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Editorial

Small things that make all the difference

In this edition of "Insight", you will find many fascinating examples of little items and actions related to Saurer that make a major difference in some way.

When I heard about this theme, my first thought was to consider how the inventive inhabitants of my home country Switzerland, today numbering just over eight million, have made their mark on the world. Swiss innovation has a long history that goes beyond the invention of milk chocolate. Or can you imagine a world without zippers or Velcro? According to the latest available data from the European Patent Office, in 2018, the country ranked first according to the ratio of applications per million inhabitants with 956 patent applications.

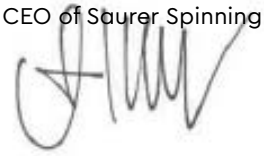
This pioneering spirit is also part of Saurer's DNA, substantiated by our 2 539 currently active patent filings (see p. 34). Patents filed by Saurer for smaller inventions that make all the difference range from magnetic spindle bearings with an upper limit of one million rpm for texturing purposes, proven single spindle technology and our innovations in piecing, which allowed Saurer to take a great technological leap in spinning (see p. 18).

The textile industry is full of small solutions. We will continue working on them for the benefit of our customers. Our customers' current and future needs continue to inform the development of our offerings and our services.

In my functions as CTO and CEO of the Spinning Solutions Segment, I spend much time visiting customers and production sites across the world. This is to ensure that our clients can expect top quality down to the smallest detail, depending on their specific needs. Since taking up the position as head of the segment in May 2019, I have been working closely with our R&D departments to ensure that we live up to our core values: "We put the customer first" and "Excel in quality". Turn to the cover story to find out how these link to our smaller innovations that truly make a difference.

I hope you enjoy this edition!

Anton Kehl
Chief Technology Officer, Saurer Group
CEO of Saurer Spinning Segment



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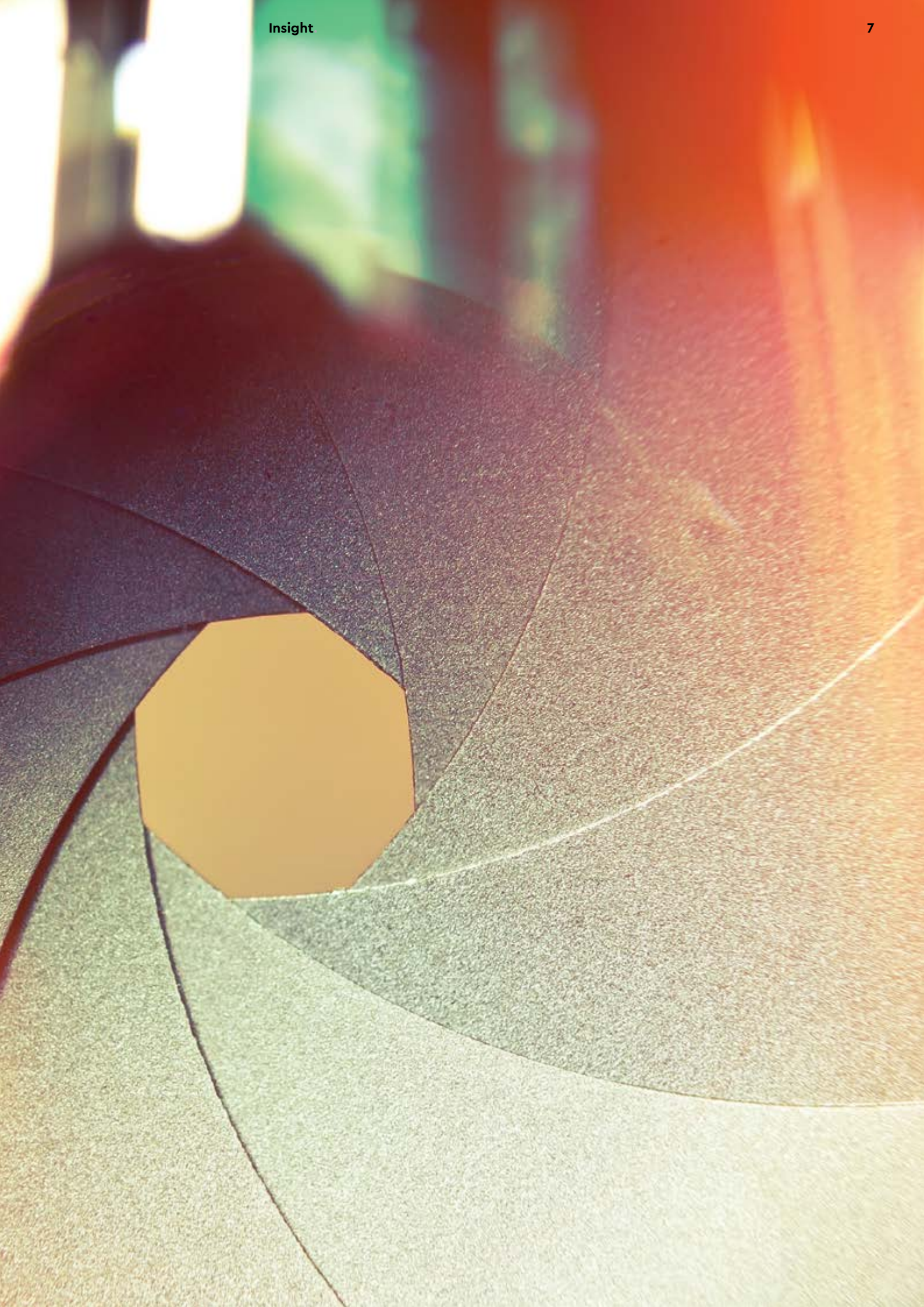
Focusing on the details

Small technologies take our customers farther: from the output of our machines, to tiny elements making up our spinning solutions, the impact of these small marvels deserves recognition.

Powering the data revolution
Glass filament, measuring 0.005 mm in diameter, is integral to the next leap in telecommunications: 5G. As providers are rolling out this technology across the world, thousands of kilometres of lightweight reinforcement filaments are needed for miniscule circuit boards for use in mobile phones. Our customers at the forefront of this technological movement supply glass filaments for these printed circuit boards. They produce these on the Saurer CakeFormingWinder and on the GlassTwister VGT8 and VGT9 (see p. 14).

With bandwidth increasing, researchers estimate that the number of devices connected to the Internet of Things (IoT) will number around 100 billion this year. Interconnected systems will have a profound impact on people's work and home lives, while transforming our cities and the way we travel via autonomous cars.



The positive impact of quality small components, such as rings and travellers from Saurer's product line Texparts, can be seen downstream in the textile processing chain.

Breaking records
Components, while small, play a fundamental role in yarn and fibre processing. The positive impact of quality components can be seen downstream in the textile processing chain – even down to the end products that find their way into trendsetters' cupboards.

While the ring traveller system determines the performance limit of ring spinning, Saurer meets the industry's expectations regarding spinning speed, which is continuously increasing. Spindles from the company's Texparts product line have among the fastest rotations in the world, even up to 26 000 rpm depending on type of fibre used.

Using these components, discerning customers are able to produce yarns of various quality grades to ensure the best fit for the required product. While its name has changed since, the product line today known as Texparts has gathered a century's worth of experience. Today, it is renowned in the sector and synonymous with quality yarn.

"Great things are not done by impulse, but by a series of small things brought together."

Vincent van Gogh

Lighting the way to greater output
The designs of our air-spinning machine Autoairo and rotor-spinning machine Autocoro incorporates a small but efficiency-enhancing feature. LED strips light up in different colours depending on what is affecting a spindle position's performance. These lights are visible from a great distance and act as a visual signal for operators. They indicate whether a can is running low or if a spindle needs attention, for example. With this feature, which is easy to understand, operators can use their time effectively without having to hurry back and forth unnecessarily. The resulting increase in productivity has a positive impact on customers' businesses.

It is vital to remember how small things can make a massive contribution. At Saurer, we will continue to produce little innovations that make all the difference.

Redefining toughness
Zooming in on a microscopic level, rotors from Saurer are covered with a patented 3d coating composed of boride and diamonds. We spares no expense – each such layer contains 0.2 g industrial diamonds, equivalent to around 1 carat. This special coating technology ensures an absolutely homogeneous layer across the component's entire surface – this is true for even the most intricate contours, like for instance rotor grooves. The boride layer protects the rotor grooves after the diamond layer has worn off. This hard, wear resistant surface makes our 3d-coated rotor almost twice as durable.

A market with a bright future

Thomas Fröis, engineer,
founder and CEO
of Texible GmbH.

