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Knitting International
The revolution in shaped knitwear
Jess power
April 2008

Until the mid 80s each weft knitting technology (flatbed, straight bar frame and circular) dominated a distinct area of knitwear. Circular knitting had the benefit of speed, producing continuous lengths of cut and sew jersey (amongst other structures) in a variety of weights and colours, enabling costs to be driven down and fashion led knitwear brands to flourish. The straight bar frames superior knitting quality combined with the ability to produce 2-D shaped panels was largely associated with traditional fully fashioned classic knitwear, setting the optimum standard in luxury knitted goods. Flatbed or V-bed knitting was considered the most flexible in terms of needle selection, thus, providing more scope for colour and patterning for the fashion markets, but could not compete with the other technologies knitting speeds. Despite the fact that the flatbed machine was capable of shaping it was considered too costly in production terms and was often limited to producing rectangular panels for high fashion applications that were constructed using the cut and sew technique. For a period in history shaped knitwear was limited to classic merchandised produced on traditional machinery using high quality natural fibres, and the fashion market relied on the less expensive cut and sew knitwear (often manufactured from synthetic materials) for inspiration which had the added benefit of complex combinations of texture, patterning and colour.

When Stoll introduced its first series of CMS flatbed machines in the mid 80s the traditional boundaries of knitwear production became less defined. The programming of this machine was notably simpler, but the real breakthrough was the reversible motor enabling short knitting strokes (variable stroke) to occur. The function of variable stroke changed the dynamics of flatbed knitwear production forever. The technology was now able to combine shaping with texture and colour patterning in a cost effective way. The fully shaped knitwear market had now begun to expand from the luxury sector into the mass fashion markets. This breakthrough in flatbed knitting technology enabled complex patterning and texture to be combined with shaping, resulting in cost effective commercially viable garments. Of course other factors contributed to the boom in the flatbed knitting machines success in the fashion markets such as better stitch length and takedown control. The once hallmark of the luxury knitwear “the fashioning mark” was now readily available in less expensive synthetic fashion garments.

Once designers, technologists and technicians began to catch up with the technological advantages offered by the new generation of flatbed machines, new shapes, styles and patterns began to prevail on the high street (raglan’s, notched armholes, saddle shoulders and inset sleeves became the vogue). A new relationship between the designer and the technician was born and the 90s knitwear flourished with innovative stylelines. The classic twinset was reinvented

with new twists producing ultra fitting silhouettes by combining the properties of rib structures with innovative shaping. Knitted garment shapes became smaller and more tailored; the focus of this era was very much on knitwear conforming to the human form (see image 1 for example of fit), featuring styles with shaped waist features and integral knitted details. Shaped knitwear became a feature in its own right – often the fully fashioning marks were enhanced around the armhole area so they became a prominent style detail within the garment design (see image 2). As shaped knitwear flooded the high street retailers it became increasingly difficult to distinguish between the manufacturing techniques used in the production. In order to reduce production costs the high street retailers were using a combination of techniques to simulate high quality classic production. For example armhole shaping was evident on both the body and sleeve panels, but the shoulder and side seams were cut and sewn post knitting to reduce the manufacturing cost. In some cases the value retailers were incorporating mock fashioning marks into rectangular knitted panels and the garments were entirely cut and sewn together post knitting. This resulted in garments that had the appearance of quality luxury knitwear, but not the associated skill and precision during construction. Thus, what once was the giveaway of traditional luxury knitwear (the fashioning mark) was no longer the hallmark of quality.

The most noticeable influence knitwear had on fashion is within the production of shaped garments during the 90s. Garments with fully fashioning marks now became main stream fashion with many value retailers using the technique (at least in part) to produce classic, staple and fashion items from a variety of fibres types. For the remainder of the 90s knitwear manufacturers expertise grew with the available technologies and pushed the boundaries of knitted garment development to its limits, in terms of developing new shapes and better fitting silhouettes with increasingly more integral features, such as button stands, pockets and collars. Image 3 illustrates a raglan sleeved cardigan, where the back and front panels (including a circular buttonstand) are knitted in one piece reducing the post construction techniques. To some extent the programming and competence of the 2-D shaped knitwear manufacturers became so advanced, that when the complete garment revolution began in the mid 90s the expectation for shaping manipulation was just too high. This caused the newest generation of flatbed knitting machines to be viewed initially with some level of caution by the knitwear industry.

In the early days of the commercial introduction of complete knitted garment machines it was argued by many that they were developed to simply save costs when producing basic fully fashioned stylelines; as opposed to the revolutionary new technology that the machine builders promoted. This generation of machines despite the restriction of only knitting basic stylelines was the beginning of a new era in fashion knitwear. Machinery manufacturers have since concentrated on user friendly programming which is now significantly more reliable than the early models. Today complete garment manufacture represents the optimum in knitting technology, providing the opportunity to knit complex

patterns whilst simultaneously shaping. The complete garment generation is associated with function, fit, mobility and greater comfort during wear. Complete garment is set to expand taking a greater share of manufacturing in developed countries as developing countries gain advanced competencies and perfect the technique in fully shaped 2-D knitwear, perhaps following the path of integral knitting as labour expenses increase. On the high street the current understanding is that consumers don't really understand the benefits of seam free knitwear, although some stores are attempting to sell the benefits through information of the swing tab.

The trend for lightweight fine gauge fully shaped knitwear first seen in the 90s will continue to dominate the market for the foreseeable future. Knitwear has a large market share of fashion with many high street suppliers appointing specifically trained knitwear designers. Design teams now tend to be equally balanced with designers, technologists and technicians to focus on all aspects of the product. Innovation, quality and aesthetics appear to have driven this forward. To some extent despite complete garment manufacture being around for over 10 years the industry is still experimenting with the technology (just as they did in the 90s with integral features). The technology appears to be following three paths, a) those manufacturers using it for basic shaped stylelines to eliminate post make-up costs and benefit from quick response (and growth in fast fashion), supplying the high street and major stores, b) fully fashioned manufacturers from developed countries using it to gain a competitive advantage and finally, c) the niche manufacturers using the technology for high functional innovative garments for sportswear apparel.

It can be predicted that there will be growth in available seamless shaped garments on the high street as more manufacturers invest in this advanced technology and consumer awareness increases, paving the way forward for the ultimate knitted garments in terms of style and innovation. The seam free revolution is just beginning.

Image 1 – Example of superior fit of rib shaped garment in armhole area.

Image 2 – Fully fashioning style detail around armhole.

Image 3 – Raglan sleeved cardigan, were the back and front panels (including a circular buttonstand) are knitted in one section.

Image 4 – (Optional) Final Raglan Garment from Image 3
