fibers and filaments
the experts' magazine
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Bioplastics

A future market
Bioplastics are increasingly ceasing to be niche products and are becoming more mass market, although they remain specialties in the textile segment.

Fibers offer unexpected opportunities

Talking to CEO Georg Stausberg
Oerlikon Manmade Fibers' new CEO Georg Stausberg gave some interesting insights into trends and technologies within the world of fibers and fabrics.

"Focus on the future with spunbond processes for technical nonwovens."

Dr. Ingo Mählmann
Product Manager Nonwoven
Oerlikon Neumag

From Melt to Material

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In focus

Sustainable manufacturing with nonwovens
Nonwoven technologies are becoming increasingly flexible.

8

Bioplastics a future market
Some biopolymers already achieve the common properties of manmade fibers manufactured using fossil raw materials.

12

Innovation and technology

Special pumps for special requirements
Carbon and aramid fibers

16

A clean HOY process with WINGS
Due to its relatively small market share, high-oriented yarn (HOY) is considered to be a specialty product.

18

RoTac promises energy-efficient tangling
Quantum leap in high-speed BCF production

23

Editorial

Dear Customers, dear Readers,

The major focus of this edition of Fibers & Filaments is on specialty products, both on the polymer itself, and on the yarn and the fabrics and the end applications. Biopolymers, nonwovens made from recycled plastics, HOY spinning systems – what these have in common is their challenging manufacturing processes and their limited market share.

However, the rising feasibility of industrial solutions frequently also changes the demand for these so-called specialties. They emerge from their niches and assume a relevant position within the market. In the current edition of Fibers & Filaments, read about what is happening in the biopolymers sector and where the potentials for airlaid products lie. Convince yourself of the highly-sophisticated solutions such as our WINGS HOY process, which transforms polyamide HOY spinning systems into clean machines.

And you can also look forward to our new RoTac³ BCF tangling unit, which will be unveiled at the Domotex Hannover 2015 trade fair.

Be inspired by our new After Sales products that promise our customers considerable added value. We are thrilled to be able to present you with yet another magazine with a whole array of exciting topics.

And we hope you enjoy reading this edition of Fibers & Filaments.

With best regards,

Georg Stausberg
CEO Oerlikon Manmade Fibers

OTM – Middle East Textile Machinery Exhibition

First textile machine construction show in Gaziantep

The OTM (Ortadogu Tekstil Makineleri Fuari – Middle East Textile Machinery Exhibition) took place in Gaziantep, Turkey, for the very first time between October 16 and 19, 2014. At the showcase, Oerlikon Manmade Fibers was present with its Oerlikon Barmag and Oerlikon Neumag brands, exhibiting on the stand of its Turkish representatives, Tekstil Servis.

Once again, the focus was on the BCF division with the S+ system. The three-end BCF system convinces not just with its 99% efficiency and its resulting cost savings in terms of raw materials, it also covers a very broad spectrum of producible total titers ranging from 600 to 4000 dtex. Furthermore, the multipolymer systems can be used without modifications to process all polymers, from polypropylene all the way through to polyamide 6. Being launched in 2011, the S+ is the world's best-selling BCF system, efficiently manufacturing high-end BCF yarns worldwide.

At the OTM the focus was on Oerlikon Manmade Fibers' BCF technology with its proven S+ system. The experts for the Middle East market received a positive feedback: (from left to right) Ömer San (Tekstil Servis), Oliver Lemke (Oerlikon Barmag), Jürgen Gleissner (Barmag Brückner Engineering) and Arnd Luppold (Oerlikon Neumag).

The new Staple FORCE S 1000 staple fiber system was unveiled in Turkey for the first time. With its compact design, simple handling and energy-efficient operation, it is convincing not just for fiber manufacturers focusing on special applications and on 'on-demand' deliveries, it also enables nonwovens manufacturers to efficiently integrate fiber production into their own manufacturing facilities: with throughputs of up to 15 tons per day Staple FORCE S 1000 enables swift product color changes with considerably less waste. The savings in terms of energy and water resulting from the deployment

of a dry-drawing process lead to a reduction in operating costs and simultaneously protect the environment. And the option to install the system on a standard industrial floor minimizes investment costs as well.

At the exhibition, the Oerlikon Barmag competence brand placed the information focus on the highly-flexible POY and FDY spinning systems for spun-dyed polyester and polypropylene. Spin-dyeing is, above all, an interesting process against the backdrop of the sustainability discussion. To this end, a piece dyeing process requires around 30 times as much energy as the masterbatch dyeing process, while also emitting approx. 30 times more CO_2. Masterbatch dyeing results are also more even and thus low-wear, which is why textiles dyed using this method are preferred in the particularly critical automotive sector as well. (che)

Oerlikon Manmade Fibers likes Facebook

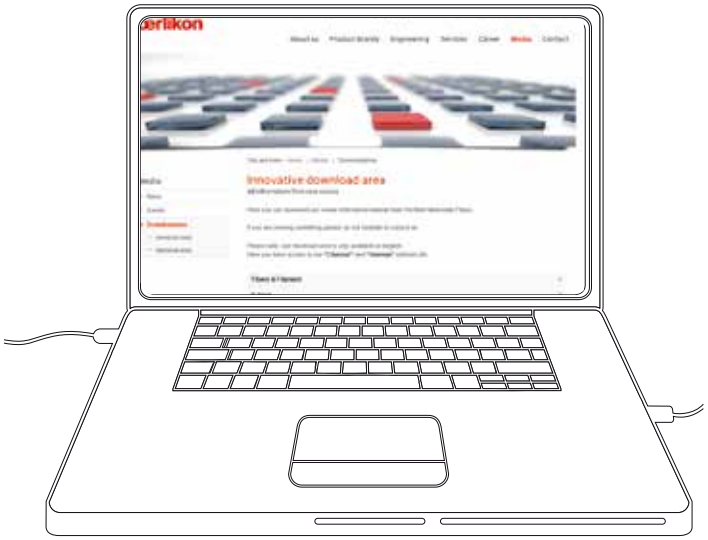
Inform, comment, intensify contacts – on the Oerlikon Manmade Fibers Barmag and Neumag brands' Facebook pages!

Oerlikon Barmag

Oerlikon Neumag

Here, you will find the latest reports and information relating to Oerlikon Manmade Fibers. Visit our Facebook page without becoming a Facebook member. However, leaving a comment for us or clicking on 'Like' requires a Facebook account.

For those who do not wish to spend time searching for our Facebook page can find a direct link on our Website. We look forward to your visit! (mn)



Product brochures from the download center

Oerlikon Manmade Fibers segment product brochures are available online. In a login-protected download area on the Website, customers can find – following one-off registration – comprehensive information on the entire product portfolio including our globally-operating Customer Service division. The brochures are regularly updated and users can easily download them in PDF format. (mn)

in brief

Feiplar/Feipur, Brazil

Focus on polyurethanes, plastics and fiber composite materials

At last year's Feipur & Feiplar trade fair in São Paulo, Oerlikon Barmag presented – in exhibitor area K5 – its metering pumps program especially for the metering and mixing work steps. The international exhibition and conference for fiber composites, polyurethanes and plastics welcomed an estimated 15,000 visitors between November 11 and 13, with around 300 companies from all over the world showcasing their products and new technologies.

In addition to numerous components for processing polyurethane, the Remscheid-based enterprise also presented components for processing other high-viscosity materials such as adhesives and silicon, etc.

Thorsten Wagener, the responsible sales executive for pumps, emphasized that "Oerlikon Barmag offers tailor-made solutions with its highly-developed range of pumps to ensure they enable precisely-defined and even metering." Whether foaming, bonding, casting or insulating and sealing – it was all on show at the 8th Feipur/Feiplar. (mn)

25,000th control cabinet installed

In September last year, the 25,000th control cabinet for a WINGS winder was completed at the Chemnitz-based Siemens plant. And the anniversary cabinet was finally installed in 'its' winder in the autumn. The Remscheid-based assembly team headed up by Heinz Duchene was thrilled to be able to celebrate this milestone. (mn)

Memorable moment: The 25,000th control cabinet for a WINGS winding machine has been assembled in Remscheid.

Axel Becker reinforces the Nonwovens sales team

Since October 1, 2014, Axel Becker has been Sales Director Nonwoven for Oerlikon Neumag. For 20 years, the native of Troisdorf worked as a product manager and international sales manager, among other things, for a manufacturer of nonwoven machines and systems.

After working at two well-known German machine builders, for which he was active as area sales manager, the 46-year-old has once again returned to the nonwoven sector. Now the businessman is reinforcing the Oerlikon Neumag sales team with his profound expertise.

Among other things, he is the owner of technological nonwoven patents. (che)

WINGS 1800/12-end system conquers the market

With just under 5,000 take-up machines sold within the first six months following its launch, the 1800/12-end system is already one of the most successful products in the history of Oerlikon Barmag. The new model convinces above all with its new string-up device. String-up for the WINGS 1800 is now even faster – despite its 12 packages.

The first WINGS 1800/12 end systems already produce high quality yarns at yarn manufacturers in China.

The new technology saves up to 30 precious seconds compared to its 10-end counterpart – hence making it faster than its competitors. The result: less waste.

