

# SPINNOVATION

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**Bräcker**

*Graf*

**Novibra**

**SSM**

**Suessen**

# IMPRESSUM



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Front cover: Winding head of SSM XENO-YD

Serge Entleitner  
Executive Vice President,  
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## Dear customer, dear reader,

What reward does an athlete or an artist receive? The acclaim!

Of course, they still have to make a living, and for this they need a financial incentive. But without this acclaim they will not be satisfied in the long run and their performance and creativity would suffer.

The same can be said of our products. Our motivation is that the customers are satisfied and confirm this with their acclaim. This edition of the Spinnovation is full of acclaim. Thank you very much!

In the following articles, our development engineers and application technologists will present a whole array of innovations and products for the successful operation of a spinning mill.

**Bräcker**, with its "BERKOL®" preparation cots, is offering a comprehensive range for the entire spinning process and with the "BERKOL® 65S" detaching roller, a world-leading product for combers. Its surface finish and hardness ensure optimal gripping of the fibres during the combing process, which reduces the quantity of good fibres lost.

**Graf** is playing an active part by conducting tests in the carding process of its customers. Detailed analyses are aiding understanding and providing solutions for improving the yarn quality and/or increasing the service life of the card clothings.

**Novibra** is proud to be celebrating the 30th anniversary of its high-precision spindle. This spindle concept makes it possible for the spinners to achieve higher spindle speed limits. The result of this development, the "NASA" spindle, is the most used spindle for premium spinning machines among all renowned machine manufacturers. Its unique properties make the "NASA" the first choice for spindle speeds above 20,000 rpm.

**SSM** demonstrates the advantages of precision winding with the "DIGICONE@2". The unique algorithm developed together with a university enables uniform density of the packages. This has a positive impact on the downstream processes.

**Suessen** "EliTe®" compact ring spinning systems stand out in terms of the particularly long service life of their components and associated ease of maintenance. These are basic prerequisites for the continuous production of a high quality compact yarn.

Globally renowned customers – "opinion leaders" – testify to their satisfaction by using our products in their spinning mills. This is the incentive that I'm referring to.

At the ITMA Asia 2018 in Shanghai, we will be showing the spinning mills of the world how much money they can be earning with Rieter systems – ring, compact, rotor and air-jet. The components from Bräcker, Graf, Novibra and Suessen are key contributors. Machines from SSM enable our customers to earn money in downstream processes as well. All of the products will be demonstrated on a joint stand. Nowhere else at the trade fair will you find so much expertise in machines, components and service.

I would like to invite you to come and visit us at the exhibition.

Best regards,

Serge Entleitner

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## DIGICONE®2 – SSM generates the “perfect” yarn package



SSM software manager Göksel Karaarslan

SSM software manager Göksel Karaarslan knows only too well how a properly wound package looks like: it features a uniform density and no visible surface structures. “No pattern”, as the experts say. This is important because a yarn package can, for example, only absorb the colour evenly if it is neatly wound. “Nobody wants to wear spotily dyed clothes”, says Karaarslan. Moreover, it is much easier to efficiently process sound packages.

### The variety of yarns and packages – a particular challenge

The problem is: the winding machines often fail to instantly wind packages that can be easily dyed. This is due to the fact that there are thick yarns, thin yarns, rough yarns, smooth yarns, straight packages, conical packages ... the list could be continued infinitely. Good winding machines must take into account all these parameters and, at the same time, constantly produce packages of high quality. In case a package is wound in a suboptimal way, this situation will lead to problems in the downstream processes and, as a consequence, result in additional disadvantages.

Additional disadvantages, however, cost time and money – money that is often lacking in the highly competitive textile market. Therefore SSM has developed an algorithm, in cooperation with a renowned university, enabling the winding machines to wind the “perfect” package, regardless of the yarn.

### Images instead of laboratory tests

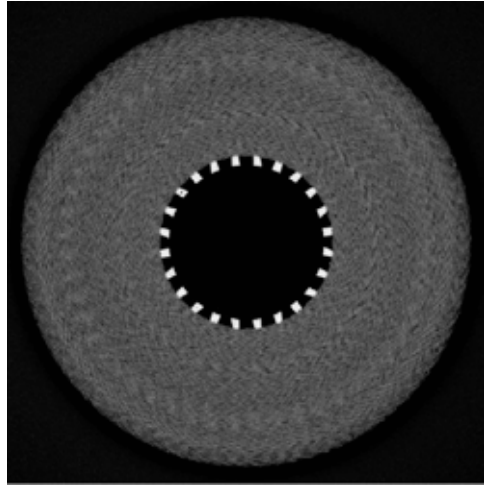
The engineers and mathematicians opted for a special approach. Instead of measuring parameters such as yarn tension, density, material, or yarn diameter, and packing them in complicated formulas, they translated the SSM expert knowledge into a theory, allowing for a precise prediction of package structures and density distribution. Using methods from the number theory, they finally managed to get a grip on the “chaotic and dynamic system” of package winding.

Based on the calculations, it was possible to devise the DIGICONE®2 algorithm that can be directly implemented into the winding machine control software. By means of high-speed recordings during the winding process and with the aid of x-ray computed tomography, the success of the SSM project was finally confirmed (see image comparative spool). Result: the identically constructed machines, which previously were not always able to wind a package that can be easily dyed, accomplished this task straightaway with the new software.

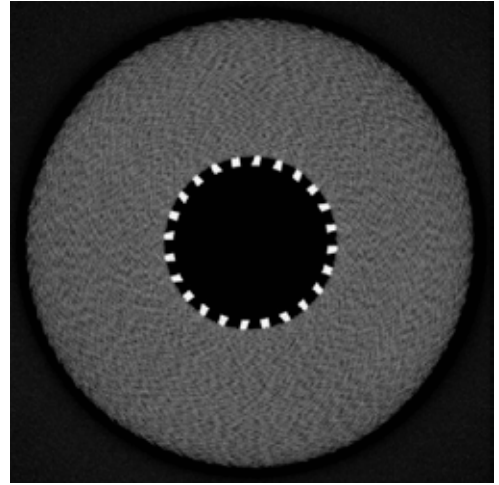
### Competitive advantage through innovation

Thanks to the cooperation between SSM and university, the idea could be optimally implemented. “The innovative DIGICONE®2 algorithm enables us to stand our ground in the competition with other winding machine manufacturers”, says Karaarslan. The algorithm is successfully used by the latest SSM machine generation, and many customers have already tangibly profited from it.

## Density distribution



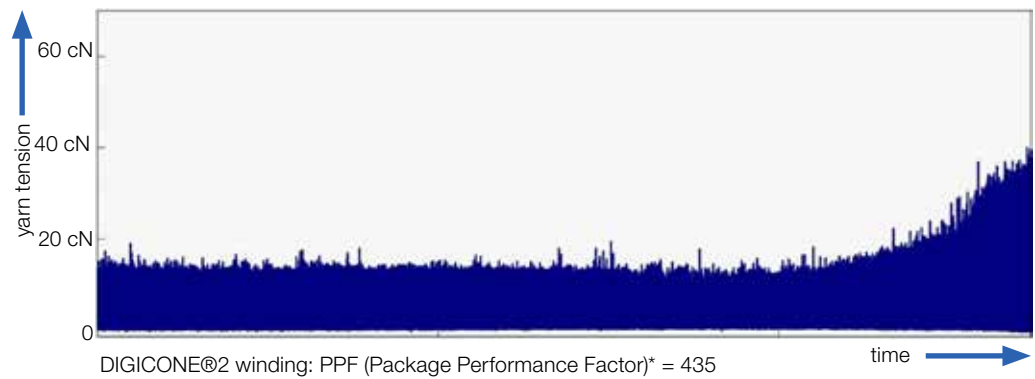
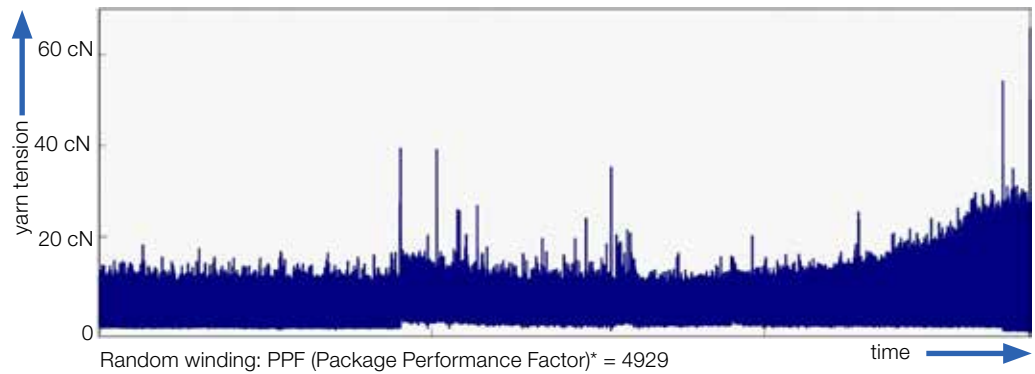
Common step precision winding



DIGICONE®2 winding

## Unwinding performance

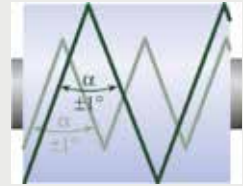
Comparative spool (450g/l):



\*The Package Performance Factor, quantifies the tension peaks in order to give a single, reliable characteristic factor for the unwinding behaviour, in particular regarding the tendency for problems during yarn draw-off.

### SSM DIGICONE®2 – advanced winding algorithm

DIGICONE® step precision winding – developed by Schweiter in the 1970s – combines the advantages of random winding and precision winding. The ratio between double strokes and number of revolutions is kept constant for a certain diameter range. The crossing angle varies only slightly within a range of  $\pm 1^\circ$ . This results in an enhanced package density that does not change with increasing package diameter. So the building of pattern zones is avoided and the package maintains a stable structure without any ribbons. Due to this stable structure, the risk of complete layers “slipping off” during the unwinding process of dyed packages, as known with random winding, is completely eliminated.



The introduction of the XENO platform opened new possibilities for optimizing the winding algorithm. Thanks to this new machine platform, SSM could release DIGICONE®2, enabling an increase of dye package density.





## BERKOL® 65S detaching roller for combing machines



Fig. 1: Detaching roller BERKOL® 65S

With the detaching roller BERKOL® 65S, Bräcker offers the world's leading product. Thanks to the soft surface, a firm clamping of the fibres is guaranteed. The very low wrapping tendency can lead to up to 30 % less machine stops. The evenness of the roller helps to reach a constantly high quality, but nevertheless, the grinding intervals have to be paid attention to.

The BERKOL® 65S is used as a cylinder for the drafting system in the combing machine as well as in the drafting system of the draw frame, when working with 100 % cotton.

With the help of optimal preceding processes, a well set-up combing machine and with the use of BERKOL® products, faultless fleeces are produced. By using the BERKOL® 65S an additional 5 % increase in efficiency can be achieved (Fig. 2).

A sub-optimal edge on the fleece can lead to an increase in cleaning steps in the winding process. These faults can only partially be detected in the combing sliver and only become visible during the winding process through an increase in cleaner-cuts (Fig. 3).

An uneven distribution of the pressure or a bad quality of the detaching roller respectively will cause holes in the fleece. This leads to a massive decrease in the quality of the combing sliver. In addition, the increased number of stops of the combing machine will reduce the efficiency (Fig. 4).

Characteristics of the BERKOL® 65S are:

- reduction of machine stops due to wrapping on the roller,
- a clean tearing-off of the fibre material,
- no loss of "good" material,
- clean edges of the fleece,
- gap-free and homogeneous fleece,
- optimal distribution of the pressure over the entire roller,
- even and constant quality up to the next grinding cycle,
- less problems in the following processes,
- high resistance against oil and ozone.



Fig. 2



Fig. 3



Fig. 4





## Decades of innovations made by Novibra

Small anniversary, big commitment for the world's  
biggest producer of spindles



Novibra clamping crowns

**Novibra is proud to announce that it has been 30 years since the revolutionary High Precision Spindle (HPS 68) design has been introduced to the spinners and allowed them to pursue new goals without spindle speed limitation.**

Since 1988 we have been continuously working on new developments reflecting the calls from the market. We have launched numerous pioneer solutions and have managed to keep the position of the trend setter for high speed spindle technology.

