KARL MAYER

Kettenwirk Praxis

Textilinformationen

Gut betucht mit Spitzengardinen
An attractive view? Lace curtains do it better!

01/2010

Textile information
From Kettenwirk-Praxis

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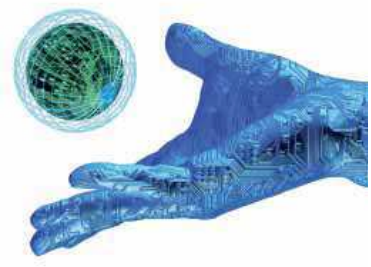
ITMA ASIA + CITME 2010, 22.-26.06 in Shanghai – a show that signals the start of the anticipated economic recovery (© jeremias münch – Fotolia.com)

Textile information
From Kettenwirk-Praxis



Warp Preparation

Spotlights

Timer

Patent

Patterns

Impressum

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Basic sports kit for manipulating the body mass index

Sports shirt with breathable zones produced on the RSJ 5/1 EL

The fitness trend continues unabated, and goes hand in hand with the attempts of textile specialists to develop new products to improve exercising and training performance.

The warp knitting process is particularly suitable for manufacturing functional sportswear. For example, KARL MAYER's high-speed tricot machines, which are fast and flexible, have become firm favourites in this sector. These high-tech machines can produce a variety of tricot fabrics, and have now been complemented by the addition of a *Raschel*tronic® machine for producing sportswear.

The RSJ 5/1 EL raschel machine was launched onto the market at ITMA 2007, and has been extremely successful since then, especially in the underwear sector. The styles that this machine can produce, which have been designed by KARL MAYER's Development Department, range from patterned foundation wear, through stretch and non-stretch lingerie, to tulle fabrics. The special features of the RSJ 5/1 EL are that it can produce individually contoured areas in specific locations to suit the final end-use, as well as zones having specific structures. It can also work different stitch densities to produce different levels of stretch. These design options are an absolute 'must' when developing sports textiles; the T-shirt shown here illustrates how these possibilities can be utilised.

The front part features a sporty, ribbed construction having different mesh zones extending in long arcs from the under the arms and across the chest. The mesh constructions, which alternate between having long, narrow openings and variable openings, provide customised breathability. The openings in the fabric are filled-in with a hatched, filigree pattern made from polyamide yarn. The result is a stable, non-stretch fabric, which transports moisture and ensures that the air can circulate freely. It also feels pleasantly soft and looks good when worn for playing sport.

This perfect combination of dynamic design and function is continued in the construction used for the back. The entire upper section worn next to the body, and the side sections, provide good ventilation thanks to their mesh construction, whereas the dense ribbed construction in the lower part produces an eye-catching effect. The design on the chest shows how the patterning facilities of the RSJ 5/1 EL can be used to produce logos and lettering. The sportsman and his shirt become a team – "Team One".

Small machines generate great interest

KARL MAYER held an in-house machine show and workshops for the DJ 6/2 EL and DJ 4/2 from 26-27.01.2010

Innovations may set the trend, but they still need a trailblazer to pave the way - especially in the machine building sector. Giving added momentum to the company's new DJ machine series was the reasoning behind KARL MAYER's decision to organise a special event, including a machine show, for its customers on the 26 and 27 January.

The programme was the same on both days, and roughly 70 making-up specialists, fabric manufacturers and yarn producers met at the company's headquarters in Obertshausen. The managing director, Fritz P. Mayer, welcomed the assembled guests. In his speech, he emphasised the importance of being able to react flexibly to the various demands of the market, especially when faced with the continuing economic crisis. With the development of the new Seamless Smart model, KARL MAYER's aim is to cater for these demands.

During the course of a theoretical presentation of the machine's performance potential, combined with the opportunity to view the actual production processes, the guests were able to get an idea of the

competitive advantages offered by these compact, double-bar raschel machines.

Machines that can fit into even tiny niches

A DJ 6/2 EL, which was producing a ladies' dress with a drawstring waistband, and a DJ 4/2, which was working a stretch top, were being exhibited at KARL MAYER's machine show. Both of these garments were being produced at incredibly high speeds from a single piece. Whereas the double-bar raschel machine with six guide bars can operate at maximum speeds of 375 min^{-1} and thus produced 5,8 complete dresses per hour, the version

having fewer guide bars can operate at speeds of up to 450 min^{-1}. This was equivalent to 10.7 tops per hour for the model being shown at the in-house event. The machines in the DJ series are therefore not only fast, they are also extremely flexible. A wide range of patterning options and the possibility of being able to change over the design quickly guarantee a high production rate, even when processing small batches, which is an important requirement for being successful in niche segments.

Cesare Citterio, the managing director of Cifra SpA, with his more than 12 years of experience in the Seamless business, has already tested the DJ models, and confirms the tailor-made design of the smart compact machines perfectly matching today's market requirements.

Especially when producing fish net tights, it is easy to manufacture tubular structures of different diameters which are

perfectly made-to-size. Besides, with the necessary know-how, it is also possible to take advantage of the machine potentials with regard to design change, in this way also being able to successfully satisfy the demands of the sophisticated and complex fashion market with its short collection cycles – an opinion which was generally shared. The machine presentation was followed by numerous discussions about the new

chances offered by these machines for the designing of fashion articles. The main focus was on fish net tights, the production of which requires a minimum of making-up but offering a maximum of diversity in terms of placing the hole and/or net patterns. Outerwear was another core topic of these discussions. The high-quality fabrics intended for dresses, skirts and shirts are produced in longitudinal direction, partly several times side by side. They comprise plain and patterned textiles, can be made of various materials, and show an exceptionally high tear strength, in spite of their sometimes filigree design. Apart from the high-price fashion articles, Cesare Citterio considers the segments of medical and sports textiles (with their usually large order volumes) to be an important application field for the DJ machines.