Furthermore, the WINGS POY 1800/12-end excels vis-à-vis the 1500/10-end model, requiring less space per filament, hence further increasing efficiency. (bey)

First Future Materials Awards presented

The winners of ITMA Future Materials Awards – presented for the very first time last year – were announced on November 26, 2014 within the context of a festive ceremony in Dresden. Awards were presented for innovations in various categories: sportswear, protective textiles, industrial textiles and medical textiles. Oerlikon Man-made Fibers Marketing Manager and member of the jury André Wissenberg was extremely impressed with the applications submitted: “The field of industrial textiles offers incredible potential – both in terms of the applications and the market development.” (bey)

For more information, go to: www.futurematerialsawards.com

A variety of innovative textile solutions have been awarded with the ITMA Future Materials Awards.

Events

China Textile Round Table Forum
January 31-February 1, 2015
www.ctma.net

Global Textile Congress
February, 13-15, 2015,
Bangkok, Thailand
www.textileassociationindia.org

Filtech
February 24-26, 2015, Cologne, Germany
www.filtech.de

Outlook plus Latin America
March 3-5, 2015, Sao Paolo, Brazil
www.edana.org

JEC
March 10-12, 2015, Paris, France
www.jeccomposites.com

Filtrex Asia
March 17-18, 2015, Hongkong, P.R. China
www.edana.org

Domotex Asia
March, 24-26, 2015, Shanghai, P.R. China
www.dacf.cn

Technotex
April, 9-11, 2015, Mumbai, India
www.technotexindia.in

UTECH
April 14-16, 2015, Maastricht, The Netherlands
www.utecheurope.eu

Techtextil
May 4-7, 2015, Frankfurt, Germany
www.techtextil.messefrankfurt.com

Anex / Since
May, 13-15, 2015, Shanghai, P.R. China
www.anex2015.com

Airlaid products made from residual and recycled materials

Sustainable manufacturing with nonwovens

Nonwoven technologies are becoming increasingly flexible and high-performance, hence opening up new markets for specialties and opportunities with regards to important challenges of the future. An example: the most diverse raw materials and fibers can be processed using the airlaid process – even waste and recycled materials.

Those flying with Southwest Airlines will quite literally experience sustainably soothing travel. Because the cabin seating has been upholstered using an innovative, ecological recycled product. Its brand name: E-Leather. This product is manufactured using a patented process. Here, airlaid nonwovens from leather off-cuts are combined with a reinforcing fabric and bonded by means of hydroentanglement. The end result is a robust, flawless recycled leather, with a pigmented surface in many colors and on an endless bolt. The benefits, including low weight, durability, high-end look, environmental friendliness and its cost advantages, have already convinced airline, road and rail travel companies and the furniture sector.

This success on an industrial scale is not least down to an established nonwovens manufacturing process: airlaid technology. Also using the airlaid principle, the E-Leather off-cuts are also recycled in a special process, transforming them into leather fluff or fibers, which are then further-processed into nonwovens. With this dry nonwoven process, the fibers are pneumatically fed into the forming station and continually laid on a suctioned and air-permeable conveyor belt to create an even nonwoven.

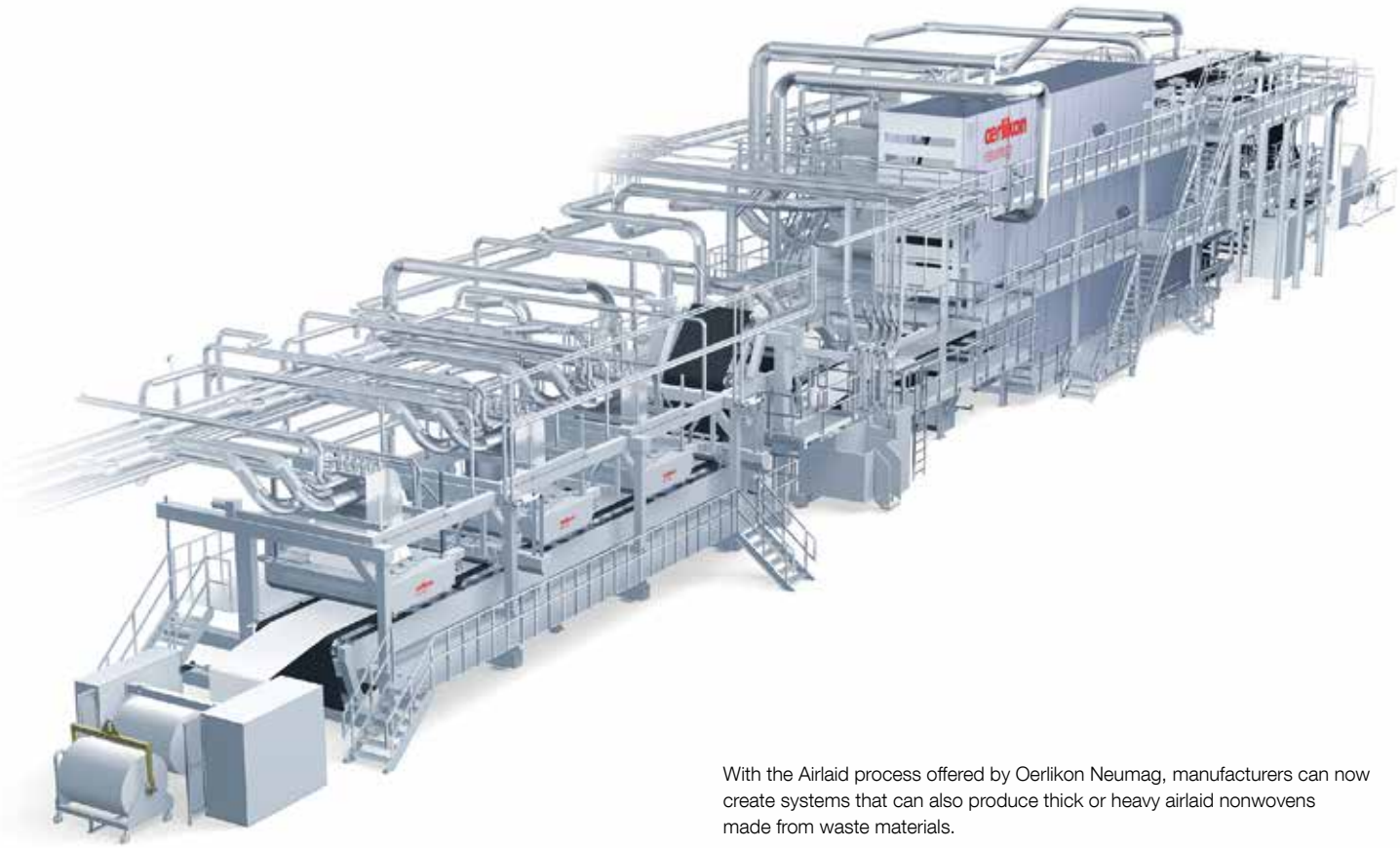
In contrast to the airlay process, with some occasionally mistaking the two processes, very short fibers of between 0.5 and 12 millimeters are used here. Furthermore, a huge variety of inexpensive raw materials can be processed: ranging from fluff pulp and all conceivable natural fibers all the way through to synthetic or industrial fibers of all kinds. These include inorganic materials such as dust and stone, glass, metal, aramid or carbon fibers and powders as well as super-absorbent fibers and powders. Even homogeneous raw material blends can be manufactured. Here, the development potentials range all the way through to the production of biodegradable goods and the creation of sustainable, resource utilization- and recycling-oriented manufacturing concepts in line with the 'cradle-to-cradle' principle. Because, as the example of E-Leather demonstrates, airlaid technology also opens the door to an attractive raw materials markets with considerable future potential and enormous cost benefits: recycled and waste materials.

Nonwovens made from waste

To this end, wool or shredded old tires can – usually in conjunction with bi-component fibers – be used to manufacture oil pads with excellent absorbency properties, for example. Old paper can be used to make insulating materials. Textile fiberglass waste or corresponding filtration dust can be processed into insulating layers. Cotton linters, nettles, poplar fibers, grasses, hay, straw, kapok, hemp and unbleached wood materials – all these natural, to date ignored fiber and residual materials can also be processed using airlaid technologies, with conceivable end uses as nonwoven products including reinforcements, insulating, filter and absorption materials

Because, as the example of E-Leather demonstrates, airlaid technology also opens the door to an attractive raw materials markets with considerable future potential and enormous cost benefits: recycled and waste materials.

or even wipes, paper handkerchiefs and tabletops. “Corresponding laboratory trials have already been successfully carried out in collaboration with the Sächsisches Textilforschungsinstitut (STFI/Saxon Textile Research Institute) and within the context of a research grant project supported by the German Federal Ministry of Business and Technology”, states Peter Schnell, Sales Director Airlaid at Oerlikon Neumag. With the process offered by the Neumünster-based company, manufacturers can now create systems that can also produce thick or heavy airlaid nonwovens made from waste materials. Even combinations with other nonwoven technologies, such as carded, spunbond and meltblown processes and with the most diverse tangling methods are possible – all tailored to the respective application. Due to the fundamentally modular structure of the systems, the company can also offer tailor-made manufacturing concepts for small and medium-sized batches. Here, the constantly further-developing and patented airlaid technologies on the one hand offer the basis for innovative new products made from virgin – or even old – raw materials or resources and, on the other hand, offer a considerably superior formation quality, high production speeds and superlative product performance and efficient raw material utilization.



With the Airlaid process offered by Oerlikon Neumag, manufacturers can now create systems that can also produce thick or heavy airlaid nonwovens made from waste materials.

