



ALMA DOOEL

COMPANY PROFILE

SUCSESS STORY

Alma dooel is company that has traditionally worked in the fashion industry. During this global crisis, we have adapted to produce COVID-19 protection gear and have deployed a fully online platform form our services ensuring the continuation of financial and job security for more than 120 workers in our community and company. With our efforts, we were able to give additional work to our more than 20 production partner in our county.

Alma Dooel Kocani is textile production and trading company, founded by Mr. Zoran Trendov in 1999, who is still the owner and the manager of the company. On a surface land area of 10.000m², we cooperate in own facility of 2.500m² workspace. In our own unit we produce middle high and high quality women's shirts, blouses, skirts, clothes etc. Parallel, we are lasting capacities of more then 20 other production partners, resulting to a monthly capacity of 60-80.000 pcs per month in the women's products. We are offering CM, CMT and ready-made product business options. Our offer includes high quality ready-made products, mainly shirts, pullovers, casual trousers, casual jackets, coats, which are produced in Macedonia and Bulgaria and appreciated by many of our European customers. Thanks to our sourcing know-how of fabrics, own production of high quality buttons, trading and stock of other trimmings, we are controlling well all our production inputs.

"Adapting production capacities for COVID-19"

INNOVATION PROFILE

This was done in three steps; the first was to protect our work force, ensuring contact work and minimize layoffs. To keep ensure that work did not stop in our production facility we took protection steps for each worker; giving them personal protection and spacing work stations as to minimize contact.

The next step was to adapt production facility to produces COVID-19 protection gear and in turn this ensures that the people we employed had financial and job security. Even in the beginning of the pandemic our production facility had switch from fashion production to producing reusable masks as our production was more suitable for this type of product.

The final step was to enable fully online order making and production quotation request. All of our models including fashion and COVID-19 protection gear can be order and agreed upon directly from our website in turn minimizing personal contact and ensuring nonstop services to all our clients.





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COMPETITIVE ADVANTAGE

Due to our efforts during this time, we have enabled our clients to keep their business with us from the safety of their offices and homes. The online platform we expect to grow as much as possible and to finally make it our primary way of working for both domestically and foreign clients and partners.

CONCLUSIONS

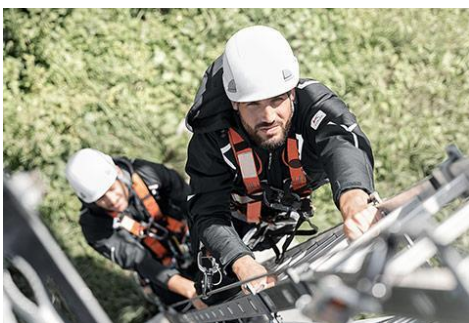
We will continue to grow our online way of working and ensure the stability of our employees and community. We strongly believe that to grow one's business, we need to adopt new sustainable technologies for production and adapt to the demands of the market we are in.

P.H.KÜBLER BEKLEIDUNGSWERK GMBH & Co. KG

SUCSESS STORY

A brief description of the success story of the Company

Kübler Workwear is a German-based company which specializes in workwear for more than 65 years. It has a vast experience in this branch and its one of the founding companies which specializes in colores workwear and now one of the major workwear supplier in Europe. The company deals diverse industries workwear. It develops workwear for almost all major types of industries including the automobile industry, petrochemicals, machinery construction, handworkers, welding, construction, and agriculture. The company's main strength lies that it makes special workwear for every industry by understanding its technical needs.



Kremel Top for high-performance workwear requirements

COMPANY PROFILE

In 1956, the trained textile merchant Paul H. Kübler together with his wife Liesel and five seamstresses began to design and manufacture workwear which has not turned into the market leader in colored workwear. The two brands KÜBLER and KEMPEL are merged lately. All sales and other business activities are bundled and integrated under the umbrella brand KÜBLER. Today KÜBLER employs 230 people at the Plüderhausen location. KÜBLER is one of the leading manufacturers of workwear and protective clothing in Europe.

"Kermel Top

INNOVATION PROFILE

The company works in very diverse industries workwear. It develops workwear for almost all major types of industries including the automobile industry, petrochemicals, machinery construction, hand workers, welding, construction, and agriculture. The company's main strength lies in that it makes special workwear for every industry by understanding its technical needs.

Research and product development have top priority at KÜBLER. The constant development of existing products and ensuring optimal production conditions thanks to their on-site technicians. Another advantage of their production is the fact that their textile supply chain also covers the raw material.

The company works with traditional fibers as well as high-performance fibers like in its Kremel Top brand which is composed of 99% of meta-aramid, that offers excellent protection against fire and flame and excellent mechanical properties.

There are lots of other brands like Bodyforce, Protectiq, Refelectiq, Forest, Pulsschlag, Identiq, etc. which are designed according to the specific needs of the special industry. KÜBLER Workwear is designed and developed exclusively at its location in Germany. A team of more than ten specialists works on new ideas every day - for more comfort, even better material, innovative protective functions, or completely new designs. In addition to its product development and design departments, they employ over 70 highly qualified seamstresses at their location in Plüderhausen. This is not only unique in the workwear industry, but it also ensures that they have consistently high quality and extremely flexible procurement options.



Kübler Forest (above) and Kübler Refelectiq (below)

COMPETITIVE ADVANTAGE

The company is based in Germany and has a production facility also in Germany. The research and development of products take place in its facility in Germany. The production takes place in the company's production facilities spread worldwide. Therefore, the sourcing and price negotiations are avoided and transparency in their supply-chain is realized. A total of more than 4,500 sewing machine operators work for KÜBLER at 21 production sites worldwide. For long-term and flexible production, at the end of which there is an optimal price-performance ratio for our customers.

