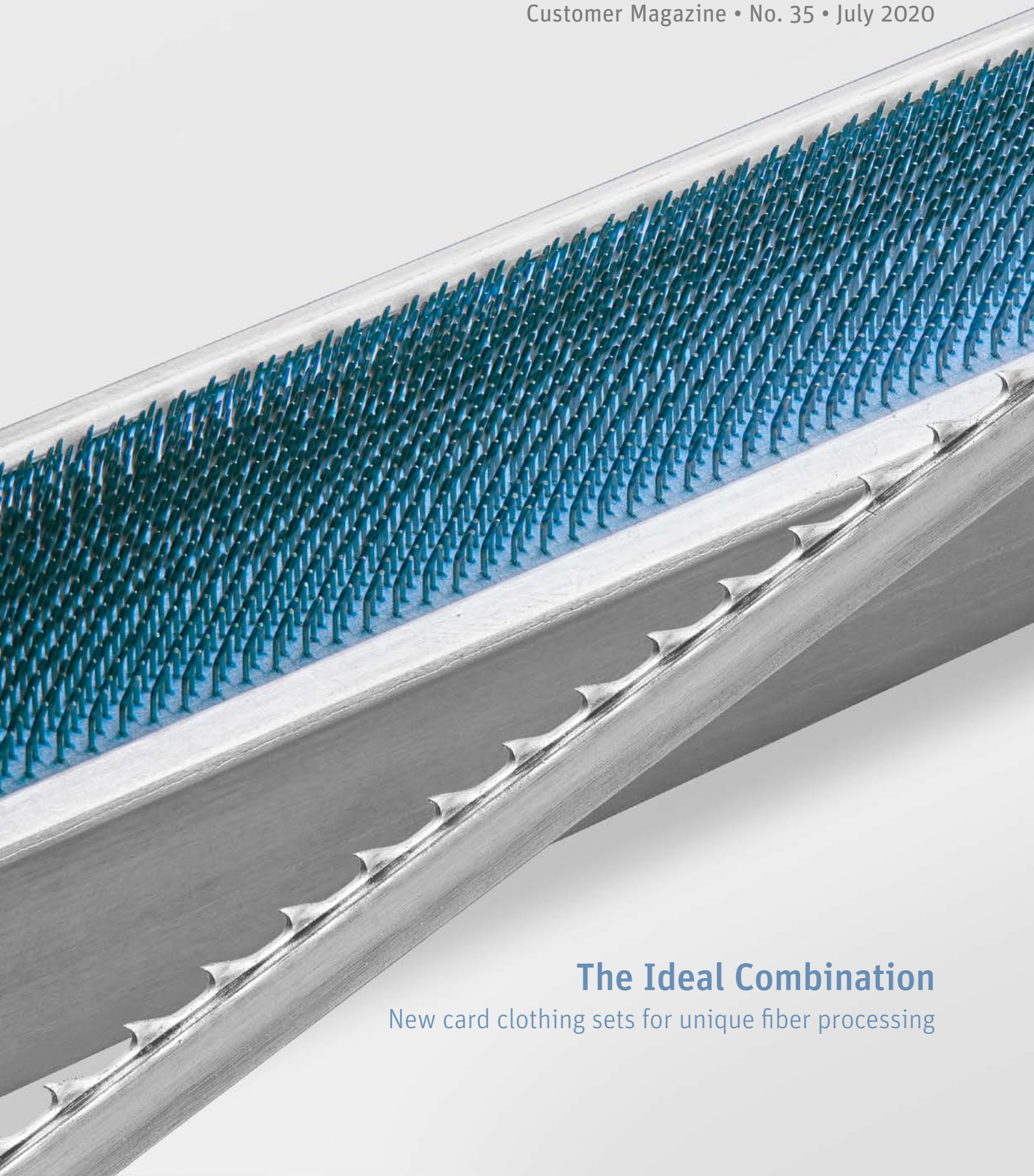


SPINNOVATION

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The Ideal Combination

New card clothing sets for unique fiber processing

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Front cover: Graf – Card clothings for cotton yarn application

Dear customers,

A year has passed since the last edition of “Spinnovation”, which focused on ITMA 2019. The feedback we received about the innovations presented by Bräcker, Graf, Novibra, SSM and Suessen was consistently positive, not only at the trade fair itself but also as the year progressed. “Business as usual” one might think. However, events then took a very different turn: The entire world has been affected by COVID-19, and the spinning industry is no exception. Your priorities have shifted – and ours have too. But we still share the same common goal: We want to maintain optimal business operations despite the circumstances.

Good examples of this are the two Mill Reports in this issue about Yunus Textile Mills Ltd. in Pakistan and Giza Spinning and Weaving Co. in Egypt. Yunus recently invested in COMPACTeasy from Suessen and Giza acquired the CROCODoff system from Novibra – investments that offer excellent returns.

This issue also has much to offer in terms of product news. Graf presents not one but two innovations: new card clothing sets for unique fiber preparation and the new MULTISHARP alloy that significantly increases machine availability. And the design engineers at Bräcker have developed retrofit sets for the Berkol multigrinder and the Berkol supergrinder that considerably improve the flexibility of grinding machines and expand their application range.

In the “Technology” section, SSM demonstrates how using resource-saving equipment can successfully reduce energy costs. SSM presents also brand new ways to combine metallic-coated thread with filament. Bräcker conducted a side by side trial of SAPHIR and PYRIT travelers analyzing the influence of the traveler service life on yarn quality and ends-down rate.



Today a large proportion of carpets are made using synthetic yarns, mainly polypropylene, polyamide, and polyester. SSM air texturing technology provides the opportunity to produce all 3 types of carpet yarns from one single material, making a significant contribution to quality, manufacturing cost and sustainability of carpet production.

You can rest assured that all of our teams – at Bräcker, Graf, Novibra, SSM and Suessen – are doing their very best to support you.

I hope you enjoy reading the articles in “Spinnovation.”

Please stay safe; truly yours,

Serge Entleitner

A handwritten signature in dark ink, appearing to read 'S. Entleitner', written in a cursive style.

Head of the Rieter Business Group Components

The Ideal Combination

New card clothing sets for unique fiber processing

Differences in raw materials are a challenge that spinning mills face every day. However, they are still expected to produce yarns of consistent quality. Graf customers benefit from perfectly matched clothings that meet their individual needs. This allows spinners to optimize the desired yarn quality even when the cotton has high trash content.

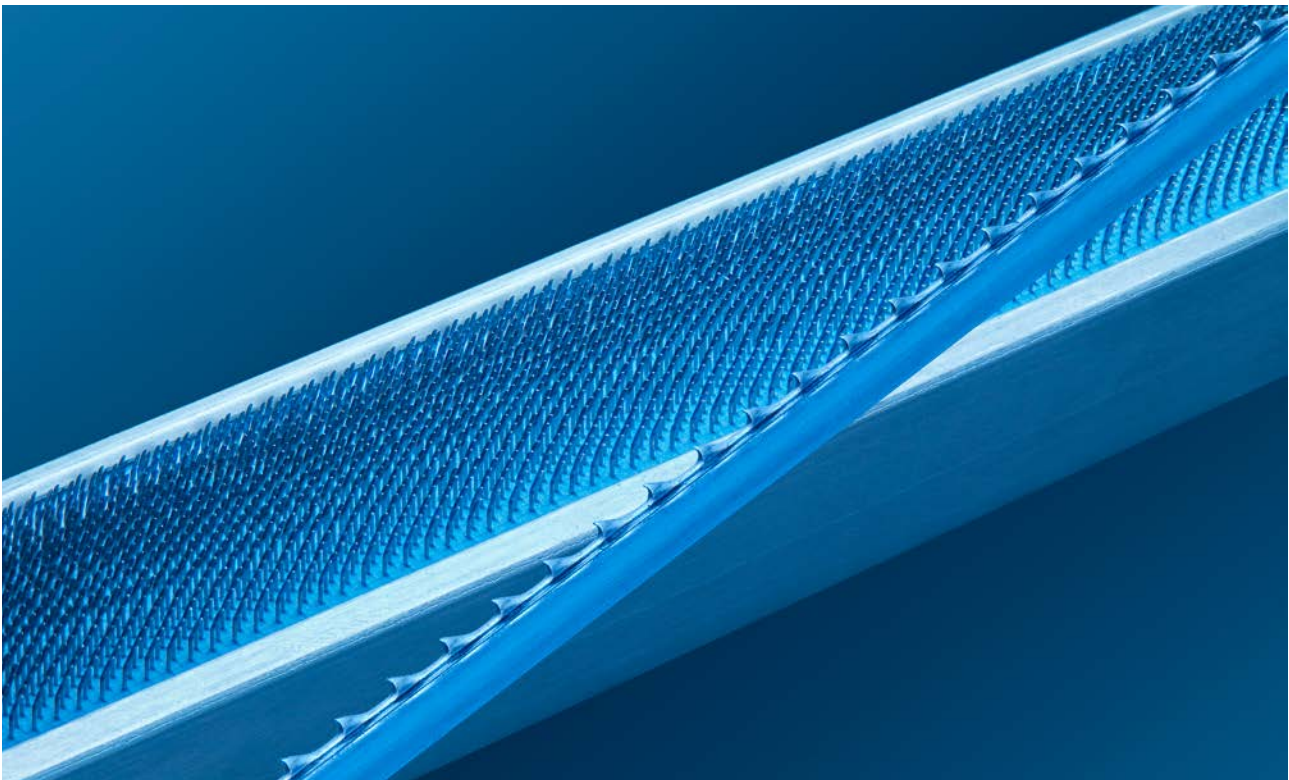
All spinners know that carding is one of the most important, yet also one of the most sensitive, processes in yarn production. The carding results have a significant impact on the success or failure of a spinning mill. Graf card clothings gently separate the fibers into individual strands so that impurities, seed coat fragments, neps and short fibers can be removed efficiently and consistently. This is the basis for consistent yarn quality and optimum raw material utilization.

