

Compact spinning
Compact-spinning machine K 48

RIETER

K 48 Innovations

Fully compacted yarn with high flexibility

High profitability and
low energy consumption

Raising the Bar

High-Speed Package for maximum productivity

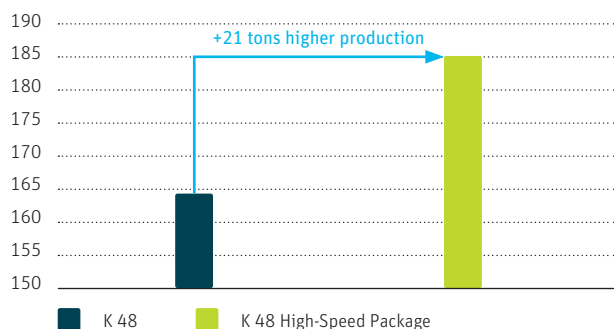
Maximizing the productivity in ring and compact spinning is an enormous challenge for spinning mills. The Rieter specialists have put together a High-Speed Package, in which the components are optimally matched to one another: LENA 28 spindle + smaller spinning ring with a 34 mm diameter + spinning tubes with smaller DUI of 16 mm.

The K 48 achieves up to 28 000 rpm spindle speed mechanically. This is an increase of 12% compared to 25 000 rpm achieved until now. The High-Speed Package includes a smaller spinning ring with a diameter of just 34 mm. The traveler needs less distance and less time for one revolution on the smaller ring. With a smaller spinning ring diameter, the traveler speed is reduced, opening up potential for an increase in spindle rotation. A plus of 3 000 rpm means a higher production of 21 tons/year, exemplary realized with cotton yarn, Ne 60.

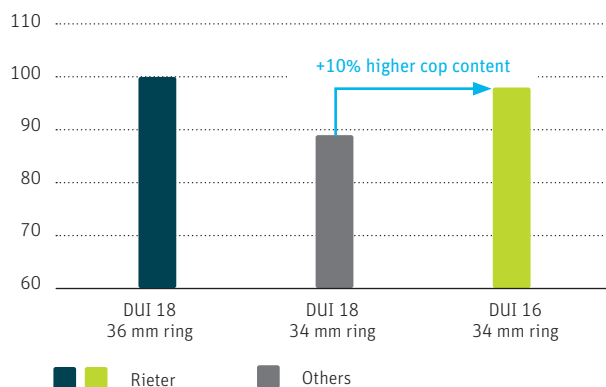


A smaller spinning ring diameter means less space for yarn on the tube. This would lead to more doffing processes and reduce profitability. To prevent this, a tube with a smaller bottom inner diameter (DUI) was designed, and the energy efficient LENA 28 spindle was adapted accordingly. The tube with the smaller DUI dimension can thereby take almost the same yarn weight as a conventional tube. So, the number of doffing processes on the spinning machine and number of cop changes on the winding machine remain the same.

12% higher production: CO, Ne 60 [tons/year/mc]



10% higher cop content: DUI 16, 34 mm ring [%]



Highest delivery speed

Depending on the yarn specification and spinning parameters, the compact-spinning machine K 48 can produce compact yarns with highest delivery speeds of up to 40 m/min. This increase is particularly important for the efficient production of coarse yarns and makes the ring spinning machine even more competitive compared to other spinning systems.

Most Reliable Compact Sieve Drum with Unique Air Guide Monitoring

Basis for a wide range of applications

The highly abrasion-resistant sieve drum requires minimal maintenance compared to competitor solutions. The surface of the sieve drum ensures a good running behavior and uniform yarn quality over long operating periods. The new coating increases the application range even more. Different raw materials, blends and yarn counts can be spun with the shortest time for a machine changeover. Special inserts for twin yarn production make the K 48 compact-spinning machine even more flexible.

The compacting unit forms the heart of the compact-spinning machine. The compacting unit comprises the sieve drum, suction insert Bright, and air guide element Detect. The optimal shape of the air guide element and suction insert ensures that the air is guided in a targeted manner.

