Digital Dots

Spindrift

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Perambulating the Graphic Arts since April 2003

News Focus • Opinion • Reviews • Technology • Interviews • Ranting • Psychotherapy • Hoopla

A sweet disorder in the dress, kindles in clothes a wantonness: a lawn about the shoulders thrown, into a fine distraction.

– Robert Herrick, *Delight in Disorder,* 1648

Dear Reader,

What dramatic disorders do surround us in these the most modern of modern times! Religious high holidays, Royal Weddings, climate chaos and now the final come-uppance of Osama Bin Laden. All of this has contrived to make us late with this month's issue, but none of it really excuses our tardiness.

Rather, these distractions from what we are supposed to be doing, underscore the biggest problem for any communications company: capturing and hanging on to peoples' attention. The pace of news and of events, the always-on nature of media mean that being heard is the single biggest challenge of the modern age. And it will continue to get harder as information delivery increases in frequency and deliverability across devices.

Making messages relevant, serving them up in multiple formats across multiple channels seems like an impossible battle to win. But it is a battle the printed word, in cooperation with digital alternatives, is well placed to fight. If you bother with it at all, how much of the in-depth analysis of Bin Laden's end will you really read online or on your 'phone?

Enjoy!

Laurel, Nessan, Paul and Todd

In This Issue

Is a New Format War Simmering?

Laurel Brunner has been looking at the Advanced Function Presentation, or AFP format, as favoured by transactional printers. But the increased use of transpromo communications means there's a need for more graphics in these kind of documents, exactly the area that Adobe's new PDF/VT format promises to address.

see page 10

Big softies

Nessan Cleary visited this year's Sign UK and found a number of new printers being launched, and a renewed emphasis on textile printing for soft signage. Now that some of the bigger players are involved we're likely to see a lot more banners printed to polyester, not to mention tee shirts and ties.

see page 15

The compact, automated proofer

Paul Lindström rounds off his examination of wide gamut wide format inkjet printers with a look at the Epson Stylus Pro 4900. This has an 11-colour inkset and a built-in spectrophotometer and can achieve a gamut of about 875,000 colours on glossy photo paper.

see page 19

Regular Features & Special Treats

News Focus

EFI has launched the Vutek GS3250LX wide format printer. It's a UV printer that uses cool cure LED technology, which features instant on/off and requires less maintenance, as well as consuming less power. In addition, the innovative ink curing technology delivers high adhesion so you can reduce your material costs with less expensive substrates like thinner styrene and other rolled materials.

Océ has upgraded its Arizona range of flatbed wide format printers with the launch of the 360GT (1.25 x 2.5m) and the larger 360XT (2.5 x 3.05m) models. They include a UV curing system designed by Océ that provides more UV energy to support difficult-to-cure media while reducing heat at the media surface by 50 percent. Both offer an Express Mode print speed of up to 35 square metres (377 square feet) per hour, which is ideal for banner and outdoor work. Both models also feature a new-style tabletop that allows very thin media to be printed directly on the table without mechanical distortion of the media into the vacuum holes.

Adobe has released CS5.5, supposedly enabling designers and developers to target popular and emerging smartphone and tablet platforms. This marks a shift in Adobe's strategy, which now sees the Creative Suite being updated every year, either with a full version or mid-cycle update, thus helping to maintain Adobe's revenue and shareprice. There's also the option for buying programs on a subscription basis that includes Photoshop for £28 per month, Design Premium CS5.5 for £72 per month or Adobe Creative Suite 5.5 Master Collection for £116 per month.

InfoPrint has launched a new 4100 series of monochrome electrophotographic printers. These run up to 100.6 metres per minute, which equates to around 1,354 2-up A4 duplex impressions. They can print true, 3-up pages with the extra-wide format (49.5 cm paper width, up to 48.2 cm print width). They support the Advanced Function Printing system or AFP normally found in transactional environments, as well as MICR printing. The 4100 is available in both simplex (TS3) and duplex models (TD5/6).

X-Rite has released its latest i1Profiler software technology designed to accommodate all skill levels, and provide the power and control needed to create the highest quality colour profiles. There's also a new i1Publish program, a fully-featured colour management tool for prepress users. X-Rite has revised its product bundles to take account of the new software.

Four Pees is to offer a budget version of its PrintFactory wide format production system. PrintFactory Go offers the same job preparation and last minute correction tools. Users can add folds, seams and tunnels, define white ink or varnish, define die cut lines, create tiles and place grommets.

EFI has launched a small business edition of its Radius MIS, designed as an entry-level, fully integrated automation solution ideal for single-site label, flexible packaging, converting and folding carton companies. It comes with a standard suite of modules which include Estimating, Tooling Management, Inventory, Purchasing, Scheduling, Shop Floor Data Collection and DMI (Direct Machine Interface) and accounting. There's also a one-stop Order Manager, which can handle most of the other processes from a single module.

