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HP-GX 4010
New Top Weighting Arm
Premium Parts – ProfiL® Navels
Solidring CR-Coating
Trash Channel for SE 9
MDTA 3 – Micro Dust Trash Analyser

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- Textufil, El Salvador
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# Impressum

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Front Cover: SUESSEN Top Weighting Arm Family HP-GX
– HP-GX 5010
– HP-GX 4010
– HP-GX 3010
Dear Reader,

ITMA 2007 is around the corner.

From September 13 to 20 it will be held in Munich, Germany.

ITMA exhibitions have always been like milestones in our industry; let us remind you of just a few highlights over the past 30 years:

- In 1975 the first fully automated OE spin tester was shown (by SUESSEN)
- The ITMA 1979 was all OE, a total of 13 manufacturers showed their products
- The ITMA 1983 was the “air jet spinning” show, with products from MURATA, TOYOTA, and HOWA.
- Compact Spinning was the dominant theme in 1999, with Rieter, SUESSEN, Zinser, CSM and others showing their respective versions of compact spinning.

We all hope that Munich will be a worthy successor of some of the real important ITMAs before.

In recent times, there has been a lot of competition for the ITMA as the ITME show in India, as well as the ITMA Asia, CITME and the ShanghaiTex in China are rapidly gaining in importance. We believe that this simply reflects the fact that the textile industry, our customers, is moving eastwards.

A trade show is always a bit of a social event: We all meet friends whom we only meet at those shows, but of course the main raison d’être is for our customers to get informed about new developments.

SUESSEN has continued its effort in research and development, and some of the novelties we will show in Munich will be discussed in this SPINNOVATION. We sincerely hope that after reading about them, you will be curious enough to come and see them in action in Hall A6, Booth 315/414.

As we said in the last SPINNOVATION No. 22, Compact Spinning is here to stay. In March 2007, we had the great pleasure to hand over the 2,000,000th EliTe® Compact Spindle to the Turkish customer MATESA, only nine months after we could celebrate the 1,500,000th EliTe® Compact Spindle. As of this writing, we have sold over 2,300,000 EliTe® Compact Spindles, making SUESSEN the number one supplier for compact spinning in the world. We are thankful to our customers, who made this happen, and we assure you that we will work hard to continue to earn your trust.

Nearly 10% of the EliTe® Compact Spindles sold are actually with EliTwist® Technology, showing the increasing importance of this technology. The main issue with EliTwist® is marketing, there are no unresolved technical matters. Those customers, who are successful in marketing EliTwist® – and that is the vast majority – are reporting paybacks of 6 months or even less.

In past issues of the SPINNOVATION, customers have shared with you their experience with EliTe®/EliTwist® and other SUESSEN products; and once again in this issue, we are proud to present successful SUESSEN customers.

We believe that featuring successful mills is one key topic in every SPINNOVATION, and we are very grateful to these customers. The spirit of sharing shown by these customers advances our industry, benefiting everybody.

Our strategic alliance with the giant Chinese textile machinery manufacturer Jingwei is developing very well. Jingwei has sold over 400,000 spindles equipped with EliTe® in China, and Jingwei and SUESSEN jointly received a very large order from an Indian customer recently. In our view, this proves that with goodwill and tolerance on both sides cultural differences are no obstacle for a successful cooperation, but rather an enhancement!

To our pleasant surprise, Open End has really picked up tremendously since the end of 2006.
SUESSEN is proud to be the exclusive supplier of OE SpinBoxes for the fully automated OE spinning machines of RIETER and of SAVIO. Sales are double of what they were in 2006, and there is no sign of slowing down. Consequently, our sales of Premium Parts (highest quality technology parts for OE spinning) have increased, too. We are investing heavily into research and development to remain at the leading edge of OE technology, where we have been for the past 30 years.

All our efforts only make sense, if they add value to your business. We, like all suppliers, are heavily dependent on your frank and open input. Only if we know your problems, we can try to find adequate solutions. In all development work, there is always the danger of trying to find the answer to a question, which nobody asked. Only your constant input can prevent this.

We hope to get a lot of your input, when you come to visit us in Munich. To the best of our recollection this will be the first ITMA in Munich (or München, how we call it in German). Munich arguably is the cultural capital of Germany, with many museums, with theater, opera house, Hofbräu House (this being the most famous beer drinking hall in the world) and Oktoberfest (the world-famous beer festival) to just name a few. May we suggest that you delay your return trip by a few days to enjoy our secret capital city.

We hope, you will enjoy this 23rd issue of our SPINNOVATION, and we hope to hear from you with comments and suggestions.

See you in München!

Erich Casanova, Managing Director
Peter Stahlecker, Managing Director

SUESSEN’s Vision

- Be the global Technology Component and Conversion Supplier to the yarn manufacturing industries in ring spinning and open-end rotor spinning
- Create added value for our customers through reliability, productivity and quality
- Ensure a sustainable and profitable growth
The EliTe® CompactSet V5 compact spinning system is designed to meet even the most challenging demands that high-end spinning mills make on a compact spinning system:

- Optimum and sustained yarn quality
- High consistency of all yarn parameters
- Minimal variation between spinning positions
- No restrictions in regard to raw material
- Easy handling
- Universal application
- Can be installed on almost all machine types
- Many optional features

SUESSEN is a pioneer in the compact spinning technology, a worldwide technological leader and a highly successful supplier of compact spinning systems.

Since the ITMA 1999 in Paris, SUESSEN has sold more than 2.3 million EliTe® Compact Spindles and is therefore the most successful company offering compact spinning systems, as well as technology leader of the market. Over 10% of these compact spindles have been successfully equipped with the EliTwist® Technology.

Initially, the system had been designed for SUESSEN’s own Fiomax ring spinning machines. However, soon afterwards the compact spinning system was provided without the spinning machine. This means that the customers are free to choose their favourite basic machine for the EliTe® Modernization. SUESSEN experts install the EliTe® Modernization Components on this machine.

As a result of the technological competence and vision of many mill owners, the new spinning system was received with great enthusiasm. Consequently, SUESSEN’s market leadership expanded significantly due to continuous improvement of the product.
The applications of compact yarns have also grown very rapidly over time.

EliTe® Yarns provide revolutionary advantages in all yarn parameters and have already set new quality standards. Furthermore, they have proven to be cost effective in terms of spinning and downstream processing.

This has ensured an unrivalled quality improvement not only in the yarn, but also particularly in the textile end product.

This development has been furthered through SUESSEN EliTwist®, which perfectly combines the fundamental principles of compact spinning and "Siro spinning". And in many respects, the EliTwist® Yarn spun on the ring spinning machine even outclasses two-ply yarn from the 2-for-1 twister.

Impressively, every seventh compact spindle supplied by SUESSEN is already using EliTwist® Technology. The wide application range covers anything from bed sheets to shirts to T-shirts (not to mention many other products).

What is compact spinning?

The purpose of a genuine compact spinning process is to arrange the fibres in a completely parallel and close position before twist is imparted. This is the most important criterion for perfect compact yarn. The eliminated spinning triangle is a by-product of this concept. This close and parallel arrangement of fibres immediately before twist is imparted is responsible for the characteristic advantages of compact yarn (see page 9.

Process of compacting

Compacting takes place in the compacting zone following the main drafting zone of the drafting system. The drafted fibre strand is compacted before twist is imparted, meaning fibres are arranged in close and parallel position to one another. And by using the EliTe® CompactSet, this effect is achieved thanks to an air flow produced by a vacuum and an inclined slot:

- Normal drafting is carried out by a conventional drafting system.
- When the open fibre strand leaves the clamping line of the main drafting zone, a lattice apron will guide it over an inclined slot that is under negative pressure.
- At the edge of this slot the compacting of the fibre strand will start, i.e. the absolutely close and parallel positioning of the fibres.
- The tension draft between the front top roller and the EliTe® Roller also supports the compacting effect.
- The fibres leaving the compacting zone are perfectly parallel and in close contact with one another.
- Twist is imparted to the round fibre strand without a spinning triangle; through being perfectly embedded, all fibres contribute to yarn strength; there will be hardly any fibres over 3 mm in length that stick out; no fibres are lost in the spinning triangle.
- Such crushed or reversed fibres as those passing through a condenser will not be found.
The Distinctive Characteristics of EliTe®CompactSet

- Can be applied to new machines by the OEM or retrofit to all types of ring spinning machines of renowned machine manufacturers
- Variants for spinning short-staple and long-staple fibres (worsted spinning)
- Designed for all types of fibres and blends
- Works with spinning single yarns, two-ply yarns and core yarns
- Optimised and universally applicable spinning accessories and components
- Retrofit possible to most different types of top weighting arms of well-known suppliers
- Optional equipment for vacuum monitoring and control

EliTe®CompactSet V5 is an upgraded version. The innovations – either individually or collectively – can be retrofitted to preceding versions.

The EliTe®CompactSet is the most flexible and versatile compact spinning system available on the market, and its upgraded version 5 (V5) will be shown at ITMA 2007 in Munich.

The basis is the EliTe®CompactSet V5 for spinning single EliTe®Yarns, which comprises four well harmonized structural groups:

- Encapsulated EliTop with front top roller, EliTe®Roller and weighting unit
- EliTube suction tube with lattice apron, insert, reversing rod, and connecting pieces
- EliVAC system for providing the vacuum with one drive motor, fan shaft, EliFan ventilators for 24 spinning positions each, hoses, hose connectors, and EliBelt drive belts
- Reinforced gearing adjusted for the basic machine type and length

The EliTe®Technology Components are installed by our highly experienced SUESSEN technicians.

EliTe®CompactSet V5 is provided in the versions EliTe®CompactSet-S for spinning short-staple fibres and EliTe®CompactSet-L for worsted spinning. All natural fibres, man-made fibres and blends thereof can be processed.

EliTe®CompactSet can be retrofitted to almost all types of ring spinning machines of renowned manufacturers.

To increase the operational reliability of a retrofit solution a reinforced gearing is installed, which is adjusted to the machine type and length.

EliTe®CompactSet-S is usually supplied with the new SUESSEN HP-GX 3010 Top Weighting Arm. In addition, it is possible to re-use the top weighting arms of renowned manufacturers already installed on the machines. The SUESSEN sales department will be happy to provide you with further information on this matter.

EliTe®CompactSet-L is supplied with the new SUESSEN HP-GX 5010 Top Weighting Arm. Machines with suction tubes for groups of spindles can optionally be equipped with single suction tubes.

The optional EliTwist® variant will enable you to produce compact two-ply yarn in a single operation on the ring spinning machine. By replacing a few individual EliTe®Components, the changeover from spinning single yarn to producing two-ply yarn can be easily and rapidly handled.

EliTe®CompactSet and EliTwist® CompactSet can be upgraded by the new SUESSEN core-yarn equipment COREflex for the production of EliCore® Yarns and/or EliCoreTwist® Yarns. Optional equipment for the EliTe®- CompactSet is the monitoring system EliVACControl V.2. Sensors monitor and control predetermined parameters for the fan speed and vacuum produced for the compacting process.

To optimise the energy balance, the machine can be equipped with the new EliVario system. In this version, the EliVAC system is driven by a frequency-controlled motor. The EliFan speed is infinitely variable on the
The new EliTube® Tube has been equipped with a larger insert that can very easily be ‘snapped in’. This will facilitate the correct positioning of the top rollers and increase the service life.

The optimised design of the T-slot (T = traverse) for combed yarns means that up to 50% more traverse in the yarn path is achievable without adversely affecting yarn quality. Consequently, the buffing intervals and the service life of the front top roller cots are considerably extended. (See separate article on page 36)

The newly developed lattice apron 5star® plus will guarantee a long service life, as well as low variation of the yarn parameters between the individual spinning positions.

The encapsulated EliTop with new pins to guide the intermediate gears is even more efficient.

The HP-GX 3010 Top Weighting Arm is now equipped with the new “Active Cradle”. Incorporating very close apron nips, this cradle provides optimum fibre guidance and improves yarn irregularity and the number of IPI yarn defects. (See article on page 34)

The new hoses for the EliVAC system are even more resistant against ambient conditions. Their internal surface offers optimised flow conditions. For easy identification, the metal coil has a red sleeve.

The housings of the EliFans have also been revised for optimum flow conditions. They are made of synthetic material.

The new yellow EliBelt (to drive the EliFans) has better anti-ageing properties and resistance against ambient conditions. Its service life will be increased by up to 25%.

A newly designed cross rail will facilitate the precise adjustment of the fan shaft after maintenance.

Spinning limits:

There are in fact no restrictions regarding the yarn counts that can be spun. Thanks to the improved embedding of the fibres in the fibre strand (utilisation of fibre substance) the number of fibres in the yarn cross-section can be reduced when reaching the limit of spinning stability, in contrast with conventional ring spinning. This means that with the same fibre quality a finer yarn count can be spun.
How do our customers use the compact spinning system?

There is a multitude of business strategies for using and exploiting the benefits of compact spinning systems, which all result in individual success. Basically, mill owners pursue the following strategies:

- Quality improvement
- Optimised utilisation of fibre substance (raw material)
- Production increase
- Substitution of products (carded instead of combed material)
- Cost saving in raw material

1. Quality improvement

Initially, this was the purpose of developing compact spinning systems. With unvarying raw material quality and production parameters of the ring spinning frame, they are capable of producing ring-spun yarns in a quality not known until now with respect to yarn hairiness, strength and irregularity.