Out of the company's broad product portfolio of carding technology components, the combination of the cylinder wire P-2040 and the flexible flat clothing resist-O-top C-55 (RSTO) has become the industry standard in cotton and cotton blend processing, and has been so for many decades.

The properties of the resist-O-top mean that this flexible flat clothing can be universally used for all types of cotton. Furthermore, customers using the flexible flat clothings from the RSTO product family can expect to see a 10% longer lifetime when compared to other flexible flat clothings. Lastly, the P-2040 and RSTO C-55 set offers unique reliability for production, which the market is repeatedly confirming.

The market requirements for cotton quality are constantly changing. Mechanical harvesting methods tend to increase the amount of contamination in the cotton. Contamination levels of up to 10% are no longer uncommon in some cotton-producing regions of the world. At the same time, spinning mills must continue to supply high-quality yarn in order to remain profitable. To meet these specific requirements, Graf has developed three new card clothing sets.

If the waste content of the cotton is very high, Graf recommends that spinners combine the flexible flat clothing RSTO C-55 with the new cylinder wire P-1940 (Fig. 1). This wire is characterized by a lower tooth height to enable the same yarn quality to be guaranteed even if the raw material is very highly contaminated.



Card clothings for cotton yarn application

Card clothings for all types of yarn applications

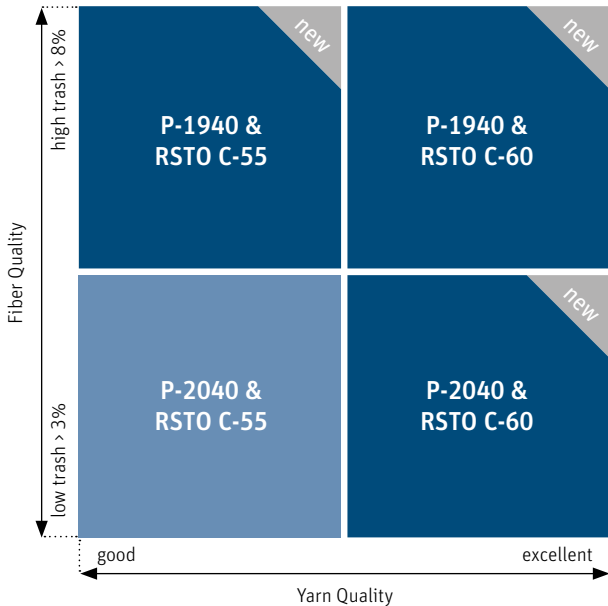


Fig. 1: Four suitable combinations of cylinder wire and flexible flats

Graf offers its customers the possibility of improving the yarn quality even further while keeping the fiber quality the same. To achieve this goal, the standard flat clothing RSTO C-55 currently in use is replaced with the flexible flat clothing RSTO C-60. With the development of the RSTO

C-60, the number of points per square inch has been increased by 10% to 600. This makes the fibers more evenly distributed and further improves the parallelization of the individual fibers.

For spinning mills looking to manufacture an outstanding yarn despite high cotton waste, Graf offers the ideal card clothing set: The cylinder wire P-1940 in combination with the flexible flat clothing RSTO C-60 meets all requirements in full.

Impact on the yarn quality

The following test evaluation demonstrates the effectiveness of the P-2040 and RSTO C-60 set in comparison to the P-2040 and RSTO C-55 set with regard to thick places and neps (same cylinder wire, different flat clothing). The test conditions in the spinning mill were:

- 100% cotton, trash content 4%
- Ring yarn, carded, Ne 30
- Card A: P-2040 and RSTO C-55
- Card B: P-2040 and RSTO C-60

The yarn quality was tested in the laboratory after 150 t, 300 t, 600 t and 800 t at a production throughput of 60 kg/hour.

The results demonstrate a significant improvement in yarn quality between the two sets. In this instance, thick places and neps were reduced by using the flexible flat clothing RSTO C-60 instead of the RSTO C-55 (Fig. 2 and 3).

Thick places +50%

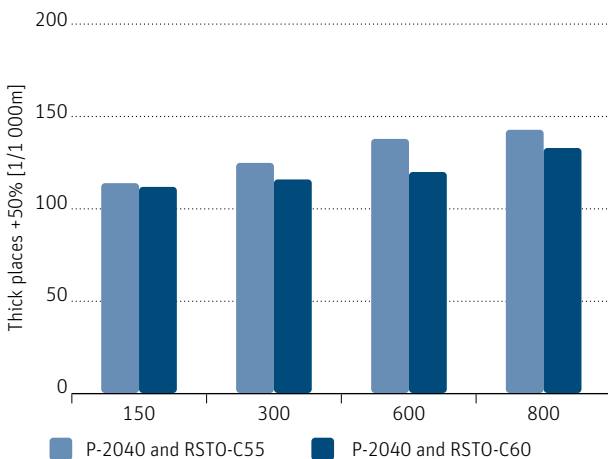


Fig. 2: Impact of the flexible flat clothing on thick places

Neps +200%

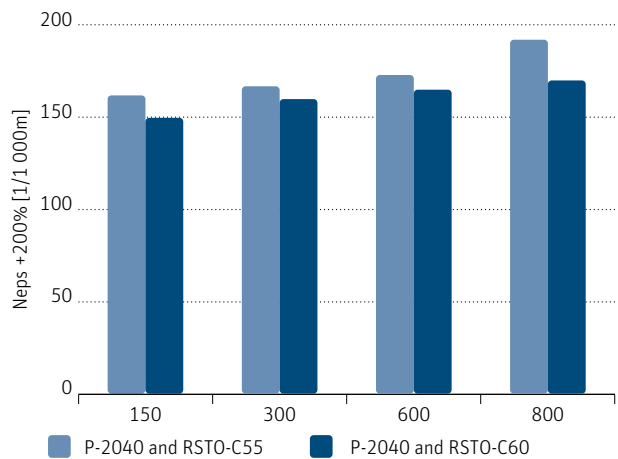


Fig. 3: Impact of the flexible flat clothing on neps

Yarn Count Range	Spinning Process	Flexible Flat
<i>Applications for cotton, cotton blends and blends with waste</i>		
Coarse	Ring, OE	RSTO C-43
Coarse	Ring, OE	InLine-X-Top C-40
Medium	Ring, OE, Air-Jet	RSTO C-48
Medium	Ring, OE	InLine-X-Top C-50
Medium	Ring, OE, Air-Jet	RSTO C-55
Medium to fine	Ring, OE, Air-Jet	RSTO C-60
Fine	Ring	RSTO C-74
<i>Applications for MMF and MMF blends</i>		
Coarse	Ring, OE	InLine-X-Top M-35
Coarse to medium	Ring, OE, Air-Jet	InLine-X-Top M-40
Coarse to medium	Ring, OE, Air-Jet	RSTO M-43
Medium	Ring, OE, Air-Jet	RSTO M-48
Medium to fine	Ring, OE, Air-Jet	RSTO M-55
<i>Applications for recycled fibers</i>		
Coarse to medium	OE	RSTO R-44

Fig. 4: Graf portfolio of flexible flat clothings for different raw materials and applications

Customized solutions for every need

In addition to the three innovations for the sets of cylinder wires and flexible flat clothings for cotton and cotton blends, Graf also offers a large portfolio of flexible flat clothings for a wide variety of other applications and raw materials (Fig. 4). Customers can count on an equally large portfolio of different cylinder, licker-in and doffer clothings too.