"The production rate of the Seamless Smart machines is really exceptional and, together with their compact design, this is a particularly important factor for us", said one visitor from the company, Karl Otto Braun, who was extremely impressed. This vertically integrated company produces every type of product found in a first-aid box, from surgical dressings to bandages, and is geared up to processing long production runs extremely efficiently.

Elias Assa, the managing director of Assatex, was interested in the machines for producing his sports textiles, as well as in their patterning possibilities. "The machines of the DJ-series are the perfect tools for our designers – both for producing fashion wear as well as highperformance sportshirts", said this spry manufacturer. "I am particularly impressed by the possibilities of working clearly defined zones having predetermined compression and ventilation characteristics in specific areas of the fabric."

The DJ machines can work functional zones having different stitch densities and stretch characteristics without any problems by changing the pattern as appropriate, together with the Multi Speed facility. Different lappings and yarns can also be used in the front and back parts of garments. Elastane is an important yarn that can be used to engineer the functional characteristics. This stretch yarn can be processed in an even more flexible way by using a new feature that was on show on the DJ 6/2 EL at the machine exhibition. All in all, it was not only the fabric producers who were impressed by these many possibilities.

Many interesting discussions were also held with visitors from well-known manufacturers of sports articles and shapewear, and these discussions will be consolidated even more over the next few months.

Greater flexibility for flexible yarns

In general, the machines in the DJ series can process elastane yarns in a wide variety of different lappings. However, when they are used together with non-stretch yarns in the jacquard bars, tension differences may occur in the yarns. This effect has been avoided until now by using covered elastane types, but the choice of elastic components was restricted. However, this problem has now been solved by using tension fingers. These tension-equalising springs are located at the jacquard bars and operate in conjunction with a specific warp beam set-up.

Changing the wallpaper without getting splashes of paint and paste everywhere

New decorative nonwoven for temporary interior design projects

Nothing is forever – a saying that is especially true when it comes to erecting exhibition stands and booths. Despite only being used for a short period of time, these temporary room arrangements must have a pleasant feel to them, and this can be achieved by using a variety of patterns and colours. They must be cosy and cheerful and, last but not least, stimulate and encourage sales. In addition to having clearly discernible surface features, the element of softness also plays an important role here. Elements that do not dazzle onlookers as they approach the stand, which have a textile look and feel to them, also create a pleasant feeling of well-being. DecoBond illustrates how tiny enclaves of cosiness and comfort can be created in just a few simple steps, especially in the rather clinical environment of the contract sector.

Characteristics

The decorative textile, DecoBond, was developed by PMG Vliestex GmbH and is extremely easy to use. This "stick and play" system can be applied very easily without forming bubbles, and removed again after use without leaving any residue behind. There are virtually no restrictions on the designs or applications of this fine nonwoven textile, and these features make it easy to set up and re-organise specific areas quickly, flexibly and cost-effectively. DecoBond offers the following advantages:

- has a self-adhesive surface that will stick to most of the surfaces
- offers a range of decorative effects, since both standard designs and special patterns can be printed onto it
- can be removed without leaving any residue, many times
- has a textile handle and appearance
- is simple and quick to use
- no air bubbles are formed
- is flame-retardant
- allows light to pass through glass surfaces
- no additional cover film is needed on the adhesive side.

Applications

In addition to being used to decorate exhibition halls and trade fair stands, DecoBond is particularly useful for creating the right background when setting up special exhibitions in museums and art and design studios. It can also be used to conjure up just the right mood in the reception areas and function rooms of hotels and special event venues.

Its other applications include fitting-out shops, interior design projects, shop windows and special displays.

This practical and versatile material for the contract sector can also be used in the home. DecoBond can be used effectively to change the look of the walls in living-rooms, halls and party areas, without having to move the furniture around and without a single pasting table or paint pot in sight! Nor is there any need to spend ages working through the instruction manual. These decorative textiles can be re-positioned many times, without losing any of their stickiness. They can be cut using a blade or pair of scissors, and can be applied and stuck down easily, without producing any bubbles. And DecoBond is happy to stick to every type of surface.

Any type of smooth and slightly structured surface, such as wood, veneer, plastic, GFRP, glass, metal, wallpaper, brickwork and plaster are suitable base materials for this decorative textile. It will even stick to pliable surfaces, such as the thin walls of exhibition stands, without any problems. The only thing that DecoBond will not stick to easily is itself. This is a big advantage when handling the material, since the fabric webs can easily be separated from each other and pulled off from the roll. Another advantage of this material from PMG Vliestex, especially when it is used on exhibition stands, is that it can be removed without leaving any residue. If you don't believe it, just try it for yourself. You will find a sample in the "Patterns" section of this issue, which you can examine, touch, and try out for yourself.

Textile construction

The base material for DecoBond is a Maliwatt nonwoven, which is mechanically bonded using the Malimo stitch-bonding technology. One side of the thin material is coated with a special adhesive, and the decorative side is printed with a pattern. The design possibilities are therefore virtually unlimited. Standard patterns can be produced in large formats and used over large areas in the same way as individually printed motifs.

This material is printed and marketed by PMG Vliestex GmbH and by his business partners.

