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TEX INNOVATION GENNAIO 2017

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GENNAIO 2017

SOSTENIBILITÀ | SUSTAINABILITY

Economia circolare e razionalizzazione delle risorse

Circular Economy and Resource Efficiency

COPIA OMAGGIO - FREE PRESS

FONTI RINNOVABILI

RENEWABLE RESOURCES

Fibre di origine naturale e materiali tessili bio-based

•

Natural fibres and bio-based textile materials

PROCESSI SOSTENIBILI

SUSTAINABLE PROCESSES

Un impegno sempre maggiore verso l'obbiettivo di un settore produttivo sostenibile

•

A stronger engagement for sustainable productive sector

RICICLO

RECYCLING

Il riciclo tessile quale contributo ad un'economia circolare ed alla valorizzazione degli scarti di produzione

•

Textile recycling as a contribution to circular economy and production waste enhancement

FIRE SAFETY TESTING
For your comfort

Reaction to fire of contract textiles and furniture

Reaction to fire test

Support for documentation required by Authorities

Assistance in completing formalities to obtain homologation

MAIN AUTHORIZATIONS AND TEST CAPABILITIES

- Authorized by Italian Ministry of Interior

- Fireproofing of upholstered furniture, (domestic and public use) according to Dept of Consumer Affairs Bureau of Home Furnishings and Thermal Insulation of the State of California (Technical Bulletins) requirements

- Tests according to: S.I. 1324; BS 7176; NFPA 260; NF D 60 013; ECE - R118/02; EN 1021-1; EN 1021-2; EN 13501-1

CSI

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EDITORIAL

Aldo Tempesti
Managing Director of TexClubTec

It wasn't long ago since textiles were considered as an outdated and mature sector, with potentially good perspective only for few companies in the west world that could be able to hold a small market niche in specific segments, in which the brand is the determining factor, rather than the product itself.
The technological evolution, that knew a strong increase in the last few years throughout all productive sectors, upset completely all pessimistic perspective on textiles. Today, technical textiles are one of the most interesting sector for investors, many technological innovations are influencing traditional textiles, smart textile applications are widening and the contribution that textiles could give to solve environmental issues is becoming more and more evident.
In the past few weeks, at the Triennale di Milano, the Green awards 2016 had been assigned to the most innovative and sustainable projects. On that occasion, textile stood out again with, for example, the project of the University of Cagliari in which wool lanolin had been identified as the best material to be used in the absorption of hydrocarbon discharged in the sea by boats and port structures (about twice the amount of pollution caused by oil tanker accidents). Sardinia's sheep are employed in milk production, while their wool is not suitable for textile applications. Being already used in bio-building today, with this new applicative perspective, wool is now considered as a new resource for high quality products rather than a waste: a perfect example of circular economy, environmental sustainability and enhancement of the domestic economy.
Another example of textiles projects that gained the Green Award is a textile panel developed by the Università Politecnica delle Marche. It is a highly efficient zero-impact panel, that could be hung as a picture, containing a complex textile system able to purify air. It could work both inside and outside a building.
In fact, fine particulate matters, pollution and industrial emissions, as well as chemical remains of detergents, soaps and perfumes, are contained in the air we breathe not only in the street, but also at home, work or school. And we breathe all those substances, mostly being unaware of that.
With the panel developed by experts, air passes through the knitted fabric, composed by two external layers in hydro-repellent and antibacterial fabrics and an inner layer made of absorbent active-carbon-based fibres that, activated by nano-materials, are able to separate, hold and break polluting micro-particles apart.
Those are only a few examples, offered by current history, of how textiles are being assigned with a new applicative role, unexpected in the past few years, also in crucial fields such as Environment and Sustainability.
However, textile materials come from an industrial production system that have to cope with environmental topics and, for that, several studies and research have been launched all over the world to find out how to make Textiles & Clothing more sustainable and reduce its environmental impact.
It is right on circular economy of textile products and on renewable raw materials, energy saving, recycling, certification and conscious planning that this issue of Tex Innovation is going to focus.

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.

TEX INNOVATION

JANUARY 2017

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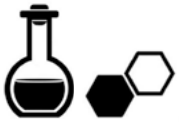
SUMMARY

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

Heimtextil 2017
Frankfurt am Main 10-13.01.2017

Milano Unica 2017
Rho Fiera 1-3.02.2017

ISPO 2017
Münich 5-8.02.2017

Proposte 2017
Cernobbio 3-5.05.2017

Techtextil 2017
Frankfurt am Main 9-12.05.2017

A+A 2017
Düsseldorf 17-20.10.2017

I NUOVI SOCI

Lamberti S.p.a.
Lamberti s.p.a, private company manufacturer of Chemical Specialties. To Technical Textiles develop the environmentally friendly Waterborne Polyurethane and Acrylic Dispersions to get the highest performances by Coating, Dipping, Impregnation and Printing processes.

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.

PUBBLICAZIONI

TECNO TESSILI
publication focused on innovative technical textiles Last issue: Workwear and safety shoes in France

MONDO TESSILE
publication focused on Textiles & Clothing
Last issue: Textiles & Clothing 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.

SUSTAINABILITY

The need to rethink the XXIth century production sector

An important challenge for the planet safeguard, which even the productive sector can't avoid to cope with, in term of resources, energy and water consumption and waste management, to achieve a remarkable reduction of its environmental impact.

Last century saw the development of many industrial societies based on great scientific and technological innovations, that took, on one hand, to a remarkable increase in people wealth and wellness in the industrialized world, provoking severe environmental changes and economic gaps between Western countries and the rest of the world, on the other.

In fact, this uncontrolled growth, that saw the industrial production increasing 40 times as much, fossil fuels use 16 times and water use 9 times, is no longer bearable.

The negative environmental effects of this trend, along with global population growth (increased 4 times as much) and its related urbanization, let severe environmental impacts spread throughout the world, up to almost the whole planet, affecting soil, water flows, landscapes and climate.

The awareness of the need for a sustainable development

The environmental issue came to light at the end of the XXth century, as a consequence of the newborn modern era, characterized by mass consumption, resulted from the industrial revolution. Over the following years, the environmental issue became an extremely actual topic, focusing on specific aspects according to periods, places and circumstances.

The environmental debate resulted in a real postmodern phenomenon, spreading everywhere in an industrialized, technological and globalized era, focusing on different topics: from the waste of natural resources to energy costs, from global warming to overpopulation, from the lack of raw materials to industrial product toxicity, from air and water pollution to waste disposal.

A first definition, dating back to 1987, identifies Sustainable Development as a development that satisfy current needs without jeopardizing the chance for future generations to satisfy their own needs too". In general, concerning the use of natural resources, this concept answers to 3 general conditions:

• The employment of renewable resources should not be higher than their regeneration capacity;
• Polluting substances and slags in the environment must not exceed amounts that cannot be bothered;
• The availability of nonrenewable resources must remain unvaried over the years.

This vision is based on how the availability of natural resources could deeply affect all economic systems and, in such a scenario, the concept itself of natural resources must be intended as wider, considering not only raw materials, but also water, air and soil.

This approach is needed for a good economic system and a good life quality; in fact, the way resources are employed (both renewable and nonrenewable) and the fast exploitation rate of nonrenewable resources could limit the ability of the planet to regenerate and preserve them for the future.

This is the topic that stands out in the global scenario of the evolutionary trends of current society, in which important issues such as population growth and ageing, environmental topics, consumption increase, resources' safeguard and pollution problems are put side by side. And all that happens in the context of a global climate change.

Population growth and ageing

World population counts today about 6.5 billion people and it is expected to reach about 8 billion people by 2025, i.e. an additional increase of 1 billion people.
It is foreseen that excessive urbanization could lead to a remarkable environmental impact in terms of pollution, mobility problems and energy consumption. Large cities are already consuming about two third of global energy amounts and they produce about 70% of global emissions. Moreover, their economic load and impact on the global economy will continue to growth in the future.
It is to be underlined that pollution caused by uncontrolled urbanization, transports and industrial production in Europe already causes 430,000 deaths per year (84,000 in Italy), raising health costs and reducing labour productivity.

Furthermore, along with population growth, birthrates are lower than mortality rates, in about 87 countries in the world, with a remarkable increase in life expectancy, raising the risk of over-ageing.

If all that becomes a reality, it could lead, on one hand, to a real rearrangement of society structures, giving birth to new markets and services, and to further temporary environmental impacts, on the other.

Consumption and industrial production

The increasing market demand coming from a wider consumption of diversified products highlighted the problem of raw materials, that, mainly in Europe, are seen as a weakness for the productive sector, since they're mostly imported by third countries (oil and cotton in particular).
For this reason, it is necessary to pay more attention to a rational use of resources, as well as to further developments of domestic renewable resources and to smart specializations.
In terms of energy, fossil fuel stocks for the future are even less than expected. Furthermore, according to experts, two third of oil veins of the planet should not be even extracted, in order to avoid an increase of 2°C in the global temperature average.

As far as water is concerned (the industrial sector uses about 22% of global water consumption), the situation is extremely severe too: in the last forum in Davos (CH), that saw the participation politicians, economists and analysts, the issue of water resources had been highlighted as one of the main and urgent challenges the world will have to face, even more urgent than the recent economic crisis.

Finally, facing the potential shortage of raw materials, production waste reduction, along with the reduction of landfill environmental impacts, acquires a remarkable importance, as well as waste recyclability, that could turn them into a resource, rather than a problem.

Climate change

Temperature 20°C beyond the Artic average, severe cold in Spain, floods in Italy, extraordinary snowfalls on Tokyo. Climate anomalies registered all over the world are a real proof of how fast global warming is evolving. According to the World Meteorological Organization of the United Nations, the increase of greenhouse gases in the atmosphere boosted the possibility that devastating climatic events take place by 10% at least.

It is to be considered that, among main causes of environmental damages, greenhouse gases have a remarkable share of responsibility and they are caused mainly by:

3% Water waste and treatments
14% Transports
10% Deforestation
6% Public and commercial settlements
35% Energy production
18% Industrial production
14% Agriculture

Conclusions

In view of such a global scenario, the industrial sector has to reconsider its productive structure, taking into consideration the need for a trend reversal, against the objectives of the past ten years, in compliance with the new sustainability goals that are emerging at all levels in the society.
Generally speaking, as far as environmental costs of production processes are concerned, the main factors on which the industry should focus are: energy and water consumption, emissions, chemicals employment, waste production. In conclusion, the main fields of intervention could be summed up in the **Three R's of Sustainability.**

Reduce: energy efficiency, reduction of water consumption and rationalization of raw materials and chemicals.

Recycle: processing system aiming at introducing products at their end-of-life in a new productive process, whether they are production or end-of-life wastes.

Reuse: lengthening of products' life-cycle, finding new application ways or allocating them to new markets.

Circular Economy and Resource Efficiency

"Towards a 4th Industrial Revolution of Textiles and Clothing". Sustainability as one of the main priorities of the European Technology Platform.

In October in Brussels, the European Technology Platform for Textiles and Clothing updated its Strategic Agenda with a new document, titled "Towards a 4th Industrial Revolution for Textiles and Clothing". The file outlines all primary innovation topics and research fields on which the European textile and fashion industry will focus for the next ten years. Among the four topics listed as overriding, a remarkable attention is given to sustainability issues, focusing on the concepts of Circular Economy and Resources Rationalization.

Learning to make more with less

The Textile and Clothing industry like any other manufacturing sector is in the business of transforming resources – materials, energy, water, chemicals – into value added products for professional or private end users. Several textile production processes, such as dyeing and finishing, are indeed very resource-intensive. As the consumption of these resources is not free, companies have a natural incentive to use them as efficiently as possible. In addition, tightening legislation on energy efficiency, CO2 emission, water use, waste water quality or air pollution makes the industry seek better technology to combine economic with ecological benefits while complying with the law. Finally, better environmental performance in production also starts to be more and more rewarded in the marketplace by increasing consumer interest in more sustainable textile products.

To reach tougher resource efficiency targets, the textile industry pursues incremental as well as radical innovation approaches. Incremental approaches include regular production technology upgrade, employment of better monitoring and control systems, use of energy-saving or energy recovery installations, water or chemical re-use systems, better waste water treatment facilities or a generally more resource efficiency driven production planning.

Radical technological innovation approaches involve the move from wet to dry textile processing replacing conventional dyeing, printing or finishing by digital printing, dyeing with supercritical CO2, plasma, laser or coating processes. Also material waste can be radically reduced by move from cut-and-sew assembly to seam- less manufacturing for instance in knitwear or direct joint-free 3D production of technical textile or composite parts.

Making a chain move in circles

When discussing innovation and market potential, "the Circular Economy" is rapidly becoming one of the most used terms in the European textile and clothing industry. It provides a guideline for the industry, when making investments in production technology (cleaner and less resource-consuming), product development (more sustainable products, focus on recyclability) and in respect to the selection of textile materials (more focus on the use of sustainable fibres). However, the industry still faces tough challenges in the transition from a traditional linear production and consumption model (take – make – dispose) to a circular model. In a circular model it is essential to cooperate with all stakeholders in production, retail and waste processing. Due to its fragmented, SME-dominated structure, the industry lacks the authority to enforce such a corporation with other essential stakeholders in the value chain. Therefore, essential innovations are not yet implemented on a large scale, due to uncertainties in the required investments and long-term economic viability of circular business models and the absence of long term commitments with retail and waste processors. Also the European legislative framework is not (yet) favorable for circular systems, although the circular economy roadmap of the EU might trigger changes with respect to green procurement and legislation (product liability). The use of recycled textile materials can be promoted by these changes.
However, there are also important barriers still to be overcome for an effective recycling of post-use textiles through new technologies for sorting and recycling of textile waste, better used textile collection systems in Europe, better consumer education and easier access for designers and product developers to high-quality, cost-competitive recycled textile materials

Natural solutions to protect the environment

Approximately 70% of all textile fibres produced in the world today as well as most textile processing chemicals are fossil-based. And while the use of a barrel of oil for textile products that may be in use for years or even decades is a much higher value use that to burn it for energy or transportation, this heavy reliance of a fundamentally non-renewable resource raises viability questions, at least in the long term. Natural fibres, while clearly renewable, are not automatically the more sustainable solution as the case of conventional cotton demonstrates much of which is grown with heavy use of water and pesticides in some of the world's most environmentally challenged regions.

