va è leader nel mercato dei monofilamenti sintetici. Grazie al suo dipartimento di ricerca interno, gli standard qualitativi della produzione Filva sono in continuo aumento.

Varese (VA)
Phone +39 0332 282870
filva@filva.it
filva.it

Filtes International S.r.l.

High performance yarns manufactured with stretch breaking technology, carded and combed, for protection against temperature and flame, cut and abrasion. Availability of wrapped and corespun yarns.

Filati high performance realizzati con tecnologia a strappo, cardati e pettinati, per la protezione al fuoco, al taglio ed all'abrasione. Disponibilita' anche di filati spiralati e corespun.

Capriolo (BS)
Phone +39 030 7461171
info@filtes.it
filtes.it

Finelvo S.r.l.

Flock and Flocked yarns in Polyamide. Flocked yarns for interiors automotive: seats, door panels, etc.; for domestic upholstery and contract; for clothing and knitting. Very high technical features of resilience, abrasion resistance, light fastness.

Flock e filati floccati in Poliammide impiegati nel settore Automotive: sedili, pannelli delle portiere ecc.; nel settore arredamento, abbigliamento e maglieria. Alte prestazioni di resilienza, resistenza alle abrasioni e alta resistenza del colore all'esposizione alla luce.

Occhieppo Superiore (BI)
Phone +39 015 2594025
finelvo@finelvo.it
finelvo.it

Gottifredi Maffioli S.p.a.

Ropes, braids and twines

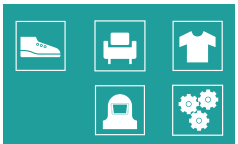
Corde, trecce, tortiglie e ritorti realizzati in fibre sintetiche ad alta tenacità

Novara (NO)
Phone +39 0321 692032
industrial@gottifredimaffioli.com
gottifredimaffioli.com

Ghezzi S.p.a.

Production of twisted, stretch and fancy yarns in artificial, synthetic and natural fibres for outwear, curtains and upholstery. Production of multicomponent yarns for technical and industrial textiles uses.

Produzione di filati ritorti, spiralati e fantasia in fibre artificiali, sintetiche e/o naturali per abbigliamento esterno, tende e rivestimenti. Produzione di filati misti per usi tecnici e industriali.



Orsenigo (CO)
Phone +39 031 619253
ghezzi@ghezzi.com
ghezzi.com

Huntsman P&A Italy Srl Textile Effects Business

Huntsman Textile Effects is the leading global provider of high quality dyes and chemicals to the textile and related industries. Research, innovation and sustainability are at the heart of what we do. We use cutting edge technology to develop solutions and create innovative products with intelligent effects such as built-in freshness, sun protection or state-of-the-art dyes which reduce water and energy consumption. All these go toward meeting the needs of our customers in supporting a more sustainable environment.

Ternate (VA)
Phone +39 0332 941413
infoprom@huntsman.com
huntsman.com

Giardini S.p.a.

Polyurethane synthetic leathers and microfibres for the shoe & leathergood industry. Fashion products sports and technical products (hi-tech microfibres, technical polyurethane coagulated). New range of products suitable for automotive and furniture markets.

Pelli sintetiche in microfibra e in poliuretano per i settori della calzatura e della pelletteria. Prodotti rivolti al settore moda e al settore tecnico/ sportivo (microfibre hi-tech, coagulati tecnici). Nuova gamma di prodotti per il settore automotive e dell'arredamento.

Vigevano (PV)
Phone +39 0381 21424
info@giardini.com
giardini.com

Italtex S.p.a.

Raw textiles and dyed thread for women's clothing and sportswear with synthetic, natural or artificial fibres. Technical and functional textiles.

Tessuti greggi e tinti in filo per abbigliamento femminile e sportivo in fibre sintetiche, naturali e artificiali. Tessuti tecnici e funzionali.

Cabiate (CO)
Phone +39 031 766301
info@italtex.it
italtex.it

Giottoindustrial Networking SA

Giottoindustrial Networking SA provides customers with tailormade support both in planning business strategies and in coping with technical issues.

Giottoindustrial Networking offre ai suoi clienti servizi personalizzati sia di consulenza nella pianificazione di strategie aziendali che di supporto in ambito tecnico.