CONCLUSIONS

It can be concluded from the historical development of the company that it's the focus of product that matters in company's success. From its inception in '50s until now the company focused only on workwear and has established itself as the market leader in this branch. Kübler workwear can comprehend sustainability and ecological aspects in their supply chain and products which are innovative and according to the latest standards set by standardization organizations.

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PAPERTALE AB

SUCCESS STORY

A brief description of the success story of the Company

PaperTale AB is a Sweden-based doorway to enter into the world behind every product that we buy. Based on Blockchain, PaperTale technology aims to ensure that the great craftsmen behind products are being paid lawfully as well as that the product has the lowest possible environmental footprint. First in focus is the fashion and textile industry because that's one of the most affected industries regarding human rights and environmental issues. Right after launching the initial idea in the shape of a concept collection in 2019, PaperTale's share value has raised more than 1000% and has attracted the fashion industry stars to be part of its dynamic board. Late 2020, PaperTale launched its first test collection and showed the world that the technology can be used on industrial scale



The Tag which tells the complete history of product supplychain

COMPANY PROFILE

PaperTale AB is established in 2018 and is a Public limited company. At this stage, the company can be categorized as a medium-sized company that employs more than 100 people. The professional board runs the company. The board members are top executives from Ikea, Lindex (Swedish Fashion Brand), Property business, and academia (Universities). CEO has over 20 years' experience in textiles value chains and entrepreneurship.

"PaperTale Smart Tag"

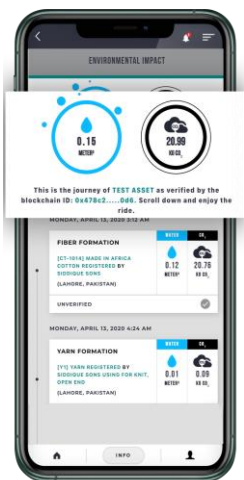
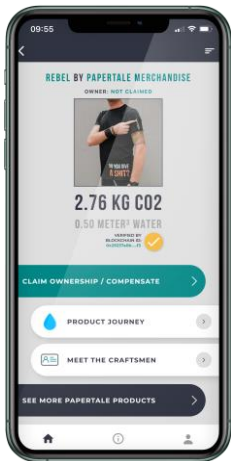
INNOVATION PROFILE

The fashion & textile industry is considered one of the most polluters on the planet and one of the biggest contributors to an estimated 36 million forced labor in the world. Today almost every other brand claims to source organic cotton but the whole world's organic cotton production is less than 0,6%. This means almost every brand is bending the truth. Consumers are becoming increasingly aware of these issues but they have no way of taking action. After trying to engage different stakeholders of the industry, Bilal Bhatti (CEO) decided to work out a business model that is built on a unique approach of businesses transparent and making more money.

PaperTale's technology offers benefits to the main key stakeholders of the industry i.e. consumers, brands, and the factories. Consumers can trust the product's claims because they can see that the products are made with each step of production as verified and logged on the blockchain.

What is the type of innovation: It is a new technology platform which comprises web and mobile apps and ties up the consumers, brands, and the factories in a unique way of trust. Consumers can see that there is no slave labor involved in the supply chain. They can also see that the compensation is also traceable. The technology brings good feeling, higher social status, money, ethical, and responsible mindset. The workers in the garment factories are protected.

The technology involves new product instruments in textile and clothing and its patent is applied and trademark is registered. The finances are made through owner equity and state loans. Paper Tale AB cooperates with universities in Europe and manufacturing countries in Asia.



Blockchain based technology tells the complete supply-line history and origin of product and impacts made on environment

Apps available in Google and Apple store

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COMPETITIVE ADVANTAGE

Papertale Technology is one of the first companies which offer firsthand information about the product the consumer is willing to buy with complete information that influences the purchase of a responsible buyer. The in-house unique team of engineers. Secured contracts, Patent filed, an intensive knowledge of manufacturing and the brands work are the key strength of PaperTale AB.

The technology which is brought to market can also be used in other products like medicine, cosmetics, food, etc.

CONCLUSIONS

“The new ideas are always risky but the greatest idea is not formed by a single moment but with continuous team effort, consistency, and commitment. There are enough good people on earth who would like to join the bus, once we have the first commitment”. Says Bilal Bhatti the CEO. It may be optimistically stated that such technology can revolutionize the transparency in TCI supply chain and may develop responsible consumer behavior.



COMPANY PROFILE

SUCSESS STORY

With the emergence of smart textiles and the availability of electro-conductive fibres and yarns from the Belgian company Bekintex, together with a big amount of knowledge and innovation driven spirit, a former manager decided to start his own company (2009) to make and commercialise active heating clothing. The brand name (30seven) revealed the purpose of the products and initially mainly aimed to keep outdoor sportsmen warm. The product range has since gradually increased, covering nowadays also work and health wear.

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Belginova is a Belgian company established by Pol Speleers that launched its first active heating textile products in 2007 under the brand name 30seven®. The former Bekintex manager had years of experience in the automotive sector, more specifically in the production of car seat heating based on electro-conductive fibres and yarns. Belginova is a small company, located in Kortrijk, in the heart of Flanders. The company develops, manufacturers, markets and sells the 30seven® heating clothing, which is based on Novaheat® technology.

In 2017 80% of the turnover of Belginova was accomplished by the sports products and 20% by the workwear. The company does not give further details on the sales.

"SUCESSFUL INNOVATION" /30seven/

INNOVATION PROFILE

Bekintex (as part of Bekaert) is a manufacturer of stainless steel based textile products for, amongst others, the automotive industry. The idea arose from heating car seats, which they had been producing for many years. The fine electro-conductive fibres could also be used to manufacture heating pads to be integrated into clothes. The idea was patented and the Novaheat® technology was born. The 30seven® heated textile clothing is powered by this technology. The heat is generated by ultra-fine corrosion resistant and unbreakable (stainless steel) fibres that are equally spread over the heating zone. A battery is fully integrated into the textile products and has an autonomy of around 6 hours.

