



**RIETER**

# link

Customer magazine no. 76/2020

**Optimization of Existing Systems**

**Thanks to Automation and Digitization  
Optimally Equipped for the Future**

**The Efficient Rotor Direct Process**

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### Cover:

Spin rotor yarn efficiently with the automated rotor spinning machine R 70.

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Dear Customer,

The last edition of link was devoted to ITMA Barcelona 2019. The feedback from visitors to the booth about the innovations that Rieter presented was very positive. And this positive feedback has led to orders – the fourth quarter of 2019 and the first two months of 2020 were very successful for Rieter. We are delighted that our product range clearly meets your needs.

The world changed in March 2020, and consequently your and our priorities changed too. What's important is getting the best out of existing systems. The articles from Buhler in the USA and Selected Textiles S.A. in Greece demonstrate what is possible with Rieter solutions.

The expanded product range from Graf, the retrofittable backpressure system preciforce from SSM, the piecing robot ROBOspin, spare parts procurement with ESSENTIALorder and automation solutions from Rieter are all moving in the same direction.

But there will also come a time after COVID-19, in which investments will be made in new systems. In this edition, you will find a comprehensive description of the Rieter rotor spinning system with important information about its cost-saving benefits and about the optimal system configuration.

The Rieter teams around the world will do their utmost to support you during this difficult time. If you need us, please do not hesitate to contact us.

I would like to take this opportunity to thank you for your trust and collaboration. I wish you, your families and your colleagues the very best of health and wellbeing.

Truly yours,

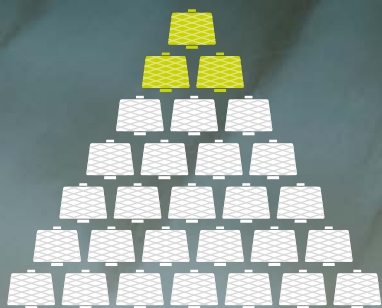
Dr. Norbert Klapper  
CEO

# The Efficient Rotor

Spin cost-effective raw material economically

**+5%**

Productivity



**-7%**

Energy



**-2%**

Raw material costs



## The Optimal Rieter Rotor Spinning System



VARIOline



Card + RSB-Module 50



Rotor Spinning Machine R 70



# Direct Process

**+ USD 330 000 per year**

Cash flow



The strength of the Rieter rotor spinning system has always been its high productivity and achievement of a consistent yarn quality, particularly in applications with shorter fibers. The new rotor direct process further greatly enhances system performance and yarn quality – even with cost-effective raw materials.

## Short and Efficient

Get the most out of the raw material

**The rotor direct process opens up interesting benefits for spinning mills: processing of more cost-effective raw materials with a higher short-fiber or trash content into yarns at a quality that is customary in the market. The customer benefits from a high additional cash flow.**

Customers who want to spin cost-effective raw material with a high trash content into rotor yarn with good yarn quality rely on the rotor direct process. It is the shortest possible spinning process for the production of a rotor yarn. It consists of the blowroom line VARIOline, the high-performance cards C 80, each directly connected to the autoleveled draw frame modules RSB-Module 50, and the fully automatic rotor spinning machines R 70 (Fig. 1). In a comparison of a “mixed spinning mill” – equipped with machines from different manufacturers – with the Rieter rotor direct process, the customer generates a cash flow that is 330 000 USD higher per year.

### Raw material costs 2% Lower

The most important factor in the yarn conversion cost is the raw material. The quality of the raw material can only be reduced to a level at which the quality of the yarn still meets the requirements of the customer or of the end product. This makes the solution that enables a very good raw material utilization and gets the best out of the fiber blend particularly interesting.

**Additional cash flow of  
USD 330 000 per year**

With the rotor direct process and the rotor spinning machine R 70, in this comparison the customer can replace a bale of virgin cotton with a bale of waste in the bale laydown and still achieve a comparable yarn quality. This means the raw material costs are reduced by 2% with the Rieter system.



Fig. 1: The fully automatic rotor spinning machine R 70 gets the maximum out of the raw material. Get an impression – scan the QR code.

The comparison is based on a system with six rotor spinning machines R 70, each with 700 spinning positions and a production quantity of 848 kilograms per hour of weaving yarn with a count of Ne 21. This excellent raw material utilization is based on the blowroom line VARIOLine with an optimal combination of microtufts and progressive cleaning as well as the card C 80 with its maximum technological cross section and individually equipped pre- and post-carding zone. The fully automatic rotor spinning machine R 70 completes the system with its efficient trash extraction. Therefore the proven function BYpass has been rearranged and optimized. Trash and dust are extracted more effectively and the rotor groove stays clean for much longer.

### Productivity up to 7% higher

Right from the fiber preparation stage the card C 80 demonstrates its efficiency: In comparison with the current benchmark, it produces 30% more card sliver. Crucial to the high productivity of the rotor spinning machine R 70 is the optimized spinning box. It achieves a better spinning stability and a higher yarn tenacity, which can be directly converted into a 7% increase in productivity by reducing the yarn twist. And this is achieved at a comparable yarn quality. In the specific example, the Rieter system in combination with the reduction in raw material costs offers 5% higher productivity.

### Substantial energy savings

Energy-efficient solutions and a high production capacity generate energy savings of 7% for the complete system. The blowroom line VARIOLine with the optional ECOrized plays a significant part in this. It reduces the energy consumption of the pneumatic fiber transport throughout the blowroom system by 30%. Energy-efficient drive concepts, innovative machine components, and the high production output of the C 80 with the RSB-Module 50 save significant amounts of energy. This is also true of the R 70 thanks to the optimized individual drives, extremely efficient suction, energy-saving automatic filter cleaning, and optimized air routing.