Riva San Vitale - Svizzera
Phone +41 916305440
info@giottoin.ch
giottoin.ch

Lamberti S.p.a.

Lamberti s.p.a, private company manufacturer of Chemical Specialties, in 2015 520 mil€ turnover, 1300 employee (16% in R&D), is present in Europe, Americas, Asia. Manufactures Waterborne Polymers, Cellulose, Hydrocolloids and Oleochemicals. To Technical Textiles develop the environmentally friendly Waterborne Polyurethane and Acrylic Dispersions to get the highest performances by Coating, Dipping, Impregnation and Printing processes.

Gallarate (VA)
Phone +39 0331 715763
lamberti@lamberti.com
lamberti.com

Giovanni Bozzetto S.p.a.

Spin finishes for man-made fibers, sizing agents, preparation & dyeing auxiliaries, finishing & coating specialties, technical coating & laminating auxiliaries, products for wet-end and finishing leather treatment, garment and wet-processing specialties.

Ausiliari per filature delle fibre sintetiche, prodotti d'incollaggio, ausiliari per la preparazione e tintura, specialità per il finissaggio e spalmatura, ausiliari per la spalmatura e laminazione di articoli tecnici, ausiliari per il wet-end e finissaggio del cuoio, specialità per il trattamento in capo.

Filago (BG)
Phone +039 035996711
info@bozzetto.it
bozzetto-group.com

Lenzi Egisto by FF S.r.l.

Production of technical textiles for protective clothing and workwear, for the building sector and for sportswear and sports activities.

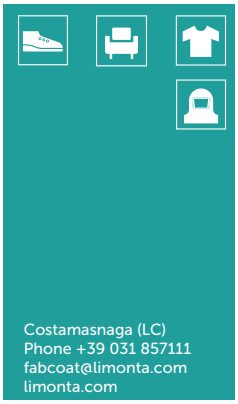
Produzione di tessuti tecnici per abbigliamento protettivo e da lavoro, per il settore dell'edilizia e per l'attività sportiva.

Vaiano (PO)
Phone +39 0574 946030
alberto.fenzi@leathertex.it
lenziegisto.com

Limonta S.p.a.

Specialist fabrics for clothing, leather goods and accessories, as well as footwear.

Tessuti per abbigliamento, prodotti di pelletteria, accessori e calzature.

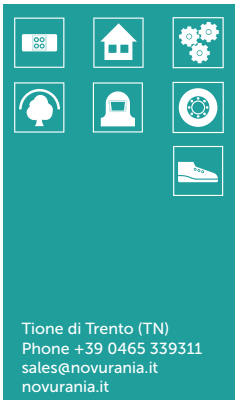


Costamasnaga (LC)
Phone +39 031 857111
fabcoat@limonta.com
limonta.com

Novurania S.p.a.

Design and production of rubber coated fabrics and or films, and of rubber sheets (up to 2500 mm width) cured or uncured. Production of rubber sheets or fabric composites in commission coating with compounds supplied by customer.

Progettazione e produzione di tessuti e/o film plastici gommati, e di foglie di gomma (max 2500 mm di altezza), vulcanizzati o crudi. Produzione di foglie di gomma o compositi tessili in conto lavoro con mescole del cliente.

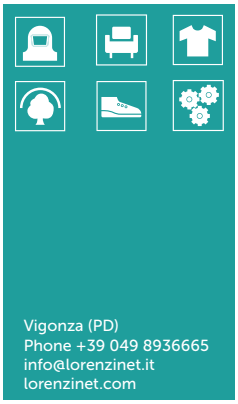


Tione di Trento (TN)
Phone +39 0465 339311
sales@novurania.it
novurania.it

Lorenzi S.r.l.

Lorenzi is one of the world's leading producer of highly functional synthetic leather for technical shoes with the brands Lyliane HTR and e-Foam. The Lorenzi Company is focusing on hi-tech design, high abrasion resistant, extremely light and eco-friendly innovative materials.

Lorenzi è un'azienda leader al mondo nella produzione di materiali sintetici per scarpe tecniche con i brand Lyliane HTR ed e-Foam.
L'azienda è focalizzata in materiali innovativi ad altissima resistenza all'abrasione, ultra leggeri e che rispettano l'ambiente.