© Nicole Effinger - Fotolia.com

A little closer to heaven with SKYLIVING

Innovative outdoor furniture using three-dimensional warp-knitted spacer fabrics for padding and ventilation

Anyone who stretches out horizontally in the open air to relax does one thing before anything else: he looks up into the Sky. Sky, the epitome of relaxation, enjoyment, forgetting and freedom, has now also become the chief component of a new, exclusive brand of outdoor furniture. The SKYbed is one of many exclusive products in which well thought-out, puristic constructions, sensational design and high-tech materials are brought together.

Materials for use in the open air all year round

SKYbed consists wholly of materials which feel good 365 days a year in the open air. They create comfort, bring outstanding design to the outdoors, and are resistant to such environmental influences as temperature variations, sunlight, rain, salt and dust,

The developer and manufacturer of this modern outdoor furniture are Dr Eric Ringhut and Marc Fink, founder and owner of SKYLIVING. To stand apart functionally and aesthetically, the entrepreneurs deliberately avoided using conventionally interlaced synthetic fibre surfaces, foam padding and aluminium or wooden support systems, relying instead exclusively on high-tech materials.

The high-quality textiles and metal components in the SKYLIVING portfolio have already demonstrated their suitability in all weathers and long service life in other applications. The three-dimensional warp-knitted fabrics which are used at the heart of the padding have proved themselves in particular. The 20-mm high, open structure of the textile spacers wicks moisture away rapidly to the outside and permits optimum circulation of the air – proper ventilation, for recovery without the build-up of heat and sweat. In addition the pressure-stable and, at the same time, flexible warp-knitted spacer fabric ensures comfort and stability in the seat and back areas. The body weight is absorbed where it occurs and not distributed over the surface – a well-developed precision elasticity which ensures that the body has soft and pleasant support. Other features which favour the use of these three-dimensional textiles in SKYLIVING products are their long service life, their low weight, the fact that they can be recycled, and certification on the basis of Eco-Tex standard 100.

The functional spacer material is combined with a micromesh fabric as a seat and contact area. The textile mesh is coated with PVC and is extremely resistant to tearing and abrasion. It is also highly dimensionally stable, extremely resistant to ultraviolet radiation and colourfast. It also dries very quickly because of its open pore nature. Additionally the mesh structure can be easily cleaned and, as a result of antimycotic treatment, it can be used without reservation in such wet areas such as spas and wellness oases. A wide range of colours gives great opportunities for individualization.

The range of high-performance accessories for total relaxation in Mother Nature is completed by a high-grade steel support system.

V2A steel (material 4301) is used in the SKYLIVING product line. This has made a name for itself because of its resistance to weathering. In addition the material is harder than normal steel , and thus more scratch- and impact-resistant. The frame material was brushed to improve its appearance. All frames can also be made from V4A steel if required.

Furniture with heart and mind

The new premium outdoor furniture from SKYLIVING combines design and functionalism in each item.

For example, the SKYbed has a flexible frame which configures itself to uneven ground and thus guarantees a tension-free, firm standing position. In addition, individually adjustable suspension links ensure different positions for individual comfort and can even out 'inappropriate' positions when several persons having different body weights relax on the SKYbed.

With its SKYlounger and SKYrocker SKYLIVING is introducing its own lounger collection, and with its many more innovative products it now has a particularly exclusive portfolio to offer. Whether on the beach, on the terrace, on board yachts, in spas or wellness oases, by swimming pools or on balconies, SKYLIVING products can be used to relax and dream on all year round. And that on high-tech textiles.

Further information can be obtained from: http://www.sky-living.com

Fig.: SKYbed (picture from SKYLIVING Dr Eric Ringhut and Marc Fink GbR)

Mother Hulda has retired

New pillow designs are replacing the old feather pillows

Modern pillows are no longer light and airy, soft and squishy, nor can they be shaken out of the window, which is hard luck for Mother Hulda! These pillows, which have stable contours, specific elastic properties and customised designs, have been adapted to suit various applications. The result is that they now have graduated, wavy profiles, incorporate blocks and cylinders for the head and neck regions, and are available, for example, as crescent-shaped nursing pillows, wedges having a moulded base for sitting on, constructions with hollows in the middle for holding babies safely and securely, or as two adjacent, flat, U-shaped profiles for securing knee joints, i.e. these pillows not only provide a good night's sleep they can also be used as orthopaedic aids.

One example of a new and different pillow design is the Ombracio pillow from Tempur® (Figures). This butterfly-shaped construction has been designed specifically for people who sleep on their stomach to prevent back and neck problems when they are lying down and also to guarantee an adequate supply of oxygen. This highly functional design is based on Tempur® foam combined with a special 3D cover. The pillow ensures that the upper body, neck and head lie in a comfortable position, so that the neck and shoulder muscles can relax and, above all, it guarantees that the area around the sleeping person is well ventilated.

The wide side border in particular, which is made from a soft, warp-knitted spacer textile, provides a high degree of breathability. The specific construction of the 3D material enables perspiration to be removed from the pillow efficiently and transported to the ambient air where it can evaporate.

The many opportunities of engineering the design during the production process also mean that warp-knitted spacer textiles are ideal for use as the actual filling material. For example, this enables zones having different hardness ratings, thicknesses of up to 5 cm, contours that suit the intended application, and even hollows in the middle of the material to be produced. The moulding process can also be used to create the desired surface profile – the result is a perfect shape, which turns yesterday's feather pillow into the snow of the Mother Hulda fairytale.

Fig.: Ombracio pillows by Tempur® (photograph courtesy of Tempur®)

Background: © kristian sekulic - Fotolia.com

Multiaxial and biaxial: Protechna ProCam system is watching you

Protechna ProCam system for monitoring biaxial and multiaxial KARL MAYER machines when processing glass fibres

Glass fibres are efficient partners in various types of composite structures. In order for them to be used in their different ways they are brought together to form nonwoven webs and processed on biaxial or multiaxial machines.

