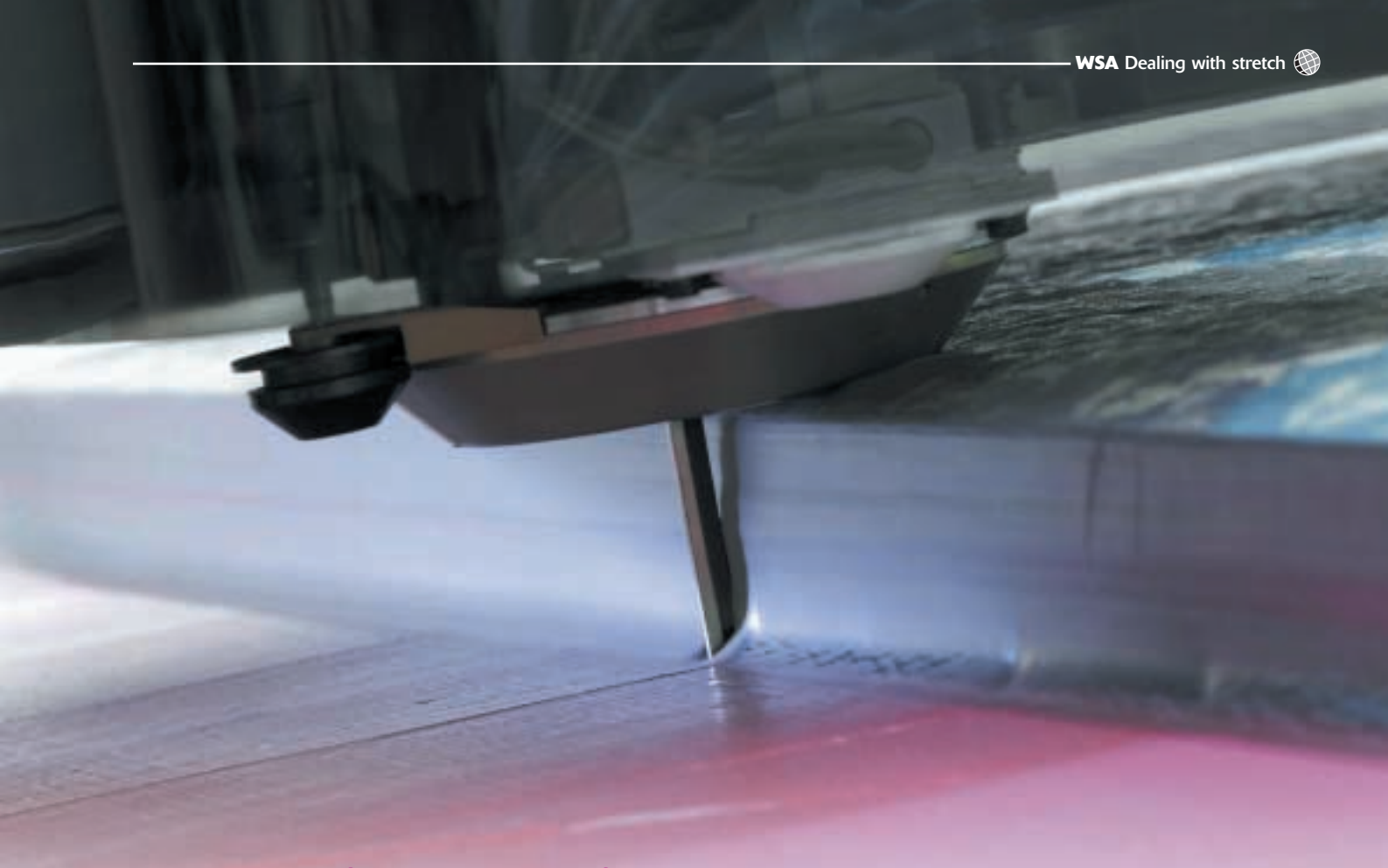


Dealing with stretch

The application of elastomeric yarns to apparel fabrics is possibly one of the most far-reaching advances in clothing technology since the invention of the zip. Comfort, fit, and, in most cases, visual improvement in the personal sense are benefits obtained at relatively little cost to the consumer. However, even the lowest percentage of stretch added to a standard weave or knit has the potential to cause problems in both the cutting and making up processes. Ingenuity, good design and the availability of IT techniques have all been brought into play to enable the garment makers to pass on the qualities conferred by elasticity.

