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DEVELOPMENTS IN TEXTILE MACHINERY

With the advancement in technology, development of new machinery and equipment is constant in the global textile industry. The year 2022 too was no exception and saw the introduction of various new machines, technologies, services and the required support systems, aimed at helping the industry become more efficient. This feature captures some of the latest developments in textile machinery.



COMPANY

Lonati S.p.A. (Italy)

MACHINE

Donna LB04Y7 (knitting machine)



Lonati Group is the world leader for hosiery machinery with annual production of 8,000 machines which cover almost the entire world production of women's hosiery, 60 per cent of men's and children's hosiery, 90 per cent of sportswear and seamless production, and 60 per cent of traditional knitwear production. Its new machine Donna LB04Y7 is specially designed for the production of stockings and pantyhose. It is a new single cylinder 4 feeds machine with electrical controls for the production of stockings and pantyhose with 1 electronic needle-by-needle selection unit on each feed (4 in total) for the production of pantyhose in jacquard, baguette and bikini patterns. It has motorised needle raising (stitch) cams for gradual or partial stitch narrowing or widening in any part of the sock. It comes with electronic yarn-fingers control with plating option at different heights and 1 motorised yarn-finger for angular movement, enabling single and double dial jacks. The electronic device maintains the size at any temperature of the machine.



COMPANY

Mayer & Cie. GmbH & Co. KG (Germany)

MACHINE

OVJA 1.6 EE 3/2 WT (knitting machine)



Germany-based Mayer & Cie. is the leader in circular knitting world, in the market as well as in technology. The company has several machines in its extensive portfolio that are suitable for knitting shoe uppers including the established ones being OVJA 1.6 ET 3 WT and OVJA 1.6 E. The latter also knits spacer which finds a place of use in both shoe upper and sportswear. A relative new addition to the portfolio is the OVJA 1.6 EE – 3WT/2WT. It is a double jersey jacquard machine with 3-way electronic needle selection in the cylinder and 2-way in the dial, offering multi-colour jacquard, tuck structures, spacer fabric, and double-knit fabric with a lay-in thread. Featuring individual needle selection in the cylinder and dial – both being temperature-controlled areas can be heated or cooled as required. This ensures that the knitting machine is at operating temperature when needed. The output is always of equal quality irrespective of the climate or the yarn used. When equipped with special needles, the OVJA 1.6 EE 3/2 WT processes yarn up to 1,200 deniers, which means the gauges as coarse as E16 are within easy reach. In combination with Mayer's design software MDS 1, the machine has another highlight – cylinder-side floats on the reverse of the fabric are integrated automatically. The machine produces heavy-duty sturdy materials that can withstand the harshest weather and fabrics that can protect against injuries. Its fabrics meet any requirements in regard to mattress covers, upholstery, and seat covers in trains and cars. The protective features of its fabrics can be put to fashionable use in shoe uppers as well as in outerwear and sportswear such as fencing or ice hockey.

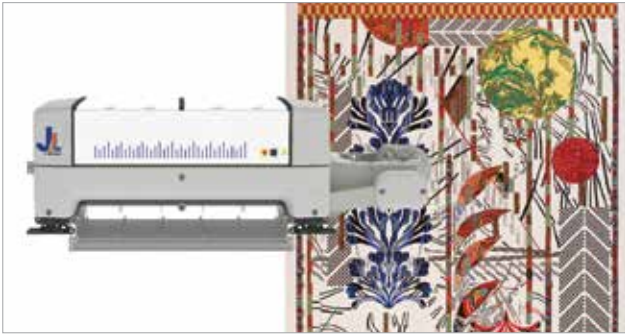


COMPANY

Vandewiele (Belgium)

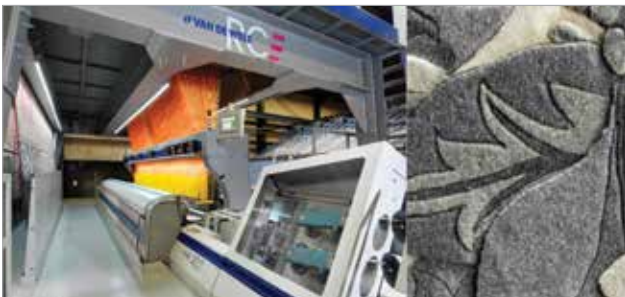
MACHINE

New version of Bonas JI range and digitally-controlled RCF machine



Formed in 1880 Vandewiele, a Belgian company, started constructing weaving looms in 1921 and today builds and integrates innovative textile systems for flooring qualities, home linen, fashion fabrics and technical textiles.