Simple quality monitoring

The air guide element Detect monitors the air flow at each spinning position. If the underpressure reaches a limit value, a red marking on the air guide element indicates that the compacting unit must be checked. This feature prevents non-compacted yarn being produced. Monitoring each individual spinning position guarantees a consistently high yarn quality.



The red marking on the air guide element indicates that the compacting unit must be checked.



Q-Package – the quality package for cotton

The Ri-Q-Draft drafting system ensures the ideal fiber guidance for most applications and very stable running behavior. The nose bar Ri-Q-Bridge is a key component in the spinning process.

The quality package Q-Package for cotton contains a stepped nose bar, an “active” cradle and a corresponding pressure bar (pin). Fiber guidance between the cradle and the nip point of the delivery roller is further improved with the Q-Package. The evenness of the yarn (Cv_m%) is improved by up to one percentage point. At the same time, yarn imperfections are reduced by 10 to 30%.

New Features

Highest production time

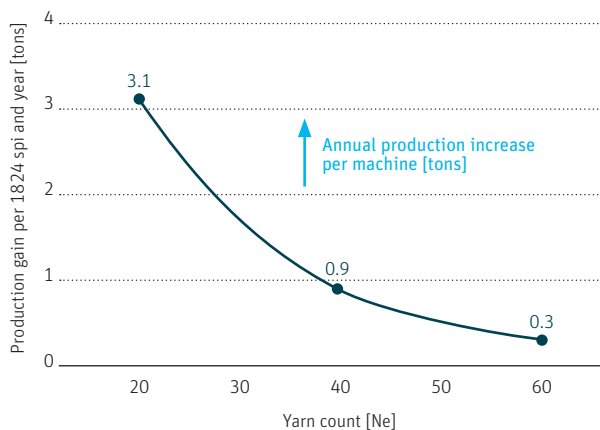
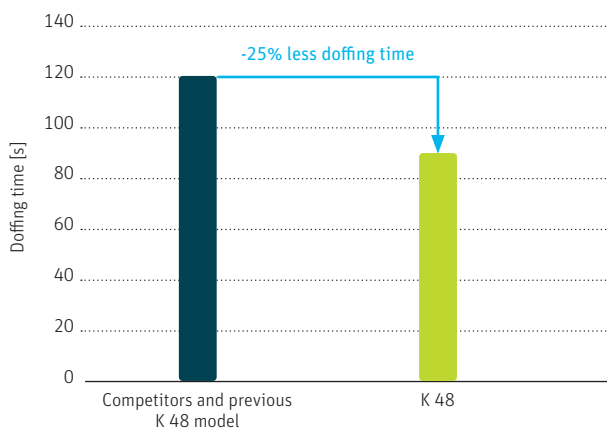
Doffing in only 90 seconds

The new generation of the compact-spinning machine K 48 redefines the boundaries. The new and most reliable automatic doffing system with a perfect alignment of gripper, tube and cop tray enables a fast sequence of all doffing process steps. The redesigned doffing system completes its cycle in just 90 seconds, showcasing a remarkable 25% reduction compared to the prior version of the K 48 and all known competitors, whose cycles typically take 120 seconds. The reduced doffing time results in shortest machine downtime and therefore a significant production gain. The advantage is particularly evident with coarse yarn counts. With Ne 20 the annual production gain is 3.1 tons per machine with 1 824 spindles.

Thanks to the sophisticated monitoring system, doffing requires no human intervention. The system includes a special profile of the doffer beam and releasable grippers. In the event of faults, the doffing process is automatically stopped by a pressure monitor, ensuring highest process reliability. With the integrated SERVOfrip system, doffing can be performed without underwinding.



Doffing time and its influence on yarn production



25% faster doffing system leads to remarkable production gain

Clever and fast cop transport

The new cop transport system SERVODisc for link systems to the winding machine is 12% faster than the previous solution. It forwards up to 45 cops per minute directly to the winding machine and positions empty tubes. This open rail system is fast enough to remove all cops on time before the next doffing cycle is due. This is important for long machines with short spinning cycles and very coarse yarn counts. The new SERVODisc is even more reliable, lowers maintenance time and consumes far less energy compared to competitors pneumatic solutions. The solid steel profile with less contact points reduces friction, and the positive driven pulley enhances the lifetime of machine components. Intelligent cop trays (Smarttray) with integrated RFID chip are available with the link system to the Rieter winding machine Autoconer X6 for information and material flow control.