Agfa has been showing off its latest wide format printer, the Anapurna M1600. It boasts four-colour (CMYK) plus

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white capability and its 12 picolitre print-heads produce high quality solids and tonal rendering at up to 720 x 1440 dpi with vibrant colours and a wide colour gamut typical for UV-curable inks. White is printed in-line with the other colours, so printing pre-white, post-white or spot white is carried out in the same printing pass. Maximum speed is 46sqm/hr.

Agfa has introduced a new 5m wide Jeti, the 5048 UV XL. This is available in two models: one is designed to address high productivity applications such as building wraps and XXL billboards with throughput speeds close to 300m^2/hour; the other is designed to offer higher quality output for both XXL and/or POS applications. Both models support simultaneous printing of up to three rolls of the same media type.

Agfa has also added a flat-to-roll option to its Jeti 3020 Titan flatbed. It supports industry standard 3.2m wide media and can handle rolls up to 340 kg.

Xerox has brought out a gorgeous new matte dry ink for its iGen4 EXP printer. It is designed for a range of print jobs, including the fast growing markets for photo products, greeting cards and calendars. The ink provides a consistent and uniform appearance across highlights, mid-tones and shadows, useful for ink-heavy applications such as marketing collateral, collages in photo books and full-page photographs for calendars and greeting cards. It also produces authentic skin tones and natural colours while maintaining fine detail in background images.

Adobe has announced the Photoshop Touch Software Development Kit, which together with a new scripting engine in Photoshop CS5 allows users to develop apps for mobile devices to drive and interact with Photoshop on the desktop. Adobe has developed three initial Photoshop CS5 companion apps for Apple's iPad: Adobe Color Lava for Photoshop, Adobe Eazel for Photoshop and Adobe Nav for Photoshop. The apps are designed to enable users to create custom colour swatches, paint and drive popular Photoshop tools from tablet devices.

Last month we reported on the **VIGC** report questioning the accuracy of PDF viewers. This month VIGC is offering a free tool, PDF Viewer Check, that lets users know if they are using an inappropriate PDF viewer, or the wrong settings. You can download this from vigc.be.

Callas has updated its PDF utility program with the launch of pdfToolbox 5. The new version includes significant performance improvements and full 64-bit support, introduces a new batch feature to easily process complete folders of files, allows visually comparing PDF files to find differences or processing problems and converts a wide range of file formats, including PostScript and EPS, directly into production-ready PDF.

Screen has added Docuboxx Webshop from ISI publishing in the Netherlands to its Equiosnet partnership programme and made Docuboxx web-to-print solutions available through its European sales channels. With this, users will be able to create a document webshop to manage the ordering, upload and checking of files for printability with automatic integration, via JDF, into Screen's Equios production system.

Enfocus has shown off Switch 10, the latest version of its suite of workflow software solutions that automate repetitive tasks. This gives publishers more robust automation, greater depths of data security, and the ability to extract more value from existing information sources and third-party tools. New features include a Workload visualiser, which continually tracks whether network loads, file volumes and other critical performance parameters remain within workable limits.

Enfocus has also launched Pitstop Connect 10 which now gains automatic updating of all installed Connectors whenever a printer or publisher changes preflight and delivery settings. There's also secure file transfer, using the industry-standard SFTP, and personalised service by using intelligent metadata through enhanced Switch 10 support.

Antalis McNaughton has launched iPrint Pure 3D, a 500 micron polypropylene film that when printed displays a full 3D image and can be printed using UV inkjet, UV screen printing, waterless UV offset, digital offset and hot foil blocking. It features a honeycomb, or 'fly eye' lens array that magnifies patterns to create the perception of depth which allows for a universal viewing

angle, meaning you can see the 3D effect all around the printed image.

Swiss paper manufacturer **Ziegler** increased its production last year by five percent leading to revenue increases of two percent to CHF105m. Ziegler is an independent family-run business and remains debt-free. Ziegler says that the outlook for 2011 can be cautiously assessed as positive despite the continuing climb in the cost of pulp.

Finch Paper has announced a new DyeJet paper for dye-based high-speed inkjet printers, which complements its Inkjet Pi media for pigmented inkjet systems. The company has also announced a new program to develop papers specifically for inkjet taking into account the different ink and printer technologies currently available.

Mondi has introduced DNS high-speed inkjet paper for transactional and transpromo applications. It has a smooth surface and high whiteness and features a surface treatment for optimal ink absorption for higher clarity. It's suitable for both dye and pigment-based inks up to 200 metres per minute. It is also part of Mondi's eco-friendly Green Range, FSC certified and available with a CO_2 neutral option.

Sappi has announced Fusion, a premium-quality, high bright, white liner that uses 100% bleached virgin fibres. It has been specifically designed for corrugated board packaging and is said to have a light weight, reducing transport costs. It is sold at a single price per tonne, regardless of grammage, to help simplify production calculations and comparisons.

The Shredding Alliance has partnered with the Robert Horne Group and its closed loop paper recycling service in the UK. This will include TSA providing a collection service from customers' premises, secure destruction of confidential waste paper either via on-site or off-site shredding and a guarantee that such paper is returned to the fibre bank where it will be recycled back into paper, for customers to use again, rather than going to landfill.