One of the leading manufacturers of equipment for the production of reinforcing textiles is KARL MAYER. The high-tech solutions from this experienced machine manufacturer are extraordinarily fast, gentle in they way they process yarns, and technically sophisticated. Nevertheless the efficiency and web quality from these multiaxial and biaxial machines – as these types are called – can be improved using sophisticated additional technology.

In this sense one component is the Protechna ProCam system which uses cameras for monitoring (Fig. 1). The monitoring system was developed specially for turning glass fibres into multiaxial and biaxial webs.

To achieve the optimization the Protechna ProCam system now makes the monitoring of relatively thick fabrics – and thus typical multilayer constructions – possible when processing glass fibres.

Requirements relating to camera monitoring

A camera-based monitoring system for biaxial and multiaxial machines is economically feasible if a large proportion of the fault monitoring is carried out by the monitoring system. The monitoring system must therefore detect pre-identified types of faults and bring the machine to a halt. In particular it is important that all common surface faults are reliably detected by the system. In addition the yarn feed must be monitored by additional light barriers, and the monitoring system must be easy and simple to operate.

The advantage of proven technology

ProCam has become firmly established as a robust and inexpensive camera-based system for monitoring the production of wide fabrics which is suitable for industrial application.

The system was originally developed for use on warp knitting machines, but has now been upgraded to satisfy specific demands when used on biaxial and multiaxial machines. With this application in mind, Protechna developed a graphic user interface which can be used on a mobile unit which has been tested in the production environment (Fig, 2).

Thus, despite the large number of fault types which need to be recognized, the monitoring system is easy to operate, user-friendly and reliable. Knowledge of working with a PC is not required. Nonetheless further development of the ProCam system opens up the possibility of archiving fault data on a comprehensive scale and to manage them optimally via a network. Precision monitoring for products with maximum and documented quality. The ProCam system is, as usual, mounted directly on the production machine even in the case of biaxial and multiaxial KARL MAYER machines (Fig. 3).

Depending on the machine conditions, the fabric is checked a few centimetres beyond the needles. As soon as a fault occurs ProCam stops the machine, warns the operator via a flashing indicator light and indicates the position of the fault on a large matrix display. Using backlight illumination to provide reliable evaluation, different types of faults can be evaluated round the clock.Using ProCam on biaxial and multiaxial machine results in almost completely no faults, or in faults which are reduced in length and effect. In addition the monitoring system produces a fault record on the basis of objective measurements which is proof of quality for suppliers and customers alike.

But the production report is also valuable within the company as well. The automatic recording of all the faults and machine downtimes can later be utilized in creating a record of fault statistics or in assessing the machine efficiency.

Detecting a wide variety of faults

On KARL MAYER biaxial and multiaxial machines the ProCam system is particularly focussed on the zero degree yarns.

The Protechna system detects the absence of any yarns inserted at zero angle after a breakage and notes this type of fault partially in terms of the reduced yarn tension before the yarn end has left the needle. In addition ProCam also indicates when one yarn has been placed on top of another yarn.

Gaps in 45/90 degree inlay/weft yarns (only 90 degree yarns in the case of biaxial machines) can be detected. The maximum permissible size is adjustable in accordance with the client's requirements.

Although a missing sewing thread cannot be detected directly by the ProCam system, the consequences certainly can. If the zero degree yarns change their positions sideways or their height, these changes can be detected by the ProCam system.

The monitoring system shows the current signal for each fault type while it is operating. This means that the stop level can be adjusted optimally for each article produced – a well-thought-out step towards a made-to-order monitoring concept. If the width of the fabric is altered, the requisite monitoring area can be increased or reduced correspondingly.

Additionally the number of stitches over which the fault detection zone extends

can also be adjusted. This means that detection can be optimized for fault lengths which are as short as possible.

Complete system and service from one source

Protechna supplies the monitoring system ready for use and with all the required components for mechanical assembly on the machine and for electrical connection to it. If necessary, qualified service personnel is available to help with the assembly, as well as with the basic settings and for training the operators.

Optional equipment

The ProCam monitoring system is not restricted solely to cameras. Protechna also supplies different types of transmitters and receivers, and also a wide range of light barrier versions which are well known from the Protechna Laserstop 4080 series. These light barriers specialize in yarn breakage detection and can be operated directly from the ProCam system via an optional plug-in module. They monitor the yarn feed and regulate the selvedge yarns.