During ITM 2022 in June, Vandewiele showed its newest addition to the highly successful Bonas JI range of jacquards – the JIL, which represents the logical extension of the JI range allowing its customers higher hook capacities (up to 11,520) within the same range of machines. The JI has been a tremendous success for Vandewiele and has strengthened or gained its market leader position with introduction of the new 96 technology used in all its jacquard machines today. Extending the range from a maximum of 5,760 to a new enhanced hook capacity of 11,520 makes the JI a preferred choice among customers. In case when bigger capacities are required the company offers its SI machine going up to more than 31,000 hooks in a single machine.



In addition to many traditionally woven carpets on the RCE+ carpet weaving machine, the company also promoted its digitally controlled RCF machine with fast creel, cut-loop machines and specific machines for weaving light carpets, all illustrated by carpet samples. The digital control of yarns allows the development of new qualities, a higher production efficiency and a closer follow-up of the machine park besides reducing yarn waste at the highest production speed. The range of carpets presented in this regard included cut-pile carpets with flatweave, sisal-look carpets, as well as the highest carpet qualities in reed 1,000 d/m 10 colours, 1,200 d/m and 1,500 d/m with up to 5,000,000 points/m².

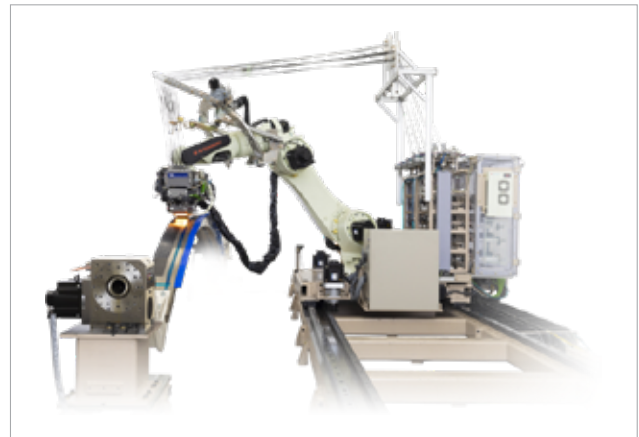


COMPANY

Tsudakoma Corp (Japan)

MACHINE

TFL – Automated fibre lay-up machine



Founded in March 1909 and incorporated in December 1939, Tsudakoma Corp is the Japanese company in the business of textile machinery, composite machinery and machine tool attachments. The company has introduced TFL – a robotic AFP (Automated Fibre Placement) which can accurately lay narrow slit tapes on complex shapes. High productivity has been achieved by individual control of multiple slit tapes with the compact head allowing it to reach narrower space. It can be applied to complex shapes of workpieces such as channel forms, which can be difficult to produce with a machine. TFL uses thermoset prepreg slit tape with provision of installing 16 spools in the creel box as standard. Those tapes are delivered to the head at optimised tension control. Tsudakoma tension control technology was originally developed for textile machines. High quality slit tapes can be produced using company's TPS prepreg splitter. A traveling axis for robot and a positioner can be combined in this system. Tsudakoma's rotary tables with BallDrive mechanism (original latest driving technology) are employed as a positioner, which support high speed and precise positioning.

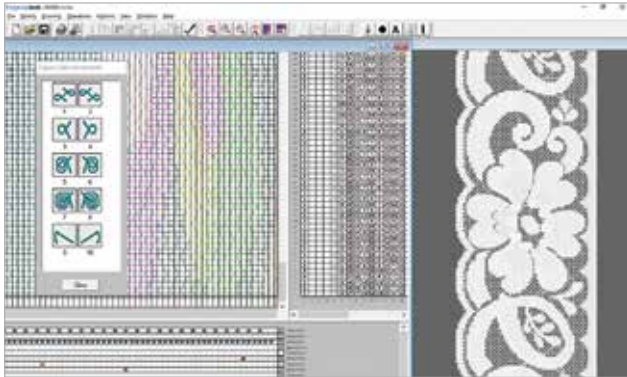


COMPANY

Comez International (Italy)

MACHINE

Mymueknit (designing software)