Elastomeric fabrics are often made into garments such as lingerie or swimwear which consist of small components. Markers can consist of many pattern pieces making even computer-produced lay plans slow to prepare. Automatic lay-planning has an obvious application with this type of garment and companies using automatic programs have reported excellent time and fabric savings. Technology provider Assyst Bulmer is offering a recently upgraded web-based automated lay-planning service, where there are no overhead, hardware or software costs for the manufacturer. Marker making becomes a direct cost simply related to the number of garments produced. To use the service the manufacturer decides on the width of fabric and sends the patterns along with marking constraints to the www.automarker.com web site and the resulting marker is delivered back, normally within ten minutes. Compatible with the majority of CAD systems used in the industry, the Automarker system also lets the manufacturer try 'what if' options, such as different fabric widths or size ratios, to find the best result.

Lectra Systeme

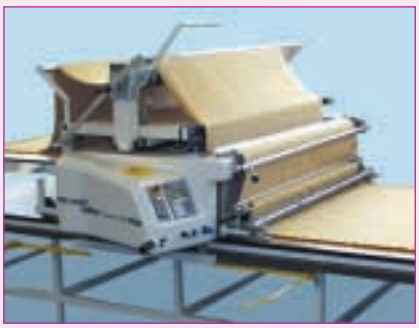
Spreading the load

Spreading is possibly the most important step in determining the finished quality of garments made from elastomeric fabrics, and in it is often made easier if the rolls of fabric are relaxed before the operation. Recent collaboration between Shelton Machines and CTI has resulted in a new



The Shelton C-Tex Fabric Relaxation system provides consistent finished length and width measurement of the fabrics during processing.

Shelton





To counteract the problem of roll rotation, Assyst Bullmer's Compact 1700 (left) operates from a driven roll where a distance sensor constantly measures the radius of the roll and then adjusts motor speed accordingly.
Assyst Bullmer have also recently upgraded their web-based automated lay-planning service, said to provide substantial cost savings to the clothing manufacturer. A screengrab from the site can be seen on the right.
Assyst Bullmer

on-line relaxation system for elastane fabrics. Known as the Shelton C-Tex Fabric Relaxation system, it provides consistent finished length and width measurement of the fabrics during processing. It combines on-line inspection and CTI's C-Tex relaxation technique within a single machine.

Within the machine fabric is unwound from the roll, without introducing tension, into a photocell-controlled lazy loop that allows it to hang freely. The movement through the loop causes the fabric to oscillate, assisting in relaxation. It then passes over an air-flotation section of the table where air is blown through to reduce friction and cause it to vibrate, thus inducing further relaxation.

Fabric length is measured using an industry standard calibrated measuring wheel, combined with an adjustable pressure roller, to eliminate material slippage and guarantee accurate length measurement. Fabric width is automatically and continuously monitored throughout the complete length of the roll. Using twin rewind rollers together with photoelectric switching and pneumatically operated edge control, processed rolls are rewound with the minimum amount of tension and are consistent from roll to roll. Machines speeds of 0 to 60 metres/minute can be set depending on fabric.

Whether pre-relaxed or not, elastomeric fabrics need to be spread with great care and precision. Poor control will mean tension and stretch being applied with the overall results of poor cut quality and wrong sizing for individual parts. Cradle spreaders give good results with many fabrics but, according to Assyst Bullmer, can have problems with soft fabrics where the roll may have a tendency to rotate within the cradle and become unevenly fed. Its Compact 1700 operates from a driven roll where a distance sensor constantly measures the radius of the roll and this in turn controls the motor driving the fabric. A dancer bar synchronises the feed roll to spread without adding any tension. End catchers are not used with elastomeric fabrics as they can build in and disguise tension.