Technical textiles are gaining ground. The textile industry is one of the top most innovative sectors and is comparable with mechanical engineering.

We found an expert on the topic of technical textiles for our interview in engineer Thomas Fröis. He first attended the University of Applied Sciences in Bregenz, Austria, graduating in electrical engineering. He then studied engineering and product management and gained a BSc in management in Vorarlberg. He has received six awards since 2012 for his innovative thinking and work, and has also patented several inventions since then.

Dr Ingo Reinbach (Business Development Manager, Saurer Intelligent Technology AG, Switzerland): Mr Fröis, technical textiles is somewhat of an umbrella term for textile materials that offer an additional technical function. In which sectors have technical textiles been used so far?

Thomas Fröis: Technical textiles have been used in the most diverse areas. From products we can no longer imagine being without, such as heated seating, to even newer areas of application such as intelligent sport shirts that monitor our vital data without the need for an annoying chest belt. Technical textiles have also become an important topic in healthcare. And we should not forget the construction industry and protective clothing across all sectors.

I.R.: Do fibres for technical textiles have to fulfil special requirements as regards their physical or chemical properties?

T.F.: The functionality of the fibres depends to a large extent on the particular application and the design

1
Demonstration embroidery feed lines for textile integrated electronics.

must be rethought from product to product. For example, the environmental conditions in industrial laundries, because of the presence of chlorine and temperatures around 95°C, are significantly harsher than is the case for an intelligent office chair. For sensor textiles in shoes, the mechanical load is a much bigger concern. Resistance to bending and abrasion over several million cycles is the rule here.

I.R.: Are technical textiles still somewhat exotic?

T.F.: In my experience, sensor textiles are a big growth market, because the number of development projects with clients has significantly increased over the last two years. And demand is increasing! Nevertheless, some categories remain exotic. From a technical production point of view, however, technical textiles have already arrived on the market. Approximately 50% of production in Europe is already in the area of technical textiles.

I.R.: How do you see the development of the market and is there a particular sector that is gaining the most ground?

T.F.: The area of technical textiles has long since arrived in Europe, and many large operations are already successfully producing from European locations. For example, growth of greater than 100% is predicted for the area of smart textiles in the coming years. I see huge potential here too.

According to the latest study from ZEW (Leibniz Centre for European Economic Research in Germany), the 2017 market volumes for smart textiles were already approximately 1.3 billion euros. According to the forecast, market volumes will increase to 4.7 billion euros by 2022 and to an almost unbelievable 41.4 billion euros by 2030. If one takes a look at the enterprise birth rate of industrial, product and fashion design companies, there is also steady growth to be seen here.

I.R.: What materials are used in technical textiles?

T.F.: The range of the materials is large and extends from silver-coated yarns to stainless steel fibres to carbon fibres. It is not only the materials that are decisive, the production technology is as well. The final product has gone through almost all textile manufacturing techniques – embroidering, weaving, warp-knitting, but also printing and dyeing are used, depending on the application. I see a very unique feature in shuttle embroidery technology. For smart textiles, freedom of design is the motivation and the materials that are processed in this manufacturing process can have a great advantage.

I.R.: You won a prize for innovation with your company Texible in 2016. What product did you receive this prize for?

T.F.: For our Texible Wisbi product. Wisbi is an intelligent bed insert that is used in care homes and hospitals. Wisbi supports care personnel in the day-to-day care of people with dementia and incontinence.

The development of the research project started when I was working at the University of Innsbruck, Austria. Along with textile and electronics companies, a supplier for laundry hire and the care homes of the city of Dornbirn, we developed the world's first industrially washable sensor textile. We were then able to accept the innovation prize of the state of Vorarlberg on behalf of all participants. The product has now been on the market for two years and also supports many private carers at home.

I.R.: Are there more projects?

T.F.: Other client projects include, for example, a shoe insert that measures the pressure distribution of the feet over the entire day. Or a shirt for work protection that detects electrical accidents, disconnects the circuit and triggers an alarm.

I.R.: What kind of machines does one need to manufacture such textiles?

T.F.: Embroidery always plays a crucial role in sensor textiles. Texible, for example, converted a Saurer Era machine and optimised it for our purposes. The conversion mainly involved further development of the shuttle.

I.R.: Are you also working together with other companies in your research?

T.F.: We try to keep the amount of research at our company very limited. We see our task as transferring the results of available research in the area of smart textiles into real products. In this context we work very closely with companies from all sectors. Smart textiles combines different disciplines such as IT, electronics, textiles and plastics. For this reason, we think it makes the most sense to seek cooperation in order to achieve the best result for the customer.

I.R.: How long does it take until a product is ready for the market?

T.F.: That is probably the point that is most often underestimated – there is no simple answer to that question. The complexity of the products and the field tests and interactive development steps that are necessary as a result require time. It depends to a large extent on how new the idea or product is and whether one can refer to existing technology. If you have to start from zero as regards the textiles and electronics, you should reckon with a development time of at least two years.

I.R.: Can one conclusively say that technical textiles will enrich our lives and make them easier?

TF.: They already are!

I.R.: Thank you for the interview!

Discover more

Intelligent laboratory systems thanks to cooperation

Optimal use of raw materials, continuous quality assurance in production: the new Autolab laboratory systems deliver exact metrics to ensure this happens.

From raw material to finished yarn, always know exactly which quality is being produced so that processes and machines can be optimised: that's how you achieve significant increases in efficiency in staple-fibre spinning. One prerequisite for this is that it must be possible for fibres and yarns to be precisely tested during all process stages. Another is that this data must be available to individual specialised areas within textile process chains at all times. With the new Autolab laboratory systems, Saurer offers a solution unique to the market: easily operated measuring and testing devices that deliver practice-oriented, absolute measured values that can be seamlessly integrated with data from production. Because Saurer is working with the company Textechno in the area of staple-fibre spinning, their many years of expertise made their mark on the Autolab laboratory systems.

The product line includes all necessary measuring and testing devices for comprehensive quality control from textile raw material to yarn. Every individual component contributes small but crucial advantages for efficiency. As an example, one of the measuring devices for fibres is Autolab LT. It measures fibre length distribution and tests fibre strength – one after the other automatically on the same sample. The result is represented in absolute measured values or directly in physical base units. This means that Autolab LT does not require calibration cotton.

In the yarn area, information on the uniformity of the sliver and the yarn, imperfection and hairiness, amongst others, is needed. Using Autolab ET means all relevant parameters for slivers, rovings and yarns can be determined with one testing device and thus ensuring optimal running behaviour for the spinning machine.

Tests are the most useful when tested values are available at the right place and the right time in the production process. Only Saurer provides seamless integration. If the offline data of the

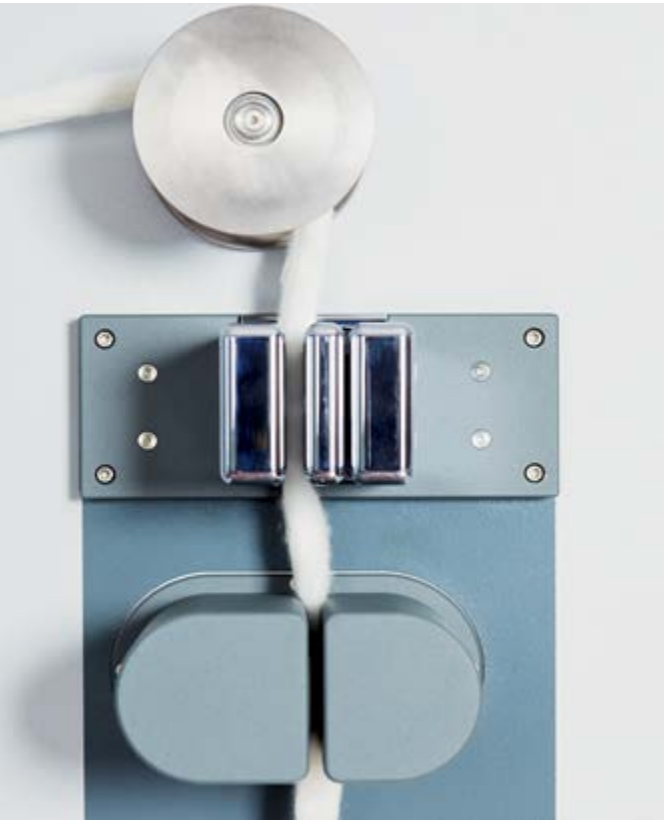
> **"Textile testing technology from the innovation leader"**

Autolab testing systems is combined with the online data of the machines, all the necessary information for optimal production of the required product properties is always available. Intelligent digitalisation thus becomes the key to greater raw material efficiency and improved product quality. Moreover, traceability and reproducibility are ensured thanks to centralised data storage.