Spinning mills can rely on their partnership with Graf as it is based on innovation, service expertise and technological support – and therefore on the best possible value for money.



Christian Liechti
Product Manager



Lifetime Extended Significantly

Significant increase in machine availability thanks to new MULTISHARP alloy

Fibers with aggressive characteristics place the card clothing under severe strain, which limits its lifetime. With the unique wear-resistant alloy MULTISHARP for the card clothing, the lifetime increases by more than 50%. This offers a significant advantage, particularly when using abrasive synthetic fibers.

Spinning mills are required to achieve consistent yarn quality. The continuously increasing proportion of abrasive synthetic fibers and cellulose fibers used in recent years is posing a new challenge. This is especially true when using dark fibers that have been made using titanium dioxide, as well as dull and semi-dull fibers. Spinning mills are already benefitting from

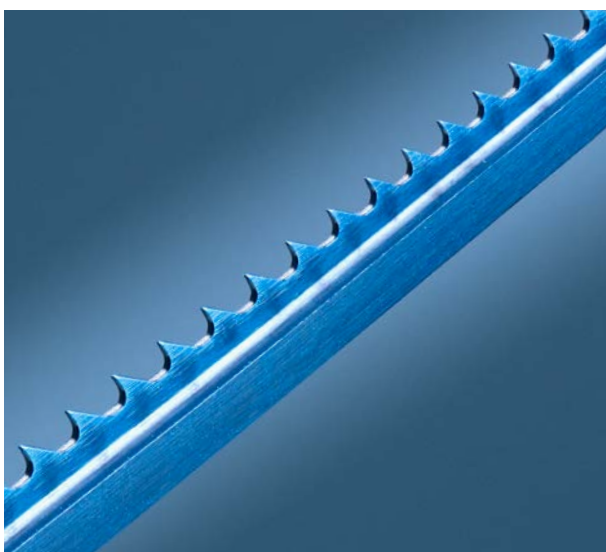
Alloy	CUTTYSHARP	MULTISHARP
Volume until clothing change (main cylinder)	220 t	330 t
Production output (Rieter C 70, 60-inch working width)	60 kg/h	60 kg/h
Service life until clothing change	153 days	229 days
Number of clothing changes per card per year	365/153 days = 2.4	365/229 days = 1.6
Number of days of production downtime per card due to clothing changes per year	2.4 x 3 days = 7.2 days	1.6 x 3 days = 4.8 days
Number of days of production downtime with 25 cards due to clothing changes per year	25 x 7.2 days = 180 days	25 x 4.8 days = 120 days
Increase in machine availability per year	180 days - 120 days = 60 days	

Fig. 1: Increase in machine availability

the outstanding properties of the CUTTYSHARP alloy, which is the industry standard in many segments, including spinning. Using the MULTISHARP alloy from Graf not only guarantees the yarn quality, but also extends the lifetime of the card clothing by at least 50%. This greatly increases the availability of the card because the maintenance cycles are significantly longer. The maintenance effort for the time-consuming process of changing the clothing, which used to require the card to be taken out of operation for up to three days, is reduced by a third thanks to the longer lifetime of the clothing.

Maintenance-related downtimes reduced dramatically

Comparative tests between the two Graf alloys – CUTTYSHARP and MULTISHARP – confirm the extended lifetime of MULTISHARP with impressive results. In a Turkish spinning mill, it was possible to increase the production volume of a polyester and viscose blend made using titanium oxide sustainably from 220 to 330 tons thanks to the new alloy.



MULTISHARP alloy – for all card clothings

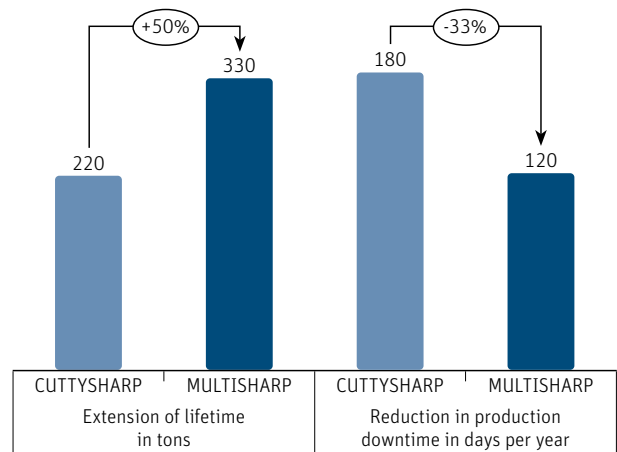




Fig. 2: Advantages of the MULTISHARP alloy in a Turkish spinning mill with 25 cards

Increasing the lifetime has a positive impact on the maintenance-related downtimes during production. The example calculation (Fig. 1) shows why the uniquely wear-resistant MULTISHARP alloy won over the Turkish spinning mill. Thanks to the longer maintenance cycles, in a mill with 25 cards, the availability of the cards is increased by 60 days every year; this means that the downtimes for changing the clothing are reduced by 33% (Fig. 2).

Spinning mills can rely on their partnership with Graf as it is based on innovation, service expertise and technological support – and therefore on the best possible value for money.



Sandra Meier
Head of Product Management



New Challenges for Grinding Machines

Retrofit kits for the multigrinder and supergrinder



BERKOL multigrinder MGLQ and BERKOL supergrinder SGLM

The small diameters of the top rollers of compacting systems such as the COMPACTeasy and the Rotorcraft Compacting System (RoCoS) present a new challenge for grinding machines, since grinding is not possible without making technical alterations in most cases. The Bräcker engineers have tackled this task and can put together the necessary retrofit kits for the multigrinder and supergrinder as required. This significantly increases the flexibility and versatility of the machines for customers.

The grindable diameter range of top rollers in the distance between the tandem drive rollers is typically limited to 24 to 50 mm on the BERKOL multigrinder. The tandem drive roller is used because although the multigrinder MGLQ can grasp all commercially available axes with a universal gripper, it cannot move them in a stable manner (Fig. 1).

For smaller diameters, this distance must be adjusted to avoid a collision between the lower drive roller and the grinding disk (Fig. 2).



Fig. 1: Grinding position of a top roller with a diameter of 30 mm

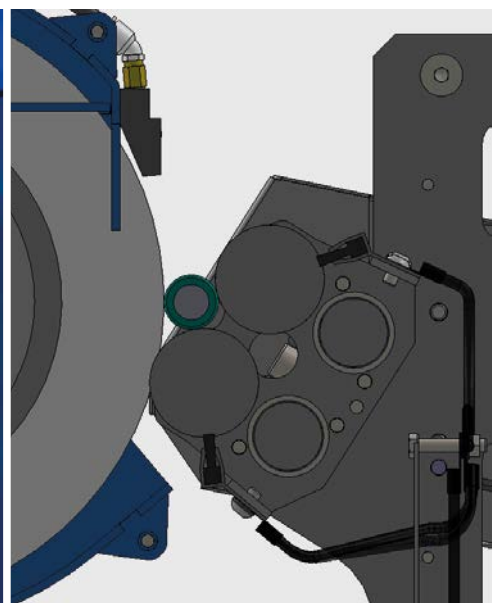


Fig. 2: COMPACTeasy top rollers cannot be moved to the grinding wheel.

