Reflecting on markets, players and changing standards



Military fire-fighters in training.

Strata Designs

The battleground for what is made in the west and what is made in Asia is nowhere being fought more ferociously than in the area of reflective materials. A recent visit to the UK's Made Up Textiles Association (MUTA) annual show revealed that almost every fabric producer or garment manufacturer regarded the output from the Pacific Rim as the prime danger to commercial well-being. Many of the exhibiters were unwilling discuss their plans in even the vaguest terms because of their perceptions of the Asian threat. Suggestions of niche development and marketing were met with scepticism.

This unhealthy state of affairs, we are aware, is prevalent throughout Europe and the USA – and current rumblings within the WTO membership are doing little to alleviate the strain. The sector of the work-wear market that requires a 'high visibility' input is huge, with more than enough specialist areas, we should have thought, to justify some in-depth lateral thinking.

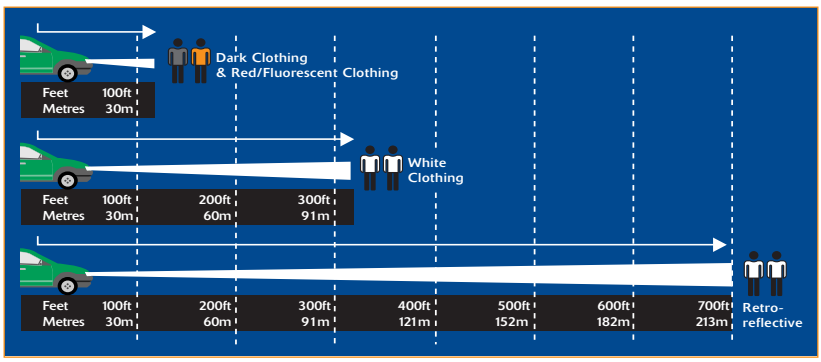
Let there be light

Most materials reflect light that registers on the human eye as a means of transmitting colour, but equally so, most do so in a scattered pattern that can only be described as inefficient in terms of visibility. In many modern situations we need to be able to concentrate the returning light to maximise visibility. Demands for improvements in safety at work and in leisure activities have made reflective materials allied to textiles of increasing importance in both work and sports wear.

Two technologies are to be found in this market, both working at the 'micro' level in terms of size, but both acting as tiny mirrors to reflect light back to the original source. Prismatic triangles as a format were first patented some 25 years ago, and bounce light from face to face at right angles. Bead technology was first used in road marking materials in the 1930s; in these the light is bounced off the rear internal faces.

The small sizes involved, and we are possibly considering several hundred 'units' to the square centimetre, and subsequent coating developments have allowed these materials to be placed in fabrics, trims, yarns and even textile printing inks. Clever design has meant that in some wear the fact that the garment uses reflective components is not visible in the daytime. Originally developed for high technology safety wear, which is still its most important market, reflective material is increasingly used in outerwear for children and sportswear.

The huge difference in visibility achieved with well designed reflective material is shown in the following chart:



Source: www.cyberglow.co.uk

Safety and fashion

Romans in France is an historic shoe centre and not the place you might expect to find a European leader in reflective technology. Yet retro-reflectivity is important in footwear and M. Bernard Cugerone of JRC-Reflex sells 30% of his output into the market, being a mix of safety footwear and children's shoes.

JRC-Reflex is a nine-year old, family-owned company that is particularly active in the niche developments surrounding reflectivity for sports and outdoor clothing. Working with a partner production company in Milan, in 2003 it developed a stretch reflective fabric that has been of great interest to the fashion-conscious street-wear sector.

Although still relatively small, JRC estimates that its use of both retro-reflective technologies places it in the top 10 companies internationally. M. Cugerone commented that he felt in good company, with 3M Scotchlite (bead technology) and Reflexite (prismatic) leading the worldwide league tables.

