In the fast-paced textile industry where time and financial pressures abound, colour management is an increasingly important operation. But is electronic colour management the future for textiles?



Textile technicolour

In the same way that it impacts on every aspect of the world around us, colour influences all areas of the textile industry. From transient fashions to consumer preferences, from designing to dyeing, colour is an all-encompassing and all important subject.

A recent presentation made by a Pantone spokesperson at the most recent Performance Days sportswear road-show (Munich, late last year), highlighted the practical applications of colour management systems within the global textiles supply chain. Matching colour has always been a challenge, but are advances in colour technology beginning to ease the biggest problems of time and money?

The globalisation of textile manufacturing operations has created a complex world supply and sourcing chain, bringing with it problems in colour management and communication. As well as being a key aspect of apparel, colour is also one of the hardest to manage as its appearance is subjective. The colour of an object varies with a number of factors: the observer, the quality of light it is seen in and the substrate the colour is printed on or the dye used. When it comes to communicating colour, there are comparatively few names to describe

According to Andrew Filarowski of the Society of Dyers and Colourists, colour is controlled well within major sports textiles manufacturers. Colour consistency within a sports team's kit is vital, so colour management must be a top priority. Colour, as illustrated above is an essential part of the new NBA Revolution basketball uniforms from adidas.

adidas

the seven to ten million colours or shades which can be perceived by the human eye.

Divided opinions

Over the centuries, the textile industry has progressed in a number of ways; professional standards have been set, technical challenges overcome and innovations in sportswear abound. But when it comes to colour, those working in the global textiles community seem to be divided. Since electronic colour matching systems were developed in the 1960s, some companies have welcomed the technology and the benefits it can bring, while others have preferred to stand by their traditional methods.

Traditionally in colour communication, physical textile samples and standards are sent back and forth between the specifier and the supplier, but, according to Andrew Filarowski, technical director at the Society of Dyers and Colourists (SDC), this in itself can create problems. "The samples will get dirty and will be creased, which will affect the colour," he says. "The environment in which you look at colour seriously affects the colour that you see. When your grandmother used to say, 'I'll have a look at this at the door',she actually understood intuitively that things look different under different lighting."

Another problem with this method, according to Mr Filarowski, is the human element, which even master dyers cannot escape. "You have to take into account the fact that visual assessment in itself isn't very good; the fact that we see colours differently depending on how tired we are, how old we are and how long we've been looking at colours during the day. If you look at a red and then a yellow, you're likely to see that yellow slightly differently."

Setting the tone

One way of getting around this problem is to communicate the colour via its reflectance data, which is where colour technology comes into play. "For decades, people have tried to find a way of representing colour in a three-dimensional space, even before the advent of computers," says Mr Filarowski. "Companies such as Instrumental Colour Systems (ICS) started telling the industry that to control colour and to apply it, you should use a spectrophotometer, which can tell you exactly how much light is reflected at different wavelengths."

This technology has not only economic and environmental benefits, but can also significantly bring down lead times. "Rather than sending a sample halfway round the world, the specifier can send the reflective data of a particular colour on a particular substrate, along with a sample, to the dyer," says Mr Filarowski. "The dyer, having dyed a sample, can email the reflective data back and the specifier can make a decision. This technology can have a massive effect on the financial and environmental futures of both specifiers and suppliers, if used and implemented correctly.

"The problem is the human element; the person making that decision would rather see a physical sample. And that's really where I think the main stopping point in this is; people want something tangible. Because ultimately, that's what the textile industry is all about. The ideal would be for everyone to work with the same reflective data as standard and use a sample as a reference point."

Colour coding

Dye manufacturing company DyStar looks to its subsidiary Color Solutions International (CSI) for the production of colour standards. "Most sportswear companies use physical colour standards but with a centrally derived set of reflectance values which must be used for instrumental pass/fail assessment of production shades," says Peter Collishaw, brand liaison manager at DyStar. "CSI produces certified colour standards which means physical standards purchased by the global supply chain partners will not differ by more than CMC 2:1 dE 0.5 [an equation developed by the Colour Measurement Committee of the Society of Dyers and Colourists]. This is the unique selling point against other standards suppliers such as Pantone, which are reference standards as distinct from certified colour standards."

While several companies, such as UK-based Marks & Spencer, have successfully implemented this technology throughout their supply chains, others have experienced problems through either miscommunication, lack of training or simply the amount of variables that must be standardised in order for the system to work. John Easton, global ecology solutions manager for Dystar, says: "Marks & Spencer is one of the few companies which basically allows its suppliers to match to electronic rather than visual data; it pioneers electronic colour communication. But it's about building the trust between the supplier and the retailer to allow them to do that."

Colour in practice

Having been disappointed by electronic colour management, Nora Kühner, a freelance fashion designer and executive board member of IDEAS (a global association of independent



Major sports brands like Helly Hansen produce brightly-coloured outdoor apparel. Colour consistency throughout their collections is key, making colour management a vital part of their supply chains.

Helly Hansen

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design studios specialising in sports), prefers to manage colours "the old-fashioned way". The designer, who specialises in swim- and beachwear fashion, says: "I want to take colours from wherever I see them, and I want my supplier to match to a sample I send them. I used to work for a swimwear company which tried tools like electronic colour matching. We were always disappointed and returned to the old fashioned way of sending fabric swatches. So in my experience it doesn't work, and I don't use a spectrophotometer in my studio. The best way to do it is the traditional way, with a piece of fabric."

Ms Kühner believes there are communication problems within the supply chain that arise because of a lack of understanding and experience. "To continue with certain colours for the process of developing prototypes is sometimes hard, sometimes easy," she says. "I have to insist on getting the colour I want. This is easier with suppliers from Italy as they have a similar colour feeling and lots of experience. Suppliers from the east often lack both the experience and the understanding for the western way of seeing and feeling colour; this is not complaining but stating the facts." The way people see and feel colour is just one of many aspects of colour management that must be taken into account. An article written by James Park and John Shore for the SDC suggests that a number of factors need to be standardised before electronic colour communication can be successful. "Non-physical standards are no more accurate than physical specimens, nor are they a replacement for trained colourists," the article reads. "They have received only limited acceptance so far and physical samples are required for handle and colour visualisation. For their successful use, there is a need for standardisation, maintenance and calibration of equipment together with standard operating procedures; otherwise differences can occur for a variety of reasons: the spectrophotometer, the operator, method of preparing and presenting samples, sample conditioning, the substrate type and history."

While the use of spectrophotometers and colour matching systems still has some way to go in the textile industry, a collaboration between people and machines could be the answer to more efficient and economic colour management. Mr Filarowski concludes: "Ultimately, there's got to be that personal preference because we are so emotive about colour. You still need to be able to put that human element into all of it. From my point of view I think there's been a push to people installing a spectrophotometer, transferring data using numbers, but not necessarily allowing it to influence from the design stage all the way through to the production stage."



In January 2003, the Scottish Parliament debated a petition (reference PE512) to define the blue in the Scottish Flag (saltire) as 'Pantone 300'. The committee noted that it was not endorsing any guidance by taking this decision.

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UK-based Marks & Spencer is one company which is pioneering electronic colour management technology throughout its supply chains, according to John Easton of Dystar.

Marks & Spencer

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