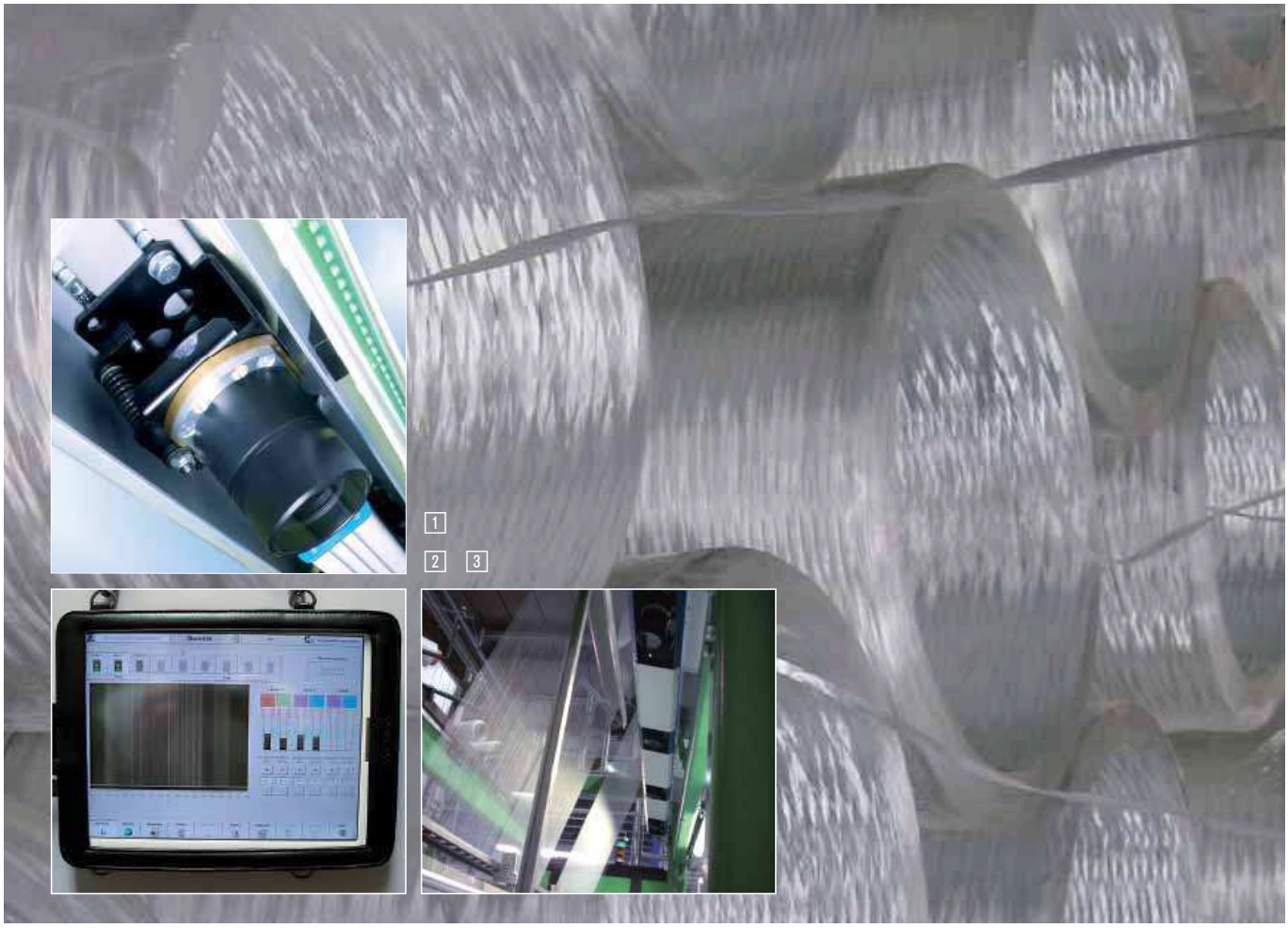
A ProCam system with conventional Laserstop 4080 series light barriers cannot normally directly detect faults in binder yarns or marking threads, as only broken yarns can be detected. The marking threads in particular tend to have an effect: the yarn no longer passes through the guide, but runs loose, but not loose enough to be detected by the Laserstop light barrier.

An additional monitoring system with a Laserstop 4080 Sync light barrier can be used for detecting these faults in the needle area.

With all these features the Protechna ProCam system is a properly thought-out monitoring solution, using which the potential of the biaxial and multiaxial machines can be fully utilized as far as efficiency and quality are concerned.

Fig. 1: Camera monitoring system with Protechna ProCam
Fig. 2: Mobile operating unit with graphic surface
Fig. 3: ProCam in use

KARL MAYER's MULTIAXIAL



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On top form with the optimised HKS MSU S

Fast and flexible – the new generation of high-speed tricot machines with parallel weft insertion

Warp-knitted fabrics are extremely versatile as far as their designs and constructions are concerned, and they can also be engineered to have specific strength values. The reinforcing yarns are mainly responsible for producing the high load-bearing capacity. These extremely stable yarns can be incorporated in line with the courses; they therefore lie at an angle of 90° in the textile, and are inserted as full wefts in this case. The types of constructions produced in this way include insect-repellent nets, lightweight yet dense shading and screening materials, high-quality warp knits for soft furnishings, and a variety of interlinings.

KARL MAYER's high-speed tricot machines with parallel weft insertion are used for efficiently producing textiles that are mainly used in semi-technical and technical applications. This traditional company is a market leader in the production of warp knitting machines with magazine weft facility, and is continuously improving and expanding its range of products.

At the beginning of this year, this manufacturer launched the HKS MSU S machine onto the market as part of a new generation of machines. This revamped machine incorporates a number of optimised features, thus giving the user access to an even greater range of applications than its predecessor. These improved performance features relate to the flexibility, but especially the productivity. The parameters that illustrate the success of KARL MAYER's development work include a fabric width of 6.27 m, even at a gauge of E 28, and a productivity rate of 2,000 m² fabric/hr.

A wide range of yarns can also be processed. At one time, viscose and acrylic spun yarns were typically used as the weft, but now extremely fine yarns, such a polyester filament yarns with a count of 17 dtex, can now be used – similar to the ones used as knitting yarns.