Oteman does use an electronically controlled feed cradle in its Synergy spreader, which allows fabric threading and unthreading operations to be carried out completely automatically to reduce handling times. The intelligent feeding system enables changes in tension, even with the most delicate fabrics, to be corrected automatically by the machine. It is claimed that the result is extremely high quality spreads and therefore an improvement in the time factor. The slide feeding system allows smooth movement of the fabric, due to a pocket of air that is created at the friction surface that also reduces any fabric distortion.

The high-speed ply cutter is currently claimed to be the fastest on the market, with a speed of 3.8m/s. The application of the latest innovations in the field of microelectronics and a system that is entirely programmable, with bi-directional speed control, enable the Synergy to achieve a maximum speed of 120 metres per minute. The microprocessor offers total control over the spreading requirements, thus adding flexibility.

Sewing a finer seam

When sewing stretch material the seam often does not necessarily have the same degree of stretch as the fabric and is thus subject to ripping, pulling, wearer discomfort and general poor quality. Establishing the right density and type of stitch and checking the tension of the threads is thus of special importance. In essence, the more thread there is in the seam, the higher its elasticity. Lockstitch seams, utilising the least sewing thread have the least give and are thus the least appropriate.

According to thread manufacturers Amann, conventional sewing yarns tend only to provide a 12% to 20% level of elasticity and the company suggests that the logical solution for sewing stretch fabrics would be to use a highly elastic sewing thread that guarantees the elasticity of the seam, an innovation it has recently developed in the form of SabaFlex. SabaFlex, Amann claims, can stretch by about 70%. It is a multi-filament twine made of poly-trimethylenterephtalate where elasticity depends on its molecular structure rather than mechanical changes such as texturing. With the lock stitch, for instance, twice the seam elasticity is achieved. Cover stitch seams, which are already elastic because of the high quantity of thread, are said to achieve an additional reserve of stretch with SabaFlex. The result is that a stronger, higher quality, product can be produced within the normal timescale.

When one considers the make-up of the type of garments which it may be anticipated will use stretch fabrics, there are many specialist operations and a surprising amount of dedicated machinery and equipment. CF Italia's CF 2603-32-R2T, for example, is a complete unit for attaching stretch trim on to the waist and legs of underwear. Composed of a two needle decorative covering stitch machine, with right trimming knife, differential, outer automatic stitch extender, special sewing parts equipped with pneumatic rear tape knee press cutter and R2T metering device, it comes complete with table, stand and motor. CF 4700-1200R2T is another complete unit from the same manufacturer, equipped to apply elastic trim in a single operation with the simultaneous hemming of the fabric on underwear and aquawear. This unit is composed of a special 8 mm. three-stitch or zigzag lockstitch sewing head, thread trimmer, automatic footlift, bar tacking option and it is equipped with rear impact cutter.

Pegasus also offers a wide range of W500 specialised machines for sewing stretch fabrics. With the W562 elastic lace attaching machines, for example, the feed of the metering device can be easily adjusted for absolute accuracy. The needle thread take-up, top spreader, looper thread take-up and needle guard mechanism are



Oteman's Synergy spreader uses an electronically controlled feed cradle that allows fabric threading and unthreading operations to be carried out completely automatically. The system enables changes in tension to be corrected automatically.

Oteman

improved over previous models from this company, providing finer and more consistent stitching. The automatic tape cutter boosts productivity enabling the operator to concentrate on sewing. By pre-setting the controller switch, any of three cutting methods can be selected: at the start of the seam, at the end of seam, or both the start and end of the seam. One example is the W562-06B/LG210 flatbed machine with top cover thread for attaching elastic lace on panties and brassieres.

Seamless sewing?

Sewing machinery for seamless garments appears to be becoming one of Schips' specialisations. Its HS C21C three stitch zigzag machine with right side knife, for example, attaches laces from the top or folded elastic on seamless garments in an open operation. Productivity is high due to the simultaneous attaching of elastic and contour cutting from a seamless tubular garment. Quality is assured through the metering device with tension monitoring and automatic compensation. With the high-tech electronics it is possible to programme operations for up to 100 garments, ten seams per garment, and ten sections per seam with any tension value. A knee switch enables manual tension change whilst an extra strong fabric waste suction with special venturi removes fabric waste.