Market interest in EU-grown natural fibres such as flax, hemp as well as European wool and cotton is rising due to an appreciation of their favorable sustainability profiles and interesting potential of their application in growing textile fibre end markets such as composites for the construction or automotive, functional clothing and interiors for allergy suffers or generally health-conscious consumers or naturally flame-retardant material (i.e. wool) for protective clothing.

As agricultural products, natural fibres typically find themselves at a production efficiency disadvantage compared to man-made fibres which a produced in large-scale controlled industrial processes. They also suffer from greater variability due to impact of changing weather and other natural conditions beyond the control of the producer.

Rapid agricultural productivity progress and new biomass processing technologies represent a strong two-pronged approach to improve the competitive position of European bio-based textile fibres. European forest-based and agricultural waste resources are an abundant, sustainable and economic feedstock for textile fibres as well as bio-chemistry used in textile processing and functionalization. Apart from being fully renewable these bio-economy routes to textile and clothing products also help to reduce hazardous and toxic chemicals from the textile industry and facilitate circular economy concepts through better recycling or biodegradation of material waste and easier treatment of wastewaters.

The garment Made in Italy: fashion and sustainability

Product Environmental Footprint of a jacket with Radilon® yarn from RadiciGroup Comfort Fibres, Sensitive® Fabrics by Eurojersey, design and tailoring by Herno®.

RadiciGroup, Eurojersey and Herno are three textile companies of excellence in the synthetic fibers to finished garment supply chain, both in Italy and all over the world; this pioneering project (one such as Italian companies often have the courage to undertake) mapped the environmental impact of a man's jacket by Herno for all phases of the production process (from the so-called "upstream" with raw materials to production with polymerization, spinning, fabric and tailoring), deciding to make a commitment to sustainability a matter of competitiveness and circular economy.

With strong local and historical ties, these three manufacturing companies worked within a system where every person, team, division, department and component contributes to the optimal end result.
It is certainly not surprising that a study of this type comes from the fashion textile industry because, to maintain the distinction of being an excellence in the world, today we need a scientific and industrial approach to sustainability to amplify and preserve all the peculiarities of the products Made in Italy.
The partnership of the three companies involved, with the technical support of ICA – Società di ingegneria Chimica per l'Ambiente S.r.l. [Chemical Engineering Company for the Environment], based in the Kilometro Rosso Science Park (Bergamo – Italy), started well before Law 221 of 28 December 2015, which regulates environmental provisions and promotes "green economy" measures to limit the excessive use of natural resources. The national voluntary scheme for the labelling "Made Green in Italy" adopts the Product Environmental Footprint (PEF) methodology.

The Product Environmental Footprint (PEF)

The Product Environmental Footprint was officially introduced in the European Union with Recommendation 2013/179/EU.
This methodology regulates the calculation, assessment, third party validation and notification to all stakeholders of the environmental footprint of products and services. The approach taken by the Commission is based on a specific principle: the impact of a product should be measured by considering the various environmental issues it can impact throughout its life cycle, from the extraction of raw materials and natural resources used in the production phase all the way to the end of the useful life of the product. The methodology results in a set of indicators covering the main environmental impact categories - greenhouse gas emissions, resource efficiency, water footprint - which the manufacturer, after third party validation, is entitled to use freely for competitive purposes, particularly as relates to marketing. The possible promotion of environmental footprints enjoys a broad spectrum.

The multicriteria methodology applied in this study took into account the following impact categories:

- Primary energy consumption;
- Climate change;
- Reduced ozone layer;
- Acidification;
- Aquatic, marine and terrestrial eutrophication;
- Carcinogenic effects on man;
- Toxicity not carcinogenic for man;
- Ecotoxicity;
- Fine dust emissions;
- Iodizing radiations;
- Soil use;
- Depletion of mineral, fossil and renewable resources;
- Depletion of water resources.

Results of the PEF study on the Herno Jacket

Along with final performances of the garment made in Green by Herno, (Breathable, Comfortable, Solid, No Pilling, No creases, Longer lasting, no stretch, easy wash care), as far as environmental performances within the production process are concerned, the PEF study allowed to:

• Identify the value of Made in Italy products from the yarn to the consumer's wardrobe, going through the whole production chain;
• Identify the final article by Herno as 100% Made in Italy;
• State the environmental performance of the article to the final consumer;
• Confirm Italian leadership in textile technological innovation.

With the analysis of the 16 environmental indicators described above, the PEF study defined the impact results for each environmental category, re-proportioning the contribution of the three companies involved. A comparison was made with a European citizen's average annual emission factors with respect to the emissions of the jacket, including for example:

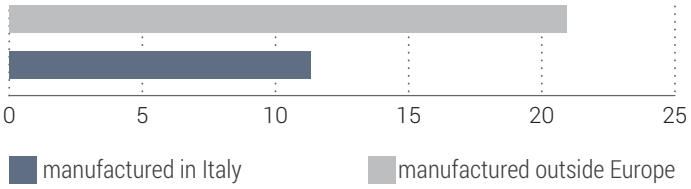
• Less than 0.15% jacket contribution to climate change when compared to the reported emissions of a European citizen in one year;
• Less than 0.4% jacket contribution to water resource depletion when compared to the indicator of a European citizen's consumption in one year;
• For most of the remaining indicators the contribution of the jacket amounted to between 0.01% and 0.4% when compared to the indicators of a European citizen in one year.

The comparison of the emissions of the jacket from raw materials Made in Italy with the emissions of the same type of jacket made in China is interesting, considering the different energy mix of the two countries: by weighting the 16 environmental impact categories and translating them into a single number, one sees a 43% increase of the environmental impact.There is a certain relevance in comparing the CO2 emissions of Italy and China; +92% Chinese compared to Italian CO2 impact, mainly due to the different energy mix of the two countries. A significant piece of data is the environmental cost of pollution according to some damage categories, including, besides carbon dioxide, nitrogen oxide, sulphur oxide, particulate matter and volatile organic compounds: the cost for the environment of the jacket made in China amounted to 5.22 euro vs. 1.97 euro if made in Italy.

Conclusions

Synergies are being created in Italy for a more virtuous productive and economic system that will make massive use of renewable energy sources, the central element of sustainability, as well as a great passage of information between the various economic entities, a strong capacity for innovation and products designed in an efficient way that will last over time and whose parts or whole can be recycled or reused in other forms. Not only does this project aim to communicate millions in investments on machinery, technology and production processes, but it also means that new business theories are taking shape in Italy, rethinking the future on issues of reciprocity, non-equivalent exchange, cooperation, proximity and the convergence of past, present and future.
Sharing is the key word.
In the twenty-first century, characterized by emerging economies, RadiciGroup, Eurojersey and Herno teach that to be competitive we have to make the most of our resources, putting them back into the production cycle instead of putting them in the trash.
We are talking about an economy designed to regenerate itself, a system in which all activities, starting with extraction and production, are organized so that someone's waste becomes a resource for someone else.
We are talking about energy maximization, which replaces material accumulation and where waste is to be viewed under a new and opposite perspective: prosperity.

Male Jacket – Italy Vs Outside Europe
Climate Change caused by Energy & Transportation ($kgCO_2eq$)



RADICIGROUP - An Italian industrial manufacturing group with over 70 years of history, 2,985 employees and a turnover of 1,011 million euro, RadiciGroup is a leading global manufacturer of a wide range of chemical intermediates, polyamide polymers, engineering plastics, synthetic fibers and nonwovens. A special characteristic and strength of RadiciGroup is the integration of polyamide in the production chain. But not only. RadiciGroup is a European leader in polyester yarn production and processing. In this case the control of one's production chain goes from the spinning stage all the way to all the various stages after the yarn. In each of its macro Business Areas - Specialty Chemicals, Performance Plastics and Synthetic Fibres & Nonwovens (Performance Yarn, Comfort Fibres, Extrusion Yarn) - RadiciGroup is committed to providing customer products and services with maximum performance, innovation and sustainability. RadiciGroup embodies sustainability through concrete action and consistency.

EUROJERSEY Spa - Established in 1960, it represents Made in Italy style and creativity in the warp-knit sector with the patented Sensitive® Fabrics, a result of continuous quality research internationally recognized. The company has a fully vertical cycle plant, the only one in Europe, designed by renowned Italian architect Antonio Citterio, with a team of 185 people who represent a pioneering example of sustainable efficiency and quality with an annual production capacity of 12 million meters of fabric. In 2007, Eurojersey took on the challenge of a sustainable production project called SensitivEcoSystem®, with investments in the latest machinery for optimized resources and reduced waste and polluting materials, obtaining important certifications.

HERNO Spa - Excellence Made in Italy for almost 70 years with a continuously evolving story, from the first waterproof of the 40s to today's production, a brand recognized internationally by the fashion world as an urban outerwear landmark. The leadership of the second generation, with Claudio Marenzi, marks the turning point towards international growth, promoting the family brand through ongoing investments in research, technology and design innovation, always combined with the right dose of traditional tailoring. The concepts of Italianness and sustainability are added to this process of constant renewal that led Herno to pioneer the introduction of ever more efficient fabrics even when it comes to double cashmere or thermo-taping. Style, functionality and technology are the basis and essence of Herno outerwear.

ECODESIGN

The role of design in the production process planning.

From the creative process to Life Cycle Design
The contribution of design to production planning as a contribution to sustainability and the enhancement of Circular Economy.

According to the evolution of the environmental topic in a mid-long term perspective, Textile & Clothing is expected to focus on a circular and efficient economic model, optimizing the use of domestic resources.
Customers today already show to be remarkably influenced in the purchasing process by the importance of emotional factors, being led to focus the attention on sustainable eco-friendly products.

From design to new business model

In this perspective, the contribution that a creative approach could give in the planning phase of the production process, to be extended to the entire product life-cycle, could reveal itself as an important factor.
In fact, in order to answer to the emerging needs of the market, that is more and more interested in the sustainable aspects of products, it is necessary to use recyclable materials and a circular productive process and to ensure competitive costs and customized productions, with higher flexibility, resource efficiency and a reduction of water consumption.
In this sense, the achievement of good results for those objectives could be fulfilled only with the contribution of a careful and accurate planning process. The planning stage, design included, should be sustainability-oriented, aiming at lengthening the life-cycle of textile products, favoring their dismantling and material reuse to make recycling process easier.
Furthermore, this approach should be integrated with the introduction of new business models, both to align efficiency requirements of resources and "Circularity" with profitability and to offer incentives to stimulate customers in returning textile materials to the supplier at the end of their life-cycle.
As far as reuse is concerned (i.e. a prolongation of the product life-cycle through its re-enhancement in new applications on new markets), creative ideas - that includes product revaluation and re-introduction on the market – are extremely important.
Innovation is today a fundamental tool for the industry to answer to the emerging needs of the market and to cope with international competitiveness, through new planning solutions and improving companies' know-how and expertise.

Thanks to a new method, named Life Cycle Costing(LCC), it is possible to evaluate the economic impact of costs linked to all processes involved in the entire product life-cycle, considering also the involvement of good or harmful effects that could affect the whole system in which production, life and disposal of products take place.

The goal of the LCC methods is to minimize costs of each step of the product life-cycle, guaranteeing, this way, economic benefits for both producers and end-users. In particular, the LCC method allows to optimize the planning of new products and to obtain better results in terms of duration, performance and sustainability, thanks to suitable customization, less wastes, improved energy saving and the enhancement of environmental and social aspects.

Sustainability: from the creative process to Life Cycle Design

A company willing to plan a new strategy aiming at introducing sustainable products on the market has to cope with the compulsory need to choose towards which direction its innovative strategy has to be oriented.
Sustainability is obviously one of the main drivers for innovation from a technology, organizational, commercial and social point of view. In this sense, the creative process is assigned with a fundamental role not only in becoming a real part of a sustainable business model, but also representing an added value for sustainability throughout the entire supply chain, from procurement to distribution: a real Life Cycle Design.

The search for new ways to design and plan textile materials is the basis of the Sustainable Change Management and the related innovation, stimula-

ted by a more "responsible" customer demand, can generate unpredictable results and mobilize new resources, opening consequently new end-use markets.

In this sense, eco-designers could intervene studying new ways for a reduction of the environmental impact on the planet and on all the living, adopting all related decisions.
A zero impact production is however impossible to be implemented: for that, the choice of which sustainable aspects to focus on becomes subjective.

For example, some companies choose to cut the environmental footprint down exploiting the labour of local communities, instead of industrial production and supporting local craftsmanship; or to choose local raw materials. Some other companies decide to protect jobs guaranteeing fair salaries to workers employed or to protect animals manufacturing bags and shoes using alternative materials rather than leather.

It could be stated that eco-designers should be the first to choose sustainability and, so, to become responsible for a model change that will affect both vertically and horizontally all company divisions.

