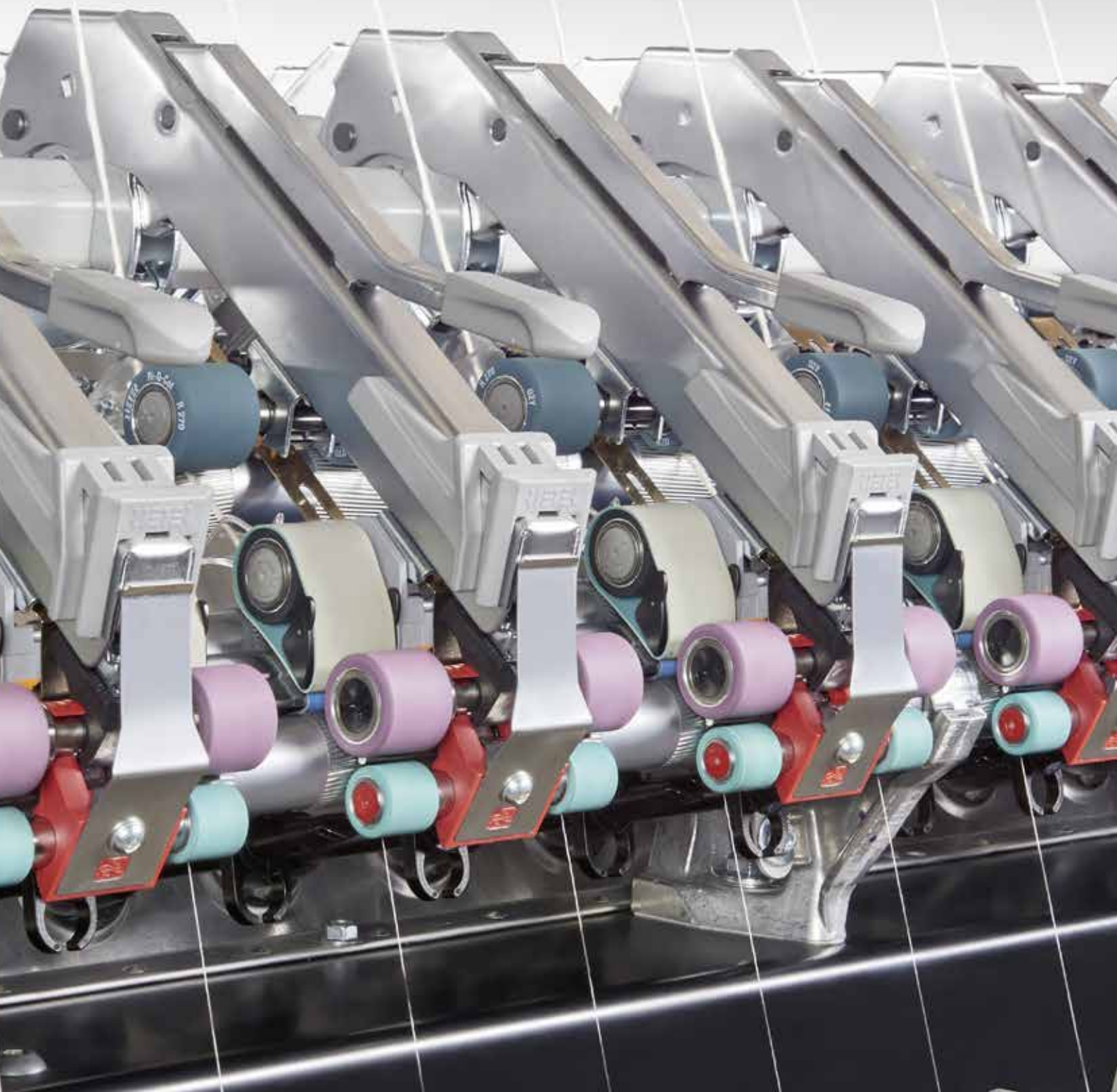


# SPINNOVATION

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## SPINNOVATION

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Front cover: Suessen COMPACTeasy

**Dear Customer,**

In this issue for the ITMA 2019, Bräcker, Graf, Novibra, SSM and Suessen show innovations for all four spinning processes established on the market, as well as for precision winding and texturing. These innovations are aimed at reducing operating costs, enhancing productivity and improving yarn quality. Increasing flexibility also plays a major role. I know from many customer discussions that the need for such solutions is huge.

Let me mention some examples.

Bräcker presents the traveller C1 ELM udr. It is particularly suitable for processing 100% cotton in conventional ring spinning and compact spinning. The traveller achieves up to 30% longer lifetime at spindle speeds of up to 25 000 rpm.

The latest open-end SOLIDRING B 188 from Suessen sets new standards in the spinning of cotton and viscose fibers with its unique tooth profile. The improved transportation of fibers from the opening roller to the fiber channel reduces imperfections (IPI) in the yarn by up to 10%. In addition, the yarn breakage rate can be reduced by up to 20%, thus increasing the production output.

With *preciforce*<sup>™</sup>, SSM presents a worldwide unique back-pressure system that constantly regulates the contact force and consistently bypasses disturbing factors on a winding machine. The precise density control ensures that an optimal package can be produced, which leads to improved properties in the subsequent process.

Another field of innovation at SSM is in the creation of new fancy yarns for the air texturing market. The development of a full range of options, under the trademark *fancyflex*<sup>™</sup>, coupled with a solid and proven machine concept, gives our customers the right tools to face an ever more competitive environment. They allow to always create new and unique yarn effects and stimulate the fashion and home textile markets.

To increase the profitability of the ring and compact spinning process, Suessen introduces the new COMPACTapron and COMPACTeasy compacting devices, which can be easily mounted and dismantled on a ring spinning machine. These



two solutions are complemented by COMPACTdrum for Rieter machines. With this, Suessen and Rieter, the inventors and market leaders in compacting, present a completely new family of compacting units: the accurate solution for every application.

At the joint booth C 201 in hall 6, the Rieter Group also shows the important contribution made by the components of Bräcker, Graf, Novibra and Suessen in all four end spinning processes offered by Rieter. Whether in the high-performance card C 80, the E 90 comber, the R 37 and R 70 rotor spinning machines or the G 38 ring spinning machine: these machines are the result of the unique combination of the know-how of the leading component and machine manufacturer.

We look forward to your visit to the ITMA.

Kind regards

Dr. Norbert Klapper  
CEO Rieter Group

## COMPACTeasy

### The new mechanical compacting solution for basic compacting needs



COMPACTeasy

Compact spinning nowadays is “state-of-the-art” and almost a must for all innovative spinning mills.

The systems available are getting more and more elaborate and complex, as they require for example an additional fourth bottom roller, further drives or reinforcement for the gearbox. In most cases, an additional suction unit is installed.

Suessen and Rieter offer a relatively simple alternative able to meet the fundamental demands of spinning mills.



Fig. 2: COMPACTeasy retainer with COMPACTeasy Roller, delivery top roller, easy-Spring and Compactor with y-channel

COMPACTeasy is a mechanical compacting system permitting real compacting without additional energy consumption owing to the y-channel in the Compactor. It is particularly suitable for customers with a restricted investment budget, and it is available for the most common applications, including the spinning of blends and 100% man-made fibers.

Compared with other mechanical compacting systems, COMPACTeasy is different in many respects. These are not only the wear of spinning components, but also yarn parameters and the consistent yarn quality.

COMPACTeasy enables a traverse motion of the roving to the same extent as pneumatic compacting systems. This is a considerable advantage over the flipping of the front top roller usual in mechanical systems. It extends the lifetime of cots and ensures in particular a permanently constant yarn quality.

The COMPACTeasy device consists of the retainer holding the front top roller (Fig. 2) and the smaller COMPACTeasy Roller, and the easy-Spring pressing the COMPACTeasy Roller to the bottom roller. Between the two rollers there is the COMPACTeasy device with Compactor and preceding Pin. The Compactor is pressed against the bottom roller with low spring force and thus causes considerably less wear of the bottom roller than magnetically loaded compacting elements.

Another feature of COMPACTeasy is the traverse motion support (Fig. 3) connecting the Compactor with the traverse motion rod, thus enabling a 6 mm traverse motion at the COMPACTeasy Roller.

The yarn quality produced by COMPACTeasy is determined not only by the Compactor (Fig. 4), meaning the y-channel, but also by the integrated Pin. This Pin preceding the condensing channel takes effect in exactly that zone of the drafting system where the fibers have the least guidance, thus improving the yarn irregularity and increasing yarn tenacity. Consequently, the yarn parameters reach a level similar to pneumatically condensed compact yarns and a much better level to conventional ring yarn and other mechanical compacting systems.

The Pins are available in different designs and can be applied in accordance with the yarn count to be spun.

