GREAT EXPECTATIONS FOR HYBRID PRINTING

Each year, billions of garments are printed by screen, but digital conversion rates remain low. According to Helmuth Haas at CHT Germany, this might change significantly with hybrid printing

Consumers simply buy a printed garment without any thought of the technical process it took to make it. This might explain the great success of DTG (direct-to-garment) printing within the B2C (business-to-customer) industry. While numerous end consumers appreciate the results, some of those technical details have not convinced print professionals to implement DTG on a mass scale for their B2B (business-to-business) customers.

FROM MILLIONS TO BILLIONS

DTG has grown tremendously in the past years enabling multiple business models to thrive. Nevertheless, putting quantity into perspective is important due to the sheer size of the garment industry. Businesses with an actual daily digital print output of more than 10,000 garments exist, but are still not common. Looking at total sales of printed garments each day, shows that even this impressive capacity looks rather small. It is not unreasonable to assume that in the USA, for example, five million printed garments are sold each day. In contrast to B2C e-commerce, this mass market is governed by B2B and a variety of technical requirements at the pre-purchase step.

MEETING INDUSTRY NEEDS

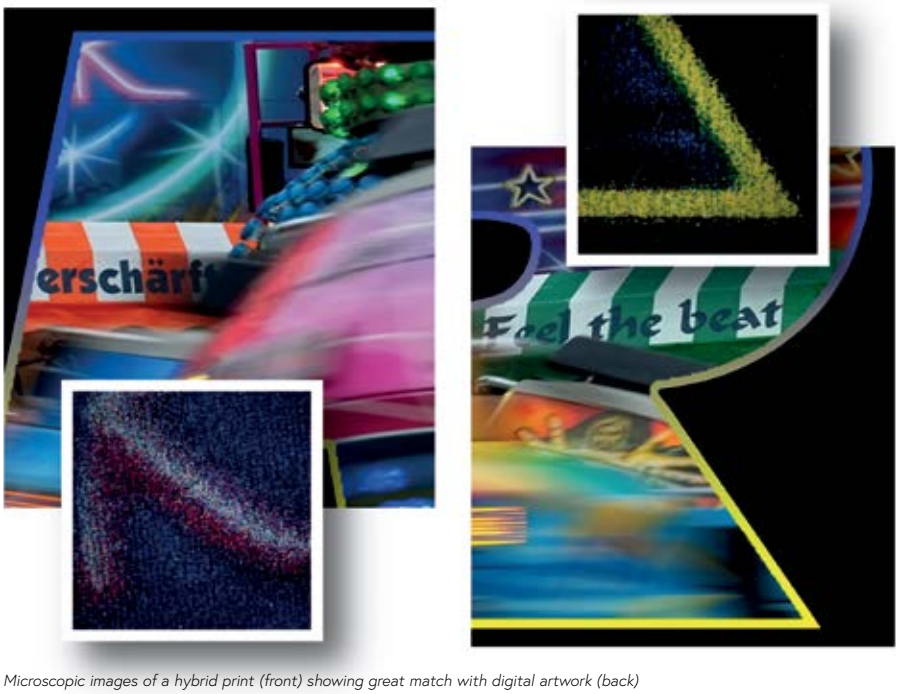
Great expectations now come with the matured hybrid technology. Unlike DTG which is a fully digital white + CMYK method, hybrid relies on a carousel and screen printing before and after the digital print step. This might at first sound like a step backwards, but it enables the mass industry to use most of their B2B-approved screen-printing technology, cost structure and supply chain. It is therefore expected that hybrid printing will grow, particularly in the B2B industry. Having a closer look at some technical aspects of hybrid helps to further understand why this technology is a great addition to DTG.