2. Optimised utilisation of fibre substance (raw material)

As a result of the special processing method, the compact spinning system requires less fibres in the yarn cross-section (spinning limit). The same raw material is spun into finer (and therefore more expensive) yarns.

3. Production increase

Another variant of improved utilisation of fibre substance is production increase. On the one hand, the spindle speed may sometimes be raised, because as a result of the absolutely close and parallel fibre positioning and therefore optimised embedding of all fibres in the yarn the ends-down rate could be substantially reduced.

On the other hand, the twist coefficient can be reduced by about 10% compared with conventionally spun yarn, for the same reason.

4. Substitution of products

The improved yarn quality permits to use carded yarns in applications, which originally required combed yarns. Combed compact yarns substitute for two-ply yarns. EliTwist®Yarns replace 2-for-1 twisted yarns.

5. Cost saving in raw material

To produce a predetermined yarn quality with a compact spinning system, less expensive raw material can be used.

In industrial practice we find a combination of purposes which fits the corresponding business strategy best.

Customers will profit from the compact spinning system in the following applications:

Advantages for your yarn

- Tenacity increased by up to 25%
- Zweigle (S3) hairiness (fibres exceeding 3mm) reduced by up to 85%, Uster (H) hairiness reduced by up to 30%
- Elongation increased by 15% (CO) to 20% (WO)
- Work capacity increased by up to 50%
- Yarn irregularity often improved
- IPI imperfections frequently reduced significantly
Your advantages in spinning
- Optimum utilisation of fibre substance
- Substantially improved spinning stability
- Possibility of reducing yarn twist by up to 10% with corresponding production increase
- Ends-down rate reduced by up to 60%
- Fewer fibres/inexpensive raw material
- Fibre loss reduced up to 0.01%
- Fibre fly definitely reduced

Weaving
- Better weaving machine efficiency, resulting in increase in production of up to 15% (Example: Nm 50 in air-jet weaving machine: weft insertion with conventional ring-spun yarn 500-600 m/min, with EliTe®Yarn 700-800 m/min)
- 30% less ends-down in weft insertion
- Less fibre entanglement in the warp
- Less contamination/accumulation of fly on the machine
- Reduced combing in case of combed yarns
- Spinning of coarser wool
- Singeing is reduced or even superfluous; no valuable yarn is burnt (since yarn is generally sold by weight, finished yarn is burnt, not just a few fibres!)

Advantages in the textile article
- Increased strength in the fabric
- Less pilling tendency
- Improved lustre
- Clear print
- Better stitch definition
- Clearer weaving structure and more defined contours
- Better touch of fabric
- Possibility of developing completely new products

Sustainable advantages in downstream processes

Winding
- Increased efficiency, reduced contamination
- Higher winding speeds possible
- Fewer clearer cuts owing to fewer ends-down in spinning

Twisting
- EliTe®Yarn often replaces conventional two-ply yarn
- EliTwist®Yarns replace conventional two-ply yarn
- Two-ply yarn made of compact single yarns requiring up to 20% less twist

Knitting
- Increase in machine efficiency and production
- Less contamination, less maintenance, less idle periods
- Less waxing
- Single thread can substitute for double threads
- Reduced wear of needles

Finishing
- Reduced loss due to singeing
- Dye liquor absorption improved, less dye liquor required

EliTe®CompactSet is the most successful and versatile compacting system available to the market. Consequent innovation and advancement are aiming at ensuring the universal applicability of components and structural groups, improved yarn quality, extended service life, even less maintenance and maximum operational reliability in industrial application.

Nobody beats the flexibility and reliability of EliTe®CompactSet!
Evolution of the SUESSEN Top Weighting Arm Family – a Historical Review

Tobias Lang, Product Manager HP, SUESSEN

For more than five decades SUESSEN has codetermined the events in the top weighting arm market. During this long period of time, innumerable developments and innovations had a lasting effect and pushed evolution ahead. The secret of this long-term success lies within SUESSEN’s basic ambition to create and design products for versatile and flexible application.

So the birth of the well-known SUESSEN Top Weighting Arm Family originated in the year 1956 with the product launch of the UT3 Universal Top Weighting Arm for 3-roller drafting systems. The design was meant to meet the special requirements of the US market, in those days the undisputed market leader.

The development focused on the two priorities:

- To achieve the best possible technological yarn parameters
- Easy and fast conversion from 3-roller to 2-roller drafting system (UT2) by means of an efficient modular principle

With this design, top roller pressure was already applied using the now well-established spring plate principle. The possibility of setting an infinitely adjustable apron nip enabled this top weighting arm to process both natural fibres and man-made fibres.

Independent tests proved already then that the higher top roller pressure, which exceeded the competitors’ values, still maintaining the apron nip, resulted in improved yarn irregularity (Uster CV) and higher breaking strength of the yarn.

These consolidated findings were implemented in the first product upgrade in 1960 – both top weighting arm versions of the UT3 for ring spinning machines and roving frames allowed even higher pressures (up to 320 N and 450 N respectively).

Additionally, SUESSEN started to set the top weighting arms in the factory, so that a uniform and constant pressure and consequently a high consistency in yarn counts have been granted since then.

Launching the stability cradle in the same year set another milestone. This cradle principle without hold-down device improved the fibre guidance in respect of precision and process reliability and is still state-of-the-art today.

The evolution of the UT3-family had such a momentum that within a short period of time the market requested a variety of versions. Just to name a few:

- UT 200 for processing cotton and man-made fibres on ring spinning frames
- UTZ 300 e.g. for worsted spinning machines requiring highest possible pressures
- UT 500 for roving frames
In 1964, SUESSEN launched an even more advanced and sophisticated concept in top weighting arm design (for the time being for roving and ring spinning frames). The UT 600 was the first top weighting arm to provide pressure for each single top roller using one plate spring for each top roller. This UT 600 series, too, was continuously expanded further. Following the motto “identical working conditions on every single spinning position” different versions for various applications were developed, amongst others:

- UTM 600 e.g. for 4-roller roving frames
- UTS 600 e.g. for worsted spinning frames

In 1972, the UT family was upgraded by the UT 620 series. Its success is reflected by the numerous design versions: in the end, the UT 620 series counted roughly 250 types for almost any application possible worldwide.

In those days, SUESSEN manufactured up to 80,000 top weighting arms per month for either modernizing drafting systems or equipping new machinery. In 1979, when the last UT 620 version named UTA was presented at the ITMA, 3.4 million UT 620 top weighting arms had already left the works in SUESSEN.

Entering the business as spinning machine manufacturer in 1988, SUESSEN presented a completely new type of top weighting arm design to the market – the HP family.

The “High-Precision” principle produced yarn parameters unimaginable by then.

Based on the plate spring principle, the top weighting arms convinced by a multitude of technical developments significantly improving not only yarn quality, but also machine efficiency and top weighting arm handling:

- “High Precision” guidance of the top rollers in the top roller retainer
- Sustained and constant application of pressure by means of plate springs
- Easy pressure setting at the desired top weighting unit
- Changing top roller distance by moving the top weighting units in the top arm body
- Enhancing the field of application in respect of spindle gauges and staple length of processed fibres
- Perfect adaptation to any specific application possible!

Right from the start, the HP Top Weighting Arm family comprised three types for the different fields of applications:

- HP-A 310 and HP-A 320 for short-staple ring spinning machines
- HP-A 410 for roving frames
- HP-A 510 for worsted spinning
Consistently high yarn quality, high stability and long service life made the HP-A Top Weighting Arm a benchmark acknowledged worldwide.

The HP-A Top Weighting Arm was one of the decisive factors for the success of the worldwide leading EliTe® Compact Spinning System.

Since 2006, SUESSEN has convinced the customers with the latest HP Generation – the HP-GX 3010 Top Weighting Arm for short-staple ring spinning. Again, as a result of careful analysis and developments, SUESSEN relies on the proven and wear-free weighting-principle of the plate springs. All other solutions of pressure application by far do not grant the same reliability and uniformity of operation. Furthermore, the current costs are significantly higher.

The HP-GX implies the aforesaid beneficial characteristics and features of its predecessor model HP-A including further improvements and developments:

- Even higher precision due to redesigned spring retainer and minimized production tolerances
- Wider top roller retainer for safer guidance of the axle
- Ergonomic handle for better handling
- Further improved rust-protection
- Use of new cradle made of non-deformable polymer

The co-operation of the experts from both sides, our customers and our technical department, made it possible to put into practice many ideas and amendments adding up to the enormous progress.

The wide acceptance of the HP-GX 3010 together with the excellent yarn results achieved, encouraged us to now launch our advancements for roving machines and worsted spinning machines.

Starting with the ITMA 2007 in Munich, the successors to our established HP-A 410 and HP-A 510 top weighting arms will be presented to the public for the first time:

- **HP-GX 4010** for roving machines
- **HP-GX 5010** for worsted spinning machines

Now the HP-GX family is complete – for any industrial application in ring spinning SUESSEN offers the perfect HP-GX solution.

Satisfy your curiosity and see the new Top Weighting Arms in our Booth 315/414, Hall A6 during ITMA 2007!
HP-GX 4010 –
New Top Weighting Arm for Roving Frames

Tobias Lang, Product Manager HP, SUESSEN

For decades, SUESSEN has set the highest standards in regard to the design of top weighting arms equipped with plate springs.

Starting with the UT3 series in 1956 up to the well-known HP-A 410 model in 1988, the SUESSEN roving frame top weighting arms always stood out for their special characteristics, i.e. stability, reliability and last but not least enduring quality.

Until today, after decades of delivery, you can find UT top weighting arms in the production line of high-quality yarns. Consistency and endurance on a top level are two of the many reasons for the world-wide reputation of the HP top weighting arm family.

The lasting success is based on the continuous and market oriented development – the guiding principle that marks all SUESSEN products and reflects best the SUESSEN philosophy.

In the sense of this principle we present the new member of the HP-GX family, the HP-GX 4010 for roving frames.

Based on tremendous experience and in close co-operation with our customers, the SUESSEN R&D department designed the new Top Weighting Arm for roving frames, setting again benchmarks in respect of quality and technology.

HP-GX 4010 – 3 different versions

The HP-GX 4010 meets even the most challenging demands that high-end spinning mills make on a top weighting arm:

- Optimum roving quality
- High consistency of all quality parameters
- Sustained roving quality
- Minimal variations between spinning positions
- No restrictions in regard of raw material
- Free from wear
- Easiest operation
- Modular system
Compared to its predecessor, the HP-A 410, the new HP-GX 4010 shows up with improved features and additional possibilities:

- Fine tuned top arm body that, in a modular assembly system, can be used both for the 3 different versions of the 3-roller system and for the 4-roller system.
- In the 4-roller drafting system, the cradle unit can be installed at position 2 or 3. It is easy to change the position at any time according to the requirements without any additional components.
- Easy handling of the top rollers in the reworked top roller retainers
- Distance or load on all weighting units are set with the units being installed.
- The redesigned retention system prevents the cradles from falling out when the Top Weighting Arm is opened.
- The perfect guidance of the top arm body prevents the weighting units from assuming an inclined position.
- The minimal tolerances in manufacture guarantee minimal variation of the loads.
- The new handle has been developed by closely considering ergonomic aspects and optimised shape.

Cradles are available for short-staple, medium-staple and long-staple fibres. They are available for spindle gauges of 90, 100, 110, and 130 mm. In combination with top roller cot diameters of 28 mm, 31 mm or 35 mm the top weighting arm covers the whole field of application for a fibre length up to 65 mm.

The HP-GX 4010 Top Weighting Arm is available as modernization for any brand or type of roving frame. Customers buying new roving frames may specify these components directly with the machine maker.

All of the above mentioned factors will enable the customers to process their raw material under optimum conditions. By combining superior quality with lasting reliability, the HP-GX 4010 is the best top weighting arm on the market.
The ambition of any new development is to become an innovation. An Open-End spinning mill would define "innovation" as:

A beneficial advantage, meaning an investment to either save yarn manufacturing costs, and/or promote yarn sales, or at least maintain yarn sales at the current level.

The new generation of ProFiL® Navels allows:
- higher production without affecting the yarn quality, nor causing more end-breaks at the higher spinning speeds.
- or, on the other hand, reduction of ends-down rate and improved yarn quality at the original spinning speeds.