1
Laboratory assistant preparing the sliver.

2
Fibre length determination with the Autolab LT.

3
Sliver testing with the Autolab ET.



Precise and connected.
Autolab laboratory systems

- Highly precise measuring and testing devices for all process stages
- Seamless integration into Senses, the digital mill management system
- Enables consistent quality management
- For all fibre and yarn types used in staple-fibre spinning
- Also as complete turnkey solution including personnel training

Discover more

5G: technology of the future

5G technology is the answer to constantly increasing data volumes. 5G will allow for further automations in production processes. There are now hardly any limits on autonomous mobility or the expansion of smart home functions in the private sphere.

Realisation of 5G technology
5G technology will not replace the mobile phone standard, but rather will introduce a completely new communication standard.

The current mobile phone standard is known as Long Term Evolution (LTE). This technology currently meets almost all the needs of private customers and provides an adequate data rate for everyday applications – this extends up to a maximum of 300 Mbits/s. The introduction of 5G will not mean the end of LTE, but rather a further development in addition to the existing network.

1
Production of a new 5G mobile phone.

2
GlassTwister plant.

Thanks to the parallel operation of both technologies, in the future it will be possible to handle larger capacities and faster network speeds.

The higher bandwidth of 5G as the new communication standard will allow for novel applications and significantly improve the positive experience for customers. Even now billions of people use mobile internet. Experts expect that more than 100 billion networked objects will be added to this number over the course of 2020. The 5G network is the answer to the demands of digitalisation.

5G infrastructure and product orientation
The wide-scale infrastructure for 5G technology will require substantial investment in base stations. Additionally, new opportunities will arise both industrially and privately.

In China alone, with its enormous growth potential, the overview is as follows: establishment of approximately 130 000 base stations by the end of 2019 in 50 urban centres. For 2020, the total number of 5G users is expected to reach approximately 70 million, along with a considerable increase in 5G-compatible mobile telephones.

Entering the era of 5G with Saurer
5G mobile communication technology requires a powerful glass fibre infrastructure. Among other materials, lightweight construction reinforcing filaments will be used for this expansion. The additional and greater requirements prompted by 5G also necessitate more functionality when it comes to printed circuit boards. The increasing data flows and multi-functionality of mobile communication devices have to be handled by printed circuit boards of ever-smaller dimensions. The boards used are made exclusively with twisted glass filaments. The base material required for this is manufactured in the highest quality on the Saurer CakeFormingWinder and on Saurer GlassTwister. Future-ready solutions and innovations in the product portfolio of the GlassTwister VGT8 and VGT9 allow Saurer to keep optimal pace with the constantly advancing developments in the glass filament industry. Specifically, the flexibility of the VGT8 enables our customers to always be one step ahead of all market trends.

GlassTwister – Crystal clear

- Single-motor spindle drives
- Single-motor synchronous drives of the creel baskets
- Adjustable package building
- High user-friendliness

CakeForming Winder – Ready for you

- Optimised thread path geometry
- New collet technology
- Bearing technology for optimal running smoothness
- High user-friendliness

Discover more

Dazzling sensation

Sequins can subtly enhance a design, or turn heads. Saurer's Epoca 7 shuttle embroidery machine applies these ever-trendy embellishments with precision and speed.

Sequins have been an integral part of fashion for centuries – according to "Smithsonian Magazine", garments embellished with gold discs were discovered in the tomb of Egyptian pharaoh Tutankhamun (1341 BC–1323 BC). Today, these decorations remain popular and fashionable, adding sparkle to a range of items from home textiles to haute couture.

Using our embroidery offerings, many of Saurer's customers produce scintillating creations for the world's great fashion houses, including Dolce&Gabbana, Marc Jacobs, Karl Lagerfeld and Hermès.

"All our customers do fantastic work – we are proud to play a small part in shaping their creations. It is also thrilling to see these beautiful garments displayed on the world's most prestigious runways," says Andreas Galiga, Textile Ennoblement Expert, BU Embroidery. "The range of possible designs is almost unlimited and we have seen many boundary-pushing concepts over the years."

For most of their history, sequins were made out of (precious) metal. For a brief period in the 1930s, lightweight gelatine discs were used. However, these were impractical because they tended to melt easily and dissolve when coming into contact with liquids. Today, the sequins that Saurer's Epoca 7 machine applies are composed of strong laminated polyester.

"A stand-out feature of the SequinsHead attachment is the speed at which it does its job, applying up to 600 sequins a minute. This means that full surface designs can be generated rapidly even when using large repeats," adds Andreas Galiga.

The discs can be applied in various ways, including in lines or using the triangle stitch. Skilled customers can master the challenge of attaching sequins so they are tilted – the result: a stunning effect where an embellished surface reveals different images/colours depending on which way the sequins are facing.

1

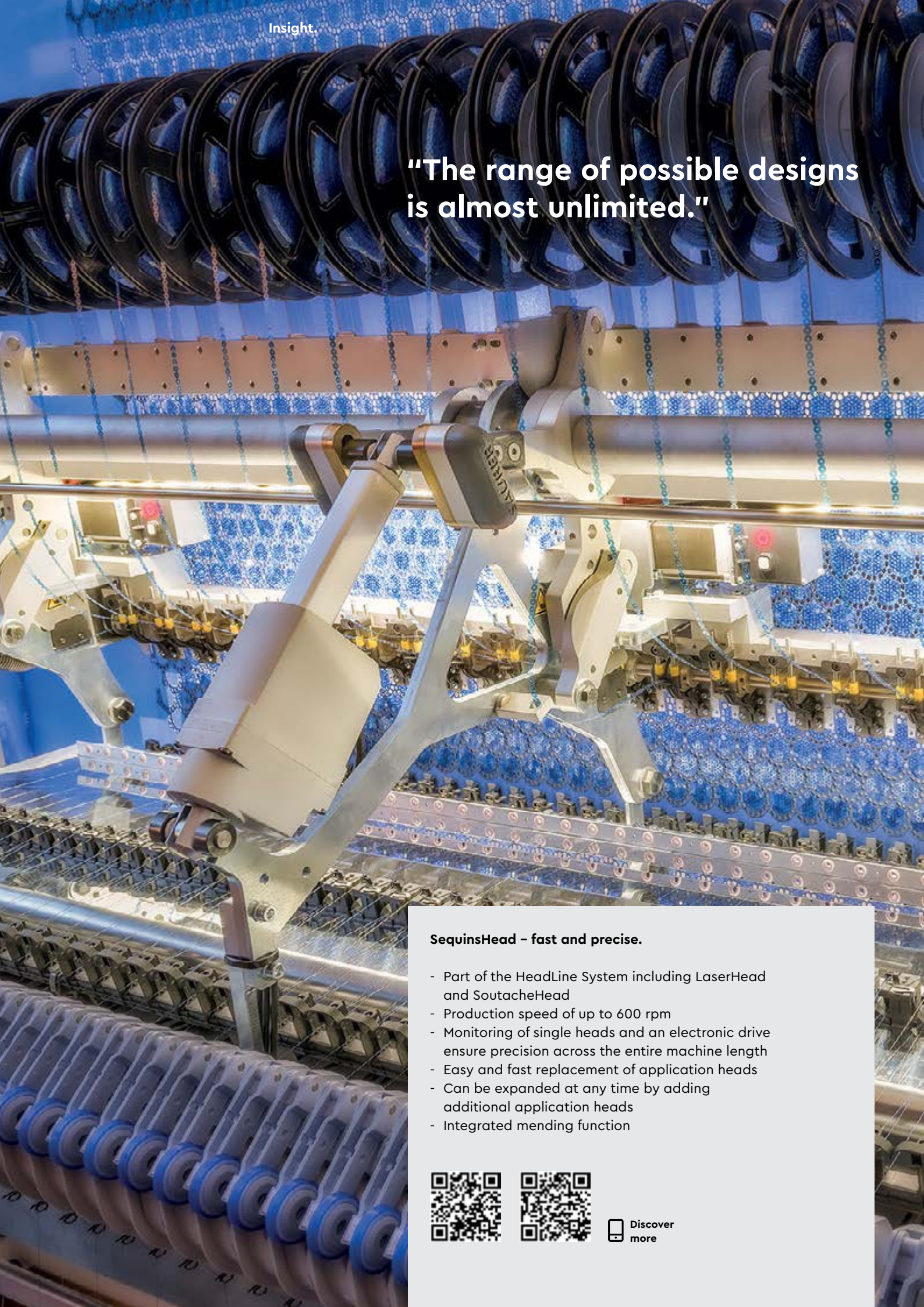
Using the Sequins-Head attachment, customers can apply common sequin sizes (3 mm, 4 mm, 5 mm and 7 mm) in combination or even as double sequins.