ECOSIGN

Erasmus+

A useful tool for designers to enhance their contribution for a sustainable circular economy

According to current emerging trends in terms of sustainability and to the concept of circular economy, the value of materials and products should be preserved as long as possible, reducing waste volumes and enhancing recycling and reuse as a consequence.
Doing that, it could be possible to reduce the consumption of materials, that should be held back, once they are introduced in the production process and on the market, finding new ways to reuse them and enhancing, this way, their value again.

In this perspective, on the 2nd of December 2015, the European Commission adopted new policies aiming at the creation of a Circular Economy.
The objective of this policy is to put in action initiatives that could represent "the missing link in products' life-cycle, that could bring benefits for both the environment and the economy", offering customers durable, innovative and potential cost-saving products.

The textile sector itself can't avoid taking action towards an enhancement of recycling and reuse practices in every step of products' life-cycle: from production to consumption, from waste disposal to their reuse as secondary raw materials, in order to reduce energy consumption and greenhouse gas emission.

Product planning plays a fundamental role, in achieving this goal and in reducing the environmental impact. In fact, when planning a product, its future is outlined, end-of-life included. A good practice could be employing, for example, materials that could be easily separated and, so, easily reused or durable materials that could lengthen product life-cycle and reduce textile waste.

Designers should ask themselves "How could fibres and fabrics used in clothing production affect the environment?" or "How could it be possible to better manage waste production during each manufacturing step?"
In theory, starting from a planning phase that already keeps into consideration the entire product life-cycle, eco-design should focus the attention on:

- Better knowledge of materials, through their performing and manufacturing features and on their different production processes, in order to reduce wastes, introducing recyclable/recycled materials or materials easy to be divided for easier recycling, etc.
-Use of local resources to reduce the impact of transports on the environment, for example;
- Reduce the volume of packaging.

Ecosign Project

At the basis of such a complex duty, a scientific education is required. For this reason, Ecosign project had been launched, with the contribution of experts coming from 4 European countries (Slovenia, Spain, Romania, Italy), to create a partnership in eco-innovation knowledge and to fulfill the designers' lack of expertise in this field, focusing on the three following sectors: food packaging, electronic and electric devices and Textiles & Clothing.
Started on the 1st November 2015 and co-funded by the Erasmus+ Program of the European Union, the project will end on the 31st October 2018. On the course of the project, a training course for Eco-designers will be developed to confer them better knowledge and skills in environmental technology matters. Furthermore, it will allow designers, already focused in other sector, to widen their expertise and, so, to operate in other sectors.

Target groups are:

- Vocational students;
- Food packaging designers;
- Fashion and industrial textile designers;
- Designers of electronic/electrical goods.

Further information about project results and topics on eco-design are available on the official website www.ecosign-project.eu and on official profiles on Twitter, Linkedin and Facebook.

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TEX INNOVATION

RENEWABLE RESOURCES

Natural fibres and bio-based textile materials

Europe facing the need for strategic choices.
European natural fibres and bio-based approaches for textile material production, from agricultural and woodland resources, wastes or by-products. Development of new systems for their processing and application aspects.

Raw materials are one of the main issues of the industrial field. Their rational exploitation is now one the most important factors of companies' competitiveness, since they represent about 40% of the entire production cost for the European manufacturing sector.
Furthermore, in a future perspective, the problem of their availability comes up. Since resource stocks are not unlimited and the amount of raw materials used by both citizens and the industry is hugely beyond quantities the planet is able to produce itself, the exploitation of nonrenewable resources will lead to their total depletion over the years, indeed.
All that could have devastating effects on future generations and, for that, all policies on sustainable development recommend to reduce the amount of materials used in production processes and, when possible, to use renewable resources.

In the textiles sector, about 70% of all textile fibres produced today in the world, as well as most part of chemical for textile finishing, have fossil origins. Despite the fact that the use of oil as source for textile products that could be used for years is a more valuable employment than its mere combustion to produce energy or fuel, this inevitable dependence of textile production from a nonrenewable source represents a critical issue in a long-term vision.

Furthermore, from an environmental point of view, processes related to oil treatments are considered as problematic, as far as the greenhouse effect is concerned. Oil treatment implants contributes heavily to greenhouse gas emissions, indeed.

In order to answer to the increasing demand for textile products while respecting the environmental requirements on textile production, identifying new and further applications for natural fibres becomes strategic, as well as increasing bio-based textile production.

Natural solutions for environmental protection

Being obtained from renewable and biodegradable sources, natural fibres could represent the "Natural solution" for sustainable production. However, despite being used for technical application in the past, before the rising of environmental issues, their employment have been limited to the clothing sector and to specific segments of home textiles, also because of the diffusion of technical synthetic fibres.
With the new need for sustainable production processes, new scenarios for natural fibers' technical applications must be considered and this could lead to new application horizons, fostering research on renewable sources, waste disposal, bio-degradability etc.

However, it is necessary to underline that, even with the employment of natural fibres, there's no guarantee that a real sustainable solution had been applied. This had been proved by cotton, whose cultivations need big quantities of water and pesticides, causing severe environmental damages, as proved in different area of the world.

New Developments for European natural and bio-based fibres

Nowadays, in Europe, synthetic and natural fibres are widely used in production. But, in the future, the population growth and the increasing demand for raw materials will make their provision harder (natural fibres included) because of the increasing need for lands for food production/ cultivation.

This situation should push the sector to use bio-used fibres, developing a real bio-economy. This way the textile sector should not depend on the petrochemical industry, reaching also positive results in the production of biopolymers and eco-chemicals, that could be used in the manufacturing process.

Different kind of textiles have been already developed up to now, from corn, milk, bamboo, nettle, crustacean carapace. Furthermore, in Italy, recent developments have been focused also on orange wastes. The innovative silk-like yarn obtained (that could be also blended with other yarns) represents a good way to reuse and dispose a part of the huge waste quantity of orange industrial manufacturing, i.e. about 700,000 tons per year.

Examples of technical applications of natural fibres

COTTON	Cotton balls
KAPOC	Life jacket padding
HEMP	Ropes and rags
JUTE	Packaging, wallcoverings, Floorcoverings support
RAMIE	Belts and ribbons, banknotes
SISAL	Ropes, carpets, nets
ABACA	Ropes for ships, lines and nets
COCOS	Carpets, Floorcoverings, ropes, brushes
SILK	Tapes for typewriters, tyres for bicycles

However, a particular attention should be addressed to the fact that a bio-based process development on an industrial scale, based on agricultural and natural raw materials and with the employment of mainly industrial and urban wastes, would avoid the competition with the food sector and the animal feed industry.

Along with bio-based processes, the global market is focusing its attention also on natural fibres cultivated or produced in Europe (flax and hemp above all). This is due to their particular sustainable features and their potential applications in new developing end-markets, such as automotive composites, functional clothing and furnishing (e.g. for allergic or intolerant customers) or natural FR textile materials (e.g. wool) for protective clothing.

Moreover, Europe is the acknowledged global leader in the manufacturing and production of high quality silk products. However, the quality of silk imported by non-European countries reduced dramatically over the years and, for that, Europe has a great opportunity to take for its silk industry, that entails the ability to find good solutions to improve quality control of raw materials through the development of different source of high quality silk.

The agricultural production process

However, as for all products related to the unstable agricultural production, in terms of production processes, natural fibres are at a disadvantage in comparison with synthetic fibres, whose productive planning on large industrial scale could be kept easily under control.

Furthermore, it could be necessary to identify productive conditions that could guarantee a qualitative regularity, that is not always ensured because of the impact of climate change and other natural conditions not predictable by producers.

But, recent developments in the agricultural sector and in the field of new technologies of biomass processing represent a great incentive for an improved competitiveness of European bio-based textile fibres. Potential resources deriving from European forests or agricultural wastes should not be ignored; they represent a sustainable and cheap raw material source for textile fibres and bio-chemical products, at both production and functionalization stages.

The contribution to Circular Economy

An approach to textile production based on bio-economy concepts, fosters not only the use of completely renewable resources, but also the reduction of toxic and dangerous chemical substances, paving the way to a sustainable economy.
In the next few years, an approach to the productive sector that would focus on circular economy will be more and more necessary, that, thanks to recyclable and biodegradable wastes and an easier sewage disposal could bring benefits for the environments and citizens' health, while reducing costs caused by industrial pollution.

Sustainability and technical applications for flax, the main natural fiber produced in Europe.

Among all natural fibers, flax stands out, being the only European native fiber and the most cultivated one throughout the continent (mainly in Northern France, Belgium, the Netherlands, with limited production also in the UK, Germany and Scandinavian countries). Furthermore, its production process is considered as extremely sustainable, thanks to limited irrigation needed, no need for pesticides and defoliants and its contribution to carbon dioxide absorption from the atmosphere.

A sustainable fiber

In the general framework of European Union strategies on sustainability, the contribution of flax supply chain answers perfectly to a Europe that aims at increasing both its competitiveness and sustainability level.

In fact, thanks to its characteristics, the production chain of flax embodies a perfect example of sustainable resources for Textiles & Clothing.

Carbon Dioxide
One hectare of flax cultivation absorbs 3.7 tons of CO2 per year. Considering the whole extension of flax cultivations in Europe, they actually contributes with 342,000 tons of carbon dioxide absorbed each year.

Water
Contrary to most part of natural or cellulosic fibers and being cultivated in temperate and rainy countries, flax doesn't need massive irrigation, but simple rain. For that, annual water savings in Europe amount to 650,000 million cubic meters, i.e. consumption rate of a big city.

Soil
Soil resources are enough to feed flax plantations, since they need small quantities of nitrogen. Fertilizers and phytosanitary protection systems are need in small quantities to preserve flax natural resistance. Indeed, flax cultivation requires 5 time less fertilizer than cotton and that contributes also to the safeguard of water flows and phreatic aquifers.

Waste
All parts and components of flax can be used for different applications: fibers are used in paper fabrics, felts; flax seeds and oil in food, vanishes and linoleum; Flax straw is used in gardening, insulation, litters, topsoil etc.

Flax Applications

Flax sustainable features could pave the way for an excellent and efficient European production chain, that, from fiber processing and through continuous innovation processes, would lead to the production of high added value yarns and products, such as high performing biocomposites for technical/industrial applications.
In the traditional textile and home sector, main applications of flax fibers consist in clothing, bags, interior design, curtains, upholstery, awnings etc.

Flax fiber features:

- Hollow fiber;
- Thermoregulation;
- Moisture absorption;
- Easy maintenance;
- Dyeing compatibility;
- Deformation/Abrasion/Pilling Resistance;
- Tensile Strength;
- Antistatic;
- Stiffness;
- Impact absorption;
- Thermo-acoustic insulation;
- Hypoallergenic e Antibacterial.

Technical applications for flax

Technical applications for flax represent today an interesting trend, since this material could become an important resource in agriculture for ecologic innovation.
In fact, along with traditional applications, flax revealed a great potential for ecodesign-oriented industrial innovations. Flax fibers have unique properties, suitable for agro-based high-tech eco-products and biocomposites, finding new interesting applications, such as composites and thermal insulation.

Composites

Its properties and, in particular, its stiffness – due to the lack of elastic skills – make flax mechanical features similar to those of glass fibers. However, flax density (lower than glass fibers, -40%) confers to composite materials (used as reinforcement) lightness features that make them suitable in applications in which lightness is considered as essential.
In this sense, sports and leisure applications (tennis rackets, bicycles, mountain bike helmets, ski) are further enhanced thanks to the eco-friendly values of outdoor activities.
Wind blades are another composite application in which blended 40/60 Flax/PLA fabrics, used as reinforcement, offer high break/compression/twisting resistance, along bio-degradable features.
Other applications find their reason in vibration absorption skills of flax. Composites with 80/20 flax/carbon (e.g. Bicycle frame) or 15/85 flax / carbon fabrics (e.g. Tennis rackets) report a reduction of 20% in vibrations. In automotive, vibration resistance is useful in noise reduction, obtained with the application of 60/40 flax /PP fabrics in inner panels.

Thermal and acoustic insulation

In the continuous search for new ecological solutions, biobuilding engineering finds in flax a natural and durable resource, able to answer to both performance and sustainability requirements. Thanks to the properties of hollow fibers, indeed, flax is an excellent insulating material, that is used as nonwoven in flooring covers and wood floorings, insulating from cold, moisture and noise.

	Density (g/cm3)	Young's Modulus E(Gpa)	Strength (MPa)	Failure strain (%)
Flax	1,4	40-85	800–2.000	2,4-3
Glass E	2,5	72-73	2.000-2.400	3

Hemp's back on the market

As for flax, hemp is a natural plant that is classified as Bast Fiber, i.e. fibers obtained from the stalk of different plants through maceration
This fiber grows well in geographical area extremely different from each other, from Northern Europe to China, from Australia to Canada. In Europe, most part of cultivations are located in France, England, Germany, the Netherlands, Spain..
Hemp is one the most ancient domestic cultivation. It grows fast and had good benefits on soil. Furthermore, there's no need of pesticides or weed killers.

At the beginning of the XXth century, Italy was among the main producers of textile hemp. Thanks to its long and strong fibers, hemp was used in fabrics, ropes and sails. Then, after reaching its peak with about 80,000 tons per year, production decreased dramatically in the second part of XXth, because of cultivation limits due to the narcotic properties of some species. In the last few years, thanks to the renovate interest in renewable resources, hemp regained the spotlight in the sector of textile manufacturing. Along with traditional textile one, new applications have been found, such as in building, thermal-acoustic insulation, composite materials, technical textiles, geotextiles and agro-textiles.