Comez International, a member of JAKOB MÜLLER AG, is the market leader for crochet and warp knitting machines. From November 2022, Comez began offering the new design software Mymueknit which is the newest version and upgrade of company's Comez Draw 3. The software has been designed for the creation of patterns and for the automatic programming of both Comez and Jakob Müller crochet and warp knitting machines. The solution offers a user-friendly and quick patterning process, is available on a subscription basis by a yearly fee which aims at reducing the initial investment cost for its customers. In addition, it grants the access to a samples online library. Free software updates and new features are available for all subscribers. The software is compatible with both Comez and Jakob Müller crochet and warp knitting machines facilitating design and simulation of each type of crochet or warp knitted pattern. It can calculate raw material and consumption cost; import patterns from all standard image processing along with images from digital cameras and scanners; and can be helpful in programming instructions and archives for mechanical machines thanks to its quick and extremely ease of use. It allows access to wide selection of drawings and setup charts with an easy search filter for each machine type, gauge and number of bars. It offers additional benefits of regular updates and introduction of new features, dedicated helpdesk support, training courses included with first subscription and downloading of drawings and setup charts with the initial kit of credits included in each subscription.



COMPANY

Uster Technologies (Switzerland)

MACHINE

EVS Fabriq Vision (Quality system)



Born in 1875 Uster Technologies, known as Uster in the industry, is a Swiss manufacturer of analytical instruments and on-line monitoring systems for the textile industry, based in Uster (Switzerland). The company is a global name in textile testing and quality control.

It has been seen that producing quality fabrics is much easier with automated inspection. Fabric producers need to guarantee reliable quality which demands a consistently high rate of defect detection. Uster EVS Fabriq Vision system ensures this by using automated control during intermediate and final inspection, removing the need for manual inspection. The system gathers the quality data and presents it in an album which is used to certify the quality of each fabric roll with total traceability. Multiple spectrometers inspect the material. Unique image processing algorithms identify all defects automatically, recording them in a dataset for each produced roll – which is also used for traceability. A defect map is automatically generated to help operators understand the allocation of defects in the fabric roll. This information is also available at an offline PC in the Fabriq Album software which is a valuable tool for optimising data for final cutting or further processing steps. The Fabriq album has even more people-friendly tools to make life easier for users. With manual classification, defects can be given customer-specific codes to identify each defect clearly. Unwanted images or defects can be ignored as well as removed automatically from the datasets but are then retained in a hidden layer for completeness of the dataset. The data from Uster Fabriq inspection system is useful in quality assessment of the final product and reports for the customers.

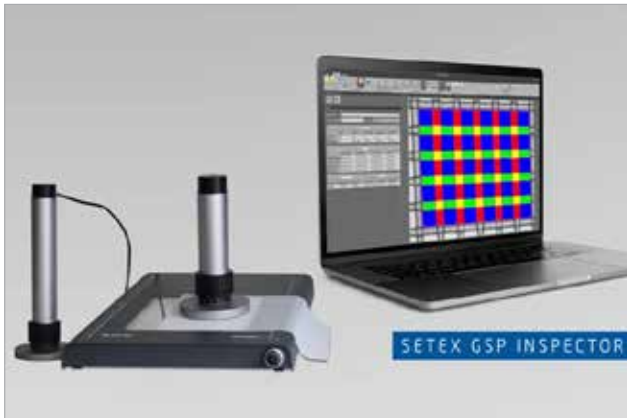


COMPANY

Setex-Textil GmbH (Germany)

MACHINE

GSP INSPECTOR 250/5 for fabric inspection



Based in Hamminkeln-Dingden (Germany) and founded in 1990, Setex has developed into one of the largest European textile manufacturers. It is the owner-managed family business in the field of fully integrated textile production encompassing spinning, weaving, finishing and assembly. The company, a one-stop supplier of controls for textile machine manufacturers and the manufacturing operation, showcased its new measurement systems GSP INSPECTOR 250/5 for direct measurement of characteristic filter parameters at Techtextil Frankfurt in June 2022. The company claims to have increased the product family of camera-based instruments to provide fabric parameters such as yarn thickness, yarn frequency, fabric geometry and pore size. The measurement system, developed with input from the filtration industry, reports with a simple measurement the pore size, pore shape and fabric pore counts in plain weaves. The interactively tracked graphical measurement visualises structure defects in addition to the characterisations as well as their influence on the result. The test results are easy to view and analyse on screen and reports can be customised for print and export to PDF. Aimed at automotive, workwear and protective wear industries with high-quality criteria, Setex's FabricINSPECTOR provides fast and simple measurements of the fabric density. The thread analysis for woven and knitted fabrics gives consistent results in a fraction of the traditional counting time. For instance, if it takes about 4 minutes to determine the thread count of 5 fabrics with a thread density of about 40 threads per cm by counting with a magnifying glass, the FabricINSPECTOR does this in 55 seconds by measuring. The evaluation of KPIs and tolerance keeps a record of quality along the value chain. The light weight and compact FabricINSPECTOR Mobile is ideal for users who want a quick decision at the location of the operation. Without the need for sampling and punching patterns, it gives reliable measured values even from running fabric.