EFI has announced preliminary results for the first quarter of this year with revenues in the range of $139 million to $140 million and non-GAAP earnings per share (EPS) in the range of $0.27 to $0.28 per share, including a $0.03 benefit from currency. The company had previously provided an outlook for the first quarter of 2011 of approximately $128 million in revenues, and non-GAAP EPS of $0.14 to $0.16 per share.

Xanté has developed a TL-30 Digital Envelope Press Feeder in conjunction with the Straight Shooter Equipment Company, and which integrates with its Ilumina line of production-quality digital presses. There's no wiring, mechanical latching or tray removal necessary so customers can simply roll the TL-30 into place, add media and run. Major features also include an adjustable stand, buckle separation, re-positional feed belts, and a unique floating acceleration table for simple integration.

FFEI has won a second Queen's Award for Enterprise in the Innovation category for the development of an internal drum Computer-to-plate solution specifically targeted at the requirements of commercial printing in emerging markets. This is because FFEI developed a system to mould its internal drums using a Zanite polymer composite, which is cheaper to make and has a lower carbon footprint.

Océ will hold a Production Printing Summit at its Poing base near Munich from 7-10th June. Océ has set aside 6,000 square meters of exhibition floor space to demonstrate its solutions for high-productivity data printing together with its partners in the pre- and post-processing business and workflow integration.

Heidelberg has produced its 4000th Suprasetter platesetter. The Suprasetter 162 with automatic cassette loading unit was handed over to the customer, Smurfit Kappa from Belgium, at a ceremony held at the Heidelberg factory in Wiesloch-Walldorf. Heidelberg has installed over 10,000 platesetters since buying Linotype-Hell in 1997.

Picture This

Now what on earth can all those people have in common? And where is the photo taken? A hint is the bronze bear in the background, the "mascot" and symbol of Berlin. This multinational group of people are members of the new workgroup 13 of the TC 130, the technical committee for ISO standards within the graphic arts. Workgroup 13 are to develop a standard for how print certifications should be done, in order to assure both print buyers and printers that print compliance according to the ISO 12647-series is judged and evaluated according to very similar criterias. At the recent meeting in April, in Berlin, the outline of this standard was agreed upon.

There are too many people in the picture to list them all, but the workgroup is led by professor Robert Chung of R.I.T. (Rochester Institute of Technology), US, and if you want to try and spot him he is kneeling in the second row in the centre of the picture, wearing a red tie. Other members of the workgroup come from Brazil, China, France, Germany, India, Italy, Japan, Korea, The Netherlands, Romania, Sweden, Switzerland, UK and US. This multinational support we think proves the interest and usefulness of ISO standards in print production. But it is important that a print buyer, choosing a printer that is certified according to ISO 12647, can trust that such a certificate is of equal value and quality all over the world.

News Analysis

Heidelberg figures upbeat

Heidelberg has published its preliminary figures for the financial year from April 2010 to March 2011. The figures show a marked improvement on the previous two years, confirming Heidelberg's forecasts and putting the company back in the black. Thus, incoming orders are up around 16 percent to €2.757 billion and sales are up around 14 percent to €2.629 billion, though this last includes around €135 million from exchange rate effects. Nonetheless, operating profits were around €4m, excluding special items.

But it's not all good news. There was a dip in sales in the fourth quarter and although the operating profits are in the black, Heidelberg will still make a net loss of around €130 million due to the huge increase in financing costs and non-recurring expenditure linked to the comprehensive capital restructuring undertaken by Heidelberg.

However, CFO Dirk Kaliebe pointed out that these cost-cutting measures had lowered Heidelberg's break-even point, adding: "With the considerably reduced level of debt, the successful capital increase and the bond placement we have safeguarded our long-term financing, and have succeeded in leading Heidelberg out of the crisis."

CEO Bernhard Schreier echoed this, saying: "Thanks to the strategic partnership with Ricoh, the leading position that Heidelberg occupies in the offset printing market will be complemented in future by innovative digital printing products. These operational and strategic successes show that Heidelberg is on the right track to achieving long-term success."

Heroes & Zeros

Hero

Chief justice Alex Kozinksi. Who he? He's the judge summing up in the appeal court ruling against the Winkelvoss twins, who claimed that Facebook founder Mark Zuckerberg pinched their idea. Judge Kozinksi said that: "At some point, litigation must come to an end. That point has now been reached."

The twins had apparently tried to claim that they didn't really understand what they were agreeing to in 2008 when they signed an agreement for a $20 million cash payment and $45 million worth of Facebook shares, which are now worth around $165 million.

Zero

PrintCity gets it this month for its latest publication. Despite keeping the Print City authors constantly informed about the development of ISO 16759 for calculating the carbon footprint of print media products, there's not a mention of it. Despite peer reviewing the report months ago and pointing out some of the more egregious omissions and misunderstandings, there is no word that carbon footprinting standards work is even underway. Not a sausage. Poor show PrintCity.