<table>
<thead>
<tr>
<th>Type</th>
<th>Fibre-Material</th>
<th>Application</th>
<th>Yarn Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>ProFiL®4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smooth surface 4 flutes</td>
<td>100% Viscose</td>
<td>Weaving/Knitting</td>
<td>Universal speed range, standard hairiness, improved yarn quality</td>
</tr>
<tr>
<td>Standard diameter</td>
<td>100% PES</td>
<td>Knitting</td>
<td>Normal speed range, standard hairiness, improved yarn quality</td>
</tr>
<tr>
<td>PES/Cotton blends</td>
<td></td>
<td>Knitting</td>
<td>Normal speed range, standard hairiness, improved yarn quality</td>
</tr>
<tr>
<td>ProFiL®6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smooth surface 6 flutes</td>
<td>100% Cotton</td>
<td>Knitting</td>
<td>High speed range, increased short hairiness, improved yarn quality</td>
</tr>
<tr>
<td>Small diameter</td>
<td>100% PES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PES/Cotton blends</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ProFiL®S</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smooth surface Spiral</td>
<td>100% Cotton</td>
<td>Weaving</td>
<td>High speed range, low hairiness, improved yarn quality</td>
</tr>
<tr>
<td>Small diameter</td>
<td>100% Viscose</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ProFiL®SM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smooth surface Spiral</td>
<td>100% Cotton</td>
<td>Weaving</td>
<td>High speed range, increased short hairiness, improved yarn quality</td>
</tr>
<tr>
<td>Soft knurled inlay</td>
<td>100% Viscose</td>
<td>Weaving</td>
<td>Normal speed range, increased short hairiness, improved yarn quality</td>
</tr>
<tr>
<td>Small diameter</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
These new ProFiL® Navels have been developed for exactly those fibre materials mainly processed in Open-End spinning:

- 100% Cotton
- 100% Polyester
- Polyester/Cotton blends
- Viscose

A general survey for the application of each navel is given in table 1.

**Technological and technical features**

What is the difference of the ProFiL® Navels compared to conventional navels?

Two aspects are responsible for the aforesaid advantages:

1. **Ceramic surface**

   The importance of the ceramic surface is unquestioned. For minimum fibre damage the ceramic surface must be very smooth and have no pores exceeding the fibre diameter.

   Today, modern ceramic composites fulfil this demand and naturally they are used for the new generation of ProFiL® Navels.

   The improved surface quality certainly minimizes the fibre damage, but has only a proportionally small impact in speed increase.
Indeed, the spinning tension, which depends on the rotor speed, causes end-breaks, if it exceeds the minimum yarn break force. The ProFiL® Navels lower the frictional force and thereby reduce the spinning tension, so that higher speeds are possible.

**Individual range of application**

Extensive field tests with the ProFiL® Navels have been evaluated and led to recommendations as guide lines for the fibre raw materials mainly processed and their applications. See Figs. 2, 3, and 4. Helpful hints for the graphs. The differentiation between “normal and high rpm-level” refers to the speed range of an individual rotor diameter.

The minimum and maximum speed range of an individual rotor diameter follows technological rules:

- A minimum rotor rpm is necessary to provide sufficient centrifugal force for a safe and homogeneous fibre slip into the rotor groove.
- The maximum rotor rpm also depends on the centrifugal force causing the spinning tension, which should not exceed the minimum yarn break force.

In general the rotor diameter is chosen in accordance with the yarn count, the fibre quality processed and the fibre mass.

The cleaner, the longer and the stronger the fibres of the processed yarn are, the higher are the speeds that can be achieved.

But still the level of spinning tension limits the maximum production speed of each individual fibre blend. The afore described characteristic of the ProFiL® Navels, i.e. reduction of spinning tension, enables the spinner to process the desired yarn at the high speed range of an individual rotor diameter. In some cases even a smaller rotor diameter can be chosen.

As an overall result the speed increase by the ProFiL® Navels is between 5% to 12%.
Cotton diagram Fig. 2
In knitwear applications the hand of a fabric is an important attribute. The hairiness level has a direct influence on this attribute. At the "normal" speed level, the previously introduced KS-M navel provides increased short hairiness (up to 2 mm) while the other navels increase the amount of longer hairs (longer than 3 mm). ProFil®-6 navels also increase the amount of short hairs (up to 2 mm).

In weaving applications long hairs disturb the downstream processes, while short hairs improve e.g. the efficiency of air jet looms.

The KS-M and the ProFil®-SM navels provide these required short hairs up to 2 mm.

PES and PES/Cotton diagram Fig. 3
In knitwear applications the ProFil® navels minimize the thermal damage to the PES fibres, due to the smooth surface. The resulting hairiness still provides a good hand of the knitwear.

In weaving applications the well-known MIMA navels are still unbeaten.

Viscose diagram Fig. 4
The speed range and application with the ProFil®-4 navel is universal. The ProFil®-4 performs with any Viscose fibre-type at a very low end-break level with good yarn quality parameters.

In weaving applications the displayed improvements in "yarn quality" are described in terms of better USTER CV% and less imperfections. In some rare cases a slight increase in end-breaks is observed – but this level is definitely lower than with any standard navel.

Summary
The ProFil® Navels enable the open end spinning mills to process their favourite raw materials at the highest possible production speeds. As an overall result, the speed increase provided by the ProFil® Navels is between 5% to 12% without negatively influencing the yarn quality, nor causing more end-breaks at the higher spinning speeds.
EliVario – More Flexibility When Producing Compact Yarn

Dr. Norbert Brunk, Head Technics & Engineering RS, SUESSEN

1. Introduction

There is a reason why the EliTe®CompactSet is regarded as the most flexible compacting spinning method available to the market. This is because it is characterised by a straightforward yet highly effective working principle, enabling all types of fibres and fibre lengths to be processed without any restriction. In addition, the system can be retrofitted to almost all ring spinning machine types of well-known manufacturers.

To date, over 2.3 million spindles across the globe have already been equipped with EliTe®CompactSet producing single compact yarns, compact two-ply yarns (EliTwist®), compact single core-yarns (EliCore®) and compact two-ply core yarns (EliCoreTwist®) from short- and long-staple fibres.

Fig. 1 Field of Application of EliTe®CompactSet-S

Fig. 1 displays the range of application for EliTe®CompactSet-S (short staple).

The properties of a ring yarn can be greatly influenced by compacting. The typical characteristics like compact, round cross-section, higher strength and hardly any long fibres sticking out are, however, also likely to have undesired effects in downstream processing or in the textile article. Consequently, as the maximum effects of compacting are now widely recognised, a trend can be observed in terms

Fig. 2 Inverter

Fig. 3 Special motor
of producing compact yarns that are not merely in accordance with the principle of being “as compact as possible.” Indeed, there is an increasing demand for the possibility of varying the compacting effect. This depends on the various requirements of the downstream process, the end product or just the more cost-effective spinning process. Applications have expanded beyond the mere spinning of long-staple cotton and have therefore supported this development.

This expansion has involved processing carded cotton, man-made fibres and blends, as well as using compact yarns both in weaving and knitting applications.

The optional product EliVario has been designed to meet this trend and we will proudly present this at ITMA 2007. This product will enable our customers to produce a compact yarn with great ease, according to any requirement, whilst simultaneously optimising their energy consumption.

2. What is EliVario?

The EliFans are driven by a special motor that is controlled by a frequency inverter via the drive shaft that reaches through the machine. Depending on the amount of space available, the frequency inverter is installed in the control cabinet of the basic machine or in a separate housing by way of exception (Fig. 2).

The special motor has been designed to ensure that it will always perform requiring the least amount of energy possible. And this is irrespective of whether the machines are long or short, or whether the fan speed is high or low. (Fig. 3)

When starting or stopping the machine, the frequency inverter controls acceleration and deceleration in line with predetermined parameters. When starting, it ensures that the vacuum at the suction slots is produced correspondingly early. In addition, it will enable the fan shaft to only stop when the spindles have come to a standstill after the machine has been stopped.

The fan speed that the user requires can be entered on an easily accessible display. Consequently, the vacuum is infinitely adjustable over a wide range of settings (Fig. 5).

The same display that applies for EliVario is also used for the optional EliVAControl system (see page 32).

3. Specific energy consumption in kWh per kg of Yarn

Fig. 6 shows the approximate quantity of yarn (measured in grams) that can be produced on an hourly basis for each spindle, depending on the yarn count. We have contrasted this with the annual power consumption of a spindle in kilowatt hours.

This trend is based on extensive tests in various spinning mills. It should be noted that the specific energy consumption is highly dependent on the
Determining such data is a rather complex process and is achieved by power meters during several doffings. And in this period of time, the yarn that has been produced is weighed. It should be emphasised that care must be taken to ensure that the marginal conditions of the spinning machine are maintained at a constant level during this measurement.

And it is only through this measuring method that one is able to realistically establish how much energy is consumed in producing a specific quantity of yarn. As such, it is suitable for comparisons and subsequent calculations.

4. Practical spinning trials with EliVario

The extent to which the share of EliTe® in the total energy costs of a ring spinning machine can be influenced and the effect this can have on yarn quality is displayed by the results of elaborate trials with EliVario in an Indian spinning mill. This customer prefers moderate spindle speeds, and high yarn quality and its lowest possible variation are the top priority.

Two yarn counts – Ne 30 and Ne 70 – were spun from long-staple cotton on a Rieter G5 machine. For each yarn count, the vacuum in the compacting zone was varied between 18 and 34 mbar.
Table 1 shows some additional important trial conditions.

As indicated in Fig. 7, the share of compacting in the specific energy costs predominantly rises with a decreasing delivery speed, i.e. finer yarn requires more energy for compacting. As a result, the vacuum has an increasing influence when finer yarns are spun.

If the energetic aspect only is taken as a basis, a potential energy saving of approximately 5% can be achieved for a Ne 30 yarn and a vacuum ranging between 18 and 34 mbar. For a Ne 70 yarn, the potential is already approximately 14%, following these trials.

Based on energy costs of 0.06 per kWh, table 2 displays the cost increase due to compacting.

So how much energy is really needed? To better understand this, the end-breaks were counted and yarn quality was tested for several doffings and all vacuum values applied.

The ends-down rate is not influenced by the vacuum.

Fig. 8 illustrates the influence on tenacity and USTER hairiness. In this respect as well, results are very clear – vacuum values exceeding 26 mbar do not further improve the quality of the yarns tested.

The influence of values below 26 mbar is not as considerable as is widely believed. Even with 18 mbar it is possible to spin compact yarns of sufficient quality to unquestionably meet the demands of many customers in the downstreaming process.

In this regard, it should be noted that lower vacuum values and therefore fan speeds have an effect on the service life of the fans, shaft bearings and drive belts. This should be taken into account as it helps to reduce the maintenance costs.

<table>
<thead>
<tr>
<th>Yarn count</th>
<th>Cost increase due to compacting with 18 bar</th>
<th>Cost increase due to compacting with 34 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ne 30</td>
<td>0.008 € / kg yarn</td>
<td>0.016 € / kg yarn</td>
</tr>
<tr>
<td>Ne 70</td>
<td>0.021 € / kg yarn</td>
<td>0.049 € / kg yarn</td>
</tr>
</tbody>
</table>
### Table 3 Conventional ring yarn vs. EliTe® with various vacuums

<table>
<thead>
<tr>
<th>Yarn type</th>
<th>Tested parameter</th>
<th>Conventional ring-spun yarn</th>
<th>10 mbar</th>
<th>15 mbar</th>
<th>20 mbar</th>
<th>25 mbar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ne 20, 100% CO</td>
<td>cN/tex</td>
<td>16.5</td>
<td>17.8</td>
<td>18.1</td>
<td>18.4</td>
<td>18.5</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>6.06</td>
<td>4.8</td>
<td>4.5</td>
<td>4.4</td>
<td>4.34</td>
</tr>
<tr>
<td></td>
<td>S3</td>
<td>3500</td>
<td>261</td>
<td>200</td>
<td>149</td>
<td>150</td>
</tr>
<tr>
<td>Ne 30, 100% combed CO</td>
<td>cN/tex</td>
<td>18.7</td>
<td>20.1</td>
<td>20.2</td>
<td>20.5</td>
<td>20.5</td>
</tr>
<tr>
<td>Medium staple</td>
<td>H</td>
<td>4.44</td>
<td>3.81</td>
<td>3.52</td>
<td>3.44</td>
<td>3.33</td>
</tr>
<tr>
<td></td>
<td>S3</td>
<td>2000</td>
<td>350</td>
<td>300</td>
<td>138</td>
<td>192</td>
</tr>
<tr>
<td>Ne 50, 100% combed CO</td>
<td>cN/tex</td>
<td>25.0</td>
<td>26.0</td>
<td>26.5</td>
<td>26.9</td>
<td>27.3</td>
</tr>
<tr>
<td>Long staple</td>
<td>H</td>
<td>3.61</td>
<td>2.85</td>
<td>2.66</td>
<td>2.50</td>
<td>2.35</td>
</tr>
<tr>
<td></td>
<td>S3</td>
<td>250</td>
<td>82</td>
<td>60</td>
<td>54</td>
<td>39</td>
</tr>
<tr>
<td>Ne 70, 100% combed CO</td>
<td>cN/tex</td>
<td>23.5</td>
<td>25.2</td>
<td>25.7</td>
<td>25.9</td>
<td>26.0</td>
</tr>
<tr>
<td>Long staple</td>
<td>H</td>
<td>3.00</td>
<td>2.35</td>
<td>2.27</td>
<td>2.20</td>
<td>2.15</td>
</tr>
<tr>
<td></td>
<td>S3</td>
<td>200</td>
<td>49</td>
<td>48</td>
<td>42</td>
<td>40</td>
</tr>
<tr>
<td>Ne 35, 50/50% PES/CO</td>
<td>cN/tex</td>
<td>21.0</td>
<td>21.6</td>
<td>21.9</td>
<td>22.2</td>
<td>22.3</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>4.02</td>
<td>3.46</td>
<td>3.40</td>
<td>3.32</td>
<td>3.23</td>
</tr>
<tr>
<td></td>
<td>S3</td>
<td>350</td>
<td>132</td>
<td>120</td>
<td>99</td>
<td>83</td>
</tr>
<tr>
<td>Ne 48, 100% PES</td>
<td>cN/tex</td>
<td>30.5</td>
<td>32.0</td>
<td>32.2</td>
<td>32.4</td>
<td>32.6</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>3.70</td>
<td>2.90</td>
<td>2.82</td>
<td>2.79</td>
<td>2.75</td>
</tr>
<tr>
<td></td>
<td>S3</td>
<td>400</td>
<td>72</td>
<td>70</td>
<td>66</td>
<td>76</td>
</tr>
<tr>
<td>Ne 60, 100% CV</td>
<td>cN/tex</td>
<td>31.0</td>
<td>32.0</td>
<td>32.0</td>
<td>32.7</td>
<td>33.0</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>3.3</td>
<td>2.85</td>
<td>2.85</td>
<td>2.70</td>
<td>2.72</td>
</tr>
<tr>
<td></td>
<td>S3</td>
<td>250</td>
<td>46</td>
<td>48</td>
<td>53</td>
<td>46</td>
</tr>
</tbody>
</table>

**5. Effects of the vacuum on different types of yarn**

Naturally, the trends described above cannot simply be applied to all fibre blends and yarn types. This is due to the fact that in many instances there will be divergence in terms of the optimum balance between yarn quality and energy consumption.