The y-channel (Fig. 5) in the Compactor of the COMPACTeasy device in the form of a “y”, is independent of the yarn count. The geometry of the channel is to ensure an invariable fiber path, the closest passage of the Compactor being wider than the different channels of other mechanical compacting systems. Obstruction of the channel by trash or thick places is therefore excluded. Furthermore, the y-channel permits double compacting, because mechanical compacting is effected twice by the special shape of the channel and the S-shaped flow of the fiber strand in the channel. This more intensive compacting compared to other mechanical compacting systems has a positive effect on the yarn parameters.

The combination of the preceding Pin and the fiber flow in the compactor ensures the excellent quality of the compact yarns spun with COMPACTeasy compared to the conventionally spun yarn.

The system is suitable for all common raw materials in short staple-fiber spinning. It is possible to process carded and combed cotton, blends and 100% man-made fibers. The yarn count range for the moment is between Ne 20 and Ne 80.



Fig. 3: Transmission of traverse motion to the Compactor (view from backside)



Fig. 4: Compactor with y-channel and Pin

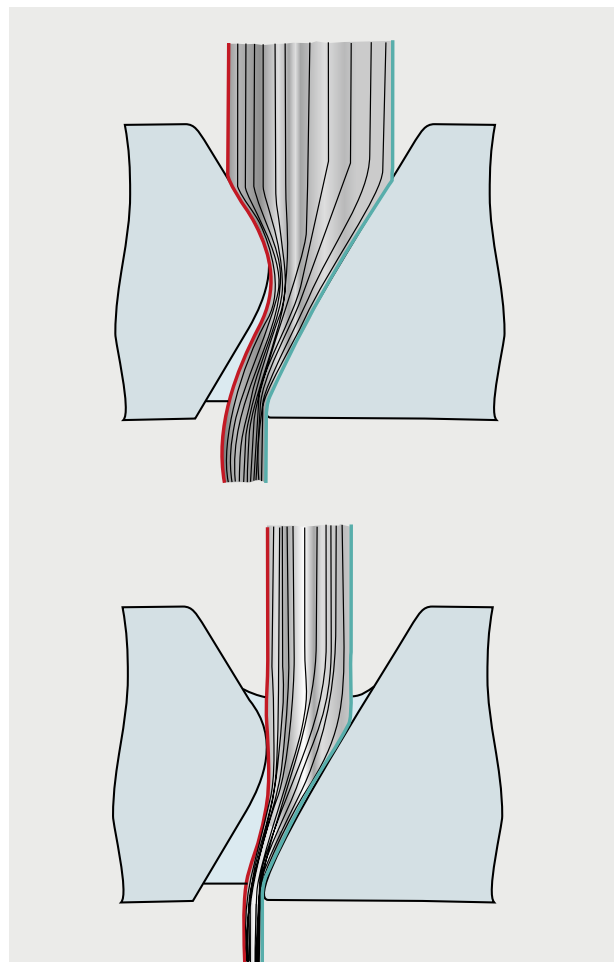
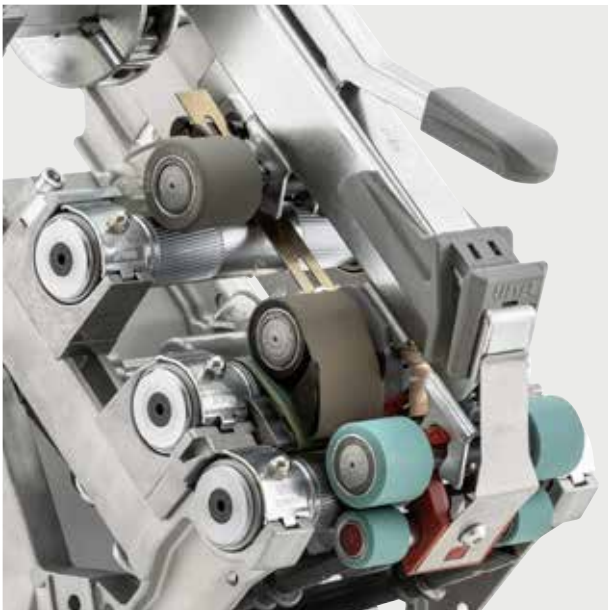


Fig. 5: y-channel in Compactor, intense double compacting for all yarn counts

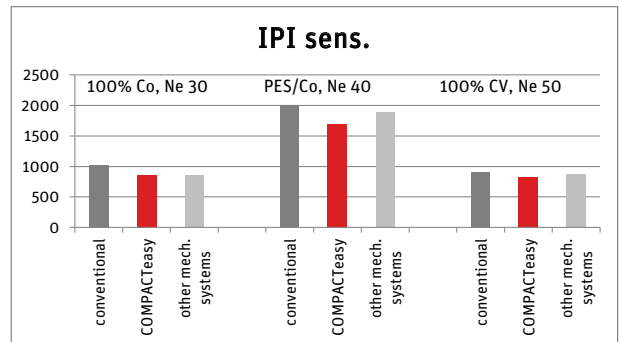
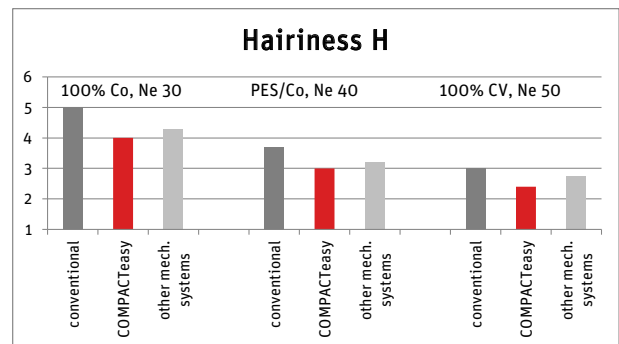
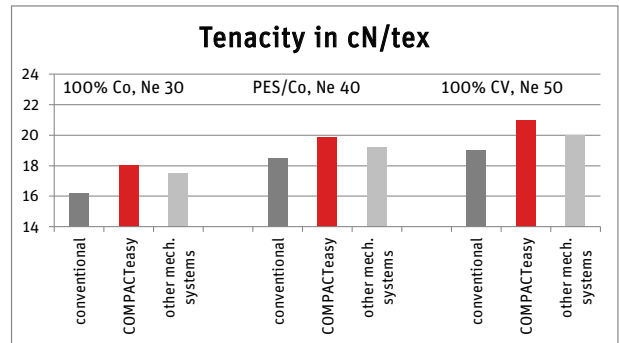
# PRODUCT NEWS

COMPACTeasy can be installed on any type of ring spinning frame. Once the system has been set up, the machine can be quickly and at any time returned to conventional ring yarn production (“plug on/off ability”).

Availability of COMPACTeasy is limited to selected countries. Please contact your sales representative for more information.



COMPACTeasy device on P3-1 drafting system



Yarn values achieved with COMPACTeasy vs. conventional ring spinning and other mechanical compacting systems for different yarn counts and materials



**Suessen**

**Stefan Urmetzer**  
Head of Technology Ring Spinning WST

## C1 ELM udr Traveller

### An optimized traveller for a longer service life at higher speeds

The new Bräcker C1 ELM udr traveller is particularly suitable for 100% CO Compact yarns between Ne 20 and 60, spun with a yarn twist  $\alpha$  of 3.5 or more.

The new geometry leads to different support surfaces between ring and traveller.

Saphir, Onyx and StarletPlus coatings are available for this traveller.

At the moment, this traveller comes in the sizes ISO 18 to 71 (No: 12/0 to 2).

Modern ring-spinning machines permit spindle revolutions of up to 25 000 rpm.

Such high speeds mean extreme stress on the ring-traveller system and, of course, the spun fibers.

Various coatings and changes to traveller geometry can counter the stress on the traveller.

The new Bräcker C1 ELM udr traveller was optimized and developed for increasingly high spindle speeds. The traveller showed its high potential when using 100% CO for conventional and compacted spinning even during development.

Our customers have reported long service lives and lower yarn-breakage rates in the development phase, as well as in operation.

#### Properties of the C1 ELM udr traveller:

- service life increased by up to 30%,
- higher speeds,
- application of 100% CO Ne 20 to 60,
- Saphir, Onyx and Starlet Plus



Traveller C1 ELM udr Onyx

Special high-tech products are needed in ring spinning in order to meet the continually rising demands and higher speeds on the textile market with the correspondingly comprehensive know-how.

Bräcker supports you with their wide range of technical products for ring spinning.



**Bräcker**

**Akin Adakli**

Product Application and R&D

## A New Dimension in Yarn Creation



SSM head of textile technology Samuel Paris

The air-texturing process, which enables imitation of natural fiber structure in yarns, has found application in numerous fields, ranging from fine apparel and outdoor wear to upholstery and carpeting. The process allows the use of flat synthetic filament supply yarns and it gives them the softness and volume necessary for such applications. It offers yarn makers the advantage of being able to produce a range of yarn qualities using the same supplies, from low-overfeed, low-volume yarns (e.g. for carpet pile) to high-overfeed, very voluminous yarns (e.g. for imitation chenille). In some of



Fabric with successive pink and green slubs

these applications, such as apparel and home textiles, fancy effects have been developed, like slubs, giving yarn producers a valuable way to diversify their offer and thereby boost demand in their markets.