High speed, precision of production and performance, endurance, low energy consumption, reduced maintenance and satisfied customers are the objectives Novibra has been following ever since.

### Challenging the speed limit

At the very beginning, there were the two bearing spindle concepts of HPS 68 that literary set spindle as the key component of ring spinning process aside the speed limit.

### Endurance at high speed

The double housing spindle NASA HPS 68 introduced further benefits. Thanks to its double housing system the spindle noise and vibration has been further minimized and as a result its lifetime prolonged. NASA has become the mostly used spindle for premium spinning machines of all renowned machine producers. Its unique features classified NASA as a first choice for spinners for high speed above 20,000 rpm.

### Economic solution for coarse counts

Novibra has always been aware of the rapidly changing trends in the textile industry. Just a few years back there was a huge demand for a universal spindle that would cover a wide range of counts starting from the very coarse. For example the denim spinners using bigger bobbins have been directed by other makers to spindles with 7.8 mm neck bearing diameter. As a result, the bigger the wharve diameter, the more energy is being consumed by the spindle. In comparison to 6.8 mm neck bearing diameter, the difference can raise up to 10% in the average. Novibra's response to a call for a universal spindle type is called L HPS 68 with a speed limit of 16,000 rpm. This model has become very popular mainly in Pakistan and other coarse spinning countries since it is the only modern high speed spindle with a neck bearing of 6.8 mm available in the market for very coarse counts.

### Energy saving

A big issue for every spinner is of course energy saving. In my personal opinion, the Novibra energy saving models HPS 68/3 and NASA HPS 68/3 with 3 mm footstep bearing diameter were ahead of their time. The risk that every trend setter has to bear. Nevertheless, the early launch of an energy-saving version of our standard models has given us the advanced leap and the confidence to go

further in this route. New technologies used both in developing process and production has enabled us to launch LENA spindle to the market in 2018: the only spindle in the world with 17.5 mm wharve diameter.

Expectations were high and we are pleased to see the positive feedback from our customers.

Depending on the particular spinning conditions and the machine itself, our customers have reported energy saving at the average of 4 to 6% to the spindles with 18.5 mm wharve diameter.

#### **Reduced maintenance**

Increasing labour costs raised a call for automation and reduction of manpower in the mill.

Imagine a self-cleaning clamping crown. There would be no need to stop the production just for cleaning the spindle catching area. Not to mention the saving of man power. The underwinding-free concept has been known and desired a long time enough. In addition, today we also know the difference of energy consumption caused by air friction between spindle with standard catching area running with several windings and

underwinding-free spindle. The latest data coming from China confirmed up to 10 % difference!

Novibra has introduced its underwinding-free clamping crown CROCOdoff in ITMA Asia in 2012.

In the meantime the CROCOdoff spindle has become our flag ship and there are more than three million spindles equipped with this state-of-the-art clamping crown in the world. And the number is rapidly growing.

Speed, energy consumption, noise and lifetime – what else could be addressed?

Besides the above-mentioned jewels in our portfolio we have recently introduced further products to the market as clamping crown EASYdoff or spindle brakes. Novibra is producing also MICROSEAL top rollers for ring spinning and roving frames, bottom rollers and heavy duty spindles for twisting and spinning.

A toast to creativity, tradition and commitments. We won't sleep on our laurels having further innovations in the pipeline.



Novibra production site – NASA



Novibra production site – CROCOdoff



# The importance of trials in carding

## 1 Precondition

In the highly competitive textile market, the manufacturing process from fibre to yarn must be known and controlled at all stages. Unrecognized outliers of any kind must be identified at the point of origin and must not degrade the bulk quality. In an environment of short product cycles and the request for maximum production output, the motivation for trials, interfering with the production process, is limited.

While tests in the spinning department are still common due to an easier handling, trials in spinning preparation are complex and, very often, get sacrificed in favour of a smoothly running production process. The carding department is feeding all lines that follow and is expected to run at full speed the whole time.

Next to time, the skill and experience of the staff is a further obstacle in carrying out trials in spinning mills. To perform a comprehensive spinning test, analyse test results and draw relevant conclusions, employees with technical knowledge and a sense of inquisitiveness are required. The notion to improve and question existing processes must also be supported by the management of a mill and practiced by all members of the staff.

If the different processes in a spinning mill are not fully understood and the available know-how is not distributed and exchanged within the mill on a constant basis, this will almost always lead to errors in the semi-finished and finished products and loss of control; making controlled quality an unattainable goal.

All those circumstances stand in direct conflict with the increasing importance of trials. They are invaluable for realizing process optimization and control and give a mill the technological edge to succeed in today's volatile environment.

### 1.1 Example Opening and Cleaning

The example below shows AFIS results from a customer in Africa complaining about hairiness in the yarn. The mill is producing carded ring yarn with medium quality cotton, originating from Madagascar: 28 to 30 mm, 4.0 to 4.8 Micronaire.

The ring spinning and winding were already checked, but the problem remained. Material samples were sent to our lab in Switzerland and checked on a single fibre testing instrument (AFIS).

	Nep cnt/g	UQL (w) mm	L(n) mm	SFC(n) %<12.7	Trash cnt/g
bale	160.0	28.3	20.5	17.1	57.0
bale opener	215.0	28.7	20.3	19.1	49.0
card input	751.0	28.4	18.9	25.0	18.0
card output	92.0	28.1	18.7	24.8	2.0

Table 1: AFIS values for the most important quality parameters from bale to card sliver

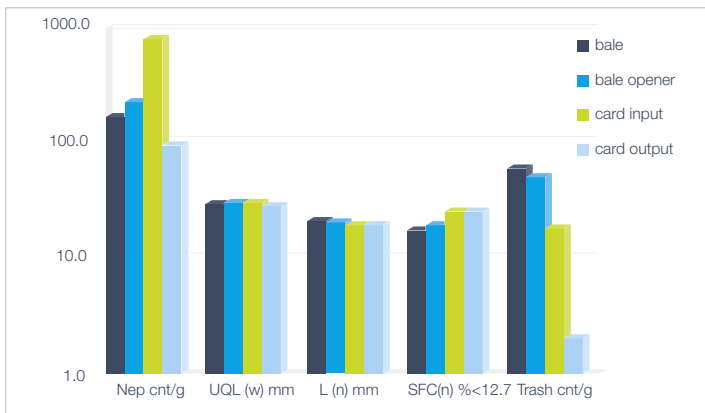


Fig. 1: Diagram with evaluation of AFIS test results from bale to card sliver

When putting the data into the fibre processing chart of Uster Statistics, Graf found the following picture (Fig. 2):

First the Short Fibre Content by number ( $SFC_{(n)}$ ) was checked and it is evident that the short fibres in the bale were close to the 5%-line. This means 5% of all spinning mills in the world are using raw material with a higher content of short fibres in the bale to produce a carded ring spun yarn.

Now, if you follow the blue line, you see an increase in short fibres during Opening and Cleaning from the 5%-line to the 50%-line. This means that the fibre is shortened and damaged and the short fibre content is actually increased by 30% ( $SFC_{(n)}$ ) in the raw material reaching the card.

These short fibres could not be reduced in carding and since there is no combing process, they cannot be eliminated at a later stage. During the following processes, short fibres cannot be controlled and are causing the distinctive hairiness problem of the yarn.

If a look at the trash content in the same yarn is taken (Fig. 3), you can also see the reason for the aggressive opening of the bales. The mill reduces the trash content from 50% in the bale to 20% in the material fed to the card.

To solve the problem the following questions must be answered:

- Is it necessary to clean the raw material quite as aggressively?
- What type of trash is in the bale?
- How can the setting in Opening and Cleaning be adjusted to the customers' needs?
- If the settings are opened, what will happen with the yarn quality?

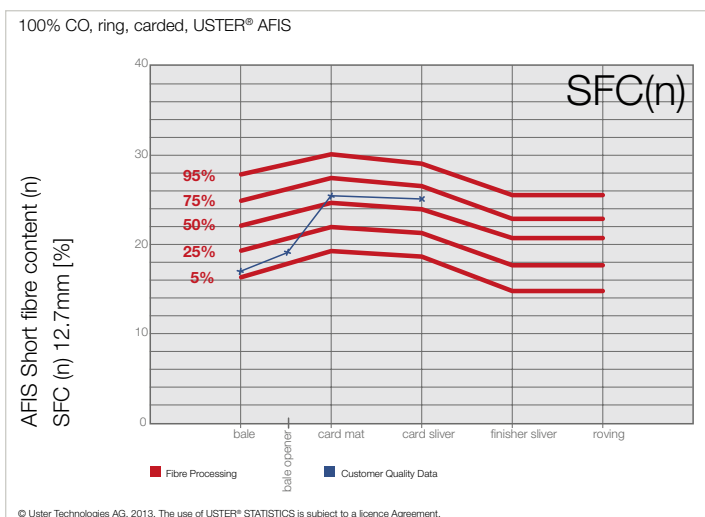


Fig. 2: Uster Statistics Fibre Processing Chart of Short Fibre Content ( $\%<12.7$ ) of a ring-spun, carded yarn (Source: [www.uster.com/en/service/uster-statistics](http://www.uster.com/en/service/uster-statistics))

This is a random example, showing the importance to understand the correlation of the various parameters in the production process and how and why they need to be controlled.

To ensure a constant quality level of the yarn, the key parameters must be defined for the semi-finished products and the yarn, controlled and recorded on a regular basis.

It is also shown that parameters cannot be checked individually; every action is influencing a set of parameters. Therefore, always the whole picture must be considered for evaluation.

## 2 Requirements

GRAF plays an active role in supporting customers in performing trials in the carding process. The manifold requirements from spinning mills ask for individual trial setups. At the moment GRAF is supervising more than 20 trial installations all over

the world, covering different key issues, like comparison of wires on cylinders, doffers and licker-in rollers, trials with flat clothings and maintenance trials with the focus on longer lifetime, improved quality data of the yarn and optimum maintenance equipment. In the following chapters some of the most relevant ones will be presented.

A key requirement to be able to perform trials to this depth is the vertical integration of production – Graf manufactures everything from metallic card clothings, carding wire to the finished flat clothing. Another requirement is the close collaboration of the different departments.

Almost all departments – starting from Research & Development to Production and Service – are involved in accompanying the often custom-made components from the initial idea to the application on customer's machines. In all cases the customer will get the full support of the GRAF technology department.

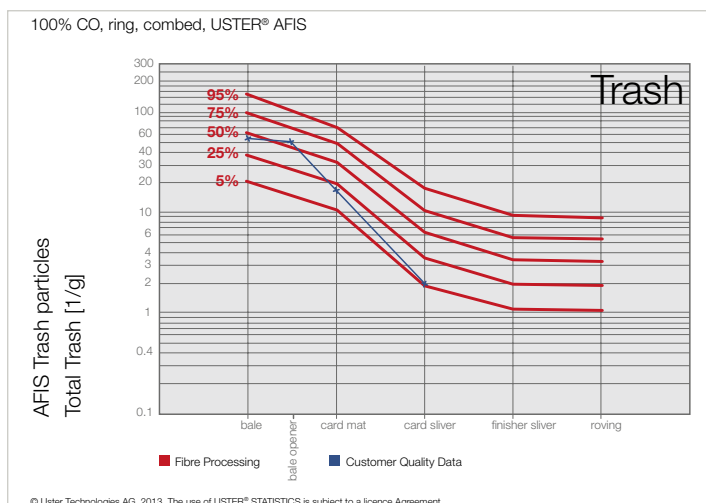


Fig. 3: Showing the Uster Statistics Fibre Processing Chart of Trash (cnt/g) of a ring-spun, carded yarn (Source: [www.uster.com/en/service/uster-statistics](http://www.uster.com/en/service/uster-statistics))

### 3 Main interests in trial installations

Card trials can serve different interests, depending on the subject:


- Maintenance trial: emphasize the importance of maintenance by making comparative trials and analyse test results; being able to make a quantitative evaluation.
- Customer trial: Try different types of wires or flat clothings to optimise the existing production. Try out new card settings with different card clothings and find the best practice according to the application.
- Development: Try out new developments in the field under real production conditions in the carding department of a spinning mill. Taking the country-specific differences into account.