Green Shoots

Caldera is launching a carbon footprint calculator especially for the wide format sector. It is part of the latest version of CostView, the company's cost visualization software for wide format printers. Version 3.0 includes "an industry premier module" for carbon footprint monitoring, which calculates the carbon footprint for the ink, media, electricity, and additional costs used in a given job.

The *Indian environment ministry* has banned the use of plastic in packaging of tobacco goods as well as shopkeepers from providing free plastic bags.

Dell has announced that it collected around €170m of unwanted technology in fiscal year 2011, with €108m coming from the Americas market. This includes hardware such as computers, monitors, printers, scanners and computer accessories and is an increase of 16 percent over fiscal 2010 for Dell. The company is roughly 65% of the way towards collecting €1.14bn of waste by 2014.

Hewlett-Packard has, since 1987, collected some €2.3bn of electronics and supplies, €1.92bn of which has been recycled and approximately €514m reused.

Heidelberg has published a new edition of the curiously entitled Profi Tip, for Ecological Printing. It provides a summary of what Heidelberg considers key facts on eco-friendly printing, with practical information on consumables, print shop operations and carbon offsetting which may or may not be environmentally friendly, depending on ones point of view. Heidelberg has also added the Agfa Eco line of consumables under the Heidelberg Saphira Eco brand.

Energy consultant Sam Jones of *Sustain* Lincolnshire in the UK has developed a 'Ten Quick Wins' plan aimed specifically at helping printers cut back on energy usage. The suggestions highlight areas where improvements could be possible with relatively little effort and quick pay back times. In general, these actions would represent the first steps in reducing environmental impact and further improvement will be possible through the development and implementation of a more comprehensive environmental management plan. They actually come down to four: Reduce energy consumption; optimise processes to reduce waste; reduce the use of hazardous chemicals; work with customers to reduce environmental impact.

Pragati has joined the Verdigris Project, our environmental initiative. Pragati offers a wide range of high-quality offset and flexo print services to its clients in India and around the world from its offices in India and New York. It produces a wide range of products ranging from books to brochures and calendars, from high-quality paperboard cartons to luxury rigid boxes, and from flexographic labels to shrink-sleeves. Environmental responsibility is important to Pragati.

For more green news, check out The Verdigris Project:

Verdigris

http://verdigrisproject.com

A Review

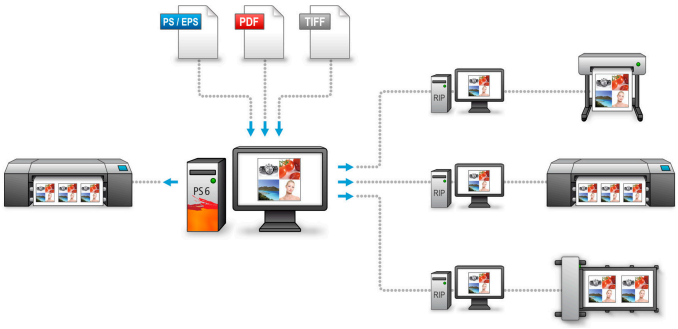
Multiple printers, multiple functions

Over the years we have tested many different RIP systems, and a name that has come up more and more frequently is ColorGate. For various reasons it's taken us a while to get around to a hands on test, but while testing some large format printers we finally had a go at it.

It's immediately obvious as to why this Hannover-based company has gained its reputation. The ColorGate ProductionServer RIP has many modules and features, with one of the main characteristics being the capacity to drive many different printer types and models, while achieving the same, or very similar, output results.

ColorGate was founded in 1997 by Thomas Kirschner and Norbert Steinhauer, and has in all about 30 employees in offices in Germany, Italy and the UK, with more offices about to be set up in Spain, Malaysia and the US. The main product is the ColorGate Production Server, but with its modular approach, it can be configured in many different ways, and ColorGate also offer stand-alone special solutions using parts of the feature set. These stand-alone products offer solutions for Proofing, CTP, Screen production, Photo production and an Ink-saving module.

The Production Server itself is Windows-based, but the clients are cross platform, and you can set up both hot folders and create virtual printers – print queues that show up on the network. One of the obvious strengths with the CG ProductionServer is the support for very many different printers, with more than 700 dedicated drivers.