New SERVODisc drive concept for less maintenance

Self-monitoring doffer grippers

The optionally available, redesigned gripper has a safety clip for a more precise and reliable tube positioning. The long lasting gripper membrane with improved grip is abrasion resistant and easy to replace. Changing of the membrane can be done directly on the machine within 15 seconds. This corresponds to a time saving of 80%.



Short-balloon setting for enhanced spinning performance

The limiting factors in ring and compact-yarn production are yarn tension peaks and the interaction with ring and traveler. One of the most important tasks therefore is to balance the various balloon forces during cop build-up. The short-balloon setting optimizes these ratios and brings clear advantages in terms of less ends down rates and longer traveler lifetime. Alternatively, the ends down rate can be kept constant, but production can be increased up to 2%. The traveler must continue to optimally compensate tension peaks and help that the yarn balloon is formed evenly during the entire ring rail movement.

Fully Electronic and Fully Automated Machine

Set yarn parameters electronically

The electronic drafting system drive FLEXIdraft uses frequency controlled motors. Parameters such as yarn count and twist can easily be adjusted on the machine display. There is no need to change gear wheels or make any other mechanical adjustments. The operator can also change the Z yarn twist direction or the S yarn twist direction on the operating unit. The balloon control ring is designed so that it does not have to be replaced when the yarn twist direction is changed.

The modular K 48 allows easy change from standard compact yarn to compact slub, twin or core yarn production.



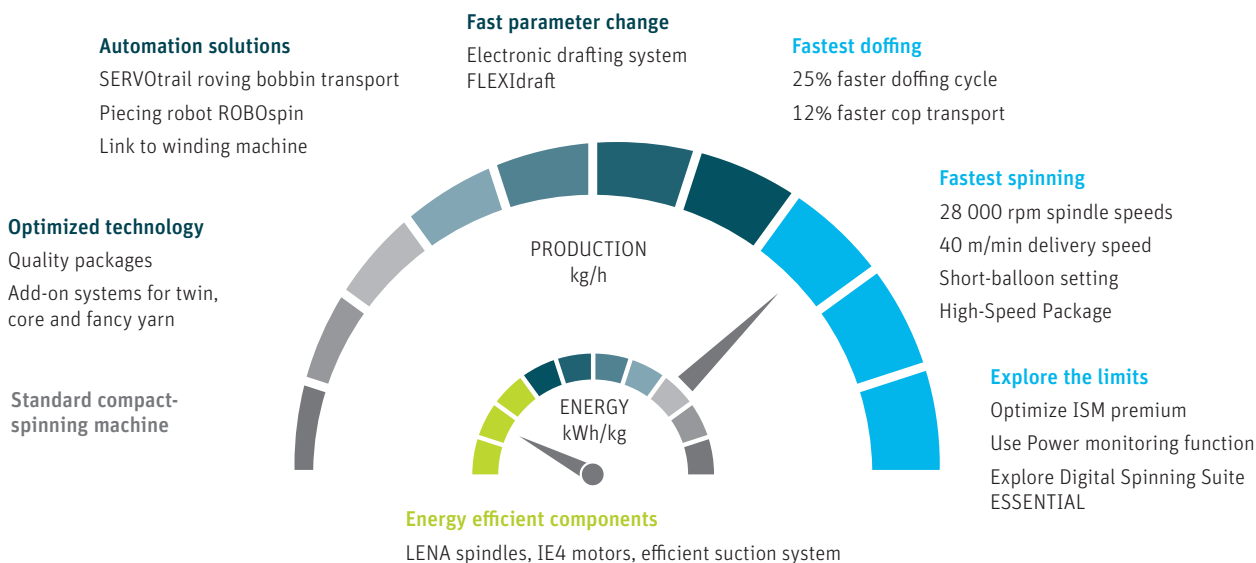
Flexible automation

The new K 48 offers varying levels of automation, from manual yarn piecing to fully automated piecing with ROBOspin for minimal personnel deployment. Intelligent linking with winding machines and flexible automation solutions with Multilink/Multilot or ROBOLoad with WILDload can be used flexibly according to customer requirements.