Nonwovens, the future of the market

For all these reasons, airlaid production could also be of great interest to manufacturers of fibers and yarns, where normal production operations regularly generate process waste, which is sometimes expensive to dispose of. But not just for this reason: the global nonwovens market has been growing continually for some years now. According to EDANA (European Disposables and Nonwovens Association), the global production of nonwovens totaled around 7 million tons and is expected to rise to around 10 million tons in 2016.

Today, airlaid nonwovens are predominantly manufactured from the very short and very attractively-priced raw material, fluff pulp. This natural cellulose fiber is also used in paper production. In 2013, its share of airlaid production totaled around 425,000 tons, which corresponds to a surface area of 10,000 km². Over the next five years, the production of classic airlaid products, such as nonwovens for feminine hygiene, wipes and disposable tableware, is expected to grow by around 5% annually worldwide. The greatest demand will come above all from the densely-populated emerging countries in Asia. However, there will also be new, innovative products in the airlaid market. Here, the automotive sector is a particular driving force for new and sustainable materials manufactured using airlaid and general nonwoven technologies. And, last but not least, there is currently a noticeable global change in awareness among consumers and manufacturers of sustainability and the problems of waste and the environment.

Against this background, airlaid specialties made from recycled and waste materials and sustainably-produced products will be subject to growing business opportunities. “The STFI offers interested parties the opportunity to carry out raw material tests and product development using a small airlaid system”, states Peter Schnell (see Infobox). In view of the rising number of new nonwoven products and applications, there are undoubtedly further raw materials to be discovered that can be processed using airlaid technology – and innovative products to be created which will be successful on an industrial scale very much like E-Leather. (bgu, imm)

With the Airlaid process offered by Oerlikon Neumag, manufacturers can now create systems that can also produce thick or heavy airlaid nonwovens made from waste materials.

Test stand for airlaid product development

The Sächsische Textilforschungsinstitut (STFI/Saxon Textile Research Institute) in Chemnitz, Germany, offers – in collaboration with Oerlikon Neumag – interested parties the opportunity to conduct pre-development and trials for nonwoven products. The test stand combines an airlaid and an airlay system with an air-through oven for pre- and final-thermobonding of laid nonwovens.

Bioplastics – a future market

Bioplastics are increasingly ceasing to be niche products and are becoming more mass market, although they remain specialties in the textile segment. However, some biopolymers already achieve or exceed the common properties of manmade fibers manufactured using fossil raw materials. And there are many indications that they become a true textile alternative in the long run. Oerlikon Barmag is already prepared for this development with flexible machine technologies.

The milk is hanging in the closet – these were the press and TV headlines back in 2011 when a "made in Germany" innovation hit the headlines. A dairy waste product spun into bio-fibers took to the catwalk with numerous benefits. Claims state that milk protein fibers are created 100 percent from renewable raw materials and are completely compostable; the corresponding textiles are silky-soft, skin-compatible, antibacterial and suitable for those with allergies. And these properties are present from a 20 percent ratio in fabrics. Production at the company-internal facilities will begin in 2014. Other biopolymers can also demonstrate excellent properties, but have been commercially successful and available on a production scale for some years now. Polylactide (PLA), for example, is manufactured by means of polycondensation of lactic acid, corn or tapioca starch and is therefore completely bio-

QMILK is based on 100 percent renewable resources and can be freely modified and co-polymerized.
© QMILK (Source: European Bioplastics e.V.)

German outdoor equipment and clothes company Yeti produced its water-resistant down jacket „North“ using biobased nylon for the outer shell.
© Yeti GmbH (Source: European Bioplastics e.V.)

based and simultaneously 100 percent biodegradable. For this reason, this biopolymer is used above all in packaging applications, but is also used in nonwovens such as spunbond rolled goods for example, in filling fibers or in apparel worn directly on the skin. The main producer, NatureWorks, already operates a plant with an annual capacity of 140 kilotons in the US and is planning to establish a further plant in Thailand. Major PLA producers can also be found in Germany, China and the Netherlands.

A further successful product is Sorona from DuPont. This bio-fiber has a weight ratio of 37 percent of annually renewable plant-based raw materials. It has the properties of polyester (PET) and nylon, is very soft and is extremely durable and stain-resistant. Sorona is deployed in carpets, apparel and automotive textiles. DuPont advertises the ecological benefits of the fibers above all: Their manufacture requires 30 percent less energy and emits 63 percent fewer greenhouse gases than in the case of the production of polyamide 6. Compared to polyamide 6.6, the manufacture requires 40 percent less energy and emits 56 percent fewer greenhouses gases. Due to the growing demand for this product, the company is planning to invest US$ 30 million at the US Kinston site over the next three years.

PA 5.6 seems to harbor lots of future potential. The bio-based nylon material is generated from starch and does not need to shy away from comparison with PA 6.6 or PA 6. On the contrary: PA 5.6 fibers such as Terryl from Cathay, which can be used for sports apparel and underwear for example, are good for spinning, have good mechanical properties as well as a high degree of textile wear comfort and even exceed the classics in terms of their heat resistance and moisture absorbency. The disadvantage of these polymers: their still relatively high development and manufacturing costs.

Market with high double-digit growth

This decisive handicap affects the majority of bioplastics and is delaying their shift from niche markets into the mass market. Their production volumes are still too small, with the result that their pricing is not yet able to benefit from economies of scale. To this end, the findings of a study conducted by the European Bioplastics trade association ascertained that biopolymers made up less than one percent of the total volume of 290 million tons of plastics manufactured in 2012. However, it is anticipated that the 1.4 million tons in 2012 will grow to 6 million tons by 2017. Market research institute Ceresana Research anticipates sales of biopolymers to reach more than US$ 2.8 billion in 2018.

Will the cultivable land required for renewable raw materials which in turn are used for manufacturing biopolymers be at the expense of food cultivation?

This is supported by forecasts predicting double-digit annual growth, a fast-growing number of new developments for the most diverse application markets and the pulling power of prominent brands that are already focusing on bioplastics – from Coca-Cola and Danone, Ford, Mercedes, VW and Toyota all the way through to Puma.

With this trend, the fact that mass-market plastics such as PE, PP and PVC can also be manufactured from renewable materials instead of fossil raw materials – with the identical properties – also plays a role. Here, so-called drop-in-solutions are being increasingly used. These deploy conventional synthesis pathways for petrochemical plastics, but use biogenic raw materials. To this end, the period required from development to marketing can be considerably shortened and costs reduced. In this way, conventional plastics could increasingly be replaced by biopolymers in the future. According to some estimates, this could be possible for half of the six million tons of disposable packaging we produce, for example.

MobileEdge has incorporated DuPont™ Sorona® renewably sourced polymer into their ScanFast™ 2.0 Collection of laptop bags. Sorona® contains 37% annually renewable plant-based ingredients by weight.
© Dupont (Source: European Bioplastics e.V.)

Against this background and due to the growing demand, the prices for bioplastics are expected to continue to fall. These will profit also as a result of the expected long-term rising prices for polymers, which are dependent on finite crude oil reserves.