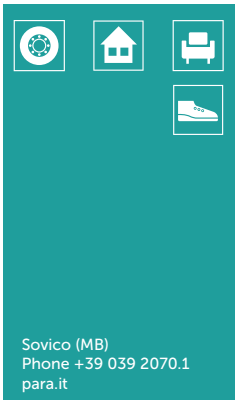


Vigonza (PD)
Phone +39 049 8936665
info@lorenzinet.it
lorenzinet.com

Parà S.p.a.

Cotton and linen fabrics for interior decoration and technical fabrics for sun protection, marine and garden furniture with high performance acrylic. Top quality producer of acrylic fabrics for awnings, with its trademark TEMPOTEST®

Cotone e lino per l'arredamento di interni e tessuti tecnici per la protezione solare, per la nautica e per l'arredamento di esterni con materiali acrilici ad alta prestazione. Leader nella produzione di tessuti acrilici di alta qualità per tende da sole, con il marchio TEMPOTEST®.

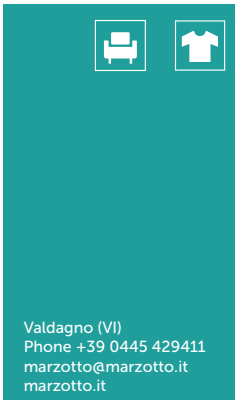


Sovico (MB)
Phone +39 039 2070.1
para.it

Marzotto S.p.a.

The Marzotto Group is the major european textile player for wool,cotton, silk fabrics and wool and linen yarns both for clothing and household textiles.

Il Gruppo Marzotto è un leader globale nel settore dei tessuti di lana, seta, cotone, lino, oltrechè nei filati di lino, per abbigliamento e arredo.

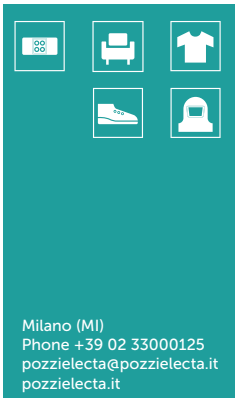


Valdagno (VI)
Phone +39 0445 429411
marzotto@marzotto.it
marzotto.it

Pozzi Electa S.p.a.

Production of cotton-system yarns and slivers for technical, upholstery and apparel sectors. Natural, artificial and synthetic fibres,, also in blends on request. Research and development of new articles in collaboration with customers.

Produzione di filati di cotone e tecnici per rivestimenti e abbigliamento. Si producono su richiesta fibre sintetiche, artificiali e naturali, anche miste. Ricerca e sviluppo di nuovi prodotti con collaborazione con il cliente.

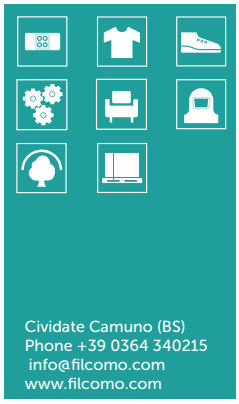


Milano (MI)
Phone +39 02 33000125
pozzielecta@pozzielecta.it
pozzielecta.it

Monvania S.r.l.

Production of continuous or spun yarns from synthetical and artificial fibers with the following technologies: two-for-one twisting, covering, doubling, cabling.
End use in sportswear , protective clothing , medical sectors and also in interior decoration.

Lavorazione di filati continui e fiocchi di fibre sintetiche e artificiali con le seguenti tecnologie: doppia torsione, spiralatura, binatura e cablatura. Con applicazioni nei settori dell'abbigliamento sportivo, di protezione, medicale e nell'arredamento.

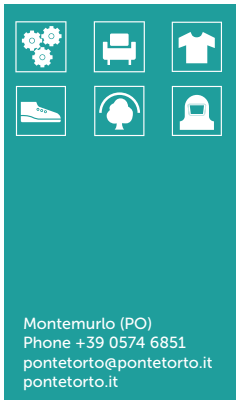


Cividate Camuno (BS)
Phone +39 0364 340215
info@filcomo.com
www.filcomo.com

Pontetorto S.p.a.

Development and manufacture of quality fleece with high performances, industrial washable, high degree washing, no pilling, long lasting.

Sviluppo e produzione di pile di qualità altamente performante, adatto al lavaggio industriale ed ad alte temperature, con ottimi valori di pilling e durevole nel tempo.