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Polyamide PA 6.10: RadiciGroup products from renewable sources

Sustainability not only in words but especially in deeds: RadiciGroup, a multinational chemical manufacturing company among the most important in the production of nylon, synthetic fibers and engineering plastics, has long focused its Research & Development on low environmental impact products, such as products based on PA 6.10: polyamides (from polymers to textile and staple yarns) obtained from 64% organic source (i.e. sebacic acid derived from castor oil plant) and 36% hexamethylenediamine from petroleum.
These products can significantly reduce the use of nonrenewable resources as compared to other polyamides entirely based on petrochemical intermediates. Please note that biopolymers are derived from renewable resources non-competitive with food production: cultivation of castor oil plants, spread mainly in India and China, takes place on semi-arid land and is therefore not in competition with food crops.
RadiciGroup's Performance Plastics Business Area offers its customers RADILON D, products based on PA 6.10 ideal for injection moulding and extrusion, which are characterized by reduced environmental impact and, at the same time, by equivalent if not higher properties than those of traditional polyamides.

As for the fibres sector, RadiciGroup's Synthetic Fibres and NonWovens Business Area offers the market the Radifloor® and Radilon® 6.10 yarns and the dorix® 6.10 staple: these products can ensure not only sustainability, but also excellent performance. The technical characteristics and the biological component of these products based on PA6.10 make them ideal for high performance technical fabrics in terms of comfort, lightness, less absorption of water, resistance and colour stability. All with lower environmental impact, an increasingly important issue that the entire textile chain has been paying close attention to for quite some time.
PA 6.10 based fibers are mainly utilized in automotive, apparel and home furnishings, including applications such as coatings and upholstery, carpeting and rugs, car floor mats, luggage compartment covers, carpeting for hotels and large structures, technical sportswear and undergarments.

Availability:
- staple (17 dtex to 135 dtex) in a wide and flexible range of dyed colours, based on specific customer needs;
- yarn: another product range constantly evolving to meet the various end-use applications for all processing technologies: knitting, weaving and tufting.

One of RadiciGroup's strengths, which the market also recognizes, is its team of trained professionals ready to provide customized solutions for any type of customer request. RadiciGroup's know-how comes in addition to being integrated upstream thanks to the Specialty Chemicals Business Area: RadiciGroup is a global player that manufactures, processes and transforms polyamide and offers the global market a wide range of polymers, engineering plastics, synthetic fibers and non-woven fabrics.

SUSTAINABLE PROCESSES

A stronger engagement for sustainable productive sector.

"Being sustainable" doesn't mean only "being eco-friendly". In fact, for a company it means also facing health issues, the employment of raw materials from renewable resources and the reduction of energy consumption, waste production and polluting chemical employment.

As far as energy is concerned, the need for an environmental impact reduction is fostering the search for energy alternatives to oil, supported by both public opinion and political world.
The rise of renewable sources had already spread throughout the world.
Despite the oil, gas and carbon price drop, as many "green" implants had been established as never before, for about 147 gigawatt of renewable energy.
Today, about one quarter of the electricity system applied doesn't involve the use of fossil fuels. In Denmark, wind energy represents 40% of energy consumption and, in some periods of the year, it reaches 130%, being consequently sold to Norway, Sweden and Germany. In Italy, energy produced with renewable resources covers about 13.8% of the domestic needs, while, in 2015, solar energy produced represented 8% of domestic energy needs. That had been a real record along with Germany (7.1%) and Greece (7.4%).

Green economy

In such a scenario, in the productive and industrial field, companies strengthened their commitment in finding good ways to cope with the environmental issue, not only in theory, but also with a concrete, pragmatic reorganization of the productive process and of the products that are going to be put on the market.
In fact, in order to analyze and evaluate accurately the environmental impact of products/processes during their entire life-cycle, from raw materials' acquisition to their end-of-life, a new method, ruled by the ISO 1404085 (Life Cycle Assessment – LCA), had been developed.
However, the shift towards a green economy can't neglect the need of so-called eco-investments. For instance, in Italy, since the beginning of the economic crisis, one company out of four committed itself in ethical and eco-friendly investments on the "green field".

In 2008, 24.5% of Italian companies invested in green technologies to reduce environmental impact, energy consumption and CO2 emissions. And that phenomenon affected the entire productive sector, no matter what the application field was, from hi-tech to the traditional sector, from food to building, from craftsmanship to chemicals, from energy to waste. The percentage increases up to 32% in the manufacturing industry.
Italy plays a leading role in the green topic: we're among the first countries in Europe for production eco-efficiency and for renewable resource employment in electric energy production (43.3%). Italy is also a leading country in industrial recycling: 25 million tons of wastes out of 163 million allocated for recycling are actually recycled: the biggest amount of recycled materials in Europe.

Technologies and processes to limit water, energy and chemical consumption.

In Textile and Clothing, the concept of rationalization of production processes is focusing mainly on the reduction of energy consumption as well as of water consumption during dyeing and finishing. It is strategically important for the textile industry to develop new and flexible processes able to guarantee lower consumption rate of resources and less waste production.

Key enabling technologies for such radical textile processing innovations are, among others, digital inkjet printing and finishing, supercritical CO2, 3D printing/polymer deposition, hot melt/adhesive technologies, UV coating, atmospheric plasma, laser technology, spray technology, ultrasonic technology, catalysis and bio-catalysis.

Sustainable products for dangerous chemical-based textile processes and bio-chemical textile processes.

Despite the current trend towards a safer environment and the rationalized employment of resources in the textile production along with the increasing demand for green products, the textile industry still uses high volumes of chemicals with severe environmental impact due to polluting substances and production itself.
There are still chemicals hard to be replaced without turning specific features down, such as flame retardancy, oil/water repellency or antimicrobial activity, that could be fundamental in final application of the product.
Industrial biotechnologies' development offers interesting opportunities for bio-based solutions and cleaner processes. The textile sector is one of the first industrial field, after the food industry, in which enzyme had been employed. Recent developments in bio-technologies resulted in new enzyme typologies with improved characteristics. Thanks to advanced bio-biotechnology, specific substances, such as bio-based textile auxiliaries, bio-surfactant and bio-resins, can be obtained from biomasses as well as essential oils and other bioactive substances for the textile sector, used in medical and wellness applications.

With the application of biotechnologies, it is possible to develop new eco-friendly industrial processes based on reduced energy consumption and renewable resources, with high performing and specific features. Advantages offered by those processes come from the substitution of traditional chemical auxiliaries with enzymes: enzymatic processes are generally carried out in lower temperature conditions (30°-70°C), ph (4.5-9) and pressure. The use of enzymes, whose application is extended from fibre preparation to finishing, can contribute in reaching a significant reduction in terms of energy consumption and chemical employment.

Towards a better future?

In the next future, thanks to further developments that could be summed up in the concepts of "4.0 Industry" and "Internet of things", a huge quantity of complex data on machineries, processes, products and customers will allow manufacturing companies to better understand and optimize all phases of the value chain, from planning to distribution (supply chain management included), production and retailing processes. All that could lead to an important rationalization of production and a waste reduction. According to an impact evaluation of the European Commission by 2030, 400,000 jobs could be created throughout Europe, if the current regulation on waste is adopted to the letter. Furthermore, the application of the proposal of the Circular Economy (July 2014) would create further 180,000 additional jobs. Moreover, European companies could obtain remarkable savings, up to 600 billion euros, about 8% of the annual turnover. All that would affect also the environmental aspect such as a sharp reduction in greenhouse gas emission, estimated between 2 and 4%.

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Textiles and graphene: sustainability and safety are paramount

Graphene in the textiles sector

Nanotechnologies now rightfully belong in the textiles sector and are demonstrating a large growth potential. This is the case for graphene G+ of Directa Plus, a company based in the Como area and one of the largest graphene manufacturers and suppliers in the world.
Currently, the textiles sector is one of the markets with the greatest potential for utilising graphene. During the past year Directa Plus collaborated with Colmar to launch the first capsule collection of sports apparel containing graphene and with Menphis, a technology company and a leader in the transfer paper business, to develop and market innovative materials containing graphene, to be utilised in the fashion, design, and architecture sectors.
A few weeks ago, Directa Textile Solutions was also founded. It is a spin-off of the parent company and is engaged in developing waterproof breathable membranes, which can be combined with various fabrics and will be enhanced, for the very first time, by the properties conferred by graphene.
There are many ways of utilising graphene with fabrics: either by printing on the fabric or by including it within the membrane. Experiments are under way to incorporate graphene directly in the yarn.

Unique properties conferred to the fabrics

The properties conferred to the fabrics by this wonder material are very interesting. For example, in technical membranes, graphene makes it possible to maintain the waterproofing and breathing properties, while adding new properties such as electrical and thermal conductivity, bacteriostatic characteristics, and resistance to abrasion. Each product is developed by taking advantage of one or more of these characteristics, to provide superior performance and, therefore, be ideal for applications not only in the fashion sector, but also in the sports, home-textile, and design sector.
The membranes that take advantage mostly of the characteristic of high electrical conductivity are ideal, depending on the optimum graphene content chosen, to obtain fabrics having antistatic, electrical heating, or data transmission properties. On the other hand, those that take advantage mostly of the thermal conductivity characteristics of graphene make it possible, for example, to develop summer clothing capable of quickly dissipating heat and winter clothing in which the body heat is distributed more uniformly and retained.
Among the most interesting applications are those in the area of the Internet of Things - smart textiles, which can take advantage of the electrical conductivity for data transmission without using metals and in complete safety for health and environment.

Innovative, but also safe and sustainable

User's health and safety and environmental sustainability are characteristics peculiar to graphene G+, which was conceived in line with these objectives, starting with the design phase. It is legitimate to ask of a new material, especially if produced with nanotechnologies: is it safe? Will its production and disposal have an impact on the environment?
Directa Plus has chosen absolute transparency to guarantee and protect the end users: the company was the first, and at the moment is the only one in the sector, to have its material certified by an independent laboratory, which conducted 14 tests certifying that it is safe with regard to health and absolutely non toxic and non cytotoxic.

With regard to environmental protection, the cradle-to-cradle approach was followed starting with the production plants' design phase. Therefore, the possible impact on the environment is taken into account and is limited to its possible minimum in each production step up to disposal. To start with, the raw material (graphite, a completely natural material) is treated through physical processes only and does not require chemical reagents. In addition, it was possible to obtain a practically zero waste results with very low energy consumption. In some cases, such as environmental applications, graphene itself can be reused and recycled.
Last November, this special care allowed Directa Plus to obtain the ISO 14001:2015 certification, which certifies and guarantees the ecological efficiency of its environmental management system.

Italian textile machinery goes green through ACIMIT "SUSTAINABLE TECHNOLOGIES" PROJECT

Italian textile machinery companies are working to provide technology solutions that place reduced consumption in energy, water and chemical products at the center of the production process in the textile industry, supporting their customers in order to reach the target in terms of efficiency and cost savings. ACIMIT Sustainable Technologies is a project with the aim of developing and promoting these key issues for the textile industry. The commitment of Italian textile machinery manufacturers involved in ACIMIT project to research advanced solutions that respond to sustainability criteria translates into environmentally efficient technology solutions that provide significant benefits to users, in terms of reduced production costs. In September 2016 ACIMIT members companies involved in the project (named Suppliers of Sustainable Technologies) were 42.

The ACIMIT Green Label, validated by an international certification body, RINA (www.rina.org), identifies the energy and environmental performances of each labelled textile machine and makes them easily recognizable and comprehensible. Specifically, the quantity of equivalent emissions of carbon dioxide (Carbon Footprint - CFP) produced during the machine's operation, is the parameter that has been chosen to provide an environmental efficiency value to the machinery being labelled. Thanks to the ACIMIT project more than 1000 Green Labels have been produced since June 2011. This is a crucial result that promotes the project's scientific commitment and the efforts displayed by the Suppliers of Sustainable Technologies, yielding important objective goals. Indeed, thanks to the Green labelled technologies developed by Italian manufacturers, 221,000 less tons of CO2 eq. were emitted into the environment in 2014, the equivalent of reducing CO2 eq. emissions generated by 38,000 cars.

The technology innovations implemented by companies involved in the project within their machines translate in economic benefits for machine users too. The saving for the customers produced by "Suppliers of Sustainable Technologies" was calculated on the information provided by the database of the Green Labels and on the quantity of material processed by the sample machine defined by each company. As regards the energy consumption the reduction also reaches 30%. As for the water consumption in the finishing sector the reduction is on average 27%.

For more information please visit www.green-label.it

Thermal stability and flame retardant properties of polyester fabric finished by boehmite-doped hybrid sol-gel

In the last years the demand of fabrics for technical uses has shown a worldwide growth much more significant than that of the traditional textile, reaching a market value of € 30 billion in Europe. It corrisponds to 30% of sales in the European textile industry, excluding clothing (Source: Euratex 2014). These fabrics are characterized by a high technological and innovative level, offering many different applications in the protective clothing market, e.g. automotive and engineering, also including products for sports, furnishing and for medical fields.

One of the most used fibres for the production of technical textiles is polyethylene terephthalate (PET), a thermoplastic semi-crystalline polyester which exhibits good mechanical characteristics conjugated with a relatively low cost, a high dimensional stability and very good resistance to chemical agents and environmental conditions. Despite these beneficial properties, PET also has many disadvantages, such as poor dyeability, electrostatic charge accumulation and pilling tendency, most of which are referable to its hydrophobic nature. One of the biggest problems to be solved in the use of polyester fabrics is probably the burning behaviour of the polymer, that melts at a relatively low temperature, between 250 and 290°C.