Nowadays there is a broad range of products available, for skiing, cycling, motorcycling, hunting, camping, work and health, including softshell jackets, gloves, mittens, socks and insoles.

Because the products are well-designed by a team of engineers and designers, a safe product is guaranteed, without the risk of overheating or causing burns.



30seven: success story



30seven: innovation in practice/

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COMPETITIVE ADVANTAGE

30seven® is the only heating clothing brand that offers the unique system of a removable heating element to make it washable. However, this also implies that the clothing can be worn without the heating element present, thus during all seasons. A high-quality lithium-ion battery powers the clothing and can be recharged at least 1.000 times. Heating is provided for a period up to 7 hours. The garment itself can be washed at a temperature of 40°C, while the heating element is washable at 30°C without detergent.

Furthermore, 30Seven® uses an e-commerce platform to offer its heating products to the entire world. With a clear navigation structure and a comprehensive description of the products it offers its customers the information they need.

CONCLUSIONS

The 30seven® heating clothing range was launched in 2009 thus has already been on the market for over 10 years. Being at that time an entirely new type of clothing (smart clothing) with an integrated active heating system, it was important to gain the trust of the customers by offering a stable, long lasting product. Furthermore, reliable and clear product information is a necessity to make the potential user become familiar with this new class of clothing. And lastly, patenting the innovation protects the company, gives exclusive right, and increases the competitive advantage. Belginova® is considered as one of the important smart textile clothing players on the European market.

SUCCESS STORY

A R&D department with specific CAD allows to design collections in-house and to develop exclusive fabrics for the customers. Here, we study the best yarns, graphics, constructions, colour variants and finishes to best suit each fabric. Prototypes of electro-welded and thermoformed fabrics are developed. We study the product industrialization in order to obtain the best possible quality in extremely short timescales.

Personalised product presentations are designed, together with simulations, catalogues, swatches, sample bunches and stands.

COMPANY PROFILE

IDIVI is a weaving company with a dyeing (in yarn and piece), warping, weaving (dobby, jacquard, knitting), finishing (also for resin, flame retardant, oil-water repellent treatments), bonding (with 2 to 10mm foams), electrowelding, thermowelding and sewing department.

Founded in 1941 by grandfather Pinin, FIDIVI is still owned by the Vergnano family today.

Our current directors, Giuseppe and Enrico Vergnano, are the third generation to work in this company. In the early 1940s, the factory produced blankets and curtains for household use, then fabrics for clothing, through to technical fabrics for cars, contract, luggages, offices and trains. For many years, it was the most important textile supplier for the Fiat Group, and has created many of the fabrics used in their cars, buses and lorries.

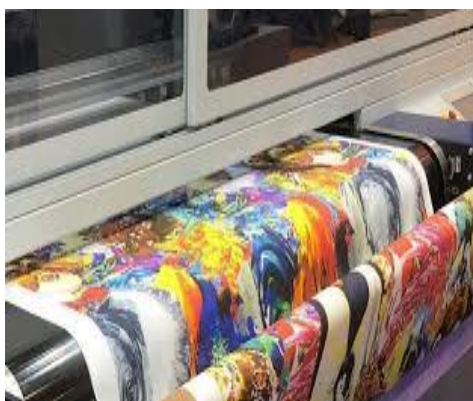
Today, the automotive branch of the company has been transferred to AUNDE Italia, with FIDIVI retaining an important share. This has enabled us to develop a remarkable experience in technology, service and research that today are the basis of the current organization of FIDIVI Tessitura Vergnano. The new FIDIVI's headquarter is located in Poirino, about 15 km far from Turin and Caselle Airport.

"SUCCESSFUL INNOVATION" SEALIFE

INNOVATION PROFILE

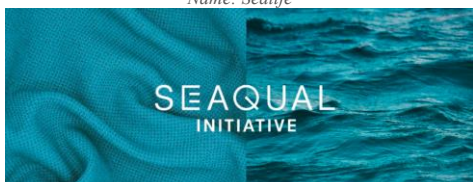
SEALIFE is a cross-functional fabric made of SEAQUAL® YARN, a special polyester fibre made entirely from post-consumer recycled plastic: from plastic fragments and debris retrieved from our oceans to post-consumer PET from land sources.

SEALIFE is GRS (Global Recycled Standard) certified, which guarantees the presence of post-consumer recycled materials in the fabric.





Name: Sealife



COMPETITIVE ADVANTAGE

With a rich colour palette of 12 solid hues and 18 melange tones, SEALIFE is available in pastel, vibrant and natural shades. Hard-wearing and durable, this upholstery fabric is highly suitable for both contract and offices.

With the fabric SEALIFE, FIDIVI is collaborating with [SEAQUAL INITIATIVE](#) to help clean our oceans while transforming marine litter into beautifully crafted fabrics.

SEAQUAL INITIATIVE is a unique collaborative community that works with ocean clean-up programs around the world to transform the marine litter they recover into Upcycled Marine Plastic; a new, fully traceable raw material with the power to raise awareness of the issue of marine pollution and highlight those helping to fight it.

Application

Office, Contract

Weight

460 g/lm - 330 g/m²

Height

140 cm

Composition

100% Recycled Polyester - SEAQUAL Certified

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CONCLUSIONS

FIDIVI joined the SEAQUAL INITIATIVE to help clean the oceans while transforming marine litter into beautifully crafted fabrics.

SEAQUAL INITIATIVE is a unique collaborative community that works with ocean clean-up programs around the world to transform the marine litter they recover into Upcycled Marine Plastic; a new, fully traceable raw material with the power to raise awareness of the issue of marine pollution and highlight those helping to fight it. In choosing products containing Upcycled MaSEAQUAL® YARN is the only certified yarn to make SEAQUAL products. It is made with at least 10% Upcycled Marine Plastic; the rest is Recycled Polyester from land plastic (PET bottles). Every product (fabric, garment, etc.) must contain at least 20% of SEAQUAL® YARN to be labelled as SEAQUAL.rine Plastic, you are helping to clean our oceans.