The demand for fancy effects with Air-Textured Yarn (ATY) is increasing, so SSM has been working hard to offer yarn manufacturers more possibilities in this field. The result is a whole family of devices for producing fancy yarns with specific effects.

### **fancyflex™ III slub device: slub effect at its best**

SSM has refined and expanded the capability of the slub device. It can now handle two different yarns e.g. different colors resulting in an ATY showing successive slubs of two different colors or sizes. Proper dispatching of the slubs in the woven fabric is critical because this plays an integral role in the final visual effect. If the distance between slubs does not vary enough, an unwanted pattern on the woven or knitted fabric will result. To solve this problem, the cycle time of SSM slub device constantly and automatically changes by an adjustable random factor of up to 100%.

To give yarn manufacturers full control of slub distribution, SSM created the so-called pattern mode. It allows users to control the distance variation by editing a sequence of up to 40 steps, or so up to 40 consecutive slubs, that will repeat in a loop, allowing full control of the final fabric design. The pattern mode also gives greater flexibility when processing two colors of slubs because the user can choose which color to use for each of the 40 steps.



Example of an unwanted pattern in fabric



This powerful mode of control opens the door to specific designs that are not possible using the more conventional random mode, like slub degrade, which progressively increases or decreases the distance between slubs.

The maximum length of the slub is limited by the *fancyflex*<sup>™</sup> III slub device, as it can only accumulate a certain quantity of yarn before it must be released.

***fancyflex*<sup>™</sup> VARIO**

In order to be able to create longer effects and new kinds of effects, SSM developed a new device: the *fancyflex*<sup>™</sup> VARIO. Featuring hardware and software specially developed in house, it provides controlled speed disturbances directly to the overfeeding godets, which are perfectly synchronized.

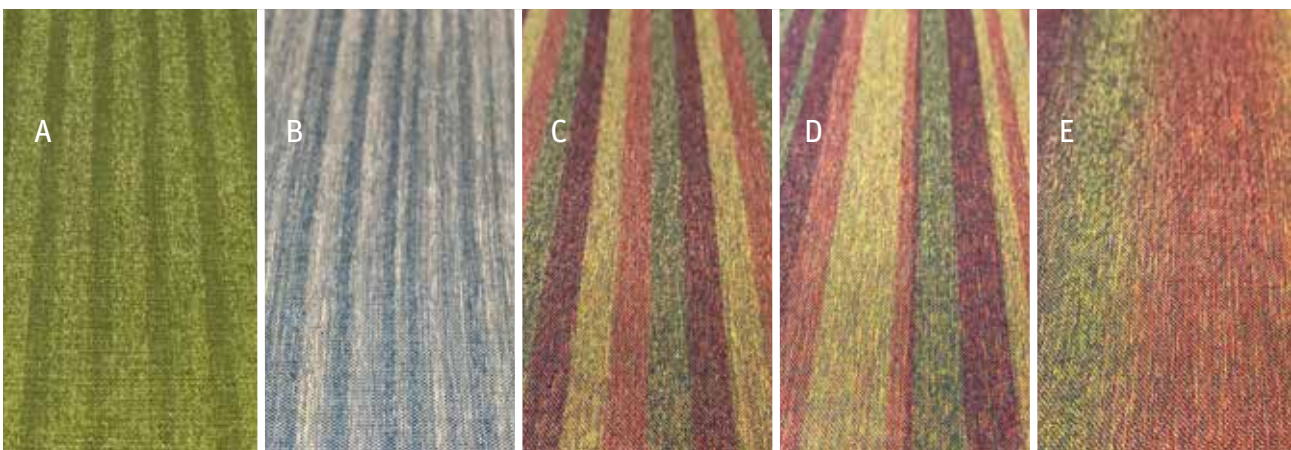
By controlling and changing the overfeed of a single component of a yarn, users can change the resulting dullness and also the final color of the ATY. Used on a single-color ATY, lengths with higher overfeed, which appear duller, will be produced along with lengths with lower overfeed, which appear shinier. Used on a single black or white thread, the shade of the yarn can be changed from darker to lighter – slowly changing, producing a shading effect or a 3D effect. When VARIO is used on several threads of different color, several colors and shades can be produced for a single air-textured yarn.

The fancy effects shown below were created using a rather simple two-step cycle with two different overfeed levels, some with a random time setting.



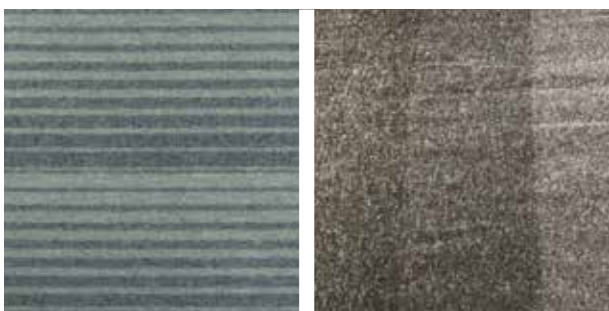
Sample design using pattern mode

- A) Rapidly changing, for a band effect
- B) Rapidly changing, with short time and a high random factor
- C) With regular time and rapid change, using one yellow, one red and one blue thread
- D) Using random times
- E) Or using longer ramp times for a shading effect



## PRODUCT NEWS

To further support users in developing unique fancy effects, SSM developed the pattern mode. It provides a sequence of up to 50 different steps. The overfeed level and duration can be set for each step, allowing the creation of special repeating patterns.



Examples of fabrics using the *fancyflex*<sup>™</sup> VARIO pattern mode, using different times, or three different overfeed levels within one yarn, resulting in three different shades of gray

### High-speed valve option

Another option available on the SSM air-texturing machine is the so-called high-speed valve, which can completely stop the air supply for a defined interval. This specially designed high-speed electro-valve is installed at the compressed air input, before the texturing jet. It allows creating a new kind of fancy effect in which the ATY shows successive non-textured lengths contrasting with the duller textured lengths, giving the appearance of shiny flashes. When texturizing threads of different colors together, the air interruption makes for a color-change effect, showing one or the other color in an alternating sequence.



Used on a single-color thread, a rather subtle dullness modulation is produced; the fabric shows lengths with contrasting intensities of sheen

### *fancyflex*<sup>™</sup> AIR option

Since one aim of air texturing is to create imitation of natural fibers, the *fancyflex*<sup>™</sup> AIR option was developed to imitate the natural irregularities shown by linen, silk and other yarns. This option works by producing neps and texture variations present in natural yarns but using inexpensive materials like polyester. Our *fancyflex*<sup>™</sup> VARIO option combined with a torque jet to false twist the threads offers users a new type of fancy effect. This setup is a way to easily control the characteristics of the effect. The prominence of the neps and the distance between them can be controlled in order to achieve the desired effect in the fabric.



**Fancy intermingling option**

This option creates commingled yarn with fancy color effects. It is available for the DP5-T, making this machine even more versatile, and for the new SSM air-covering machine, the XENO-AC. It consists of a high-speed valve attached to an intermingling jet body that stops and restarts the air flow at a very high pace.

The principle is not new, but its availability on SSM single-position machines makes it much more attractive for users. Intermingled fancy yarns are generally produced in small to medium lot sizes. There is no need to dedicate a complete machine side for producing a small quantity, rather, only the necessary positions are used, which gives users the added flexibility they want.

Several types of fancy effects can be combined, for instance slub and VARIO, to produce even more complex design effects. Slubs in conjunction with VARIO effects can also be combined with the elastane feeding device to produce elastic air-textured yarns. The whole range of SSM devices and options allows for new types of designs, directly at the yarn stage, making the downstream processes (weaving, knitting) simpler and giving yarn producers powerful means of diversifying their offer and enhancing their competitiveness.



SSM DP5-T DIGICONE® *fastflex*™ air texturing machine



**Samuel Paris**  
Head of Textile Technology



Woven and knitted fabrics with fancy intermingling, with different time settings

## Premium Parts – ProFil®SOLIDRING B 188

A new tooth shape going along with unbeatable advantages!



Fig. 1: ProFil®SOLIDRING N coating

With the SOLIDRING and its different tooth shapes, Suessen has defined a quality standard for open-end spun yarns. The SOLIDRING stands as a guarantor for the best yarn quality with the highest lifespan, in particular due to the precise manufacturing of the SOLIDRINGS.

For instance the SOLIDRING B 174, which is widely spread especially in the cotton sector as well as in the processing of viscose fibers, satisfies the customers worldwide with its outstanding performance. With the newly developed tooth shape of the ProFil®SOLIDRING B 188 (Fig. 1), a great addition to the SOLIDRING B 174 was created.