itema

COMPANY

Itema SpA (Italy)

MACHINE

iSAVER-enabled Rapier machine



Italy-based Itema SpA is one of the world's known suppliers of quality, high-performance weaving machinery and support services to the industry. The company's most versatile rapier machine in the market, the Itema R9500-2, was shown at ITM 2022 loaded with an absolute innovation: iSAVER for apparel applications. iSAVER, the device that revolutionised the denim weaving providing tangible benefits in terms of sustainability and money saving thanks to the left side waste selvage elimination, has been further developed to successfully weave a wider range of yarns. The device is now available also for the benefit of apparel weavers and it can successfully process cotton, Lycra, Tencel and polyester yarns.

The Itema rapier machine ensures the highest efficiency by reducing waste production and energy use, while optimising the fabric's hand-feel, aesthetic and performance.

DORNIER

COMPANY

Lindauer Dornier GmbH (Germany)

MACHINE

PROTOS & TRITOS production systems



The world-renowned aircraft manufacturer Dornier switched to building textile machinery after WWII when the Allies prohibited the company from building aircraft in Germany. In 1950, Lindauer Dornier GmbH was founded in present day headquarter building at Lindau-Rickenbach. Today, with corporate divisions – weaving machines and speciality machines, Dornier has established itself among global technology leaders.

At the JEC World in May 2022, Dornier presented end-to-end approaches to thermoplastic composites and three-dimensional preforms. With its PROTOS and TRITOS production systems, Lindauer Dornier presented comprehensive solutions for the economic production of high-quality customised thermoplastic composite structures at the event. In order to provide a solution for the low level of availability of suitable unidirectional fibre reinforcement (UD tapes) and prepreg semi-finished products, Lindauer Dornier has developed the PROTOS Line (Polymer and Roving to Sheet). The integral solution allows tailored manufacturing of high-performance intermediates, products easy to be further processed. First, the Tape Production Line PROTOS TP produces either dry or fully impregnated tapes and afterwards processes them with the Tape Weaving Machine PROTOS TW into high-performance semi-finished thermoplastics.

In high-performance applications, 3D fabrics are superior to layered fibre composite structures due to their good damage tolerance and high dynamic load capacity. The Dornier TRITOS Line (Textile Roving into Three-dimensionally Oriented Structure) combines this material superiority with highly productive, industrial production. With fabric thickness of upto 100 mm and

the patented Dornier Welt Saver (DWS), the preform production line TRITOS PP is ideally suited for the use in areas with high-cost pressure.

MACHINES: P2 MONO & ROVING RAPIER MACHINES

From roving fabric made of heavy tow to special fabrics made of ceramic fibres, where many special solutions have been used so far, Dornier has now launched a highly flexible machine platform with the P2 Mono. The new mono rapier weaving machine is available in different versions, enabling customers to produce many special products on one platform. In combination with the Dornier Zero Twist Feeder, even two weft colours can be inserted twist-free at high speed and with a wide variety of patterns.

On the other hand, Dornier has acquired the know-how for customised solutions for the composites industry over the course of more than 50 years in which the company's roving weaving machines have set the international industry standard for the production of high-performance fabrics made of carbon, glass and aramid fibres. P2 Roving is their successor only. Thanks to its higher frame stiffness, improved filling insertion performance, the maintenance-free, patented Dornier SynchroDrive concept and an optimised positive centre transfer, it is already considered as the most flexible rapier weaving machine in the world. Its improved shed geometries ensure an absolutely symmetrical warp thread path which means that carbon fabrics for high-end applications can now be produced even better and more reliably. Additionally, innovative waste saving devices reduce weft waste and allow an efficient production with optimal use of material.