To confirm this statement, an extensive series of trials were undertaken in the SUESSEN R&D department using different types of raw material and yarn counts.
The range of vacuum tested was between 25 mbar and 10 mbar (an extremely low value).

The results (cN/tex, H and S3) are shown in table 3 and contrasted with the values of conventional ring yarn. And the findings can be summarised as follows:

- Even with a very low vacuum of 10 mbar, it is possible to achieve substantial improvements for all yarns compared with conventional reference yarn.

- On the whole, the maximum quality increase for cotton yarns in these trials is achieved with vacuums from about 20 to 25 mbar.

- When man-made fibres are spun into compact yarn, an increase in yarn strength is usually not the goal. Instead, the reduction of long-hairiness is the fundamental intention. Therefore, for this purpose, a very low vacuum is already sufficient.

In conclusion, these laboratory tests indicate that in achieving minor quality improvements one often has to accept a significantly higher energy consumption, and that the influence of the vacuum depends on the raw material processed.

6. Summary

Following the wide range of applications for compact yarns, the demands made on compact spinning methods have further differentiated.

The influence of additional energy costs for the ring spinning machine on the total yarn price is low for coarser EliTe® Yarns. In the case of yarns with a count of Ne 60 and finer, energy costs have become increasingly important.

Without question, the studies have proven that this factor can be influenced, as it is usually possible to achieve quite substantial quality advantages over conventional ring yarn, even with rather low vacuum values.

EliVario will enable the spinning mills to match the quality with the corresponding demands. And this can be done in a very simple way and without additional components, whilst simultaneously optimising the energy consumption for producing an EliTe® Yarn.
MDTA 3 – Microdust and Trash Analyser for the Cost Effective Selection and Combination of Raw Material

Anja Weinans, Product Manager QSS, SUESSEN

In today’s fierce competition it is more than ever important to be able to flexibly react on customers’ requirements with still keeping the costs down. Raw material is one of the most dominant factors in the costs of yarn production and in many cases the figure exceeds 50% of the total cost. Consequently, the selection of the fibre material and its material compositions are absolutely critical aspects regarding both, the quality and the profitability of the spinning mill. The most important consideration in selecting raw material is to be able to produce the required quality at lowest cost.

Due to the prevalent form of classing by colour and leaf grade, many farmers are cleaning the cotton to a high degree. Consequently the fibres get damaged, the short fibre content increases and the usually easily removable leaf and seed particles get smashed and are therefore hard to clean out. Besides the cleanability and the trash, dust and fibre fragment content, processing behaviour as well as the tendencies of stickiness are also important parameters, which influence the quality and the profitability. All these parameters can be determined by the MDTA 3.

Function

The MDTA 3 processes tufts as well as different slivers of 5-20 g and is able to separate the samples into fibres, trash, dust and fibre fragments. This is achieved by opening the fibres in a similar way to carding. Dust, trash and fibre fragments are separated and finally the fibres are formed into a homogeneous fibre ring of 1 m in length. For clear evaluation the different results are weighed and proportioned to the size of the sample. In order to achieve representative test results 3 passages with a total of 20 g are recommended.

Gravimetrical and visual assessment of dust, trash and fibre fragment content

48 different cotton samples have been tested regarding trash, dust and fibre fragment content. As Fig. 1 shows, trash, dust and fibre fragments are individual parameters, which do not correlate to each other. It is therefore not sufficient to just know one of them.

The fibre fragment content is an indicator for sensitive fibres or fibres overloaded from the ginning process. The knowledge of the dust and fibre frag
ment content also becomes important for processing the yarn on circular knitting machines with regard to defects in the knitted product.

The dust value is an important factor for the anticipation of potential problems in rotor and ring spinning mills as well. During yarn production the fine dust often increases the wear on machinery elements stressed by the yarn. On ring and rotor spinning frames a high dust content often leads to processing problems due to increased dust and fly deposits on the machine and on ring spinning frames, in particular even to augmented wear of the ring traveller.

The MDTA 3 not only determines the actual trash content, it also allows visual assessment to ascertain its precise contents. The clear advantage of the gravimetrical measurement of trash as compared to the optical measurement of the HVIs is that the actual trash content is measured, whereas the HVI simply provides information relating the number of trash points and the trash area on the surface of the test sample.

**Cleanability**

The cleanability of a raw material describes the degree of opening and cleaning that can be reached with a raw material. It can be determined by running several passages on the MDTA 3. If a relatively large amount of trash – compared to the total trash content – is extracted during the first passage on the MDTA 3, the cleanability of the fibres is good.

34 different cotton types have been tested regarding the trash content and the cleanability. Fig. 2 shows that there is no correlation between total trash content and cleanability. This proves that cleanability is a completely different fibre property, which is of major importance for the processing of fibres.

Very often those cotton bales, which seem to be relatively clean cause the greatest problems. The trash of these cotton bales often consists mostly of seed coat fragments, which can only be separated with difficulties or even
not at all. If high trash content in fibre material consists primarily of leaf particles, the raw material can be easily cleaned. Since fibre material with low trash content is usually more expensive than material with higher trash content, knowing the cleanability of the fibre material permits significant cost savings. The cleanability can only be measured by the MDTA 3, no other testing instrument is measuring this important parameter.

Process optimization

The MDTA 3 not only serves to evaluate raw material, it also supplies important parameters for process optimisation.

Fibre material reacts diversely on the processing in the opening and cleaning line. Since the MDTA 3 simulates the opening and cleaning line, the nep sensitivity of a material can be determined by running the material several times through the MDTA 3 and subsequently testing the sliver on a nep tester. Fig. 3 shows an example of the nep sensitivity of 5 different fibre materials.

The MDTA 3 can also be used to adjust the opening and cleaning equipment according to the trash and fibre fragment content. It also allows to improve the setting of the cards regarding the optimized cleaning of trash and dust without creating additional fibre fragments.

Furthermore it can be used to continuously observe the cleaning efficiency of an opening/cleaning equipment, cards or of an entire cleaning line.

Melanges

The production of colour matching blends is very time consuming and in certain circumstances also very expensive since it has to be done either on production machines with big raw material quantities or by hand. If individual blend components are presented to the MDTA 3, due to the opening up to single fibre, a melange, which will match the results of a production machine, is produced within just a few minutes. Thereby the MDTA 3 represents a substantial progress for the preparation of melanges because it simplifies and shortens the colour matching process and helps to notably reduce the costs for melanging and sampling.

Tendencies of stickiness

The MDTA 3 opens and cleans raw cotton similar to the processes in the blow room and card. After opening, the raw material is pressed against the rotor wall by centrifugal force to form a sliver. It was observed from time to time that it was difficult to remove the fibre ring from the rotor. Fibres and trash particles sticking to the rotor wall were the reason for this. Subsequent
tests proved that these were either honey dew drops or oily trash particles which are the main reasons for stickiness in cotton. Just like in the other general methods for determining stickiness, the sticking places have to be counted. Due to the black rotor surface the sticking places are clearly visible as Fig. 5 shows. The correlation to the H2SD-test is almost 100%. There is only a difference in absolute values, as Fig. 6 shows.

Simulation and optimization of raw material blends

If the sliver of the MDTA 3 is subsequently spun on the QuickSpin Unit or a production spinning machine, a simulation and optimization of the existing raw material blend regarding its costs is possible. First the existing mix is presented to the MDTA 3 and a yarn is spun. Then the ratio of the mix is changed, presented to the MDTA 3 and spun as well. Afterwards the yarn quality is compared. By repeating this process with several modified material mixtures, the minimum cost mix of a certain yarn quality can be determined. In one case a customer managed to achieve cost savings of 148,000 US-$ with even improved yarn quality.

In distributing the QuickSpin System, which consists of the MDTA 3 and the QuickSpin Unit, SUESSEN decided to enter into a sales cooperation with SDL Atlas. This is the world’s largest and most complete source of textile testing, quality control and laboratory equipment. For further information regarding SDL Atlas, please visit http://www.sdlatlas.com.

Summary

By testing a sample on the MDTA 3 the gravimetrical content of trash, dust and fibre fragments is determined.

The MDTA 3 is the only instrument to measure the cleanability, an important factor which allows cost savings in material purchasing. Furthermore, the cleaning efficiency of machinery can be determined.

In addition, the MDTA 3 notably shortens the colour matching process of melanges, which results in significant cost savings in melanging and sampling.

The MDTA 3 also gives you an indication about tendencies of stickiness.

Moreover, the MDTA 3 can be applied for the simulation and optimization of raw material blends.

The MDTA 3 is the only instrument, which can be flexibly used for raw material evaluation, optimization of blend, evaluation of cleaning machinery, production of melanges and determination of stickiness.

It therefore provides important additional information to the established measurements of HVI and AFIS, which are essential for the cost effective selection and combination of raw material as well as for the quality management.
CR-Coating for SOLIDRINGS

Michael Basting, Head Technics and Engineering OE, SUESSEN

Common knowledge?!

When processing cotton or viscose fibres on Open-End spinning machines, a N-Coated SOLIDRING provides a better yarn quality, better trash extraction and often less yarn-breaks than a DN-coated one!!

...but the N-coating does not really ensure a long service life, which neutralises the a.m. advantages after a few 1000 hours.

The demand: A market-oriented solution – the CR-Coating

There is demand for SOLIDRINGS, which achieve the highest yarn quality level and provide a long service life. The SUESSEN CR-Coating combines the quality advantages of the N-coated SOLIDRINGS and the wear protection of the DN-coated SOLIDRINGS.

The yarn quality improves with CR-coated SOLIDRINGS, depending on fibre material and yarn count (Fig. 1):

- up to 2% improved USTER CV%
- 20% to 40% less thin places
- 15% to 30% less thick places
- 20% to 40% less neps

![CR-SOLIDRING vs. DN-SOLIDRING Quality Advantages](image)
Technological – Technical aspects

Process-related requirements command a diamond layer, which is relatively thick, so it can only be applied to soft edged carriers, preventing the layer from cracking.

Diamond-coated SOLIDRING teeth are more rounded (Fig. 2-C) and therefore less aggressive in opening. On the other hand, the relatively thin nickel layer does not require an edging level like for DN-coating and consequently the N-coated SOLIDRINGS are sharper.

Sharper teeth naturally provide a more aggressive opening work, which improves the fibre separation and therefore the trash extraction.

The better the fibres are separated, the more parallelized they get into the rotor and the better they are embedded in the produced yarn.

USTER CV%, thin places, thick places and neps are reduced. Higher trash extraction helps to avoid rotor groove contamination. More homogeneous yarn is produced over a longer time.

In addition, the ends-down rate is reduced.

Fig. 2 illustrates sections out of opening roller teeth with the different degrees of edging.

CR-Coating

To meet the demands of the market, a new type of coating had to be developed ensuring sharp teeth. This coating had to be durable and have a thin layer.

The CR-Coating perfectly fulfills these requirements (Fig. 3), thus reaching the yarn-quality level of nickel-coated SOLIDRINGS and the durability of DN-coated SOLIDRINGS.
For two years now, EliVACControl (Monitoring System of the EliFans) has been available for optional installation in our EliTe®CompactSet modernization.

EliVACControl monitors the EliFans for correct speed and thus ensures a uniform vacuum over the whole length of the ring spinning machine.

A sensor (Fig. 2) spots every single EliFan individually – malfunctions are detected and indicated – so that the processing of non-compacted yarn is reliably prevented.

Among others, malfunctions of the EliFan can have the following reasons:

- Old or defective EliBelts
- Contaminated EliFan (for instance by fibre strands sucked into the suction slot of the EliTube)

With the EliVACControl V.2 upgrade version, handling will be even easier and more reliable.