Every piece of fabric is fully traceable back to the yarn it is made of. It is a system that works as long as every player of the process is part of the SEAQUAL INITIATIVE. That means that any company that buys SEAQUAL products from FIDIVI has to join the SEAQUAL INITIATIVE. This is done by subscribing the 'SEAQUAL Trademark & Copyright License Agreement'. This is a free of charge agreement that certifies your company can buy and sell SEAQUAL products. You may also support the project with a donation that will help the involved NGOs in their efforts to free our oceans from litter.

Learn more: www.seaqual.org <https://www.youtube.com/watch?v=rT6faJ47B1M>

COMPANY PROFILE

SUCCESS STORY

Liebaert is a textile company with a long tradition in unique quality fabric production, 100% made in Belgium. It seems to be always up-to-date with the trends and the customers' contemporary needs, yet always meeting highest quality standards. Today it implements new technologies and highest sustainability practices, something crucial for the eco-system as well as for the market needs of the third decade of the 21st century. The secret to success seems to be the dedicated and excellently trained personnel and the care for the well-being of each individual within the company.



Nanostitch® Cuprana fabric

Liebaert is a private family company existing since 1887, with the leadership being transferred over 5 generations. It is a medium sized company (151 employees in 2019) in the textile manufacturing sector, and generates 17.47 million in sales (USD) per year. There are 2 companies within the Liebaert corporate family, including its own clothing sportswear line since 2019 (RectoVerso brand). The company is vertically integrated, with departments from design, yarn, fabric production, dyeing, printing, finishing, confection and testing. Its facilities include 175 knitting and weaving machines and there are around 300 new products made each year. Moreover, Liebaert is certified with the highest quality standards ISO and Oekotex. Liebaert develops products for a variety of sectors, from fashion to the automotive and aeronautical industry.

INNOVATION PROFILE

NANOSTITCH TECHNOLOGY

The company invests 10% of its profits in research and puts product innovation as key to their success, collaborating with different industries, laboratories and universities, including Ghent University. The Nanostitch technology is used to produce a new generation of high performance stretch fabrics knitted with Lycra fibre, which are a signature Liebaert product, specifically engineered for the sportswear segment. Produced on the finest warp knitting machines, they provide premium thermal and sensorial comfort, along with different fabric specifications, including lightweight and highly breathability, moisture wicking and cooling and heating fabrics. These fabrics are up to 20% lighter than comparable compression fabrics and provide 2 to 3 times more compression than standard tricot fabrics. Moreover, in 2020 they have been investing in their medical products range to develop fabrics against COVID-19 and similar viruses. These developments have been under collaboration with the textile laboratory Centexbel which is entitled to give such certifications. For example, their Nanostitch® Cuprana fabric contains special Cupron (copper infused yarns) and EMANA (far-infrared yarns with bioactive

minerals) that support ultimate skin comfort and anti-infection benefits. Moreover, copper has been found as very effective against COVID-19. The fabric is washable and can be used as an inner layer in facemasks, available in more colors. Cuprana® has been CNAS certified, copper containing and has antibacterial properties.

COMPETITIVE ADVANTAGE

Although there are many facemask materials available on the market, especially in the last year, Liebaert's innovation lies in the development of unique facemasks that meet the highest standards in terms of protection, comfort as well as environmental aspect. The facemasks are therefore washable, can be used both from the inside and outside, and most importantly, are COVID-19 approved by a known textile research center, which only ensures consumers trust in the protection properties of the fabric. They are produced using the nanostitch patented technology, which is very well known for great comfort. Also, the fabrics are fully made in Belgium, which brings 100% transparency and trust.

CONCLUSIONS

In the last few years, Liebaert has been shifting its product range from fashionable products towards more technical textile production, in order to meet consumer needs and keep its competitiveness with other European textile manufacturers, taking advantage of what is Europe well valued for – technological development and premium quality guarantee. It is a great example of successful implementation of high-performance knitwear technologies and use of novel functional yarns for sportswear, fashion and various other industries, such as medicine and automotive. Its success lies primarily in the quality, in the flexibility of the product range, in constant investment in innovation and in keeping up with the market demands. The company's name is associated with sustainability and ethical principles which indeed increase the strength and success of the business.

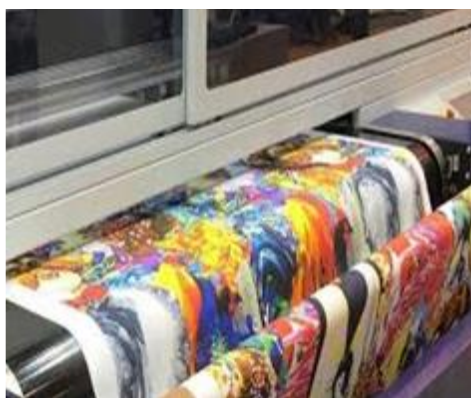


SUCCESS STORY

The challenge of Miti SPA is to create uncompromisingly performing fabrics that respect nature. Greenperforming is the concept that best summarizes our relentless commitment to developing solutions that are sustainable and performing at the same time, offering the best functional and aesthetic performance.

Some key elements that characterize the path:

- 30% M3 of water consumed per kg of fabric produced
- 25% tons of CO2 emitted equivalent to +21,000 tall trees
- 90,000 plastic bottles and cups consumed per year



COMPANY PROFILE

Since 1931, the Polli family has been at the helm of the company, guaranteeing not only continuity, but its natural predisposition for innovation. This attitude is part of the Company's DNA. After each milestone reached M.I.T.I. it never stopped.

Its path is constantly evolving and the company is supported and driven by the stimuli that the Polli family has never stopped giving. Thanks to M.I.T.I. continues to stand out on the market, making itself appreciated for the maximum attention paid to details to guarantee performance and quality of service.