2

Sequins are a hot trend: in early 2020, a multitude of sparkling outfits added glamour to the runway of the Berlin Fashion Week and the red carpet at the Oscars.

3

The SequinsLine System is used for designs that are composed mainly of sequins. Its segmental structure and the electronic drive guarantee precision over the entire embroidery length.

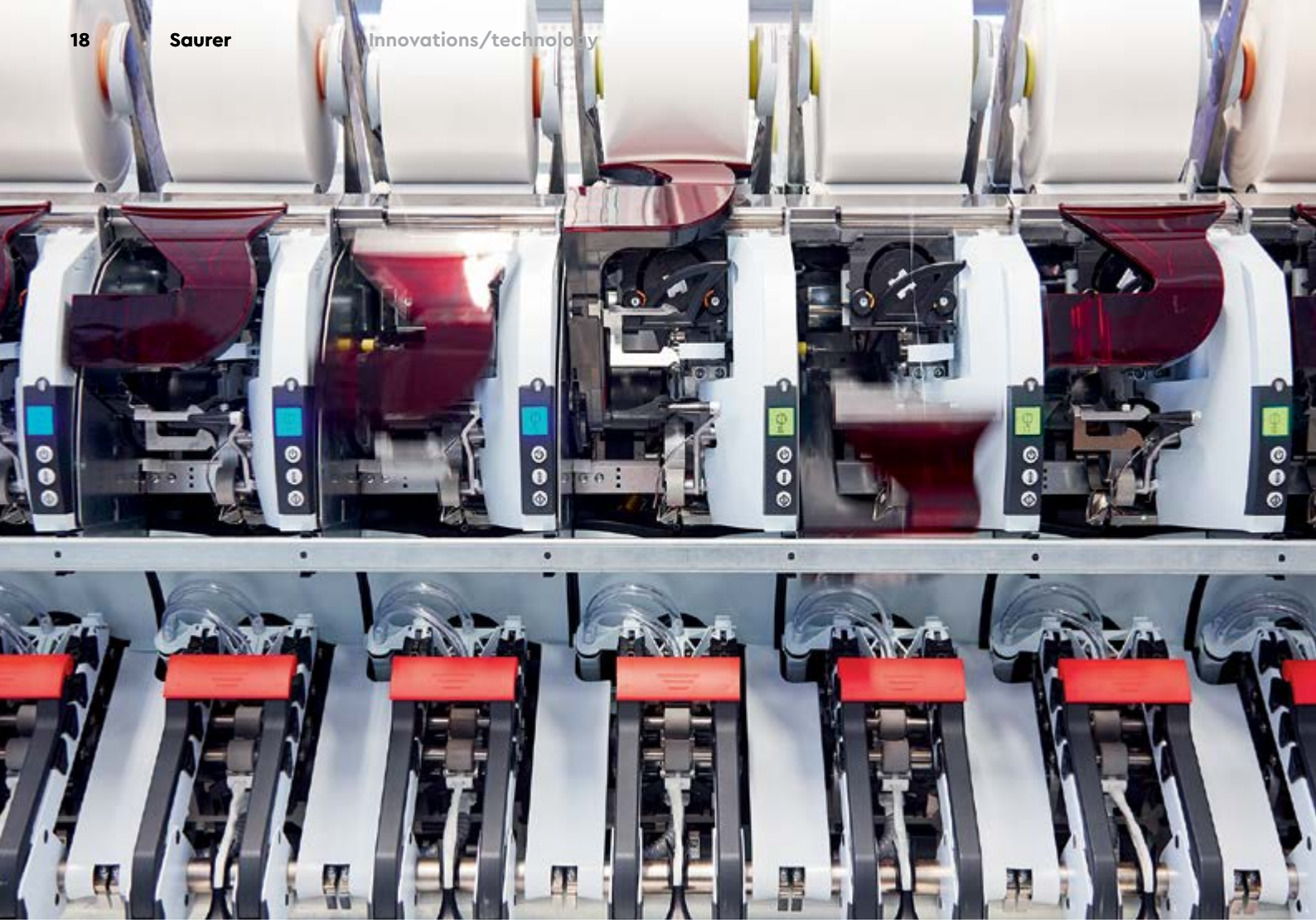


"The range of possible designs is almost unlimited."

SequinsHead – fast and precise.

- Part of the HeadLine System including LaserHead and SoutacheHead
- Production speed of up to 600 rpm
- Monitoring of single heads and an electronic drive ensure precision across the entire machine length
- Easy and fast replacement of application heads
- Can be expanded at any time by adding additional application heads
- Integrated mending function

Discover more



Vital for piecing

Behind the red suction arms protruding from Saurer's spinning machines lies powerful SynchroPiecing technology, which has a great impact on customers' profitability.

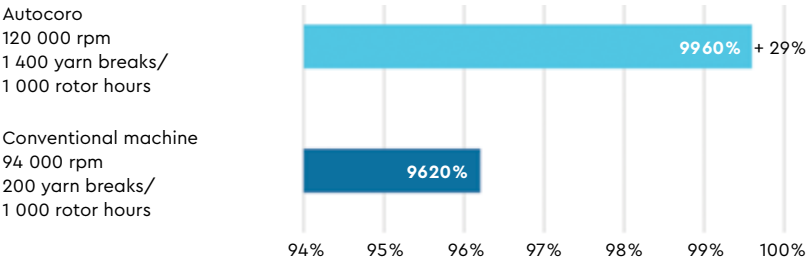
Piecings, while tiny, have a big effect on the speed at which yarn is produced. Our patented SynchroPiecing technology carries out these piecing operations at each individual spinning position, meaning that yarn breaks are pieced immediately after they happen without the need for a robot to travel to the relevant position.

"We already introduced SynchroPiecing, then with the ability to carry out 12 piecing operations simultaneously, in 2011. Today, it enables the Autocoro to carry out 36 simultaneous operations. This successful system is also part of our new air-spinning machine Autoairo and available as an option for the new rotor-spinning machine

1

Autoairo is the only air-spinning machine with SynchroPiecing on the market.

Autocoro efficiency (NE%)

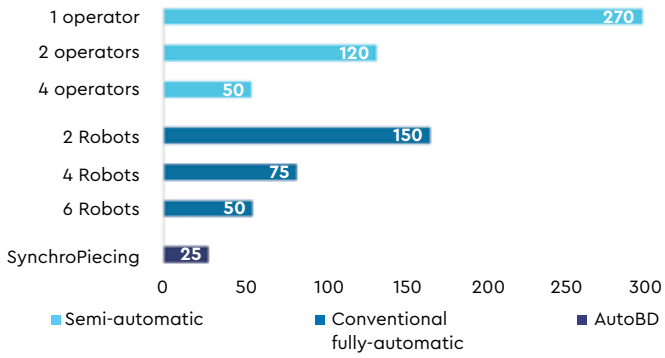


Productivity increases by 29% due to high rotor speed plus high efficiency ratings

AutoBD," says Dr. Tai Mac, Business Line Director Open-End Spinning. "SynchroPiecing is the key gene of our rotor and air-spinning machines because it enables them to perform unique functions."

These include being able to 'multitask' using innovative features that customers are using to their benefit, such as faster machine ramp-up (TurboStart) and usage of low grade raw materials which are made possible by SynchroPiecing.

AutoBD run-up time (in minutes)



Up to 50% faster run-up with AutoBD (600 pos.)

"SynchroPiecing is the key gene."

Raw material: more flexibility
Customers who own Autocoro and AutoBD machines can use more affordable raw materials. With sustainability a major trend across the industry, clients can now process recycled raw material at higher production speeds on both machine types. As spinning stability of raw material can be disregarded, the resulting increase in rotor speed means a productivity increase of up to 30% compared to conventional machines in the case of Autocoro and AutoBD. This technology also gives customers in air spinning more choice regarding the types of raw materials they can use.

SynchroPiecing has helped customers around the world to boost production: today, it is an integral part of almost one million spinning positions.

