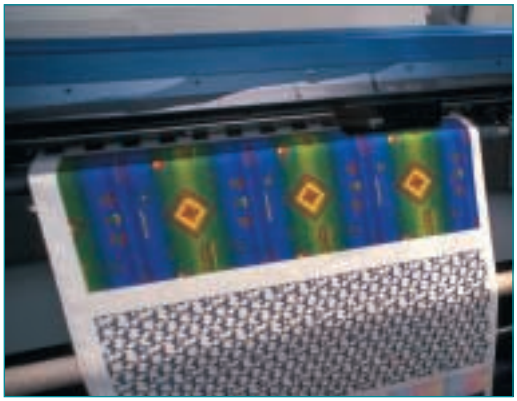
Inky digitals

In the summer of 2002 a department of British government known as the Office of Fair Trading (OFT) investigated the Consumer IT Goods and Services Market and published its report in the following December. An unashamedly populist action with little chance of achieving very much, it was in part a response to High Street consumer fears that inkjet printer manufacturers (in particular) were padding their profits by overcharging for replacement ink cartridges. This possibly prejudicial theory ignored the fact that the printers in question had been purchased in the first place for little more than loose change - and certainly at prices that produced almost zero profit for the manufacturer.

The overriding problem was that consumers felt 'ripped off' by the perceived short life of replacement cartridges set against the relatively high unit cost (in some cases at 50% of the price of the original machine). OFT's relevant recommendation? That manufacturers address the problem themselves and 'agree on an industry test standard for inkjet cartridges … with the results made available to consumers at point of sale'. Laudable if unlikely, but it kept the High Street warriors happy.

It may be surprising to some that a similar situation applies in the textile inkjet, or digital, printing sector - if not to the point where users feel the unnatural urge to trust a politician. Prices of inks and/or dyes vary considerably and the smaller business or design house may find it worth while to do some careful market research to get the best 'bang for their bucks'. Broadly speaking there are two basic types of ink - acid or reactive – with a number of variations to each to cope with the widening variety of fibres in everyday use. Acid inks are used for printing on polyamide and elastane, as well as wool and other animal fibres. Reactive inks are reserved for other natural fibres such as cotton, viscose or silk.





Ciba inks in action, Bright. Fresh. Impeccable registration. Ciba

Solutions and specialities

Ciba Specialty Chemicals is right at the forefront of developments in this decade-old technology and presents what it calls Integrated Textile Solutions to cover every eventuality and stage of the process from pre-treatment through printing to finishing.

"We aim to provide a solution for every situation," says Christoph Biedermann, global head of Ciba Specialty Chemicals' Textile Effects Segment. "Our customers require different kinds of solution, depending on application and end product. They might need packages consisting of compatible products that enhance each other's effects. Alternatively, they might be looking for a process, an entire concept comprising all stages of processing, and/or advice on processing that ensures the right end product. We offer integrated solutions that are tailor-made to suit individual requirements, whether they are those of the fibre producer, the dyer and printer, the machinery maker, the end product manufacturer or the retailer."

At the 2003 ITMA exhibition Ciba linked itself strongly to the Italian printer manufacturer Reggiani Macchine and its new DReAM inkjet system powered by Scitex Vision inkjet print heads. But of that more later.

In a post-ITMA discussion with the French IT group Lectra Systèmes, it was made very clear that the next growth area will be related to a subject that was an early favourite with this magazine – the science of mass customisation. Lectra considers its digital printing solution is the ultimate tool to cope with the enhanced creativity afforded by the ability to select a design and the fabric, measure the customer, create and produce a garment in one day.

Clothing manufacturers are but a short distance away from this state of nirvana, but companies now have the ability and the option to print directly on fabrics and simulate all kinds of textile aspects, visualising the general aspect of the design onto the fabric. The prototype can then be tested before 'freezing' a collection for mass output.

Lectra's digital printing solution combining software, hardware and services, was all developed in a strategic partnership between Lectra and printer manufacturer Stork - and brings the technology previously reserved for the creation of prototypes to short run print production. Based on recent developments to Lectra's design software, this digital printing solution means that designers can achieve high quality results, with colour-fastness similar to conventional printing processes, by using the appropriate inks and pre-treated fabrics.

During the meeting with Lectra, we also had the opportunity to discuss the application of the system with Andy Frogson, CAD manager with the UK-base Quantum Design Group He told us of a recent job handed to his company:

"A haute couture customer in Paris contacted us for a special order on Wednesday afternoon and sent an e-mail of an idea for the design they wanted to put onto fabric. We created a print using Lectra's U4ia software and e-mailed it back to Paris for approval. We flew to Paris with three different fabric bases, printed with the digital textile printing solution the day after and the design was brought back to the United Kingdom on Friday with the order for the fabric. The fabric was then delivered to the customer in Paris on the Monday morning, to make into garments to be shown at a fashion show. This was a 60 metre order! It would normally take 4-6 weeks to get a sample on fabric back from the Far East. We can turn a sample round in only 48 hours on-site!"