M.I.T.I., a leading company in the production of warp-knit stretch fabrics, has the recognized ability to stimulate the creative spirit and transform the ideas of its customers into concrete realities.

One of the most important values of M.I.T.I. lies in the ability to accompany its customers in discovering the trends of the future of warp-knit fabrics, guiding them towards the best solution for their business needs.

"SUCCESSFUL INNOVATION" STARTEX silver technology

INNOVATION PROFILE

STARTEX silver technology is the technology dedicated to fabrics for industrial and medical applications. The combination of a sophisticated production process and special fibers such as carbon, complete the wide selection of fabrics developed by M.I.T.I. in this area.

The warp-knit fabrics with STARTEX silver technology are made by M.I.T.I. using polyester fibers with antibacterial properties.

Long-term performance is achieved thanks to silver ions incorporated into the fibers by nanotechnology.

COMPETITIVE ADVANTAGES

STARTEX silver technology is tested and certified for long-lasting performance up to 300 washes at 40 ° C.

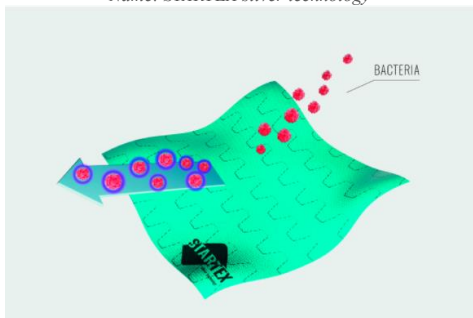
This fabrics are mainly designed for the medical sector but can be used for multiple applications: internal helmets, chamois, orthopedic supports, medical clothing, laminated and coupled fabrics.

STARTEX silver technology is fully certified by manufacturers in accordance with ISO: 20743: 2007 and JIS 1902: 202. Fabrics with STARTEX technology are BLUESIGN certified.thing, laminated and coupled fabrics.

Personal health is one of the sectors where technology and reliability are essential. Busts, insoles, knee pads, elbow pads, elastic bands: our fabrics are effectively used in technical orthopedic material and medical clothing.



Name: STARTEX silver technology



The STARTEX silver technology is suitable to:

Snug compression for better comfort

Carbon yarns

Permanent antibacterial options

Antimicrobial / sanitary effect

Exceptional moisture management and breathability

Freshness in contact with the skin

CONCLUSIONS

The combination of technological innovation and production sustainability increase the strategic choice to undertake actions aimed at defining and managing the sustainability of one's business can be summarized as follows:

- Reduction of operating costs; - Acquisition of new market shares with the strengthening of marketing and branding reputation actions; - Continuous improvement of its performance in terms of safety, quality of the finished product, protection

of the Environment and energy efficiency; - Effective communication of corporate image, values and responsibility.

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SUCCESS STORY

Directa Plus is a leading producer and supplier of graphene nanoplatelets-based products targeting the markets of consumer and industrial applications.

In November 2016 the company launched Directa Textile Solutions, a subsidiary focusing on the creation of innovative textile products designed and made to measure.

COMPANY PROFILE

Founded in 2005, Directa Plus is one of the world's largest manufacturers and suppliers of graphene nanoplatelets-enhanced products for use in consumer and industrial goods. The company's patented graphene nanoplatelets-based products are natural, chemical-free and manufactured with reduced environmental impact processes.

Directa Plus has developed a proprietary scalable, modular manufacturing process to produce and supply high quality engineered graphene materials – marketed under its 'Graphene Plus' (G+®) brand – which can be used by third parties in a wide variety of industrial and commercial applications. The production facility is capable of producing up to 30 tonnes per annum of graphene-based products.

Directa Textile Solutions is a subsidiary of Directa Plus offering a wide range of multifunctional textile products and membranes enhanced with the company's patented G+® which are suitable for a variety of textile applications.

For 2017 the company reported a total income growth greater than 50% - EUR 1.23 million versus EUR 0.82 million in 2016 - with 15,000 metres of G+ printed fabrics being sold, corresponding to sales for EUR 0.77 million versus EUR 0.08 million in 2016.

" G+ Co-Mask "

INNOVATION PROFILE

Following the Covid-19 spread, in 2020 the company released a range of face masks featuring antiviral properties under the brand name G+ Graphene Plus®. Over 180 materials were tested during the development phase and finally the choice fell on a highly breathable jersey fabric. The masks feature a special three-layer construction: G+® Printed Jersey + G+® Impregnated Cotton + G+® filters. G+ Graphene Plus® is antiviral and proves to be very effective against SARS-CoV-2. Tests were carried out following ISO18184. Furthermore, the mask are dermatologically tested and hypoallergenic, intrinsically antistatic and thermally comfortable thanks to Planar Thermal Circuit® (PTC), a further patented technology by Directa Plus, which allows heat to move from hot spots to colder ones, thus creating a thermoregulating effect. In 2017 the company has been allocated a grant for a biannual research project on the use of graphene in advanced textiles and fashion called GRATA (Graphene for Advanced Textiles and Fashion).



protective three-layer construction: G+® Printed Jersey + G+® Impregnated Cotton + G+® filters



G+ Graphene Plus®

Contact of the Company

COMPETITIVE ADVANTAGE

The company's Textiles vertical can print its G+® nanoplatelets on synthetic, natural and artificial fabrics, and is able to offer G+® enhanced membranes. Main applications include sportswear, citywear, jeans and workwear.

G+ Graphene Plus® fabrics feature antibacterial properties and are certified antibacterial according to ISO 20743:2013. Furthermore, G+ Graphene Plus® provides a filtration efficiency of 95% according to EN 14683. Coronavirus put the spotlight on the relevance of empowered personal and environmental hygiene and these specialty features make the company's products suitable for meeting the resulting strict safety and hygiene requirements by providing antibacterial solutions with proven effect.