NON-CONTACT VERSUS CONTACT PRINTING

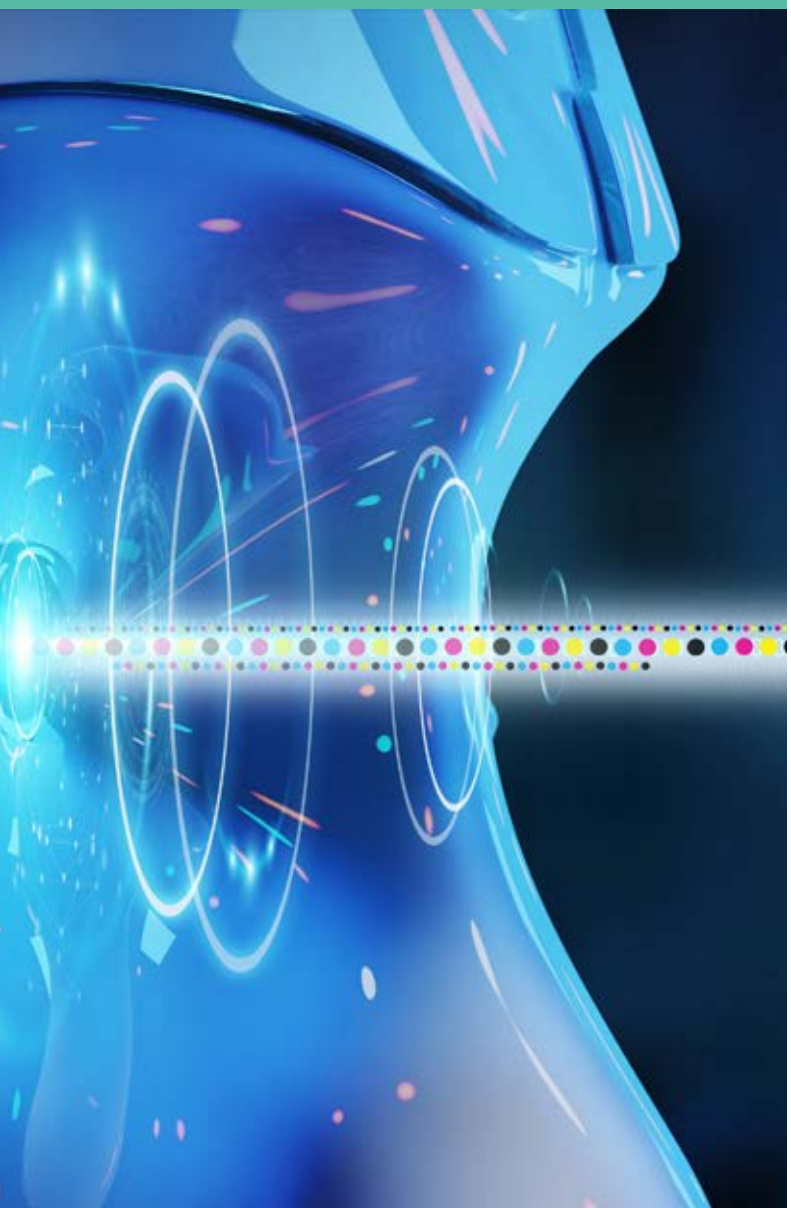
While this technical differentiation between DTG (non-contact) and screen (contact) might first appear academic in nature, it has far-reaching fundamental implications. Textiles do not have a flat surface and have a multitude of capillaries with protruding trifibres. These do not make the greatest substrates for jetting picolitres of a low viscous white ink.

Continued over

Four-screen hybrid print fulfilling B2B and GOTS standards



Microscopic images of a hybrid print (front) showing great match with digital artwork (back)



For DTG this works due to a spray pre-treatment, drying and pressing process before two of five digital printing stages. Here hybrid shows its great virtue since it uses screens (a contact-printing method) to flatten the surface with high viscosity screen inks. These screen inks have been optimised over decades and are often rheological masterpieces depositing a thin, elastic, uniform, highly opaque film on top of a garment – all within seconds.

PRODUCTION CAPACITY

Most high-end DTG printers can print a letter-sized image on a dark shirt within 30 seconds; for hybrid it normally only takes 10–20 seconds. Taking into consideration that minimum order quantities (MOQ) within mass production are at least in the hundreds, the higher print speed of hybrid outweighs the additional set-up time for each design. If, for example, a print shop needs to print 2,000 garments per day using five different designs, it will require two eight-hour shifts on a high-end DTG machine, whereas hybrid can print the order in one.