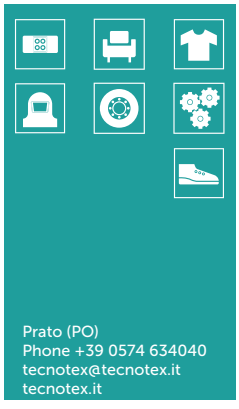


Montemurlo (PO)
Phone +39 0574 6851
pontetorto@pontetorto.it
pontetorto.it

Next Technology Tecnotessile - Società Nazionale di Ricerca S.r.l.

Technological research, technical-financial administrative services to firms, textile technologies consulting, development of new materials and new finishing processes, production of nanofibres, design and development of new machinery.

Ricerca tecnologica, servizi di consulenza tecnico-finanziaria alle azienda, consulenza per il settore tessile tecnico, sviluppo di nuovi materiali e nuovi processi di finissaggio, produzione di nanofibre, progettazione e sviluppo di nuovi macchinari.

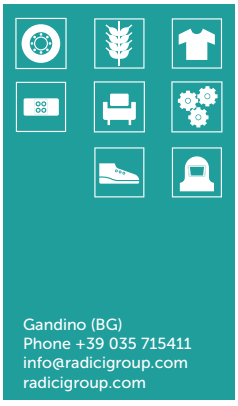


Prato (PO)
Phone +39 0574 634040
tecnotex@tecnotex.it
tecnotex.it

Radici Partecipazioni S.p.a.

A global group manufacturing Chemicals, Plastics, Synthetic Fibres and Nonwovens for applications in apparel, home interiors and building, automotive and industrial markets.

Un gruppo globale produttore di Chimica, Materie Plastiche, Fibre Sintetiche e Non tessuti destinati all'abbigliamento, all'edilizia e all'arredamento, al settore auto e ad applicazioni industriali.



Gandino (BG)
Phone +39 035 715411
info@radicigroup.com
radicigroup.com

Reggiani Macchine S.p.a.

EFI Reggiani provides worldwide complete solutions for the textile market, with a focus on the development of sustainable processes. An overall answer to the whole textile process, starting from yarn treatment to fabric printing and finishing.

EFI Reggiani fornisce in tutto il mondo soluzioni integrate per il mercato tessile basate sullo sviluppo di processi eco-sostenibili. Una risposta completa per l'intero processo produttivo tessile, partendo dal trattamento del filato, fino ad arrivare alla stampa e al finissaggio del tessuto.

Grassobbio (BG)
Phone +39 035 3844511
reg-info@efi.com
www.efi.com/reggiani

Servizi Ospedalieri S.p.a.

Cleaning e rental service of flat and packaged linen for hospitals and nursing homes. Internal logistics management and Sterilization centers. Supplying and Sterilization of kits for the operating room and surgical instruments.

Lavaggio e noleggio biancheria piana e confezionata per ospedali e case di cura. Gestione di presidi interni e centrali di sterilizzazione. Fornitura e sterilizzazione kit per sale operatorie e strumentario chirurgico.

Ferrara (FE)
Phone +39 0532599711
ServiziOspedalieriSPA@
serviziospedalieri.it
serviziospedalieri.it

Rivolta Carmignani S.p.a.

Bed linen, table linen and bath linen for hotel, restaurants, contract.

Biancheria per il settore alberghiero, della ristorazione e dell'arredamento contract.

Macherio (MB)
Phone +39 039 2010555
aldo.rivolta@rivoltacarmignani.it
andrea.cagna@rivoltacarmignani.it
stefano.mazzaron@rivoltacarmignani.it
rivoltacarmignani.it

Sitip S.p.a

Sitip S.p.A. has 3 production sites: 2 sites are located in the province of Bergamo and one in the island of Malta. Its core business is synthetic warp knitted and circular knitted fabrics.

Sitip S.p.A. ha tre sedi produttive: 2 nella provincia di Bergamo e una a Malta. Il core business di Sitip S.p.A. è la produzione di tessuti sintetici a maglia in catena e circolari.

Cene (BG)
Phone +39 035 736511
info@sitip.it
sitip.it

Saati S.p.a.

Technical precision fabrics for medical, diagnostic, automotive, chemical, acoustic, electronic, appliance, sifting, filtration application. Production of conveyor, dryer and filter belts for textile, tannery, ceramics, screen-printing, packaging, transports, lamination and food processing.