### Additional cash flow

With the savings and adjustments shown, the customer benefits from an additional cash flow of around 330 000 USD per year in comparison to a "mixed system".



**Fig. 2:** The card C 80 with the autoleveled draw frame module RSB-Module 50 is the optimal combination with a high short-fiber content.

### Optimal process sequence

From a short-fiber content of over 50%, the rotor direct process with the autoleveled draw frame module RSB-Module 50 is the best solution, because only here the slivers with low sliver adhesion are processed accurately (Fig. 2). The article on page 8 in this edition of link and the technology publication mentioned in it provide detailed information on all aspects of this spinning process, including a visual assessment of the knitted fabric.

### Significant demand

The first new machines have already proven themselves in the field. Customers are impressed with the high productivity of the card C 80. The rotor spinning machines R 70 – which have been sold in South America, Asia and other regions – offer energy savings of 20% compared to the previous model and have proven themselves in the field. A Chinese customer with a complete Rieter system, including cards with RSB-Module 50 and rotor spinning machines, is already benefiting from the rotor direct process with its blend of cotton and waste.

## Choosing the Right Rotor Process

Wanted: The ideal process with a high short-fiber content

**The best way to process shorter fibers and waste is with a Rieter rotor spinning machine. But which process offers the ideal solution with a high short-fiber content? And how many drafting zones should a draw frame module have? A study has provided the answers.**

When searching for the ideal way to process cotton with a high short-fiber content, three different processes were examined: the classical rotor spinning process with two draw frame passages, the shortened process with one autoleveled draw frame and the direct process with an autoleveled draw frame module on the card (Fig. 1). Therefore a West African cotton blended with different quantities of short fibers (noil) was used. Yarn counts Ne 12, Ne 20 and Ne 30 were produced. For the purposes of visual assessment, the yarn with a count of Ne 30 was used to produce single jersey fabric on a circular knitting machine.

### Economical direct process with optimal quality

The rotor direct process with autoleveled draw frame module is a very interesting process solution not just for economic reasons but also for quality reasons (Fig. 2). In comparison to the process with one or two draw frame passages, it has a positive effect on the yarn quality for raw materials with a short-fiber



Fig. 2: A typical application for rotor yarns with a high short-fiber content

content of 50% or above (Fig. 3). The use of the RSB drafting system module directly after the card offers the security of a controlled draft in this case. There is also the added benefit of a higher sliver breaking load, which ultimately results in a rotor yarn with improved evenness.

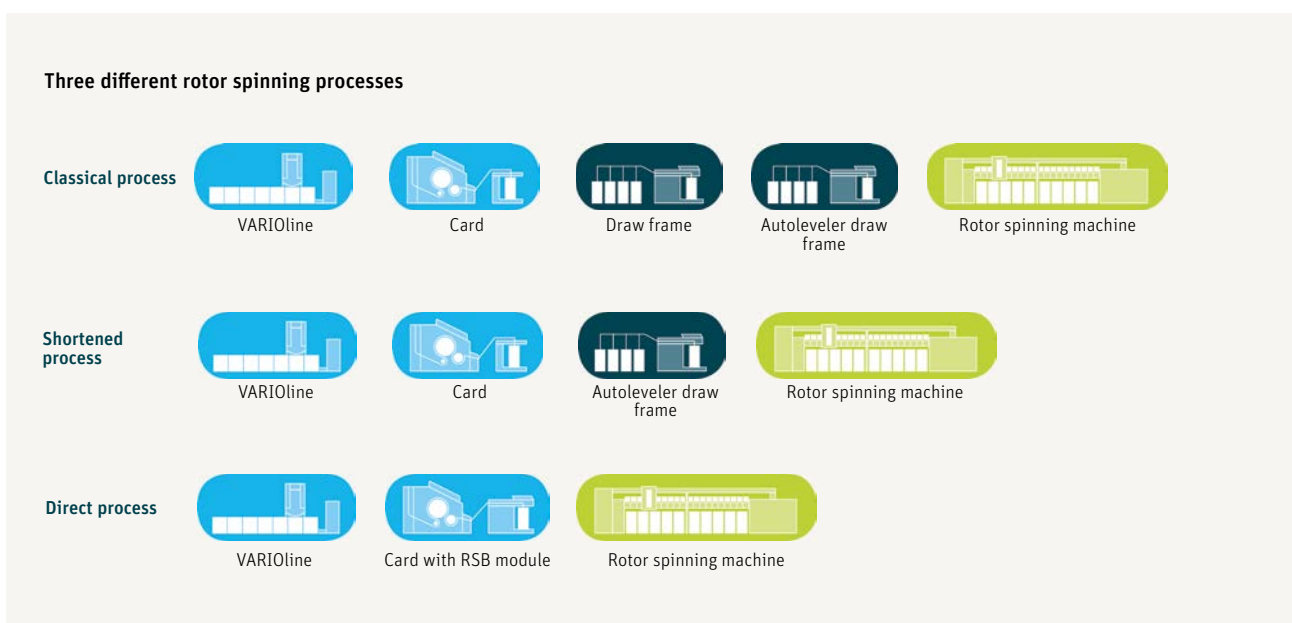
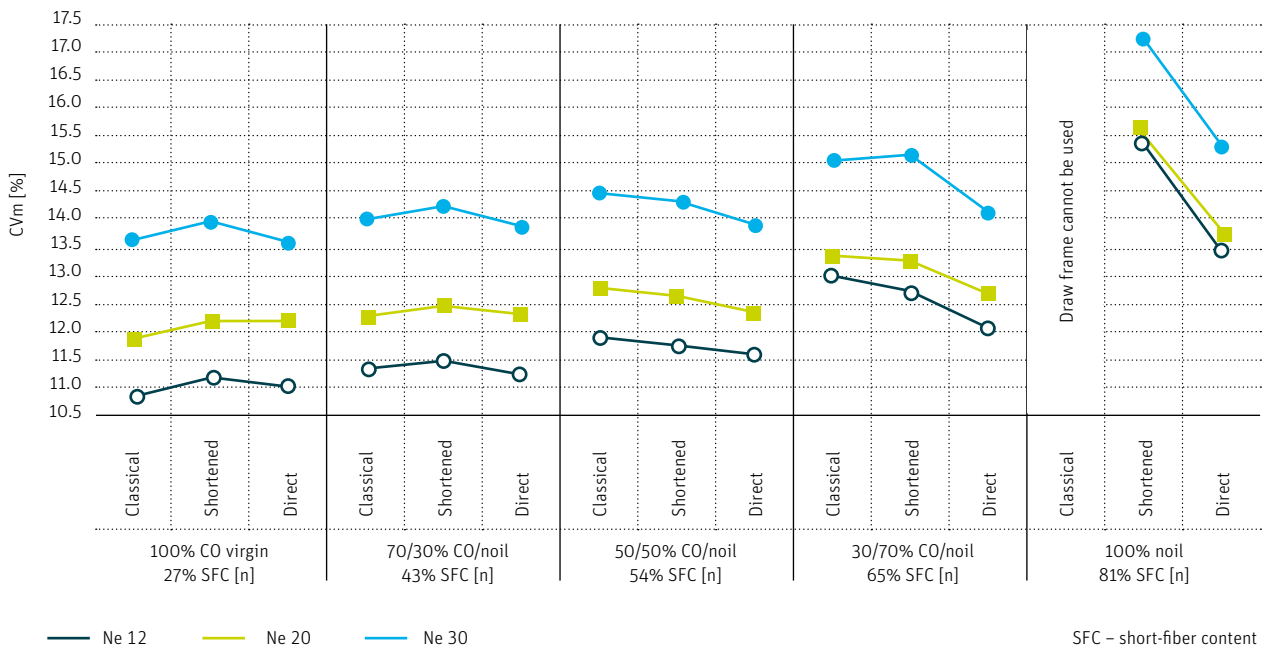