CONCLUSIONS

Being unpredicted large-scale outbreaks of infectious diseases, pandemics have the power to cause sudden, widespread mortality and morbidity, as well as social, political, and economic disruption. As explained in a public statement, ever since the risks of a COVID-19 pandemic became clear, Directa Plus has been determined to contribute to the fight against the spread of the disease by using the unique properties of graphene and the strength of Directa Plus's IP portfolio to enhance personal protective equipment and redirected its Advanced Development Area's efforts and resources to achieve this. The G+ Graphene Plus® mask range has been designed for use for commuting, in workplaces and during sport and exercise.

COMPANY PROFILE

SUCCESS STORY

Using conductive metal (copper, brass and stainless steel) yarns and specialty knitting machinery, Knitronix manufactures all-fabric knitted sensors and limit switches for the detection of temperature, occupancy, pressure, moisture and GSR.

The company was originally founded in 1949 under the name Scomar S.r.l.: design and manufacturing of automatic flat knitting machines. In the following fifty years, Scomar manufactured and exported more than ten thousand knitting machines, with a sales network of 40 representatives across five continents. Following the significant change in the Western textile market which took place in the early 2000s, the company was renamed Inntex and evolved into a manufacturer of innovative knitted metal fabrics resulting from the specialty technical know-how gained over the years using Scomar machines duly modified to properly handle the new yarn materials.

Today Inntex produces and markets metal fabrics for interior design and high frequency electromagnetic shielding, while Knitronix, a separate entity since 2016, designs and manufactures sensors from knitted metal wire. The company's proprietary knitting machinery and material combinations are protected by EU and US patents. All products are entirely designed and manufactured in factories in Tuscany, Italy, using proprietary technologies.

" Temperature, Pressure and Liquid Sensors "

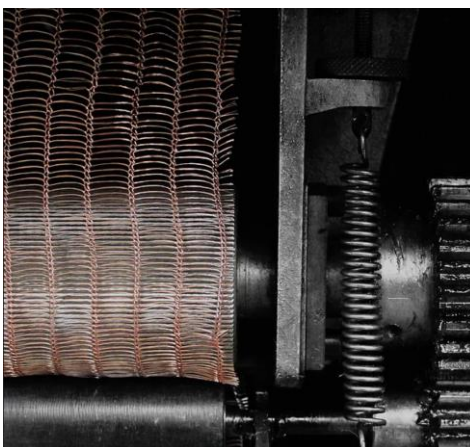
INNOVATION PROFILE

Being entirely made of fabric, textile matricial pressure sensors are soft and conformable. Knitronix developed a range of lightweight and breathable specialty sensor types based on proprietary wire knits. By combining fine metal wires with non-conductive fibers, the company designs and manufactures high duty cycle (HDC) textile sensors measuring temperature, pressure and the presence of liquids. Among these, high duty cycle IoT sensors are suited for the monitoring of soft or large surfaces. Target markets are industrial safety and occupational health, patient monitoring and performance tracking.

The company acts as manufacturer and, at the same time, as specialized consultant providing bespoke solutions for companies and research institutes, including the Institute for Microelectronics and Microsystems (Rome, Italy), the Department of Textiles at Ghent University (Belgium), the Department of Social Science at Siena

University (Italy), the ICT department at the University of Florence (Italy), and The BioRobotics Institute, Scuola Superiore Sant'Anna (Pisa, Italy).

Knitronix has been coached by EIT Digital and has won an innovation grant from SmartX.



IoT textile sensor for temperature, pressure, liquid

COMPETITIVE ADVANTAGE

Temperature detecting sensors are breathable, formable and stretchable single layer items suitable for direct skin contact. Being based on the RTD principle, the temperature they measure is the average T measured over the entire surface of the sensor. Basic pressure detecting sensors are dual-layer contact switches combining conductive and non-conductive fabric components, developed for embedment in mats, seating or other surfaces to signal bodily contact. Matrix pressure sensors feature piezoresistive elements in a matrix configuration yielding dozens or hundreds of continuously varying values across the entire sensor surface. They are flexible and lightweight and suitable for broad-range pressure monitoring. Liquid detecting sensors are breathable single-layer items able to detect as little as 1 ml of liquid anywhere on their surface. They can be wrapped around pipes, or integrated into roofing materials.

CONCLUSIONS

In 2005 co-founder and CEO Riccardo Marchesi began wondering if a fabric featuring conductive fibers could be used to measure environmental data, which brought to the company's further evolution and expansion: in 2016 the spin-off Plug & Wear, later renamed Knitronix, was started to manufacture textile sensors for the detection of tactile pressure, temperature and the presence of liquids/humidity. Through the introduction of the smart textiles division in addition to the industrial product range and the interior design textiles collection, the company succeeded in diversifying its range. Textile sensors have several advantages over traditional ones and can be used in several applications.

MAK PLC



COMPANY PROFILE

SUCSESS STORY

MAK PLC is company with tradition that is looks forward to the future. The company continues the journey of many textile manufacturers who have established traditions in these industries between the two centuries. MAK entered the 21st century as a modern company, with a closed production cycle. Their journey will continue with the sustainable development of the company based on the needs of the market, and the growing consumer demands, which they achieve with the well trained and motivated personnel.

MAK PLC is established in 1912. The company is 100% private property.

MAK PLC is a vertically integrated company that produces **raw fabrics**, with production lines for finishing - dyeing and printing fabrics, with a variety of enrichment technologies, including – hydro/oleophobic coating, lamination, antibacterial finishing, flammability reduction, treatment against insects (mosquitoes) and etc. The product cycle closes with the production of ready-to-wear garments like military and police uniforms, workwear of all kinds and leisure and sportswear

MAK PLC is certified according to standards: ISO 9001:2015, ISO 14001:2015, OHSAS 18001; OEKO-TEX 100, AQAP 2110

"COVID-19 PROTECTIVE SUITE"

INNOVATION PROFILE

Led by continues aspiration to meet the needs of the market, when choosing a product range, the company's management is guided by fabric market topical issues and trends. One of the innovations that find significant application on the market, especially in the current situation with COVID-19, is the development of **fabrics with permanent antibacterial finishing**.