### 4 Importance of maintenance

The performance of the card is sensitive to the maintenance of the card clothing. The better maintained the components are, the more precise the setting of the machine can be made and therefore the yarn quality can be optimized to stay on a stable level.

In the Card Clothing Management (CCM) of GRAF the customers can choose, according equipment and raw material, which maintenance schedule is appropriate (for example: Table 2).

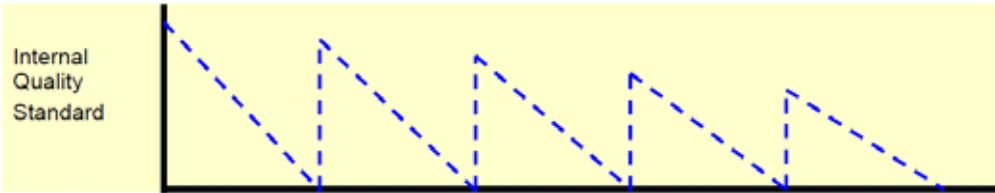
Those tables are a guideline, the final decision for re-sharpening or change is based on a visual check and with the support of the quality data of the fibres and the card or draw frame sliver.



## Card Clothing Management

**Machine type:** Rieter C60 / C70 with IGS Classic and IGS Top  
**Raw material:** Cotton  
**Cylinder and licker in:** CS quality

Remarks: Approximate figures for preventive maintenance with TSG and (DSW)  
 The approximate figures stated below may vary, depending on quality requirements or content of dirt and sand  
 For card without periodical nep control in card sliver



Element / Interval	1. Service		2. Service		3. Service		4. Service		5. Service	
Combed ring yarn fine Ne 50 - 180	0 t	130 t	240 t	340 t	430 t	500 t				
Combed ring yarn coarse Ne 20 - 50	0 t	210 t	390 t	550 t	700 t	800 t				
Carded ring yarn	0 t	250 t	460 t	650 t	820 t	950 t				
Open end yarn	0 t	280 t	540 t	760 t	950 t	1100 t				
Revolving flat tops	E Automatic resharpener at normal production by IGS Top <sup>*1)</sup>									
Cylinder	A Automatic resharpener at normal production by IGS Classic									
Doffer	A	R	R	R	R	R	R	R	R	C
1. Licker in if needle roller										C by 2200 t
1. Licker in if metallic wire				C						C
2. and 3. Licker in										C
Stat. flats and knife(s) above licker in		C	C	C	C	C	C	C	C	C
Stat. flats and knife(s) above doffer										C
Preopening segment										C
Flat stripping and cleaning elements			X							C by 1100 t
Take-off roller										C by 2200 t
IGS Classic stone										C

Remarks: A = Activating      E = Equalizing      X = Check, if necessary replace  
 C = Change                  R = Resharpener                  \*1) Equalizing by 2. and 4. Service recommended

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Table 2: CCM for a C70 card running with cotton

The following example shows the importance of activating the doffer before production and emphasizes the importance of proper and controlled maintenance.

#### 4.1 Example Activating of Doffer Wire

##### Object

Prove the importance of activating of doffer wire for a consistent quality level

##### Installation

The trials were performed in the RIETER Spinncenter on a C70 card.

##### Raw material

Turkish cotton, Donex, 31.0 mm, 4.7 MIC

##### Activating procedure

The new doffer clothing has been activated with 3 passages (minimum of 3-6 passages for doffer wire). A microscope has been used to evaluate the correctness of the activation:

grinding traces throughout the entire landing as far as the carding edge must be visible. 100 % of the tooth points must be activated.

##### Testing procedure

The 6ktex card sliver was tested on an Uster Tester 4 for evenness and on a Rothschild Tester for adhesion length measurement.

##### Conclusion

The results show very clearly that the sliver quality improves as a result of the activating of the doffer wire. The normal CVm shows that the short term variation is reduced by 10 %. The activating has got the bigger impact on the long-term variation of 1 m and 3 m, where the values improved by up to 30 %.

The adhesion length shows the same behaviour for both slivers, it is not influenced by the activating of doffer.



Fig. 4: ASG – Doffer resharpener device

	CVm %	CVm <sub>(1m)</sub> %	CVm <sub>(3m)</sub> %
L-4640-X1,0 90 kg/h			
Before activating	3.36	1.58	1.26
After activating	3.02	1.22	0.86
	< 10%	< 22%	< 30%

Table 3: Uster Tester values of sliver measurement before and after activating of doffer wire

## 4.2 Example Flat Grinding Roller

### Object

To reduce the tolerances of the flexible flat grinding rollers, equipped with different grinding fillets, were tested and subsequently the flats were analysed on the measuring beam.

The following example shows the importance of equalizing in general and the tolerances before and after equalizing with different grinding mediums.

### Measuring report

Grinding roller with standard type finish, i.e. DSW (see Figs. 5 and 6)

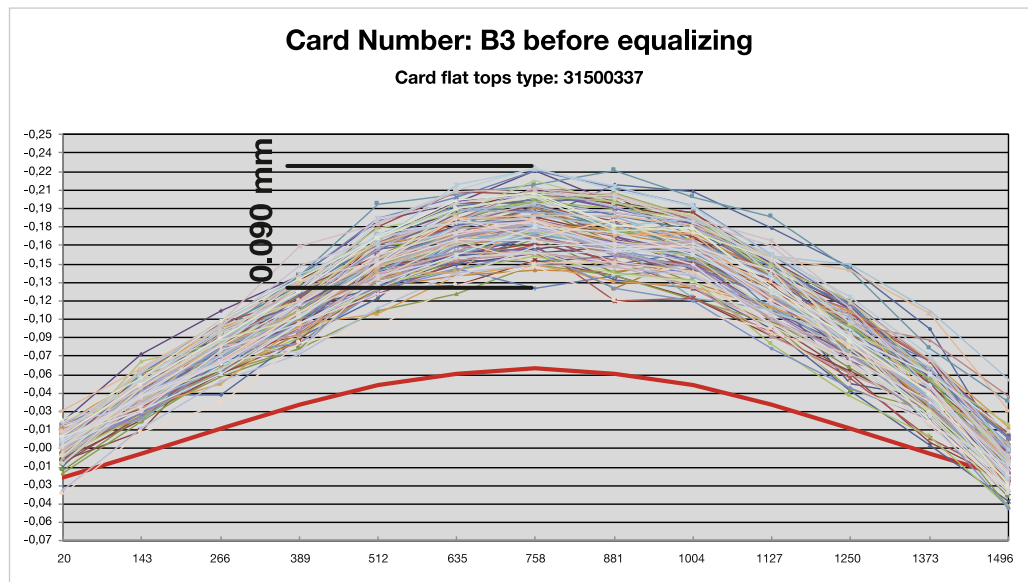


Fig. 5: Set1: Flat clothings before equalizing

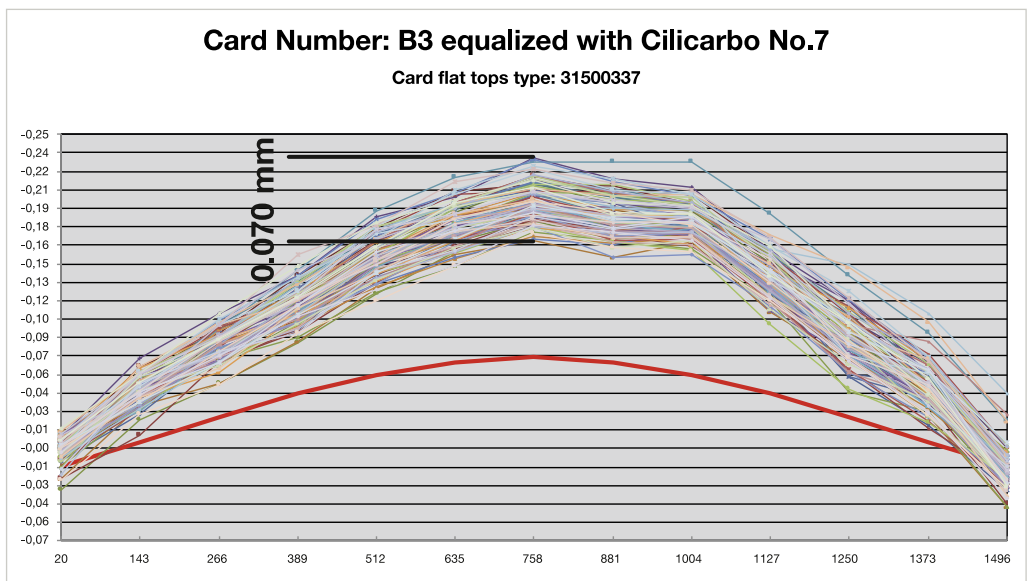


Fig. 6: Set1: equalized with standard type grinding cylinder DSW



Grinding roller with new type finish, i.e. DEW (see Figs. 7 and 8)

### Conclusion

The graphs show that with the DSW grinding roller, equipped with standard grinding fillet, the tolerances of the flat clothings could be reduced by 22 % and with the DEW grinding roller clothed with the new grinding medium

by 50 %. For precise machine settings, small tolerances are required. Especially between cylinder and flats, where the actual carding process is taking place.

If the equalizing process is performed correctly and the card settings are not adjusted, the yarn values are not influenced by the smaller tolerance band of the flat clothing.