SynchroPiecing for Autoairo, Autocoro and AutoBD (optional)

- Unique feature of Saurer machines
- Proven technology
- Allows customers to choose raw materials more freely
- Increases productivity
- Saves energy

Autoairo

Autocoro

AutoBD

Discover more

Hidden talents – technical yarns in the car

Unseen from the outside or visible only after a second glance, many technical yarns are "hidden" inside the car. Their task is to absorb tensile forces at a more or less precisely defined elongation.

The desired elongation behaviour does not result from the textile material alone. Rather, the deciding factor for elongation behaviour is the construction of the twisted yarn, i.e. its structure combined with its twists.

The carcass of a tire, for example, consists of twisted cord yarns. With every revolution of a tire, these twisted cord yarns are subjected to tension – many millions of times over the course of years. Therefore, high fatigue resistance is essential for the cord yarns in the carcass. It is not the material itself but mainly the construction of the twisted yarn and its twist level that guarantee such high fatigue resistance. Symmetrical 2-ply and 3-ply constructions, preferably made of polyester or rayon, are used in the carcass.

There are also twisted yarn constructions elsewhere in the car: toothed belts in the engine compartment serve to transfer mechanical energy. The toothed belt is subjected to tension with every revolution. In order to withstand this continuous strain, the toothed belt contains highly twisted cord yarns made from high-performance textile fibres such as aramid, for example.

Seat belts, the car's primary lifesaver, must absorb large amounts of kinetic energy in the event of a collision – in a short but precisely defined period of time. Seat belts must therefore exhibit very specific strength and elongation behaviour, which in turn arises from the textile material properties of the polyester used for them in combination with the twists.

The airbags are invisible because they are hidden in the steering wheel, dashboard and door panelling, but they are extremely important – even lifesaving – in the event of an accident. Today, they are standard equipment in every car. The starting point for producing airbags is yarns made of polyamide or polyester. To smoothly weave these yarns into a textile fabric, they must first be given a few twists, i.e. a protective twist.

Technical yarns with protective twist can also be found in lorry tarpaulins. Tarpaulins must be tear-proof and resistant to temperature changes and precipitation. High-strength polyester with low shrinkage is therefore used for tarpaulins.

With the twisting and cabling machines TechnoCorder TC2 and CableCorder CC5, Saurer offers ideal machines for the production of technical yarns made from a variety of feed materials in a very wide yarn count range.

TechnoCorder TC2 – as versatile as the market

- Maximum production flexibility
- Unique material flexibility
- Yarn count range from 235 to 60 000 dtex
- Unbeatable productivity

CableCorder CC5 – cabling in pole position

- High energy savings
- Smart spindle design
- Modern quality control
- Automation solutions

Discover more

Optimisation means working on details

Spinning, splicing, winding – the optimal coordination of these processes results in high-quality end products. Saurer creates the basis for this with proven technology and constant innovation.

In terms of the structure and functionality of yarns, rapidly changing trends in fashion present spinning mills with more and more varied requirements. Here ring spinning scores points with its flexibility. Spinning and winding can be optimally coordinated with each other in the combination of the Z 72XL ring spinning machine and the Autoconer winding machine. Both are at the highest technological level – and are constantly being further developed.

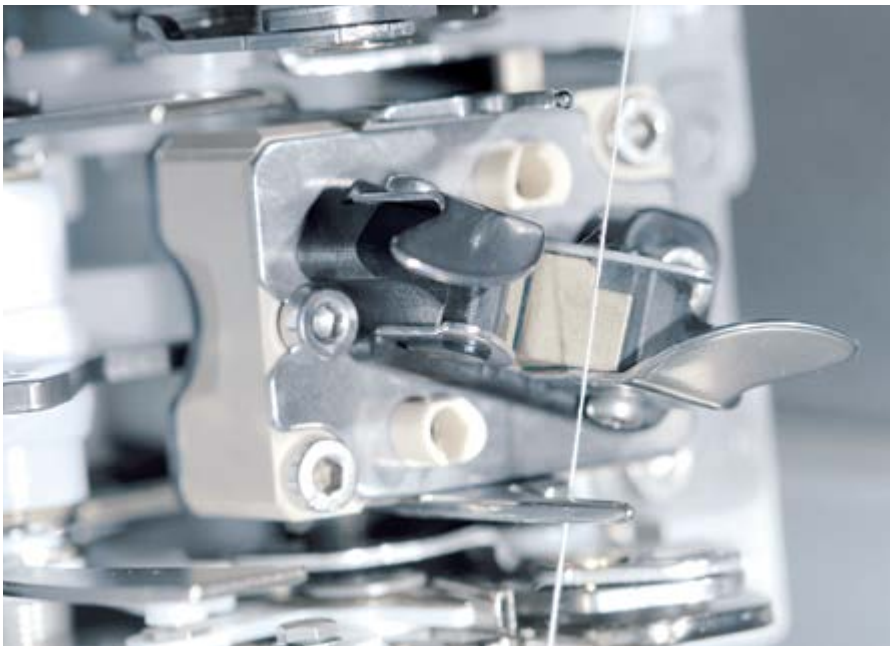
In ring spinning, yarn, splice and package quality are the key factors influencing the characteristics of the final article in the areas outerwear, home textiles and sportswear, and are responsible for an efficient production process. More specifically: what the drafting system achieves during spinning and what the splicer and drum achieve during winding – these small components have a decisive effect.

The drafting systems of the Saurer short-staple ring-spinning machines ensure the greatest possible flexibility in every respect during spinning. Depending on the customer requirement, the mechanical weighting arm of the PK 2600 series can be equipped with various cots and top apron cradles. It impresses with consistent yarn quality, highly flexible settings, easy handling, no loss of pressure due to leaks, and has long set the benchmark in this area.

During splicing, it is important that the yarn ends are connected reliably and in a visually unobtrusive manner. After intensive air-flow studies, Saurer developed a new splicing prism. The result: higher splicing strength with a lower variation range, a shorter, visually unobtrusive splice zone and coverage of a wider yarn spectrum. This increases process reliability in further processing and improves the quality of knitted and woven fabrics.

For the package build, Saurer engineers have also discovered the optimisation potential in detail. Knowing well that nuances are critical for yarn displacement, they increased the traversing width of a drum from

2



3

150 mm to 154 mm. Result: more yarn length at the same diameter, 1–2% more content per package. For customers this means: more weight per packing unit and therefore lower transport costs, longer operational run-time of the packages in further processing and less handling, because fewer packages need to be reloaded.

Well-proven technology plus innovation, particularly for the key components: with this combination, Saurer creates noticeable advantages for the overall process – in the interest of its customers.

1

Weighting arm PK 2630 SEC impresses in customer operations.

2

1–2% more package content thanks to a larger traversing width.

3

Splicing prism for a wider yarn spectrum and better splicing results.

"Our spinning and winding components make the qualitative difference."

Key components in the ring spinning process

- Weighting arm of the PK 2600 series: constant yarn quality
- SmartSplicer with innovative prism: strong spliced joint with good appearance
- Drum with larger traversing width: more yarn length at the same package diameter

Discover more

Components – the key to success

1
Assembly of a roller bearing with a view of the ball track.

2
Automated texturing disc production.

Sports clothing, home textiles and technical textiles made from synthetic fibres have become an integral part of our lives. Saurer is a leading supplier of components for their manufacture.

The use of man-made fibres has increased rapidly since the 1950s. A decisive factor for this development is the high functionality of the fibres, which can be provided with specific characteristics (e.g. windproofing).

Additionally, there are economic factors such as high availability, lower raw material costs and good recyclability, a characteristic that is becoming more and more important.

The main customers, the clothing and home-textile industries, strive to give flat synthetic yarns the touch of cotton, i.e. a character like natural fibre. This is done in the finishing process of texturing: flat yarn is

"Components with a direct influence on yarn quality."

permanently crimped by friction. This increases the fibre volume, elasticity and heat retention, and the yarn acquires a comfortable feel.

The cornerstone in texturing was a magnetic spindle bearing that was developed for speeds of up to 1 million rpm. However, with increasing production speeds, this reached its technical limits, which cleared the way for the texturing unit that remains process relevant to the present day.

Thanks to great expertise and proximity to the process, the company from Hammelburg was able to establish itself as a preferred supplier. Bearing systems such as twist stoppers, nip rollers and polyurethane texturing discs – a consumable part of the otherwise maintenance-free units – have a direct influence on the yarn quality. The latest generation of extremely successful texturing discs was introduced in 2019 with the CoolFlow Disc. Improved heat transport has resulted in a significant lowering of the load on the disc at process speeds of up to 1 000 m/min, and therefore an extension of the service life.