In particular, important chemical changes take place on the macromolecule at the pyrolysis temperature, with production of CO, CO2, acetaldehyde, benzoic acid, terephthalic acid, acetic acid, hydrocarbons (such as methane and benzene), vinyl benzoate and divinyl terephthalate [1]. However, the major limitation in the use of polyester is represented by the tendency to drip during combustion, increasing the damage caused by the flame. In fact, during melting the polymer can propagate ignition sources and cause very serious damage in contact with the human skin. Many studies about flame-retardant products for PET, focused on dripping of melted polymer, are reported in literature [2].

The main approaches involve products containing phosphorus and / or halogen, used:

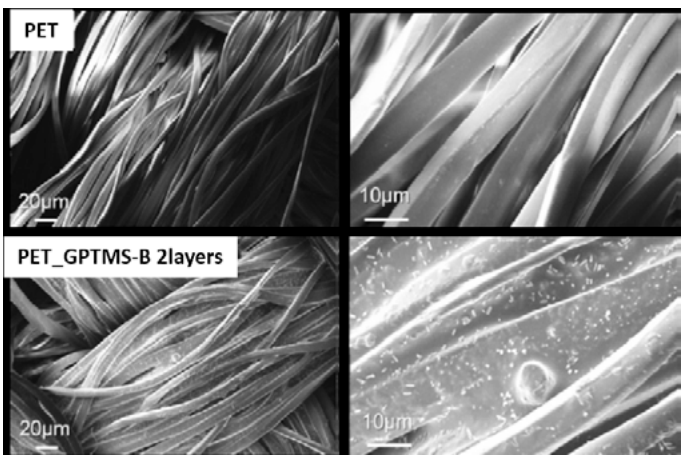
1. as co-monomers in the polymeric structure during synthesis of the polymer;
2. during extrusion;
3. by means of impregnation or coating processes, in the finishing step.

In fact, compounds containing halogen and/or phosphorus inhibit free radical generation during combustion and reduce the availability of the fuel through the formation of a protective barrier, called char. Nevertheless, in recent years, due to both the relevant legislation in force and voluntary standards, the use of flame retardants containing halogen has been banned since they are able to emit toxic gases during combustion or the incineration stages. This consideration suggested research of halogen-free flame retardant in accordance with both human safety and the environment. Recently, inorganic hydroxides, such as aluminum trihydroxide and magnesium hydroxide, have replaced halogen-based flame retardant chemicals in many applications due to their better environmental compatibility [3]. Their main advantages are the endothermic decomposition accompanied by the release of water, resulting in a cooling and dilution effect during the combustion phase. Boehmite (γ-AlO(OH)) is an important precursor of aluminum-based compounds, able to improve the formation of carbonaceous residue (char) during combustion.

In spite of this, it is not as efficient as aluminum hydroxide (Al(OH)3); boehmite has a layered structure and in a similar way to montmorillonite or hydrotalcite, offers promising potential to obtain nanocomposite materials which, during combustion, realize ceramic surface layers able to act as a protective coating against flame.

In this study, boehmite was immobilized on polyethylene terephthalate fabric (100% polyester, PET; 140 g/m2) by (3-Glycidyloxypropyl) trimethoxysilane (GPTMS), a hybrid precursor widely used in sol-gel synthesis. GPTMS is characterized by the presence of three hydrolyzable alkoxy groups, able to condense themself producing ceramic films, and of an epoxide group with well known reactivity. In several studies [4,5,6] it was shown that this sol-gel precursor is able to create transparent and porous ceramic films on the surface of treated fabrics. At the same time it is able to incorporate in the ceramic matrix functional molecules with the result of immobilizing them on textile surfaces. Selected polyester fabrics were treated with only the precursor (GPTMS) or with the combination of GPTMS and boehmite (GPTMS-B), using pad-cure method. The drying and curing conditions were 80°C for 5 minutes and 170°C for 4 minutes, respectively. The treatment was repeated twice to allow the deposition of two layers on the substrate surface. Chemical and morphological characterizations were carried out by FT-IR spectroscopy and SEM-EDX analysis. The thermal stability was performed by thermo gravimetric analysis (TG), while the flame behaviour was investigated according to the ASTM 4804 standard.
As shown in Figure 1, the morphological analysis suggests the formation of a layer of silica and boehmite microaggregates, uniformly distributed on the treated fibres.

Figure 1. SEM images ad different magnification of reference sample (PET) and polyester fabric treated with the combination of GPTMS and boehmite (PET_GPTMS-B 2 layers).



For a deeper interpretation of the combustion behaviour of textile fabrics treated by GPTMS or boehmite, alone or in combination, thermogravimetric analysis (TGA) was carried out on treated and untreated samples. TGA is an important technique to measure, in a controlled atmosphere, the amount and rate of change in the mass of a sample as a function of temperature. The results obtained under air atmosphere and reported in Figure 2, show that, with respect to the pristine fabric, the treated polyester samples have different thermal behaviours. In fact, compared to the untreated fabric or the PET only treated with boehmite, the sample treated with GPTMS registered a strong anticipation of the degradation process. Furthermore, regardless of the number of layers, at 600°C the same treatment showed a final residue greater than both pristine PET and sample only treated with boehmite. This experimental result is more evident in the case of sample treated using a GPTMS-Boehmite combination in which, for both layers applied, it is possible to highlight the largest amount of residue, due to the synergistic action of the proposed chemicals.

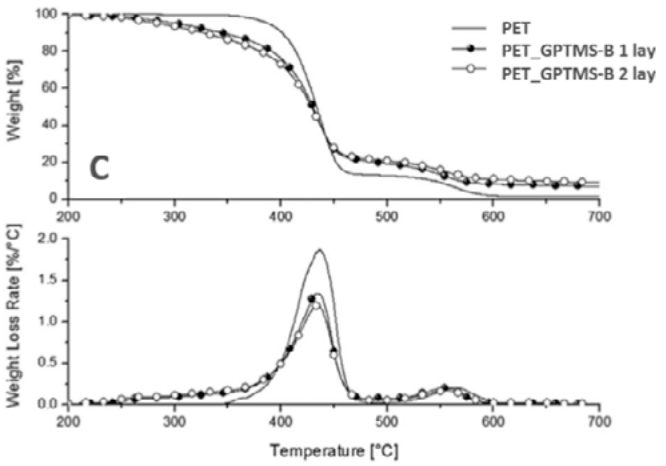
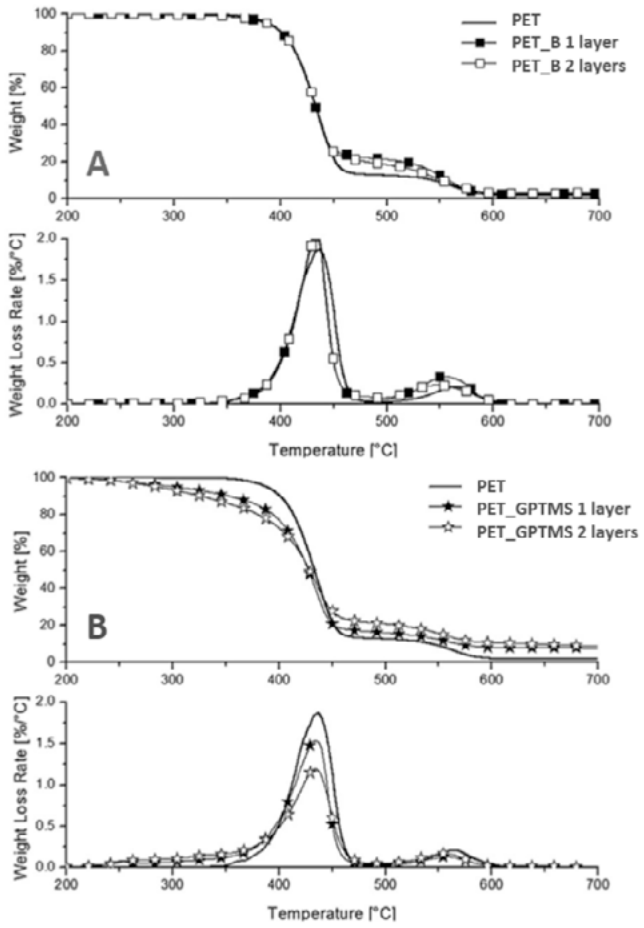


Figure 2. TGA and dTG (in air) of PET fabrics treated with 1 or 2 layers of: boehmite (A), GPTMS (B) e GPTMS-B (C).



Finally, polyester fabrics were tested in presence of a flame to study the drip phenomenon. In fact, as already mentioned, in the case of polyester it is one of the biggest problems related to the combustion of the polymer. In fact, the melting of the polymer and the formation of incandescent drops can remove part of the material, by acting as a secondary source of ignition, or, in the worst case causing very severe burns to human skin. Table 1 shows the results of the flammability tests performed on the polyester reference and on fabrics treated with bohemite (PET-B), only with (3-Glycidyloxypropyl)trimethoxysilane (PET-GPTMS) and with a combination of sol-gel precursor and bohemite (PET-GPTMS-B). Tests were carried out by positioning vertically the sample above a flame, for 10 seconds. The results, listed in Table 1, were evaluated as a function of combustion time, the residues and the formation of drops of molten material. For the untreated sample, the combustion process causes the drip phenomenon within 8 seconds and maintains a residue of 20% at the end of the test. With respect to the pristine PET, only boehmite does not substantially change the observed results while, analyzing the sol-gel treated sample, it is possible to observe an increase of the residue (28%). Unfortunately, in the latter case, an unwanted presence of dense and black smoke was observed. It is the additive effect of GPTMS and boehmite that provides the most interesting results: this treatment, based on the combination of two chemicals, allows the generation of a residue (37%) almost double the untreated sample, removes the drip phenomenon and simultaneously acts as a suppressor of smoke.
Furthermore, the morphological analysis on the residual product showed the maintenance of the fabric structure that is not completely destroyed by the flame. Even if charred, the coating is still visible confirming its protective role for the textile sample.

Table 1. Flammability data of treated and untreated polyester samples.

Sample	t_{drop} (sec)	Residue (%)	Image
PET	8	20	
PET_B	9	21	
PET_GPTMS	//	28	
PET_GPTMS-B	//	37	

In conclusion, the flame retardant finishing realized on polyester fabric, using a sol containing simultaneously boehmite and GPTMS, has greatly improved its combustion behaviour, as confirmed by both the char increase and the suppression of the drip phenomenon. The obtained results confirm the effectiveness of this sol-gel based treatment realized without halogen, phosphorus, nitrogen and heavy metals. It can be used as an environmentally friendly process, to replace advantageously the flame-resistant products currently used in textile finishing treatments.

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RECYCLING

Textile recycling as a contribution to circular economy and production waste enhancement

The environmental impact of the textile production chain could be ascribable to different stages of the system itself. For instance, synthetic fibre production deeply affects the environment because of the employment of nonrenewable resources as well as in natural fibre production (e.g. Cotton) big quantities of water and pesticides are used.
Furthermore, waste amounts represent a remarkable issue whether they are produced during production and processing of textile materials, such as production waste and excesses (industrial or pre-consumption), or at the end-of-life of products, once it had been sold and used (post-consumer materials).
In this sense, a particular attention have to be given to recycling processes for both products and waste, aiming at reintroducing them in a new industrial process, through new manufacturing ways, and so, starting a new life-cycle.

As an example, Assosistema stated that recycling secondhand clothes could:
- cut textile environmental impact on global warming down by 53%;
- reduce pollution caused by the textile industry by 45%;
- cut water eutrophication down (caused by nitrate and phosphate excess in water flows) by 95%.
However, there are different approaches to be used and different ways to identify suitable technologies that could lead product manufacturing towards a remarkable reduction of production costs, while considering recyclable materials as a real and efficient alternative. Among them, there are technologies for production waste recovery.

Production waste recycling

In Italy, tons of wasted textile fibres could be allocated for other applications, reducing the impact of Textiles & Clothing. Textile recycling could supply low-cost raw materials with low environmental impact for many application fields, such as automotive, furnishing, sailing or insulating panel production.
According to data released by Assosistema, each year in Italy, 25,000 tons of textile products are produced (about 14 kg per person), but only a small share of them is recovered at their end-of-life.
As far as textile waste recycling is concerned, better results had been obtained in other countries, in which Switzerland stands out, recycling about half of textile waste each year throughout the country.

Opportunities for raw materials with low environmental impact

Since the quality of materials considered as wastes is higher than expected, it could be a good practice to recover them through a real recycling plan, both mechanical and chemical. Furthermore, those recovering processes are often more sustainable than raw materials manufacturing.

However, in order to reach a good rationalization level, the efficiency of those processes should be improved as well as the quality of recycled materials. For instance, in order to create systems that could make textile recycling easier, the (automatic) phase of separation of post-consumer materials should be enhanced as well as advanced technologies should be developed for dyestuffs and finishing extraction and blended fibre separation in fabrics avoiding fibre damages that could represent a severe problem in terms of quality.

Recycling technologies

For that, in the last few years, many studies had been carried out to improve textile recycling of industrial and post-consumer wastes.

As far as chemical recycling is concerned, cotton has been deeply studied and today many pilot schemes had been put in action in order to evaluate technologies and results on the market.

On the contrary, technologies for PET and PA 6 recycling are already consolidated, even if further studies could offer the chance to enhance the entire process. In chemical recycling, for process efficiency, fibre chemical composition and dyestuff/finishing nature are really important. However, the employment of enzymes, could be a further factor for process improvement, while treatments with ionic liquids for fibre and finishing separation are being carried out.