Fig. 1: Rotor yarns can be spun in different ways.



**Yarn unevenness depending on rotor spinning process**

100% cotton 1 7/32" with different noil contents



**Fig. 3:** The direct process with the RSB module has a positive effect on the quality of yarn with a high short-fiber content.

After the RSB draw frame module, the sliver has increased adhesion compared to one draw frame passage. Therefore, the sliver adhesion in the direct rotor spinning process does not reduce too much despite the high short-fiber content, which avoids long-wave fluctuations in the yarn evenness. This means that when using cotton with a short-fiber content of 50% or above, the rotor direct process has benefits over the classical process or shortened process in terms of yarn evenness and general yarn quality. This is true of all three yarn counts analyzed in the study.

**Two drafting zones are essential**

The RSB draw frame module offers a crucial advantage when processing cotton with a high short-fiber content: It works with two drafting zones (Fig. 4). This is beneficial for achieving good yarn evenness, even from a short-fiber content of 27% or above with 100% virgin cotton. For other solutions available on the market with only one drafting zone, the yarn evenness is significantly worse, which is particularly clear for longer sliver lengths, such as for the three-meter mass varia-



**Fig. 4:** From a short-fiber content of 27% and above when using virgin cotton, two drafting zones are essential.

## ROTOR SPINNING PROCESS

### Yarn unevenness depending on drafting zones

100% cotton 1 7/32" with different noil contents

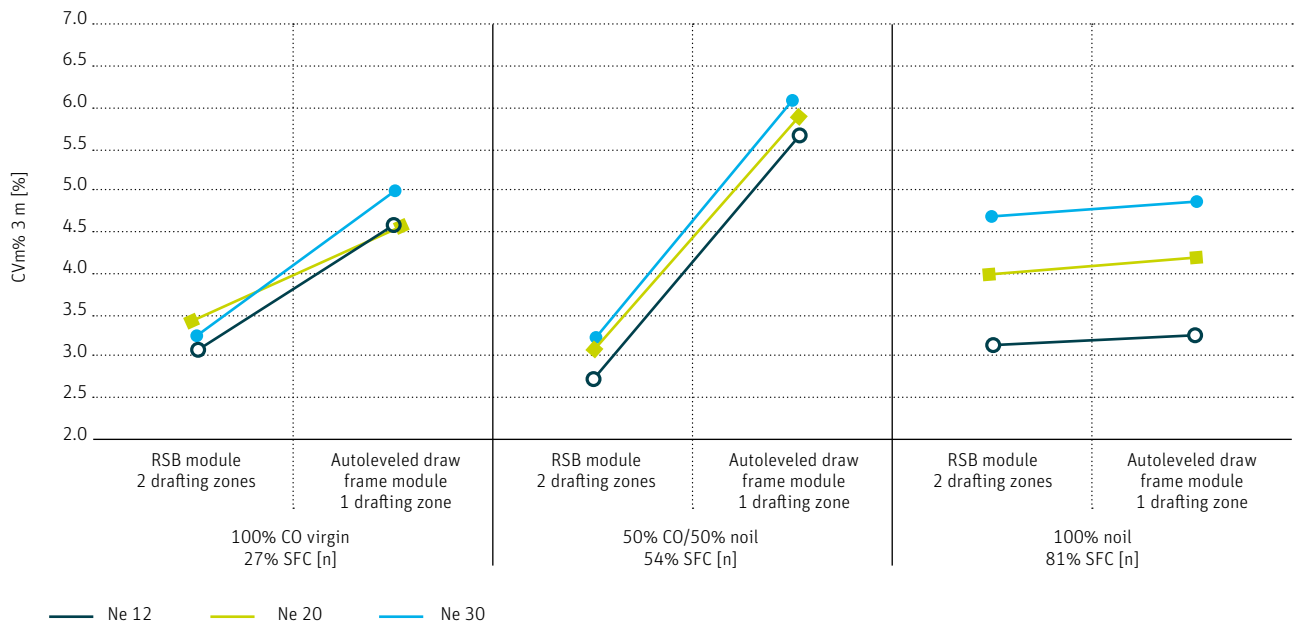


Fig. 5: The evenness of the rotor yarn is significantly improved with two drafting zones.

tion (CVm% 3 m; Fig. 5). This results in undesirable “stripes” in the final product.

### Process sequence versus short-fiber content

For a short-fiber content of up to 30%, the classical process with two draw frame passages is the best solution, primarily because of the yarn unevenness.

From a short-fiber content of over 50%, it is disadvantageous to choose a longer process sequence. This reduces the sliver adhesion and with it the yarn quality. For this reason, it is advisable to use the direct process with an autoleveled draw frame module downstream of the card for this application, as this provides significantly improved yarn unevenness and reduces imperfections. For the autoleveled draw frame module, two drafting zones are required in every case. The RSB-Module 50 is the ideal solution in this scenario.

The shortened process with autoleveled draw frame by no means achieved the optimal result in this study. It would represent a compromise when the customer is unable to choose the optimal process.

The right process depends on the raw material, application and level of flexibility. Rieter will be happy to provide advice, including in relation to the conversion of existing systems.

The complete study “The ideal rotor spinning process for a high short-fiber content” with further, detailed explanations is available to download from <https://www.rieter.com/services/expertise-new/textil-technology>.



The ideal rotor spinning process for a high short-fiber content

<https://Lead.me/bbXL8Y>

## Optimally Equipped for the Future

Spin more economically thanks to automation

**In many markets, spinning mills are being confronted with a growing labor shortage and a lack of industry-specific expertise. Rieter understands these challenges that customers are facing and offers both automated machines and tailor-made automation and digitization solutions, which are also available as retrofit.**

Do you want to achieve high productivity and machine availability around the clock without being dependent on personnel? Do you want to produce yarn efficiently with fewer personnel or use your existing personnel for more important tasks? The only way to do this is by automating processes on and between the machines. With Rieter products and systems and by collaborating with companies such as ElectroJet, Rieter offers automated, customer-specific solutions for the entire spinning process from a single source.