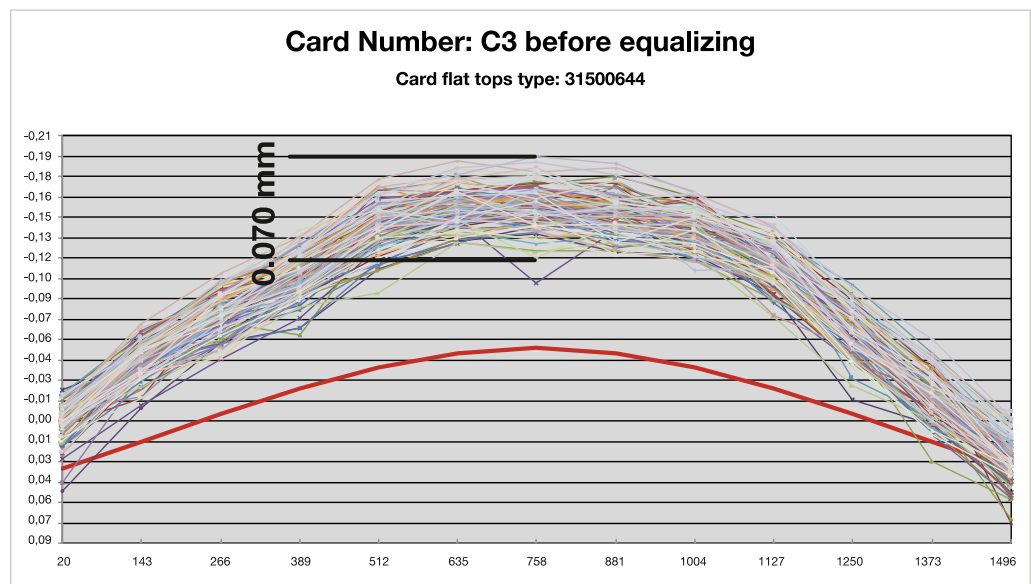


Fig. 7: Set2: Flat clothings before equalizing

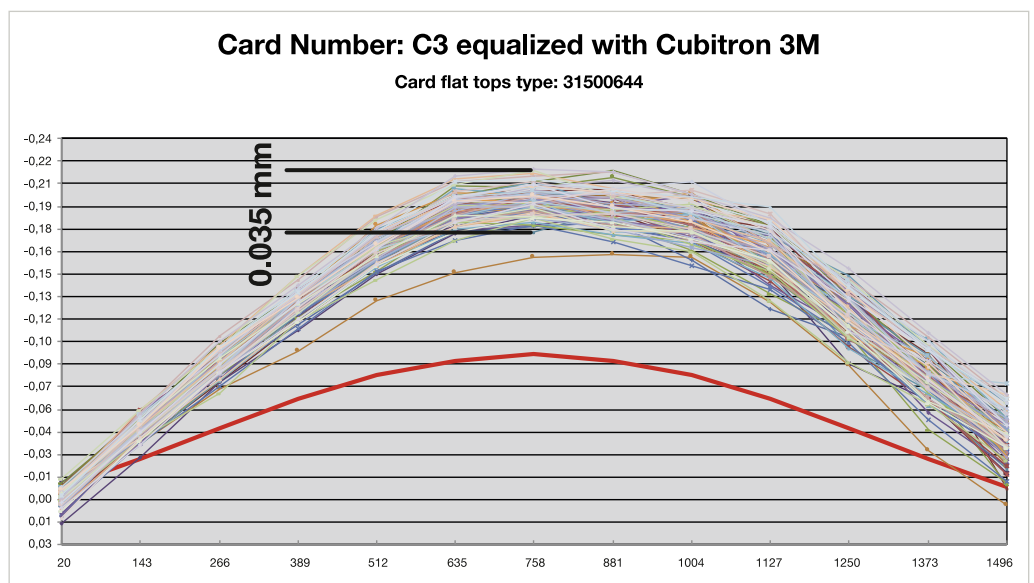
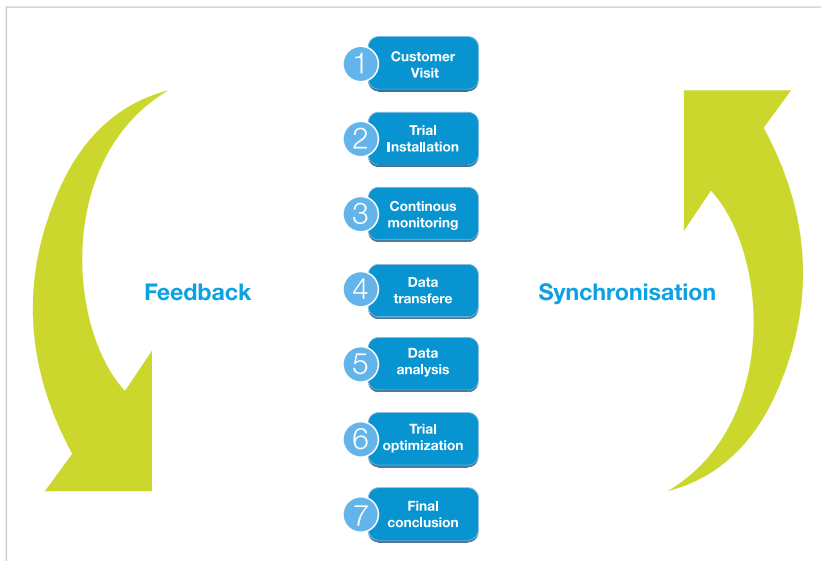


Fig. 8: Set2: Equalized with DEW, new type



- Definition of trial card and reference card. Both cards must be fed with raw material from the same line to make a proper comparison.
- Both cards must be re-clothed completely before the trial commences.
- Same Management of Card Clothing for both machines
- Definition of card settings, collection of samples, sample size, test frequency and quality data for fibre, sliver and yarn tests to establish conclusive quality data
- Pictures of the clothing must be taken and analysed on a defined basis.

### 5 Process of customer trials

1. During a customer visit the technical sales team is taking its advisory function and discusses upcoming needs and wishes with their customers. Based on their know-how and experience and in cooperation with their customers, the technologists will make suggestions for optimization or approach of an existing problem. The options range from modified use of existing components to redesign or even new developments. Application engineers and customers cooperate closely and focus on finding the best possible solution for a task.
2. After defining all parameters of a trial installation, the shipment will be initiated and the installation arranged. Important parameters are:
  3. The trial will be supervised by the technology department in Switzerland, the local sales representatives and the technical sales team (CH).
  4. Quality data will be transferred on a regular, defined basis according to test schedule.
  5. The results will be collected and analysed by the technology department in Switzerland.
  6. Based on the first results, corrective measures can be taken to reach optimum results.
  7. Once the trial is finished, conclusions will be drawn and presented in a final report. The findings will be distributed to all involved stakeholders.

Advantage customer	Advantage GRAF
<ul style="list-style-type: none"> <li>• try different components</li> <li>• process optimization</li> <li>• detailed analysis of carding process</li> <li>• improve yarn quality</li> <li>• increase lifetime</li> </ul>	<ul style="list-style-type: none"> <li>• gain experience</li> <li>• improve application know-how</li> <li>• create understanding and find solutions</li> </ul>

## 5.1 Example Wire Comparison

### Object:

In this trial, the standard cotton cylinder wire P-2040SX0,4-B8 is compared with the new P-1940SX0,4-B8 wire

### Raw material:

Turkish cotton, 29 mm, 4.4 MIC

### Installation:

The cylinder wires are installed on two C 60 Rieter Cards producing carded ring spun yarn Ne 22 in a spinning mill in Turkey.

### Card clothing:

Resist-O-top C-55/0 flat tops

### Procedure:

The trial card and the reference card were completely re-clothed at the same time. Both cards are in the same line, fed with the same raw material and having the same settings. Every 50 to 100 tonnes the card clothing will be evaluated and pictures will be taken. Spinning trials will be run and analysed on a regular basis.

**Analysis: See table 4 and figure 9.**

	CARD N°	date	machine type	cylinder wire	production kg/h	production to date	CVm%	Thin places -40%	Thick places +35%	Thick places +50%	Neps +140%	Neps +200%	Neps +280%	Hairiness H
REF	22 NL	03.04.2018	C60	P-2040SX0,4-B8R	50	500	13.6	64	748	121	643	186	54	6.36
TRIAL	21 NL	03.04.2018	C60	P-1940SX0,4-B8R	50	496	13.7	56	653	102	536	128	31	6.40

Table 4: Test results measured with Uster Tester 5

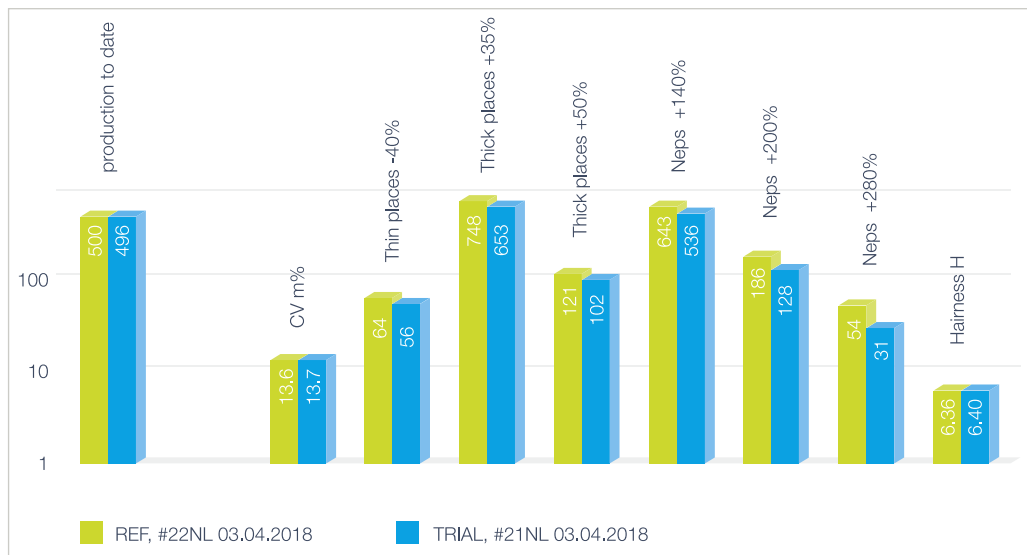


Fig. 9: Results from a spinning trial measured with an UT5-S800

### Next steps

Throughout the initial 500 tonnes of production the quality data of the yarn of the trial card has proved to be superior. Especially Thick places and Neps were reduced by between 13% to 30%. The trials will continue to be closely monitored up to the reclothing of the machines. Based on the results and the positive feedback of the customer, further trial installations with different applications will be organized.

The effort is worth it: trial analysis and conclusions, the close cooperation of the different stakeholders, the gained know-how and insights give the spinning mills the competitive advantage they need to strengthen and grow in the market.

## 6 Conclusion

Even with the knowledge that trials are costly and time-consuming, they must be treated as investment in the future of a mill and the manufacturer of card clothings. The mutual experience gained during a trial will serve as basis for upcoming decisions.

To run trials in a mill, the infrastructure must be available and staff must be instructed to prepare and run the trials correctly. Another important factor is the mind-set of the management and the people in the mill. They must be open to new ideas. Teamwork and the close cooperation of all involved parties is another inevitable variable for a successful test execution of trials.

GRAF can support their customers in performing a proper trial, allowing correct conclusions to be drawn. The customer-oriented support by GRAF is only possible due to the vertical integration of the production, where special requirements can be realized in a timely manner.

Trials give spinning mills the opportunity to get detailed information about their operation and to understand how the different parameters are correlating. With this knowledge a mill can act proactively and make sound decisions to reach strategic goals, rather than be always one step behind and react on demand, fighting fire after fire.



## BERKOL® spinning cots

### The secret of the impact by cots on yarn values and efficiency

The ring- and traveller system, touching the yarn as a last bottle neck before it is wound onto the cops, is the last key point in the spinning process. This is known to every expert and a very important fact.

But on the spinning machine, the last point where the single, parallel fibres are guided and warped before the winding process, is just as important. This point is responsible for the evenness and some very important yarn parameters. This point is the **spinning cot**.

### The stress factor

At the point of the cots the fibre material is stretched the most, especially on the spinning machine – independent of the type of

spinning process (ring spinning, compact spinning, Siro or Siro-compact, core yarn, slub or fancy yarns). This stress factor is putting the highest demands on the cot. This is made visible by the wear and tear, the building of grooves and the deformation of the cot in direction of the fibre path.

These damages are causing faults in the stretching of the fibres due to faulty and irregular transportation and insufficient clamping.

Result:

- bad yarn values (CV % and IPI),
- lower productivity due to a higher ends-down rate.

Additionally, the surface of the cot is hardening as time goes by. This occurs due to inadequate storing as well as during the normal spinning process. Conventional cots (NBR) are actually sulphur network systems. This built-in sulphur is building sulphur bridges, which are split by the aging process and are building new, additional nets. Additional nets automatically mean an increase in hardness.

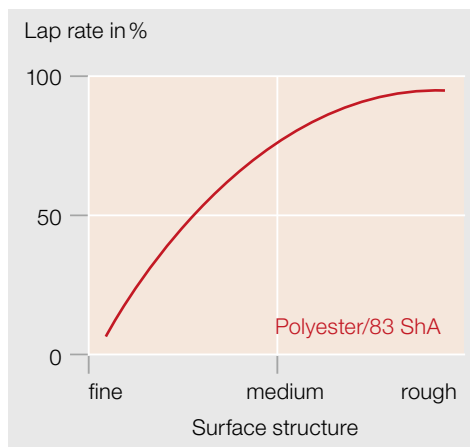
*Cots should only be ground as seldom as possible and as often as necessary.*

The quality of the cots and with it the yarn quality and the spinning performance can only be guaranteed, if over the entire life cycle of the cot, the cot is ground at the perfect point in time. The optimal surface of the cot after the grinding process, the required roughness  $R_a$  and, if necessary, an additional Berkolizing (UV treatment) will manifest themselves in a perfect spinning behaviour, minimal wrapping tendency, low end break-ages and a good yarn quality (CV % and IPI).

Under the brand name of BERKOL®, Bräcker is the only company worldwide offering both, high-end quality cots and grinding systems, which have been known for decades for the best service available.



BERKOL® supergrinder SGMLB, with Berkolizing Module



By regularly grinding the cots, before the negative influences manifest themselves, this process can be prevented:

- High and regular yarn quality
- Low end-breakages
- Minimal wrapping tendency
- Perfect running condition

In any case, it is important to only grind so much, as to completely remove the worn and deformed material and until even, fresh and non-hardened material is building the new surface, free of dust and of left-overs from the grinding process and, with the adequate roughness.