As far as mechanical recycling is concerned, studies had been focused on the process itself, according to fabric structures (plain fabrics, knitted fabrics) in order to protect the quality of recycled fibres. In the future, it will be necessary to develop a more systematic spinning process in order to guarantee a good production pace and a high quality level obtained from recycled fibres.

In conclusion, it could be useful to remember the most famous recycling example in the textile sector, i.e. PET bottles. After that polluting substances had been selected and taken, PET can be transformed in continuous filaments for clothing application (fleece, paddings, composite materials).

A new generation of performing and eco-friendly fabrics

In the development of new fabrics, TAIANA has always strived for the development of eco-friendly fabrics achieving challenging targets for a more eco-friendly future and an environmental commitment, moving away from marketing gimmicks.
The result of this philosophy is the new project from TAIANA called RELYFE which is a further step towards the circular economy. RELYFE is not only a range of fabrics of new generation but it's also a pioneering project that leads the way to a revolutionary idea of recycling a product of excellence.

YOGA
Yoga represents the ultimate innovation in terms of sustainability among stretchable fabrics. In fact, it's not only made with a mere recycled polyester, but it's created with the elastic portion of a recycled yarn. Yoga is studied, designed and produced in Italy, respecting the strictest eco-friendly targets.
It's a woven stretch fabric very interesting for its technical characteristics. This article, combined with great lightness (160gr/sqm) peculiar features of much more heavier fabrics; this means that you can realize a sportswear much more lighter, more compact and best performing.
In particular stretch, compression and recovery values are at the top of its sector.
Its structure particularly compact, much more of 200 yarns for sqcm, makes this fabric extremely durable to abrasion and to the pilling formation.
Moreover the values of UV protection are very high (UPF50+), and it makes YOGA the ideal partner for outdoor sports.
Elastomer used is resistant to external agents as sweat, sunlight, chlorine and washings.
All these features make YOGA a sampling of new generation and the its eco aspects is only one basic requirement for an article from extraordinary performance.

YOGA key features:

• Manufactured from 100% recycled post-consumer polyester- Designed and manufactured entirely in Italy;
• 4-way stretch fabric – for maximum comfort and fit;
• The elasticity woven remains constant throughout the life of the garment;
• Extremely thin – only 0.4mm, as a second skin;
• UVA / UVB – UPF 50 protective;
• Microfiber structure for a silky hand-feel;
• Easy drying – thanks to the specific structure, it dries very quickly;
• Hi-Modulus – for a pleasant feeling of support and slimming effect;
• Studied to be used also in chlorinated swimming pool and SPA.

YOGA has two cores: SILK and SPORT

Yoga Silk: suitable for Fashionable athletic-wear as well as for glamor beachwear. Designed for the most innovative brands, it's a connection between tradition and future.

Yoga Sport: developed for active sports, specifically for swimming, it's treated with LOT'O'DRY DWR for a super quick drying. Dedicated to the growing world of fitness, ranging from daily sport activity to extreme sports.

Filatura C4: Re.Verso™ partner of excellence for the first time at Heimtextil

"Thanks to a shared philosophy and dedication to sustainable manufacturing and business, both companies have collaborated, with the support of C.L.A.S.S., to present a new dimension in **eco-smart re-engineered wool based yarns, signed Re.Verso™ by Filatura C4**, now especially targeted for the contract market and apparel" declared **Alessio Catani**, Managing Director of Filatura C4. Since 1962, Filatura C4 is known for smart innovation in the contract and furnishing market and is achieving specialization in the recuperation of technical and natural fibers. The company offers a wide range of styles and typologies for the Technical, Natural and Classic category. The philosophy is the customized collaboration with the clients, personalizing innovations to create ad hoc applications. Filatura C4, due to its past and know-how, is the exclusive Re.Verso™ partner for contract and apparel.

Re.Verso™ is the trademark of a new, totally traceable, certified and transparent, Italian textile system for wool based materials. It is a fully integrated chain for truly unique and highly valuable materials.

This joint venture began when Filatura C4 realized the unique added value the Re.Verso™ concept can offer, neatly matching their own business profile and philosophy: the creation of high quality products and performances through Research & Development of materials with low environmental impact. Re.Verso™ collects sorts and reprocesses pre-consumer textile waste in a new way that is accredited, fully transparent and fully traceable at every stage. This means it completely matches a Filatura C4 creative dedication to be 100% Made in Italy, while making the best quality recuperated yarns that perform without compromise, and can replace virgin yarns use, saving on raw materials, costs and environmental impacts.

RE.VERSO™ COLLECTION

This collection has been created, to meet the increasing demands of the market in the recuperation of textile fibers and to meet environmental responsibility. The Re.Verso™ yarns are manufactured from a combinations of wool, mainly re-engineered coming from pre-consumer textile materials, with artificial and synthetic fibres and are available in a wide range of counts that may vary from Nm 5.000 to Nm 9.500 and can be offered in single end or twisted.

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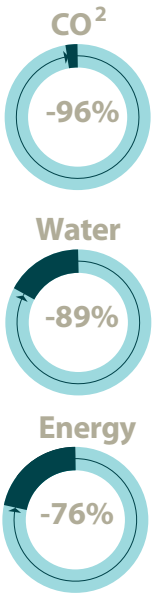
Re.Verso™ boasts the following certificates: Global Recycling standard (GRS) and SAB8000.

Re.VersoTM holds a LCA study conducted by PRIMA Q that illustrates the following energy, water and emission savings:



Re.Verso™ is a unique, certified, fully integrated manufacturing Italian chain, a first to market business based on the re-engineering of wool and cashmere materials from pre-consumer off cuts. An evolved example of circular economy.

Through this Re.Verso™ line, the company offers products of good quality,with low environmental impact, using eco-sustainable raw materials in an eco-responsible production process.

CERTIFICATION

Textile Eco-labelling

Results showed by market surveys (Nielsen 2013) highlighted a strong increase in customers' interest in buying not only safer goods, but also products that have been produced with social and ecological criteria. This trend outline interesting perspectives for all markets, also because a remarkable share of customers confirmed to be inclined to pay higher prices for such products.
Main European customers' worries involve health and safety protection of workers, human rights' respect from operating companies (e.g. child work is unacceptable), environmental protection in general and, in particular, the reduction of greenhouse gas emissions.

Moreover, companies, public bodies, international organizations show bigger interest towards complementary ways of promotion of health and safety concepts, that become real selective standards in product and service purchases from suppliers and a strong marketing tool for sales and advertising.

This trend is becoming a real driver for tools, that could make identification easier for all products that answer to those requirements.

One of this tool is customer goods' labelling, with all product details supplied by the company, or with logos of third parties that could guarantee the compliance of those products with specific requirements (i.e. governmental/international organizations, EU, private third parties ecc.).

There are also standards and marks that mainly contributes to communication between operators (es. ISO 14001 or Oeko-Tex, that is used for final end-users too).

Finally, joining a code of behavior outlined by companies, buyer groups or authorities is another tool that could be deployed too.

Today, a universally accepted definition of "ecological product" doesn't exist. However, since 1998, ISO (the International Organization for Standardization) developed the 14020 standard series on environmental labels/marks and declarations.

Environmental labels and declarations outline environmental features of products or services and represent a proof of the producer's attention on environmental issues, while customers are provided with more details about products' environmental features at the same time.

In particular, ISO 14024:1999 standard focuses on ecological label Type I, the ISO 14021:1999 to Ecological labels Type II, ISO 14025:2000 Ecological labels Type III.

Furthermore, since climate change had been identified as the main challenge of next future, many international, regional and domestic initiatives have been launched, aiming at reducing greenhouse gas (GHG) concentration in the atmosphere; some of them are compulsory (EU ETS), others are voluntary (ISO 14064, ISO/TS 14067 "Product Climate Footprint", PA 2050, GHG Protocol).
In any case, those initiatives on GHG are based on the evaluation, monitoring, reporting and audit of GHG emissions and/or their related reduction rate.

Below, an overview of ecological labels and declarations is reported:

ISO 14024 – Environmental label Type I

Those are voluntary labels conferred with certification by a third party. They are based on a multiple criteria over the entire lifecycle of the product.
Criteria fix limits the production has to be in compliance with, to obtain permission of being put on the market. Type I labelling programs have been introduced in many countries, such as: the Green Mark in Taiwan, the Ecolabel in EU, the Eco Mark in Japan and the Green Seal in the USA.

Table 1. Examples of Environmental labelling Type I worldwide

Country/Region	Label	Logo	Website	Notes
Canada	EcoLogo		ic.gc.ca	Created in 1988, this label involves more than 300 product categories and 7,000 certified products.
Germany	Blue Angel		blauer-engel.de/en	Environmental label created by the German Federal Government in 1978. It enhances eco-friendly features of products. Today there are 80 product categories, 1,500 certified companies and 12,000 certified products.
Taiwan	Green Mark		greenliving.epa.gov.tw	This mark had been created in 1992 by the Environmental Protection Administration (TEPA). Today, more than 6,000 products from 112 categories had been certified with this mark. Since 2002, "Green Mark" products have been considered as preferable in public procurement.
EU	Ecolabel		ecolabel.eu	Voluntary European Mark, founded in 1992, to boost the commercialization of eco-friendly products. Textile categories involved: flooring, mattresses, footwear. Despite not being familiar for most customers, this certification could be an advantage in Green Procurement since GPP criteria are similar to Ecolabel Requirements.
USA	Green Seal		greenseal.org	Founded in 1989, it isn't applied to textile products.

Country/Region	Label	Logo	Website	Notes
Japan	Eco Mark		ecomark.jp	This is the only Japanese ecological label Type I. Created in 1989, it is managed by the JEA (Japan Environment Association) and controlled by the Ministry of the Environment.
World	Oeko-Tex Standard 100	  	oeko-tex.co	OEKO-TEX® Standard 100 is a worldwide independent testing and certification system, from raw materials, to semi-finished goods and end products at all manufacturing phase, with a particular attention on harmful substances contained in fabrics. Introduced to overcome textile supply chain fragmentation and differences among countries legislations, it evolved itself into 2 new standards: Sustainable Textile Production (STeP) – for manufacturing processes – and Made in Green – for products – always related to OEKO-TEX®.

ISO 14021 – Environmental label Type II

This category involves environmental labels and self-declarations on environmental aspects (e.g. Recyclable, Compostable etc…) stated by producers, importers or retailers, without the intervention of independent certification authorities. However, the regulation includes some parameters to be respected and requirements about label contents.

ISO 14025 – Environmental label Type III

Environmental declarations that report details based on specific requirements, containing an evaluation of the environmental impacts, according to a LCA system analysis over the whole product's lifecycle (as specified in the ISO 14025 – Environmental label Type III). All labels are checked and verified by independent bodies and they must be always clear and comparable with each other; e.g. Environmental Product Declarations (EPD).

The Eco Leaf Environmental Declaration is an example of Type III label. Introduced in 2002, this label is managed by the Japan Environmental Management Association for Industry (JEMAI).

A different approach to product safety

In the last few years, the certification scenario became more and more complex and articulated, with new emerging approaches. An example of this situation is the new DETOX campaign launched by Greenpeace. It is not a real certification label, indeed, but it claims for a harmful chemicals' reduction in fashion goods, rousing the entire sector from its roots about this topic. The new "visa" of the environmental association is now a real brand at customer eyes.
In fact, after the launch of the DETOX campaign in 2011, many fashion designers and stylists joined this cause, designing, producing and selling eco-friendly clothes. This brought dozens of important international fashion brands, once only interested in emotional and aesthetic aspects, to join DETOX protocol, giving birth to a following more conscious and systematic approach in environmental certification and features.

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The certification of the Chain of Custody

A response to the request of wood based textiles

Clothes made from fibers derived from wood are gaining approval by the final consumer who, supported by a mature awareness in choosing products with a strong connotation about the environment and sustainability, directs their purchases meticulously and environmentally by promoting products that are not derived from petroleum or fossil materials.
In this way it contrasts the use and exploitation of non-renewable resources, so destined inexorably to exhaustion by encouraging the consumption of textile fiber of plant origin that are, however, renewable, biocompatible, recyclable, insulating and hygroscopic.
So these products bring with them a number of benefits that cannot be neglected and consumers begin to appreciate.
But we must also take into due account the critical environmental matter associated with these products: deforestation.
We are cutting down trees everywhere, from the boreal forests of Canada to the tropics of Indonesia and Brazil thus contributing to the reduction of natural green areas of the Earth caused by the over-exploitation of forests to meet the request for timber for fuel, to create new lands to be used as intensive cultivation, to satisfy the demand of precious woods and to produce the raw material for wood-based which will then be transformed into a variety of common products; for example, the paper and the textile fibers derived from wood.
We are witnessing a growing demand coming from the market, concerning the confirmation of the eco sustainability of these textiles whether or not simple legal obligations.

It is therefore necessary to identify a form of guarantee in order to show that natural products based on wood can also be managed from their origin, the forest, then through the transformation process to reach finally their intended use, sustainably and therefore it may declare without fear of retraction that the common everyday products can also have their "green" soul.
The answer to everything lies in the Chain of Custody certification and, for this reason, the certification schemes of Chain of Custody and FSC and PEFC, can be a practical response to market needs with particular reference to textile fibers derived from wood.

These kinds of certification are well known and recognized around the world and are considered, unanimously, a guarantee for products manufactured using raw materials handled in a controlled way, respecting law, environment and sustainability.

This because both certification schemes are based on the concept of the final product traceability from the raw materials by guaranteeing their origin from certified forests, managed in a controlled form or otherwise from recycled materials.