What possibilities does Rieter offer and how do customers benefit from them? The Rieter automation concept can be demonstrated using the example of a system for spinning

combed compact yarns. This spinning process is made up of many process steps and, without automation, it requires a large number of personnel.

### Efficiency in the combing section

The automated combing set with the systems SERVOLap and ROBOlap offers personnel savings of up to 50% compared to the manual solution. The proven lap transport system SERVOLap transports the laps produced in the combing preparation stage to the combers automatically and without contact (Fig. 1). This eliminates the laborious task of moving trolleys and means that the combers are never at a standstill because of missing lap: Before the laps run empty, the comber automatically requests new ones from the SERVOLap. With ROBOlap, the automated lap change and batt piecing system, the entire process is no longer dependent on personnel. The laps are changed on the comber without delay and with consistent quality, and the new batt is pieced up automatically (Fig. 2). Over 3 500 combers are already using ROBOlap in production. The two automation systems have



Fig. 1: SERVOLap reduces the number of operators and increases efficiency in the combing section. The animation shows how it works – scan the QR code.



**Fig. 2:** With ROBOlap, Rieter is the only company to offer a proven automated batt piecing solution on the comber.

been on the market for 25 years and have been continuously modernized and optimized.

### Automation in bobbin transport

For ring and compact yarn producers, the roving bobbin transport system SERVOTrail from the roving frame to the spinning machine is an immense labor-saving solution. SERVOTrail significantly reduces the distances that employees need to move. It also saves space, ensures free access to the spinning machines, and improves the ergonomic handling of the bobbins (Fig. 3). The automatic transport system ensures that the roving on the bobbins is not touched. This guarantees consistent quality.

There are different technical variants and automation levels. The three most important systems are Circuit, Flexible and Direct. For spinning mills whose product range rarely changes, SERVOTrail Circuit offers simple, fixed bobbin circuits between one roving frame and three to four ring spinning machines. Spinning mills that process a wider product range will benefit from SERVOTrail Flexible. With this solution, any roving frame can supply any ring spinning machine. The automated variant for the most demanding customer requirements is SERVOTrail Direct. Roving bobbin trains are automatically positioned in the ring spinning machine and thereby replace the bobbin creel. There is no need to manually replace the empty tubes with full bobbins. Personnel sav-



**Fig. 3:** SERVOTrail automates roving bobbin transport and saves space.

ings of up to 30% can be made with SERVOTrail depending on the level of automation.

### Proven and innovative solutions for end spinning process

With ring spinning and compact-spinning machines, the proven individual spindle monitoring system (ISM) increases the efficiency of the operators and the machines. ISM uses the three-stage display concept to guide the machine operator to the spinning position with ends down via the shortest route. Unnecessary inspection rounds are no longer required.