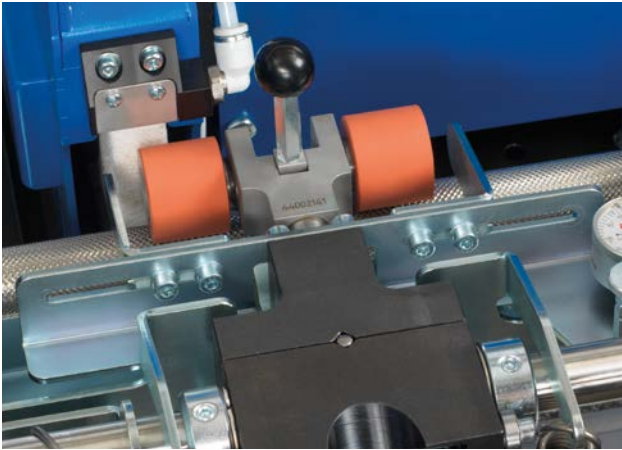


Fig. 3: Additional grinding device for semi-automated grinding of top

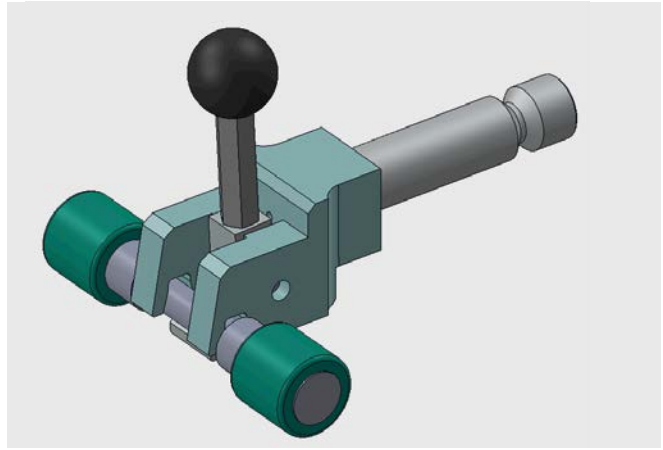


Fig. 4: Clamping head roller cots

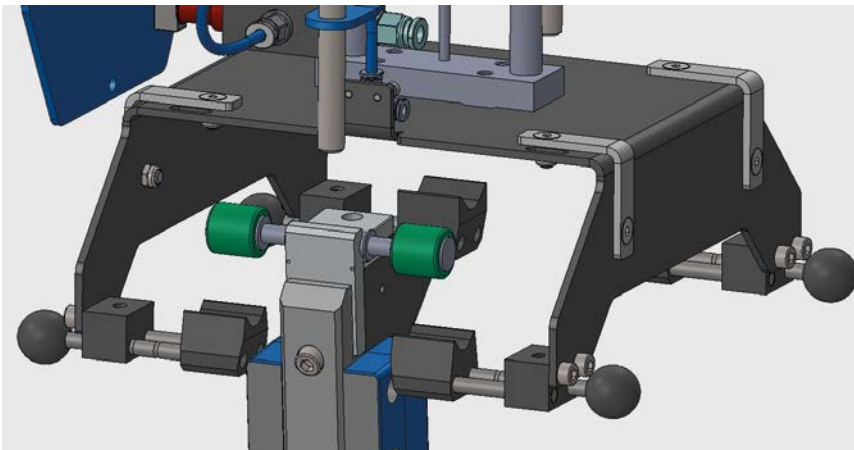


Fig. 5: Top roller mount on the grinding unit

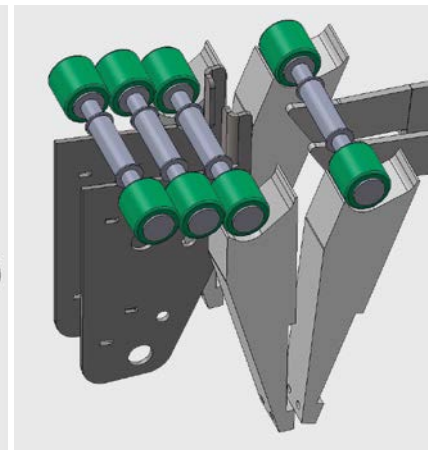


Fig. 6: Modified lifting V-blocks

The solution for the machine models multigrinder and BG/U (predecessor of the MG) is semi-manual grinding using an additional grinding device (Fig. 3). A compatible clamping head is already available for RoCoS and COMPACTeasy top rollers (Fig. 4).

A retrofit solution makes it possible to adjust the axle mount of the basic model BERKOL supergrinder SG to cots with smaller diameters (Fig. 5).

The supergrinder models with a magazine feeder also require modifications to the loader and unloader to ensure that the pickup of the top rollers is mechanically secure (Fig. 6).

On supergrinder models with a measuring device, extra adjustments must be made to the infeed axis as well.

The retrofit kits for the supergrinder, which will be available in the second half of 2020, will enable Bräcker customers to also grind the top rollers of the most common mechanical compacting systems without having to invest in additional machines.



Dr. Markus Dippel
Head of Development
and Technology



The Right Technologies for Carpet Yarn Producers

SSM air-texturing machine DP5-T

Until the 20th century, wool and silk were the principal yarn materials used to weave carpets. Today, a large proportion of carpets are made using synthetic yarns, mainly polypropylene, polyamide, and polyester, the latter extensively used in cut pile carpets for its versatility, bright colors, and softness. SSM air texturing technology makes it possible to produce all three types of carpet yarns from a single material, increasing quality, lowering manufacturing costs, and improving the sustainability of carpet production.

The primary backing provides the carpet's foundation layer (Fig. 1). It plays the central role in ensuring the dimensional stability of the carpet and the efficiency of the carpet manufacturing process.

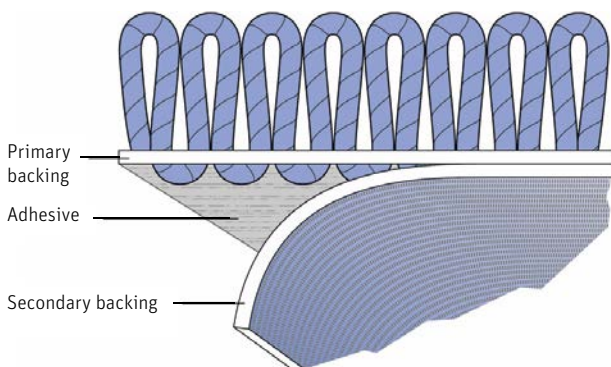


Fig. 1: Carpet construction

Yarns used for the primary backing must meet two principal specifications: first, high tenacity to withstand the weaving process and ensure good carpet durability and, second, no long open loops, to avoid breakage during weaving. Yarns can be either untwisted or, for higher quality, twisted. In addition, polyester ATY has several advantages over jute and cotton yarns for carpet backing. The DP5-T offers endless possibilities when it comes to fine-tuning carpet backing yarn quality. Characteristics like elongation and tenacity can be adjusted easily through the drawing ratio and godet temperature, and loop structure can be freely defined according to customer needs thanks to the DP5-T individual motor concept. The use of a continuous filament for the supply material makes it possible to produce high-quality backing yarns with high regularity. And the global availability of polyester POY – the preferred supply yarn for ATY – enables mills using the DP5-T to produce backing yarns without worrying about having enough yarn in stock for carpet manufacturing. Stock

volumes can be reduced to a minimum, as the ATY primary backing yarn can be produced on demand. Counterpart yarns like jute are produced only in a few countries and at times can be difficult to source.

Furthermore, the low overfeed needed to produce such yarns allows higher production speeds, leading to increased output and short return on investment. Finally, using polyester yarns instead of natural fibers for carpet backing enables better recyclability of carpets with polyester pile yarn. There are few possibilities for recycling carpets that contain a mix of yarn types. The single-position machine concept gives the SSM DP5-T great flexibility for the production of the finest to coarsest carpet backing yarns, up to 4 000 dtex, simultaneously on the same machine.

Secondary carpet backing yarn

A secondary carpet backing (Fig. 2) is necessary for carpets with latex coatings. The ATY process with either polyester or polypropylene filament yarns is a flawless alternative to the commonly used long staple yarns.

The purpose of a secondary backing is to provide maximum adhesion for the latex coating so that the latex layer cannot easily detach from the carpet. Long staple polyester and polypropylene yarns are used for secondary backings because they have long protruding hairs that afford good adhesion for the latex coating. Even better than long hairs are long loops,

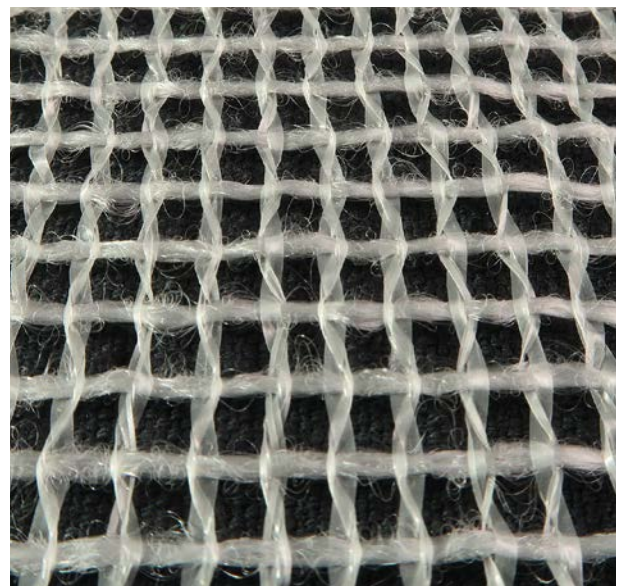


Fig. 2: Secondary backing fabric with an air-textured yarn in weft and tape in the warp.

inherent in air-textured yarns. These “hook” the latex even better, producing excellent delamination values. Also, continuous filament yarns have the advantage of generating less dust during the weaving process because they have no filaments that can detach from the yarn and pollute the production environment.