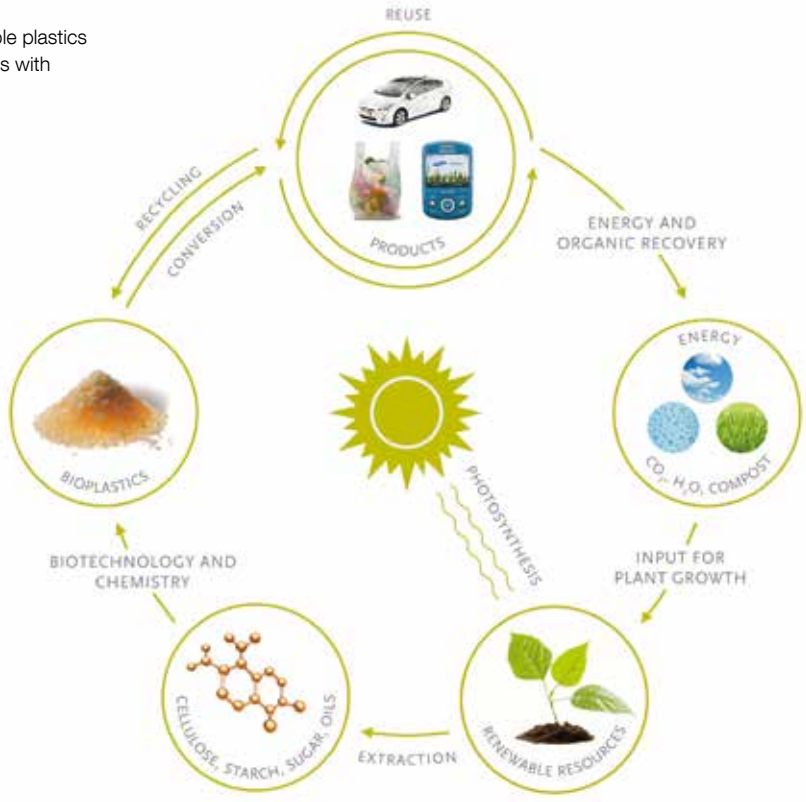
Sustainable change of image

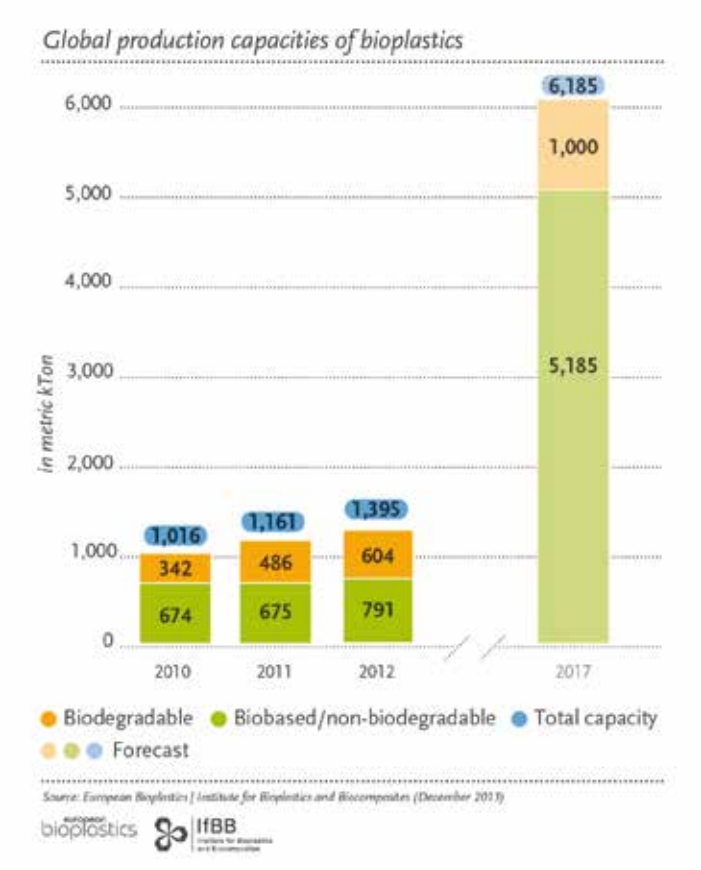
A further significant market driver is growing ecological awareness across the globe. Topics such as climate protection and waste problems are meanwhile leading to a change of image within the industry. The ecological discussion has intensified above all in Asia. The industrial importance of biomass and the interest in bioplastics are growing particularly in China. To this end, the Chinese government is driving forward the development of biodegradable plastics by, for example, limiting the use of non-degradable products and restricting their use for shopping bags, for instance, since 2008. From this commitment to sustainability and ecological values, commercial data agency Textiles Intelligence currently concludes that there is increased interest in, and utilization of, clear bioresins and biofibers within the Chinese nonwovens industry. This is not just down to the swift rise in demand for textile hygiene, care and medical products within the country, but also because of the resulting growing waste problem. China lacks a well-performing waste incineration and recycling infrastructure, which is why biodegradable materials are currently experiencing such a growth in importance. It is not least due to its tremendous population and the fact that it is the world's largest textile producer that China therefore offers a gigantic market for bioplastics and is already the largest manufacturer of bio-based plastics overall.

"In the textiles sector, we have registered that the PLA and PA 5.6 biopolymers are currently a major focus in China and Asia", reports Markus Reichwein. The Senior Product Manager at Oerlikon Barmag believes his company is well-equipped to cope with this demand for textile machines for processing bioplastics: "Our fiber manufacturing technologies are also ideal for such purposes. We already have customers with extensive experience in manufacturing these bioplastic fibers using our machines and systems."
In addition to the great opportunities, the bioplastics market also poses challenges, of course. On top of the already-

The life cycle model of biodegradable plastics illustrates the variety of opportunities with regards to sustainability.

Source: European Bioplastics e.V.





mentioned high costs, which can in principle be reduced or converted into lower prices by means of drop-in-solutions or mass production, the bioplastics industry is still battling with one question that is becoming increasingly emotionalized: will the cultivable land required for renewable raw materials which in turn are used for manufacturing biopolymers be at the expense of food cultivation?

European Bioplastics is trying to dampen this controversial issue with statistics: here, the cultivable land used for bioplastics production in 2012 was less than 0.01 percent of global agricultural land, which totals 5 billion hectares. Even with the aforementioned growth forecast for 2017 – with an increase from 1.4 to 6 million tons of bioplastics – this would merely mean a rise in the cultivable land used for bioplastics production of 0.02 percent of all agricultural land. This is contrasted by 97 percent of all agricultural land used for food production. These figures promise – even in the more distant future – sufficient leeway for the production of biopolymers. Furthermore, it is also possible that demand for land will decrease with the increased deployment of bio raw materials such as so-called non-food plants or biomass made from cellulose. The deployment of food residue and waste products could also help reduce the amount of cultivatable land required – all courtesy of the milk in your closet. (tho)

Bioplastics: productive family

Bioplastics are the earliest industrial mass-produced plastics: the first factory manufacturing celluloid was opened in around 1870. Among other things, this cellulose-based thermoplastic was used in the manufacture of photo films and toys. This kind of bio-based polymer can also be created from plant biomass such as corn or sugar cane by means of fermentation and subsequent polymerization, the synthetization of monomers into macromolecules. By melting (thermoplastics) or dissolving (aramid or viscose spinning plants), the plastic polymers are then transformed into an application-appropriate shape, for instance molded parts or fibers. Furthermore, biodegradable polymers are meanwhile also being produced. Here, microorganisms convert materials into natural substances such as water, nitrogen or compost – without any chemical additives.

To this end, the bioplastics can be split into three subgroups according to European Bioplastics:

- Bio-based, non-biodegradable plastics such as bio-based PE, PP and PET (‘drop-ins’) and industrial polymers such as PTT and TPC-ET;
- Plastics that are bio-based and biodegradable such as PLA, PHA and PBS;
- Plastics that are fossil-based and biodegradable such as PBAT.

The applications range from packaging, apparel and carpets, seat upholstery and foam materials, consumer electronics and construction materials all the way through to toys and sports articles. To this end, biopolymers basically have the same properties as conventional plastics, but frequently offer additional benefits such as greater heat resistance and elasticity or more or less water vapor permeability. But their ecological benefits will be even more important in the future: in part, biopolymers are biologically-degradable or can be recycled for generating thermal energy or for reuse as a material. Furthermore, they also use renewable raw materials, replacing fossil fuel-based materials. Above all bio-based plastics that are simultaneously biodegradable will be able to help reduce the emission of greenhouse gases and the CO_2 footprint of a product, hence making a contribution towards the solution of the waste problem.

Carbon and aramid fibers

Special pumps for special requirements

At first glance, rowing boats, tennis rackets and heat-protection clothing or fiber glass cables and brake pads would appear to have very little in common. However, this changes when we take a closer look. Among other things, all these different items receive their specific properties through the utilization of very special fibers – carbon fibers, on the one hand, and aramid fibers, on the other hand. What both have in common is their low weight and their increasing industrial significance in specialty markets.

From white to black thread – the carbon fiber

Carbon fibers made from polyacrylnitrile fibers (PAN) are industrially-manufactured fibers, which are converted into carbon in a graphite-like manner by means of an oxidation and pyrolysis process. Outstanding tenacity, good resistance to high temperature and thermal shock and excellent chemical resistance make carbon fibers the preferred material for use under extreme conditions. The starting material for manufacturing high-performance carbon fibers is the so-called PAN precursor. The quality of the precursor plays a decisive role in compound materials manufactured from carbon fibers. Ensuring that the material is easily processed into carbon fibers in the downstream processes and achieving the required tenacity values for the carbon fibers is dependent on the evenness of the precursor fibers.

Metering under more difficult conditions

The Oerlikon Barmag gear metering pumps play an important role when manufacturing this challenging starting product. When preparing the polyacrylnitrile solution, the Oerlikon Barmag gear metering pumps guarantee the respectively required precision recipe by means of high-precision metering. Only then can the correct composition of the starting materials be ensured. In the downstream wet spinning process, the spinning pumps meter the spinning mass and ensure precise pressure build-up, whereby the titer fluctuations are kept as low as possible. Inaccurate metering would result in yarn breakage or unevenly oxidized or carbonized fibers and hence production waste,

Carbon fibres are used in applications where low weight and extreme stability are prerequisites. Oerlikon Barmag delivers pumps and winders to process the demanding material.

unevenly oxidized or inferior quality in the downstream process steps – for example during oxidation and pyrolysis.

The spinning pumps have been developed especially for the challenges of this complex process. They can be hermetically sealed (in accordance with the stipulations of the Federal Emissions Law – 'TA-Luft' [Technical Guidelines on Air Quality Control]) and therefore ensure that no toxic products can escape and harm people or the environment. To this end, the applications for the pumps are as diverse as their tasks are demanding. The composition of the spinning solutions determines the material from which the pump is manufactured, with the deployment details therefore defining the respective materials.

A similar situation also applies to the manufacture of aramid fibers. Manufacturing fibers by means of polymerization and the deployment of sulfuric acid as a solvent is a frequently used method. Only very heavy-duty, wear-resistant pumps can be used in this aggressive environment. Special materials and selected coatings for excellent surface hardness ensure that the pumps are able to carry out their tasks reliably and long-term.

Process reliability and efficiency

The Oerlikon Barmag gear metering pumps will also be able to more than efficiently solve challenging future metering tasks. Furthermore, the pumps guarantee stable and secure processes wherever the stipulations of the Federal Emissions Law apply due to the deployment of critical media. (wa)

A clean HOY process with WINGS

Due to its relatively small market share, high-oriented yarn (HOY) is considered to be a specialty product. Its share makes up around 5% of overall textile filament yarn production, with – as in the case of other textile manmade fibers as well – its primary sales markets in China and India.