Tessuti tecnici di precisione per settore medicale, diagnostico, automotive, chimico, acustico, elettronica, elettrodomestici e filtrazione. Nastri trasportatori, centrifughe e cinghie per filtrazione per tessile, conceria, produzione di ceramiche, confezionamento, serigrafia, trasporti, plastificazione e produzione di alimentari.

Appiano Gentile (CO)
Phone +39 031 9711
info.it@saatitech.com
saati.com

Soliani Emc S.r.l.

Shielding application field: wide range of items using the metal yarn as knitted mesh gaskets or metal fabric for shielded windows. Electroless process to cover with pure nickel the surface of nonwoven and 3D fabrics such as: PET, Kevlar, Nomex, carbon.

Produzione di articoli schermanti che prevedono l'impiego di filati metallici per guarnizioni in tessuto a maglia metallica o tessuti metallici per vetri schermati. Processo di trattamento con nickel puro per tessuti, non tessuti e tessuti 3D come il PET, Kevlar, Nomex, carbonio.

Como (CO)
Phone +39 031 5001112
info@solianiemc.com
solianiemc.com

Safil S.p.a.

HI-TECH yarns: Flame retardant, Anti-shock, Anti-cut, Anti-abrasion,Antibacterial, Antistatic, Waterproof. Fibers used: Nomex®, Kevlar®, Kolon®, Kermel®, NewStar®, Profilen®, Kanecaron ®, Kynol®, Belltron®, Trevira® CS, Coolmax®, Meraklon®, Silver, Polyethylene, Viscose FR.

Filati tecnici: prodotti con proprietà di flame-retardant, anti-taglio, anti-shock, anti abrasione, antibatterico, antistatico, resistente all'acqua. Le fibre utilizzate sono: Nomex®, Kevlar®, Kolon®, Kermel®, NewStar®, Profilen®, Kanecaron ®, Kynol®, Belltron®, Trevira® CS, Coolmax®, Meraklon®, Silver, Polyethylene, Viscose FR

Gaglianico (BI)
Phone +39 015 25 46 800
info@safil.it
safil.it

Sportswear Company S.p.a.

Sportswear clothing company whose products are focused on fabric innovation and research.

Azienda produttrice di abbigliamento sportivo, incentrata sullo sviluppo, la ricerca e l'impiego di tessuti innovativi.

Ravarino (MO)
Phone +39 059 810111
spwco@spwco.it
stoneisland.com

Sefar Italia S.r.l.

Sefar is the leading manufacturer of precision fabrics from monofilaments for the screen printing and filtration markets.

Sefar è il principale produttore di tessuti monofilo di precisione per i mercati della serigrafia e della filtrazione.

Collegno (TO)
sefar.it

S.T. Protect S.p.a.

Personal Protective Equipment, uniforms and professional workwear.

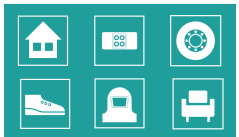
Prodotti per la sicurezza e abbigliamento protettivo, uniformi e abbigliamento da lavoro.

Broni (PV)
Phone +39 0385 090211
stprotect@arroweld.com
tacconi-spa.it

Stefano Mardegan S.r.l.

Producer and wholesaler of Technical Textiles: PU coated and dyed Nylon and Polyester; One and two sides coated PU and/or PVC textiles; Artificial Leathers; Solvent free coated textiles and leathers; Mesh; Cristal; Laminated fabrics; Printed and rough textiles.

Società che produce e commercializza tessuti tecnici: Nylon e Poliestere resinati e tinti; Monospalmati e Bispalmati in PVC; Spalmati in PU e/o PVC; Finte Pelli; Pelli e Tessuti spalmati senza solventi; Stampati; Cristal; Reti; Laminati e Tessuti grezzi.



Milano (MI) - ITALY
Tel.: +39 0234538689
info@mardegan.com
stefanomardegan.com

Tespe S.r.l.