Based in Albstadt, in South West Germany, Regine Elastic manufactures all its output in the home country. Producing reflective materials for over 30 years, having transitioned from making regular tapes and elastics, it has been a partner with 3M for glass bead materials, developing a close relationship over the last 15 years. With 70% export by volume, it sells 50% in the European area.

The main products are banding, mostly elastic, and piping, with the primary market being clothing, mainly work wear and the sports/athletic sector. The children's market is also important but Europe has lost quite a bit of market share to lower technology and keenly-priced products from Bangladesh.

Piping is of particular value in the garments worn by traffic police, delivery service staff, airport workers, and tele-communications staff that operate at the interface with moving traffic and in many factory situations. The incorporation of piping into the seams of their garments serves to reflect the outline of the whole person rather than a symbolic 'H' at chest level.

The corporate market

Regine Elastic also sees an increasing business in reflective transfers, which can provide corporate identity as well as aiding visibility. Reflective transfers have the same power of reflection as regular reflective fabrics.

The company has 35 employees, and also remains concerned about cheaper products coming from Asia. It sees its route to future success in Europe as being dependent on fast delivery, short runs, high quality and new developments. The technology related to dyeing, improved elasticity and washability is progressing quickly, and the product range is also increasing with the addition of labels, ribbons and yarns. Additional technologies of printing, embossing, weaving and laminating have been added to the corporate armoury in recent months.

Based in the English county of Leicestershire, Strata Designs is a family business that was established in 1985 to capitalise on a plastic conversion process called Dimension Weld, a radio frequency welding technique, which in itself has been available since the early seventies. Strata initially used Dimension Weld to convert many different types of flexible plastics into badges, labels and trim, much of it concerned with the direct decoration of sportswear and mainly on football replica kit for the UK manufacturing industry. With the development of off-shore production the company now produces a far wider product range to a more diverse selection of customers, including the major sportswear brands.



Visibility where and when it is most needed.

Strata Designs

As has been said, the Dimension Weld process converts plastic films of various qualities to create different visual effects, many of which are then applied directly to textiles. Retro-reflective elements are a particularly strong business sector, with an involvement in identification for emergency services and police forces, 'fun' patches for children's clothing, sew-on reflective tape, reflective blocks for attaching to activity hardware (cycles, toboggans, etc), and tapes and stripping for high-visibility clothing. A new product for 2004 involves a retro-reflective woven base fabric in a range of colours, red, blue, green, yellow and white, which could allow a substantial move away from the standard silver strips and patches.

Understanding new legislation

The work wear production regulations that affect safety clothing are particularly rigorous with importers into the EU and European producers working to the EN471 standard for high visibility garments. This standard takes into account a number of important aspects

- the angle of light in and out
- washability
- reflection
- abrasion resistance
- what happens in rain

To the consternation of a number of specialist producers, recent revisions to the standard have also added a further requirement for conformance to the provisional ENV343 standard - weatherproof garment performance regulations that also include a breathability performance factor. This last is a critical part of the ENV and one that was possibly intended to relate purely to the outdoor clothing market (to be charitable), but, in the catch-all manner of so many European standards, it looks as though it may well be applied to a sector for which it was never intended.

The closing session at the recent Survival 2004 conference, organised by the University of Leeds in the UK, gave detailed and critical attention to the revised EN471. Speakers noted in particular that the inclusion of ENV343 militates against consumer choice and fair trading, limits production capabilities, and was promulgated without consultation.

They asked for the reason(s) behind the decision to include all shell garments in the requirement for the water vapour transmission test, and also why the Ret boundary between Clothing Classes 1 and 2 has been modified from 150 to 40?

Additionally, scorn was poured on the global application of the Ret (skin model) programme as the only acceptable water vapour transmission test. The known bias towards one particular laminate was said to create an unfair advantage in comparison with the performance of hydrophilic coatings and laminates which perform equally well in use.

Finally it was strongly suggested that the recommended wearing time limit guidance for the clothing is meaningless unless it can be related to the particular working patterns and local weather conditions.