For several years the company has been establishing itself outside the textile industry. Bearings for food production and special solutions for robotics are just two examples of successful knowledge transfer.

With the beginning of production of textile machine components by FAG Kugelfischer in 1957, the products made a name for themselves in the industry very quickly. The booming demand for technologically advanced bearing components allowed the company to position itself as a leading supplier. In the 1990s the business unit was separated from the FAG Group and became TEMCO Textilmaschinen-komponenten GmbH. Since 2006, Engineered Bearing Solutions has been a part of the Saurer Group, in addition to other leading component manufacturers.

Good to know.

- About 80% of all manufactured synthetic fibres are made of polyester
- Synthetic functional textiles can also be thermoregulating, dirt repellent, antimicrobial, flame retardant, UV resistant, electrically shielding and chemical resistant
- In a passenger car there are about 21 kg of man-made fibres (including airbags, safety belts and tire cord)
- In the manufacturing of DTY yarn (drawn textured yarn) Temco components are essential

Discover more

Creating a sustainable future – together

Mr Zaki Bashir, CEO of Gul Ahmed Textile Mills.

Zaki Bashir, CEO of Gul Ahmed Textile Mills in Pakistan, believes that the textile industry needs to invest in more sustainable production.

With an extensive CSR programme in place and making a concerted effort to become a green company, Gul Ahmed is leading the way.

One of Pakistan's largest and fastest-growing textile companies.

The story of textiles on the subcontinent is the story of Gul Ahmed. The group began trading in textiles in the early 1900s. It then entered the field of manufacturing with the establishment of the iconic entity known as Gul Ahmed Textile Mills Limited in 1953. Today, the brand is associated with sustainability in production, textiles of the highest quality and innovative value chain management all the way from bale through to retail. As the company's products are sold in 44 countries around the world, Gul Ahmed has become a global player in home textiles and apparel.

When it comes to design, the possibilities are endless. Inspired by the latest trends from the region and across the world, the talented creative minds of Gul Ahmed are looking to push the limits to surpass the expectations of demanding markets.

Together with its long-term partner IKEA, Gul Ahmed was already present at the very beginning of the BCI Cotton development story. In fact, the first BCI Cotton bale was spun at Gul Ahmed Textile Mills almost 10 years ago. Today, being one of the largest consumers of BCI Cotton, the company is also keenly aware of environmental issues and promotes organic cotton farming to minimise the adverse impact of pesticides and fertilizers on the natural surroundings.

2
Gul Ahmed Collection.

3
Top of the line Spinning Technology – Gul Ahmed's choice is Saurer Autocoro.

4
With the weaving machine Gul Ahmed realises a great variety of fabrics.

"The most modern and flexible machines such as the Autocoro are the guarantee for sustainable production."

Gul Ahmed aims to improve the textiles it produces continually, which means investing in state-of-the-art machinery. The latest development was the introduction of Saurer's high-speed Autocoro. These rotor-spinning machines with around 20 000 spinning positions have improved energy costs by 20% and increased efficiency. Gul Ahmed also is increasingly focusing on aspects around circular economy, and is setting up plants to use post-consumer waste for spinning. Saurer's rotor-spinning machines are prepared for optimum processing of re-generated fibres and work highly productive.

Gul Ahmed's efforts towards sustaining the environment for the generations to come has resulted in a commitment to adopt the best practices necessary to make its business more environmentally friendly.

Running a textile plant is energy-intensive, so the company has put in place measures to keep its environmental footprint to a minimum. Gul Ahmed uses a highly efficient gas-based cogeneration plant to produce power using both hot water and steam in the processes. Future plans include setting up a new energy system based on biofuels and solar power. The first solar power generator is under construction and will be completed by mid-2020. Availability of water remains as one of the major concerns for the textile industry. The region is also quickly becoming one of the highest risk areas for water scarcity, so there is an urgent need for counter-measures. In response, Gul Ahmed has set out on an ambitious journey to recycle as much wastewater as possible. The launch of the first phase of this project was in August 2019 and the company currently recycles one Olympic swimming pool of water every day. It expects to double this capacity in two years.

5
Water recycling plant at Gul Ahmed.

By collaborating with international experts, the company has also created a full range of dyes using textile fibre from used clothing and manufacturing waste. In January 2020, the first ozone garment-washing machine will be operational. Used clothes are thus cleaned and disinfected in a particularly resource-efficient way using active oxygen. The water used to rinse the laundry is recycled and reused repeatedly. Ozone saves on energy, water and chemicals yet guarantees high-quality results. Hot water and alkalis are also removed from the equation.

Gul Ahmed believes it is essential to invest in people, processes and sustainability. Its entire workforce enjoys health benefits from the organisation. The company takes pride in being an equal opportunity employer and has an extensive CSR programme that reaches both inside and outside the company. The plantation drive in cooperation with government bodies and educational institutes aims to plant 1 million trees and to educate communities on the importance of plantation. In a joint collaboration with the Deaf Reach School, Gul Ahmed offers employees with hearing disabilities separate orientation programme held in sign language. So far, the project has been successful and has provided over 100 people with job opportunities.

"Making textile processes more sustainable and social is possible and necessary, today more than ever before. We just have to take advantage of these opportunities and take responsibility for our actions towards the environment," concludes Zaki Bashir.

Gul Ahmed Textile Mills Limited

Location
Karachi, Pakistan
Year of foundation
1953
Production
Spinning, yarn dyeing, weaving, finishing, cloth processing
Home Textile, Apparel & Retail (over 100 retail stores in Pakistan)
Gul Ahmed spins 600 000 pounds (~272 tons) of yarn per day
Processes approximately 10 million metres of fabric per month

Machinery
33 Autocoro rotor-spinning machines
Around 20 000 spinning positions
www.gulahmed.com
www.gulahmedshop.com

Discover more

Holy Al Kiswah to continue relying on Saurer

The state-owned company was founded in 1926 and is now located in the district of Umm Al-Joud in Mecca, Saudi Arabia.

1
Kiswah Kaaba creation at Al Kiswah Factory Mecca.

Holy Al Kiswah employs around 250 people from Mecca. Every year, 100 of the most creative embroiderers are selected to decorate the new Kiswah with magnificent embroidery. In total, every year the company processes approximately 400 kg of gold and silver thread with thicknesses of less than a third of a millimetre.

The Kiswah (Arabic: قوساك) is a 260 m^2 cloth that wraps the Kaaba (the most sacred site in Islam) in Mecca in Saudi Arabia. It is made of 700 kg of pure silk and 120 kg of gold and silver threads. The finished cloth weighs approximately 1 t and a new one is made every year, since the embroidery oxidises or fades due to the high humidity.

For the production of the new Kiswah, Saurer supplied a machine that was specially rebuilt for the customer, to produce the high-quality twisted silk yarn for the cloth. In December 2019, a delegation of five engineers and quality inspectors from the customer visited the plant in Krefeld, Germany, to inspect the machine, measuring 4 m by 8 m and 2 m high.

The ring-twisting machine for sensitive yarns was produced in China. The creel, which is equipped with a large number of sensors for process monitoring, comes from Chemnitz, Germany.

"We appreciate the flexibility of Saurer."

2
Saurer senior management and guests in Krefeld.

3
The GlassTwister before acceptance in Krefeld.

The Saurer GlassTwister is normally intended for the production of glass filament yarns, which are needed for the manufacture of printed circuit boards or batteries for electric cars. For Holy Al Kiswah, Saurer took on the challenge of carefully modifying the glass-twisting machine to meet the specific needs of the customer, enabling them to process pure natural silk of highest quality.

"We have been a Saurer customer for many years and appreciate their flexibility," emphasise the members of the Holy Al Kiswah delegation. "We have been working with a Saurer Hamel 1000 twisting machine for many years, and now we want to replace it with a more modern machine. We discussed the project with Saurer for the first time at ITMA 2015, and then, after intensive discussions, decided on a modified GlassTwister. We are excited and looking forward to working with the new machine soon," a member of the delegation adds proudly.

The machine will be assembled on site by two Saurer fitters from Krefeld, who will also train the employees of Holy Al Kiswah.

The company museum and factory can be visited upon request on Saturday, Monday and Wednesday from 9:00 to 12:00. For details, consult the website (scan QR code).