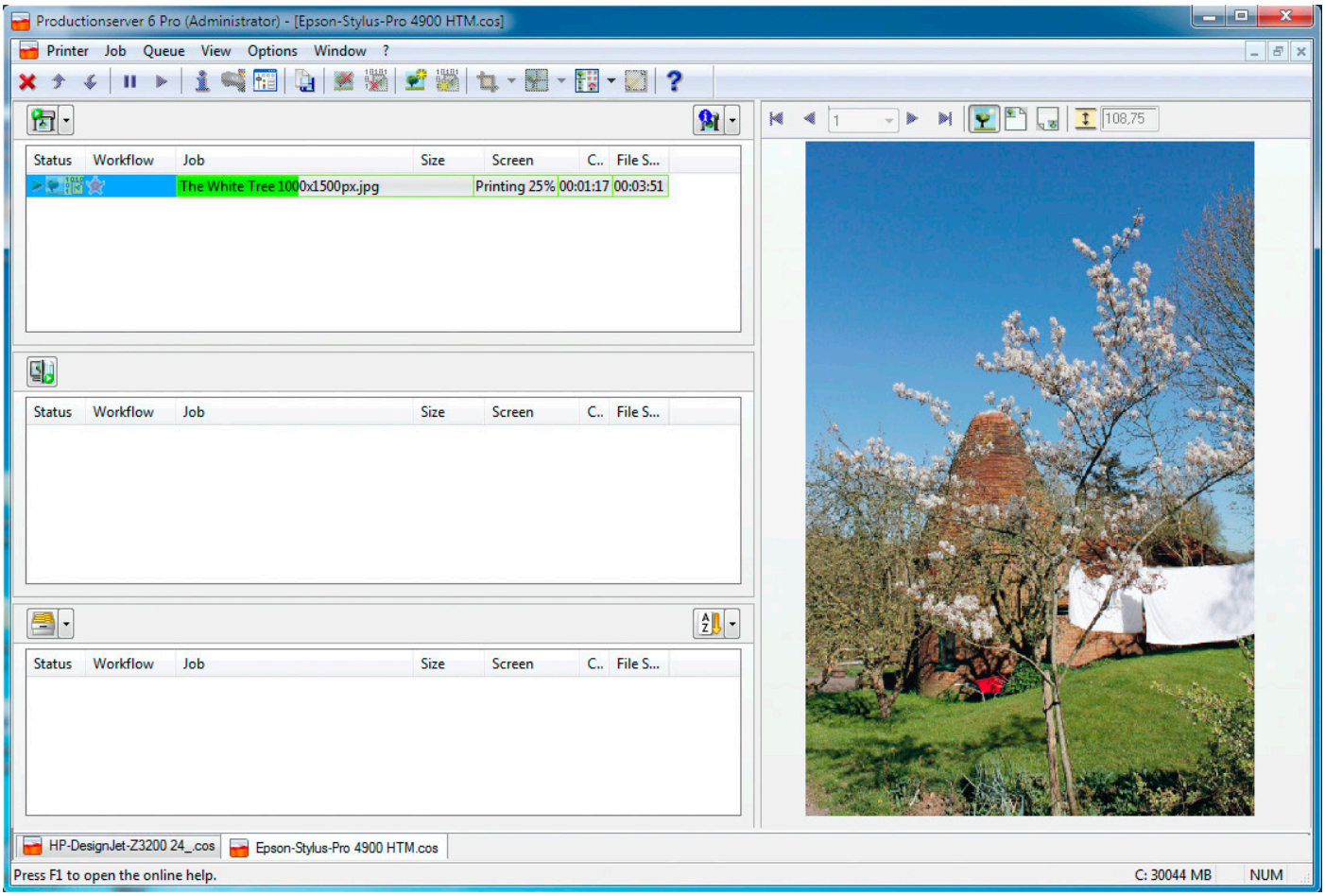


One of the strengths of ColorGate ProductionServer is the capacity to drive multiple output devices, while maintaining the same, or very similar, colour appearance on the output from all of them.

The system can be expanded in several ways, both by adding more modules, and also by adding processors, to create a multiple RIP solution.

Among the modules is support for preflight and JDF, and these are areas where ColorGate intends to expand further. ColorGate uses the Global Graphics Jaws Postscript and PDF interpreter.

In terms of quality assurance ColorGate takes a very pragmatic approach. The users are free to use whatever calibration method best suits their needs so, for example, both the Fogra media wedge and the IDEAlliance G7 calibration target are included in the package. When calibrating inkjet printers with built-in spectrophotometers, such as the HP DesignJet Z3200 and Epson Stylus Pro 4900, the CG ProductionServer supports direct and automated readings using those devices. But



The user interface of ColorGate ProductionServer is very simple and straightforward. A colour accurate preview of the job at hand is shown (if you work on a high end calibrated monitor that is), and the status of the jobs is displayed and can easily be modified.

there is also support for most of the common handheld or scanning spectrophotometers on the market.

Our tests

We focused our testing on photorealistic production, and how easy it might be to drive several different printers through CG ProductionServer. At our disposal was a Canon iPF 6350, an Epson Stylus Pro 4900 and a HP DesignJet Z3200 – all what we call wide gamut printers with 11 or more inks in use. The Epson SP 4900 and the HP Z3200 both had built-in spectrophotometers, which CG ProductionServer could use for calibration and ICC profile creation, and we used a handheld X-Rite EyeOne when calibrating the Canon iPF 6350.

We didn't compare processing speeds, since we used Windows 7 under Parallels on an Apple MacBook Pro, but having added the maximum amount of RAM (8 GB) to the laptop, Windows 7 and ColorGate ProductionServer were running surprisingly swift. In real production the RIP should of course be running on a heavy duty PC with multiple processors and even more RAM to get maximum speed and performance. But in order to evaluate ease of use and colour accuracy our set-up worked well enough.