Manufacture of Technical Textiles for thermal insulation and industrial seals for high temperature in Glass Fibre, Ceramic Fibre, Silica, Asbestos-Free: Braided Packings, Ropes, Knitted Cordes, Sleeves, Tapes, Fabrics, Insulation Pillows, Expansion Joints

Produzione di Tessili Tecnici per isolamento termico e guarnizioni industriali per alte temperature in Fibra di Vetro, Fibra Ceramica, Silice, Asbestos-Free: Trecce, Corde, Calze, Tricotee, Nastri, Tessuti, Cuscini isolanti, Giunti di dilatazione

Chiuduno (BG)
Phone +39 035838864
info@tespe.it
tespe.it

Super Glanz S.p.a.

Producing and blending chemicals products for the textile industry. Application field: clothing, sports, swear, furnishing, automotive, industrial textiles. Our research and development laboratory can offer technical support and consulting.

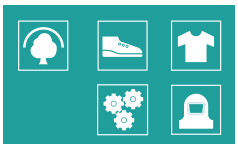
Prodotti chimici per l'industria tessile. Settori applicativi: abbigliamento, abbigliamento sportivo, arredamento, automotive, tessuti industriali. Il nostro laboratorio di ricerca e sviluppo offre anche supporto e consulenza tecnica.

Oste di Montemurlo (PO)
Phone +39 0574 799191
super.glanz@super-glanz.it
super-glanz.it

Tessitura Molteni Palmira S.r.l.

Fabrics finished and coated, polyamide, polyester blended with cotton-stretch woven. Lamination with any membrane. Awarded by EN ISO 9001/2008. Sportswear, boots, ready wear, Protective garments - military, motorcycle suits.

Tessitura, tintoria, spalmatura, accoppiatura membrane PU-PE-PTFE. Produzione tessuti tecnici, Nylon Poliestere, Cotone. Tessuti Elasticizzati.



Lambrugo (CO)
Phone +39 031 607218
info@tessituramolteni.it
tessituramolteni.it

SXP Stilmotor eXtra Protection S.r.l.

Since 1990 internal design-development-production of equipment and technical protection for law enforcement and for professional and sports uses. Certified company UNI EN ISO 9001 since 2003 and UNI EN ISO 14001, EMAS registration since 2009.

Dal 1990 progettazione-sviluppo-produzione interna di equipaggiamenti tecnico-protettivi per forze dell'ordine e per usi professionali e sportivi; Azienda certificata UNI EN ISO 9001 dal 2003, UNI EN ISO 14001, registrazione EMAS dal 2009.

S. Maria a Monte (PI)
Phone +39 0587707491
info@sxpstilmotor.com
sxpstilmotor.com

Tessitura Stellini S.r.l. - Stellini Group

Production of upholstery fabric, mattress ticking and double knit jersey. Production of multifilament dope-died yarns in polyester and polypropylene either outdoor or Flame retardant. Production of ATY and DTY yarns.

Produzione di tessuti e maglia Jacquard per arredamento e materassi. Produzione di filati tinto-massa in polipropilene e poliestere multi filamento sia outdoor che antifiamma. Produzione di filati testurizzati ad aria e frizione.

Magnago (MI)
Phone +39 0331 658052
info@tessiturastellini.com
stellinigroup.com

Synt3 S.r.l.

Synt3 produces synthetic leathers by PU coagulation, coating, printing, embossing of textiles, using functional materials for end uses in bookbinding, protective footwear, clothing, flame retardant upholstery.

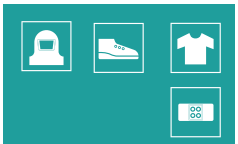
Synt3 produce pelli sintetiche per coagulazione di PU, spalmatura, stampa, goffratura di supporti tessili, impiegando materiali funzionalizzanti per applicazioni in legatoria, calzatura di sicurezza, abbigliamento, arredamento antifiamma.

Erba (Como)
Phone +39 031643608
info@synt3.com
synt3.com

Tessitura Taiana Virgilio S.p.a.

Elastic woven fabrics for high performance Sportwear, Medical and Workwear

Tessuti elastici per abbigliamento sportivo ad alte prestazioni, medicale e da lavoro.



Olgiate Comasco (CO)
Phone +39 031 994411
taiana@taiana.it
taiana.it

TA LI S.r.l.

TA LI srl develops and sells polyurethane coagulated and coated fabrics (synthetic leather), offering innovative materials in term of technology and sustainability. Market destination of our material are: Upholstery (residential and contract), shoes, leather goods and bookbinding.