Another significant innovation is development of fabrics with anti-mosquito treatment, for which production the company possess license from WiWeB Institute –Germany.

Both innovations funding is provided entirely with own funds.

Development of the innovative fabrics was carried out together with Technical University of Sofia and in very close cooperation with Accredited Testing Laboratory in TEX CONTROL Ltd, where MAK accomplishes all its researches and tests.



COVID – 19 Protective suite



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ICT IN TEXTILE AND CLOTHING HIGHER EDUCATION AND BUSINESS

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Anti-mosquito protective fabrics

COMPETITIVE ADVANTAGE

Thanks to the anti-bacterial fabric development, company MAK adequately met the needs of the COVID-19 crisis, offering to the market, reliable protective masks and certified overalls.

Anti-mosquito protective fabrics and possessing license form WiWeB Institute, enable MAK to become main uniforms supplier for the German army.

With the production of ready-made garments, the company closes its production cycle.

Expected turnover increase for 2021, only from anti-mosquito uniforms sales is 1,5 million EUR.

CONCLUSIONS

During the socialism in Bulgaria dozens of weaving mills were existing and working. With the coming of Democracy, significant part of them cancel their activity. Thanks to the innovation management approach, company not only manages to maintain over the years, but also occupies a leading position on the local and European textile market, as well.

Based on the latest innovation MAK is following its main goal becoming a global-minded and globally operating company, by constantly introducing new technologies, products and penetrating new market fields in textile and clothing industry.

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TESTING LABORATORY IN TEX CONTROL

SUCSESS STORY

Tex Control Ltd. is laboratory with tradition that is looks forward to the future. Thanks to the motivation and high qualification of the staff, Tex Control will continue with the sustainable development of the laboratory, based on the needs of the market, and the growing consumer demands

COMPANY PROFILE

Tex Control Ltd. is established in 2008. Since 19.01.2011 the laboratory is accredited in accordance with BSS EN ISO/IEC 17025:2006, for more than 120 international standards.

With these capabilities the laboratory provides laboratory tests of over 80% of the features / indexes/ of the textile materials, textile fabrics and ready garments. The trend is for its capacity to be expanded.

The test laboratory has at its disposal modern testing equipment and auxiliary equipment. The technical tools are of the latest generation of technology and manufacturing capabilities of the world's leading specialized companies (**SDL Atlas** - England; **JASCO CORPORATION** - Switzerland; **DATACOLOR INC** - USA; **CECIL INSTRUMENTS LTD** - UK; **WTW GmbH** Germany; **ZWEIGLE, CmbH**, Germany; **TEXTTEST, INSTRUMENTS, AG**-Switzerland; **"BINDER"** Germany; **IKA**-Germany, etc.)

The company is 100% private property.

INNOVATION PROFILE

Led by continues aspiration to meet the needs of the textile market, when taking decision for the next investment, the Laboratory's management is guided by fabric market top issues and trends. One of the innovations that find significant application on the textile market is **BUNDESMANN WATER REPELLENCY TESTER**. This apparatus is an imitation of the rainy weather conditions in the various climatic zones. Determination of water repellency of fabrics by Bundesmann rain-shower test, is a main requirement of all European armies, especially of the German and Austrian.

Another significant innovation is investment in **SWEATING GUARDED HOTPLATE** which is used for determination of the thermal and water-vapour resistance of the fabrics. This apparatus was extremely useful in the current COVID-19 situation, namely for testing water-vapour resistance of the membranes, used for protective suits

Both innovations funding is provided entirely with own funds.



COMPETITIVE ADVANTAGE



Thanks to the investment in SWEATING GUARDED HOTPLATE, TEX CONTROL adequately met the needs of the COVID-19 crisis, offering to the textile market, reliable test examination of protective laminated fabrics, and protective coveralls

Performing tests in accordance to EN 29865 Bundesmann rain-shower test, is the reason why TEX CONTROL become leading testing laboratory for the needs of the German army.

For the last 2020 year there was turnover increase at the amount of 85 000 EUR , only from SWEATING GUARDED HOTPLATE tests.

CONCLUSIONS

Thanks to the innovation management approach, and the continuous expansion of the accreditation scope, TEX CONTROL not only manages to maintain over the years, but also occupies a leading position on the local and European textile market, as well.

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CROATIAN UMBRELLA & KISHA

Hrvatski kišobran 

SUCCESS STORY

The constant development of new products and production oriented towards quality and affordable price has ensured the expansion of the market in record time. From humble beginnings in cooperation with the Lipovica penitentiary where the first Croatian umbrellas were produced, to production in Zaprešić, the Croatian umbrella team has grown in numbers, knowledge and experience. In addition to the Croatian umbrella, the company Tabacco is the exclusive representative of the Kisha brand for Croatia, and it is a 'smart umbrella' designed by the Croatian innovators Marija Butković and Andrija Čolak.

COMPANY PROFILE

The Croatian umbrella is owned by the Croatian company Tabacco d.o.o. founded more than 25 years ago. With continuous development and investment in business processes, Tabacco d.o.o., a few years ago, as an anti-recession measure aimed at employing as many people as possible, introduced a brand called Croatian Umbrella. This brand currently includes the production of several product groups - umbrellas, raincoats, dog raincoats, shopping bags and school slipper bags - with the aim of continuous development of new products and ideas. In addition to the Croatian umbrella, the company Tabacco is the exclusive representative of the Kisha brand for Croatia, and it is a 'smart umbrella' designed by the Croatian innovators Marija Butković and Andrija Čolak.