FSC and PEFC Chain of Custody certification certifies the origin of the wood raw material from these sources and represents for the manufacturing an opportunity to support the sales in an ethical and environmentally friendly manner.
This suggests the naming of chain of custody: each production link in the supply chain must be certified.
In the certification process a fundamental role is played by the certification body, that becomes a guarantor for the validity of issued certificates based on the fundamental principles of competence, accreditation, independence and impartiality.

Achievement and maintenance of these certifications is done through the following steps:

- Execution of an audit for initial certification at the production or transformation site aimed at verifying the compliance with the reference standard;

- If the verification and approval activities performed by the Certification Body are successful, a certificate can be issued containing details about manufacturer and articles covered by certification;

- Execution of an annual surveillance audit to check the maintenance of compliance with the reference standard.

The certificate is valid for five years and is renewed before expiry date.

CSI is accredited for issuing Chain of Custody certificates according and FSC® and PEFC™ standards and offers to its clients 15 years of recognized experience in certification and testing.

Carlo Dassi
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carlodassi@csi-spa.com

PERFORMANCE AND SUSTAINABILITY

Despite being considered as a remarkable topic only in recent years, sustainability in textile production is becoming a real feature and an identification mark for the Italian textile production. A big number of companies already introduced on the market some products that, despite offering the same innovative performances of the traditional production, characterize themselves for the employment of recycled raw materials or renewable resources, lower energy consumption and a reduction of products with a severe environmental impact.

In the following chart, a real example of products made with sustainable materials and processes, and so within a sustainable vision, is given:

Argar S.r.l			
Product Name	Product Type	Performance / Features	Contribution To Sustainability
2.0	Polyester knitted fabrics	ISO 20471 for high visibility fabrics	post-consumer recycled polyester (from PET bottles)
Giardini S.p.a			
Product Name	Product Type	Performance / Features	Contribution To Sustainability
41Z nappina eco star	Water PU coated natural fabric	Solvent free Product	Natural fibers with PU in water
Chamois T19	polyester microfiber	Solvent free Product	Solvent free production of fabrics
718 nubuk 5 eco	polyester microfiber	Solvent free Product	Reduction of substances with severe environmental impact (ozone-water)
40Q nappa soft eco	Water PU PES coated microfiber	Solvent free Product	Solvent free coating
Monvania S.r.l			
Product Name	Product Type	Performance / Features	Contribution To Sustainability
PERPETUAL	Texturized polyester	Recycled polyester	Recycled PET from wastes (domestic and not)
Pozzi Electra S.p.a			
Product Name	Product Type	Performance / Features	Contribution To Sustainability
CS	Yarn	Flame retardant	Spun in Italy, with hydroelectric and photovoltaic energy, self-produced by our own implants.
Ecostar	Yarn	Recycled	Obtained from recycled materials and spun in Italy, with hydroelectric and photovoltaic energy, self-produced by our own implants.
Crabyon	Yarn	Antibacterial	Produced with natural Chitosan and spun in Italy, with hydroelectric and photovoltaic energy, self-produced by our own implants.
Nature Care	Yarn	Eco-friendly	Range of yarns for clothing, furnishing and technical applications, manufactured in Italy in compliance with current regulations and using renewable sources of energy, entirely selfproduced by our own implants.
Radici Group			
Product Name	Product Type	Performance / Features	Contribution To Sustainability
Radifloor®	BCF Yarn	Polyamide 6	Produced using processes based on renewable sources of energy
Radilon® staple fibre	Staple fibres	Polyamide 6	Produced using processes based on renewable sources of energy

Radilon®	Textile yarn	Polyamide 6 and 6.6	Produced using processes based on renewable sources of energy
Radilon® 6.10	Textile yarn	Polyamide 6.10	Made with bio-polymers obtained from renewable raw materials
dorix® 6.10	Staple fibres	Polyamide 6.10	Made with bio-polymers obtained from renewable raw materials
Cornleaf	Textile yarn	Derived from a PLA-based polymer	Made with bio-polymers obtained from renewable raw materials
Radifloor®	BCF Yarn	Polyamide 6	Dope-dyed
Radigreen®	Yarns for articifial grass	Polyamide, Polyethylene,	Dope-dyed
Radilon® staple fibre	Staple fibres	Polyamide 6	Dope-dyed
Radilon®	Textile yarn	Polyamide 6 e 6.6	Dope-dyed

Servizi Ospedalieri S.p.a

Product Name	Product Type	Performance / Features	Contribution To Sustainability
SO.X-VERSUS	Radiation protective clothing	The only washable and sterilizable product	Recyclable radiopaque layer. Solvent free production.
SO.HYBRIDUS	Surgical kits for operating rooms	Hybrid kit including reusable and single-use fabrics	Replacement of some single-use parts in favor of reusable components
SO.COMFORT	O.R. uniforms	Lyocell-fabric uniforms	Use of Lyocell fibres, obtained from cellulose pulp of sustainable cultivations
S.O. DREAM	polyester mattresses	Mattresses in 3D manufacturing	100% recyclable product that requires minimal use of cleansers and water to be washed

Soliani EMC S.r.l.

Product Name	Product Type	Performance / Features	Contribution To Sustainability
Tessuto Ripsto Argento RFID	Electrically conductive fabrics	Certified RFID shielding of 100dB in electric field on the RFID frequency	It guarantees a good life-cycle of the product even after an intense mechanical and surfacial use and it can be applied to any unused or waste fabric

Lamberti S.p.a.

Product Name	Product Type	Performance / Features	Contribution To Sustainability
Rolflex Polyurethanes	Waterborne Polyurethane Dispersions	Provide Chemical and Phisical resistances to Fabrics, Woven and non Woven	Reduction of the Volatile Organic Compounds up to zero, elimination of SVHC solvents, as for example, DMF (Dimethylformamide), NMP (Normal Methyl Pirrolidone) and NEP (Normal Ethyl Pirrolidone), that can be used in manufacturing process line like in Coating and Impregnation.
Rolflex TECH	Waterborne Polyurethane Dispersions	Watercolumn and Moisture Vapour Permeability to fabrics	Water-based polymer, alternative to solvent based coatings. Reduction of the emissions of Volatile Organic Compound to the Environment
Rolflex PU 148	Waterborne Polyurethane-Acrylic Copolymer Dispersion	Impart High abrasion resistances and high strenghts to the fabrics without using Melamine/Formaldehyde systems	Elimination of Formaldehyde and SVHC substances, as for example, DMF (Dimethylformamide), NMP (Normal Methyl Pirrolidone) and NEP (Normal Ethyl Pirrolidone), in final articles. Reduction of the emissions to the Environment
Rolflex BK 18	Waterborne Blocked Isocyanate Dispersion	Waterbased crosslinker to improve fastness to all treatments	Elimination of Formaldehyde and SVHC substances, like Methyl-ethyl-ketox-ime, in final articles. Reduction of the emissions to the Environment
Piroflam ECO New	Waterbased dispersion of organic and inorganic compounds with binders	Eco-Friendly (Alogen and Heavy metal free) flame retardant for back coating and foam coating application	Flame Retardant coating Alogen and Heavy metal free and free of organic phophorous derivatives. Low VOC and FOG

Pontetorto S.p.a.

Product Name	Product Type	Performance / Features	Contribution To Sustainability
8835/EARTH	FLEECE	A perfect combination between technical performances of fleece and environmental performances.	100% biodegradable Nylon
8317/M/REPREVE	STRETCH FLEECE	Fabrics produced with the smallest environmental impact, still maintaining performing features of stretch fleece, in terms of breathability and thermal insulation	Yarns obtained from polyester 100% recycled from PET bottles
7846/M/NEWLIFE	STRETCH FLEECE		
7848/NEWLIFE	FLEECE		

Finding new approaches to the market with new business models

A conference arranged in Milan by TexClubTec, Università Cattolica and Giottoindustrial networking S.A., focused on case histories of companies and authorities that had been able to reach a great success, thanks to a good understanding of market trends and to their ability to interact efficiently with the market itself.

It is commonly agreed that creativity are one of the strength of Italian companies, mainly in two specific fields: design and technological innovation.
After all, when talking about weaknesses of Italian companies in general, financial vulnerability (under-capitalization) is the main topic, partially along with their reduced dimensions, against a world that is more and more globalized.
In this short list of pros and cons, it seems to miss the reference to their ability to approach the market in new and innovative ways, as if this attitude could not affect company performances.

If we consider some current example, however, it cannot be neglected that market sensing, market creation and market/customer management represent one the most relevant field on which companies have to focus in a globalized and interconnected world. Thinking of some leading companies that asserted themselves in the last few years on the market, it cannot be unnoticed how their success had been fostered not only by technological skills and product creativity, but also by their ability to understand signals of change as well as latent and real needs and to create new business models able to offer valuable products that better answer to customer expectations (e.g. Ikea or Decathlon, or H&M, Zara and Calzedonia in the textile sector).
In contrast, in the last few years, weaknesses of the Italian system (country and companies) in asserting themselves on fields in which Italian products should have been the best had been highlighted.
Even in the food industry, three main product ranges, such as coffee, pizza and ice-cream, saw the rise of not-Italian brands worldwide: Nespresso is now a synonym of Italian coffee, Pizza Hut is the global brand for pizza and Häagen-Dazs asserted itself as a producer of high quality ice cream while Italian brands and products found big hurdles in coping with new business models and the competitiveness of international brands, even on their domestic fields.

There had been also many examples of underestimated products, planned and designed in Italy, that obtained a great success on the market, after being sold to foreign companies. An example of that is the common rail system for diesel engine that, after Marelli sold it to Bosch, it became a real must for the automotive sector.

However, the inability to pick up and understand the market and its trends is not the real issue. The real problem is that, despite their strong creative and innovative skills, Italian companies lose the challenge when coping with global markets and the dynamism of both customers and competitors.

Sometimes it is the lack of attention to be responsible for that; sometimes it is due to organizational weaknesses. It is to be highlighted that this phenomenon could be caused by issues related to company culture and attitude or to organizational hurdles. The company organization represents and stands for the vision and the culture of its employees and decision makers, also in the relationship between company structure and its external branches.

Beyond the leading role it plays still today, the Italian Fashion and Textile industry is not an exception in this situation. Despite gaining importance with several brands in the recent years, the textile supply chain ran down with evident signs of weakness.
Furthermore, the Italian feature that some fashion brands keep still today is only the name: Gucci, Valentino, Loro Piana, Corneliani and more; all those Italian leading companies had been sold to foreign groups.
As far as the textile industry is concerned, the situation is not so different and, if we rethink about the glorious era of the Italian textile industry, it is clear that, despite the technological/technical expertise and innovative creativity, something didn't work as expected.

The Italian textile industry couldn't evolve and innovate itself, being stuck with traditional business models, the first to be affected by the rise of developing countries. Design and brand management still are the strongest part of the sector, while production remains the weaker one. Italian companies couldn't find new horizons and opportunities. On the contrary, for example, about 50% of German companies reallocate themselves in the field of technical textiles. Competitiveness push companies to raise quality or to better manage production costs, a field in which is quite impossible to compete today.
Except for some companies that still confirm the leading role of the Made in Italy in the world thanks to high quality products, most part of Italian textile districts severely reduced their dimensions while others had to find some other ways to survive through reorganization and personnel reduction. Or more, in some cases, companies had to find an acceptable balance with new Asian production companies, that have been recently established in Italy.

In such a distressing scenario, there still is a chance for a real change, provided that companies give to the market the importance it really deserves. In order to achieve this goal, there are three main areas of intervention it is essential to take action in:
Market observation and trend analysis for all signals, whether they are strong or weak. A good strategy should be leaving the daily pressure behind and thinking of the future, being aware that a good answer could only come from a market that had been efficiently "questioned".

Team working: being able to be a real team, combining resources available all together. This is a crucial field for the Italian production system (textiles included), but it still see Italian companies being sceptic with regards to other companies, as if closure and isolation wouldn't be the worst practice for the economic development.
Company organization and structure have to become crucial elements in any marketing strategy, both as an essential point to recognize and identify market signals and trends and as an active platform that could allow the company to influence the reality and the market itself.

The conference
Arranged by TexClubTec, Università Cattolica and Giottoindustrial networking S.A., the conference wants to analyze the above mentioned topics, involving consistent examples of successful achievements in those three main areas: companies and authorities that had been able to build their success on market trend understanding and their ability to interact with them efficiently. Their case histories will be in-depth analyzed with the contribution of full professors of the Università Cattolica, that will translate in general practices what could be seen as a unique event.
Finally, for a complete analysis, the conference will be supported by TexClubTec (Italian technical and innovative textile association) that, thanks to its expertise and knowledge of this field, will integrate the analysis of real case histories and data with the general and current situation of technical textiles in Italy and Europe.