The aim of this development was to further optimize the tooth shape of the ProFil®SOLIDRING B 188 in such a way, that a better delivery of the fibers into the fiber channel and the highest possible fiber beard separation can be achieved. This would result in an improvement of yarn quality and a better spinnability.



**Suessen**

Giulia Salatovic  
Product Manager Premium Parts

Advantages of the ProFil®SOLIDRING B 188 at a glance:

- improved yarn quality, especially a reduction of the yarn imperfections of up to 10%,
- improved yarn uniformity of up to 0.3 CV%,
- very good running performance due to a lower end-break ratio of up to 20%,
- cost savings by admixture of inferior fiber quality (without affecting the yarn quality),
- possibility of reducing the opening roller speed
  - without any loss in quality,
  - increase of service life.

Recommended applications:

- weaving and knitting sector,
- yarn count range: Ne 18 to Ne 40,
- raw material: 100% cotton.

### Technological background

In comparison to the teeth of the SOLIDRING B 174, the teeth of the ProFil®SOLIDRING B 188 are shorter with a slightly different angle of the tooth face (Fig. 2). Therefore, the fibers cannot enter so deeply into the clothing of the SOLIDRING, whereby a better detachment of the fibers can be ensured.

Under the same spinning conditions as when using the SOLIDRING B 174, e.g. at the same centrifugal force (opening roller speed) and air vacuum in the rotor chamber, the fibers detach more safely from the teeth into the fiber channel and finally into the rotor.

The main reason for the very intensive and better fiber singularization is the more inclined and thus more aggressive saber tooth shape of this SOLIDRING. Consequently, this leads to a better yarn quality and furthermore to a higher spinnability. The yarn quality advantage thereby allows a reduction in the opening roller speed so that the service life of the SOLIDRING will be increased due to lower stress on the tooth tips.

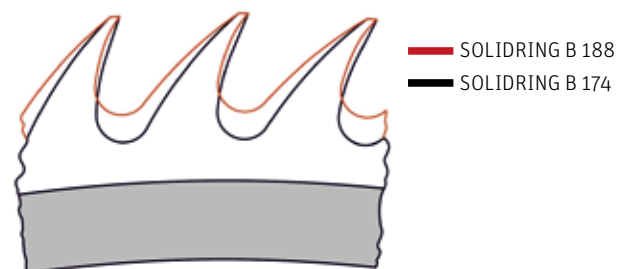


Fig. 2

# Top Weighting Arm for Roving Frames

## The new HP 4080

For three decades, the HP top weighting arm family from Suessen has been synonymous with maximum quality and optimum yarn quality. The practically hysteresis-free loading of the top rollers is unsurpassed. Even the smallest concentricity deviations of the cots and the smallest fluctuations in the thickness of the fiber material allow a friction-free micro-movement of the top rollers and thus a constant load force.

Even though the technology and yarn results of the HP top weighting arm family are unbeatable, the HP-GX 4010*plus* was complex to set up and operate. Suessen has therefore decided to fundamentally revise the HP top weighting arm family. At ITMA 2019, the newly designed HP 4080 top weighting arm (Fig. 1) for roving frames will now be available. The main focus during development was on the following properties:

- easy adjustment due to the height setting by means of an eccentric screw and a simple setting gauge for the weighting units,
- ease of operation due to reduced operating force,
- constant and stable yarn quality on all spinning positions thanks to improved adjustability, low manufacturing tolerances and a new type of cradle made of high-performance plastic,
- virtually hysteresis-free loading of the top rollers as a prerequisite for best yarn quality,
- robustness and longevity due to the use of best materials.

The new features of the HP 4080 are explained in the following.

### Slotted guide system

In contrast to the HP-GX 4010*plus*, the top rollers of the HP 4080 are seated in the slotted guide system (Fig. 2). The type of support ensures that the top roller is always parallel to the bottom roller. Since the top roller's guide slot allows only one degree of freedom in a direction perpendicular to the drafting system, the exact position of the top rollers is also ensured when the top rollers are buffed or the height setting of the top weighting arms is changed. The position of the top rollers is also maintained when the top weighting arms are opened, which allows close adjustment of condensers or auxiliary units.

### Leaf spring

The top rollers of the new HP 4080 top weighting arm are also loaded by leaf springs, as in the previous versions, which load the top roller directly and without friction. A

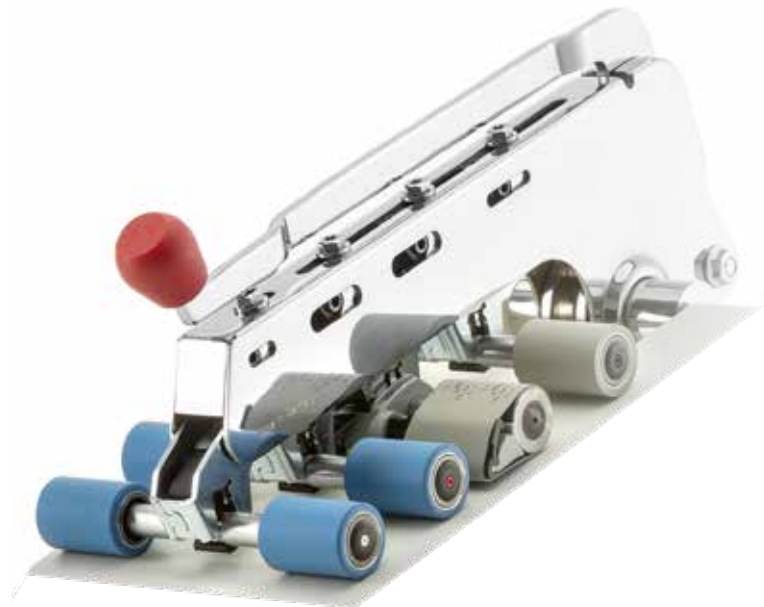


Fig. 1: HP 4080 top weighting arm

hysteresis, as it can occur with competitive products using locating or bearing bolts, is excluded with the HP 4080. The top rollers can therefore react to the slightest fluctuations in the fiber mass or to concentricity deviations of the top roller and enable an optimum yarn quality.

The stress-optimized shape of the leaf spring enables an excellent spring rate. Figure 3 shows the stress distribution of the loaded leaf spring. The simplified geometry with single bending results in particularly low tolerances. The spring consists of high-quality steel, which is given a unique microstructure in a special hardening process.

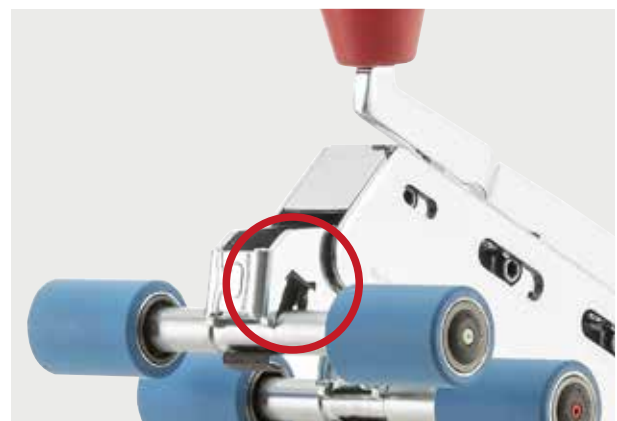


Fig. 2: Slotted guide system of the weighting unit

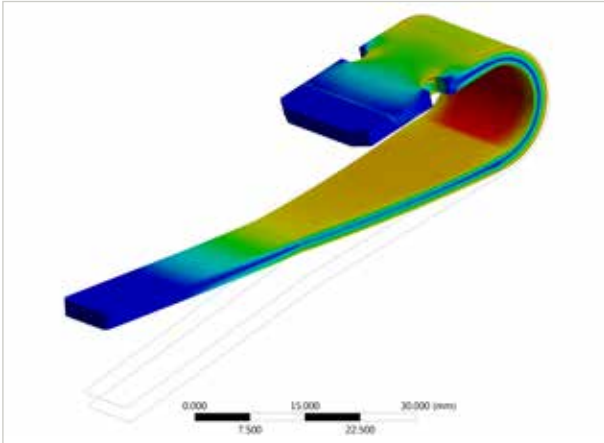


Fig. 3: FEM calculation of leaf spring, equivalent stresses in loaded condition

Springs of each production batch are subjected to a fatigue bending test at overload and the expected load cycles in the life of the spring are simulated. This ensures a constant quality of the springs and prevents creep and relaxation of the leaf springs even in the event of fiber laps or handling mistakes.

The force of each leaf spring can be adjusted in four steps by means of an eccentric bolt and thus optimally adjusted. It is therefore possible to adjust the top weighting arm even for the most difficult applications and critical materials.