	Designation	Colour	Hardness shore A
	BERKOL 63	petrol	63
	BERKOL 65 S	brown	65
	BERKOL 65	red	66
	BERKOL 70	blue	70
	BERKOL 74	green	76
	BERKOL 83	olive	83
	BERKOL 75	black	80

### The right way to grind

It is therefore not sufficient to only remove the visible wear and tear. If non-visible, but deformed and hardened material would build the new ground layer, the quality of the cot would not be as required, yarn values and the running condition would deteriorate after a short time and thus the grinding cycle of the cots would be shortened accordingly and unnecessarily.

Anyway, a minimum of 0.25 mm should be ground off. By doing so, the grinding interval will be considerably extended and the appearance of cracks on the cot surface considerably reduced.

The very exact setting of the Bräcker grinding systems allows the setting for a minimal grinding step of 0.01 mm, a very high accuracy, a minimal roughness of up to  $R_a$  0.5 and a roundness better than 0.02 mm.

Technical information, grinding intervals, application of various cot qualities and more, can be found in the leaflets of our various grinding systems, on our website or in the Bräcker short staple manual.

Product qualities of BERKOL® Premium Cots



## BERKOL® multigrinder – Statements from the market



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Manifattura di Cene was established in 1978 and it belongs to the Pezzoli Group (spinning and dyeing companies). The company is located in Cene (Bergamo, Italy).

The spinning plant has a big variety of European machines and it works with conventional and compact system as well as Open-End rotors.

The main production of CENE is Denim cotton carded but in the last year they produced a lot of blends such as polyester, linen, modal, viscose and bamboo.

The daily production is around at 50,000 kg of yarn with counts ranging from Ne 1.8 to Ne 20 including Fancy, Slub, Corespun and Dualcore mainly for clothing and furnishing. They are proud of their production flexibility.

Mr. Pezzoli, the owner of the company, during our last interview has showed us the progress made over the past few years, from the first Open-End plant and then step-by-step until the current status of producer of various types of yarn.



Elena Baroni, Yarn Sales Manager of Manifattura di Cene



Dante Caldana, Production Manager of Manifattura di Cene

We had the opportunity to exchange views with their production manager Mr. Dante Caldana and their yarn sales manager Mrs. Elena Baroni regarding the grinding machine purchased last year on the occasion of their investment in updating the service machine equipment.

**Question:** Mr. Caldana, the new BERKOL® multigrinder MGLQ has been in operation for 10 months, what is your feeling?

**Mr. Caldana:** This new multi-purpose grinding machine has made our spinning plant more performing thanks to the excellent grinding quality of spinning top rollers and preparation cylinders, moreover the grinding machine is intuitive and easy to use.

**Question:** Mr. Caldana, why did you decide to buy a BERKOL® model?



Dario Percassi, Machine Operator

**Mr. Caldana:** We did several tests and at the end, our choice fell on the new version of grinding machine of BERKOL®, the multigrinder model, which represents for us an excellent mix in terms of grinding quality, production and practicality of use. BERKOL® has always been a precise machine, fast, with excellent design, so there was no doubt to confirm the purchase. Now we are satisfied of this machine because we can grind the entire range of short and long cots used in our spinning plant just with one single machine with a first class grinding result.

**Question:** Mrs. Baroni, professionally you switched from production to yarn sale. How do you judge the new BERKOL® equipment?

**Mrs. Baroni:** Sincerely with the multigrinder the quality of the yarn is always constant and under control thanks to the grinding quality. Moreover, together with the other BERKOL® machines like the press, the berkolizing and the lubrication unit, we are sure that the yarn is produced at the best since the beginning.

**Question:** Mr. Caldana, do you have seen some interesting progress on this grinding machine?

**Mr. Caldana:** Without considering the things already said about the technique and mechanics of the grinding machine, a point of great value and appreciated is the control system with 50 memories easy to fill and to recall like a smartphone, and a good news it is the dust extractor integrated into the machine.

**Question:** Mr. Caldana, would you recommend the multigrinder to other spinners?

**Mr. Caldana:** Certainly yes! In three words: the grinding machine is robust, reliable and easy to use.





## PT. Indah Jaya Textile Industry, Indonesia

Business expertise with visualization



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**I started my career with Indah Jaya in 2005 and currently I am the Technical Director of the company, handling projects and all technical parts of the mills.**

Indah Jaya has decided to focus more on quality to be one of the best yarn suppliers in the market. This objective has forced us to do the following:

- compact spinning system,
- appropriate raw material selection and management,
- control of moisture in the material,
- control of card variation,
- control of comber variation,
- no adjustments in finisher drawing and consistent yarn count CV%,
- optimized parameters in roving,
- very good ring frame working to minimize quality deviations,
- optimum clearer setting to eliminate faults which result in complaints

Overall consistency is very important. To achieve it and keep fine tuning the standard to a closer level is the key for good quality.

**Measure it, compare it with standard, correct the process and look for permanent solution.**

The technical team is committed to work with meaningful data and keep learning to prioritize their time to reduce deviations and implement good systems.

### Compact Spinning System

This is a great technology which helps a spinning mill to a great extent with higher flexibility. Without compact, it would be very difficult to produce a fine count yarn suitable for high speed weaving process because of higher yarn strength and elongation with minimum CV%. It helps to upgrade the cotton usage and to reduce the mixing cost when it is sold as non-compact yarn.

For end uses, where yarn strength is very critical, compact is a cheaper solution.

Working siro yarn without compact would be very difficult and compact siro yarn has the lowest hairiness and better yarn characteristics. Lower yarn hairiness with lower hairiness variation along with lower IPI is a great advantage of the compact system.

The compact system is a must for any spinning machine in the future. We can also clearly see its dominance in synthetic yarn processing.

Clarity on maintenance concept, component life and good ring frame working performance are the basic requirements to produce consistent high quality yarn. Technical skill and system to maintain start-up breaks by less than 1 % helps a lot to run a compact system with less deviations. Consistency in IPI and clearer cuts will confirm the good performance of compact spinning.

Never run compact ring frames with very high breaks or with very high pneumafil waste. This will make a big difference in the quality of compact yarn.

There are different measures available to increase fibre control in the main drafting zone through PINSpacer, special cradles, but one has to know that this leads to more yarn breaks. It is costly to improve basic yarn quality by increasing fibre control in the main drafting zone.

Below are the actual yarn imperfection data for carded and combed compact yarns.

The two tables (1 and 2) are actual data from the Uster reports from the regular production. We can still see that there is scope for improvement. One should always look for reducing the deviations which is very much possible if there is a focus.

This data is directly from Uster report and no rouge readings are removed to calcu-

				U%	THIN	THICK	NEPS	NEPS	
DATE	LOT	NE	U%	CVb	-50 %	+50 %	+200 %	+280 %	IPI
01.04.2018	LOT 1	10.70	1.50	1.2	84.9	499.0	92.4	20.9	178.5
02.04.2018	LOT 1	10.90	1.60	0.7	87.4	489.0	97.5	22.4	185.6
03.04.2018	LOT 1	10.60	1.70	1.70	76.70	426.00	80.10	17.20	158.5
04.04.2018	LOT 1	10.80	1.70	1.8	73.6	470.0	87.4	16.3	162.8
05.04.2018	LOT 1	10.70	1.80	0.9	79.6	472.0	85.3	18.5	165.8
06.04.2018	LOT 1	10.49	1.70	0.3	54.4	465.3	83.0	17.9	137.7
07.04.2018	LOT 1	10.80	1.50	0.6	96.1	487.0	85.8	18.9	182.5
08.04.2018	LOT 1	10.80	1.70	0.6	67.5	478.0	66.5	15.9	134.6
09.04.2018	LOT 1	10.80	1.10	1.1	81.2	489.0	81.6	19.3	163.9
10.04.2018	LOT 1	10.80	1.40	1.8	81.0	536.0	97.0	21.1	179.8
11.04.2018	LOT 1	10.50	1.90	0.6	73.0	459.0	94.4	21.8	168.0
12.04.2018	LOT 1	10.50	1.70	0.8	71.8	470.0	89.6	20.5	162.2
13.04.2018	LOT 1	10.90	1.60	1.5	80.0	536.0	78.0	23.5	159.5
14.04.2018	LOT 1	10.80	1.90	1.7	76.3	512.0	80.6	19.1	158.6
15.04.2018	LOT 1	10.60	1.60	1.1	68.2	450.0	82.4	17.5	151.7

Table 1: cotton carded Ne 26 for knitting

				U%	THIN	THICK	NEPS	NEPS	
DATE	LOT	NE	U%	CVb	-50 %	+50 %	+200 %	+280 %	IPI
10.02.2018	LOT 2	32.33	9.57	1.5	1	9	19	3	29
11.02.2018	LOT 2	32.24	9.22	1.5	0	7	17	3	24
12.02.2018	LOT 2	32.24	9.18	1.9	0	7	15	2	22
13.02.2018	LOT 2	32.24	9.39	1.3	0	8	19	4	27
14.02.2018	LOT 2	32.28	9.29	1.8	0	8	17	3	25
15.02.2018	LOT 2	32.25	9.44	2.5	1	9	19	3	29
16.02.2018	LOT 2	32.2	9.43	2.6	1	7	22	5	30
17.02.2018	LOT 2	32.25	9.27	1.7	0	7	17	3	24
18.02.2018	LOT 2	32.25	9.27	1.8	0	7	17	3	24
19.02.2018	LOT 2	32.22	9.56	1.6	1	11	22	5	34
20.02.2018	LOT 2	32.24	9.5	1.9	1	9	22	4	32
21.02.2018	LOT 2	32.25	9.56	1.8	1	10	22	4	33
22.02.2018	LOT 2	32.27	9.51	1.8	1	10	21	4	32

Table 2: cotton combed Ne 32 for knitting

late CVb or IPI. Major reasons for deviation in CVb are due to deviations in the main drafting zone in ring frames. There are lots with deviations higher than this. This is the biggest challenge for spinners to minimize these variations.

### Raw material management

Appropriate raw material selection according to the end use is very important. Bale management is very essential to maintain the yarn quality. For yarns, unlike other products, quality consistency helps to build the brand name. If you can supply 100 containers to the customer with the same quality, it will help the mills to become a market leader.

Since raw material contributes 60 to 70 % for yarn quality, it is all the more important to take all the care possible with raw material. Even though we mix a wide range of colour and micronaire, one has to make sure that the average and CV of these parameters in every day mixings are almost same. Variations within mixing, between mixing and between lots should be as low as possible to **build the brand**.

**This basic control along with the compact system helps to have a competitive advantage in the market.**

Table 3 shows the actual mixings given to the production. One mixing is done with 62 bales. Each mixing average and CV% for mic, +b and Rd is maintained within close range to eliminate Barre and quality deviations due to raw material.

### Control of moisture in the material

Moisture variation in cotton in process results in yarn quality variation. It would be impossible to do the perfect carding action if the cotton were wet or moisture content were more. Moisture variation also results in weight variation in slivers even though the number of fibres in the cross section is the same.

Higher moisture results in more thick places which leads to more long faults in the yarn. Higher thick places in draw frames directly increases the number of roving breaks. Very high moisture leads to poor ring frame performance because of high drafting resistance created by high moisture content.

**Since cotton is hygroscopic**, it is essential to maintain water content in grams per kg air in the department to minimize moisture variation in the material.

### Carding process control

Even if two new cards of the same type with the same wires are assessed for quality, it will be difficult to get the same carded yarn quality due to setting variations.

Mixing No.	mic Average	mic CV%	+b Average	+b CV%	Rd Average	Rd CV%
1	4.55	7.83	7.75	7.58	77.83	4.02
2	4.55	8.12	7.89	6.92	78.18	3.98
3	4.53	8.17	7.99	7.92	77.80	3.90
4	4.53	8.73	7.87	9.57	78.09	3.86
5	4.56	8.45	7.96	7.63	78.01	3.88
6	4.55	7.35	7.84	8.07	77.85	3.60
7	4.55	8.12	7.89	7.87	78.28	3.29
8	4.53	7.63	7.81	6.77	77.86	4.01
9	4.57	8.47	7.85	7.38	77.83	3.86
10	4.56	8.09	7.88	6.81	78.09	3.83
11	4.57	8.77	7.99	8.29	77.96	3.59
12	4.55	8.21	8.04	8.00	78.19	3.79
13	4.57	7.89	7.93	7.91	78.16	3.79
14	4.55	8.30	7.93	8.59	77.92	3.70
15	4.56	8.54	7.84	7.57	78.04	3.54
16	4.57	7.18	8.05	9.21	78.16	3.50
17	4.56	9.23	7.85	7.07	78.01	3.86
18	4.57	8.16	7.85	7.33	78.03	3.74
19	4.55	7.92	7.87	8.50	78.12	3.85
20	4.52	9.32	7.91	7.98	78.30	3.31
21	4.55	8.24	7.92	8.69	78.01	4.01
22	4.57	7.80	8.02	8.27	78.37	3.73
23	4.55	8.20	8.09	7.90	78.18	3.83

Table 3: daily mixing chart for a particular lot

Card wires do not wear out same in all cards and for different raw materials. Wire specification should be decided according to raw material and yarn count.