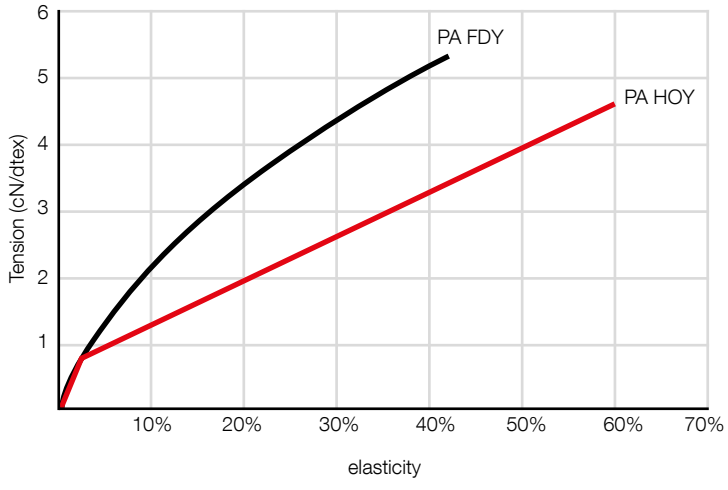
The first HOY PA6 processes were unveiled back in the 1980s, with he aim of creating an inexpensive investment alternative to FDY systems.The result is a yarn whose physical properties lie between those of POY and FDY. This yarn can be manufactured on a standard POY system equipped with the WINGS PA6 concept that has been modified in a few decisive areas. With a stretch of between 55 and 65% and a tenacity of 3.8-4.2cN/tex, in its applications HOY is an inexpensive substitute for FDY. Due to the high stretch of HOY yarn, the expensive addition of elastane can also be dispensed with.Correspondingly, the material is frequently used in applications similar to those of FDY, in which an inexpensive price level for the end product is a priority.

In India, these are traditionally dupattas (shawls); worldwide, the yarn is processed to create light fabrics for apparel with a high degree of elasticity. In addition to the common end uses, HOY and FDY yarns can both be further processed without texturing. To this end, it saves a further downstream manufacturing step and the yarn can be directly twisted, woven or knitted in the downstream process.

The difference in detail: HOY and FDY

The greatest difference to FDY can be described using a tension/elasticity diagram. If the tension/elasticity curves of both yarns are superimposed, the difference becomes clear (see Figure 1).

Figure 1



Typically, HOY has the so-called yield point at a tenacity of approx. 0.8cN/dtex. From this yield point, each increase in tension results in a permanent deformation of the yarn. We know about the peaks in these further processes, which an FDY yarn can handle without any problem. However, these peaks are a huge issue for HOY yarns. This is, among other things, due to the fact that HOY yarn is used in applications that depend on the quality requirements for the end product and the formation process.

Process technology challenges

In terms of process technology, HOY is comparable with the POY process, although it runs at around 10% higher production speeds than polyamide POY. Directly further processing the yarn requires the application of oil in excess of 1% for HOY yarn. Consequently, the HOY process requires more than twice the amount of spin finish compared to the standard process. This is precisely where the challenge of the HOY process lies. Oil is scraped off, and practically blown off the surface, at each point of contact between the yarn and the yarn guides and, of course, particularly in the tangling jets. The resulting process-typical oil mist in the air and the oil film in the area around the winder make this working environment unclean for operating staff and systems and no longer tolerable from an HSE (Health-Safety Environment) point of view. As an international corporation, the HSE topic is considered to be extremely important at Oerlikon. Numerous innovations from the Manmade Fibers segment, among other divisions, have their origins in the ongoing endeavor to create safe and ergonomic working environments. Also, many new technologies and solutions have been developed and created as a result of environmental and sustainability considerations.

Encapsulated draw unit guarantees a clean process

These considerations also influenced the development of a WINGS solution for the HOY process.

The result: an encapsulated draw unit ensuring that the scraped-off and/or spraying spin finish does not contaminate the surrounding areas. Innovative solutions in the suction unit of the specially-modified tangling jets as well as in the drainage channel directly underneath the draw unit also ensure safe removal of the surplus spin finish. Housing the godets and the tangling unit has been made possible thanks to the compact design of WINGS. If equipped with a cover to their draw units, conventional POY/HOY concepts would be virtually impossible to operate; furthermore, the energy consumption of special suction devices used in conventional system layouts is considerably higher.

The polyamide HOY process with the WINGS concept has a broad process window: providing 30 to 100 den final for take-up speeds of up to 5,200 m/min, the new system operates under superlatively clean conditions. (bey, sfa)

With its completely encapsulated draw field, WINGS reduces to a minimum the otherwise common contamination in the winding area caused by the spin finish and hence ensures the process is clean.

The pilot plant in Neumünster

The cradle of innovative spunbond products

With their spunbond pilot plant, Oerlikon Neumag is focussing on technical nonwoven applications. Dr Eng Kirsten Prehn, Head of Development Meltspun Process informed us of the background.

With the increasing, worldwide expanding infrastructure, technical texiles/ nonwoven applications are becoming more and more significant. In particular geotextile applications and technical textiles for the building industry such as roofing membranes and underlays, as well as filtration applications show a considerable growth. Oerlikon Neumag recognized this trend early on and, during the past two years, increasingly focussed on nonwoven products for technical applications also from continuous filament. In order to technologically meet the challenges of the market, the spunbond pilot plant has been expanded.

The aim is the adjustability of the products required on the market as well as a comprehensive product development. The pilot plant also enables the further development of the process and the machine technology as well as the production of application-related, optimized nonwovens. In cooperation with the Oerlikon Neumag sales department, customers can also use the pilot plant for product development and optimization. Extensive testing appliances are available for analyzing the nonwovens. Moreover, the line width of 1.200 mm is adequate for various post processing steps so that the nonwovens can also be tested and the requirement for the adjustability of the products on the market is met.

The aim is the adjustability of the products required on the market as well as a comprehensive product development.

The pilot plant is classically used for PET (polyester), PP (polypropylene) and bico-composite, alternative polymers such as PLA can however also be spun. Oerlikon Neumag has extensive experience and a high process reliability, specially for polyester types with different viscosities, but also for special polymers.

Practice makes perfect – realistic conditions on pilot plant scale

We have a continuous spunbond plant with 1.200 mm working width with SMS structure, i.e. one spunbond beam (S), then one meltblown beam (M) and a further spunbond beam (S) in machine direction. Technical nonwoven applications with one layer spunbond are preferably realized with the front spinning beam in machine direction.

Spinning unit & co.

The spinning unit in the main comprises the following functional groups with their functions:
First we have a discontinuous crystallizer and drier with batch filling, for e.g. different PETs or PLAs. The dried polymer is filled in big bags and the respective gravimetric dosing unit is filled via a suction conveying device. Each of the three spinning positions has 2 universal extruders, one smaller and one larger. Either mono or bico operation can be run via modular melt distributors. Various spinnerets respectively spin packs are available for the most different polymers, titer and set ups.

The cooling unit is below the spinning system. A further core piece of the plant is the draw-off unit with variable, adjustable gaps and pressures accord-

ing to the process requirements and product parameters, as well as the diffusor with adapted vacuum exhausting. According to the products to be processed, we have conveyor belts with different belt structures, surfaces and permeability. Several follow-up modules are available which can be variably applied, respectively used alternately with each other. Especially for PP geotextiles we have a connectible spin finish application unit which can apply various spin finishes for influencing the filament surface condition, respectively the statics over the belt before the bonding.

For bonding the nonwoven, we have a calender from Andritz Küsters GmbH for thermal bonding. Alternatively, two high-capacity hyper-punch needling machines from Dilo Machines GmbH, with two needle boards each and needling direction from the top, respectively the bottom, horizontal moving components for the needles and a high stroke frequency for high processing speeds, can be modularly installed.
On the one hand, a semi-automatic winding station for low process speeds and smaller roll diameters is available as a winder. On the other hand we also have a fully automatic high-speed winder for a higher speed and longer running lengths resp. roll diameter, from Edelman Technology GmbH & Co. KG.