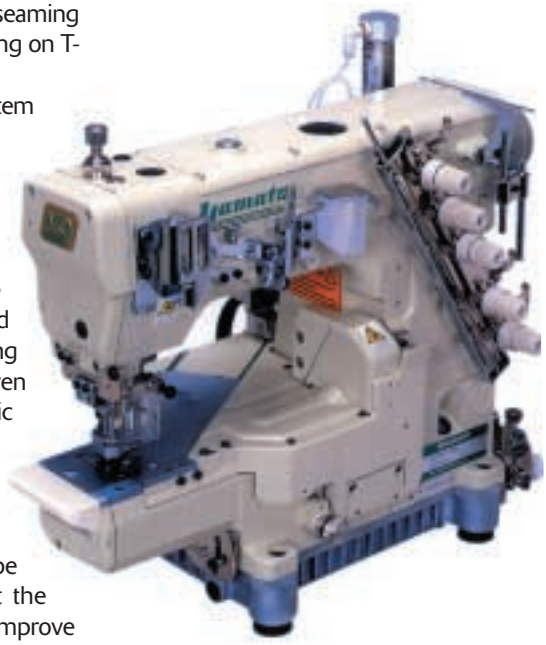
The Schips HS C1D-FP220 overlock workstation with automatic back tacker has been developed for closing side seams on slips and briefs, side and shoulder seams and sleeves on T-shirts with automatic seam back tacking at seam start operating with the choice of either one or two needles. Label dispensers for simultaneously attaching either top or under labels are optional.

Yamato's VG Series is a new generation of short cylinder bed interlock machines having upgraded function and performance. The maximum sewing speed of this machine is 6,500 s.p.m. with less noise and vibration than previous models. The short cylinder is 30mm shorter than the conventional one from needle drop point to the left side of cylinder. From needle drop point to the left side of cylinder is only 45mm though an extension cover enables use for standard hemming operations. The distance between the needle drop point to the right side of cylinder is 80mm. The needle stroke can easily be changed from 31 to 33 mm by changing the position of the eccentric pin on the needle bar rod. The design enables smooth feeding, preventing twisting during long seaming operations such as bottom hemming on T-shirts and tops.

With a presser foot floating system to enable even feed on light weight and stretchable material, the Yamato FD-62-07-MS-1/WDA flatseamer is fitted with a cutter which cuts both edges of right and left material to ensure uniform finish. A newly developed mechanism enables positive feeding to maintain smoother operation even on the different thicknesses of fabric such as the crotch point or where the collaret is pre-attached. The machine also is fitted with an air-operated and photo-cell controlled chopper type automatic thread chain cutter at the beginning and end of sewing to improve productivity.

The MF-7700 series from Juki offers high-speed, flat-bed, top and bottom coverstitch machines with two (MF-7722) or three needles (MF-7723). As the seam tension may be easily increased or decreased, the machines can be used for a broad range of applications. Seams can be adjusted depending on the application or material by changing the thread path or adjusting the thread tension controller. The optimised thread take-up mechanism and top covering thread path route contribute to an increased stability of top covering stitches whilst the machine is capable of performing sewing with a low tension applied to the thread to offer improved responsiveness. The machine is provided as standard with differential-feed with a micro-adjustment mechanism, a feed dog inclination adjustment mechanism, a micro-lifter and a needle bar stroke conversion mechanism. It can therefore be quickly adjusted to respond to various materials and processes.

The Juki MO-6100D series dry-head, high-speed, overlock / safety stitch machine is claimed to be the world's first. With a maximum sewing speed of 6,000 rpm the needle bar, feed and looper mechanisms require no oiling, thus removing the danger of oil splash on to delicate fabrics. The driving section of the machine, except for the needle bar, feed and looper mechanisms is installed in a sealed forced oiling block. The machine incorporates various mechanisms as standard, such as a micro-adjustable differential-feed and an external adjustment for the feed dog inclination. These, and similar features, can be said to contribute to finished seams that perfectly match the material to be used.



Yamato's VG Series is a new generation of short cylinder bed interlock machines having upgraded function and performance.

Yamato