The system becomes even more efficient with ROBOspin, the automated piecing robot for ring and compact-spinning machines. ROBOspin works around the clock to repair ends down that occur while the machine is running or during doffing (see also page 14). It automates an unpopular task in the spinning mill, for which it is hard to find the personnel in many markets. To transport the cops from the spinning machine to the winding machine, Rieter has been offering the proven Link interface for many years. Almost 80% of machines are now supplied with this automated solution.

### Automatic palletizing and packing

Downstream of the winding machine, palletizing systems and packing machines can simplify or reduce the operators' work. Single or central palletizing systems enable packages to be placed efficiently on pallets (Fig. 4). This protects the mate-



rial while reducing costs and minimizing the risk of material mix-ups. The process can be completed with damping, weighing and packing systems.

**Automated spinning mill makes 44% personnel savings**

In a comparison, a complete system with just under 53 000 spindles for producing combed compact yarn was used and the effect of the above-mentioned automation solutions was evaluated. From the blowroom to the packed yarn package, with the automation solutions the number of personnel required falls by 44% from 54 to 30 operators per shift (Fig. 5).



Fig. 4: Palletizing systems simplify work for operators.

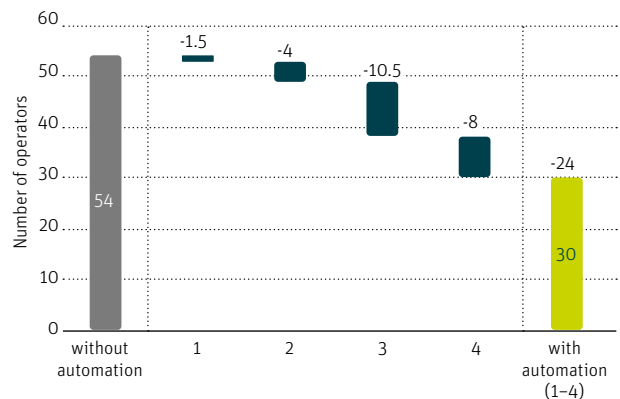
**Further automation and retrofitting**

There is a new option for automating monotonous work for the semi-automated rotor spinning machine R 37 too: The robot ROBodoff changes the full packages without interrupting the spinning process. In addition, there is the possibility of automating all of the can transports needed in the spinning process. Rieter offers all of these solutions as retrofits too, in which case the machine model or year of manufacture is crucial.

**No automation without digitization**

Digital technologies are becoming increasingly important in spinning mills. They provide support when there are shortages of experts and operating personnel. This is particu-

**Advantages of automation**



1. Combing section: SERVOlap, ROBolap
2. Roving bobbin transport system SERVotrail Direct
3. Ring spinning machine: ISM, ROBOspin, Link
4. Palletizer

Basis: Spinning mill for combed compact yarn with 53 000 spindles

Fig. 5: With different automation solutions on and between the machines, the number of operators can be reduced significantly.

larly relevant to machine maintenance and inefficiencies in the process areas, such as in the storage of spare parts. With ESSENTIAL, the Rieter Digital Spinning Suite, Rieter offers a single system for overcoming these challenges. Four different modules enable spinning mills to put together the right package for them. The free module ESSENTIALbasic offers many features, such as the ability to order spare parts online. This saves time that can be used efficiently in other areas (see also page 15). The module ESSENTIALmonitor displays actual production, energy consumption and quality data while helping to plan maintenance work. It allows the efficiency of the system to be increased. The module ESSENTIALmaintain offers an intelligent maintenance solution and optimizes maintenance planning. The fourth module, ESSENTIALpredict, detects machines that are not achieving the expected performance and shows solutions that will prevent a possible failure.

Investments in automation and digitization are investments in the future. They enable cost savings to be made while guaranteeing the quality of the sliver and yarn, particularly in difficult times.

## ROBOspin Makes Spinning More Attractive

Automatic piecing on ring and compact-spinning machines

**The ring and the compact-spinning technology are still the dominant end-spinning processes. ROBOspin makes both of these spinning machines even more attractive. The piecing robot automatically repairs ends down, reduces personnel costs significantly and enables higher productivity.**

in turn reduces personnel costs. The quality of the yarn piecer is consistent, and contamination or damage of the cop is a thing of the past.

### Intelligent and efficient

Regardless of the machine length, one robot is in operation per machine side. It repairs ends down that occur during spinning or after doffing. In this process, ROBOspin uses a system that is now the standard at Rieter – the integrated individual spindle monitoring ISM. It detects ends down. The information is sent to ROBOspin via the machine control system. The robot travels to the relevant spindle, where it stops and repairs the ends down. The complete process is automated: finding the yarn, placing the yarn in the ring traveler, balloon control ring and yarn guide elements, and piecing. The spindle is then restarted.

### Innovative solution for all

Rieter offers ROBOspin for new machines and for the installed base. The ring spinning machines G 38 and G 37 are available from the factory with ROBOspin. Retrofits are currently possible for the G 36. In the near future, the piecing robot will also be available for the G 35 and G 32 as well as for the compact-spinning machines K 48, K 47, K 46, K 45 and K 42.



Fig. 1: The piecing robot ROBOspin increases productivity and also reduces personnel costs.

ROBOspin automatically repairs ends down and is used 24/7 without any loss of efficiency (Fig. 1). The piecing robot automates very unpopular work in the spinning mill, for which it is hard to find the personnel in many markets: piecing on the ring and compact-spinning machines. The spinning mills benefit in three key aspects: increased machine availability, higher productivity and a relief on the personnel side, which



**ROBOspin takes ring- and compact spinning to the next level – 24 hours a day. See for yourself.**

<https://youtu.be/tZgNhfnb3gg>

## Complete an Order in Just a Few Clicks

Efficient online ordering of spare parts with ESSENTIALorder

**In the Rieter Digital Spinning Suite ESSENTIAL, all digital applications that simplify management of the spinning mill are integrated. ESSENTIAL can be individually configured and expanded. This allows users to choose exactly the right modules to meet their needs.**

Every Rieter customer can have the module ESSENTIALbasic enabled free of charge upon request. The platform enables the use of important textile technology information, as well as access to ESSENTIALconsult for customer-specific machine documentation and recipe recommendations, plus ESSENTIALorder for spare parts orders via the webshop. The platform is continuously being developed and expanded with new functionalities.