The construction of a voluminous and loopy yarn structure for secondary carpet backing is widespread practice. It allows higher production speeds compared with staple yarn counterparts, setting a new benchmark and enabling both lower production costs and superior quality for carpet manufacturers.

Carpet pile yarns

In cut pile carpets, the pile yarn is visible and gives the carpet its sheen as well as adds to the style and pattern. The SSM DP5-T air-texturing machine is an extraordinary production tool when it comes to producing various pile yarn qualities, enabling the production of diverse carpet designs.

Flexibility in pile color

Incorporating creel solutions that can accommodate up to eight plies per position, SSM machinery allows full flexibility in terms of color mélange, enabling the production of a wide range of nuances from a limited number of color supplies. A variety of shades can be obtained from only two supply colors: dark and light gray (Fig. 3). The varying shades are produced by blending both colors in different proportions.

Flexibility in pile shrinkage

Thanks to induction-heated godets and their precise temperature control, it is possible to produce ATY pile yarn with specific shrinkage behavior. The shrinkage level can be easily tuned in the recipe by adjusting the temperature of each individual godet. Heat setting the carpet changes the appearance of the pile depending on the shrinkage level of the yarn, producing different pile heights and carpet.

It is possible to incorporate pile yarns with different shrinkage levels into the same carpet (Fig. 4). For instance, a high-



Fig. 3: Color flexibility of pile with only two supply colors

TECHNOLOGY

shrinkage pile yarn results in shorter pile height after heat setting, while a low-shrinkage pile yarn results in a higher pile height after heat setting. The result is a carpet structure with a three-dimensional effect (Fig. 5 and 6).

The SSM DP5-T machine enables core/effect yarn construction, making it possible to design pile yarns consisting of two yarns, one high shrinkage and the other low shrinkage. After heat setting, these yarns develop a specific structure that differs from other pile yarns (Fig. 7).

It is easy to design a high-shrinkage yarn. What is not easy is to produce tons of such yarn with a uniform, specified shrinkage level. This is precisely what is necessary to avoid expensive defects in finished carpets. Nonuniform shrinkage

causes variations in pile yarn height, resulting in unsightly voluminous stripes in the carpet. The superior induction heating concept of the SSM DP5-T eliminates this problem. The godet's surface temperature is held within a tolerance of 2 to 3 °C to ensure a constant shrinkage level within and between the different positions of the ATY machine, a prerequisite for consistent carpet quality.

Flexibility in pile construction

The overfeed level, which is chosen during the air-texturing process, significantly affects pile quality. A known drawback of polyester FDY pile is that it bends easier than materials like polypropylene or polyamide. Air-texturing pile yarn reduces this bending tendency by creating a loop structure that stiffens the pile and makes the finished carpet look better and



Fig. 4: Different shrinkage levels ranging from a minimum of 4% to a maximum of 65%.



Fig. 5 and 6: Carpets with 3D effect with high-shrinkage pile used for the dark background and low-shrinkage pile used for the flourish design



Fig. 7: Various shrinkage level combinations and their different appearance within the pile

last longer. Overfeed values also play a role in the appearance of the yarn, producing a sheen or matt pile yarn appearance, whichever is needed in the carpet design (Fig. 8).

Introduction of fancy effects

Another advantage of using the SSM DP5-T in the production of pile yarns for carpets is the ability to use the fancyflex VARIO system, which enables controlled overfeed changes within the same pile yarn. This makes it possible to tailor color variations (Fig. 9) or the structure over the length, enabling the production of carpet styles never seen before (Fig. 10).

Sustainability

Sustainability is a major and growing concern in the textile industry, and there are many hurdles to recycling carpets main-

ly because they consist of a mix of materials. Separating the various types of fibers in a carpet for recycling increases costs and sometimes requires the use of chemicals, with their ecological drawbacks. This results in a large quantity of used carpets ending up in landfills. When carpets consisting of several materials are recycled, you often get a downgraded product used, for example, in composite materials for insulation.

Usually, it is the application that dictates the type of material used in a carpet, especially for pile or loop yarns, which are fully exposed to carpet usage. Every material has its own advantages: Polyamide yarns are preferred for higher traffic areas because of their excellent abrasion resistance, polypropylene yarns for their stain and moisture resistance, and polyester yarns for their softness, brightness, and vivid colors, to name a few examples.

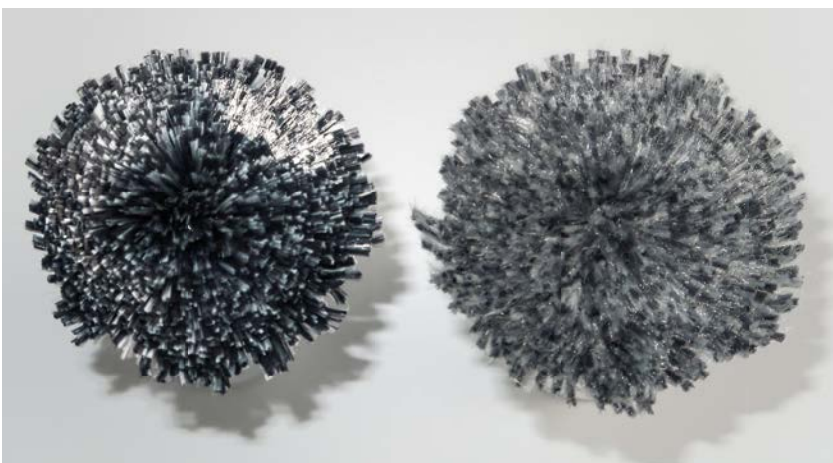


Fig. 8: Depending on the pile overfeed value, sheen or matt pile appearance is possible.

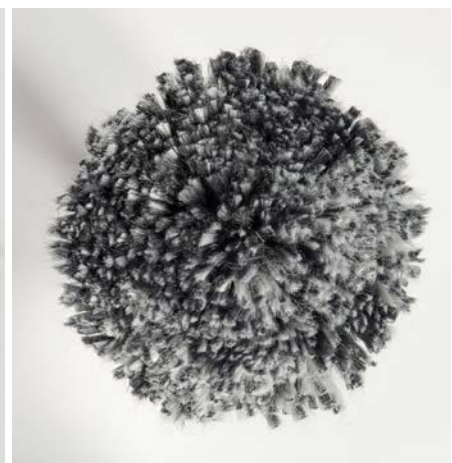


Fig. 9: VARIO system enables the production of a pile yarn with colors varying between light and dark gray.



Fig. 10: New carpet styles are possible with polyester ATY pile yarns and the SSM fancyflex VARIO system.

SSM machinery has the technologies to produce the three constituent yarns of a carpet from a single type of material, clearing the way for more economical “primary” recycling. This means that used carpets can be recycled into new yarns to produce new carpets, drastically reducing the use of raw materials and conserving our natural resources.



Fig. 11: The 4-ply version of the RG12 DTB false-twist texturing machine

RG12 DTB 4-ply polyester DTY machine for carpets

Another asset for any carpet yarn manufacturer is the SSM RG12 DTB false-twist texturing machine (Fig. 11). It employs the unique concept of individually driven positions, giving the mill full flexibility in production planning. Because each position is individually driven, the machine can handle small as well as large production batches. Also, the need for another laboratory machine to develop new yarns is eliminated because one position of the production machine can be designated for this task. Once development is complete, this position can be reallocated to normal production, maximizing productivity. The compact design of the machine offers optimized ergonomics. Detection of any mis-threads can be monitored easily because the entire yarn path, from creel to take-up, can be inspected from a single point.

The machine allows up to four friction units per position to produce 4-ply DTY. For instance, 4 x 300 denier is possible without any loss of machine efficiency, making this machine ideal for the carpet industry. Furthermore, the possibility of fitting short electrical primary heaters and longer DOWTHERM heaters makes it possible to texture all kinds of filament yarns, such as polyester, polyamide, and polypropylene, with the highest efficiency.



Samuel Paris
Head of SSM Textile Technology



Shiny and Fancy Effects

Brand new ways to combine metallic-coated thread with filament

Metallic-coated yarns such as Lurex have been well established in the market for decades. One current trend is to integrate these yarns into fabrics to achieve a shiny and fancy effect. Featuring specific yarn combinations, these yarns are finding a wide range of applications, from home textiles to fashion apparel including shoes and hosiery.