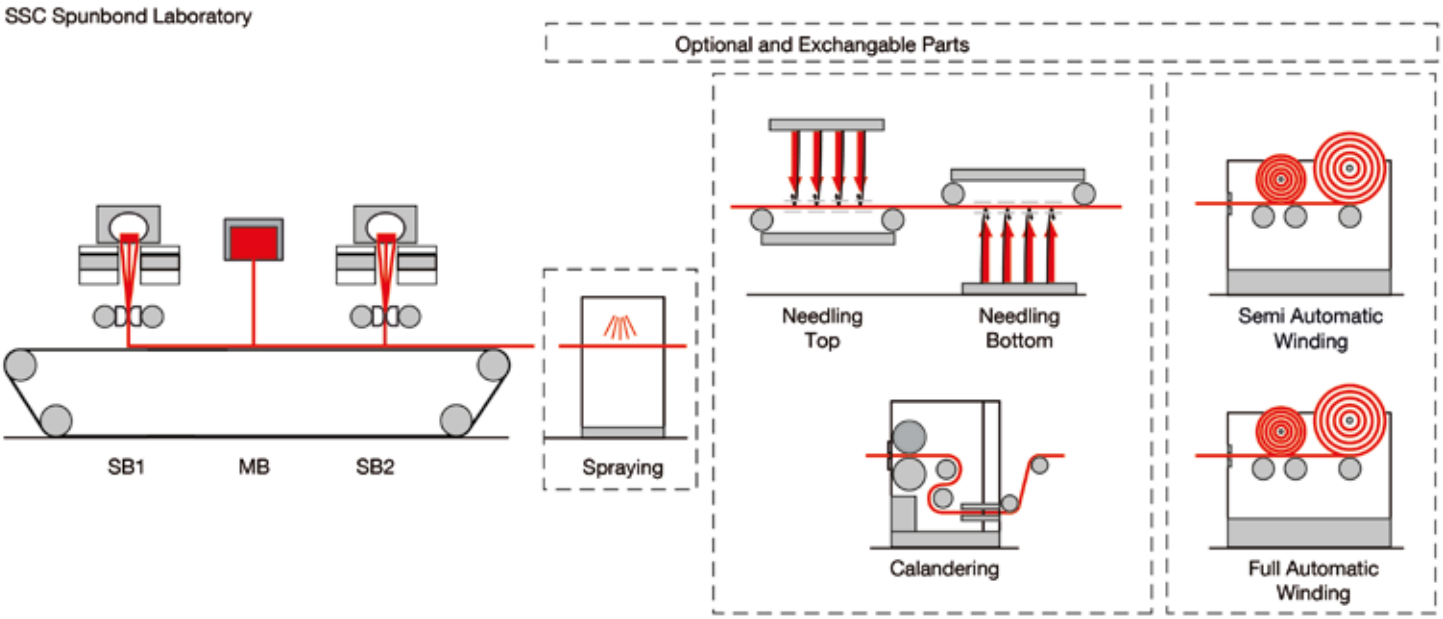
Suitable line structure for each product

The previously mentioned modules can be individually positioned to the line so that the most suitable line structure can be built up for each product and operated with the original configuration.
On the technical product sector, needled nonwovens for geotextiles and roofing substrate and also calendered nonwovens for underlays and filtration applications, can be produced.
If necessary, offline components for further processing can be used with external partners. This includes heat-setting stations and binder application stations.

The process and quality controls are effected in Oerlikon Neumag's comprehensive measuring laboratory.

This laboratory offers:
- moisture measurement of the chips
- transmitted light and incident light microscope for titer determination respectively bico assessment
- filament tenacity and elongation measurement
- weight and thickness measurement according to DIN
- tension testing machine for various tensile and puncture tests
- measurement of the characteristic opening width
- measurement of the water permeability, air permeability and water column as well as filter efficiency

The aim of the product development at Oerlikon Neumag in the upcoming months, is the further deepening of the existing expertise on the PET substrate sector and the further development of these products so that comprehensive data on this sector are available for the customer. The basis is, in this case, the PET roofing substrate shown on the attached table. (pku)



Quantum leap in the high-speed BCF production

RoTac promises energy-efficient tangling

The constant increase of productivity, respectively of the process speeds results in higher demands on the tangling. Consequentially: higher air pressures and a double tangling. The compulsory cost increase for the necessary air is a necessary evil. In addition, so-called tangle dropouts / breakdowns can result with very high process speeds. These are so problematic because they impair the carpet appearance, in particular with tricolour carpets. The solution to this is RoTac. The new rotating tangle unit from the market leader for BCF yarns in Neumünster. means an energy-efficient tangling at high speeds. In comparison to conventional tangle units, there are two principle changes in the RoTac:

1. The air supply is pulsating instead of continuous.
2. The tangle nozzle rotates with the yarn.

RoTac³: The system is now available for new as well as existing S+ BCF machines.

Pulsating air current for an energy-efficient tangling

The tangle nozzle is provided with air by a stationary air supplying unit. The core element of the RoTac is a rotating nozzle jacket which has a certain number of borings with a corresponding spacing according to the required number of knots. If a boring is positioned over the compressed air opening, an air blast is released and tangles the yarn. Therefore, compressed air is only consumed if a tangle knot is to be formed, thus considerably reducing the necessary volume flow and in turn the energy consumption. In comparison to conventional tangle units, the compressed air consumption is reduced by up to 50% depending on the type of yarn.

With this principle, the yarn has a uniform amount of knots split up in a defined spacing. The tenacity of the tangle knots can be optimally adjusted via the force of the compressed air, in wide ranges also independent of the number of knots.

Rotating nozzle for optimal yarn quality also at high production speeds

With the RoTac, the performance of the tangling can again be increased also at high speeds. Through the better controlling of the number and thickness of the tangle knots, the yarn uniformity for the further processing is improved. This in turn enables the BCF producer to potentially further reduce the air consumption. It is highly probable, that the uniformly tangled BCF yarn offers additional advantages for the subsequent processing steps.

A better future with RoTac

This is, however, not the only advantage: through the changed, smoother yarn guiding into and out of the tangling unit, yarn friction is reduced in this area. This not only results in less dust and reduced yarn breaks, but also a higher process stability, in particular with fine titers and special, more brittle polymers.

The first RoTac systems were already used in 2012 in the single-end Sytec One plant. After the further development and intensive tests, RoTac will now also be integrated in the 3-end S+. The RoTac³ is designed so that it can be retrofitted into existing S+ plants. (che)

Within the context of the Aftersales Services Upgrade & Modernization, Oerlikon Neumag generally offers the retrofitting of S+ plants with the RoTac³. Those interested can obtain more information under: service.neumag@oerlikon.com

‘Fibers offer unexpected opportunities’

Georg Stausberg assumed the position of CEO for the Oerlikon Manmade Fibers segment on January 1, 2015. ‘Fibers & Filaments’ spoke to him about trends and technologies within the textile sector.

» Mr Stausberg, you have been working in the manmade fiber sector for over 25 years now. What do you find so captivating about this business?

The desire for apparel is a fundamental need of all humans. Due to the continuing population growth across the globe and the limited cultivable land available for natural fiber sources, it will only be possible to satisfy this need and demand in the long term through a rise in the deployment of manmade fibers. However, this requires innovative solutions, both in terms of applications for fibers and filaments and in terms of the machines and systems for manufacturing such fibers. When we take a close look at the history of manmade fibers,



we can see the incredible pace at which the fiber sector has developed over the years. And we as machine and systems builders have made a contribution to this fascinating development.

We are constantly discovering new properties in the various fibers. To this end, textile materials are consistently being used for new applications, replacing other materials in the process. And this innovativeness is most obvious in the industrial sector: the properties in terms of stretch with simultaneous tenacity are unparalleled. Just think about safety belts and airbags or the entire geotextiles sector. There is the perfect fiber for each and every application.

But there have also been countless innovations in the area of apparel textiles. Polyester fibers 50 years ago cannot be compared to contemporary fibers. Manmade fibers today assume completely different functions: they are anti-static, antibacterial and cotton-like – manmade fibers today unite natural fiber properties with the functional benefits of manmade fibers. From this point of view, they are actually superior to natural fibers.

» Bioplastics are also a strongly-growing part of the market. Where do you see Oerlikon Manmade Fibers technology in this context?
We have carried out comprehensive biopolymer processing tests for various customers on our R&D Center systems and have also supplied individual systems. Technologically, we are well prepared and equipped for this trend.

» Sustainability is an important topic for Oerlikon Manmade Fibers. How do you rate the market development of biopolymers?
Their properties are comparable with fossil-based polymers, as is the manufacturing process. The decomposition process is considerably simpler though. To this end, biopolymers are absolutely an alternative with mass production potential, especially in the nonwovens used for hygiene, care and medical products. However, biopolymers are also the prudent choice in other applications. I believe that the decisive question is when, and at what cost, biopolymers will be available in sufficient quantities to also permit the efficient manufacture of mass products.

» And one final question: manmade fibers or natural fibers – which will own the future?
Very clearly manmade fibers. The manmade fibers market share meanwhile makes up in excess of 60 percent of the market. This trend will continue and manmade fibers will extensively replace natural fibers in many areas of the apparel industry in the medium term. There are numerous reasons for this: firstly, the natural fiber market is subject to strong price fluctuations, just like the markets for all other agricultural products. Here, raw material scarcity plays a major role. In contrast, manmade fibers are independent of this and can be manufactured anywhere in the world at comparatively consistent prices. Furthermore, the process of manufacturing manmade fibers is also the cleaner and more sustainable solution when viewed from an ecological perspective. For example, tons of pesticides and many cubic meters of water are consumed before a cotton fiber is 'wearable'. Thanks to our direct spun-dyed process, it is now possible to virtually dispense with water altogether when producing manmade fibers and still achieve excellent yarn quality.

Mr. Stausberg, thank you very much for this informative chat. We wish you a good start in your new position. (bey)

How the Polish polyamide yarn manufacturer Stilon is defying its Asian competition

Specialties as the recipe for success

The Polish company ZWCH Stilon looks back on a long tradition as a manmade fiber manufacturer. Polyamide filament yarn has been manufactured in Gorzów since 1951. The raw material caprolactam required for this has been produced by the company itself.

Today, Stilon is considered one of the few manmade fiber yarn manufacturers in Europe that is successfully competing with the Asian market players. Yarn with the Stilon brand name continues to be considered a high-end product.

CEO Jakub Matyjaszczyk (left) and Director of Production Arkadiusz Rychlicki spoke with Fibers & Filaments about their recipe for success and their plans for the future.