INNOVATION PROFILE

Kisha, smart umbrella, uses a smartphone for its work and full potential. Kisha itself is an umbrella with a specially designed pocket in which there is a Bluetooth module, and with which the umbrella and smartphone are connected. In addition to the umbrella and module there is application that must be installed on the smartphone. It is currently only available for iOS devices, but is expected to arrive on the Android platform as well. Kisha as a smart umbrella, ie the application installed, will warn the wearer of the expected rain. Also, Kisha is an umbrella that cannot be lost. Every time the wearer is moved away from the umbrella, or one forget it, the smartphone will warn the owner about it. It is this possibility that is one of the key ones and in it lies the popularity of the Kisha smart umbrella. In addition to the KISHA smart umbrella, Croatian umbrella also developed their own innovative umbrella whose special feature is that it has a built-in microchip, which is bluetooth connected to the smartphone. When the umbrella is left somewhere and when the owner moves 30 meters away from it, the chip is activated, and the owner's cell phone starts ringing.

COMPETITIVE ADVANTAGE

Through continuous investment, development and realization of innovative and challenging projects, Croatian umbrella strive for secure future. The greatest advantage is understanding the needs of customers and the application of active listening at the workplace. Combining craft, good organization and coordination, but also using modern technology and automation, Croatian umbrella achieve a high quality level with fast delivery and reasonable pricing. With constant investments in raw materials, production processes, innovation and development, Croatian umbrella strive to be ahead of the competition. Croatian umbrella umbrellas are special because of the way they are sewn, they are much stronger than usual, made of fiberglass, which means that they are very flexible.

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CONCLUSIONS

The Croatian umbrella is the only one in Croatia and one of a total of two umbrella factories in the whole of Europe. Formed after the crisis in 2008, and survived the corona crisis, Croatian umbrella is a true success story employing 50 workers and producing 200,000 umbrellas per year. Also, they have developed their own IT management that allows individualization of design and independent development of umbrellas by the customer.

SUCSESS STORY

Cateks d.d. is a company specialized in the development, production and sale of special technical fabrics, polyurethane-coated and laminated technical materials, as well as final and ready-made products, which are of high quality. It is the development of quality products that is the key factor for successful business operations and for the achievement of a competitive advantage in the market, and the constant work on improving is their strategy for realizing this advantage. Cateks continuously invests in new equipment that enables the development of new products. Medical program within which is the production of materials waterproofing, antibacterial, antifungal and antidecubitus treatment. Protective program includes the production of a two-layer, three-layer and four-layer laminated materials with breathable membranes production of clothing (waterproof and windproof pants and jackets), and in the footwear industry for the production of special footwear (military and police boots).

Cateks is one of the biggest textile producers in the region and one of the oldest in the south Eastern Europe. Thanks to technological development and innovation, today it consists of three production departments: Textile, Polytex and Confection. Such an organisation creates a vertical integrated production and allows for a better control of every phase of production and high degree of technological innovation by combining knowledge and experience of engineers in all production departments that has put Cateks in a position of a producer in technical fabrics and materials of special applications and a higher added value.

INNOVATION PROFILE

Constant investment in innovation has resulted in the development of new technical fabrics for special purposes. Their COMPAGO® Defend represents the top quality of production of special purpose fabrics used for the production of military and police uniforms, such as CORDURA® NYCO materials made of a mixture of polyamide and cotton fibres, a mixture of cotton and polyester, 100% cotton, materials with stainless steel or carbon threads for antistatic properties, or with FR fibres for non-combustibility. Fabrics are finished to meet special properties: Water repellence, Oil repellence, Anti-dirt, creasing, insect protection. A new fabric with significantly improved properties and a concealing pattern that is purposefully designed for the use of the Ministry of Defence, which proves Cateks as a fundamental fabric manufacturer that can follow research and development in this field in the regional, European and global markets. The COMPAGO® PROTECT brand includes high-quality technical materials that protect against weather conditions such as rain and cold, provide protection during work in hazardous conditions when handling flames, oils and petroleum products, when working in explosive atmospheres (when exposed to electrostatic voltage) or in conditions reduced visibility. The materials are divided into three groups: Polyurethane-coated materials, Multilayer materials laminated by dot gluing technology and treated cotton fabrics or

mixtures of cotton and polyester. COMPAGO® Medical are technical materials treated against burns, fungi and bacteria and meet standards such as BS 7175-CRIB 5, EN ISO 12925. The production is carried out in accordance with REACH. The products meet Oeko-tex standard 100, class I, which confirms that the materials they can also be used to make products for children. Their main application is in the

production of medical covers for mattresses, pillows and medical aids, as they are pleasant to the touch, antibacterial and provide long-lasting hygiene.



COMPETITIVE ADVANTAGE

In Cateks, the trends in detection and camouflage development are continuously analysed, concluding that today's high-level detection is far ahead of the covering one. The decision to turn to addressing and solving these problems was made, because the preliminary research has already shown that a shift is needed in this segment. Gathering knowledge and experience in 26 years of working with various military units around the world, Cateks has transformed this into a new recognizable product with a completely different way of construction, functioning and approach to solving this problem. Cateks has consulted the best experts in the field of detection, collaborated with many institutions and ultimately protected our results with industrial design for the whole of Europe. So another innovation is the new camouflage pattern with a whole new perspective on the look of camouflage in a modern combat environment.

Contact of the Company

CONCLUSIONS

Cateks is one of the largest textile companies in the region and one of the oldest in the south eastern part of Europe. Cateks has positioned itself as one of the most important centres for the development and production of high-performance textile materials intended for military and protective purposes. An exceptional example of success that, with advances in technology and an innovative approach, is continuously working on the development of new products. Also, by optimizing existing processes, it increases the utilization of energy and resources, better waste management and thus further contributes to environmental protection.