The Individual Spindle Monitoring (ISM) system premium is now standard on every compact-spinning machine and is the basis for the roving stop device. A much higher level of process optimization can be achieved by integrating the machines into the all-in-one mill management system ESSENTIAL.

Redefine the boundaries

Maximum production in ring and compact spinning not only means offering the highest spindle speeds. Noticeable production benefits can be achieved by significantly reducing machine downtimes.



Lowest Energy Consumption

Energy efficient technology

The extremely efficient IE4 main motor drives were developed for high speeds to save energy. It can also be used profitably on machines with fewer spindles and low speeds due to its permanent magnetic functioning. Efficiency is not only related to motor technology but also to motor size. With one single spindle motor and the choice of IE4 motors, Rieter invests in sustainable yarn production.

With the new HPS 28 and LENA 28 spindles, revolutions of up to 28 000 rpm can be run. Both spindles have a second damping system to remarkably reduce the bearing load and the noise level. Compared to conventional spindles with a whorl diameter of 18.5 mm or 25 mm, the LENA spindle with 17.5 mm saves up to 6% energy.

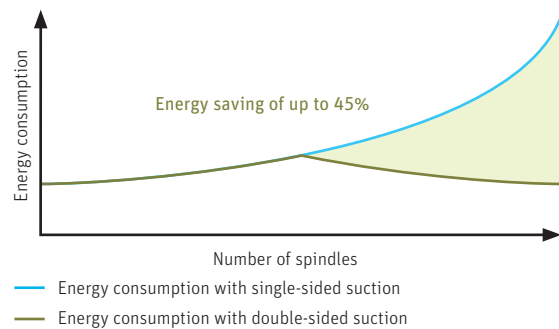
Energy savings with power monitoring function

The power monitoring function is a new standard configuration for the new compact-spinning machine K 48. Power monitoring is used to compare the energy values between machines. The values provide the operator with information for early detection of energy losses. There are various reasons for higher energy consumption of a single machine in a spinning mill, for example high fiber contamination on different machine elements such as travelers, spindle tape or drafting rollers. The energy consumption can be an indication of the right time to replace wear parts.

Efficient suction system

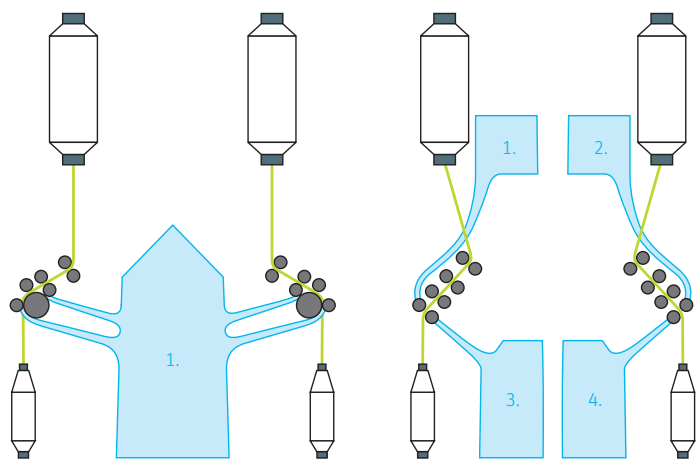
The double-sided suction for long machines optimizes the aerodynamics of the entire suction system. This reduces the energy that is required to generate the underpressure on machines with up to 1 824 spindles. Compared to single-sided suction system, the same air volume can be transported using less energy.