Carding parameters like cylinder speed and carding production in kgs per hour should be based on raw material and yarn count. It is not necessary to take out very high amounts of waste in cards to achieve yarn quality. Most of the cards in our mills work with 4 to 5 % card waste which helps to achieve 91 to 92 % carded yarn realization. Card parameters, wastes and settings should be optimized and should be controlled through good maintenance concepts.

One should make sure that at any points of time, if individual card IPI is tested with carded count, it should not vary so much. Following are the actual card wise IPI taken periodically for different lots. Improving quality consistency is an ongoing process.

From the tables (4 and 5) it is evident that it is not very difficult to maintain quality consistency in cards. Please also note that some

of the cards in the above trial were running with wire life of cylinder, flats and doffer with 1600 tons.

### Comber process control

Combing is a very sensitive process. Its objective is to upgrade the quality of cotton by removing neps, impurities and short fibres.

Clarity on maintenance schedules, component life, production system are very important to maintain consistency in combed yarn quality – U% variation between combers should be less than 0.2 %.

From the readings in table 6 it would be noticed that it is much more difficult to maintain comber wise IPI within minimum variation.

This is mainly because of variations in top comb loading, very thin film overlapping during piecing at detaching roller, web appearance etc. Deciding on noil % based on raw material and end use is very important to minimize mixing cost.

	LOT 3	LOT 4	LOT 5
	Count		
Card No.	26CDKX	26CDKX	26CDKX
CD 1	129	161	188
CD 2	164	159	179
CD 3	164	160	178
CD 4	164	168	176
CD 5	177	156	179
CD 6	180	141	143
CD 7	181	162	163
CD 8	172	135	16
CD 9	156	153	154
CD 10	183	165	166
CD 11	172	129	187
CD 12	166	154	155
CD 13	149	144	155
CD 14	154	208	155
CD 15	165	149	155
CD 16	189	159	155

Table 4: carded yarn IPI

	LOT 6	LOT 7	LOT 8	LOT 9	LOT 10
	Count				
Card No.	20CDKXNU	20CDKXNU	20CDKXNU	20CDKXNU	20CDKXNU
CD 24	77	106	102	85	97
CD 25	129	121	125	72	104
CD 26	128	81	97	78	124
CD 27	132	141	122	122	133
CD 28	88	118	125	101	120
CD 29	112	101	90	103	72
CD 30	95	135	89	108	94
CD 31	94	90	79	106	97
CD 32	87	84	80	94	110
CD 33	87	89	123	76	75
CD 34	104	80	79	74	83
CD 35	97	122	123		101

Table 5: carded yarn IPI

### Finisher draw frame process

Almost all the mills are equipped with autoleveller draw frames in finisher. Most of the autolevellers have the capacity to correct 25 % of feed variation. That means that if the feed hank is heavier than standard feed hank by 25 % or lighter than standard feed hank by 25 %, the autoleveller can deliver the same delivery hank with less than 1 % variation.

If this is true and most of the mills are equipped with cards which can deliver sliver with less hank variation which will be less than 5 %. If this is the case why there should be draw frame adjustments in the shifts? Something else is causing this difference which leads to frequent adjustments.

The basic assumption for autoleveller working in finisher draw frame is that material density is constant. Hence autoleveller

measures the volume and corrects the draft to maintain delivery weight. Anything that affects the density leads to adjustments. One has to work on reducing these density variations in the material to eliminate adjustments in finisher draw frame.

This helps to maintain average count between machines and between days within very close limits and also count CV is low and very consistent. This helps to improve the fabric appearance to a great extent. **Every adjustment in finisher increases count variations in the yarn** (see table 7).

Every day all draw frames are checked once in 2 hours for sliver Ne with 5 samples. The average wrapping of 60 readings per day are given in the table for each machine. Please note that no readings are removed in any of these calculations. CV% of draw frame wrappings is the CV of 360 individual readings.

Comber mc No.	LOT 11	LOT 12	LOT 13	LOT 14	LOT 15	LOT 16	LOT 17	LOT 18	LOT 19
	32 cm	32 cm	32 cm	32 cm	32 cm	32 cm	32 cm	32 cm	32 cm
1		33	51	37	40	24	43	35	37
2		33	46	34	38	28	36	28	33
3		29	48	45	33	27	41	57	41
4		53	37	36	43	28	50	38	39
5		29	28	33	26	26	35	34	28
6	34	26	26	41	37	33	37	34	25
7	26	28	30	42	32	42	39	31	38
8	36	27	28	46	29	23	24	41	25
9	36	43	29	36	27	27	40	32	37
10	36	32	35	37	26	29	26	43	26
11	39	38	35	24	24	36	34	30	35
12	43	27	33	27	36	34	44	48	25
13	34	32	40	24	24	37	38	37	36
14	58	59	43	33	48	36	52	33	29
15	40	34	45	36	41	42		58	37
16	31	29		stop	stop	stop	stop	stop	stop
17	45	36	38	27		34	34	40.2	31
18	35	38	40	33	39	68	69	28.1	44
19	40	38	41	37		43	46	40	31

Table 6: comber wise IPI 32 cm

**Draw frame wrapping average of 60 readings checked every two hours 5 samples**

Date	Machine Nos.						Daily
	16	24	20A	20B	22A	22B	AVG
06.03.2018	0.1165	0.1158	0.1161	0.1163	0.1160	0.1163	0.1162
07.03.2018	0.1163	0.1160	0.1163	0.1161	0.1161	0.1162	0.1162
08.03.2018	0.1159	0.1158	0.1160	0.1163	0.1160	0.1162	0.1160
09.03.2018	0.1158	0.1161	0.1160	0.1165	0.1162	0.1161	0.1161
10.03.2018	0.1158	0.1162	0.1159	0.1163	0.1161	0.1160	0.1161
11.03.2018	0.1158	0.1164	0.1161	0.1166	0.1164	0.1165	0.1163
12.03.2018	0.1155	0.1163	0.1163	0.1162	0.1163	0.1162	0.1161
13.03.2018	0.1158	0.1162	0.1163	0.1159	0.1164	0.1162	0.1162
14.03.2018	0.1162	0.1165	0.1163	0.1162	0.1162	0.1163	0.1163
15.03.2018	0.1161	0.1163	0.1165	0.1159	0.1158	0.1162	0.1161
16.03.2018	0.1156	0.1163	0.1162	0.1158	0.1156	0.1159	0.1159
17.03.2018	0.1159	0.1164	0.1162	0.1160	0.1159	0.1161	0.1161
18.03.2018	0.1159	0.1161	0.1156	0.1157	0.1156	0.1158	0.1158
19.03.2018	0.1158	0.1161	0.1159	0.1160	0.1159	0.1158	0.1159
20.03.2018	0.1157	0.1161	0.1158	0.1162	0.1159	0.1160	0.1159
21.03.2018	0.1157	0.1160	0.1158	0.1162	0.1156	0.1163	0.1159
22.03.2018	0.1158	0.1160	0.1161	0.1160	0.1158	0.1165	0.1161
23.03.2018	0.1162	0.1162	0.1157	0.1163	0.1161	0.1164	0.1162
24.03.2018	0.1157	0.1159	0.1161	0.1156	0.1156	0.1160	0.1158

CV% of day of all 360 readings
0.48 %
0.38 %
0.43 %
0.31 %
0.37 %
0.42 %
0.40 %
0.41 %
0.41 %
0.45 %
0.43 %
0.39 %
0.37 %
0.42 %
0.40 %
0.40 %
0.46 %
0.40 %
0.41 %

Total No. of adjustments in all mcs
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0

Table 7: Drawing wrapping, CV and adjustments

	LOT 20		LOT 20	
	Avg Count	Count CV%	Avg Count	Count CV%
08.03.2018	20.26	0.45 %	16.13	0.67 %
09.03.2018	20.12	0.81 %	16.13	0.84 %
10.03.2018	20.23	0.46 %	16.18	0.54 %
11.03.2018	20.18	0.71 %	16.21	0.40 %
12.03.2018	20.20	0.73 %	16.12	0.69 %
13.03.2018	20.12	0.83 %	16.12	0.65 %
14.03.2018	20.14	0.85 %	16.23	0.48 %
15.03.2018	20.19	0.79 %	16.12	0.72 %
16.03.2018	20.22	0.60 %	16.10	0.68 %
17.03.2018	20.15	0.66 %	16.20	0.40 %
18.03.2018	20.21	0.64 %		0.96 %
19.03.2018	20.15	0.88 %	16.15	0.81 %
20.03.2018	20.16	0.77 %	16.07	0.47 %
21.03.2018	20.12	0.75 %	16.10	0.99 %
22.03.2018	20.15	0.98 %	16.15	0.97 %
23.03.2018	20.15	0.74 %	16.16	0.46 %

Table 8: ring frame daily count and CV%

Ring frame counts are checked for each ring frame with 12 readings of 100 meters from all four drive sides and average and CV% are calculated for all the individual readings from all the ring frames running in that count.

**Roving process**

Roving stretch is never being checked in any of our mills. There is no need to check roving stretch if right TPI and tension parameters are selected. It is made sure that if there are 30 roving machines working in different mills with same roving hank that all these machines are working with same roving tension parameters for the same type of machines. There should be no difference in roving hank or ring frame Ne if it is checked from the first layer or the last layer of the roving machine.

Roving TM is decided by roving hank, fibre length and fibre fineness. There are a lot of misconceptions regarding this issue. This clarity is very important to decide the optimum roving TM so that there are no roving breaks and similarly there are no yarn breaks in ring frames due to undrafted ends.

### Compact ring frame process

To run compact ring frame with high quality, ring frame breaks should be in control and pneumafil waste should not be more than 1%. Ring frame TM should be decided based on raw material and end use in compact ring frame. Very high variation in RH and temperature inside ring frame department will lead to variation in ring frame working performance. Multiple breaks should be totally eliminated to produce high quality compact yarn. Very low start up breaks and immediate piecings of these breaks is very important to run compact ring frames.

Anything that affects compacting should be given more importance to minimize quality deviations caused by compacting.

Very low clearer cuts and alarms will confirm the good working of compact ring frames.

Chart 10 shows the total cuts of different machines in all shifts. Some of the readings were removed because of complete roving changes in the ring frame which increases the cuts in that shift. Some data are missing. The closer the clearer setting, the bigger the variation between shifts.

In general there is an opinion that B grade quality or clearer alarms will be high in case of compact yarn compared to non-compact yarn. Yes, it might be true if compacting related deviations are not taken care of and clearer settings and ring frame breaks are not maintained suitable for compact yarn spinning. But with proper control, B grade yarn percentage can be easily less than 0.15% even with very close clearer settings.

The amount of fluff created for the same breakage rate in compact yarn will be very much less compared to non-compact yarn for the same count.