Calibration and ICC profile creation were straightforward, and the resulting colour appearance very pleasing. As one should expect from a professional RIP system, rather than using default profiles and only the printer driver for output, images printed after making a new calibration and creating custom ICC profiles had better gradation and more subtle details in the images. While images printed without any dedicated RIP (using the printer driver only) might look colourful, they are seldom colour accurate, and often difficult to predict. With CG ProductionServer you achieve both a predictable result, and wide gamut for the images (using, for example, the Epson 4900 the profile created for glossy photo paper could reproduce

nearly 800,000 colours – twice the gamut compared with offset printing!).

We didn't test the proofing workflow, but ColorGate claims to be able to achieve less than ΔE 1 on average for the media wedge used, which brings it to among the top most accurate proofing systems on the market.

To conclude, our acquaintance with the ColorGate ProductionServer was a positive experience, and we now better understand why this is rapidly becoming a very popular RIP system on the market. If ColorGate successfully expand the support for preflight, JDF and web-to-print in the portfolio, they will most likely prove to be a serious competitor and challenger to the better-known systems on the market.

Picture This

Océ opted for an eye-catching digital graffiti display on its stand at Sign and Digital UK. Local students ensured the wall was never left blank for long with various quirky cartoons, but visitors were invited to make their own drawings, which Océ printed out using a Colorwave 600 poster printer. Quite a number of people showed off a talent for caricatures.

The YrWall was developed by Lumacoustics specifically for promotional events such as Sign and Digital UK. The spray can uses infrared light, which can be tracked by a computer as it moves across the screen. It's somewhat easier to use than a conventional paint spray can, and more environmentally friendly. You can change nozzles to alter the type of spray and effects such as splats and drips, and call up a menu on-screen to change colours.

Is a New Format War Simmering?

For most of the over 6000 visitors to February's biannual Hunkeler Innovation Days in Lucerne, Switzerland, the focus was on digital printing at extreme speeds. Coming from a range of industries, producing shedloads of financial and transactional work with a dose of commercial, these people above all want data processing that matches engine speed.

This event was the perfect place to find out more about how the PDF/VT format compares to AFP-IPDS, the entrenched alternative. ISO standard 16612: Portable Document Format, Variable Transactional was published in August 2010 and the Advanced Function Presentation-Intelligent Printer Data Stream has been around for decades. So what are the chances of Adobe's format weasling its way into traditional AFP-IPDS strongholds, such as banking and high finance?

The Champion

AFP, which is essentially a page description language, dates back to 1984. This mainframe programming language is designed for high speed, high volume data processing and is independent of application or output device. AFP comprises several data streams and data object architectures, including the IPDS communications protocol and object management architectures for colour, fonts and graphics.

IBM originally developed AFP as its general purpose information presentation and document architecture. In 2004 IBM set up the AFP Color Consortium in order to add improved colour support and management to the AFP architecture, opening up the whole gig to the consortium members in 2006 when it was renamed the AFP Consortium (AFPC). IBM handed its founder role to InfoPrint (now a division of Ricoh) in 2007 and over the last couple of years membership in the AFPC has grown to around 30 companies, most of whom are document processing specialists, and include HP, Kodak, Punch Graphix and Xerox. The AFP Consortium is in the process of making AFP and IPDS open data specifications, to allow them to evolve to have full colour graphical capabilities.

AFP uses the principles of object-driven structures and resource (ie database content elements) management. It is widely used to process transactional work produced on mono or colour digital printers, where runs can be over 500,000 pages with all of them different. AFP processing is device independent, with rasters rendered on the fly according to the data, output requirements and where content should be placed on the page following complex rules. Those rules ensure that the right content, including external resources, appears where it should do on the page and the page doesn't come into being until it is printed.

Unlike PDF, AFP-IPDS has no concept of a page or output format, so the files it generates only exist at the point at which they are printed and they cannot be written to disc or copied, making AFP-IPDS very secure. And yet because of its object orientation, the format has the flexibility to incorporate graphical formats such as JPEG, TIFF, or PDFs onto the page. These files can be called from external resources and inserted into the AFP data stream. However, they cannot be quality checked within the data flow. Embedded PDFs get turned into AFP objects and are then RIP'ed as a subsidiary process before being added to the AFP-IPDS data stream.

Although AFP-IPDS files can't be stored, an AFP file can sort of be written to disc. An AFP file is a description of how the variable data should be offered to the reader, regardless of the viewing environment. This description knows nothing of content, only of how it should be presented. AFP can for instance be used to deliver content to mobile phones or ATMs, as well as printing engines. The page only exists when the file is opened and presented and has the associated device and display information. Thus AFP files exist in abstract; once sent for output they cannot be captured.