The market is constantly in search of unique fancy products. With this in mind, SSM has worked to develop an innovative way of creating brand-new combinations using the air-covering process. The SSM XENO-AC produces not only standard air-covered yarns, but also sophisticated yarns in which Lurex¹ is added to various filament yarns such as PES and PA, either DTY or FDY. These yarns give the final knit-

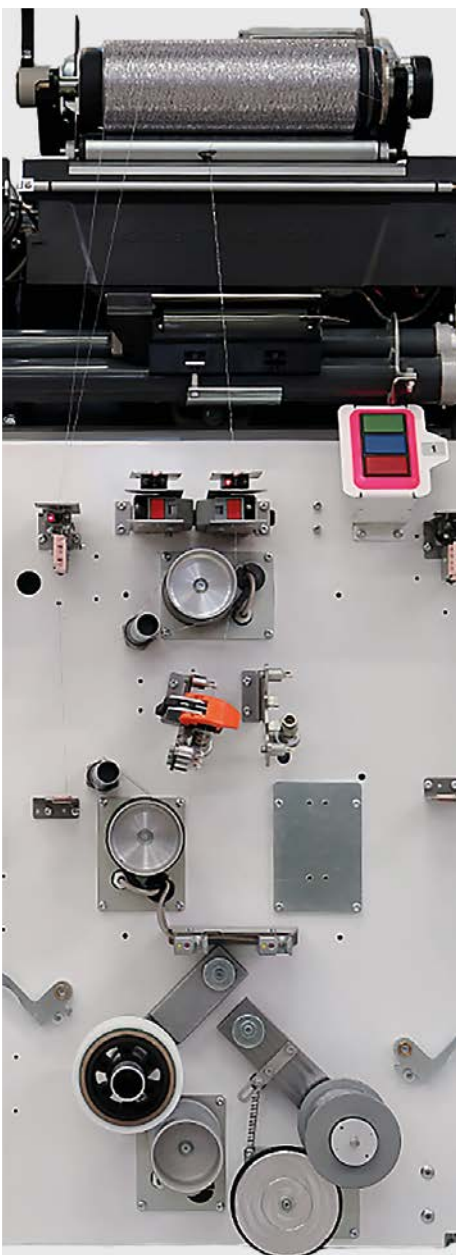


Fig. 1: Yarn path of SSM XENO-AC, Lurex



Fig. 2: LUREX supply packages



Fig. 3: SSM XENO-AC LUREX execution

¹ Lurex is a registered brand name of the Lurex Company, Ltd.



Fig. 4: Woven fabric with Lurex inserts

ted or woven fabric an exceptional shiny effect with incomparable properties. The production process involves Lurex thread being inserted into an air-pressure nozzle along with one or more filament yarns where they are then comingled. Figures 1, 2 and 3 show the special yarn path that has been engineered to achieve a smooth and regular feed of the metallic-coated thread directly from the supply packages.



Fig. 6: SSM Air Texturing Machine, DP5-T



Fig. 5: Yarn packages and fabric samples made of filament and Lurex

The filament yarn covering the Lurex reduces itchiness and lends the fabric a softer touch than that achieved through direct use in knitting or weaving. The filament cover also protects the Lurex from abrasion and prevents breakage in downstream processes. For some products, the air-covering process can replace more expensive and slower conventional covering processes used to cover filaments with Lurex. Typical production speed for the air-covering process of Lurex is about 20 times higher than conventional covering. Furthermore, elastane can be fed into the yarn, enhancing the fabric properties by creating a stretch effect for glittery and elastic fabrics commonly used in denim, socks, and hosiery. Figure 4 shows a woven fabric and figure 5 various yarn packages with fabric samples made of filament yarn and Lurex.

A retrofit is available for customers who already own a XENO-AC and can easily modify a standard execution to handle Lurex. A similar retrofit is also available for the SSM DP5-T air-texturing machine (Fig. 6), in turn providing manufacturers even greater flexibility in the creation of new types of fancy yarns.



Marc Valzer
Textile Technology



Comparison of SAPHIR and PYRIT

Traveller finish impact on yarn quality and spinner profitability

It is a well-known fact that along with the spinning ring, the traveller also has a considerable influence on the maximum spindle speed and yarn quality. There is an additional factor to be considered when choosing a traveller for a specific application – which the size and resulting running time of a yarn batch. Bräcker has conducted a side-by-side trial of SAPHIR and PYRIT travellers in which the influence of the traveller service life on yarn quality and ends-down rate was analyzed. As a result of this trial, it was determined that PYRIT is recommended for long running yarn batches while SAPHIR is the traveller of choice for smaller batches.

This trial was conducted using 100% combed cotton into Ne 40, with 980 T/m at a spindle speed of 18 000 rpm, using Bräcker TITAN ring 42 mm. The trial compared PYRIT and SAPHIR travellers of C1 UL udr 6/0 over a period of 240 hours.

Productivity – ends-down rate

During the trials, the balloon size and spinning behavior of both traveller types were observed. The ends-down rates were documented as these have a significant influence on the productivity of the mill. After a running period of about 120 hours, the first ends downs were noted for SAPHIR and PYRIT travellers. Later, after about 200 hours, the ends down on spinning positions with PYRIT travellers were observed to be half of the rate of SAPHIR. It was observed that with PYRIT travellers, the ends-down rate was always clearly lower than that of SAPHIR travellers, even after a running period of 240 hours.

Yarn quality

Throughout the duration of the trial, all relevant yarn quality parameters of both travellers, such as hairiness, irregularity, imperfections and dynamometrical values, were measured at regular intervals and, owing to the steady spinning conditions, tendencies resulting from traveller wear can be visualized. From this visualization, it was possible to observe that irregularities, imperfections, tensile strength, and elongation remained almost constant throughout the whole trial, while hairiness values, measured with a Zweigle hairiness tester, demonstrated the correlation between hairiness and traveller operating life. Yarn hairiness is measured using a Zweigle hairiness tester in which the number of hairs of each length is

determined in respect of a certain yarn length tested, before being displayed numerically and graphically.

With PYRIT travellers, the hairiness tends to be lower. To reduce traveller wear during the running-in period, Bräcker recommends the use of a running-in program for travellers on modern ring spinning frames, which under normal conditions reduces the spindle speed by about 5% over two to five hours. As soon as the contact area between the traveller and the spinning ring is perfectly formed, yarn hairiness will decrease. The extraordinarily smooth running of the traveller and resulting constant yarn tension ensure hairiness values are kept at an equally low level over a long period.

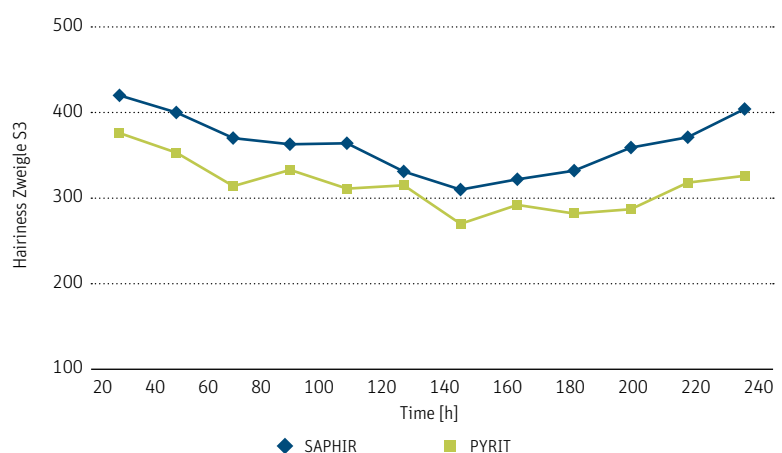
The fact that better hairiness values can be achieved with the PYRIT traveller over a long period is due to the wear process being slowed by its specific traveller finish. Up to the end of the study, which lasted 240 hours, hairiness values remained constant. This means that the traveller did not suffer from any significant wear that could have disturbed its smooth running. Even if hairiness (Zweigle) of approximately 1 mm is of minor importance in the daily routine of a spinning mill, it is a good indicator for the behavior of the ring/traveller system in such a trial (see figure below).

Traveller wear: visual determination

Traveller wear was evaluated visually. The degree of wear is indicated by a scale from 0 to 5, with “0” indicating no visible wear and “5” corresponding to extreme wear. Furthermore,

Yarn quality, Zweigle hairiness S3

100% combed cotton, Ne 40, 18 000 rpm



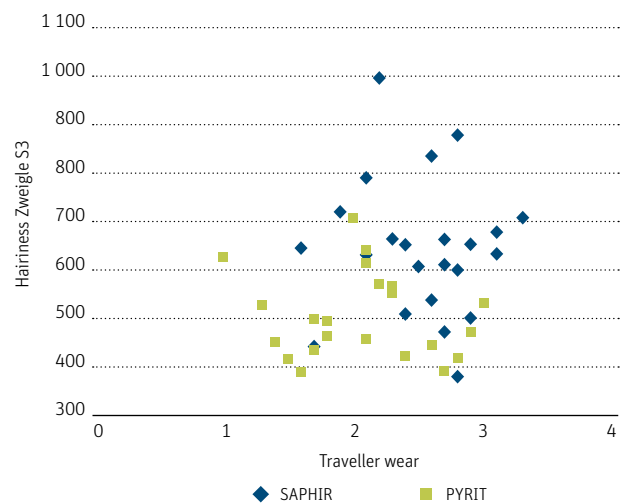
the position of the yarn path in relation to the contact area ring traveller enables the position of the traveller on the ring to be analyzed.