Energy saving potential with double-sided suction



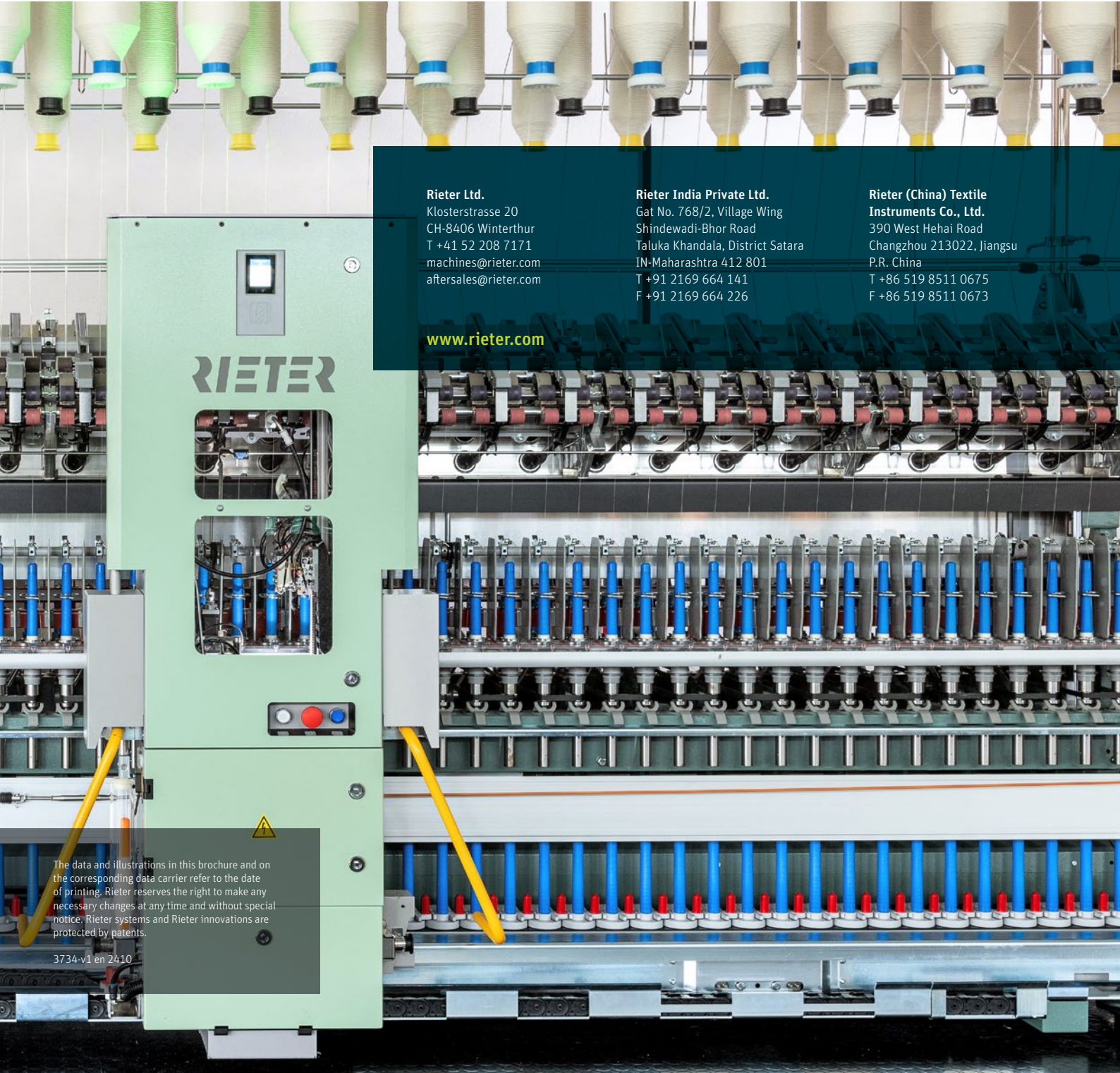
The K 48 with one-duct system requires significantly less energy for the production of high quality compact yarn in comparison to other solutions. No additional suction installation and motors are required as the underpressure for yarn compacting is supplied from the suction base unit. The large duct cross-section lowers air speed and reduces the air friction. This results in additional energy savings.

Rieter one-duct system for ring and compact spinning



Rieter system with 1 duct

Competitor system with up to 4 ducts



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