### Submit orders 24/7

With ESSENTIALorder, users can manage their spare parts procurement process independently. This makes it easier to process both express orders and standard orders. Stocks at the spinning mills can be optimally planned. The module contains an online spare parts catalog for the specific machine configuration. Availability, price and supplier can be checked with a click before ordering. The system is available 24 hours a day, 7 days a week. Orders can be submitted from anywhere and at any time.

An administrator can define various user profiles and authorizations for spinning mill employees within the platform. The order history makes repeat orders easier. Direct price information helps the customer to make a quick decision. Spare parts are supplied particularly quickly for credit card payments. Thanks to shipment tracking, the customer is always informed about the current delivery status.

Different search options – material number, machine type, catalog – make it easy for the user to find the required spare parts. Thanks to the stored database, the technical compatibility of the spare part is checked directly and confirmed with a traffic light system.



<https://Lead.me/bbAD1M>

### Do you want to experience the benefits of ESSENTIAL?

Access to the ESSENTIAL platform, including ESSENTIALorder and ESSENTIALconsult, is free for Rieter customers. Please contact your Rieter sales representative to find out how to access the Rieter Digital Spinning Suite.

*“ESSENTIALorder supports us in our everyday work and simplifies the handling of our orders. With the help of direct price and quotation inquiries, we save time that can be used efficiently in other areas.”*

**Tomislav Poslek** (left),  
Head of Technical Department,  
Klanjec spinning mill (Croatia)





## Modernization with Maximum Impact

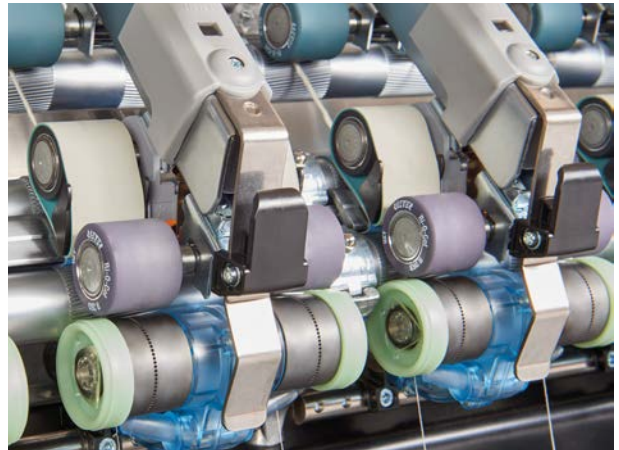
COMPACTdrum boosts productivity by up to 20%

**Greece's most prominent spinning mill was looking for an innovative solution to increase the productivity of its existing ring spinning machines – and found a competent partner in Rieter. The compacting device COMPACTdrum meets the customer's high requirements and even saves energy.**

Selected Textiles S.A., one of the largest spinning mills in Europe, is located in the heart of Greek cotton fields and has its own cotton ginning facilities. The company produces its own ginned cotton and exports cotton worldwide. The spinning mill also processes high-quality cotton itself, turning it into carded and combed cotton yarns and ply yarns. When looking for a more economical and innovative solution for yarn production, the company decided to collaborate with Rieter again.

### Productivity increased by as much as 20%

Selected Textiles S.A. spins its cotton yarns on older Rieter ring spinning machines. The decisive criterion for the company is the quality of the cotton yarns produced from the Greek cotton. Since the new compacting device COMPACTdrum can be installed on both new and existing ring spinning machines, the course of action was defined quickly. The quality data of the manufactured compact yarns met the high requirements of the company, even at higher spinning speeds. Depending on the yarn count, the productivity of the ring spinning machine was able to be increased from 10 to 20%. This was enough to convince Selected Textiles S.A.



The compacting device COMPACTdrum also enables the economical spinning of high-quality compact yarn on existing Rieter machines.

### Low yarn conversion costs

The compacting device COMPACTdrum can easily be installed on and removed from the Rieter ring spinning machine. There is no need for a separate suction duct to be installed. The compacting device is suitable for all raw materials and yarn counts. This enables spinning mills to respond flexibly to market requirements, and to switch between ring yarn and compact yarn quickly and easily.

The sieve drum that compresses (i.e., compacts) the fibers has been optimized, and as a result, the compacting zone reduced to the necessary minimum. The energy required for compression is very low at around five to eight watts lower per spindle than that of other compacting solutions. The design and sophisticated functionality ensure low maintenance requirements and the longevity of the technology components. This means that COMPACTdrum contributes not only to making the spinning mill more flexible, but also to reducing the costs per kilogram of yarn.

*"We are very satisfied with the new compacting device. This simple and easy-to-install device gives a second chance to older spinning mills in order to compete in cost and quality in the global market. Also, the compacting device helps the spinning process to achieve the best results in terms of quality and production."*



**Evripidis Dontas**  
President and CEO  
Selected Textiles S.A.



**COMPACTdrum enables a quick change between ring and compact yarn. See for yourself.**

<https://youtu.be/FcZmVL941Lw>



## Considerable Raw Material Savings

Investments in mill assessment quickly paid back

**Buhler, the leading supplier of fine yarns, is headquartered in Jefferson, Georgia, USA. Working together with Rieter, Buhler has optimized its spinning mill. As a result, the productivity and quality of the spinning mill has been massively improved. Production costs have also been reduced and the production skills of employees have been strengthened.**

Through performance optimization services, Rieter is able to boost the productivity of spinning mills. Every project consists of three phases: the pre-assessment, the Mill Assessment, and the implementation of recommended solutions. During the first step, Buhler described the spinning mill situation and set its expectations. Based on these inputs, a Rieter technologist and a senior service engineer performed a 5-day Mill Assessment at the customer’s premises.