The new HKS MSUS S not only enables a wider range of yarns to be processed, it is also more versatile when it comes to incorporating the reinforcing yarns. Even long underlaps, e.g. in an arrangement of 1-0/4-5//, can be processed without any problems. Selecting the option, "weft repeat", enables yarns to be incorporated only at the points at which they are actually needed. Zones having different densities can also be alternated with each other, and the segments produced can be configured to have specific widths. The transition from open to dense knitted constructions can therefore be worked very smoothly. The Multi Speed function is needed to do this. And practical textiles can also be attractive. Atlas net lappings can be used to make the weft-inserted fabrics more attractive. The use of lustrous yarns produces elegant fabrics, whereby the weft yarns on the inside do a sterling job and also look attractive on the outside.

Examples of constructions produced on KARL MAYER MALIMO's HKS MSU S:

No.: 10915

Machine:	HKS MSU S
Gauge:	28 E
Stitch density:	3 stitches/cm
Construction:	GB 2: 1-0/0-1//
Threading:	GB 2 and Weft: fully set,
Yarns:	GB 2: polyester, text., 76 dtex f 24 weft: viscose, Nm 20

No.: 10917

Machine:	HKS MSU S
Gauge:	28 E
Stitch density:	52 stitches/cm
Construction:	GB 2: 1-0/0-1//
Threading:	GB 2 and Weft: fully set
Yarns:	GB 2: polyester, text., 76 dtex f 24 weft: polyester, text., 167 dtex f 32

Basic-Photo suit: © Luis Louro - Fotolia.com / Photo suits: © G.G. Lattek - Fotolia.com

Yarn changing in the hands of robots – automatically better performance

Automatic loading of rotary creels – a development from KARL MAYER and Primon Automazioni for optimising the doffing/donning process on a Gir-O-Matic at Loro Piana

Automatic rotary creel loading is one technical solution that can be used for automating the processing sequences when changing the bobbins on KARL MAYER's sample warping machines (Fig. 1). This innovative system comprises a robot, which is responsible for changing the yarn bobbins and knotting-on the yarns. This development was on show at the last ITMA trade fair as a simulation, and was used in practice for the first time in spring 2009 at Loro Piana's Quarona plant.

This robot technology was developed jointly by KARL MAYER and Primon Automazioni. This leading producer of warp preparation machinery brought its special expertise in building warping machines to bear in this joint project, whilst the Italian producer of automation and rationalisation systems proved to be extremely adept at developing automatic sequences for warp preparation. Primon Automazioni has been supplying the market for some years now with automated solutions for e.g. doffing and donning creels with full and empty bobbins. The objective of these two specialist suppliers was to optimise the already extremely efficient operations of the *Gir-O-Matic* even further. The aim was to make this machine, which is already extremely reliable, flexible and productive, even more beneficial to its users, especially when working with yarns that have to be changed frequently and with short warp lengths.

Exceptional performance from the *Gir-O-Matic*

KARL MAYER's *Gir-O-Matic* sample warping machine is designed for the production of multi-coloured or single-colour sample and production warps in warp lengths of up to 1,050 metres. Depending on the number of bobbin positions on the rotary creel, this warp preparation machine is available as the GOM 8, GOM 16S, GOM 16 or GOM 24, and these are all extremely efficient, high-precision production machines.

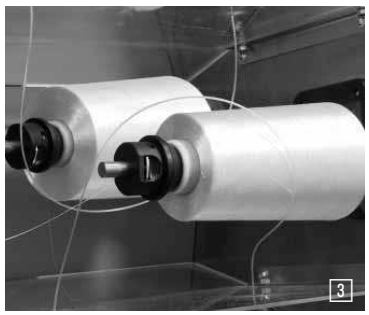
More specifically, a patented band build-up control system guarantees perfect band build and stepper motors ensure that the yarns are transported accurately.

Other features include a drum having a circumference of 7 m, a leasing and beaming unit and, on the GOM 16 and GOM 24, an optional pre-draw-off drum and pressure roller device. The separating device enables from one to nine separate bands to be laid, and is controlled automatically, which guarantees a fully automatic warping sequence. The pre-draw-off drum and beaming unit handle the warps to guarantee perfect further processing. All these features can be accessed easily via the relevant software.

An Operator Interface in the form of a touchscreen allows data to be input easily, and enables all the operations to be seen "at-a-glance". This interface is also responsible for communicating with the *KAMCOS*® system, the link to the machine's modular computer units. The *Gir-O-Matic* can be networked via an Ethernet system and linked up to the KARL MAYER Teleservice system.

The advantages of this clever configuration include:

- perfect handling of the yarn
- perfect warp beam build
- perfect length accuracy
- productivity is increased by as much as 40 % when processing single-colour warps and by up to 600 % when sample warping, compared to the sectional warping technology.



Optimising specific sequences, such as yarn donning using robots, has enabled the performance of the *Gir-O-Matic* to be increased even further.

Robot station for automatic bobbin changing and order preparation

This innovative solution enables bobbins to be changed during total or partial yarn creeling at the *Gir-O-Matic*. Once the bobbins have been exchanged, the yarn ends are also knotted automatically. This is done by the robot. This independent "assistant" can move with six degrees of freedom, and is equipped with specific tools for carrying out its various jobs. These include:

- a pick&place device for removing bobbins from the loading trolley and doffing or donning the bobbins
- a device for sucking the yarns
- a device for cutting and positioning the yarns (Fig. 2)
- a mobile knotting device (Fig. 4)
- a device for releasing the bobbin holder on the rotary creel
- a loading trolley
- a KARL MAYER laser monitoring system for measuring the diameter of the bobbins that are running out.

KARL MAYER has also modified its sample warping machine to enable the creel to execute a separate movement.

