Knitting International **May 2008**

Fashion and fit

Jess power

Anthropometrics is the new buzz word within fashion and clothing research. Since the earliest UK size study conducted in the 50s by Kemsley the relationship between anthropometrics and clothing sizing has become widely recognised. Clothing manufacturers and retailers have come to accept that consumer satisfaction is promoted through superior fitting garments; and as such the study of body dimensions in relation to the fashion retail markets is of significant importance. In previous years sizing systems for military personnel have been studied in detail; however, since the majority of the civilian population do not conform to this body shape the information was of little practical use to the fashion clothing manufacturing sector. The UK industry addressed this in 2001 by conducting Size-UK, this was a government sponsored state-of-the-art national civilian sizing survey involving the fashion industry and academia (some 11,000 subjects were scanned). The anthropometric data was collated from 3D body scanning and the results influenced the sizing on the UK high street. Since then other countries have followed suit conducting national surveys (Size-USA 2003 and Size-Korea 2004). However, data obtained from any sizing survey is only of practical use to the fashion industry when it has informed the development of size charts for garment production. This is where information relating specifically to knitted garments is lacking, the size charts which are in the public domain, all appear to relate directly to the manufacture of clothing from woven structures. Perhaps this is due to the diversity in knitwear since many different structures may influence the dimensions of the garment, thus the garment fit would be determined by the knitted structural properties, therefore making a single set of size recommendations impossible and a good understanding of structural properties essential.

The knitwear market has been steadily changing since the 90s – knitwear today represents the optimum fashion garment which has a prominent place in most high street ranges. More manufacturers than ever before are producing shaped knitwear, and fit is of the utmost importance to keep a competitive edge especially in traditional branded goods. Knitwear is no longer associated with the baggy sweater; it represents sophisticated stylelines conforming to the human form, resulting in flattering garment shapes. As technology moves forward pushing the boundaries of what is available in terms of patterning and shaping capabilities in flatbed knitting it is more important to establish new relationships between body measurements and knitted size charts.

Traditionally garment size charts and knitwear specifications have been a closely guarded secret within the industry. Each individual manufacturer has their own set and are unwilling to place them in the public domain – perhaps claiming this is associated with brand differentiation and providing a competitive element in retail. The individual knitwear manufacturing specifications have been devised with some understanding of customer expectation, but strongly based on the empirical knowledge gathered over many years. In many cases manufacturers have tweaked the measurements to accommodate for variations in fashion knitwear, this may be suitable for cut and sew

garments; however in fully shaped knitwear the size and form of the knitted panel is paramount. The process of shaping panels takes an entirely different production route to that of cut and sew knitwear. The knitting programmer role is often doubled with the size technician, who may not necessarily have any grounding or expertise in traditional pattern development. Paper patterns are not produced in the traditional process of fully fashioned knitwear; the shape is achieved by calculating the number of wales (stitches) and courses (rows). This is based on mathematical principles, a general understanding of knitted structures and knowledge of resultant fabric properties. The knitting specification provides information relating to the timing of the narrowings and widening to achieve the desired shape (Image 1). When manufacturers develop knitted specifications it is impossible to base them on the current size charts in the public domain since these relate entirely to woven garments and knitted structures perform differently under normal wear. These structural differences add certain benefits to the final garment as the material can be manufactured to conform tightly to the human body (retaining excellent comfort properties) or simply drape it in a way that is not possible using woven structures.

The fact that knitted structures have natural stretch properties is often exploited, resulting in fewer sizes offered in knitted styles than what is available in woven collections. Standard woven garments are normally sized in the UK using a numerical coding system (10, 12, 14 etc). This normally amounts to approximately a 25mm increase in bust sizes between the individual grades. Some knitwear on the high street also adopts this system, but it is tempting for knitwear manufacturers to use descriptive size codes (S, M, L) with 50 mm grades between each size. The benefit of producing descriptive sizes is obviously financially related since it saves costs throughout the entire production process. But does this represent good value to the consumer? A garment carrying the label of small would be expected to fit both standard UK sizes of 10 and 12. Yet in reality it would represent a change to the knitted structure as the garment is stretched to accommodate the larger body size. In other words the garment would change its appearance aesthetically due the structural properties being modified (stretched). Of course the noticeable difference to the consumer would be dependant on the style and fit of the knitted garment - a close fitting garment would be effected more significantly.

When examining how shaped knitwear conforms to the body there are four standard style lines; the notch, the raglan, the saddle and the inset (Image 2). Each of these stylelines links to a distinctive armhole shape (Image 3) and results in the overall garment conforming to the human form differently. The notch for example is the most basic of stylelines and produces a wide armhole with plenty of room for movement. The distinct giveaway of this armhole is that the shoulders are usually straight and the sleeve head when all panels are laid flat would fit directly into the armhole shape (hence there is no structure manipulation). This styleline in its basic form is often associated with golfing ranges were the garments must not inhibit movement. A styleline which is far superior to the notch (in terms of conforming to the body) is the raglan armhole. When the sleeve panel is attached to the body it falls at a sharp angle of between 17-24° to the straight shoulder, enabling the sleeve widest to be reduced dramatically. A distinct

giveaway of the raglan is that the armhole seam continues into the neckline (hence there is no shoulder seam). A style that is very much associated with traditional knitwear manufacture is the saddle shoulder armhole. Similarities can be draw with the woven yoke styleline; the only difference being that the saddle section is a continuation of the armhole shape, rather than a separate panel as the yoke is. This styleline begins to manipulate the properties of the knitted structure since there is an extra section on the back panel that pushes more of the saddle (yoke) over to the front of the garment. Thus, when the neck shape is cut – 20mm drop at the back and perhaps 60mm at front the whole section of the centre seam join from the sleeve is eliminated giving the impression that both sleeves are knitted in one continuous panel. This styleline is considered to be masculine with a boxy shape which filters in and out of vogue as fashions changes. It should be noted that the saddle is an expensive style to produce due to the post knitting processes and in some yarn compositions it is impossible to knit due to the steepness of the extra shaping on the back panel (the yarns must be flexible with reasonable natural stretch). A newcomer to the knitwear styling portfolio is the inset sleeve. As fashions became more fitted the armhole and sleeve widest were reduced dramatically to conform to the body in a method that we associate with cut and sew shapes. The natural stretch properties of the knitted structure enable close fitted garment to be produced by modifying the tradition notch armhole somewhat. Initially the overall armhole size and the sleeve widest measurements were reduced. This resulted in an armhole that the sleeve head would not fit into. To accommodate this, the sleeve head had to be increased dramatically. When the new sleeve shape was fitted into the armhole the sleeve was now forced downwards at a steeper angle to that produced by the raglan style. This resulted in an excess of fabric on the shoulder seam, to reduce this negative effect the shoulder seam requires shaping from the neckline by approximately 30mm. The inset style conformed better to the human form when the chest and the shoulders were reduced to provide a narrow fitting garment. This style is very much associated with the fashion conscious who require knitwear to conform rather than drape over the body curves.

As technology moves on, takedown mechanisms are improved and programming becomes less complex resulting in more attempts to create the perfect knitted styleline. Since shaped knitwear relies heavily on the movement of wales (stitches) in the form of increasing and decreasing it is near impossible to achieve the smooth curves which are available in cut and sew, since fractions of stitches would be required. However, similar shapes can be achieved though the holding of stitches and the manipulation of the knitted structure. This style of armhole will be featured in the next addition.

Image 1 – Knitting specification.
Image 2 – Diagrammatic images of stylelines
Image 3 – Knitted stylelines