### Immediate payback

The Rieter specialists closely examined the entire spinning mill – from the blowroom through ring spinning. This was worth the effort: The optimization of various machine settings lead to a significant increase in sliver and therefore yarn quality (Fig. 1). By overhauling the grid bars of the pre-cleaner UNIClean B 10 and adjusting the trash extraction level, 1.2% of the raw material could be saved. This meant that the investment made for the Mill Assessment was quickly repaid.



*“The Rieter specialists worked closely with our staff to optimize our spinning mill from the blowroom right through to end spinning. Thanks to performance optimization services, we could save 4% of the raw material when processing cotton and 2% of the raw material when processing specialty fibers overall in our spinning mill.”*

**Chris Daniels**

*Operations Manager at Buhler Quality Yarns Corp.*

Machine	Bale opener	Comber
Target	To reduce the number of neps in the card sliver	To reduce the number of neps in the combed sliver
Action	Adjustment of the take-off roller speed	Adjustment of top comb setting
Number of neps before	147	89
Number of neps after	110	31
<b>Reduction</b>	<b>25%</b>	<b>65%</b>

Fig. 1: The Mill Assessment resulted in better quality.

### Remarkable results

In order to further optimize the spinning mill, the Rieter specialists recommended a series of solutions, which included replacing technology components and modernizing machines.

Equipping the combers with state-of-the-art nippers, circular and top combs in combination with an on-site Rieter service engineer resulted in an improved raw material utilization of 2.8% for cotton with the corresponding effect on yarn conversion cost. Modernizing the cards reduced raw material waste and saved 2% of the specialty fibers. Other setting adjustments on various machines across the entire spinning mill and the replacement of worn-out parts lead to an improvement of 30% in terms of yarn imperfections and, last but not least, to a 6% production increase.

The reduced production costs mean that the investment in Mill Assessment, technology components and modernization of machinery will be paid back in less than 18 months and gives Buhler more financial scope for further investments.

## 50% Longer Service Life for Card Clothings

Consistent quality thanks to new Graf clothing sets and MULTISHARP alloy

**To manufacture a reproducible, consistent yarn quality at minimal costs: That is the goal of many spinning mills. The Rieter subsidiary Graf offers unique ways to achieve this goal with three new clothing sets for cards. In addition, the new alloy MULTISHARP ensures a 50% longer lifetime.**

The cotton production and spinning industries are continuing along the path of efficiency and cost optimization that they have been following for many years. This has consequences: Cotton with a higher trash content is increasingly being used in order to lower raw material costs. This raw material is not just a challenge when it comes to producing a consistent yarn quality – it also places significant demands on the wear characteristics of the machinery and components used. The innovations from Graf enable both a consistent quality and resistance to wear to be achieved at higher trash contents in the raw material.

### 50% longer lifetime thanks to MULTISHARP alloy

Since the product was introduced at ITMA 2019, spinning mills have been able to benefit from the unique, wear-resistant alloy MULTISHARP for all card clothings. It guarantees consistent carding results, ensuring a reproducible yarn quality over the entire service life. This extends the service intervals and reduces the service interactions, which lowers maintenance costs. Spinning mills can therefore choose from three alloys with different requirements in terms of service life and throughput (Fig. 1).

### Clothing sets for every application

Many spinning mills appreciate the benefits of the clothing set consisting of the cylinder wire P-2040 and the flexible top resist-O-top C-55 (RSTO C-55). Even with variable raw material qualities, its universal application has guaranteed consistent carding results and reliable production conditions for many years. With the new clothing P-1940 and resist-O-top C-60 (RSTO C-60) that are also available, Graf gives spinning mills the opportunity to meet the yarn quality requirements even when the trash content of the raw material increases (Fig. 2).

Alloys on card clothings for different customer requirements

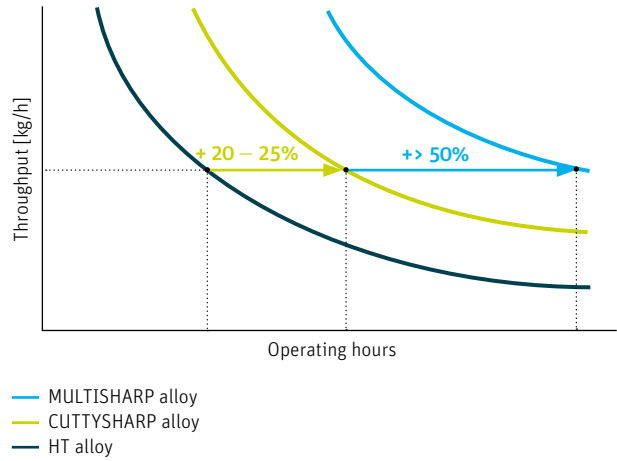


Fig. 1: The MULTISHARP alloy increases service life and lowers maintenance costs significantly.

Card clothing sets for cotton and cotton blends



Fig. 2: Application areas for the card clothing sets

**Consistent yarn quality ensured**

The adapted tooth geometry of the cylinder wire P-1940 enables better cleaning out of trash content, seed coat neps and fiber neps with unlimited carding accuracy. Fiber alignment and homogenization are not affected. With its extraordinarily robust design, the P-1940 achieves the conventional service life. If necessary, this can be extended by using the new MULTISHARP alloy.