With this arrangement, bobbin changing at the *Gir-O-Matic* is fully automatic and, as required, is carried out in the conventional way. However, there are some deviations from the "business as usual" principle. The new bobbins are no longer mounted directly onto the rotary creel but onto the loading trolley at the robot station. This means less work for the operators and greater operating efficiency.

Once the bobbin trolley is loaded as required, it moves into the robot's operating zone and, at just the right moment and without any further intervention, all the necessary sequences are carried out – from removal of the tubes to knotting of the yarns.

At the same time, the warp beam that has just been produced can be removed at the other side of the machine – this is real "multitasking", which increases the productivity of the *Gir-O-Matic* even more.

Fig. 1: The CTM system in use on the *Gir-O-Matic*
Fig. 2: The pick&place system with cutting device (above)
Fig. 3: Bobbins in the creel
Fig. 4: The knotting device

Automated, high-precision operations

Automatic loading of the rotary creel operates with a high level of precision. The processing steps required are carried out accurately according to a predetermined plan. The pick&place device first of all removes a new bobbin from the loading trolley and the creel moves to the changing position. The robot then intervenes in the working zone of the *Gir-O-Matic*. It removes the bobbin that has to be changed from the creel, cuts the yarn that is left on it, rotates its arm about an angle of 180°, and inserts the new bobbin. Automatic knotting is then carried out. The bobbin that has been removed is then placed in the trolley by executing another 180° movement. This operation is both accurate and fast.

The complete cycle for changing the bobbins and knotting the yarns together takes just 30 seconds. If only partial creeling is required, the bobbins that have to be replaced are detected first by a laser system.

Benefits for Loro Piana

The bobbin changing and knotting robot has been operating on the *Gir-O-Matic* at Loro Piana since March 2009, and has been extremely successful. At warp lengths averaging 200 m, machine utilisation has increased by 2.5 to 3.5 hours a day, so that productivity has risen by 15 %. The productivity is even higher when the running lengths of the warp beams are short and the yarn changing cycles are short.

This integrated robot solution not only guarantees a high level of efficiency when using the *Gir-O-Matic*, it also offers maximum flexibility – an important benefit to the company in terms of its competitiveness, although not normally the prime consideration in an automisation and rationalisation project. Companies operating several machines can use their staff more effectively as a result of the increased productivity of the *Gir-O-Matic*, and normal production output can be achieved either in less time or with fewer machines.

At any rate, the robot for automatically changing bobbins and knotting the yarns together is a piece of equipment that will quickly pay for itself (ROI).

Source

Stefania Parisi, Automazione in orditura, Selezione Tessile, settembre 2009, pagine 48-51

Share and profit

Second generation of CFP components – the second stage of the optimisation programme improves machine availability

Technical progress in the warp knitting sector bears all the hallmarks of KARL MAYER. With their increased performance, quality and flexibility, the machines produced by this traditional manufacturer have enjoyed considerable success for many decades all over the world. One of the most important chapters in the company's history was the integration of carbon-fibre-reinforced plastic (CFP) bars into the machines and modifying the design of the machines accordingly. These high-precision composite components are up to 25 % lighter than the conventional version. They are also more rigid, thus enabling speeds to be increased considerably, for a simultaneous optimisation of the machine availability. The high temperature stability of the CFP materials has enabled the window for problem-free machine operation to be increased from +/- 2 °C to +/- 5 °C, and subsequently even to +/- 7 °C.

The company's tricot machines were the first to profit from this lightweight construction technology, and have been available with CFP bars since the ITMA fair in Munich in 2007. Once the gradual changeover of this machine series had been completed, work began on adapting the raschel machines. The first machine with CFP components, the RSE 4-1, will appear on the market at the beginning of April 2010.

With its revamped bar and shaft concept, KARL MAYER has optimised the use of this technology and made it easier to operate.

The developers and engineers have recently come up with a solution which has made the high temperature stability, which is now a standard feature of this new warp knitting technology, to be achieved more easily and efficiently. The lynchpin of this increased efficiency was to substitute the old continuous, tempered shafts for controlling the bars with components that have been divided up into high-precision segments. The shaft is divided into segments according to specific machine parameters, and it is no longer necessary to carry out the heating-up stage that was previously required following a machine stoppage. This has reduced the time-consuming heating-up phase, cut down on energy costs, and dispensed with the need to specifically adjust components during the start-up phase.

In addition to the short starting-up times, machines equipped with second generation CFP technology are more stable to ambient temperatures when operating, and thus guarantee a high gauge accuracy. Even when producing fine fabrics and at large working widths, the production machine runs smoothly at top speed to produce top-quality textiles.

The changeover of the high-speed knitting machines to second generation CFP components will start again soon, and will be carried out gradually over the course of the year.

A patent has been applied for to protect this innovative system.

ITMA ASIA + CITME – starting-point for the upturn

ITMA ASIA + CITME under a positive sign, 22.-26.06.2010 in Shanghai

This year ITMA ASIA + CITME will be held between 22 and 26 June in the New International Expo Center in Shanghai – just in time to coincide with the long-expected upturn in the Asian textile and clothing industry.