Function

A sensor individually spots every single EliFan. The sensor scans the speed of the EliFan whorl, which represents the vacuum effective at the suction slots of the EliTubes. The data of four individual sensors are collected in one control unit (Fig. 1). The control units are located in the sections of the ring spinning machine.

The control units pass on the data to the central display (Fig. 3) located at the machine end, which is also able to handle the data of many other optional SUESSEN applications for EliTe® CompactSet like EliVario (see page 20) or the SUESSEN Core Yarn Device Coreflex (see next issue SPINNO-
VATION or see us at ITMA 2007). At the display a reference speed is entered as well as a first threshold value to initiate a warning message and a second threshold value for an error message.

Whenever the speed of an EliFan drops below the first threshold value for the warning message (10% below reference value recommended), the ID-number of the individual EliFan is indicated on the display and a red light-emitting diode (LED) lights up in the corresponding control unit in the spinning section.

As soon as the speed of an EliFan drops below the second threshold value for the error message (20% below reference value recommended), the ID-number of the individual EliFan is indicated on the display, the red LED lights up in the corresponding control unit in the spinning section, and an additionally installed warning light on the endstock of the ring spinning machine is activated. Alternatively, the customer is free to link up the error message with an automatic stop of the ring spinning machine to prevent the production of low-quality yarn.

With the ID-number given, the position of the EliFan in question is easily localized.

Benefits

- Uniform vacuum over the whole length of the ring spinning machine
- Acute malfunctions (e.g. torn Eli-Belt) are instantly detected and displayed.
- Creeping drop in pressure, caused by dirt, oil, ageing etc. at EliFan or EliBelt are detected in time and indicated.
- EliVAControl permits to apply a lower vacuum for compact spinning, because errors and malfunctions at the EliFan/EliBelt system are instantly detected and displayed. Setting a higher vacuum for the only reason of having some additional security in case of malfunctions can be avoided, thus prolonging the service life of EliFan, bearing and EliBelt.
- Costs savings due to less inspection work

Summary

Sensors checking the speed of the EliFans monitor the yarn compacting process. Deviations in speed from a set threshold value are instantly detected and displayed. EliVAControl ensures the processing of yarn identically compacted at each single spinning position, prolongs the service life of the components EliFan, EliFan bearing and EliBelt, and minimizes the inspection work.
The SUESSEN Active Cradle

Peter Blankenhorn, Head Technical Developments
Wilhelm Stahlecker GmbH, Germany

Purpose of the double-apron unit

The real requirement of a double-apron unit I could only grasp for the first time when I had the possibility of watching a lady working at a classical spinning wheel.

If the fibre material is drafted without any further preventive measure, the fibre strand widens and the resistance to drafting declines all at once, as a result of the decrease in interfibre friction.

This results in thick and thin places and in the worst case the fibre strand breaks. To avoid this worst-case scenario, the lady is rubbing the fibre strand back and forth between her fingers while drafting the fibre strand. This prevents the fibre strand from widening.

A rubbing movement on an industrial machine with many working positions cannot easily be put into practice. Engineers very early had to find other solutions to simulate this procedure. Already in the early 19th century, two leather aprons controlled the main draft. Although today synthetic aprons generally substitute for the leather aprons, the system and assembly have survived.

Influencing the drafting conditions

By means of the distance between top apron and bottom apron the pressure applied to the fibres can be manipulated. Usually this distance is created by a distance piece, the so-called cradle spacer. To realize the uniform and steady drafting process, the highest possible pressure onto the fibres has to be applied.
By choosing a small cradle spacer you can process a very even yarn.

However, reducing the distance between the aprons, yarn hairiness will rise and yarn strength will decline.

Furthermore, the double-apron unit must not clamp the fibres too strongly, as the pair of delivery rollers might not succeed in pulling the fibres smoothly and uniformly out of the unit.

Drafting defects and ends-down are the consequence. Here are the limits for using very small cradle spacers. Depending on the yarn characteristics desired and the textile article, it might be favourable to choose a higher cradle spacer.

Restrictions of the system

When using higher cradle spacers, the influence of dimensional tolerances of the top aprons is of minor importance. If, however, the distance at the mouth of the apron pair is reduced to only a few tenth of a millimetre, the variation in thickness of the aprons or the stiffness of the aprons may lead to erratic fluctuations in the drafting process. This results in yarn defects.

This is of extraordinary importance when using drafting systems with stepped nose bars. Due to the special geometry of the profile of the bar, the resulting pressing force between the aprons is much higher compared with flat nose bars or uniformly curved nose bars.

The SUESSEN Active Cradle

In the SUESSEN Active Cradle the top aprons are tensioned by a spring-loaded leading edge. If the apron tension varies when using low cradle spacers as a result of variations in the top apron stiffness, this effect is compensated by the flexible leading edge, thus preventing almost any negative influence on the drafting process.

The spring-loaded leading edge has the additional advantage that top aprons can be replaced without removing the unit from the top weighting arm or dismantling the unit itself.

Field tests and comparisons

Field tests on a broad basis confirmed all our careful considerations being the basis of this development. The new cradle type is particularly effective in combination with low cradle spacers or in drafting arrangements applying stepped nose bars.

The SUESSEN Active Cradle will be presented on our ring spinning machine exhibited at ITMA 2007 in Munich.
One of the core components in EliTe® Compact Spinning is the EliTube, which is responsible for applying the consistent vacuum needed for the reliable compacting of the fibre strand spun into compact yarn.

The combination and arrangement of the individual components are decisive factors in relation to the quality of the compact yarn produced. Furthermore, they are critical as regards the operational reliability of the entire spinning system. Be it airflow, suction slot, lattice apron, insert or surface roughness – any advancement applied in this respect is subjected to extensive and careful tests. Consequently, only those improvements with a positive influence on yarn quality and operational reliability are incorporated in the product update.

The 5star® Tube comprises the following advancements and improvements compared to the previous EliTube:

- New surface finish
- New slot-type for combed yarns
- New insert
- Refined lateral covers
- Web position of guide rod

**New surface finish**

Many years of R&D resulted in this hardwearing and specially defined surface.

The new finish reduces friction between tube and lattice apron by 10% and will extend the service life of the lattice apron. The new finish further reduces the accumulation of fluff and fly on tube and lattice apron.

**New slot design (T-Slot) for combed yarns**

The optimized design of the T-Slot for combed yarns Ne 20 and finer permits up to 50% more traverse in the yarn path without influencing yarn quality, thus considerably extending the buffing intervals of the front top rollers cots.

**New Insert**

Instead of fixing the insert with plastic plugs, it is now simply snapped in. A user-friendly tool enables the user to easily remove the worn insert. With the simple press of a finger the new insert is fastened.
The supporting surface of the insert has been modified, so the precise positioning of EliTop and EliTe® Roller is easier. The new geometry of the insert prolongs the service life.

**Web position of guide rod**

The position of the webs on the guide rod has been optimized. This modification helps to safely avoid the accumulation of fly under the lattice apron.

**Refined lateral covers**

The fit of the lateral covers, which are made of plastic with lamellar structure, has been improved. This avoids air leaks and optimizes the air balance.

**Replacement**

The new 5star® Tube can be used in all previous versions of the SUESSEN EliTe® Compact Spinning System. The 5star® Tube may be used only in combination with any type of 5star® Apron.

**Matching the slot types available with the appropriate application**

The new 5star® Tube comes with 4 different slot types:

- G-Slot: straight inclined; former standard, now only for worsted spinning
- D-Slot: with Delta at the top for carded counts coarser than Ne 20
- T-Slot: straight inclined curved to the right at the top for combed counts finer Ne 20
- E-Slot: V-shaped for EliTwist® (gap with different angles for short-staple and worsted spinning)

Core yarns can be spun with all slot types – for the highest possible performance we recommend the G-Slot.

This new 5star® Tube can be applied to all previous versions of the SUESSEN EliTe® Compact Spinning System.

The 5star® Tube was tested both extensively and carefully. It is able to considerably improve the uniformity of yarn quality produced on all spinning positions and increases the operational reliability. Furthermore, it reduces maintenance costs.

SUESSEN recommends to use the 5star® Tube exclusively in combination with the lattice apron types 5star® Apron or 5star® plus.

<table>
<thead>
<tr>
<th>Suction Slot</th>
<th>Description</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>G-Slot</td>
<td>Straight inclined</td>
<td>Worsted spinning</td>
</tr>
<tr>
<td>D-Slot</td>
<td>With Delta at the top</td>
<td>Carded counts coarser than Ne 20</td>
</tr>
<tr>
<td>T-Slot</td>
<td>Straight inclined, curved to the right at the top</td>
<td>Combed counts finer than Ne 20</td>
</tr>
<tr>
<td>E-Slot</td>
<td>V-shaped</td>
<td>EliTwist®</td>
</tr>
</tbody>
</table>
Modernization, meaning upgrading an existing SE 9 machine of 12 years of age and older?

What would be reasonable circumstance to look into such a project? – the first thought of most spinning mill managements!

The answer: benefit, meaning cost-savings in the first place.

Your Problem?

The standard trash removal system of ACO 240 and ACO 288 is not sufficient.

Due to the narrow dimensions of the standard trash channel, the trash already extracted gets into air turbulences, re-enters and contaminates the spinning units causing additional yarn-clearer cuts and yarn breaks. Furthermore, the basically parallel walls of the standard trash channel support the formation of the so-called "lint-rolls", which worsen the a.m. contamination of the spinning units.

Yarn-clearer cuts and end-breaks have a direct and negative effect on the machine efficiency, thus they cost money.

Our Solution!

The Premium Parts Trash Channel modernization has an increased depth – known from the SUESSEN Sweep-Cat system – ensuring a safe removal of the extracted trash out of the range of air turbulences.

The bend of the back wall prevents the formation of any lint-rolls, thus the contamination of the spinning units is reduced, resulting in:

- up to 25% less yarn-clearer cuts
- up to 50% less end-breaks
- up to 4% increase in machine efficiency

Pay-Back

Considering these results the return on investment is within one year for most applications. Interviews with many mill managers confirmed that a pay-back period within one year is their goal and the only reasonable justification of any investment in older machinery.
Technical features

Indeed, the only component to be replaced is the trash channel. The complete drive system of the trash conveyor belts is reused as well as the conveyor belts themselves.

Thus maintenance, settings and spare parts of the trash removal system remain the same. This is very convenient for your spare parts stock and the maintenance personnel.
The Spirit of Vision – Textufil S.A. de C.V., El Salvador

Antonio Durante, Area Sales Director Latin America, SUESSEN

Textufil is a fully integrated, flexible industrial enterprise, continuously evolving technological and operational resources. It is a significant example of vitality, tenacity and entrepreneurial intelligence aimed at overall quality and customer service. Founded in 1972, it is a family business currently run by its President Mr. Jorge Elias Bahaia and his two sons Elias Jorge Bahaia and Jorge Elias Bahaia.

History of Textufil

In the beginnings, the factory produced only texturized nylon and polyester yarn. As part of its plans to become a vertically integrated company and to satisfy the demands of its consumers and customers, it started production of dyed fabrics with prints in line with the latest fashion and customer preferences.

1985 – investment in a new facility to produce yarn for the sewing industry
1987 – installation of a spinning facility for cotton and blends
1992 – commissioning of an eight-colour rotary printing machine
1993 – installation of a facility for spinning carded and combed cotton, increasing the installed capacity of cotton spun by 60%

Some details about the spinning mill

With the latest investments in 4,512 spindles, Marzoli MPTN with EiTe®, the ring spinning capacity grew to a total of 32,288 spindles. The Open-End capacity includes 800 rotor spinning positions.

Yarn production of Textufil

The production capacity is up to 12 million kg per year. The ring spinning division manufactures both combed and carded yarn as well as polyester/cotton yarn.

The yarn counts range from Ne 4 to Ne 50. According to the market needs, either combed or carded ring-spun yarns are manufactured. At the moment 70% of the production is combed ring yarn.

Approximately 50% of the production is used in their own knitting mill. 86% of production is exported to international customers. Nowadays the USA represent the most important market for Textufil with an export quota of more than 80%.

Short facts about yarn production:

- Ring and rotor yarns for knitting
- Carded, combed yarns with a count range of Ne 4 to Ne 50
- Polyester spun yarns with a count range of Ne 30 to Ne 40
- Polyester/cotton blended yarns with a count range of Ne 12 to Ne 45
- Heathers

Short view of knitwear fabrics:

- Interlock
- Jersey
- Ribs
- Piques
- Jacquards
- Thermal
- and more
Short view of sewing thread:
- Ne 40/2 – 100% PES
- Ne 50/3 – 100% PES
- 150/1 – Textures 100% PES

The conversion
to EliTe® Compact Spinning

Textufil’s aim is the creation of high-quality, marketable and niche products. To achieve this goal, Textufil decided to transform their conventional ring spinning machines applying the latest spinning technology and are now successfully producing the best compact yarn worldwide.

The change, short and effective

At the end of 2005, the first two Rieter G5/1 machines were converted with the SUESSEN EliTe® CompactSet.