TA LI srl sviluppa e commercializza tessuti coagulati e spalmati in poliuretano (finte pelli, ecopelli), offrendo materiali sempre più innovativi, moderni e sostenibili. I settori di mercato per uso e destinazioni dei materiali prodotti sono: arredamento (residenziale e contract), calzatura, pelletteria, legatoria.

San Giorgio di Piano (BO)
Phone +39 051 6650062
info@tali.it
tali.it

Testori S.p.a.

Needlefelts and fabrics, filter bags and pockets, cloths for gas and liquid filtration. Main industrial applications: aluminium, cements, power generation, iron and steel, pharmaceutical, chemical, waste to energy and wastewater treatment.

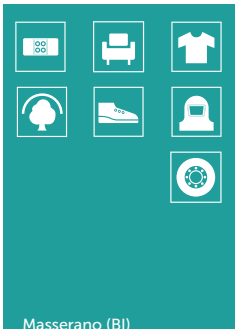
Feltri agugliati, tessuti, maniche filtranti, sacchi e tele per filtrazione di gas e liquidi. Principali settori industriali: alluminio, cemento, power generation, siderurgico, farmaceutico, chimico, inceneritori e depurazione delle acque.

Novate Milanese (MI)
Phone +39 0235231
info@testori.it
testori.it

Tintoria Finissaggio 2000 S.r.l.

Dyeing, finishing, bonding and printing of kitted and woven fabrics. The most important processes are: lamination of breathable and waterproof membranes, water repellent, stain resistant, flame retardant, ultra dry, aloe treatments.

Tintoria, Finissaggio, Accoppiatura e Stampa di tessuti a maglia o navetta. Tra i processi più rilevanti possiamo elencare: accoppiatura con membrane impermeabili e traspiranti, impermeabilizzazione, aloe, easy care, antimacchia, antifiamma, ultra dry.



Masserano (BI)
Phone +39 015 99421
info@tf2000.it
tf2000.it

Trevira GmbH - Succursale Italiana

Manufacturer of high-tech polyester fibres and filaments, standard and modified (flame-retardant, anti-bacteria, antipilling, stretch, micro). Applications: all textile applications for clothing, furnishing, bedding and semi-technical.

Fiocchi e fili continui di poliestere standard e modificati.

Milano (MI)
Phone +39 023191141
Treviracs.info@trevira.com
trevira.com

Windtex Vagotex S.p.a.

Development and Production of fabrics and nonwoven, laminated with technical fabrics and membranes for garments, shoes, medical, industrial and other uses. Development and production of membranes with Windtex brand.

Progettazione e produzione di tessuti accoppiati con tessuti tecnici e membrane, per abbigliamento, calzature, medicale, industriale e altri usi. Sviluppo e produ- zione di membrane per accoppiatura con marchio Windtex.