AFP >> IPDS <=> print engine

AFP-IPDS data processing is bi-directional, so there is a constant and open dialogue between the data source and printing engine. This is a particular strength of the format, one that guarantees data consistency and provides a

mechanism for tracking the data and pages as they are processed during the print run. Data consistency is protected because the system sending the AFP-IPDS data stream to the printing engine, also receives confirmation back that the engine has successfully placed the content resource where it is supposed to be.

This bi-directional communication occurs at lightening speed, prior to each page in the job being printed and makes sure that the job runs as intended on a particular output device. It also means that if for some reason a job does stop within the run, the printing device knows where it is when the job restarts.

Safe and sound

The IPDS dialogue between data stream and printing device also provides an added layer of security, because it is a mechanism for catching user errors. This could be, for

This InfoPrint 5000 inkjet printer uses an AFP workflow which can adjust the speed of the printer to match the rate at which the files are being processed during the print run.

instance, something in the bitmap that is out of the print zone. In such a case IPDS will stop the run so that the data or placement rule can be corrected.

AFP can't check for how a file will print, because it doesn't exist until it reaches the printing engine so preflight checking isn't part of this workflow. And is preflight checking really feasible for a 500,000-page run? Manufacturers such as Océ with TrueProof offer tools for checking data in advance, by essentially soft-proofing the data for processing robustness. TrueProof can also be used for ink estimating.

An AFP-IPDS workflow RIPs at the page level, rather than RIP'ing the entire file before it gets output. This is why AFP always knows where it is in the printing. Screening takes place in ASICs in the printheads so data files are small, easy to move and very quick to process: there is no raster data until the point of output. Page pairs are buffered and printing only starts when there is a specified amount of data ready to RIP and print, say at least 30 seconds worth of printing.

Some high speed engines such as the Infoprint 5000, slow down so that the engine speed matches the available data rate as the buffer empties. This minimises the problems sometimes associated with laser printing technology, which doesn't much like stopping and restarting the engine.

Adobe's PDF-VT

PDF evolved from PostScript for rendering data files suitable for eventual output on an offset press, rather than a high-speed digital engine. PostScript and PDF are all about completeness and quality, rather than processing speed or data independence. PDF therefore has immense strengths in rendering complex colour and design intense page images. PDF/VT is Adobe's attempt to emulate AFP, with a data format designed to bring the strengths of PDF to high-speed transactional workflows.

It is also hoped that PDF/VT will provide more reliable and predictable data processing than is currently the case with formats such as PPML (Personalized Print Mark-up Language), Kodak's Variable Print Specification (VPS), and Xerox's Variable Data Intelligent PostScript Printware (VIPP) all of which are getting a bit long in the tooth and none of which is truly device independent or capable of fully supporting layers, transparency or device independent colour. In such VDP workflows, PDF transparencies must be flattened, fonts turned into outlines, spot colours into process colours and device-independent colours converted to device-dependent ones, so it's all a bit of a kludge.

PDF/VT is based on PDF 1.6 so it fully supports layers, ICC-based colour management and transparencies, and it has no problem with fonts or colour conversions. PDF/VT is designed for use with digital job tickets such

One of the members of the Adobe development team for PDF/X-VT is Dov Isaaks. He is also active in the TC 130 group of technical experts who further develop the PDF/X-series based on user input.

as JDF, so it has robust links to external systems. PDF is a content container so of course these files are highly portable as well as being device independent. The format brings to high-end transactional processing support for the high-end features of PDF such as colour control and management, blends and transparency.

An application generates a PDF/VT file when a native file is ready for production. This means that the PDF/VT file is dependent on how the application has written it. A RIP capable of rendering PDF 1.6 then interprets and renders this data for output to the specific target device adding the variable data elements and the specifics of format, trapping and screening. This requires an Adobe PDF Print Engine 2.5 RIP or the Global Graphic's Harlequin RIP. Developers focused on the traditional offset market have embraced APPE while HP uses the Harlequin RIP for its Indigo presses. However, uptake beyond this core so far has been cautious. This may be due to the previous lack of VDP support in the RIP, but it may equally be that AFP-IPDS is so well-established.

The format allows for one time rendering and caching of recurring elements, so that they are only rendered once. Large files can be processed across colour planes for faster processing, however each file must be completely RIP'ed before printing starts, and in case of an error printing cannot restart where it left off.

In order to support variable data, the format has two modes, PDF/VT-1 and PDF/VT-2. PDF/VT-1 is based on PDF/X-4, for self-contained digital assets stored within a single file, and PDF/VT-2 uses PDF/X-5, which references external digital assets. As with any PostScript or PDF file these files can be stored on disc. Fans of PDF/VT believe that it will fit seamlessly into an existing PDF workflow, however the number of printers using PDF and producing variable data print is not large, so this may be wishful thinking at this stage.

For producers of transactional print PDF/VT has a steep hill to climb. We have written extensively about O'Neil Data Systems in Los Angeles, and despite its huge investment into VDP technology, based on recent conversations, it has no plans to move to PDF/VT, nor were the O'Neil staff even very sure what it was!