After only three months of experience and intensive trials, Mr. Elias Jorge Bahaia decided to invest more in the EliTe® CompactSet and ordered the conversion of further 14 Rieter G5/1 spinning machines and confirmed the EliTe® System some weeks later ordering for his new project from the Italian machine manufacturer Marzoli 6 of the just recently released Marzoli MPT with EliTe®.

Even before the erection of the Rieter machines was completed, Mr. Elias Jorge Bahaia ordered another 12 EliTe® CompactSet conversions for their Marzoli NSF/L ring spinning machines. The conversion of these machines is scheduled for August 2007.

With this last order the total amount of EliTe® CompactSet spindles, including also the new Marzoli ring spinning machines, is rising to 45,056 spindles and will be the largest compact spinning unit in America.

Textufil’s goal is to convert also the remaining conventional Marzoli ring spinning machines of the types NSF2, NSF3 and NSF4 with the EliTe® Spinning system. After this step the amount of EliTe® Compact spindles will be of 57,824 spindles.

Today, the EliTe® and EliTwist® compact yarn production covers more than 50% of the monthly production of ring spun yarns.

With the investment in EliTe® Technology, Mr. Elias Jorge Bahaia converted Textufil into a high-end spinning mill with a lead over its competitors, securing them a leadership position in the Latin American market.

The mission of Textufil to be a globally acting first class company, committed to permanent improvement and focusing on the customers satisfaction in the textile area, is underlined by the latest investment. The EliTe® and EliTwist® Yarns offer new business opportunities to achieve a continuous and successful growth.
Gülle Tekstil companies started their facilities at the beginning of 1980 with a very small knitting capacity. In 1983 we established our dyeing house to improve our activities in this sector. Investing in knitting and dyeing until 1996, we constantly increased the existing capacity.

In 1996, we invested in yarn spinning and bought 10 Open-End rotor spinning machines. So we started producing melange yarn as there is a big demand from the market. This investment enabled Gülle Tekstil to offer the complete product range from yarn to fabric to the market.

In 2000, with a second spinning investment of 30,816 ring spindles, we started producing especially blends, melange and cotton yarn.

Between 2000-2003, we invested in dyeing and knitting to increase the capacity.

In 2003, we invested in ring spinning again. We finalized the first phase of the third investment with another 21,464 ring spindles.

Currently, we have a capacity of 52,280 ring spindles and 2,800 open-end rotors. With other orders already placed in the course of this year, the ring spinning capacity will reach a total of almost 67,000 ring spindles.

Production Capacity

Gülle Tekstil produces yarn in the range between Ne 6 and Ne 100. With the existing capacity, the yarn production is 40 tons/day, the knitting capacity is 30 tons/day, the dyeing, finishing, printing capacity is 35 tons/day, the fibre and yarn dyeing capacity is 12 tons/day.

The company also produces its own electricity.

Gülle Tekstil currently has 900 employees.

70% of our products are exported. The main export markets are in Europe and Asia.

A good portion of the production is covered by melange yarns. For the most part, Gülle Tekstil sell knitted fabrics with melange yarns. But the melange yarn is also sold directly to the market.

When melange yarn is produced, finding the correct colour recipe is always a problem. The suitable recipe has to be found by experimental blending of different colours. This is usually very time consuming as well as cost intensive, especially when expensive raw material like cashmere has to be used.

We at Gülle Tekstil introduced the MDTA 3 to overcome the problem of the costly process of finding the colour matching recipes.

We have bought the MDTA 3 in 2004 for the purpose of producing colour matching melange samples.

We are producing melanges on the MDTA 3 with basically the total range of raw material processed in our mill e.g. cotton, viscose, polyester, silk, linen, bamboo.

Description of the melanging process with MDTA 3

If we have a new colour yarn order, we select of our existing mixtures the colour recipe coming closest to the new order. Then we start varying the ingredients by making trials on the MDTA 3 to match the newly required colour.

After having blended the raw material on the MDTA 3, we present the MDTA 3 sliver to our production ring spinning or open-end rotor machines where a sample yarn is produced. In some cases we also produce a melange sample fabric. Often the melange yarn or fabric sample is sent to the customer for approval, before we are starting production.

Once the recipes have been tested and approved on the MDTA 3 they can be transferred 1:1 to the production machines.
Generating colour-matching melanges before we used MDTA 3

Before we had the MDTA 3 it was not so comfortable and easy to make colour matching melanges. We had to stop one carding machine from our production line for at least 1 shift. We fed the fibre blend from the back of the machine by hand to get the sliver. A minimum of two or three persons were required to make these trials on the carding machine which took approx. 25 minutes per trial, also a lot more raw material was needed for the trials.

We draw great benefits out of the MDTA 3

The colour matching process is considerably shortened. It now only takes us 2–3 minutes to receive a melanged sliver, which we can present to our production machines. The MDTA 3 not only saves time, it also saves labour. The colour matching process can now be operated by just one person. We now only need 10-20 g of raw material for 1 melange, which reduces our raw material sampling costs notably. Our production has no longer to be interrupted for the colour matching processes, so we do not lose any production capacity. We also save energy costs. The MDTA 3 contributed considerably to shorten our colour matching process and to make it more cost effective. We do not want to miss the MDTA 3 in our colour matching processes anymore.
K.P. Textiles Pvt., Ltd. Coimbatore – India

Peter Stahlecker, Managing Director, SUESSEN

K.P. Textiles is one of those success stories, which I cannot help but admire!

Mr. Padmanaban started K.P. Textiles in 1997 in Coimbatore, TN. He came from a modest background, but hard work, perseverance, and his entrepreneurial spirit made K.P. Textiles a shining success!

Initially, they only had weaving, but then ventured out into processing / finishing with the Sri Venkatesa Processors Ltd., also located in South India. In logical progression, Mr. Padmanaban next went into spinning.

Today K.P. Textiles is the world’s leading supplier of fabrics for sari blouses.

This is a very specialized high twist voile material, usually made from Ne 100/2 highly twisted yarn. The quality is held in high regard all over India, and is also exported to all corners of the globe.

K.P. Textiles is organized into three divisions:

- The weaving division has over 2,000 automatic looms, and of course full preparatory, sizing, steaming and doubling facilities.
- The finishing division has all the modern machinery needed to finish the fabrics into any of the almost infinite number of colors and shades required by fashion-conscious ladies in India and elsewhere.
- The spinning division will be described in more detail below.

In addition, Mr. Padmanaban soon realized that the cost of power was bound to increase, as India industrializes at a rapid pace, and power generation has a hard time keeping up that pace. Again Mr. Padmanaban acted in a decisive way, installing wind mills to reduce his power cost.

After some discussions with SUESSEN representative Mr. Mathew, Mr. Padmanaban quickly understood the economic advantages he could get out of SUESSEN’s EliTwist Technology. A lesser entrepreneur would have started with 2 or 3 thousand spindles, to test the waters, so to speak. Not so this mill owner: He ordered 36,288 spindles EliTwist to be supplied over a period of several months!
Of course, there were some initial problems to be overcome, but for K.P. Textiles and his leader, problems are challenges to be solved. They have a very strong technical team as I could convince myself during a mills visit. The quality is monitored all the way from the cotton to the finished fabric, leaving nothing to chance. As the famous American Edison once said: “Success is 20% inspiration or luck and 80% hard work”.

K.P. Textiles tell us about the following advantages of EliTwist® over their conventional ring doubled yarn:

- Tenacity increased by 20% to 25%
- Elongation increased by 2 – 3 percentage points.
- Hairiness reduced
- Spinning breaks / 100 h reduced by 20%
- Fly generation reduced by 50%

During the discussion the mill quality assurance leader shared with us the yarn parameters given in table 1.

The superior performance continues into weaving. Again, we are happy to share K.P. Textiles’ results with our readers (table 2).

These values improve warping production by 20% to 30% and weaving production by 10% to 20%. According to the weaving master, the fly generation in weaving is much reduced compared to ring doubled yarn.

According to their finishing expert, the feel of the fabric is very good, it is of high quality, and very resistant.

Mr. Padmanaban would not be the successful entrepreneur he is, if he now decided to rest on his laurels. A further expansion by 100 looms and by 18,000 spindles will be undertaken very shortly.

It is always a very positive experience for any equipment supplier to be associated to a forward-looking enterprise like K.P. Textiles.

Figuratively speaking, equipment suppliers like SUESSEN are merely the makers of the piano. It is only our customers, who can perform a symphony using the piano – we cannot!

We at SUESSEN are proud to be a small part of K.P. Textiles’ success, and I personally want to thank Mr. Padmanaban and his dedicated team of professionals for sharing all this information with us and with our readers.
The GTN Group has been a SUESSEN EliTe® Customer right from the beginning. GTN and SUESSEN went through some trials and tribulations together during the early days of EliTe® Compact Spinning, but they never lost their faith in the system. Their patience, but also their insistence that things be right 100% greatly improved the EliTe® System. I had the pleasure to be associated with Mr. B.K. Patodia right from the start of our cooperation, and I learned a lot from him and from his way of dealing with problems. I am very pleased that we can share some of GTN Group’s secrets of success with our readers.

1. The spectacular success of your group of companies especially in yarn exports shows, what entrepreneurial spirit, paired with determination and hard work can achieve. Please tell us a little bit about yourself, your background and how you grew over time to reach your present stature.

Ans: Our association with the textile industry goes back to over 75 years, initially starting with trading activities. Our focus changed in 1966, when my father Mr. M. L. Patodia, Group Chairman, took over a spinning unit with a small capacity of 12,000 spindles at Alwaye, near Cochin, in Kerala State. With this brand new venture, I embarked into this career when I became the Managing Director of the Company at an early age of 22.

Over the years, GTN Group, which started with a modest 12,000 spindles and 150 workers, has since grown into a multi-locational Spinning Group with nearly 150,000 spindles in operation. With current plans for expansion, this is expected to reach 210,000 spindles by early 2008; along with an increase in employment to nearly 2500.

GTN Group now encompasses GTN Textiles Limited, the Flagship Company of the Group, based at Cochin, Patspin India Limited at Palakkad in Kerala, as well as a new unit being set up at Udumalpet, near Coimbatore (Tamil Nadu); and GTN Enterprises Limited, also at Udumalpet.

GTN Group is a pioneer in the field of Cotton Yarn Exports from India, especially in fine and superfine combed yarns. In the early 1980s, GTN Group became the first in India to export combed cotton yarns to sophisticated markets like Japan and Italy.

My elder son Mr. Umang Patodia, who is the Managing Director of Patspin India Limited and is responsible for the operation and management of the Spinning Units, ably assists me. My younger son, Mr. Ankur Patodia, is the Managing Director of GTN Enterprises Limited. He is mainly responsible for our knitting and readymade garment business that supplies both exports and domestic markets.

2. Would you let us know, which are your major markets and what count ranges you cover in your Group and your present turnover.

Ans: Group’s counts range from Ne 24s to Ne 200s and our focus is more on value added products like doubled, gassed, high twisted, reverse twisted, compact and core-spun, both for weaving and knitting applications.
GTN exports 90% of its production to various markets like Japan, Italy, South Korea, Israel, China, Austria, Taiwan, Turkey, Germany among others. The present turnover is 90 Million USD and it is expected to reach 150 Million USD by 2008/09.

3. **India has grown spectacularly over the past several years, and particularly in the textile industry. How do you see the future growth of the Indian textile industry?**

   **Ans:** The future of the textile industry in India is highly promising; as the country is blessed with three integral basic requirements for its success, namely: men, materials and machines.

   The number of installed spindles in India has progressively increased from 37.03 million in 2003-04 to 39.50 million in 2006-07. Similarly, the number of shuttleless looms has also increased, albeit at a slower speed. Two factors are primarily responsible for this growth: the Technology Upgradation Fund Scheme introduced in April 1999 and the elimination of quantitative restrictions by US & EU on exports of textile products since 2005.

   India has already achieved an impressive breakthrough in cotton production and it has emerged as the second largest exporter of cotton in the world. With rapidly expanding production of Bt. and hybrid cottons, the production of quality cotton in India is expected to rise appreciably. Therefore, availability of quality cottons at competitive prices is expected to provide necessary stimulus for larger production of textile products.

   Since April 1999, textile units have made huge investments for modernization by inducting latest-technology. In addition, progressive units have also been undertaking HRD programmes for honing the skills of workers.

   The total market size of the Indian textile industry in 2006 was $52 billion. As per the 11th Five Year Plan of Government of India, the target of $ 115 billion market size is sought to be achieved by 2011-12. This would call for substantial expansion of spinning, weaving, processing and garmenting capacities.

4. **Could you tell us, how you got started with EliTe® Compact Spinning? How many of EliTe® Spindles do you run by now?**

   **Ans:** I would like to stress that our mill was among the first in the country to install Compact Spinning. Realising the enormous scope for Compact Yarn, GTN took the pioneering step by installing 3,000 SUESSEN EliTe® machines in 1999. Since then, the company has steadily increased the Compact capacity to the present level of 80,000 spindles. By the first quarter of 2008, its Compact capacity will reach up to 100,000 spindles.