» The Polish Martis Group diversified its business six years ago by acquiring Stilon: from yarn trader to yarn manufacturer. What was the motivation?

Jakub Matyjaszczyk: Martis looks back on a long tradition as a trader of polyamide yarns. In 2008, the company was able to acquire Stilon from Nylstar, expanding its value-added chain in the process. In principle, investing in a polyamide yarn manufacturing facility was a logical step for the Martis Group. At the same time, it was a great opportunity for Stilon to distribute its products itself.

» The major manmade fiber production capacities are in Asia. How can you compete with these large-scale players? What is your recipe for success?

Arkadiusz Rychlicki: Our strengths are flexibility and technology: we have a comprehensive product portfolio, offering a wide range of products for specialty and niche markets demanding high-quality yarns. Therefore, we do not compete with the major suppliers from the Far East. Moreover, the location of our plant is a further competitive advantage since our customers are mainly located within Europe. This means that being in the heart of Europe is well ensuring that we have advantages in terms of delivery times simply on the account of the less challenging logistics.

» For which applications and markets do you predominantly manufacture?

Arkadiusz Rychlicki: Our polyamide yarns are predominantly deployed in the production of circular knitting, hosiery and seamless, where microfilaments are especially applied. We further process in-house by means of warp knitting, allowing us to offer our yarns on warp beams. Our sales markets include all of Europe, with approx. 40% of our products destined for the local Polish market.

» Until now, you have mainly manufactured polyamide. However, polyamide is being replaced by polyester in many areas. Is setting up polyester production systems an option for you? What are your plans for the future?

Arkadiusz Rychlicki: We are not especially concerned about polyester replacing polyamide in the market. The properties and the yarn parameters of polyamide cannot be easily substituted. Thus, we will mainly focus on

polyamide and PBT production in the future. We will carry on to specialize on the production of both types of polymer for the European market.

» What do you think the yarn market will look like in five years? What trends do you see with regards to yarns demanded by the market?

Jakub Matyjaszczyk: Quality is the key to success. We predict increased demand, and hence corresponding potential, for quality yarns. So, quality over quantity. For us, this means that we want to increase our market share and to develop new markets. For this, we have upgraded our production facilities with new spinning systems and texturing machines.

» You have purchased Barmag products for the first time now – why?

Jakub Matyjaszczyk: The starting point was that we wanted to increase our quality yarn capacities. In general, our yarns are destined for warp knitting processes, which require a high level of evenness in the supply material. To this end, we consciously opted to collaborate with the technology leader. We expect Barmag equipment to provide superlative systems quality and, of course, also to supply first-class yarn quality.

Gentlemen, thank you very much for talking to us. We wish you continued success with your products and business. (bey)

Manmade fiber producers rely on energy-efficient Oerlikon technology

Supporting the growing bottling market

The turnkey plant was handed over to EIPET at the beginning of 2014.

With the drastic increase in world population, drinking water is a scarce resource. Optimum conservation and an efficient transport are all the more important for these precious resources. The light, unbreakable PET bottle is in this case the first choice. Investment in production facilities for the synthetic granulate out of which the bottles are made, is particularly high in the emerging nations. With its high level of technological expertise in the production and handling of synthetic materials such as man-made fibers, Oerlikon Barmag has enabled a customer in Egypt to establish himself in the growing market for bottle-grade granulate by constructing a plant from the planning to the commissioning.

Worldwide, water is becoming increasingly scarce. The best way to keep it fresh and easy to transport, is to bottle it. Global consumption of bottled water has more than doubled in the past few years. Today, over 200 billion bottles of water are drunk every year. "Bottles made of synthetic materials have virtually replaced glass as a packaging material for water and other drinks," says Michael Scholz, Project Manager at Oerlikon Barmag in Remscheid. Bottles made of synthetic polyethylene terephthalate (PET) are not only practical and unbreakable: because of their low weight, transporting them, also consumes less energy. A further advantage is that the material can be easily recycled.

Beverage bottles are probably the best-known use for PET, but certainly not the only one: more than half of the annual production of 45 million tons is processed to manmade fibers. These are wrinkle-free and tear-resistant and absorb very little water. They are therefore also ideal for clothing that needs to dry quickly. Such fibers are also used in so-called geotextiles for stabilizing roads and dams. Oerlikon Barmag, a division of the Oerlikon Group's Manmade Fibers Segment, has unique know-how in the manufacturing of equipment for the production of these manmade fibers.

Worldwide demand for synthetic materials continues to rise

"As this practical material is very much in demand for textiles as also for packaging, many companies are investing in the expansion of production capacities," says Scholz. A consortium of Indian and Egyptian investors decided to establish themselves in this growth market. The target of the Egyptian Indian Polyester Company (EIPET)

was, to set up a facility manufacturing granulate for synthetic bottles in Egypt, with a capacity of 1500 tons per day. Based on their experience for the requirements necessary for the production of man-made fibers, Oerlikon Barmag was able to optimally cover EIPET's needs: The proven Oerlikon technology led to significant energy savings and a sustainable reduction in operating costs. Oerlikon, as a contractor, was also able to offer the construction of the plant from the planning stage through to commissioning from one source. Worldwide, the Manmade Fibers Segment has completed three polycondensation facilities with a total of seven production lines. In two of these projects, the segment acted as general contractor.

Successfully transferring expertise from the manmade fiber industry

PET is obtained from organic raw materials using a multistep chemical process. Here, terephthalic acid and ethylene glycol are mixed with certain additives to generate a reaction. "The high temperatures and vacuum generated within these so-called polycondensation plants, transform the raw materials into polymers," explains Scholz. As the technology used in the manufacturing of bottle granulates is largely identical with that used for man-made fibers, Oerlikon benefited from their know-how from this sector when engineering the plant.

PET is obtained from organic raw materials using a multistep chemical process. Here, terephthalic acid and ethylene glycol are mixed with certain additives to generate a reaction.

During the filament production, polymer melt, in liquid form, is led to the spinnerets. For bottle-grade granulate, the melt is cooled in a water bath, and the strands produced are chopped up into small chips. Another difference is the higher viscosity of the melt. The plant therefore has an additional process step, during which the viscosity of the synthetic material is increased.

The most important requirement is low energy consumption

Synthetic materials production is a growing market. Nevertheless, the manufacturers are locked in an intense worldwide competition and constantly searching for ways of increasing their profitability. Their greatest priority is cutting operating costs, mainly by reducing energy consumption.

At Oerlikon Barmag, a team of 30 engineers was responsible for the project. The detailed planning was carried out together with an engineering company in India.

With a special technology developed by Oerlikon Barmag, the hot steam, generated during the manufacturing process, can be used to produce cold water. "This so-called vapor absorption distiller, significantly reduces the plant's energy consumption," explains Scholz. On top of this, Oerlikon Barmag's technology has a high conversion rate and creates relatively little waste. Operators thus attain a substantially higher margin and are more competitive. In addition, the plant technology enables manufacturers to use a certain amount of recycled synthetic material in the production process, resulting in a reduced need for raw materials.

PET is obtained from organic raw materials using a multistep chemical process.

Oerlikon Barmag assumed overall responsibility for planning and construction

A second requirement from customers, particularly in the emerging countries, is the competence, to, as a general contractor, be able to offer such a plant from planning to commissioning. The customers themselves do not have the necessary know-how. At the same time, they wish to minimize the risks inevitably involved with large-scale projects. EIPET, also only wanted to negotiate the investment with a single partner. "That is why we planned the complete facility, procured the parts and supervised the building of the plant" sums up Scholz.

At Oerlikon Barmag, a team of 30 engineers was responsible for the project. The detailed planning was carried out together with an engineering company in India. All the components, such as reactors, filters, heating elements, vacuum systems, piping, valves, sensors and control units, were procured from suppliers in various countries. During the subsequent building phase, up to 700 specialists worked on the site. The turnkey plant was handed over to EIPET at the beginning of 2014.

"The successful completion of such a complex planning and construction project within a defined budget, not only calls for reliable and proven plant technology, but also a highly professional project management," summarizes Scholz. Thanks to their technological expertise and experience from numerous similar projects worldwide, Oerlikon Barmag enabled EIPET to successfully enter the bottle-grade granulate market. (bs)

Operational efficiency – failure-free production at the highest level

Partnering for performance

In textile machine and systems construction, accompanying service offerings are decisive when it comes to taking production with extremely durable machines to the utmost limits.

The objective of the Oerlikon Manmade Fibers Customer Service department is to make all aspects of the production processes more efficient. These services provide the customer with a high degree of investment security as they ensure that the required quality standards are adhered to and hence the customers retain their competitive edge.

With the refocusing of the service offerings in 2014, the Manmade Fibers segment has now placed the spotlight on five performance fields that are tailored to the requirements of our customers. The background to this was a customer survey, which revealed the desire for the Service department not to function merely as a problem solver, but to join forces with the customer to form a high-performance partnership. Our Partnering for Performance motto – in other words, closer cooperation between advisers and customers – reflects these new structures perfectly.

Operational efficiency

In addition to the Start-up Service, which is carried out and supported by experienced engineers and technicians, Oerlikon Manmade Fibers also offers further process support.

The Service division's 'operational efficiency' offering also provides

customers with long-term support. In an initial step, this supplies advice and planning support with the aim of finding customized solutions.