KING ABDUL-AZIZ COMPLEX FOR KISWAH

Location
Mecca, Saudi Arabia
Year of foundation
1926
Staff
250
Production
Silk fabric

Machinery
Silk twisting machinery
Warp machinery
Weaving machinery
Winding machinery
Tying machinery
Dyeing and bleaching machinery
Sewing machinery including one of the largest sewing machines in the world
www.factory.alharamain.gov.sa/en/index.html

Discover more

Sustainability through recycling

Else Tekstil, which recycles textile scraps, is expanding its expertise and customer network via its own brand Bornewa.

Founded in 1975, Else Tekstil has been well-known ever since for its ring- and rotor-spun yarns. In 2018, the business overhauled its plant to create an ultra-modern production platform for regenerated fibres and yarns, becoming one of Turkey's biggest producers of recycled goods. By recycling textile waste from Turkey and elsewhere under its own brand, Bornewa, the company is making a major contribution to sustainability and eco-friendly production.

Thanks to its large waste storage capacity, Else Tekstil is able to come up with optimal and speedy solutions to any and all customer requirements.

At the plant, textile scraps from around the world are separated and stored by colour, sorted according to orders and then processed into fibres in the separator. Using Saurer BD 7 machines and the Autocoro 9, yarns are produced from the regenerated fibres with different proportions of cotton and polyester as well as yarn counts from Nm 4 to Nm 36.

These yarns are exported to more than 30 countries, with Germany, Italy and Portugal the biggest importers. Else Tekstil's monthly production capacity is 700 t of fibres and 800 t of yarn, and the company is an approved supplier to the brands Zara, H&M, Superdry, Camp David and Mads Nørgaard.

"More and more companies are beginning to focus on the issue of sustainability and are launching projects to actively help protect the environment. Recycled products are definitely becoming more popular because they're cheap and give companies the chance to boost their social responsibility credentials. And we're doing our bit, too," says board member Eşref Koçak. "To ensure our customers receive a swift service with all manner of colour and mixing options, our warehouse is stocked full of all colours imaginable. With the amazing flexibility of the Autocoro, we are always able to fulfil our customers' needs on time. Rotor-spinning machines from Saurer allow us to make samples and process multi-lots at the same time.

"And with the flexible Autocoro, we were even able to produce recycled slab yarn with a yarn count of Nm 36/1. Using our knitting machines, we then transform our yarns into fabrics. Our customers are thrilled with the huge range of options they have at low prices."

Eşref Koçak,
board member,
Else Tekstil San.ve Tic. A.Ş.

"Thanks to the flexible Autocoro, we are able to fulfil all of our customers' fast fashion demands."

The new plant also includes 13 circular knitting machines. So besides its commitment to research and development, Else Tekstil now has another competitive edge: the technology and flexibility of the Autocoro machines.

Else Tekstil San.ve Tic. A.Ş.

Location
Çorlu, Turkey
Year of foundation
1993
Staff
201
Production
Recycled fibre and yarns

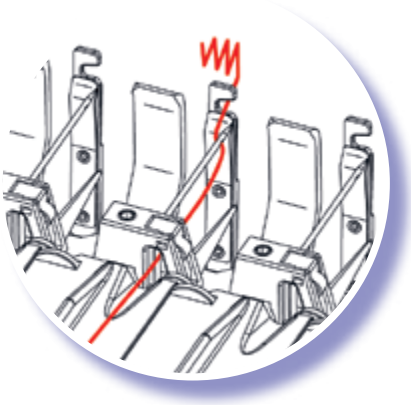
Machinery
Textile waste recycling machines
2 Saurer BD 7
4 Saurer ACO 9
13 circular knitting machines
www.else.com.tr

Discover more

Did you know?

1 128

This is the number of needles on the longest Epoca 7 embroidery machine, measuring 33.4 yards or 30.5 metres.



11 days

Around the world not in 80, rather in less than 11 days. Although the ring traveller of the machine weighs only 20 milligram, it runs at a speed of 165 km/h. At that speed, it would orbit the equator in less than 11 days.

2 000 KM/H

The airspeed in the opening tube of the splicer on the Autoconer is as fast as a jet, moving at 2 000 km/h.

8 800 metres in 11 minutes

During the uniformity test performed by the Autolab ET, 800 metres of yarn are checked per minute. In 11 minutes, that's 8 800 metres. This corresponds approximately to the height of the world's highest mountain, Mount Everest.

2 539 patents

Global innovative power: Saurer has filed patents around the world – the majority of them in China, followed by India and Germany.

1 500 HANDS

Around 1 500 hands are in action every day in operations at the Saurer Spinning Solutions location in Germany, ensuring that customers' orders are processed and the shipments leave the warehouses on time and in full.

40 T-shirts

408 000 metres of yarn are checked in the laboratory in Übach-Palenberg, Germany, every day. This corresponds to the amount of yarn in around 40 T-shirts going through a comprehensive yarn quality check.

5.5 years

The Autocoro makes good on its promise: highly efficient denim yarn production. Because with just one Autocoro, it would only take 5.5 years to provide a pair of jeans for every Swiss citizen (eight million trousers).

Focus on Saurer laboratory

For a company to make the most of its machinery, expertise is called for. It's often the little things that make all the difference. This is where the specialists at our high-tech laboratories come into play.

Insight: What are the strengths of the Saurer laboratory in Übach-Palenberg, Germany?

Klaudia Flores Molina: We work with the latest test equipment for nearly all tests on fibres, yarns and fabrics. Here in Übach-Palenberg we have specialised in staple fibres. What's more, only highly qualified textile laboratory assistants and textile technologists work in our laboratories.

Insight: What is inspected during fibre and yarn tests?

K.F.M.: During fibre tests, the raw material itself is inspected, for example the fibre length, cotton maturity, and amount of trash. In other words, we analyse the input for the textile machines.

Wilhelmine Hamacher: Yarn tests are carried out to inspect the output of the spinning machine – the yarn. This includes factors such as irregularity, imperfections, and strength.

Eileen Wilhelm: This information allows us to interpret yarn behaviour in the downstream process better and to also draw conclusions about upstream processes. This is why we test every intermediate and end product in the textile chain as well.

Insight: What are the procedures for a yarn test and how is testing done?

W.H.: A yarn test should always be considered on a case-by-case basis and there is a range of different methods. Test criteria may include: irregularity, thick and thin places, twist, hairiness, strength, and elongation of the yarn.

K.F.M.: It always depends on which tests are required by the customer. In any case, the test needs to be suitable for the raw fibre material and the yarn type. We are happy to provide advice here on what is appropriate. It goes without saying that we carry out our tests in reproducible conditions, for example to DIN standards, as well as in a standard atmosphere.

Insight: Do the test methods also include long-term tests?

K.F.M.: Usually they don't. However, as part of research efforts, we do also carry out long-term tests for internal development.

Insight: What do customers gain when they commission the laboratory?

E.W.: Objective test results and recommendations from competent specialists, which the customer can use to optimise their textile operations and increase productivity.

Insight: How detrimental can it be to customers if something is wrong with the fibres or yarns?
E.W.: As textiles are made in many consecutive process steps, even the smallest of errors in an early process step can lead to massive quality issues over the course of production.

For example, an incorrect machine setting during production of the sliver may only be noticed later on in the fabric. This can cause fatal consequences because it cannot be undone. In the worst-case scenario, the entire production of the fabric may be so defective that it cannot be processed or sold on. Inspecting the textile products between the individual process steps therefore allows errors or quality defects to be detected in good time. And this saves the customer a lot of time and money.

Insight: When should customers turn to you?

K.F.M.: The services provided by the laboratory are not only intended to find defects, but also to ensure quality. In other words, the textile products also need to be inspected for preventive purposes, whatever the process stage. We can also make recommendations on how to avoid errors – this is one of the main reasons why customers should contact us early on.

Insight: If a customer wants to draw on your services, how do they go about this in practice?

E.W.: Customers can email or call us and let us know what tests they require. Alternatively, they can ask our service staff for the relevant request form for testing.

Insight: And what happens once a customer has commissioned you?

K.F.M.: The customer usually sends us the material to be tested. Once testing has been completed, the customer receives a detailed test report from the laboratory technicans.

W.H.: Customers also have the option of arranging an appointment to visit the laboratory so they can see for themselves what we can offer them.

Insight: Do you only work for European customers?

K.F.M.: No, we work for customers all over the world, as do our laboratories in Münster (Germany), China and India.

Insight: Do you collaborate with the other Saurer laboratories?

E.W.: Yes, we already have a shared database so that we can access the results from the Saurer laboratories worldwide. We are also planning to further intensify our collaboration in future.

W.H.: And we carry out a "round trial" with Suzhou once a year, for example. The aim of a round trial is to guarantee the same results worldwide when testing the same starting material. This serves quality assurance purposes.