The properties of the slotted guide system listed above in combination with the leaf spring result in many benefits for the spinning mill:

- **Adjusting the weighting units on the open top weighting arm:**  
Since the distance between the fixing of the weighting unit in the guide rail and the slotted guide system is precisely and invariably specified, the weighting units can be adjusted with a high degree of accuracy on the open weighting arm. This reduces the assembly time. The precise setting enables a constant yarn quality of all spinning positions of a roving frame.
- **Adjustment of the weighting units independent of the grinding condition:**  
When grinding the cots, the height of the top roller axis changes. Depending on the make of top weighting arm, the position of the top roller also changes in the range of several tenths of a millimeter.

Thanks to the slotted guide of the HP 4080 top weighting arm, even the smallest deviations are excluded and the exact position of the top roller is always specified. This ensures constant conditions for optimum yarn quality even over several grinding cycles.

- **Position of the weighting units independent of the height setting:**  
With most top weighting arms, a change in the height setting also results in a slight change in the top roller position, which cannot be neglected in critical applications. The slotted guide system of the HP 4080 determines the top roller position independently of the height setting and ensures the greatest possible precision. This feature increases the consistency of the yarn quality over a long period of time.
- **Position of the weighting units fixed during opening and closing:**  
The slotted guide system has advantages in this respect as well. Condensers, pressure rods and other additional equipment can be set extremely close to the top rollers and thus also allow critical applications and new areas of application.

### Height setting

The height of the top weighting arms is adjusted with an eccentric screw (Fig. 4), which is easy to operate from the side. The mechanism has been further improved and made more robust. The possibility of precise adjustment of the top weighting arms is thus given and makes an additional contribution to consistent yarn quality throughout the machine.



Fig. 4: Eccentric setting

**Operating force**

The weighting lever of the HP 4080 is mounted in low-friction high-duty plain bearings. This significantly reduces the operating force of the top weighting arms. At the same time, the service life of the bearings and the ease of operation are increased. The operator tires less quickly. The result is good acceptance of the top weighting arm in the spinning mill.

**Steel quality and tempering**

All components of the HP 4080 are made of high-quality steel with low manufacturing tolerances. Components subject to particularly high stress are hardened. Even repeated fiber laps or handling errors do not result in deformation of the top weighting arm. The HP 4080 guarantees high operational safety and is designed for a long service life, which can be twice as long as that of competing products. The top weighting arm therefore represents a sustainable investment.

**Top apron cradle**

The innovative top apron cradle for short-staple applications (Fig. 5) is made from a high-performance polymer with extreme creep resistance and excellent dimensional stability. To reduce the influence of top apron tolerances, the top apron cradle has a tensioning device. Unlike competitive products, the tensioning element is technically correctly located in the slack side of the top apron.

The nip line of the top apron is therefore independent of the apron dimensions. The design enables a constant and uniform function of the top apron cradle even with different apron tolerances and thus a constancy of the yarn values independent of the apron dimensions. This component also follows the philosophy of the new HP 4080, to achieve the best possible and constant yarn quality throughout the entire machine.

The new top weighting arm HP 4080 has already been installed in various spinning mills. The ease of adjustment, the user-friendliness and the robustness were confirmed. The advantages of the low manufacturing tolerances, the novel plastic cradle, and the hysteresis-free loading of the top rollers were demonstrated in the spinning mills by very good yarn values and a high consistency of all spinning positions.



Fig. 5: Top apron cradle for short-staple applications



**Suessen**

**Dr. Peter Blankenhorn**  
Head Technical Department WST

## *preciforce*<sup>™</sup> – High Precision Backpressure System

Among other factors, such as *digitens*<sup>™</sup> (SSM online regulated yarn tension) and DIGICONE<sup>®</sup> 2 (SSM step-precision winding), the backpressure force is an important influencing factor for a perfect yarn package construction on a winding machine. The backpressure force has a significant influence on the package density that needs to be achieved. The more precise a backpressure force system is working, the better the density can be controlled, resulting in an optimal package construction. Standard backpressure force systems, such as pneumatical-, electro-mechanical- or mechanical systems, on winding machines worldwide follow a pre-defined curve. Disturbing factors, which can occur frequently in a production, are not corrected with these systems.

Therefore, SSM has developed the world's first backpressure force system that constantly regulates the contact force and consistently bypasses disruptive factors.

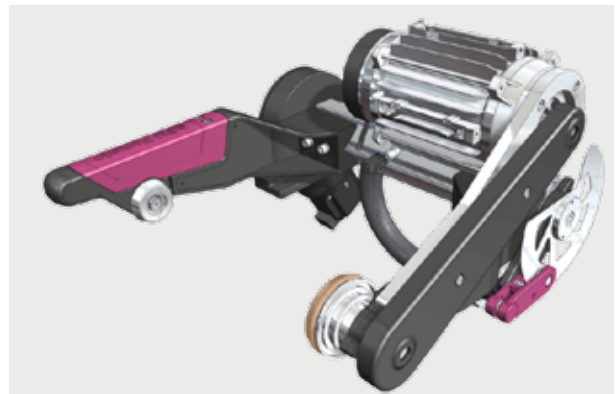
### ***preciforce*<sup>™</sup> - a worldwide unique backpressure system**

*preciforce*<sup>™</sup> is the first and only backpressure system on a winding machine which regulates the contact force in a range of 200 to 8'000 cN with precise accuracy, regardless of whether hard or soft packages are wound. Due to the innovative design, no manual backpressure adjustments, commonly known on winding machines with pneumatical or mechanical backpressure systems, are any longer required. Thanks to the compact design, the powerful *preciforce*<sup>™</sup> system can easily be retrofitted on existing SSM XENO winding machines of all types.

Besides of all these benefits, the *preciforce*<sup>™</sup> system is entirely maintenance free, consumes less energy and the fact that the system is self-calibrating further enhances the advantages of the *preciforce*<sup>™</sup> system.



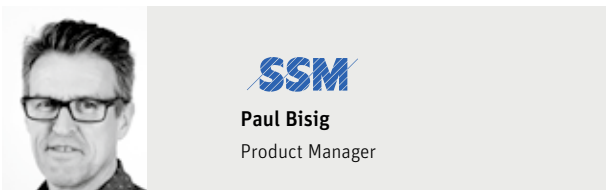
SSM XENO-YW precision package winder



*preciforce*<sup>™</sup> winding unit



SSM XENO-YW machine sections with the brand new *preciforce*<sup>™</sup>





## Glass Fiber Twisting/E-Glass

Reduction of component sizes while preserving or improving function is a persistent and increasing trend in the electronics industry.

This is clearly reflected in the latest mobile phone generations, but high-quality E-Glass products are more and more commonly used in the automotive industry as well.

In order to meet the demands of this market, Bräcker expanded the product range of its HZ CLB family by using market-leading twisted glass fibers. This led to the HZ 3.8 CLB, the smallest nylon traveller ever produced by Bräcker.

In alignment with the E-Glass area, our traveller was made smaller and better:

- seam reduction to an absolute and non-interfering minimum in the yarn progress,
- minimal weight fluctuations,
- very good properties could be achieved in the ISO area 8-25, but the product is available in many other weights as well,
- prevents loops on the cake,
- prevents broken fibers on the cake,
- optimized geometry for an improved winding angle,
- very high and even form stability of the traveller.

### Rings for glass filament twisting

Rings produced from porous sinter metal are in use for glass filament twisting. The continuous oil flow assures an even twisting tension over the full bobbin filling.

Bräcker supplies sinter metal rings for ring heights 3.8 to 16.7 mm in all the common dimensions.



HZ 3.8 CLB traveller



Sinter ring



**Bräcker**

**Elk-Lars Haberer**

Product Application and R&D  
Marketing and Product Management

## High Quality Components for Worsted Compact Spinning on Conical Rings

Wool and some other long-staple fibers have relatively high micronaire values and are not able to create a fiber lubrication film on the ring. For the spinning process itself it is necessary to have some sort of lubrication between ring and traveller. The ring and traveller system is imparting the twist and is creating a tension for winding the yarn on a cop.

For excellent results the correct combination of conical rings and travellers is needed. Depending on the yarn count and yarn type Bräcker propose steel travellers in J-shape or NYLTEX travellers.

### Worsted compact spinning

For the high-quality compact yarn application staple fibers from 60 up to 200 mm length and wool with a fiber diameter of 16 to 30 micron is applicable.

Raw material qualities:

- all kinds of wool,
- high quality animal hair (Alpaca, Camel, Vicuña ...),
- man-made fibers,
- blends.

Yarn count range:

- Nm 28 and finer.