DATE	LOT 21 32/1-CMKXNU-ZE		LOT 21 26/1-CDKXNU-ZE		LOT 21 30/1-CMSXNU-ZE	
	Avg Count	Count CV%	Avg Count	Count CV%	Avg Count	Count CV%
09.03.2018	32.41	0.56 %	26.31	0.58 %	30.16	0.53 %
10.03.2018	32.36	0.69 %	26.32	0.94 %	30.19	0.54 %
11.03.2018	32.28	0.62 %	26.29	0.52 %	30.18	0.58 %
12.03.2018	32.32	0.88 %	26.25	0.92 %	30.18	0.52 %
13.03.2018	32.24	0.74 %	26.21	1.02 %	30.17	0.52 %
14.03.2018	32.21	0.86 %	26.19	1.08 %	30.15	0.70 %
15.03.2018	32.22	0.70 %	26.25	0.91 %	30.22	0.57 %
16.03.2018	32.25	0.72 %	26.20	0.73 %	30.23	0.57 %
17.03.2018	32.25	0.60 %	26.19	0.64 %	30.18	0.50 %
18.03.2018	32.27	0.65 %	26.12	0.61 %	30.18	0.54 %
19.03.2018	32.25	0.83 %	26.20	0.88 %	30.20	0.66 %
20.03.2018	32.22	0.74 %	26.19	0.82 %	30.22	0.54 %
21.03.2018	32.26	0.82 %	26.15	0.85 %	30.20	0.67 %
22.03.2018	32.25	0.91 %	26.21	0.72 %	30.20	0.72 %
23.03.2018	32.24	0.64 %	26.24	0.94 %	30.19	0.49 %

Table 9: ring frame daily count and CV%

This helps to reduce the clearer cuts or yarn complaints due to fluff while processing coarser yarn counts. When you rewind the compact yarn, quality deterioration is almost nil whereas non-compact yarn rewinding will change the yarn structure which will result in complaints if it is mixed with regular yarn.

Compact yarn helps to remove the waxing for knitting yarn. This is a great advantage in maintaining the winding machine. Wax coatings in clearer and machine components poses a lot of difficulty to maintain the winding machine and yarn complaint related to waxing. Waxing variations will be eliminated 100%. Compact yarn helps to give better yarn quality with high winding speeds especially for finer yarn counts. Minimum 20% winding speed increase is possible with compact yarn.

Variation in IPI and hairiness increase by winding is much lower in compact yarn compared to non-compact yarn. This helps to improve fabric appearance with compact yarn.

### Summary

From the above details, I would like to inform that compact yarn is a superior yarn compared to non compact yarn. But when you make such superior yarn you have to focus on quality consistency right from raw material up to winding to make a better compact yarn and serve the industry.

Date	Machine No. and Quantum 3 Clearer								
	22			23			24		
	I	II	III	I	II	III	I	II	III
01.04.2018									
02.04.2018	46	51	50	35	61	57	51	61	52
03.04.2018		50	42	38	40	33			39
04.04.2018	51		44		71	37			35
05.04.2018	42	52	41	36	41		37	40	35
06.04.2018	65		50			38	30		47
07.04.2018	55	42	43	54	37	40	38	39	39
08.04.2018	40	43	40	37	39	40	38	40	41
09.04.2018	48	46	42	43	39	55	52	43	37
10.04.2018	46		52	38	51	38	60	36	33
11.04.2018	49	48	47	52	39	36	49	39	39
12.04.2018	53	59	39	32	38	34	40	41	37
14.04.2018	45	47	43	44	58	44	52		50
15.04.2018	45	40	43	46	47	40	58	51	45
16.04.2018	43	58	45	49	50		53	52	41
17.04.2018	51	55	46			43	47	46	40
18.04.2018	49	49	38	41	40	35	38	34	33
19.04.2018	38	38	38	36	35	36	37	34	39
20.04.2018	39	39	40	38	35	41	38	37	40
21.04.2018	45	44	56		73	42	65		44
22.04.2018	44	50	56		53	44	65	52	38
23.04.2018	51	52	57	61	42			40	41
24.04.2018	44	41	49	41	61	52	57	51	43

Date	Machine No. and LOEPFE Clearer (ZENITH)								
	35			36			37		
	I	II	III	I	II	III	I	II	III
01.04.2018									
02.04.2018	421	413	412	328	610	459	464	610	426
03.04.2018	449	418	323			358	543	610	454
04.04.2018	559	910	311	449	518	374	516	610	490
05.04.2018	362	399	311	374	610	374	479	518	490
06.04.2018	339		354	353		396	482		422
07.04.2018	397	294	377	344	453	384	356	484	537
08.04.2018	641	340	402	409	347	360		570	449
09.04.2018	437	460	471	425	424	461	507	537	517
10.04.2018	465	418	413	384	387	397	513	576	606
11.04.2018	442	487	451	388		393	398	422	377
12.04.2018			540	360		331	409	418	426
14.04.2018	445	672	362	357	581	354	474	470	
15.04.2018	335	544	356	353	372		521	520	470
16.04.2018			577	574	574	386	461	461	459
17.04.2018	460	460	387	400	411	399	504	572	453
18.04.2018	474	480	486	458	611	402	538	540	
19.04.2018	477	502	470	469	530	635	585	302	417
20.04.2018	649	632	499	386	342	342	341	448	526
21.04.2018	410	445	443	372	354	312	606	621	465
22.04.2018	471	409	484	580		359	477	777	486
23.04.2018	580	428			705	377	678	431	504
24.04.2018	499	413	380	369	399	366	447	418	468

Table 10: clearer cuts, 20 s carded for knitting – Lot 22 from Mill 1





R. Shandheep,  
Senior Sales Manager

## Pratibha Syntex Ltd., India

From Fibre to Fashion



LENA spindle cut

**Pratibha Syntex was established in 1997 as India's first integrated textile facility with a vision to be global leaders in sustainable products and practices – any task or activity that has positive impact on people plant and profit is sustainable.**

Pratibha Syntex has turned their vision into action with more than 10,000 people sharing a common belief, 100% conversion into sustainable material, 50% reduction of water foot print, 50% reduction of carbon foot print, 33% reduction in solid waste disposed and investing 5% of profit in people and communities to further the vision.



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Pratibha's journey started in 1997 with a 25,000 spindle spinning unit which grew to 40,000 spindles by 1999.

Simultaneously the Vasudha project was started engaging now 30,000 farmers over 130,000 acres to sustainably grow organic cotton.

The knitting unit was started in the year 2000, which produces single jersey, fleece rib, pique, and interlock in both open width and tubular fabric.

Expansion of the plant continued with setting up of the dyeing and garment unit, and the spinning unit got addition of Open-End spinning and Air-Jet spinning machines.

Pratibha is today a modern and highly efficient plant: Fibre-to-Fabric integrated unit producing 20,000 tonnes of yarn per year consisting of ring, compact, doubled, Melange, Open-End and Air-Jet varieties.

The knitting unit produces about 10,000 tonnes of knitted fabric per year with fabric processing using the most resource efficient and environmental considerate cold pad patch dyeing and finishing, rotary screen printing and embroidery.

The garmenting unit produces 60 million pieces per year which include inner wear, sleep wear, lounge wear, thermal, fashion and active wear.

#### Power Study taken before Changing the Spindles

SL No.		Date
1	Machine No. = 21	25/11/2016
2	Machine make	Toyota
3	Spindle wharve diameter	20.2 mm
4	No. of spindles	1008
5	Count	32 CH
6	T.P.I.	20.93
7	Ring diameter	38 mm
8	Tube length	210 mm
9	Max speed	17,900 rpm
10	Average speed	17,054 rpm
11	Doff length	3142 m
12	Net production per doff	58.874 kg
13	P waste weight	1.33 kg
14	Total weight in	60.204 kg
15	Full doff power	78.8
16	Unit per kg	1.309

	Saving Units per doff	Saving UKG	Power saving
<b>Existing</b>	78.8	1.309	%
<b>After</b>	70.9	1.179	
<b>Total</b>	7.9	0.12977121	10.13

#### Power Study taken after Changing the Lena Spindles

SL No.		Date
1	M/C No. = 21	28/11/2016
2	Machine make	Toyota
3	Spindle wharve diameter	17.5 mm
4	No. of spindles	1008
5	Count	32 CH
6	T.P.I.	20.93
7	Ring diameter	38 mm
8	Tube length	210 mm
9	Max. speed	17,900 rpm
10	Average speed	17,054 rpm
11	Doff length	3142 m
12	Net production per doff	58.53 kg
13	P waste weight	1.6 kg
14	Total weight	60.13 kg
15	Full doff power	70.9
16	Unit per kg	1.179

Pratibha top clients include C&A, Jockey, Hanes, Walmart, Mec, Patagonia, Prana, Zara, Max, Fuck, Levis, jack & jones, Zalando just to name a few.

Pratibha in their continuous effort in perusing their vision to be global leaders in sustainable products and practices pay great emphasis in environmental and employee wellness and development by empowering women through skill development and induction across the organisation:

- creating holistic farming communities,
- minimizing and reinstating process waste back in loop – LOOP,
- technology and process that contribute in reducing carbon and water foot print by 50% – Allure,
- zero discharge facility: 100% water recycled and reused back in facility,
- rain water harvesting,
- solar powered facility: 445 of purchased power are solar based.

Pratibha, a leader in all their initiatives, embrace new technology with enthusiasm and products which are in line with their vision to be global leaders in sustainable products and practices.

Pratibha had to change their spindles in their ring spinning and as textile industry waits and looks forward to ITMA – International Textile machinery Association Exhibition for launch of new products.

Pratibha technical personnel visited ITMA Milano in 2015 looking for development and new products in spindles.

Novibra Boskovice s.r.o. – after extensive field trial – introduced their energy saving spindles LENA (Low Energy Noise Absorbing Spindle) for ring spinning machines at ITMA Milano.

Mr. Kaushik (V.P.) placed order for three ring frames to ascertain for themselves the power saving they can get with Novibra LENA spindles.

The results were very positive as expected and Pratibha was able to get a power saving

of 10.3% as compared to their existing spindles.

In the words of Mr. Kaushik it was worth waiting for the change of spindles with LENA and company is able to save 10% power per kg of yarn produced as compared to earlier spindle on the ring frame.

The power study data (see tables) reinforces the finding of the mill.

As Pratibha was convinced with the LENA spindles trial and its power saving technology, they made a repeat order for nine more ring frames and plan to change all spindles in their spinning plant with Novibra LENA spindles in the near future.

Novibra s.r.o. Boskovice – Technology leader in spindle manufacturing – is proud to associate with Pratibha Syntex and be a partner in their success.

Achievements and awards have become a part of Pratibha Syntex progress and growth towards achieving their goal and vision and just to mention a few of them:

**Global Best Supplier Award 2017 from C&A**

For overall performance

**AEPC Silver Trophy 2016**

For Highest Global Export 2015-16 (above Rs. 100 CR upto Rs. 500 CR category)

**India Organic Award 2016**

Best Garmenting Award for Organic Garment Manufacturing Facility

**India Organic Award 2016**

Best Processor Award for Textile Processing Facility



Left: Mr. Sambhaji Pandhare

Right: Mr. Narendra Kaushik – Vice President



## Companhia Industrial Cataguases

Founded in 1936, Companhia Industrial Cataguases is one of the most advanced cotton and viscose industries in the world. Its products are offered in Brazil and more than 20 countries, especially those dictating the standards of world fashion. Cataguases manufactures 2.5 million meters of fabric per month. The Spinning Mill has 200 employees and 33,120 spindles to produce 300 tonnes of yarn/month.



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The experience Cataguases has gained over the years using Bräcker ORBIT rings and Bräcker ZIRKON travellers.

### A conversation with Marcos Aurélio, Industrial Director of Cataguases:

Companhia Industrial Cataguases has always emphasized the importance of industrial evolution in the manufacturing process. From the founding of the company to the present day, technology and the search for suppliers that enhance production of yarn is part of a preciousness and care that is perpetuated by years of history.

Within the scenario of constant sustainable evolution and technological changes, we have to mention the importance to have

partners that enhance our processes like Bräcker.

Relationship of Cataguases with Bräcker began in 2004 when the company went through a restructuring phase in the spinning subsidiary and acquired new machines with technologies that demanded high level business partners and suppliers.

In the constant pursuit of achieving excellence in fabrics, both performance levels and productivity, Cataguases started using Bräcker rings, recognized worldwide for their high quality and credibility within the textile industry.

Initially Cataguases purchased a trial quantity of ORBIT TITAN Ø 38 mm and 40 mm rings, running with SFB 2.8 RL dr SAPHIR travellers, achieving good results regarding yarn quality and spinning performance.

When Bräcker introduced travellers with the ZIRKON finish, the company made substantial gains in performance and cost, achieving higher speeds at the machines and turning down the number of yarn breaks.