COMPANY

Loepfe Brothers Ltd. (Switzerland)

MACHINE

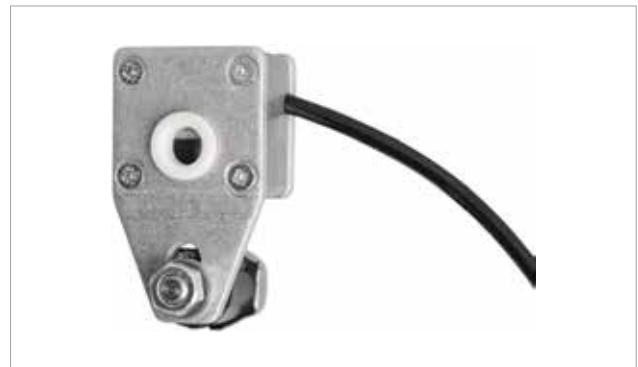
YarnMaster PRISMA



Established by brothers Helmut and Erich Loepfe in 1955, Loepfe is headquartered in Wetzikon (Switzerland). The company has established itself in the field of optical yarn clearers as the world's leading manufacturer and solution partner for electronic online quality assurance systems. Presently, Loepfe yarn clearers monitor 50 per cent of the world's staple yarn production. The control and handling of contamination in cotton are some of the biggest challenges in spinning technology. With the introduction of its YarnMaster PRISMA, Loepfe has set a new benchmark in quality control, especially for cotton as well as for coloured yarns, melange yarns and man-made fibres. Loepfe's newly developed F-sensor enables 100 per cent colour management for the first time in the history of yarn clearing. True foreign matter detection eliminates unjustified cuts which directly leads to higher performance and a reduction in yarn waste. The RGB technology used by Loepfe—to detect foreign matter and organic components of cotton—is based on detection with the full spectrum of light. The yarn gets illuminated in the full spectrum of light using the additive RGB colour model. Technology uses three primary colours – red, green and blue – adding wavelength to enable full-colour monitoring, a globally unique feature. RGB technology makes it possible for the first time to precisely detect all colours, scanning the whole raw material and classify the unwanted components within it. Optimised reflection and adapted optical technology in PRISMA further results in 360° all-round monitoring, achieving unprecedented precision in the yarn clearing of staple fibres. The PRISMA software system uses algorithms and statistical models to analyse and draw inferences from data patterns, ensuring recognition of all possible organic matter.

WEFTMASTER SW SENSOR

Screen printing requires quality assurance and production efficiency. In the screen printing process, some of the smallest threads are woven, making the demands on the sensors used for quality monitoring very high. Sensors must be able to detect



thread in thickness of only 16 µm – thinner even than a human hair. They must ensure a reliable machine stop in the event of a missing weft thread in order to guarantee the flawless quality of the end product. At the same time, a false signal may trigger an unnecessary stop of the machine causing a negative impact on efficient and profitable production. To arrest such hindrances and increase production efficiency, Loepfe has come up with WeftMaster SW-G and SFW-L sensors for smooth production with perfect results. The weft stop motion sensors detect any yarn break or yarn stoppage. The movement of the weft yarn is detected up to the fabric selvage with piezo-electric signal transducers. Reliable monitoring of the weft insertion is performed on the overall fabric width and even works for different weft yarns. The weft yarn moves over the sensing device without additional tension and with only little deviation. With such perfection, Loepfe's WeftMaster SW sensors provide weavers with quality assurance and production efficiency.



COMPANY

Rauschert Group (Germany)

MACHINE

Sodium batteries



The German Rauschert Group is an independent, owner-managed company existing since 1898. The group is a leading global manufacturer of technical ceramics, moulded plastic parts and functional components.

In January this year, Rauschert participated in the “KeNaB-ART” project (short for ‘ceramic-based sodium battery with beta-aluminate for applications above room temperature’) funded by the Federal Ministry of Education and Research (BMBF), Germany, in the “Battery 2020 Transfer” initiative which supports the development of new ceramic sodium batteries for storing renewable energy. The battery concept can make a contribution to the ‘post-lithium-ion-era’ and can be adapted to industrial scale as required with regard to the necessary cell components. Sodium batteries are both ecologically and economically attractive alternative to lithium-ion technology. In contrast to conventional lithium and sodium batteries, this type of battery is based on a solid electrolyte made of a special sodium ion conductive ceramic as the heart of the battery cell. It is combined with a metallic sodium anode and a high-performance cathode powder on transition metal oxides to create what is known as an ‘all solid state’ battery cell. Compared to usual liquid electrolyte, this battery cell does not have a high fire load thus greatly reducing risk potentials. The metallic sodium anode also has the advantage of a very high energy density that can be achieved, since additional carbon, as in standard battery cells, can be dispensed with. The expertise gained with KeNaB-ART is intended to help manufacture more sustainable, more stable and safer cells with high energy density and thus contribute to energy transformation across industries, including textiles.