Fields of application:

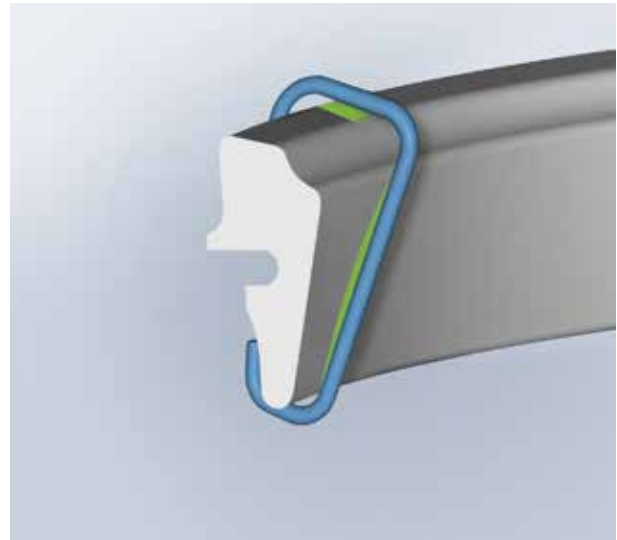
- high value garments (suits, dresses ...),
- tights, stockings and underwear,
- sports and active wear, functional clothing.

High-quality animal hair for worsted compact yarn is rather expensive so it is absolutely essential to use the best ring and traveller system to achieve the highest possible yarn quality.

### Ring and traveller system

As mentioned in the Bräcker Long Staple Spinning booklet, the conical ring with the J-shaped traveller is the most effective and proven combination for spinning of wool, acrylics, cashmere and blends.

Because of the steadily growing demand on high-quality travellers for this segment Bräcker offer now some lighter travellers in J 11.1 KST r and heavier travellers in J 11.1 CST-Br and J 9.1 CST r.



Favourable combination: raceway convex/traveller back straight, large contact areas

— contact

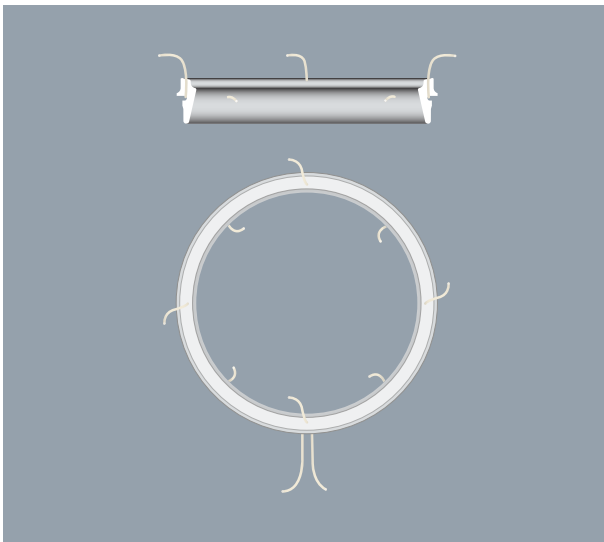
### Ring and traveller system worsted compact

For worsted compact spinning of wool and wool blends in the fine to very fine count range a conical ring with the height 9.1 mm is recommended. The suitable traveller is steel traveller J-Type 9.1. Some of these travellers are also available in Saphir, Starlet or Pyrite finish for a better running condition and lifetime.

### Influence of the ring raceway

Older conical rings have convex or straight raceways, i.e. the inner side of the ring is totally plain or slightly curved. In order to obtain the optimum contact between ring and traveller during running, the correct ring and traveller combination must be selected.

In order to reach the best traveller sliding and a reduced coefficient of friction, the new rings are convex/slightly curved on the raceway. In combination with a traveller with a straight back the touching area is much larger, while the traveller is running (in an inclined position).



4+4 lubrication points

**Conical steel rings**

Because wool and some other long staple fibers are not able to create a fiber lubrication film on the ring (as for instance cotton fibers do) it is necessary to have artificial lubrication between ring and traveller.

This is the reason why lubricated rings are necessary in worsted spinning.

Their specification conical comes from the shape of the main ring bearing surface.

Oil is brought onto the ring surface by wool wicks through holes and “caught” by the traveller during its revolution on the ring.

**Lubrication system**

For more than 50 years, Bräcker has been using the “4+4” system: four holes in the main bearing surface and four holes on top of the ring.

The oil arrives directly on the traveller running area and assures a good and constant lubrication.

The wick used to bring oil on the surface is made of 100% pure wool.

As a general rule is applicable:

- two wicks for spinning pure wool or wool/acrylic for counts finer than Nm 20,
- four wicks for spinning acrylic or pure wool coarser than Nm 20.

For running-in procedure and maintenance details, please contact your local Bräcker representative. The Bräcker Long Staple Spinning booklet can also be downloaded from the Bräcker website.



In April 2018, a worsted seminar was held, organized by Suessen, in Zhangjiagang, Jiangsu Province, China.



**Bräcker**

**Brigitte Moser**

Senior Sales Engineer

## Graf's Cutting Edge Innovation

### Spinning mill specific innovations in card clothings

Latest technologies and new system approaches allow Graf to reinvent and design the clothings for revolving flats for each market segment and its specific needs, to enable Graf's customers to stay sustainably profitable. The market environment, automation in cotton picking as well as the performance of the carding machines changed in the last years and pushed the established card clothings to their limits. Graf is presenting the new approach of its power of innovation and planned products.

Graf's key innovation focus has been on how to improve the yarn quality (Q), how to adapt the flat clothings and cylinder wires to the raw material used (T) and its composition as well as to give longer lifetime (L), resulting in a better \$/t ratio for the spinning mills. However, after a profound analysis of the changing boundaries, Graf has recognized two aspects with key impacts for spinning mills. The first such aspect is the increased throughput (P) on the card in kg/h with the demand for the same yarn quality. The second one is new system designs to minimize the good fiber content for a better yield (Y) in the trash, having a high impact on spinning mills profit.

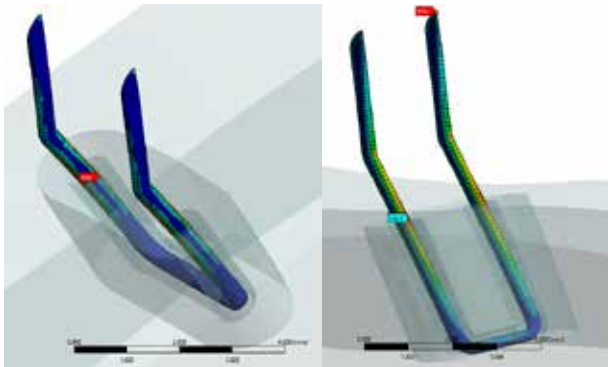


Fig. 1: Finite Element Calculation visually encouraged results in a hook set in an elastic foundation to tune the new products to meet customers' requirements in the carding process for each segment group

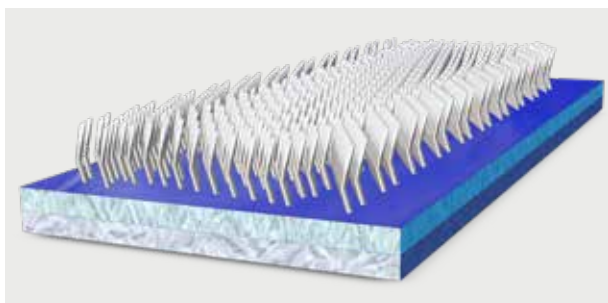


Fig. 2: Automated 3D visualization of latest complex setting pattern with full link to production machines and carding process

#### Key pillars of innovation

- Yarn quality (Q)
- Trash content in raw material (T)
- Lifetime of products (L)

+ High performance (P)

+ Saving of good fiber for more profit (Y)

#### Integrated systematic approach

There are many systems to be considered when creating products with added value for the different needs of spinning mills from each segment. The whole downstream processes and the carding process itself with all its parameters and different possible products need to be aligned. The main work in carding happens between the flexible flats and the teeth of the cylinder wire. Graf uses the latest technologies and investigates in the laboratory as well as in field tests how to develop solutions specific to reach spinning mills expectations. Based on automated programming Graf can accelerate the innovation process by design thinking approach by simulating, visualizing and calculating prototypes to minimize development time and costs (Figs. 1 and 2).

#### Additional focus: Saving of good fiber for more profit (Y)

Addressing the latest focal point of saving good fibers in the carding process, Graf develops a new system of flexible flats containing many different parameters in production and design for such a particular product group. The calculation below illustrates the assumption that a spinning mill with the yearly production of 5 000 t can save up to 0.3% good fibers in flexible strips in the card and generate additional revenue of Euro 35 000 per year using the same amount of raw material thanks to Graf's yield optimized flat clothing. The saving depends on quality of the raw material, the setup of the carding machines as well as the yarn grade produced.

#### Calculation assumption

Spinning Mill production	5 000 t/y
Yarn sales price	2.4 Euro/kg
→ Savings of good fibers	0.3% (15 000 kg)
→ Sales increase by fibers saved	35 000 Euro/y
(Sales increase minus conversion costs → profit increase)	

Table 1: Calculation of sales increase; assumption based on savings of good fibers, depending on raw material, card type and card setup as well as requirements of end product.