With Lectra's digital printing solution, the Stork Sapphire can print at 10- to 32 m²/hr.

Lectra



Together with its strategic partner Datacolor, Lectra Systèmes has produced a colour management programme that is intended to be truly WYSIWYG - what you see is what you get. The colour values on the designer's screen are identical to those that will be seen throughout the production chain.

Lectra

Brought by the Stork

The Lectra PrinterServer software, developed jointly by the French company and Stork, is an interface between computer-generated designs and the digital printing of samples, prototypes, and short run production on Stork digital printers. The Stork Amber, Sapphire and Storm printers were demonstrated specifically during our visit, but the software has been two or three years in development and undoubtedly other models will be found to be compatible.

The system will accept files from Stork, Lectra, and other CAD systems, as well as TIFF files; it will control print functions including step and repeat, job queuing, spooling and multiple image layout. It supports colour gamut mapping and colour control developed from Lectra's strategic partnership with Datacolor, and facilitates printer calibration for true accuracy in colour placement.

The Stork Sapphire prints 10 m²/hr on average (up to a maximum of 32 m²/hr) making it even more productive than the previously developed prototyping solutions. The technology ensures that the printer continually achieves high productivity and it can accept both types of ink, acid and reactive, simultaneously through separate circuits making it possible to alternate inks (and therefore fabric types) as required, without additional handling or cleaning of the printer.

ACID DYE INK	DISPERSE DYE INK	PIGMENT INK	REACTIVE DYE INK
Cyan	Cyan	Cyan	Cyan
Magenta	Magenta	Magenta	Magenta
Yellow	Yellow	Yellow	Yellow
Black	Black	Black	Black
Red	Red	Red	Red
Blue	Blue	Blue	Blue
Navy	Violet	Orange	Orange
Orange	Light Cyan	Green	Light Cyan
Fluorescent Yellow	Light Magenta	Light Cyan	Light Magenta
Fluorescent Red	Light Black	Light Magenta	Light Black
Light Cyan			
Light Magenta			
Light Black			



A DuPont 700 series, one-litre sealed ink cartridge and full Artistri 700 series ink colour range.

DuPont

The DReAM digital printer from Reggiani Macchine is suitable for all types of fabric runs and is capable of running at over 150 m^2/hr. This company has produced a tri-partite package with the collaboration of Scitex Vision, which provided its Aprion drop-on-demand print heads, and Ciba's inks and dyes as noted earlier. Although supplied as a standard roll-to-roll configuration, DReAM can be specified to meet customer requirements and potential.

Reggiani contends that the quality of the output from this fast mover is such that high fashion apparel and swimsuits are well within the realms of possibility. CEO Dr Ambrogio Caccia Dominioni commented: "Our system goes beyond the existing paradigms for textile printing in that we achieve the high quality our customers require, while providing them with the flexibility and cost effectiveness that only digital technology can offer."

Nobody will be surprised to find that DuPont has been involved in textile digital printing ever since the technology first made an appearance. Branded Artistri, DuPont emphasises that it offers a fully integrated, production-capable, digital textile printing solution for printed textiles, apparel, home furnishings, gaming, flag and banner and industrial applications.

The DuPont Ink Jet 2020 Printer comes equipped with 16 printheads on two carriage rails, designed for maximum speed, flexibility and reliability in a production environment. The industrial piezo printheads accommodate the widest range of aqueous inks for durable textile printing. An in-line dryer enhances drying at high print speeds to ensure that prints are ready for wind-up in the shortest possible time. Capacity ranges from 30 to 50 m^2/hr at resolutions from 360 to 720 dpi, for up to eight colours.

DuPont says that the ink delivery and changeover system is clean and trouble-free. With up to thirteen colours per chemistry, customers have the option to customise configurations and optimise colour gamut on every design and the formulations available are said to cover every known fabric option.

Artistri software accepts all the standard file formats, provides accurate colour assignment functions - and is probably operating below its designed capability.

Future guesses

To anyone viewing textile inkjet printing in action for the first time - the technology is impressive. However, the speed/cost equation restricts its use to sampling, short runs and that all-important mass customisation, until such time as the development engineers catch up with the speeds available from the control programs.

The large printer capacity of the size on offer from Reggiani will become the norm. Throughput speeds will increase, and digital imaging on textiles will take on the 'acceptable option' identity it clearly deserves.



The DuPont Artistri 2020 digital printer boasts sixteen printheads on two carriage rails for maximum speed and flexibility.

DuPont