Date: 23.02.2017 - Time: 14.00 – 18.00 - Venue: Milan
(Updated news on: www.texclubtec.it o www.giottoin.ch)

PROGRAM DRAFT

REGISTRATION AND WELCOME COFFEE			14.00 - 14-25
INTRODUCTION	Renato Fiocca	Full Prof. of Università Cattolica, Centrimark Director	14.30 - 14.40
PRESENTATION	Bruno Dardani	Moderator	14.40 - 14.45
FIRST CASE *The ability to observe and analyze market trends*	Annalisa Tunisini Martin Thompson	Full Prof. of Università Cattolica General manager Technical Fibre Products	14.50 - 15.35
SECOND CASE *Being a team*	Clemente Bottani Karl Brentrupp	CEO Giottoindustrial networking Carbon Composites Schweiz board member	15.40 - 16.25
THIRD CASE *Organization as the main element of the marketing strategy*	Andreas Dorner Giacomo Manara	Marketing Director Lenzing AG Prof. of Università Cattolica	16.30 – 17.15
CONCLUSIONS	Aldo Tempesti	TexClubTec Director	17.20 - 17.30
QUESTION TIME	Bruno Dardani	Moderator	17.35 – 18.00

FASHION IN ORBIT
Fashion, technology, and inspiration from space



All began when the European Space Agency (ESA) invited us to design a capsule collection with innovative materials and technologies deriving from space research that we have developed together with the students of the School of Design at the Politecnico di Milano.
The results were presented at the Science Museum in London on 25th May 2016 with a fashion show Couture in Orbit that has achieved a great success by the public and the media and at the European Researchers Night in the Italian headquarters of ESA/ESRIN last 30th September 2016.

This initiative has inaugurated the first European Space Agency opening to a wider public, not only for researchers and scientists as it happens habitually, to communicate through the language of fashion the importance of scientific research carried out in orbit and its practical implications in the daily life, that very often we ignore.

The space imaginary offers fantastic experimental scenarios that can be transformed and re-interpreted by the language of fashion, so apparently distant from the scientific world that revolves around the space, for example by finding new applications of technologies for garments that could improve comfort and performance of the people who wear them. The fashion industry has an important role in this spin-off process, because it is a catalyst for trends, lifestyles and behaviors, and at the same time is open to the use of new materials, smart fabrics and wearable.
Let us remember that in fashion there are plenty of examples in which space imaginary was formal inspiration, especially in the 60's the attraction of the Moon and the space has become viral to the point that we can speak of Space Age style. But the big difference between the attraction exerted by the space on the fashion of the past, which was inspired primarily to the shapes, the colors and the style, and our collection Couture in Orbit is its ability to integrate space technology in garments looking at he same time in the same at the needs of people, observing their habits, beliefs and current trends in society.

During the concept design process of Couture in Orbit collection we observed the confinement environment and the microgravity astronauts living aboard the International Space Station (ISS) or when working outside in outer space, we analyzed their on-orbit activities and their relationships with objects that weightless generate new behaviors and actions, and above all we have found connections between living in space and living on earth, although apparently they seem to be two very different environments.

The strong interest aroused by Couture in Orbit convinced ESA to continue this experience with Politecnico di Milano launching a new Higher Education Course at POLI.design, the Consortium of Politecnico di Milano, which we called Fashion in Orbit, and that will start next 30th January 2017.

But this time we will involve not students, but professionals and companies in the fashion industry who want to explore the fashion in the era of technology and better understand how to become more aware protagonists of a epochal transformation process, knowing that space innovations will have more and more in the near future a strong influence on the behaviors and performances of people. Exploring how to the research conducted in space may inspire fashion and create new social growth and business opportunities opens many possibilities to build cross-cutting relations with experts from the industry's most technologically advanced in the world, the space one.

The space economy is growing exponentially expanding its horizons and looks at new application fields such as design, fashion, innovative textiles, but also food, cinema, art that can potentially provide large contributions to space research in their own virtue of their different point of view.

The recent Space4Inspiration ESA event organized at the Science Museum in London on 13th and 14th September 2016 was created with the intention to expand the scientific fields of interest and generate new sustainable business models crossing different sectors. On this occasion we were invited to present Fashion in Orbit as a prime example of Couture in Orbit spin-off to demonstrate how the designer can be a mediator of languages, between science and the needs of people, including project culture and know-how, among space and terrestrial companies, between technology and beauty.

With Fashion in Orbit we want to present a collection that highlights the technology, which does not hide it, that uses it outside of the garments to also give her an aesthetic value as well as functional, able to characterize the style and make it recognizable even in graphical key .
In this context, sustainability means creating spin-offs from space that could be used by many people on our planet. Technology transfers, new applications for terrestrial products become challenges that can give amazing results if they involve companies in the private sector, as is the example of Fashion in Orbit which involved Colmar as a sponsor along with TexClubTec for innovative textiles.
For informations and inscription to Fashion in Orbit
http://polidesign.net/en/FiO

by Annalisa Dominoni & Benedetto Quaquaro
Professors at Scuola del Design / Politecnico di Milano

The New Beginnign of Milano UNICA started off the right foot

February 1-2-3 and July 11-12-13 the appointments for 2017

The 23rd edition of Milano Unica, the Italian Textiles and Accessories Trade Show, which was held for the first time at Fieramilano Rho from September 6 to September 8, was visited by over 6,000 fashion companies that came to see the FW 2017/2018 collections. In terms of figures, this result is perfectly in line with the figures registered in the past September edition even if, commercially, its specific weight is more significant given the new and rigorous selection criteria adopted, characterizing this 'New Beginning'.

The presence of important companies, coming mostly from the US, China, the United Kingdom, Japan, Russian Federation and Korea, is worth noting.

The 23rd edition of Milano Unica, whose organization was made possible thanks to the support provided by the Italian Ministry for the Economic Development and by ICE Agency, its operational arm, included 382 exhibitors, 79 of which were European, and also other top-notch companies that participated in the Observatories: Japan 39 and Korea 21, for a total of 442 exhibitors, 139 of which foreign.

"Origin Passion and Beliefs", the exhibition promoted by Fiera Vicenza and dedicated to suppliers of quality Made-in-Italy artisanal semi-finished products, ran in parallel and within the grounds of Milano Unica.

"The new, more rigorous, invitation-based selection criteria, that put a stronger focus on buyers than on other types of visitors, invalidate any direct comparisons with the past September 2015 edition. However, the general opinion that I heard most frequently expressed is that the search for quality led to improved results also in terms of the number of contacts established. Our concerns in relation to the move from the Portello fair grounds to the Fieramilano Rho fairgrounds vanished after the registration of the overall satisfactory results of the "New Beginning" of Milano Unica.The objective of making the exhibition an important point of reference for cultural initiatives, very much representing the true essence of Made-in-Italy production, was widely appreciated by both visitors and exhibitors. The exclusive presentation of the moodboards developed by prominent designers allowed – for instance – to more efficiently emphasize - also through the communication of emotions – how the success of fashion strongly depends on quality, creativity and innovation of fabrics and accessories.," commented President Ercole Botto Poala. The next appointment of Milano Unica, whose S/S 2018 trends were presented at La Pelota - a happening aimed to spur the dialogue between the actors of the fashion system - will be on February 1-2-3 2017. Stefano Fadda, MU Art Director, says on the trends subject "the pleasure of travel, the dream to bring together different cultures, the game of connecting past and present and the desire to rediscover historical figures of aesthetic and cultural importance, are the cornerstones on which Milano Unica's new trends for next Spring-Summer 2018 have been based. We are convinced that modernity is not an abstract concept but on the contrary is all that can be born from an unusual, even extreme, crossover of languages, experiences, cultures and people coming from all space and time latitudes. We are convinced that only a linguistic and visual contamination can push us towards new ways of interpreting the manufacturing tradition.

Always in 2017 the newest initiative of Milano Unica, newest also in the textile exhibitions landscape, is the repositioning of the September edition in July (11-12-13). Another "new beginning" for the Exhibition that is speeding the increasingly innovative and influential impact on the international fashion community, a winning strategy under way since last edition when the new location and the entire transformation of the 23rd Milano Unica confirmed the positioning on the top- end range of the market.

Aprile / April 2016

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.

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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.

Bienate di Magnago (MI)
+39 0331350137
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info@argar.it
sales@argar.it
argartechnology.com

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)
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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 0423985231
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www.area-52.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
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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.

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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.

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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

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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

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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
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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
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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
andrea.zattin@electrolux.it
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.

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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.

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csi-spa.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)
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eurojersey.com
sensitivecosystem.it

EXTREME Technologies Solutions S.r.l

Accessories and products for sportswear, workwear and footwear. Graphic transfers and materials for hot application techniques on fabrics and laser manufacturing. Brand: Reflective Solution: fabrics, refracting thermoadhesives and high visibility products..

Accessori e prodotti per il settore abbigliamento sportivo, da lavoro e calzatura. Transfer grafici e materiali per l'applicazione a caldo su tessuti e lavorazioni laser. Brand Reflective Solution: tessuti , termoadesivi rifrangenti e prodotti per l'alta visibilità.

Palazzolo sull'Oglio (BS)
Phone +39 030 733093
info@extreme-net.com
extreme-net.com

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.
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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 Surface Science Italia S.r.l. - Textile effects

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.

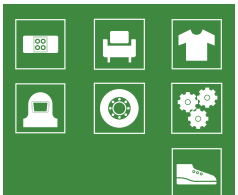
Lamberti s.p.a, private company manufacturer of Chemical Specialties, in 2015 520 mil€ turnover, 1300 employee (16% in R&D), is present in Europe, Americas, Asia. Manufactures Waterborne Polymers, Cellulose, Hydrocolloids and Oleochemicals. To Technical Textiles develop the environmentally friendly Waterborne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

Gallarate (VA)
Phone +39 0331 715763
Fax +39 0331 996861
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.

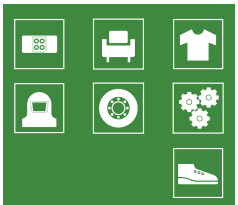
Tessuti per abbigliamento, prodotti di pelletteria, accessori e calzature.

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

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

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

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

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

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

Monosuisse Italia S.r.l.

Synthetic monofilaments in PET, PA, PP, PLA, PPS and PBT. Main application fields: Wet Filtration, Screen Printing, Spacer Fabrics, Light Weight conveyor Belts, Automotive, Medical

Monofilamenti sintetici in PET, PA, PP, PLA, PPS e PBT. Principali settori applicativi: filtrazione dei liquidi, serigrafia, nastri trasportatori per pesi leggeri, settore automotive e medicale.

Cornaredo (MI)
Phone +39 02 9393041
info.siderarc@monosuisse.com
monosuisse.com

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.

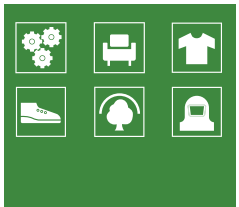
Lavorazione di filati continui e fiocchi di fibre sintetiche e artificiali con le seguenti tecnologie: doppia torsione, spiralatura, binatura e cablatura. Con applicazioni nei settori dell'abbigliamento sportivo, di protezione, medicale e nell'arredamento.

Cividate Camuno (BS)
Phone +39 0364 340215
Fax +39 0364 340749
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.

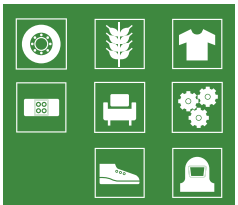


Montemurlo (PO)
Phone +39 0574 6851
pontetorto@pontetorto.it
pontetorto.it

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

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

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.

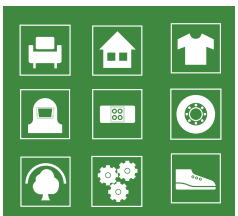
EFI Reggiani fornisce in tutto il mondo soluzioni integrate per il mercato tessile basate sullo sviluppo di processi eco-sostenibili. Una risposta completa per l'intero processo produttivo tessile, partendo dal trattamento del filato, fino ad arrivare alla stampa e al finissaggio del tessuto.

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

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

Rivolta Carmignani S.p.a.

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

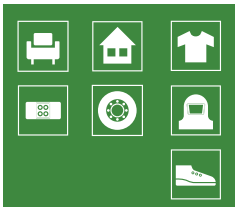
Biancheria per il settore alberghiero, della ristorazione e dell'arredamento contract.

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

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.

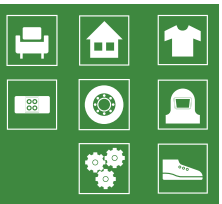


Como (CO)
Phone +39 031 5001112
info@solianiemc.com
solianiemc.com

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

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

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

S.T. Protect S.p.a.

Personal Protective Equipment, uniforms and professional workwear.

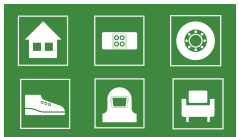
Prodotti per la sicurezza e abbigliamento protettivo, uniformi e abbigliamento da lavoro.

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.

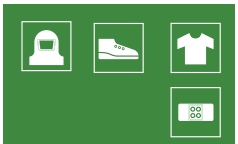
Synt3 produce pelli sintetiche per coagulazione di PU, spalmatura, stampa, goffratura di supporti tessili, impiegando materiali funzionalizzanti per applicazioni in legatoria, calzatura di sicurezza, abbigliamento, arredamento antifiamma.

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.

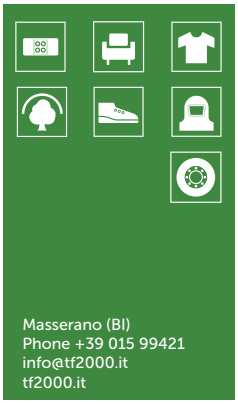
Feltri agugliati, tessuti, maniche filtranti, sacchi e tele per filtrazione di gas e liquidi. Principali settori industriali: alluminio, cemento, power generation, siderurgico, farmaceutico, chimico, inceneritori e depurazione delle acque.

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.

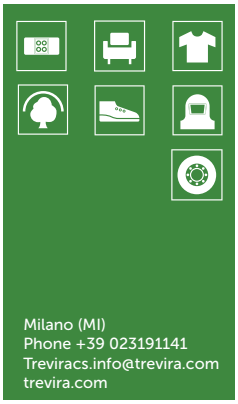


Masserano (BI)
Phone +39 015 99421
info@tf2000.it
tf2000.it

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

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