Most important of all, the spinning mill reached the quality levels of the yarn market standards by Uster Statistics, especially yarn regularity and yarn hairiness.

The concern with quality is a major premise of Cataguases spinning unit, which produces around 300 tonnes/month with a total number of 33,120 spindles.



Companhia Industrial Cataguases Spinning Mill



Spinning unit of Companhia Industrial Cataguases – ZIRKON travellers as Strap package



Marcos Aurélio – Industrial Director



From left to right: Cleber Resende (Spinning Coordinator), Marcos Aurélio (Industrial Director) and Josias de Andrade (Maintenance Manager)

The investment to turn Bräcker ORBIT Rings and ZIRKON travellers into a standard at the spinning mill resulted in many gains, in addition to the productive excellence; Cataguases had a decrease of the maintenance costs by reducing the working hours to exchange the travellers based on the higher durability of ZIRKON finishing.

Therefore preventive maintenance started to follow the desired schedule, since the concomitant exchange of maintenance and production team resulted to almost no impact or loss of production. The exchanges of yarn counts and travellers were also equalized with maintenance or programmed stop of the spinning frames.

Another positive point is the time taken for the traveller insertion with the use of the Bräcker RAPID Tool that is infinitely shorter

than the insertion made with other tools. Every maintenance schedule had the collaboration of our maintenance manager, Josias de Andrade, who has contributed during all these years working with Bräcker travellers.

In the table below, it is possible to visualize a small comparison of gains obtained during the partnership with Bräcker.

Cataguases take great pleasure in expressing their satisfaction with the products they use from Bräcker. The spinning mill of Cataguases was a pioneer in the use of ORBIT Rings with Bräcker travellers in Brazil and the company relies on Bräcker to continue in this process of constant innovation.

Description	ORBIT TITAN Rings	
	SAPHIR Travellers	ZIRKON Travellers
Travellers	ISO 25 SFB 2,8 RL dr	ISO 25 SFB 2,8 RL dr
Working hours/traveller	300	1,200
Percentage gain with time of travellers exchange	–	300 %
Spinning mill RPM	19,000 to 20,000	19,000 to 20,000
Durability of ORBIT Rings	> 8 years	> 8 years
Upper limit of yarn breaks 1000 sp/hour	≤ 20	≤ 15
Gain of production estimated by less number of traveller exchanges	–	0.300 kg/day/ring frame
Conciliation of preventive maintenance and travellers exchange	0	80 %
Durability of the ORBIT TITAN Rings	> 50 %	> 50 %



Peter Stahlecker  
Managing Director

## PT. Indah Jaya: Success through intimate know-how and total dedication



Mr. Johnny Pesik



Mr. Thavasi Vijayakumar, Technical Director

I must have met Mr. Vijay for the first time around 2007. Obviously I tried to convince him of EliTe®Compact – but somehow did not succeed initially. Sometime in 2010, he relented and ordered one trial machine on LR60 – the rest is history as they say.

Today, I am happy and proud to report that over 250,000 EliTe®Spindles are running at Indah Jaya, Spinmill Indah and Apac Inti, the newest addition to the group.

The story of Indah Jaya is one of those success stories which are found only rarely; allow me to share a few mile stones.

It all started in 1962, when Mr. Eddy Pesik, the father of Johnny and Tony Pesik, founded a weaving mill for towels – and only 25 years later exports to Europe and to Japan were in full swing.

Today, the group is in the capable hands of the second generation: Mr. Tony, whom I never had the pleasure to meet, looks after financial matters, and Mr. Johnny looks after the business, so to speak.

Mr. Johnny is an absolute expert in weaving, they say he knows the process very well and knows every detail of the process to bring it up as the biggest terry towel manufacturer in Indonesia with their own brand TERRY PALMER. He worked on the shop floor of his father's weaving mill; Mr. Eddy knew that nothing beats hands-on experience. I only really met Mr. Johnny once – more about this memorable meeting later.

In 2002, they added spinning, using 30,000 spindles second hand machinery from Singapore. Only two years later they added a second unit of 36,000 spindles.

In 2005, Mr. Vijay joined Indah Jaya Group – and I am sure Mr. Johnny and Mr. Tony agree with my saying that this turned out to be a blessing for their spinning operations Indah Jaya, Spinmill and now Apac Inti.

They continued to expand and to modernize spinning. In the year 2008 the time of used machinery was definitely over, they added a complete Rieter plant with 10,080 spindles to produce coarse count denim yarns, all machines linked to winding machines.

In 2010, Spinmill was started, a very major project of 180,000 spindles on ring spinning machines. Most of these machines are equipped with SUESSEN EliTe®CompactSet.

Today, this is a state of the art spinning mill by anybody's standards:

- Indah Jaya around 70,000 spindles
- Spinmill around 180,000 spindles
- Apac Inti around 70,000 spindles
- Rotor spinning

All spinning in Indah Jaya and Spinmill are linked to winding and Apac Mill modernization program already started. They spin mostly coarse counts, Ne 6 to Ne 20, 60% carded and 40% combed. The combined production is a mind boggling 400 tons/day, to be increased to around 450 tons/day soon!

In 2017, when the owners of Indah Jaya decided to take a 70% share in Apac Inti, the running and upgrading of the mill was naturally entrusted to Mr. Vijay. He decided to convert 34,000 spindles LR6 and LR9 to EliTe®. As of this writing they are under erection.

As I said, I only really met Mr. Johnny once. Together with Mr. Vijaj and our agent AGANSA he came to our booth at some ITMA Asia or ShanghaiTex, it was in 2010.

He said, he wanted to buy EliTe®, I believe it was 10,000 spindles, and he wanted a price. I mentioned a price – and Mr. Vijay walked off to make a phone call. He came back and said something in Bahasa. Mr. Johnny nodded, shook my hand and simply said “Okay, Peter, we have a deal”. Mr. Vijay of course had called his connections in India, to ensure my price was correct.

It was of course, and Mr. Johnny took Mr. Vijay's word for it without further discussion. I never discussed prices or any other matters with Mr. Johnny again, Mr. Vijay was the contact. *Such is the trust between these two men!*

Naturally, installing 250,000 EliTe®Spindles over time cannot be trouble free. There were issues, to put it mildly. Unwaveringly Mr. Vijay helped to solve the issues, and I must say that I learned to admire his patience, his tremendous know-how, his novel ideas and his generosity.

Of course, every time I come to Indonesia a visit to Tangerang to meet Mr. Vijay is a must and a genuine pleasure – and every time I walk out of the meeting I have learned a few new and useful things!

Surely, everybody at SUESSEN is proud to be associated with such a successful group! For me personally I have learned a lot during this journey, mostly of course from Mr. Vijay.

I wish the Indah Jaya Group much success for many years to come – and I am convinced they will have it!



## Manufacturas KALTEX

The largest compact spinning mill in America and world-wide the largest denim manufacturer with EliTe® Compact Spinning technology



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Manufacturas Kaltex is a Mexican company with more than nine decades of experience to manufacture the best yarns and fabrics with the highest quality, being the largest of its kind in Latin America.

The production capacity of Manufacturas Kaltex is 126 million kilograms of yarns per year distributed to five spinning plants in the state of Hidalgo, and 200 million metres of fabric per year (piece-dyed and denim), in three weaving plants, two located in the state of Hidalgo and one in the state of Querétaro.

The main fibres that are processed for the manufacture of yarns and fabrics are: cotton, lyocell, polyester, nylon, acrylic, modal, viscose and blends in polyester/cotton, polyester/acrylic, polyester/viscose, cotton/nylon, etc.

For ring yarns, machines equipped with state-of-the-art technologies are used for the production of core-spun, slub and plain yarns.

For Open-End yarns, Open-End machines are equipped with Amsler slub yarn system and used for the production of fancy yarns, as well as plain yarns.

The spinning plant capacity allows Kaltex to produce about 365 tonnes per day of combed, carded, compact and conventional yarns, for knitting and for weaving, in the range of 5's to 50's. The whole range of production of the yarns is processed with North American cotton, but organic cotton is also used. The yarn is mainly for domestic use, a small part is sold in the market.



Plant manager and responsible for all Open-End machines in Kaltex



To maintain the cutting edge in quality of yarns and fabrics, Manufacturas Kaltex bet for an improvement in their spinning lines by modifying 120,250 spindles of ring spinning with the Suessen EliTe®Compact System. 46% of the EliTe® production is for yarns used in Denim fabrics and 54% for yarns used in piece-dyed and knitted fabrics.

With regard to Open-End yarns, a total of 12,000 rotor positions in two plants located in the state of Hidalgo were modified with the Suessen Quality SpinBox SQ.

Advantages of the EliTe®Compact System:

- In cotton yarns and blends, a considerable improvement in the irregularity and imperfections of the yarn was obtained.
- Yarn strength and elongation could be improved, and production speeds be raised.

Advantages of the SQ SpinBox:

- In the machines where SE8 boxes were replaced by SQ, productivity was increased owing to higher production speeds with the same quality of yarns.
- In the machines where SE9 boxes were replaced by SQ, production speeds were maintained, but with an improvement in quality. Less irregularity and imperfections, higher resistance and elongation and decrease of Classimat defects.



Responsible for the EliTe® ring spinning plant No. 4 (Denim)

This allows Kaltex to increase the quality of their yarns, increase productivity and make better use of the properties of cotton fibres.

Considering an annual production of 126 million kilograms of yarn in five plants, the change to EliTe®System in two of them represents 24% of the production, while the update in Open-End spinning with SQ boxes, represents 50% of spinning production. In total, approximately 74% of yarn production was upgraded with EliTe®Compact System and Quality SpinBox SQ from Suessen.

In the post-spinning processes, improvements between 15% and 17% in productivity and quality were obtained.

#### ITMA 2015

The first EliTe® tests were carried out for Kaltex in 2007, after several trials and discussions and having thoroughly tried a competing system before and for a long time. Finally, on 15<sup>th</sup> November 2015 at the ITMA 2015 in Milan, the CEO of Kaltex ordered the EliTe®Modernization of 120,250 ring spindles.

Together with the order of SQ Modernization for 43 Autocoro machines SE 8 and SE 9, this was indeed the biggest single order SUESSEN had ever received so far!

This investment makes Kaltex by far the largest compact spinner and Suessen customer of the Quality SpinBox SQ in Mexico and the American continent.

With this enormous investment the Kalach Family underlines the technological progress of their ring and Open-End spinning mills. Today, half of the EliTe®Spindles are used for the production of Denim yarns Ne 5 to Ne 30, the ring spinning machines are also equipped with a slub-yarn and core-yarn device.

Furthermore, some EliTe® machines are also equipped with the Pinter Duo Core technology.

In the third quarter of 2016, the first Zinser 350 and Zinser 319 were modernized with the EliTe®System; the last Zinser machine was commissioned by the Suessen technicians in June 2017.

The SQ modernization of the Open-End machines was carried out by Kaltex technicians. This underlines the quality and the level of knowledge of the Kaltex technicians, not only in the Open-End plants, but also in the ring spinning plants.

This case is a classical model of realizing association between strong enterprises, so that both sides can take advantage of each other's strength.

#### **Follow-up order with Kaltex**

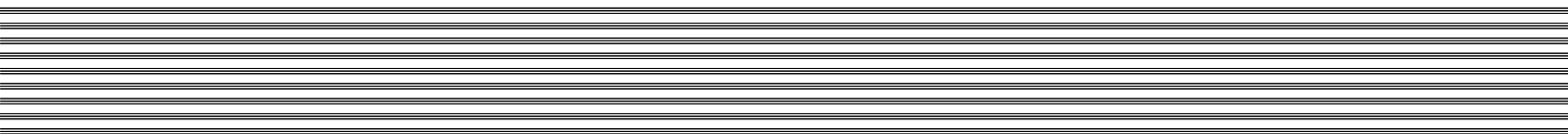
Suessen was successful in concluding a remarkable follow-up order with Kaltex for modernization of their ring spinning machines with EliTe®CompactSet in Planta 5. A first batch of five machines was already installed in September 2018.

The facts prove that the long-lasting co-operation between Kaltex and Suessen is successful.

We wish Kaltex continued success!



EliTe®Spinning Plant 1H





**Bräcker**

*Graf*

**Novibra**

**SSM**

**Suessen**