**Flexible flat for better yarn quality**

Spinning mills that specialize in fine yarns gain a crucial advantage with the flat RSTO C-60: an improved opening of the fiber tufts into individual fibers, and ultimately a better

yarn quality. This is based on an increase of the points per square inch by 10% to 600. For applications in a higher output range or when using cotton with a trash content of more than 8%, a thicker wire can optionally be used.

**Differentiation through comprehensive solution packages**

Spinning mills that rely on a partnership with Graf benefit from a comprehensive package. This consists of technology components related to carding, technology consultancy and a global service network. Customized solutions for specific applications guarantee the best value for money for every customer.

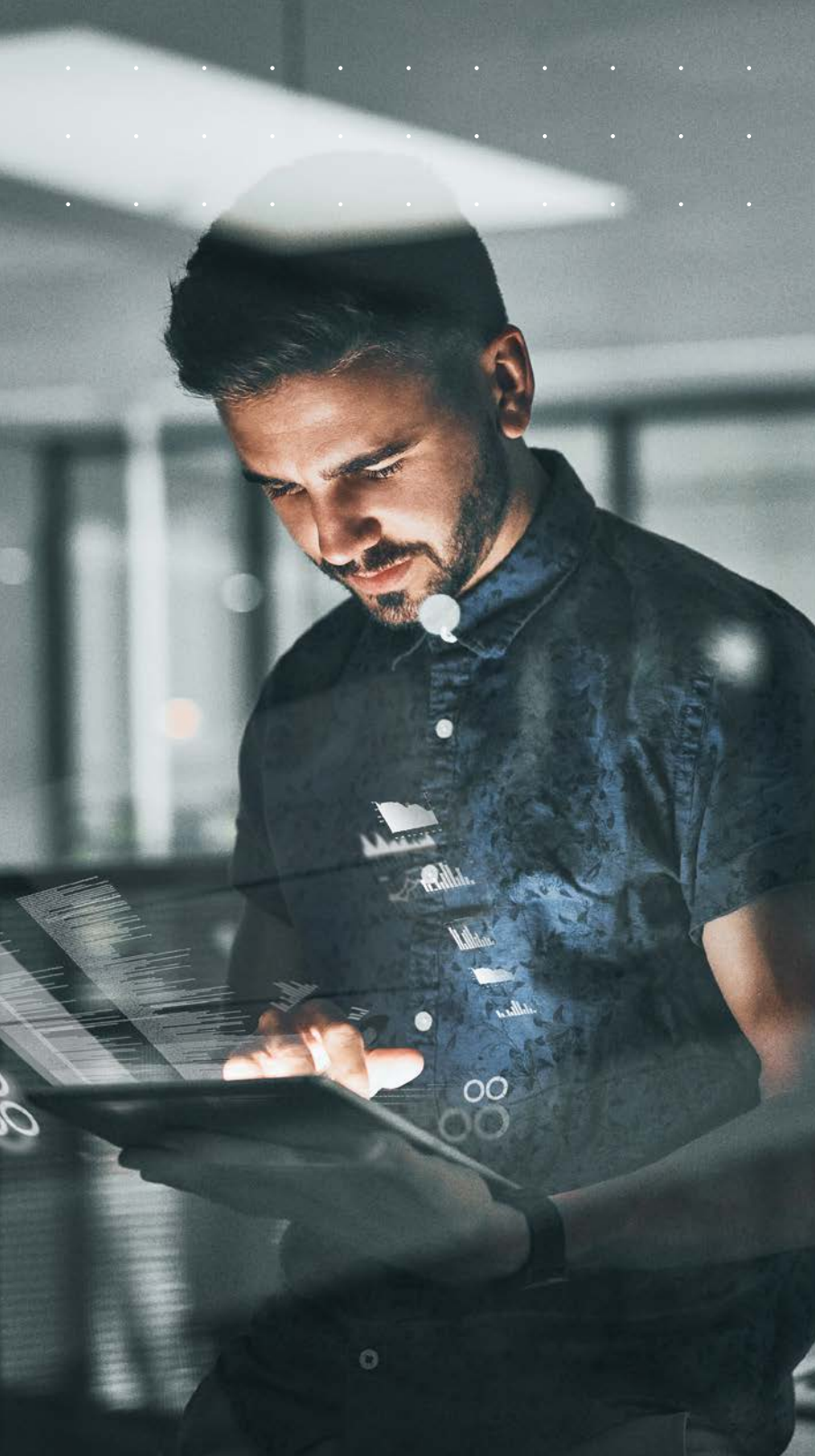
**Precision Increases Production**

**Dye packages with optimal yarn density**

How densely and accurately a yarn is wound up when manufacturing dye packages is crucial to the color quality and the productivity of the dyeing process. SSM is setting new benchmarks in this area with the high-precision backpressure system preciforce. Dye packages with all kinds of yarns thus show a significantly better dyeing behavior. As such, in the production of cotton dye packages the effective package density can be increased and processed with a very low density tolerance of up to +/-1 g/l. The package build-up is extremely uniform, which gives the customer two advantages: more yarn per package and therefore increased production per dyeing process, as well as a consistent color quality. The crucial factor – the yarn density – is now an independent value that can be entered and regulated on the operating unit of the precision winding machine. The backpressure system preciforce is offered as an option on new winding machines XENO-YW, YD, PB, TU and AC and can easily be retrofitted on older models of the specified machine types.



With preciforce dye packages with a consistent color quality and with high productivity can be produced.



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