Colognola Ai Colli (VR)
Phone +39 0456159111
vagotex.it

4M Plants

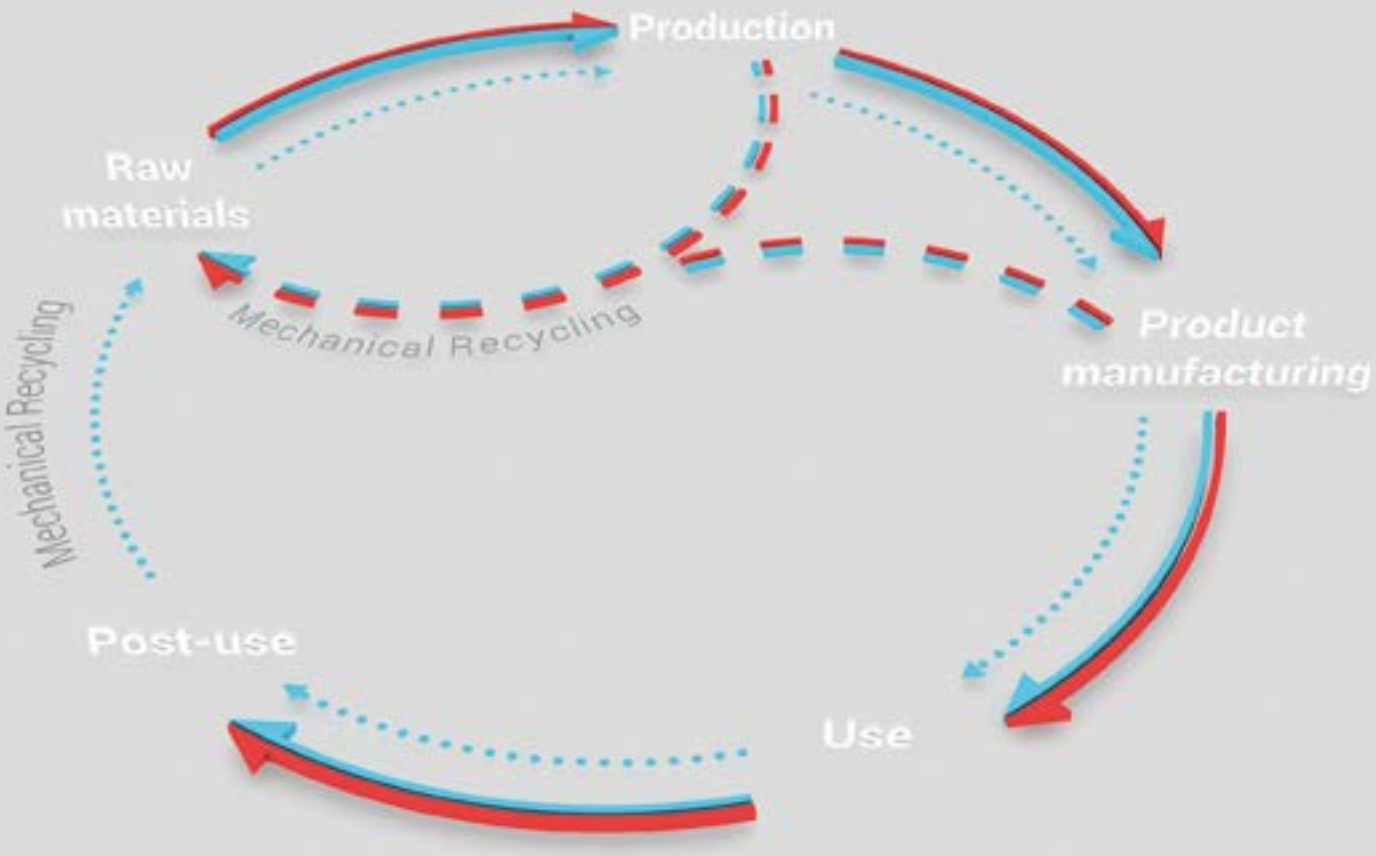
visit us at
TECHTEXTIL
Hall 3.0 - Stand B08

SPINNING THE FUTURE

4M Plants uses the latest technologies to be ergonomic, functional and flexible in a reduced space, a reliable and innovative product that gives a competitive edge. We are constantly investing in research & development for newer and safer process and products. We manufacture compact spinning lines for **polyester** and **polypropylene** for continuous multi-filament yarns in POY, FDY and High-Tenancity. Into our product range we also have **ATY** Air Texturing Machines with full independent position controlled by computer.
Since we are also yarn manufacturer, all our plants are tested before shipment in our production environment, moreover we are in a position to offer training for your team at our premises using your plant before shipping it.

Via Manzoni, 54 – 20020 Magnago MI – Italy – Tel. +39.0331.1629168
www.4mplants.com – **sales@4mplants.com**

The RadiciGroup way to **Circular Economy**



Performance Plastics
Synthetic Fibres & Nonwovens
Post-industrial recycling
Post-industrial and post-consumer recycling

Mechanical recycling of plastics and fibre scraps back into plastics for new, high performance and value-added products. This is the way we work.

At RadiciGroup we measure the impacts of this strategy through Life Cycle studies for a sustainable and sound approach to circular economy.

Il riciclo meccanico degli scarti di plastica e fibre per la realizzazione di nuovi prodotti, ad elevate performance e alto valore aggiunto. Questo è il nostro modo di operare.

Presso RadiciGroup misuriamo gli impatti di questa strategia attraverso studi di Life Cycle Assessment per un approccio sostenibile e rigoroso all'economia circolare.

RadiciGroup: Specialty Chemicals, Performance Plastics, Synthetic Fibres and Nonwovens

www.radicigroup.com