Graf analyses the performance of the new developments in its own laboratory as well as in field tests, as illustrated below. Figure 4 is a result of the measurement taken from Figure 3 in the field test which visualizes the actual difference in the degree of loading of two different flats the carding area. First flat is a state-of-the-art flat design in comparison to a new type of flexible flat from pre to post carding zone from left to right. The grey area between the two lines indicates the difference in loading which consists of trash, dust, neps but also of good fibers.

It is obvious that even the saving of a small percentage of good fibers in the waste has a positive impact on the profit of a spinning mill.

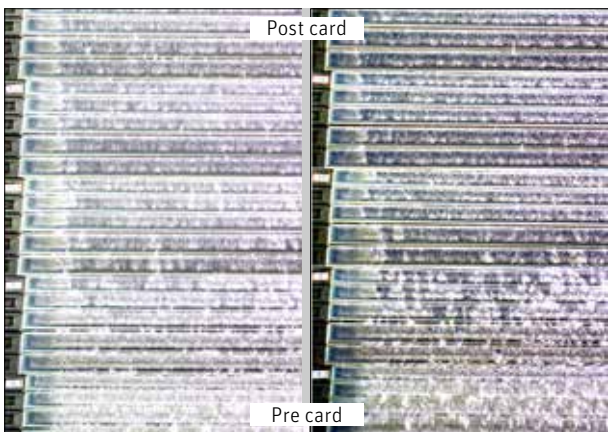


Fig. 3: Visualization of loading of the flexible flats across the carding gap of two different types of flats as basis for the diagram in Fig. 4

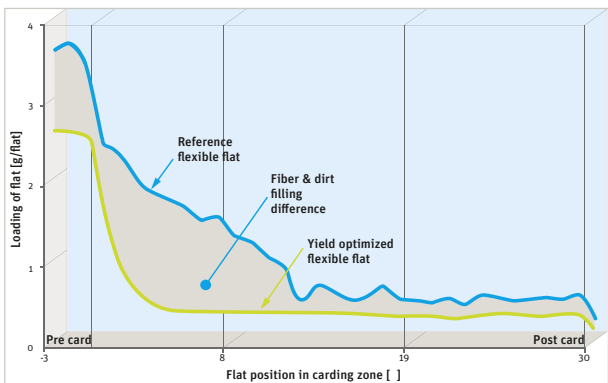


Fig. 4: Loading behaviors of two different flexible flats across the carding area from post carding zone to pre carding zone against the cylinder direction. The area in this comparison shows the reduced amount of waste and good fibers.

Three examples of different designs of carding systems for different customers' need.

**1. Yield optimized system Y-Top (Y)**

This spinning mill is producing good quality yarn with mid-to high production rates, facing strong competition with the selling price. For this customer a small amount of good fibers saved, as mentioned in table 1, of up to 0.5%, can result in the price advantage required to compete in the market, depending on the raw material and the condition of installed machines and required yarn quality (Fig. 5).

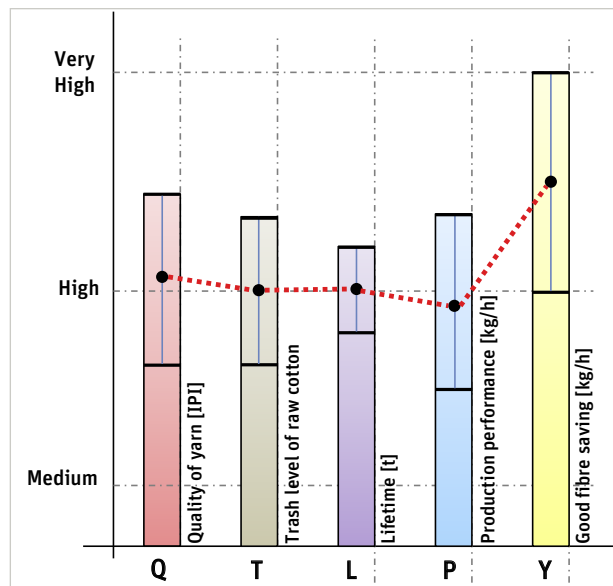


Fig. 5: The figure shows the composition of the 5 main parameters. The dominance is in the values yield performance for maximum profit.

**2. Performance optimized system HiTop 2 and MULTISHARP Wire (P and L)**

A spinning mill producing open-end yarn requires the highest productivity and lifetime as well as a good quality of the yarn. These two requirements are incorporated into the new system. For example, the open-end spinning process is able to use shorter fibers compared to ring-spinning processes. Therefore, the yield is subject to another definition of usable fibers but it is still important and incorporated into the system. It is connected to the latest alloy used for cylinder wire MULTISHARP to provide maximum lifetime (> 25%), allowing high productivity with extended maintenance cycles throughout a longer lifetime of the whole system (Fig. 6).

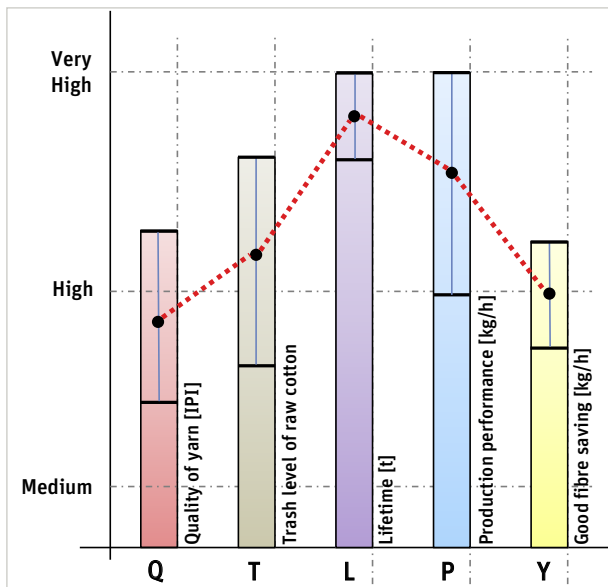


Fig. 6: This figure shows a high dominance in production performance and lifetime with increased trash level in raw material allowance for highest production rates.

**3. Quality optimized system RSTO (Q)**

This flat was designed for spinning mills with highest quality requirements. Their income is not generated by selling highest quantities but by the higher selling price for high grade yarn. Their focus lies in maintaining the highest yarn quality with the known good fiber content in the flat strips (Fig. 7).

These examples provide an overview on how Graf designs and produces flexible flats and cylinder wires as a system for utmost benefit for the customers. Based on knowledge, protected by patents, Graf can maintain its position as the market leader of high quality card clothings.

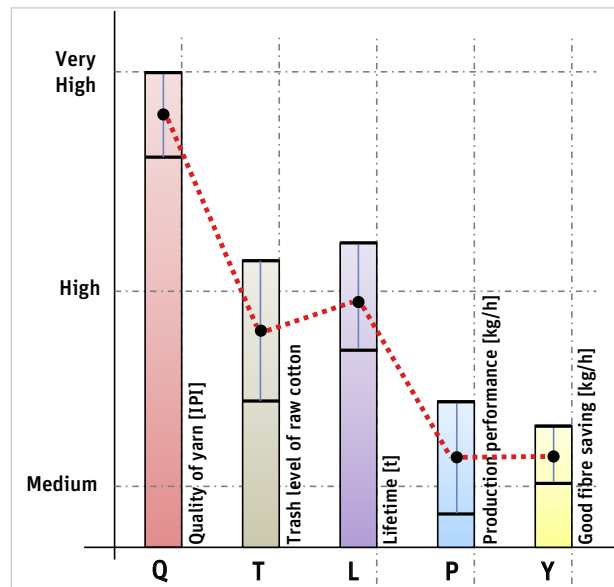


Fig. 7: In this product the dominance is focused on best yarn quality.



## GaoTang JinTai Cotton Co., Ltd.

GaoTang JinTai Cotton Co., Ltd. is located in GaoTang county, west of JiNan city which is the capital of ShanDong province. It enjoys convenient transportation with high speed train and highway. The company was established in 2005, started with 10 000 spindles. Cotton spinning was always the company's main work, and at the beginning it was mainly carded cotton spinning. In 2008, the company expanded their capacity to 50 000 spindles. And in 2015, the total capacity was enlarged to nearly 80 000 spindles. In this year, the company purchased 16 sets of Rieter G 32 ring spinning frames, with 1 632 spindles per machine.

These machines were installed with Suessen EliTe® Compact spinning system. The main product now is semi-combed cotton yarn, range from Ne 21 to 40. Combed yarns take around one quarter of whole production.

Up to now, the first lot of machines (eight sets) have been running for around two years. Due to stable performance and good quality of the yarn, the company placed the order for a second lot of 8 machines in 2017.