COMPANY

Emtech Electronic GmbH (Germany)

MACHINE

TSA Tectile Sensation Analyser



Founded in 1995 and located in Leipzig (Germany), Emtech Electronic develops and manufactures very specialised test devices mainly for the pulp and paper industry. The company presented its innovative softness measuring device – TSA Tectile Sensation Analyser, in the recently concluded Hygienix 2022 in New Orleans, Louisiana, US. The device delivers precise data about the haptic qualities of softness, smoothness and stiffness of nonwoven products. In addition, TSA is able to objectively measure deformation and recovery characteristics. While producing hygienic nonwoven products such as wet wipes or diapers, technicians want to know the effects of different lotions on the way the product feels to the touch. Though there is traditional hand-panel method available, the time it takes to organise, and the subjective results are its disadvantages as the test must be repeated and averaged to arrive at a reliable hand-feel value. The TSA, on the other hand, is for on-the-go measurements delivered within seconds. The handy digital solution provides a numerical value for each measured parameter as well as a calculated overall hand-feel value that has been shown to correlate very well with the results from traditional hand-panel tests. The device uses an innovative sound-based measuring principle to simulate the sensory capabilities of the human hand, allowing precise measurements of a material’s softness, smoothness and stiffness. Additionally, the elasticity, plasticity and hysteresis are determined using a deformation measurement.



COMPANY

Dent Instrumentation (UK)

MACHINE

Nelson sensor – The Twin



Lancashire (UK)-based Dent Instrumentation designs sensors for the textile industry. The company is known for inventing the world's first non-contact infrared yarn sensor. It has been supplying custom-made yarn sensors to some of the leading textile manufacturers. With over 35 years' experience in sensing both man-made and natural fibres the company has built a reputation for developing and manufacturing high quality products that give prolonged service. In the same pursuit, the Dent R&D team has recently developed the next generation of Nelson sensor – the Twin. This new design incorporates two independent sensing circuits instead of the traditional single circuit, trials of which are currently underway. This type of sensor is primarily used in winding machines for man-made fibres and is typically fitted to machines manufactured by Oerlikon Barmag. The Twin is currently being marketed as a retrofit sensor upgrade for machines currently in the field, to improve their efficiency.

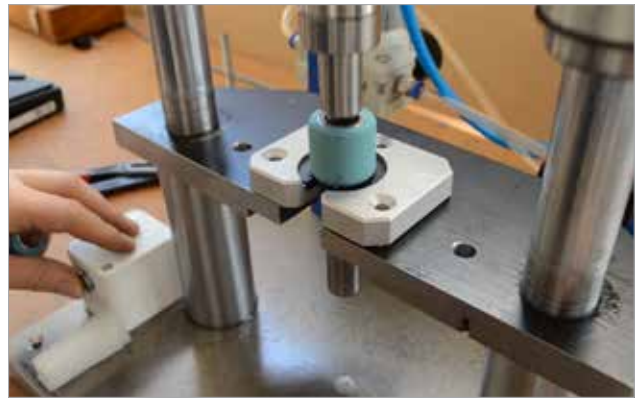


COMPANY

Swinsol AG (Switzerland)

MACHINE

2-in-1 Cot Mounting Device



Swinsol AG is a Swiss company based in St. Margrethen. It develops and manufactures components as well as technologies of mechanical compacting systems for ring spinning machines for processing natural and man-made fibres and their blends into yarns.

Spinners need to maintain cots and rollers when they are engaged in the process of ring or compact spinning. In the same regard, Swinsol has developed a device with changeable parts for both delivery rollers and front top rollers, which makes switching from roller size as well as from pressing on to pressing off very easy. The device consists of one main support device and 2 stamps – one for top roller cots and other for delivery roller cots; 2 plungers for different sized cots; 4 centering plates and one centering tube. The device can be used for both manual and automatic press. The cot mounting device is part of the supply of Swinsol Recomact package. **FF**