First, the concrete work processes during production are observed and examined. Here, the aim is to identify failures and obstacles and to then remove these with the objective of increasing efficiency. Particularly in situations in which the individual steps within the supply chain are not well structured, this again and again results in delays that have a negative impact on the production processes. Operational efficiency not only examines the systems management, but there is also a focus on the logistics management and the employees. People play a decisive role in production processes. Correspondingly, the Oerlikon Manmade Fibers Service division offers customers in-house staff training or e-learning options. Those who understand their machines and the processes and treat their workplace with care and attention also make a positive contribution towards optimizing the production.

The aim is to identify failures and obstacles and to then remove these with the objective of increasing efficiency.

“Order and cleanliness save time, energy and – above all – costs, resulting in higher product margins and retaining competitiveness”, reports Arkadiusz Matyja, responsible for Offer Management and Consulting at Oerlikon Manmade Fibers. Original spare parts are a hugely important factor for ensuring optimum production in the long term. With the myOerlikon.com customer portal, ordering is not just comfortable and fast, it also guarantees the security of maintaining production quality with extremely high-end parts. Regular maintenance and servicing of machines ensure that yarn producers have high system availability, while professionally-equipped service stations and workshops local to the customer offer fast and, above all, good repair services for components with original parts.

With the myOerlikon.com customer portal, ordering is not just comfortable and fast, it also guarantees the security of maintaining production quality with extremely high-end parts.

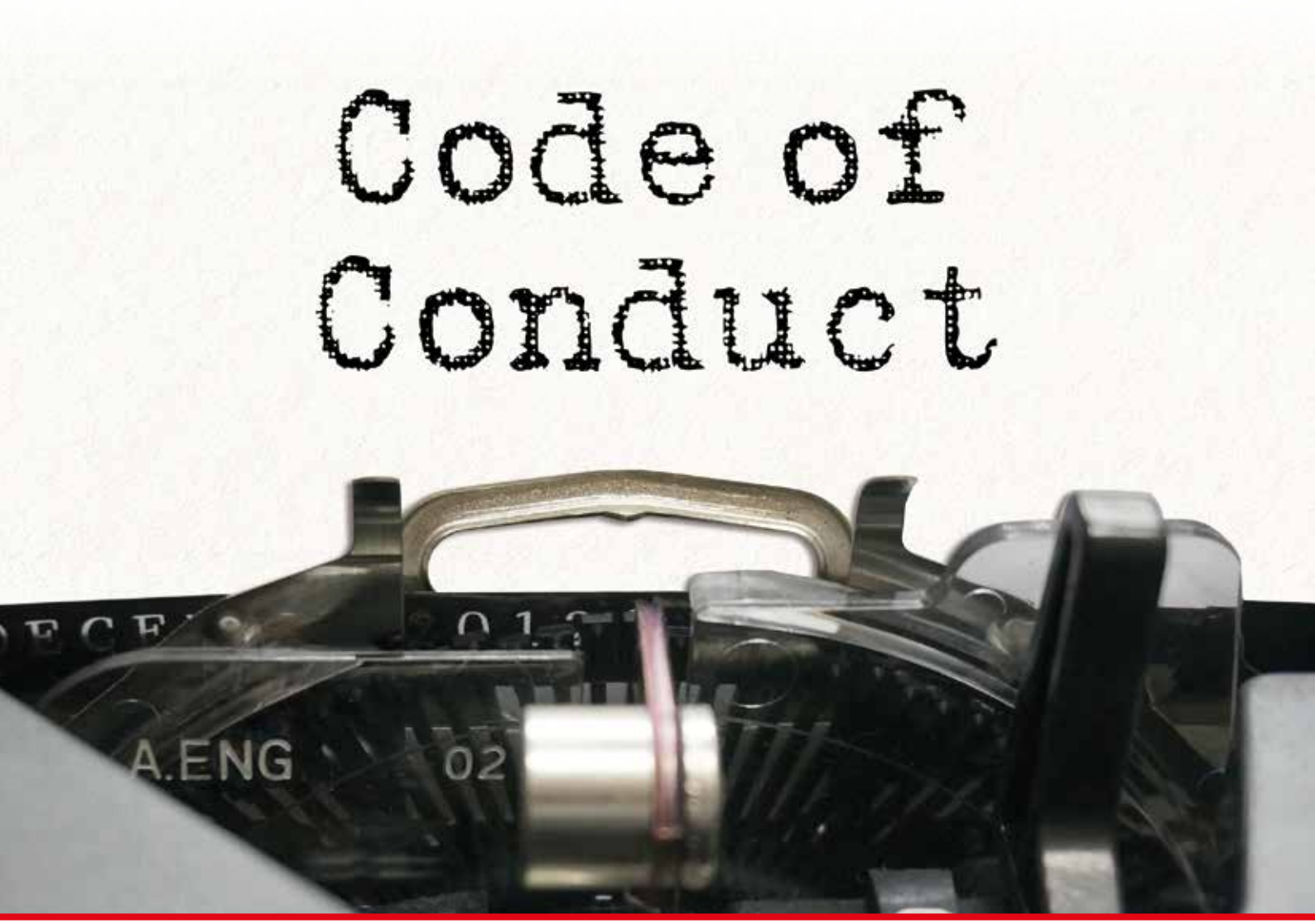
Customers wishing to carry out maintenance and servicing in-house have the option of setting up their own on-site workshop with Oerlikon Manmade Fibers employees. The comprehensive maintenance and servicing process then take places at the on-site workshop – a cost-efficient alternative.

Further preventative measures include the subsequent inspections supported and carried out by Oerlikon Manmade Fibers, ensuring that unforeseen malfunctions, which can lead to extensive downtimes, are avoided. With the refocused service offerings, challenging technology now goes hand in hand with above-average service.

As a reliable partner, the service experts actively contribute towards the success of their customers! (mn)

Compliance at Oerlikon
A joint success

“No thanks. I cannot accept this gift.” With products and solutions, Oerlikon Manmade Fibers not only provided value added for its customers, it must in the process also take on the associated global and cultural challenges on a daily basis. Starting with the development of innovative, environmentally-conscientious products and the creation of attractive working conditions for all employees, behaving fairly with regards to competition without fixing prices or corruption all the way through to our certified supply chain. But what is the situation in those gray areas?



Oerlikon published a Code of Conduct for business partners, shareholders, employees and all other stakeholders in 2008. It summarizes the rules and regulations for business and other social behavior that the Oerlikon Group considers to be binding for all. However, the Oerlikon Code of Conduct is more than merely a rulebook. It is also designed to sensitize the employees throughout the entire company particularly to ethically-difficult situations and to be a behavioral framework for staff. Berta Körte, Senior Manager of Compliance at Oerlikon Manmade Fibers, repeatedly emphasizes: "The challenging objective is to ensure that each and every employee in all parts of the group regards the Code of Conduct as matter-of-fact." The responsible Legal & Compliance department focuses on the valid legislation and applicable stipulations as well as internal guidelines to guarantee the principle of legally- and ethically-sound business practices. Hence, the topic of compliance comprises the intersection between the legal rules and regulations, the business processes and procedures as well as the ethical values and the cultural peculiarities. The interdisciplinarity of the topic is the greatest challenge and compliance can only be sustainably anchored in our daily business activities with the commitment and the support of all employees and stakeholders.

Giving and receiving gifts

Among other things, the Oerlikon Manmade Fibers Compliance department is currently drafting a binding Code of Conduct on the topic of 'Giving and receiving gifts and other benefits'. Giving and receiving gifts is not fundamentally prohibited, but can – as gifts are in principle items of value – mean a business relationship with risks. For this reason, the Manmade Fibers segment recommends that its employees remain extremely vigilant and sensitive to this issue. According to the Code of Conduct, gifts must be given or taken "in an open and transparent manner and are only permitted if these are the result of free will, given or taken in good faith and without any expectation of any reciprocation." Concretely, cash gifts, for example, are fundamentally prohibited. What is important is that the principles laid out in the Code of Conduct are binding for all employees in all positions, all countries and all subsidiaries.

New challenges

Over the past 20 years, the general conditions and structures have changed for all companies, to such an extent that compliance has developed into a new challenge and an autonomous corporate management task. So, if the general conditions change – for example as a result of globalization and the associated tapping in to new markets and the information technology revolution, which not only creates new areas of risk such as data security but also enables a new level of transparency – these will also have an impact on the actions of a member of a group.

In addition to preventative measures, such as internal audits, consultations and e-learning training seminars, an early-recognition system has been implemented with the whistle-blowing policy. This policy is directed at all employees and requests all parties – in the event of suspicion that has not been reported to direct superiors – to report to their relevant compliance officer or the compliance hotline, with the aim of ensuring swift and comprehensive clarification of the situation. Many positive examples have been registered with the Indian Oerlikon companies, for instance. In a separate initiative, a guideline for avoiding corruption has been drafted that takes the particular legal and ethical circumstances in India into consideration. Using the Code of Conduct as their basis and their country-specific experiences, our colleagues have made an important contribution to the further development of the Oerlikon Compliance standard. All our stakeholders and employees can have faith in the fact that Oerlikon and all it segments worldwide strive to always orient their actions on the very highest ethical standards.

As a result of compiling, communicating and stringent orienting the conduct of managers and all employees on the Code of Conduct, Oerlikon has been able to substantially reduce the risk of breaches. For this reason, we will continue to demand the highest standards of honesty and integrity at all levels of the company. This will enable Oerlikon to comply with the responsibilities of being a reliable business partner and employer and hence sustainably secure our joint success. (mn)

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