The yarn hairiness (Zweigle) of each spinning position was measured and paired with the traveller wear, with a higher traveller wear tending to result in increased yarn hairiness. The PYRIT travellers, after an operating period of 180 hours, showed less wear and a tendency towards lower hairiness values (see figure on the right).

Summary

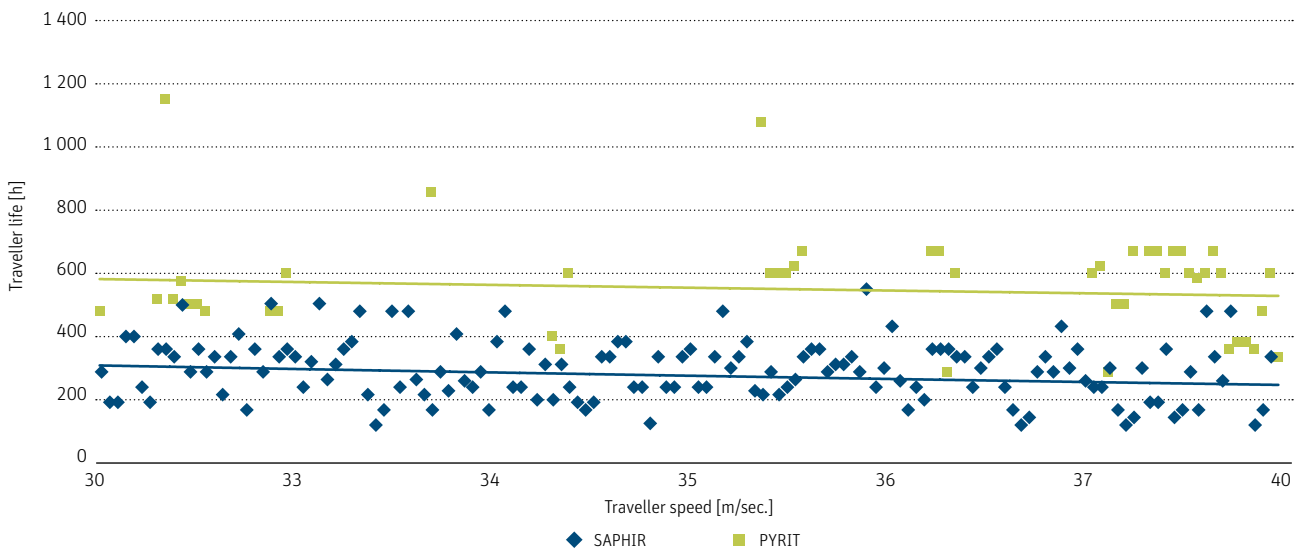
PYRIT travellers are especially recommended for customers with long-running yarn batches, as they increase traveller change intervals. Conversely, spinning mills in which fiber

Traveller wear and the yarn hairiness S3 after 180 (h)
100% combed cotton, Ne 40, 18 000 rpm



Traveller life [h] SAPHIR/PYRIT

Practical experience in different spinning mills, Ne 30 to 50, 100% cotton



materials and yarns are frequently changed would preferably choose SAPHIR travellers due to their lower run time requirements. An additional conclusion drawn from this study shows that using PYRIT travellers enables a more consistent yarn tension to be achieved over the entire traveller lifetime. This results in the potential for increased spindle speed and production. Bräcker is continuously collecting spinning data related to rings and travellers, with an excerpt from this spinning data (100% cotton Ne 30 to Ne 50) – segmented into

SAPHIR and PYRIT traveller finishes – showing differences in the traveller lifetime achieved (see figure above).



Dr. Markus Dippel
Head of Development
and Technology

Bräcker

Operating Costs Successfully Lowered by SSM

Energy efficiency as an underestimated success factor in yarn production

Yarn producers have always had to keep their operating costs – and consequently their energy costs – as low as possible, as these costs have a direct impact on the profitability of their company. Low energy consumption and subsequently low energy costs are therefore important factors when deciding to invest in new or replacement resource-saving equipment.

SSM winding machines are always the first choice when it comes to low energy consumption, but they are also unrivalled in terms of performance and energy efficiency. Thanks to intelligent engineering and consistent use of the most advanced technologies, with their high production output and quality, SSM winding machines are state of the art in terms of low power consumption – and very successful at reducing operating costs as a result.

Better performance confirmed

A direct comparison in practice shows that when used for the same application with identical winding parameters – speed, yarn tension and contact pressure – SSM winding machines perform better. This is confirmed by comparative measurements from a number of SSM customers who consistently measure the power consumption of all their equipment in order to analyze their operating costs in detail. For example, a customer in Asia is saving approximately CHF 8 000 annually by using around 300 SSM spindles.

Up to 25% lower power consumption

Resource-saving, energy-efficient production using SSM winding machines translates directly into up to 25% lower energy costs. When considering the return on investment as a whole, it is clear that the performance gains, longevity and energy efficiency make investing in SSM winding machines worthwhile.



SSM XENO-YW: Depending on the application and winding parameters, the power consumption of these high-performance winding machines is just 18 to 100 watts per winding unit.



SSM PWX-W: The power consumption ranges from 30 to 70 watts per winding unit, depending on the application and the winding parameters used.



Paul Bisig
Product Manager



“Capturing the Full Potential of Our Recent Investment”

Yunus Textile Mills Ltd. relies on Suessen COMPACTeasy

Suessen designed its COMPACTeasy compacting devices for customers interested in low investment costs. COMPACTeasy produces high-quality compact yarns from all standard raw materials while offering users the ability to quickly adapt to market requirements by enabling production to be switched easily from ring to compact spinning. Thanks to the mechanical intense double compacting by the y-channel of the compactor, no additional energy is required for this compacting process. Such features help COMPACTeasy enhance user competitiveness in the highly competitive spinning industry.

Yunus Textile Mills Ltd. is part of the Yunus Brothers Group and prides itself on possessing top-of-the-line vertically integrated processes for spinning, weaving, dyeing, printing, and finishing. Yunus Textile Mills is a direct supplier for a majority of the private and leading retail brands in the U.S. and Europe. As a vertically integrated company, it is the largest exporter of home textiles in Karachi, Pakistan and features a stitching unit with the capacity to convert approximately 10 million meters of fabric every month.

Yunus Textile Mills currently maintains a spinning capacity of 78 000 spindles and uses fiber materials in its spinning mills which are 100% carded and combed cotton, or in blends with polyester and viscose, while yarn counts range from Ne 16 to Ne 80. Yunus Textile Mills recently invested in the newest

compact spinning device from Suessen, COMPACTeasy. To explain the reasons behind this investment, Adil Edhi, COO of the company, sat down for an interview.

Spinovation: Mr. Adil, your company recently placed an order with Suessen to upgrade your existing ring spinning machines to new compacting device COMPACTeasy. What was the reason for this investment?

Adil Edhi: We heard about this system at the ITMA exhibition in Barcelona in 2019 and decided to proceed by first ordering one trial machine. After extensive trials over a longer period of time with different raw materials and different yarn counts, we were convinced of the benefits provided by this new system and decided to proceed with an investment in two phases for a total of approximately 20 000 spindles.

What are the benefits of this system?

We already have some pneumatically operated compacting systems in our mills, which enabled us to easily compare these two systems. With COMPACTeasy, the main advantages we observed after only a short time of operation were how easy it is to handle the components, the low maintenance required, and the huge savings it provides in terms of energy consumption since the COMPACTeasy system works purely on a mechanical basis and does not require any suction system for compacting.



Suessen COMPACTeasy on Lakshmi LR 9 ring spinning machine

Machine Data	COMPACTeasy	Conventional
Spindle/M/c	1 200	1 200
Spindle gauge	70	70
Ring dia/Tube length	36/190	36/190
Bottom roller diameters, F-M-B	27/27/27	27/27/27
Drafting system	p3-1	p3-1
Spinning Data		
Raw material	cotton 60% CM + Polyester 40%	cotton 60% CM + Polyester 40%
Yarn count	Ne 60 /1 Combed CVC	Ne 60 /1 Combed CVC
Actual count	60.48	60.49
Roving count/TPI	1.55 – 0.96	1.55 – 0.96
Yarn TPI	33.3	33.3
Spindle Speed average	22 600 rpm	21 700 rpm
Spindle Speed maximum	23 400 rpm	22 450 rpm
Yarn Breakage (%)	1.5%	3%
Yarn irregularity (Uster) U%/CV%	11.62 / 2.4	12.25 / 2.2
Thin -50%	23	41.8
Thick +50%	81.5	136.3
Neps +200%	131.8	181.3
Total imperfections	236	359.4
Hairiness Uster (H)	2.5	3.19
CV%	4	2
CLSP	3 344	3 144



Adil Edhi, COO of Yunus Textiles Mills Ltd.