   After the introduction of Compact technology, most of the spinning machinery manufacturers have ventured to exploit this revolutionary technology. However, the large number of
SUESSEN EliTe® in the global market today, speaks volumes for its quality. It has managed to safely enjoy an edge over all its competitors.

5. Please let us know, how satisfied you are with EliTe®, and with the service SUESSEN and VTS are providing. Please critically let us know, where we may improve to serve you better.

**Ans:** As one of the first users of EliTe® Technology, we are proud to be associated with SUESSEN. There is a constant endeavour on their part to improve and continuously evolve the compact technology, which we fully support. We are extremely satisfied with the services that we receive from SUESSEN and their agents, VTS, in India. We, on our part, are continuously giving them the technical feedback to further upgrade the compact technology and quality.

6. It is clear that your group will continue to grow aggressively. Would you share with us your view of the future of your company?

**Ans:** Renowned the world over for its strict adherence to high standards of quality, GTN has been awarded certifications like ISO 9001 for Quality Systems, ISO 14001 for Environmental Management System and the Oeko-Tex Standard Certification for Yarn Purity. Furthermore, the company has been the proud recipient of the
TEXPROCIL Award for Excellence in Exports of Cotton Yarn for 19 years consecutively.

GTN’s range of international quality products is a testimony to its principles of perfection. All our spinning units are equipped with the most modern machines, manufactured by LMW, Rieter, Truetzschler, Schlafhorst, Murata and SSM. Similarly, all laboratories are fully equipped with an entire range of testing machines, manufactured by Uster and Spinlab.

No success story is complete unless fortified by research and development activities. Our research and development efforts have played an emphatic role in innovation, modification and upgradation. Today, GTN yarns are used by fashion heavyweights across the globe in creating fine shirting, branded bed linen and made-ups, handkerchiefs, dress material, voiles and crepes.

GTN is one of the largest users of SUPIMA and ELS Giza cotton varieties. We were the first Indian spinners to be given the SUPIMA brand licence. As the charter member and partner in the Cotton Gold Alliance, GTN has made a significant impact in the global context.

This is epitomized in GTN’s branded products INFINITI, SVELTE and WONDER TWIST which are all well recognized labels the world over.

At the heart of GTN’s success lies the dedication of its work-force. Committed personnel, with diligent drive and technical expertise, foster an environment of high productivity and efficiency. With the collective focus and rich experience of a motivated team, the stamp of abiding devotion marks every product that wears the GTN tag.

Every GTN employee undergoes an in-house training and in-plant orientation programme to ensure that their know-how is updated with the most recent global trends and technologies. Sound human resource policies and efficient labour management have generated a successful working environment.

The group recognized very early on the importance of information technology, which could help differentiate our efficiencies and provide superior customer service. Keeping this objective in view, we implemented ERP in our group using SAP as early as 1998. We have been constantly upgrading our systems and currently we are operating on the latest MySAP Platform, which encompasses the entire supply chain within.

All our production units and offices are networked on a vibrant Intranet, which helps us to deliver high levels of efficiency, both internally and, most importantly, to our customers.

7. One decisive trait of any successful entrepreneur is his ability to predict the future a bit more accurately than the rest of us. Please tell us your view of the future of compact spinning in general, and in your company in particular.

Ans: Compact spinning is THE technology of our future and we can undoubtedly predict that the share of this technology will continue to rise at a rapid pace in most of the Asian countries including India. Compact yarns are increasingly becoming necessary for many present generation specialized products. In our company itself, we are already seeing 50% of our capacity into compact spinning and we plan to boost this even further.
Compact Spinning –
Innovation of 21st Century

V.N. Balakrishnan, Senior Vice President Operations,
GTN Textiles Ltd./India

Ring Spinning, still the most acceptable yarn spinning system, has undergone several changes to improve quality and productivity during these years. However, a major revolutionary change has taken place in 1999, Compacting System.

Much has been said about this great system and the tremendous population growth speaks about its acceptability and benefits. Today, more than 5 million compact spindles are working satisfactorily with a major contribution from SUESSEN EliTe®.

Looking at the speed at which compact is conquering the textile spinning industry, it is clear that this is going to be a normal spinning system for tomorrow. The tremendous benefits of this system are fully exploited both by yarn manufacturers as well as end users.

Compact spinning, the system that ensures better optimum utilisation of costly raw material with minimum loss and damages to the fibre, improves the yarn quality tremendously, more importantly on the hairiness aspect.

This helps the weaver, besides less consumption of costly wet processing ingredients, with better machine efficiency particularly on looms and with a much cleaner atmosphere. Contribution of compact yarn in making dense fabrics is quite rewarding.

Yarn quality improvement in our count ranges, i.e., Ne 30s to 120s, achieved over a period is summarised as under:

- **Hairiness**: by Zweigle S3 value – 60 to 80%, by Uster H – 20 to 30%.
- **Strength**: improvement in RKM – 10 to 18%.
- **Elongation**: improvement 10 to 15%
- **Unevenness**: 0.3 to 0.6 reductions in U%.
- **IPI**: 20 to 35% reduction in Imperfections.
- **Ring Frame Breaks**: 40 to 50% reduction in ends down

Educating the end user to exploit the enormous advantages of this yarn needs further efforts from both yarn and machine manufacturer. In this regard, contribution of SPINNOVATION is praiseworthy in educating the Spinner as well as the Weaver / Knitter in making use of the compact yarn most profitably.

We, at GTN group, installed the first SUESSEN EliTe® Ring Spinning Machine as early as 1999 with just 3,000 spindles and today we are at almost 80,000 spindles and by 1st quarter 2008, we will be completing 100,000 spindles. Counts ranging from Ne 30s to 120s are regularly manufactured, practically maintaining the same normal Ring Frame speed, with far better yarn quality parameters.

The benefits accrued from this yarn were dealt with in greater details in most of the articles of SPINNOVATION or elsewhere. However, so far, the phenomena of cop to cone compact yarn quality difference have not been dealt with in any article in the SPINNOVATION. Therefore an attempt is made here to share our own experience on the subject with our fine and superfine yarns.

**Cop to cone increase in imperfections**

Upon the introduction of automatic winders two decades ago, a significant increase in yarn imperfections and hairiness was noticed in the final yarn, especially in counts above Ne 50s. Counts like Ne 100s and Ne 120s, the increase in imperfections was as high as 80–120%. This phenomenon of abnormal increase in imperfections was taken up with manufacturers of automatic winders as well as lab equipment manufacturers and several trials were conducted over these years. In spite of the best efforts by the manufacturers of automatic winders, no substantial reduction could be achieved till now.

But with the compact yarn, the adverse effect on the yarn quality after the winding process was found significantly reduced. For a spinner like us, who is marketing yarn in the cone form, it was a great relief. This advantage is accrued only due to the substantially lower hairiness in the parent compact cop yarns. In table 1 we have
Table 1: Summary of difference in yarn quality parameters of various compact/normal yarn counts after winding

<table>
<thead>
<tr>
<th>Count (Ne)</th>
<th>U% increase (unit)</th>
<th>IPI Increase%</th>
<th>RKM diff%</th>
<th>Elongation diff%</th>
<th>UT-3 H increase%</th>
<th>Zweigle S3 increase%</th>
</tr>
</thead>
<tbody>
<tr>
<td>50/1 combed weaving (compact)</td>
<td>+0.1</td>
<td>20</td>
<td>0.0</td>
<td>+2.0</td>
<td>+17.7</td>
<td>+457</td>
</tr>
<tr>
<td>50/1 combed weaving (normal)</td>
<td>+0.7</td>
<td>50</td>
<td>+0.7</td>
<td>+2.7</td>
<td>+15.0</td>
<td>+88</td>
</tr>
<tr>
<td>60/1 combed weaving (compact)</td>
<td>+0.1</td>
<td>22</td>
<td>−1.9</td>
<td>0.0</td>
<td>+8.9</td>
<td>+377</td>
</tr>
<tr>
<td>60/1 combed weaving (normal)</td>
<td>+0.5</td>
<td>62</td>
<td>+0.4</td>
<td>0.0</td>
<td>+16.4</td>
<td>+79</td>
</tr>
<tr>
<td>70/1 combed weaving (compact)</td>
<td>0.0</td>
<td>24</td>
<td>+2.7</td>
<td>+5.1</td>
<td>+7.7</td>
<td>+380</td>
</tr>
<tr>
<td>70/1 combed weaving (normal)</td>
<td>+0.3</td>
<td>65</td>
<td>−1.1</td>
<td>+4.5</td>
<td>+25</td>
<td>+140</td>
</tr>
<tr>
<td>80/1 combed weaving (compact)</td>
<td>+0.1</td>
<td>22</td>
<td>+0.7</td>
<td>0.0</td>
<td>+23.6</td>
<td>+896</td>
</tr>
<tr>
<td>80/1 combed weaving (normal)</td>
<td>+0.4</td>
<td>62</td>
<td>−0.4</td>
<td>+4.9</td>
<td>+17.7</td>
<td>+84</td>
</tr>
<tr>
<td>100/1 combed hosiery (compact)</td>
<td>+0.1</td>
<td>25</td>
<td>+1.8</td>
<td>+3.3</td>
<td>+7.5</td>
<td>+208</td>
</tr>
<tr>
<td>100/1 combed hosiery (normal)</td>
<td>+0.5</td>
<td>82</td>
<td>−0.8</td>
<td>+2.0</td>
<td>+16.7</td>
<td>+77</td>
</tr>
<tr>
<td>Overall average of Compact yarn</td>
<td>+0.1</td>
<td>23</td>
<td>+0.8</td>
<td>+2.0</td>
<td>+13.0</td>
<td>+463</td>
</tr>
<tr>
<td>Overall average of normal ring spun yarn</td>
<td>+0.5</td>
<td>64</td>
<td>−1.2</td>
<td>+2.8</td>
<td>+18.2</td>
<td>+94</td>
</tr>
</tbody>
</table>

summarised the yarn deterioration in quality of both compact and normal yarns after cone winding.

As can be seen, there is a significant reduction in IPI increase in the Compact Yarn in all the counts compared to normal yarn, without any exception. However as far as hairiness is concerned, the increase in Zweigle S3 values is much higher than normal spun yarn; however the same trend is not noticed in UT3 Hairiness values. Of course the S3 value of compact cone yarn is still lower by 50% of normal cone yarn.

The data used in the table 1 is the overall average of the yarn quality tested at Ring Frame Bobbin stage and cone from the Autoconer for a period of two years.

**EliTwist® Technology**

We have added small capacity of EliTwist® Spindles and commercial production started recently in superfine counts and yarn is marketed under the brand "WONDERTWIST".

Initially, the customers were hesitant to use this new concept yarn and have been informing that the real “doubled yarn effect” is not achieved in final finished fabric with this yarn. However later on, a few of them, realizing the price/performance advantage, started consuming. Here again, the education of the end users to exploit the maximum advantage of this yarn is to be undertaken by both yarn and m/c manufacturer. As far as a spinner is concerned, the elimination of assembly winder and double yarn twisting, result in saving in investment, power, labour, space etc. The end user is also benefited by lower yarn price.

Table 2: Summary of difference in yarn quality parameters of various compact/normal yarn counts after winding counts after winding (cop to cone)