Insight: Does the laboratory also play a role when it comes to new purchases of Saurer products?

E.W.: In an indirect way. By examining the materials in the individual process stages, we can check whether the customer has achieved the desired quality and material exploitation with the Saurer machines. Since ITMA 2019, Saurer has also been offering Autolab, a complete solution for the laboratory.

Insight: So an analysis of yarn optimisation by the lab can increase machine productivity?

E.W.: Without a doubt! By inspecting the yarns, the customer can react to the settings of the machines and draw conclusions about the quality of the raw material.

Insight: What role does the laboratory in Übach-Palenberg play in current fashion trends and the analysis of new yarns?

K.F.M.: We don't develop new yarns, but we do see how fibre blends and yarn characteristics change over time. In this way, we know what trends our customers are reacting to. Particularly customers with new materials often use our services, which enables us to observe trends.

E.W.: Of course, we also react to these on the development side! If certain new fibre blends become more frequent, then the components and features of Saurer machines need to be adapted.

Insight: Can you make out any new trends at the moment?

E.W.: At the moment sustainability and recycling are hot topics.
A lot of fibre blends with a high proportion of recycled material – especially cotton, are being spun. Eco-friendly manmade fibres out of natural polymers, such as lyocell, are also becoming more and more popular. As all test results are recorded in our database, we can also access old results and compare them with current results. So we can quickly identify trends in this regard as well.

Insight: Do you also conduct research yourselves?

W.H.: Not directly, but our laboratory collaborates with the application technology and development technology department at Saurer and examines the materials from spinning trials. We therefore make an indirect contribution for the benefit of our customers on a daily basis.

Insight: Thank you for the interview!

Discover more. We'll be introducing another team of Saurer experts to you in the next issue.

Parts: original is the right choice

Dr Daniel Wächter is Product Manager After Sales & Service at Saurer Spinning Solutions.

With a portfolio of almost 300 000 original parts for all product lines and all machine generations, Saurer ensures that customers' machines run optimally throughout their life cycles.

Insight: What goes into the development of Saurer original parts?

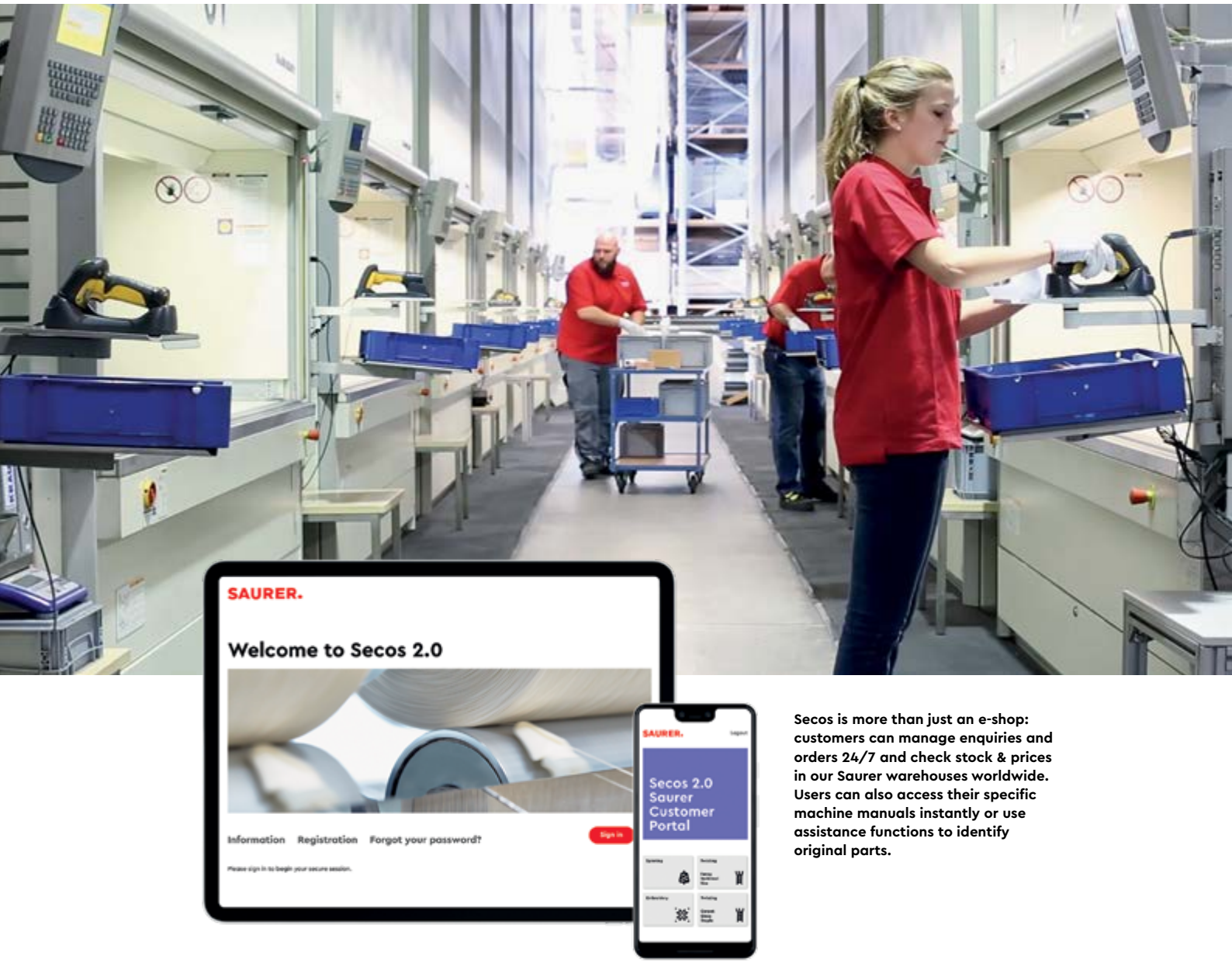
Dr Daniel Wächter, Product Manager After Sales and Service: First of all, all our products go through an extensive R&D process. This is coupled with the innovations from series machine development. Our many years of worldwide market experience and close cooperation with our customers during field trials are equally valuable. Our specialists put our Saurer original parts through strict quality checks – we test them thoroughly in hardness applications. They have also proven their worth a thousand-fold in spinning mills around the globe. Some, like our Belcoro spinning components, set technical and technological standards in the textile industry.

Insight: What are the advantages of using original parts from Saurer?

D.W.: Our customers enjoy the benefits of life-long technical services and guaranteed availability of original parts for decades. They can also count on support from our technological consulting team across the globe and our Customer Technology Centres. We also have a worldwide network of Customer Service Centres and Saurer agents to support our customers' businesses. Saurer original parts have a long service life. They ensure trouble-free production in the customers' plants and reduce machine downtime. Naturally, our products come with specified guarantee periods, information concerning expected service life and application recommendations. Many parts are protected by patent to ensure that our customers can benefit exclusively.

Another major advantage is that customers' machines will always be up to date and benefit from the latest innovations. It can be costly to use parts from a third party because this often decreases machine performance: the risk of damage is higher, e.g. damaged bearings caused by badly balanced rotors. Very often, third-party parts have a shorter lifetime and must be replaced at shorter intervals. Replaced parts or electronic parts with incorrect settings may need to be serviced more in order to address problems.

Insight: How can customers recognise that they are buying an original part?



Secos is more than just an e-shop: customers can manage enquiries and orders 24/7 and check stock & prices in our Saurer warehouses worldwide. Users can also access their specific machine manuals instantly or use assistance functions to identify original parts.

D.W.: We focus on key components that determine yarn quality. They are relatively easy to identify by the quality seal that is printed on or stamped into their surface. In many cases, the logo is a figurative mark that we have trademarked – this means only Saurer can use it.

Insight: Can you tell us more about how you store and ship parts?

D.W.: Many specialised and experienced teams handle this process: parts administration is responsible for order management and the export team for shipping and customs regulations. For very urgent deliveries, customers can opt for express shipping: all orders placed by 13:00 GMT are turned over to the freight forwarder on the same weekday.

In the warehouse, we ensure that the correct parts are shipped with modern pick to light systems. Our original parts are stored carefully to prevent dust contamination. Rotors and all other susceptible parts are stored in rustproof paper. We also send out all the parts in specialised packaging to ensure that they arrive at the customer in the same condition in which they left the factory. Since we have stock available in many countries, we are able to deliver orders fast and reliably.

Insight: Thank you for the interview!

Discover more