According to Zhang Min, the general manager of the company, the machine G 32 with EliTe® could run at higher speed compared with Chinese short machines, and both hairiness and spindles variation is better than with other types of compact systems. Their customers gave high praise for the fabric appearance which is more even and plain.

Today, the machines are running at a speed of 18 000rpm, pure cotton Ne 40, with yarn breaks <10/thousand spindle/hour, and doffing breaks <15 per machine/doffing.

The yarn quality is shown below:

Mean	CVm%	U%	H	SH	AF	Thin 40%	Thin 50%	Thick 50%	Thick 140%	Thick 200%
	12.31	9.71	3.1	0.64	100	63	2	24	278	54



**Suessen**

Ziqiang Hu  
Suessen Business Development Manager



Zhang Min, General Manager

With this quality data of yarn, semi-combed, the company has good sales and got good reputation from their customers.

One point Zhang stressed that machine G 32 with EliTe® is very much suitable for mass production with high speed and stable quality. That is the big advantage over Chinese short machines.

During normal production and maintenance work, the company found that EliTe® is easier for cleaning and maintenance and these points become increasingly critical under current social situation because the textile operators become more and more difficult to hire.

Thanks to the healthy running condition, the company is planning to set up a new workshop with 50 000 spindles soon. Suessen is confident that the company will cooperate again with JinTai in the near future.



Rieter G 32 with EliTe®

## Tejidos Jorgito S.A.C.

### Suessen SQ SpinBox modernization – important pillar of competitiveness

Named after the founder’s father, Tejidos Jorgito is a family-owned business that has managed to maintain a steady growth pace in a market that is every day more globalized and competitive. In order to achieve this, it is important to understand their work philosophy, that can be described in three words: “humbleness, resilience and commitment.”

The company has been operating in Peru for more than 30 years. “The first years were the toughest,” says Luis Jarufe, CEO of Tejidos Jorgito. “We had no money or capital enough to build our own factory, so we started commercializing fabrics, buying and selling and earning a couple of cents per kg. It was definitely difficult, we had to find a space in a market that was already controlled by big players, but fortunately we did. It took time and patience to build some capital to be able to start building our own operation.”

In 1991, the first four circular knitting machines were bought, and in 1994 a small dye house was installed. This allowed the company to be more independent. “When we depended on other companies to produce or dye our fabrics, we experimented many delays in our deliveries, and this generated many commercial problems with our customers, that was why we decided that if we wanted to grow in the business, it was necessary to be as self-sufficient as possible,” remarks the current CEO.

Faced with higher sales and therefore need for more yarns in 1999, they acquired a used open-end plant with three Elitex machines and in 2001 a used ring spinning plant. In 2005, 13 more Elitex machines were installed.

In 2010, the spinning plants were renovated, all Elitex and Zinser ring spinning machines were sold.

Today they have four plants in two locations, three are open-end plants with a total of 24 ACO machines (total of 6 200 rotors) and 10 000 ring spinning spindles, the dyeing plant is located in Vulcano. The 72 knitting machines are installed in Santa Clara.

The production capacity of Tejidos Jorgito is today around of 6 million kilograms of yarns per year (100% Cotton and blends Cotton/PES and Cotton/PES/Acrylic) and 6 million kilograms of knitting fabric per year. The yarn count range is Ne 6 to Ne 50. 80% of the total yarn production output is open-end yarn, 20% ring yarn. 80% of the yarn production is for own use, for manufacturing of Jersey, Pique, Flannel and Elastic Jersey fabrics. The remaining 20% is sold locally



Johnny Majluf, Operation Director

or indirectly to other countries, located mainly in South and Central America.

#### Suessen SQ modernization

After doing the renovation of their machinery, the objective of the owners was to achieve a higher efficiency and production, in spinning and knitting. With the modernization of the OE machines the objectives have been achieved in both sectors.

#### Advantages with Quality SpinBox SQ

Higher production (up to 38% more), better efficiency (seven points) and better yarn quality (improvement in all relevant parameters, as yarn regularity, resistance and elongation), is reflected in higher quality and softer touch (by lower yarn twist) of the fabrics.

The following table shows the improvements achieved with the SQ SpinBox:

	IPI	Rkm	ae
SE 9/10	135	13.1	4.25
Quality SpinBox	99	14.0	3.4

#### Tasks for the future

“Currently the family is very happy and satisfied with the results obtained with the SQ Modernization,” says Johnny Majluf (Operation Director). “The target is now to conclude the modernization of all SE 9 and SE 10 in 2019, a total of 17 machines.”





Rodolfo Quichiz (Plant Director) and Esau Cardenas (Spinning Manager)

**The next generation**

Tejidos Jorgito knows it is important that the next generation has the vision and tenacity to be able to continue growing. Since 2007, four founder’s sons and daughters have started working in the business, and they also live and breathe the same working philosophy the founders do.

Being a family-owned company, it is a challenge to succeed in passing the torch to the next generation, that is why a formally planned succession process has begun in 2018. The family members believe the new generation faces a more complicated reality, and the only way to succeed is by professionalizing the organization (but keeping a light and very practical, non-bureaucratic style of management), having well defined family protocols and above all, having the right people, in the right place.

As part of this change, it is important to mention that the CEO’s son, Javier Jarufe, who has been working in the company for the past twelve years, has been incorporated as partner and as member of the board of directors. “The key of our success is to develop strong and healthy relationships with all our partners, and we consider our partners our suppliers,

our clients, and specially, the people that work for us. Without the outstanding human capital we have, all this wouldn’t be possible. As long as we are truly committed, and we never forget to pay attention to every little detail in our business, we will be standing,” states Javier Jarufe.

**Review from the view of Suessen**

In 2010, Suessen started to make business with Tejidos Jorgito. Johnny Majluf, Rodolfo Quichiz (Plant Director) and Esau Cardenas (Spinning Manager) could be convinced of the quality of the Premium Parts products. Step by step the confidence of the managers and technicians was gained by optimizing costs and production in terms of yarn quality and OE machine productivity.

At the ITMA 2015 in Milan, Suessen managers had the first discussion regarding the modernization of the OE machines with the SQ SpinBox. A first test was started in 2016, on one section; in 2017 Suessen began to modernize SE 9 and SE 10 machines.

Today the SQ Modernization of 14 Autocoro machines SE 9 and SE 10 is installed in the two spinning plants, producing highest quality yarns with low costs.

The SQ modernization of the open-end machines with the Quality SpinBox was carried out by Tejidos Jorgito technicians. This underlines the quality and the level of knowledge of the technicians.

This investment makes Tejidos Jorgito by far the largest Suessen customer of the SQ Quality SpinBox in Peru and the South American continent.

This case is a classic model of good and highly professional partnership; Suessen is proud to be part of the success story of Tejidos Jorgito with the SQ SpinBox.



**Suessen**

**Antonio Durante**  
Senior Sales Manager



Contact:  
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## Maksons Spinning Mills Ltd.



Maksons company building

Maksons Group is one of the most prominent textile conglomerates in Bangladesh. The group has expanded its operation through investment in the field of spinning, textile, readymade garments, land and property development, and logistic business. Out of all the group's business concerns two are public limited companies that are listed with both Dhaka Stock Exchange Limited and Chittagong Stock Exchange Limited with consistent performance.



Mohammad Ali Khokon, Managing Director of MSML and President of Bangladesh Textile Mills Association



**Anisur Rahman, Chief Executive**  
Spintech Associates, Bangladesh,  
Suessen Agent

The group has adopted effective Corporate Social Responsibility programs to make a positive impact in the community while maximizing business value of his shareholders and stakeholders.

Maksons Spinning Mills Limited (MSML) is one of the largest spinning mills in the country, which was established in September 2003. With over 15 years in the textile sector it has reached a capacity of over 100 000 spindles, making it one of the highest producers of yarn, with a production capacity of 20.65 million kg annually.

MSML invested in state-of-the-art compact ring spinning technology to meet the customers' quality requirements in 2016. They have installed Suessen EliTe® Compact Spinning System on 45 168 spindles, as a technological advancement footprint.

Advantages of the EliTe® Compact Spinning System over the conventional spinning are:

- 10 to 15% higher production,
- 25% higher strength that results in 5 to 10% increase in efficiency during knitting, warping and weaving,
- 25% lower hairiness that saves a lot of enzyme cost and health hazard during dyeing,
- higher yarn and fabric realization,
- less spirality,
- superior yarn and fabric quality.

“Both we and our customers are satisfied with Suessen EliTe® Compact Spinning System, as we are able to provide quality yarns to our customers. This is boosting our demand for yarn from our valued customers,” said Mohammad Ali Khokon, MD of Maksons Group. It is getting difficult for the yarn producers to sustain in the market because customers' demand is high-quality product with low price. EliTe® is therefore getting more popular among the spinning community.



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