<table>
<thead>
<tr>
<th>Count (Ne)</th>
<th>U% increase (unit)</th>
<th>IPI Increase%</th>
<th>RKM diff%</th>
<th>Elongation diff%</th>
<th>UT-3 H increase%</th>
<th>Zweigle S3 increase%</th>
</tr>
</thead>
<tbody>
<tr>
<td>80/1 combed weaving wondertwist</td>
<td>−0.1</td>
<td>11</td>
<td>2.2</td>
<td>1.8</td>
<td>3.4</td>
<td>319</td>
</tr>
<tr>
<td>100/2 combed weaving wondertwist</td>
<td>−0.1</td>
<td>15</td>
<td>2.2</td>
<td>5.0</td>
<td>4.8</td>
<td>350</td>
</tr>
<tr>
<td>Overall average of wondertwist</td>
<td>0.1</td>
<td>16</td>
<td>2.2</td>
<td>4.8</td>
<td>4.1</td>
<td>355</td>
</tr>
<tr>
<td>Table 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>------------------</td>
<td>------------------</td>
<td>------------------</td>
<td>------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Count (Ne)</strong></td>
<td><strong>80/2 CW-WT</strong></td>
<td><strong>80/2 CWR</strong></td>
<td><strong>80/2 CWFG</strong></td>
<td>% diff w.r.t.</td>
<td>% diff w.r.t.</td>
<td></td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td><strong>(TM-4.0)</strong></td>
<td><strong>(TM-4.0)</strong></td>
<td><strong>(TM-4.0)</strong></td>
<td><strong>normal doubles</strong></td>
<td><strong>normal gassed</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Wondertwist yarn</strong></td>
<td><strong>normal doubles</strong></td>
<td><strong>normal gassed</strong></td>
<td><strong>normal doubles</strong></td>
<td><strong>normal gassed</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>UTJ Results:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single yarn strength (cN)</td>
<td>477.3</td>
<td>425.6</td>
<td>464.9</td>
<td>477.3</td>
<td>425.6</td>
<td></td>
</tr>
<tr>
<td>Rkm</td>
<td>33.0</td>
<td>29.4</td>
<td>32.1</td>
<td>+12.2</td>
<td>+2.8</td>
<td></td>
</tr>
<tr>
<td>Rkm CV%</td>
<td>6.6</td>
<td>7.1</td>
<td>7.2</td>
<td>6.6</td>
<td>7.2</td>
<td></td>
</tr>
<tr>
<td>Elongation%</td>
<td>5.7</td>
<td>5.1</td>
<td>5.2</td>
<td>+11.8</td>
<td>+9.6</td>
<td></td>
</tr>
<tr>
<td>Elongation CV%</td>
<td>5.7</td>
<td>8.7</td>
<td>6.4</td>
<td>5.7</td>
<td>8.7</td>
<td></td>
</tr>
<tr>
<td>B-work (cN.cm)</td>
<td>714.8</td>
<td>591.2</td>
<td>643.8</td>
<td>+20.9</td>
<td>+11.0</td>
<td></td>
</tr>
<tr>
<td><strong>UT-3B Results:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U%</td>
<td>8.4</td>
<td>8.5</td>
<td>8.3</td>
<td>-0.1 unit</td>
<td>+0.1 unit</td>
<td></td>
</tr>
<tr>
<td>Thin places (−50%)/km</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Thick places (+50%)/km</td>
<td>6</td>
<td>33</td>
<td>+100</td>
<td>+100</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Neps (+200%)/km</td>
<td>19</td>
<td>13</td>
<td>10</td>
<td>+46</td>
<td>+90</td>
<td></td>
</tr>
<tr>
<td>IPI/km (Normal sen.)</td>
<td>25</td>
<td>16</td>
<td>13</td>
<td>+56.2</td>
<td>+92</td>
<td></td>
</tr>
<tr>
<td>Thin places (−40%)/km</td>
<td>8</td>
<td>7</td>
<td>5</td>
<td>8</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Thick places (+35%)/km</td>
<td>51</td>
<td>53</td>
<td>47</td>
<td>51</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>Neps (+140%)/km</td>
<td>79</td>
<td>101</td>
<td>75</td>
<td>79</td>
<td>101</td>
<td></td>
</tr>
<tr>
<td>IPI/km (Higher sen.)</td>
<td>138</td>
<td>161</td>
<td>127</td>
<td>-14</td>
<td>+8</td>
<td></td>
</tr>
<tr>
<td>Hairiness H</td>
<td>3.1</td>
<td>4.9</td>
<td>2.6</td>
<td>-36.7</td>
<td>+19.2</td>
<td></td>
</tr>
<tr>
<td>Hairiness sh</td>
<td>0.6</td>
<td>1.0</td>
<td>0.5</td>
<td>0.6</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td><strong>Classimat Results:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total classimat faults</td>
<td>95.0</td>
<td>51.0</td>
<td>50.0</td>
<td>+86.3</td>
<td>+90</td>
<td></td>
</tr>
<tr>
<td>Objectionable faults</td>
<td>1.2</td>
<td>0.1</td>
<td>0.0</td>
<td>1.2</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Slub</td>
<td>1.4</td>
<td>0.1</td>
<td>0.0</td>
<td>1.4</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td><strong>Zweigle Results:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S3</td>
<td>383.2</td>
<td>544.8</td>
<td>43.1</td>
<td>-29.7</td>
<td>+800</td>
<td></td>
</tr>
<tr>
<td>S3 CV%</td>
<td>16.5</td>
<td>34.6</td>
<td>39</td>
<td>16.5</td>
<td>34.6</td>
<td></td>
</tr>
</tbody>
</table>

The above results are limited in scope; also a strict comparison of cop to cone, as done earlier, could not be done, as the process involved here is different and not identical. Despite the increase in S3 hairiness being high, the hairiness level of this yarn is far lower than RING DOUBLED AND TFO twisted yarns – thanks to compacting!

with well acclaimed advantages of compact yarn. EliiTwist® cop to cone difference in yarn quality, as done with single EliiTe® Yarn, is summarised in table 2.
The tables 3 and 4 show the difference in yarn qualities with respect to traditional doubled yarn and gassed yarn. From these limited comparative studies, the superiority of EliTwist® Yarn with respect to RKM and elongation is well proved. Hairiness, obviously, is lower in EliTwist® Yarn compared to twisted grey yarn. However, gassed yarn hairiness is definitely lower than the EliTwist® Yarn. Similarly, Classimat faults are also high in EliTwist® Yarn. However, looking to the greater scope of this system and resultant yarn, we are of the opinion that this yarn can replace conventional doubled yarn in certain sectors of end use.

### Table 4

<table>
<thead>
<tr>
<th>Count (Ne)</th>
<th>100/2 CW-WT (TM-4.0)</th>
<th>100/2 CWR (TM-4.0)</th>
<th>100/2 CWFG (TM-4.0)</th>
<th>% diff w.r.t.</th>
<th>% diff w.r.t.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wondertwist yarn</td>
<td>normal doubled yarn</td>
<td>normal gassed yarn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UTJ Results:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single yarn strength (cN)</td>
<td>374.7</td>
<td>319.9</td>
<td>347.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rkm</td>
<td>32.4</td>
<td>27.6</td>
<td>30.0</td>
<td>+17.4</td>
<td>+8.0</td>
</tr>
<tr>
<td>Rkm CV%</td>
<td>7.7</td>
<td>7.8</td>
<td>8.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elongation%</td>
<td>5.6</td>
<td>4.9</td>
<td>4.8</td>
<td>+14.3</td>
<td>+16.7</td>
</tr>
<tr>
<td>Elongation CV%</td>
<td>6.0</td>
<td>7.2</td>
<td>7.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-work (cN.cm)</td>
<td>578.4</td>
<td>269.3</td>
<td>475.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UT-3B Results:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U%</td>
<td>9.1</td>
<td>9.6</td>
<td>9.2</td>
<td>-0.5 unit</td>
<td>+0.1 unit</td>
</tr>
<tr>
<td>Thin places (~50%)/km</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thick places (+50%)/km</td>
<td>12</td>
<td>8</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nep (+200%)/km</td>
<td>46</td>
<td>42</td>
<td>26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IPI/km (Normal sen.)</td>
<td>59</td>
<td>50</td>
<td>33</td>
<td>+18</td>
<td>+78</td>
</tr>
<tr>
<td>Thin places (~40%)/km</td>
<td>8</td>
<td>7</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thick places (+35%)/km</td>
<td>95</td>
<td>79</td>
<td>101</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nep (+140%)/km</td>
<td>164</td>
<td>140</td>
<td>161</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IPI/km (Higher sen.)</td>
<td>290</td>
<td>242</td>
<td>294</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hairiness H</td>
<td>2.6</td>
<td>3.0</td>
<td>2.4</td>
<td>-13</td>
<td>+8</td>
</tr>
<tr>
<td>Hairiness sh</td>
<td>0.5</td>
<td>0.7</td>
<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classimat Results:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total classimat faults</td>
<td>161</td>
<td>50.0</td>
<td>63.0</td>
<td>+222</td>
<td>+155</td>
</tr>
<tr>
<td>Objectionable faults</td>
<td>2.0</td>
<td>0.2</td>
<td>0.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slub</td>
<td>2.2</td>
<td>0.0</td>
<td>0.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zweigle Results:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S3</td>
<td>266.6</td>
<td>1195.0</td>
<td>22.9</td>
<td>-78</td>
<td>+1056</td>
</tr>
<tr>
<td>S3 CV%</td>
<td>22.0</td>
<td>14.1</td>
<td>39.8</td>
<td></td>
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</tr>
</tbody>
</table>
**EliTe® CompactSet in the U.S.**

**Jim Blalock, American Suesseen Corporation, USA**

Two textile institutes in the U.S. are working with our Fiomax E1 EliTe® Compact Ring Spinning Machine:

- NCSU (North Carolina State University)
- Cotton Incorporated, North Carolina

SUESSEN updated both machines in spring 2007 with the components incorporating the latest technological development: new EliTops, 5star® Apron, new EliTubes for single yarn and EliTwist®…

At NCSU the machine serves for educating American students in new methods of spinning technology. Studies have begun comparing compact yarn to conventional yarn. The next focus will be on downstream cost-savings by using Compact Yarn.

Apart from its academic benefits, the machine is also available for outside trials. This service is offered for a nominal fee to domestic and international textile companies. M/s. Watson, Associate Director TexEd Programs and Pleasant, Spun Yarn Lab Manager thank SUESSEN for its assistance.

Cotton Inc. is the development and marketing organisation of the American cotton industry, accepted worldwide. In their Cary, NC, headquarters they are equipped to perform research and development on cotton products from fibre to finished goods using state-of-the-art technology. In May 2000 already they purchased a Fiomax E1 due to its superior design and flexibility to spin both compact and conventional yarns.

SUESSEN upgraded this machine technologically thus enabling Cotton Inc. to remain on the cutting edge of technology when spinning compact yarns.

Mr. Clapp, Director Fiber Processing, commented that SUESSEN and Cotton Inc. have maintained a mutually beneficial relationship for more than 25 years, because both companies are committed to the idea that cotton fibre remains one of the most important textile ingredients. Current and future cooperative developments will reflect this strong commitment to providing consumers with cotton yarns that are both performance oriented and cost effective for today’s competitive and global textile marketplace.

**Contact NCSU:**
Tim_Pleasants@ncsu.edu

**Contact Cotton Inc.:**
www.cottoninc.com/FiberProcessing
Our annual EliTe®Forum took place at our R&D centre WST from May 7 – 11. This was already the third time and we decided to install this event as a regular institution in the years to come.

Again mill managers and owners participated in the fully comprehensive training of the EliTe®Technology imparting theoretical and practical knowledge.

This time we welcomed guests from Turkey, Pakistan, Brasil, El Salvador and Bangladesh.

The five days were filled with intense training and instruction concerning operation and handling of the EliTe®CompactSet including maintenance.

Our experts from the different departments Service, Technical Department and R & D gave valuable tips and hints helping our customers to make their compact spinning installations even more successful and profitable.

The discussions with customers having actual experience with EliTe®Compact Spinning are of course extremely valuable for the progress of SUESSEN’s R & D work.

To round off the theme we additionally invited experts from adjoining areas of compact spinning as from NOVIBRA, BRÄCKER, ZWEIGLE, ROSINK and SAVIO.

All participants received the precious and well-known certificate

Certified Technologist of EliTe®Compact Yarn.

All participants confirmed the intrinsic value of the EliTe®Forum contributing to the most successful operation of our installations in the spinning mills. Satisfied customers from Pakistan and Turkey have already placed follow-up orders.

SUESSEN Awards

During the last ITMA Asia in October 2005, SUESSEN could celebrate the installation of the 1,000,000th EliTe®Spindle. The award went to Ejaz Spinning, Pakistan.

Already a few months later, SUESSEN again had reason to celebrate: the 1,500,000th EliTe®Spindle had been installed. This time, the customer was Super Spinning of India, with their headquarters in Coimbatore.

In spring 2007 we celebrated the 2,000,000th EliTe®Compact Spindle with our esteemed Turkish customer MATESA Tekstil Sanayi ve Ticaret A.Ş.

Today we are very happy to announce the ceremonial handover of the SUESSEN Award to GTN Textiles Group/ India – Sri B.K.Patodia / Chairman (see interview page 46).

More than 2,300,000 EliTe®Compact Spindles have been sold worldwide, of which 1,000,000 to India alone.

Recently we delivered the 1,000,000th EliTe®Spindle to India. By happy coincidence, it went to our customer GTN, who had also received the very first one a few years back!

We cordially invite you to the ceremonial handover scheduled for Saturday, September 15, 2007, on the premises of ITMA Munich, Hall A6, Booth 315/414 at 4.00 pm.
Compact Ring Spinning

**EliTe® CompactSet**
Modernization of ring spinning machines

**EliTwist®**
Two-Ply Compact Yarn directly from the ring spinning machine

**EliCoreTwist®**
Two-Ply Compact Yarn with Core Yarn directly from the ring spinning machine

Conventional Ring Spinning

**HP Drafting Systems and Spinning Components**
- HP-GX 3010 Top Weighting Arm – for short staple spinning
- HP-GX 4010 Top Weighting Arm – for roving frames
- HP-GX 5010 Top Weighting Arm – for worsted spinning

Top rollers, cradles, bottom rollers, bottom apron nose bars:
Customers buying new ring spinning machines or roving frames may specify these components directly with the machine maker.

Open-End Rotor Spinning

**Open-End SpinBoxes**
for OEMs Rieter and Savio

**Premium Parts – Modernization**
SC/SQ SpinBoxes for Autocoro rotor spinning machines

**Premium Parts – Packages**
Modernization Packages for Autocoro rotor spinning machines

**Premium Parts – Spinning Components**
Spinning Components for Autocoro rotor spinning machines

**Premium Parts – Spare Parts**
Spare Parts for SE 7/8/9/10/SC/SQ SpinBoxes

Testing Equipment

**Microdust Trash Analyser MDTA 3**
Fibre dust and trash testing equipment

**QuickSpin Unit**
Prediction of yarn properties

**QuickSpin System**
Combination of MDTA 3 and QuickSpin Unit

...market oriented solutions...

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