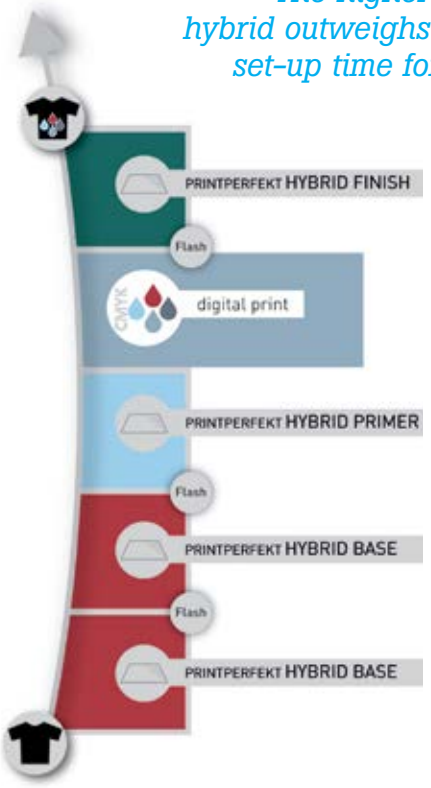
LEAD TIME

Pre-printing processes in the B2B screen-printing industry often take weeks. Colour separation for process colours, preparation of meshes, screen ink preparation, testing for colour accuracy, hand feel and wash fastness, plus final approval by the customer, takes time. Hybrid printing avoids many time-consuming steps because only the shape of the design is needed to manufacture identical screens. Once a colour library has been approved upfront, it is also expected that approval times can be drastically reduced.

SUBSTRATE AND FIBRE VARIABILITY

Despite claims, there is still no general solution for printing with DTG on all shirts containing dark polyester. Here hybrid enables trouble-free printing using a screen-printed blocker layer thereby avoiding dye migration. On pure cotton, however, hybrid also extends the suitable substrates window tremendously. DTG requires combed, ring-spun cotton of great staple length, whereas hybrid is tolerant to substrates of lesser qualities which form the bulk of sold garments. Printing on very elastic substrates is now also possible by using suitable screen inks in a hybrid process.

"The higher print speed of hybrid outweighs the additional set-up time for each design"



Hybrid process for brilliant and durable prints

MAINTENANCE

Operators are extremely aware that you cannot beat gravity, especially for white inkjet inks. The density of the white pigment is at least twice as high as for the rest of the CMYK pigments, making print head cleaning, replacement and downtime a serious time and cost factor for DTG. In comparison, hybrid printing with only CMYK inkjet inks delivers more reliability and robustness in harsh environments full of cotton dust and heated screen pallets.

COLOUR REPRODUCIBILITY

Printing a colour library via DTG on various substrates on different days can be fascinating because you always discover new shades. This is often due to an inconsistent white layer of the digital ink. In addition, the white inkjet ink has little ink-receiving functionality built in, which means that it poorly controls dot gain of the subsequent CMYK ink. Here hybrid is at its best because getting a consistent white layer is at the core of screen printing. By screen printing an ink-receiving layer, great colour reproducibility is achieved because this transparent layer controls dot gain of the CMYK inks.

WASH DURABILITY

Maintaining a great print after washing it five times at 60°C seems to be required from the B2B industry for a high-quality print. Currently, only hybrid can deliver this by applying a top coat after the digital print.

SPECIAL EFFECTS AND COMPETITIVENESS

In today's e-commerce world, differentiating yourself from competitors is mostly done through intelligent website design, advertising and social media strategies. Therefore, DTG having a rather standardised print outcome, does not endanger their business model to such an extent. The abilitity of B2B print shops to achieve the perfect Pantone colour, coupled with some foil and glitter special effects, creates a competitive edge by attracting high-value, lucrative orders.

COST

Hybrid printing is generally significantly cheaper than DTG as long as three-digit MOQs are offered. Although, comparing it with the usual print costs in the mass market one perceives a large gap. Since hybrid does not print white digitally, it has inherently lower costs for ink and maintenance. Considering its higher productivity, machine acquisition and labour costs are also lower per garment. In the mass garment printing industry, even the smallest cost savings can make a big difference.

FUTURE GROWTH

In the years to come the greatest growth will happen with DTG, but in the B2B sector relative growth rates will be highest. By fulfilling those B2B requirements, hybrid has enabled digital printing to enter mass production. Part of that growth is expected to come from replacing conventional multi-colour halftone printing. Another interesting area is licensed merchandise due to its ability to handle peak ordering periods. Wash-resistant digital prints on polyester garments might also attract considerable volume. Currently it is hard to predict the growth of hybrid once B2B designers adopt variable data printing. This might be the greatest opportunity since it uses one screen set-up for multiple digital designs.

All in all, the future looks bright for both the screen print artisans and the production powerhouses who are willing to add digital technology to their repertoire. ■

Helmuth Haas is Project Leader – Digital Textile Printing at CHT Germany

Further information:
CHT Germany GmbH, Tübingen, Germany
tel: +49 7071 154 458
email: helmuth.haas@cht.com
web: www.cht.com