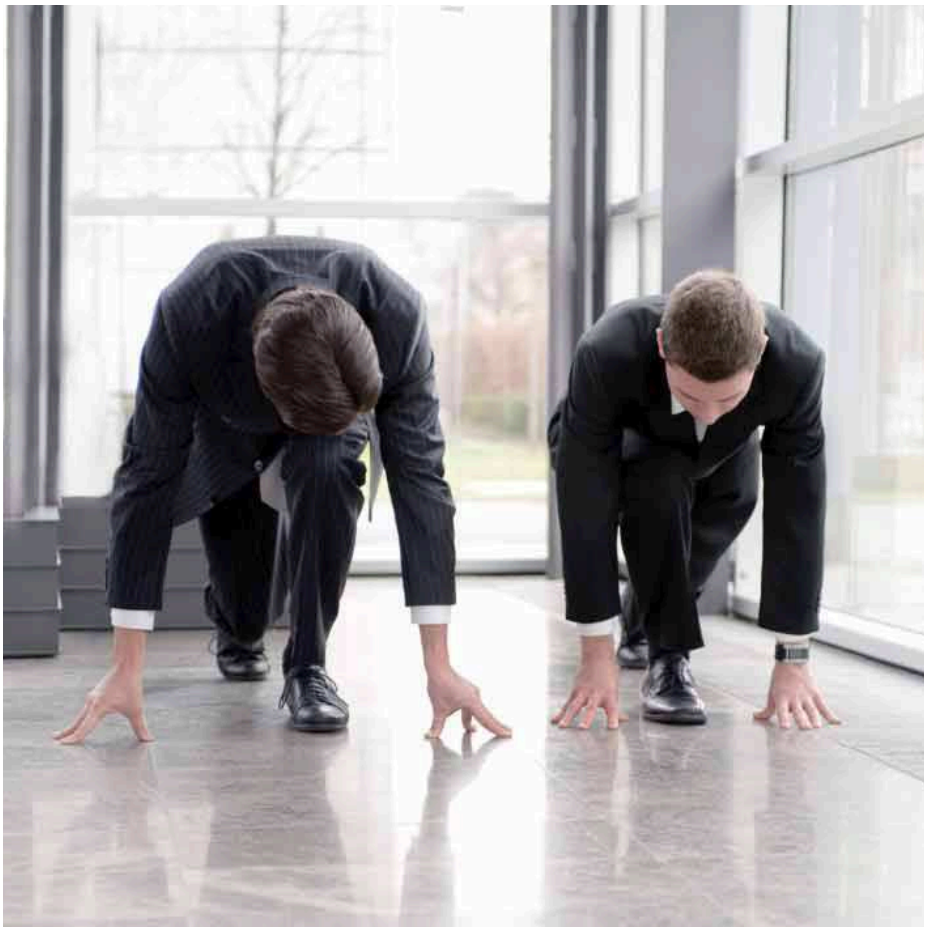
After a prolonged period during which the economy was in the doldrums, growth has again been noted in the sector, in India, for instance. Between April and November 2009 there was an approximately 11 % increase in the production of clothing, compared to the same period during the preceding year, and the production of man-made fibres rose by 22 % /1/. When the stocks had been reduced a positive trend could also be discerned in German textile machine imports after a time lag. Whereas goods to the value of 26 million Euros were exported during the whole of the third quarter of 2009, in the two months October and November alone the exports reached a value of 39 million euros and thus clearly a higher value than in the previous quarters,

A similar picture can be found in China. In the first quarter of 2009 German textile machinery exports to the People's Republic lay at a weak 121 million Euros, whereas there was clearly an increase to 159 and 151 million Euros during the second and third quarters. In October and November alone the exports came to 127 million Euros /2/. Against this favourable investment climate in the large Asian markets preparations for ITMA ASIA + CITME gathered momentum. 95 % of the space in the nine exhibition halls was booked up as early as January. This means that around 1000 companies will be exhibiting on a net floor space of 55,000 m². 100 manufacturers will be travelling from Germany alone.

The first port of call for all those interested in warp-knitting machines and warp preparation equipment will be hall E1, stand A54 – the KARL MAYER exhibition stand. As one of the highlights, this global player with its headquarters in Obershausen will be featuring the production increases which can be achieved through the appropriate integration of carbon fibre components and the correspondingly adaptation of the machine concept. The RSE 4-1 – the first lightweight raschel machine – will be seen under continuous production conditions at ITMA ASIA + CITME, and will reach speeds which have previously not been achieved. The increase in efficiency will be achieved by using lighter and more stable carbon fibre components in the bar area. A further advantage of the lightweight materials is that they are unaffected by heat and cold – an important attribute with regard to increasing the tolerance range when configuring the production environment. Thus it was possible to widen the window of climatic specifications from +/-2 °C to +/-7 °C for trouble-free operation. The first KARL MAYER machines to profit from the advantages of integrating carbon fibre components were high-production tricot machines. A model of the carbon fibre component generation from this production sector will also feature at ITMA ASIA + CITME. Further novelties on the KARL MAYER stand will come from the *Jaquardtronic® Lace* and seamless production sectors – a cavalcade of innovations which is by no means exhausted.

Parallel to the mega machine show in Shanghai this manufacturer, which abounds in innovative ideas, will be staging an in-house exhibition in the customer centre at its subsidiary in Wujin, showing the new RD 6/1-12. This extension to the double raschel machine series will be described in greater detail in this issue. In addition KARL MAYER will be featuring another novel company product and a new Warp knitting machine with parallel weft insertion.

In addition to the high-tech solutions from the warp knitting sector, ITM ASIA + CITME will feature "state-of-the art" technology from along the whole of the textile production chain in its sightseeing schedule. Reason enough against the background of a positive mood in the sector to hope for a large number of visitors. Whilst the leading event in Asia in 2008 had over 80,000 visitors, the organizers are reckoning on an increase in this figure to over 100,000 in June.



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/1/ Sumit Sharma, representative of VDMA North India Office, Indian Textile Industry Scenario, Noida, January 2010

/2/ VDMA-Nachrichten 1/2010, German Export of Textile Machines to November 2009 in millions of euros, Frankfurt/Main, January 2010