The low energy consumption is clear, but what do you mean in regards to low maintenance costs?

For this COMPACTeasy system, Suessen designed a transverse motion support for the existing traversing roving guide mechanism, enabling a traverse motion of the roving guides of approximately 6 mm. during spinning, resulting in cost savings and extended cot and apron life. Other mechanical systems do not offer this option.

How about the quality advantages of the produced yarns? What are the benefits here?

This depends on the raw material and yarn count, but compared to our conventional yarn products, we were able to increase production by 4%, while reducing Uster Hairiness value H by 30% and increasing yarn tenacity by 6%. IPI was also reduced by over 35%. The biggest difference realized in downstream processes such as weaving was an approximate 10% increase in weaving loom productivity.

Are you satisfied with Suessen and the services they provide?

Yes we are. Suessen maintains an excellent service infrastructure here in Pakistan and whenever we need support, their response is immediate. Additionally, we believe that we have also helped Suessen by installing the first trial machine to help develop and optimize the new COMPACTeasy system. We are looking forward to continuing and even enhancing our business with Suessen.



Ioannis Spiridopoulos
Head of Sales and Marketing



“An Investment That Definitely Pays Off”

Giza Spinning and Weaving Co. impressed by Novibra CROCOdoff system

CROCOdoff crown for automatic underwinding-free doffing guarantees reliable clamping and exact yarn cutting. Thus it eliminates cleaning and brings the benefits of reduced maintenance. In an interview, Mohamed Abdelaal, General Manager of the Egyptian Giza Spinning and Weaving Co., provides some interesting insight into their investment decision making process and discloses how a well-selected system of crown and spindle helps to render the staff assignment more flexible and enhance the profitability of the mill.

Spinnovation: Mr. Abdelaal, can you tell us about your company?

Mohamed Abdelaal: Giza Spinning and Weaving is a relatively new corporation. Mohamed Marzouk, company's owner, built up the plant on a green field in 2008. We had to design new buildings, invest in machines and start our production from the very beginning. But it does not mean that we are a small company! The capacity of our spinning factory is now 100 000 spindles, with a daily yarn output of 16 tons.

Starting from the ground up can certainly be a challenge. What kind of criteria did you use when selecting new machines and spindles for your spinning mill?

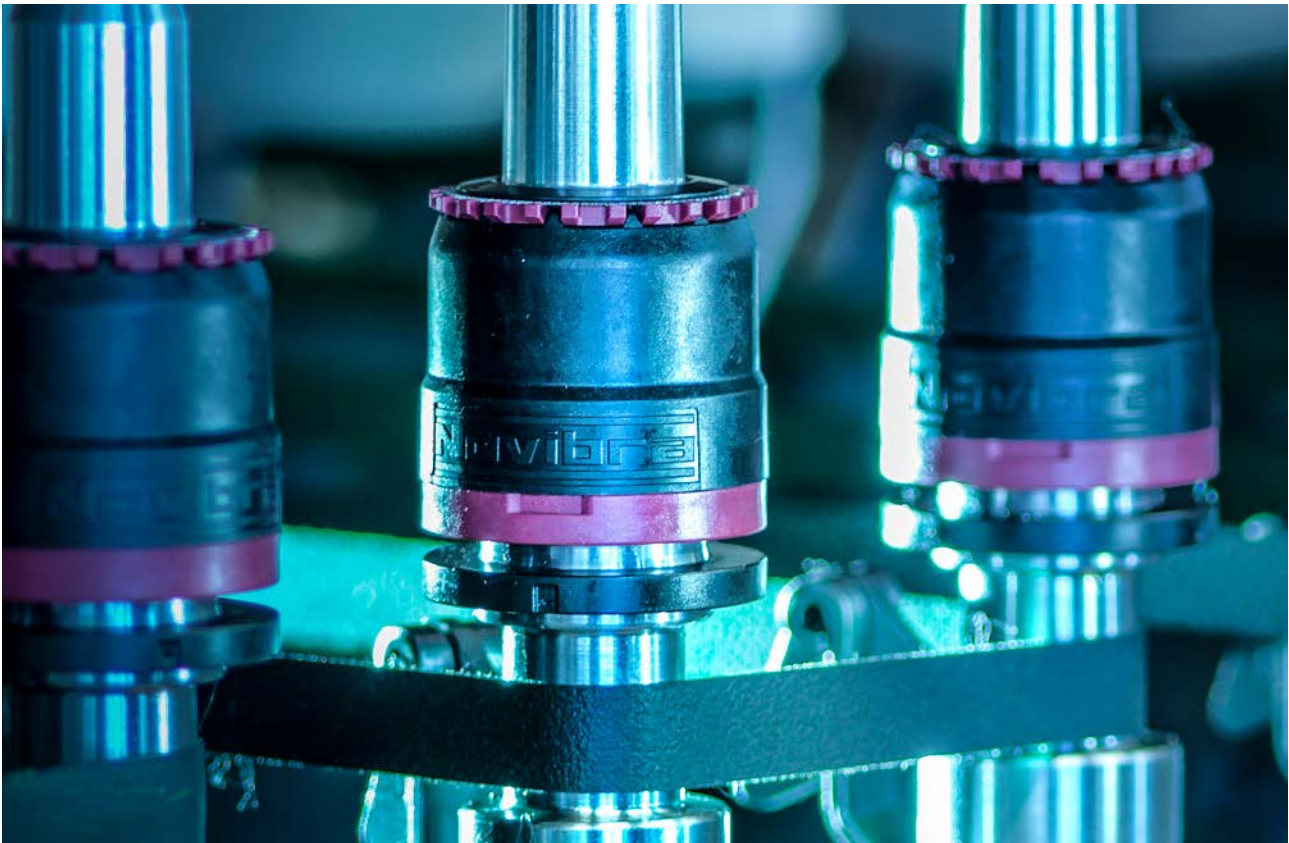
Despite having a limited budget, we simply wanted to have the best technology available on the market. When we heard about Novibra spindles that feature significantly lower maintenance demands, the choice was an easy one to make.

Do you mean spindles fitted with CROCOdoff?

Yes. The Novibra CROCOdoff system impressed us and we wanted to see for ourselves if it works, and it certainly does.

You assembled spindles with CROCOdoff on your ring spinning machines. How many of those spindles do you have at the moment and how satisfied are you with their performance?

We have 22 Marzoli ring spinning frames equipped with more than 25 000 NASA HPS 68/3 spindles and CROCOdoff clamping crowns in total. We have been using this system for several years now and we are absolutely satisfied. It is



Novibra spindles with CROCOdoff clamping crowns in operation

easy to be used and efficient. Thanks to this system we could reduce maintenance of clamping device to minimum, which brings us further advantages – we eliminated the yarn waste and increased the production with fewer operators.

How frequently do you have to clean spindles without CROCOdoff?

We clean the spindles on machines without CROCOdoff monthly. When doing so, we have to stop the machine and at least four people are needed for its cleaning, which causes us to lose valuable production time while forcing us to utilize manpower that could otherwise be saved. On the contrary the machine equipped with CROCOdoff can continue spinning at the same time as it requires minimal cleaning and maintenance. Additionally, we achieve more than 50% less yarn breakages during the spindle start-up.

How was the machine set-up for CROCOdoff? Was it difficult?

Not at all. Although there was a slight learning curve, machine set-up is easy and all spindles run like one big orchestra guided by a conductor. The conductor is the spindle speed and all CROCOdoff crowns follow it – opening and closing all at the same time automatically.

Any other component novelties you equipped your machines with to enhance their performance besides CROCOdoff?

In general, we prefer premium-quality components that enable our machines to run smoothly. Besides CROCOdoff crowns, we also use other state-of-the-art components like Suessen EliTe compacting system or Bräcker rings and travellers. All these ingenious products make our corporation more competitive, and we see a lot of other new companies copying us in this way of thinking. One of our missions is to offer high-quality yarns at competitive prices and Novibra spindles with CROCOdoff help us to achieve this goal. This is an investment that definitely pays off.



Maintenance Manager Maher Abdelfatah (left) and General Manager Mohamed Abdelaal (right) in the mill



Roman Hruška
Sales Manager

Novibra



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