Making Your Choice: AFP-IPDS vs PDF/VT

The market clearly demands more than black and white variable data printed onto preprinted offset shells that have been languishing for months in a manky warehouse. The old model lacks the cost effectiveness, dynamism and scope to integrate into cross media communications that modern industry wants. Both PDF/VT and AFP-IPDS offer viable alternatives to the traditional method, but which one will the market embrace?

The market wants a data format that delivers, that integrates with existing workflows and that runs on competitively priced systems. With its long history and protected market position, AFP-IPDS tools don't come cheap but they do deliver. There may be room in some market sectors for alternatives based on PDF/VT, such as for shorter run applications. Where there isn't the requirement to process 500,000+ pages in a single run, PDF/VT may have an opportunity.

The vast run lengths AFP-IPDS supports is one of its greatest strengths, however run lengths are coming down and financial companies are moving towards

more sophisticated communications with customers, addressing narrower communities of interest than they may have done in the past. The choice of data format is a workflow decision: is the run length massive and the content basic, which would be fine for AFP-IPDS or is it relatively short with complex graphics and colour content, which would argue for PDF/VT?

PDF/VT also allows more flexibility in the workflow choice, because it is portable from one system to another. It is also easier to view the data, which may not necessarily

Håkan Larsson at Strålfors sticks with AFP: "While we follow what happens with PDF/X-VT, we have found AFP to be the only format to provide the processing speed we need."

be something finance companies want since most of the variable data printed with AFP-IPDS is confidential. That AFP-IPDS pages cannot be saved because they don't exist gives data owners an inbuilt security mechanism. And whereas AFP can print to PDF, PDF cannot print to AFP.

There is also the matter of data consistency and tracking. IPDS ensures that the systems sending the AFP-IPDS datastream to a printing device also receives information that the printer has placed the resource where it is supposed to be. This bi-directional communication prior to each page in the job being printed, ensures that the job runs as intended on a particular device and that if a job does stop within the run, the engine knows where it is when the job restarts. This is not the case with PDF/VT because the whole job has to be reprocessed if the run halts before completion.

PDF/VT could match this mechanism using a metadata management method, such as JDF. If a job stops the system could use metadata to work out where it is in the workflow and to pick it up again, but this surely carries a data processing burden of its own.

And then there is the future development path for these formats. The AFPC want AFP to be as powerful as PDF with full support of all its features. Such things as rendering intent, resolution and colour management are not quite on the AFP-IPDS user's radar yet, but this will change as applications evolve and more sophisticated colour and designs are required. The AFPC is already working so that AFP is ready to meet these market needs because the AFP Consortium's sole purpose is the continued development of AFP-IPDS.

There is no equivalent body working exclusively on PDF/VT, which is under the aegis of the same ISO TC130 working group also concerned with other standards such as PDF/X and XMP. We see furthermore a very real danger of PDF fragmentation as diverse efforts to develop and optimise it for different constituencies of interest evolve. The Ghent Workgroup and various ISO technical committees are all working away on iterations of PDF. The unintended consequence of these efforts may be to confuse and befuddle the market. For many customers, AFP-IPDS may seem the simplest and safest long-term option.

The choice of AFP-IPDS or PDF/VT is ultimately a workflow choice. What type of work is your prepress system set up to handle? What are your customers' security requirements? What is your average run length? What premium are customers prepared to pay for colour? What sort of processing infrastructure do you have? How up to date are your RIPs? How well do you understand PDF or AFP processing?

Market Expectations

AFP-IPDS is proven and well established and under constant, focused development. PDF/VT is largely

Comparative Strengths and Weaknesses	AFP-IPDS	PDF/VT
Rendering intent	–	√
Resolution	–	√
Screening	–	√
Colour space definition	–	√
Transparency	–	√
Object embedding	√	√
Bi-directional comms	√	–
Volume	√	–
Security	√	–
Speed	√	–
Development base	√	√
Installed base	√	–
Cost (low)	–	√
Cost (high)	√	–
Data proofing	√	–
Device independence	–	√
Page tracking	√	–

unproven and under development by an ISO committee working group, most of whose members are not specialists in high-speed transactional applications. The evolution and market penetration of both formats depend fundamentally on engagement between the users of these formats and those responsible for their development.

That said, the market's embrace of PDF workflows, the flexibility they offer for complex graphics and colour support, and the steady erosion of traditional market boundaries, would suggest that this could be achieved. Ultimately the market will determine the uptake and evolution of PDF/VT and right now that market seems to be quite content with AFP-IPDS.

However AFP-IPDS has to reflect changing market needs. The need for content differentiation and relevance, which the use of complex design, colour and variable data offer, is growing. Companies want the flexibility to print documents where they like, which requires job portability. The web is an important commercial interface between providers and customers, and for employees. It is used for generating print, content submission, complex job approval cycles, and for variability of variability: version management according for instance to geographies or demographics of different target groups. The market will increasingly expect colour accuracy and predictability across substrate, blind exchange of device independent files, and tools for managing the relationships of content files to external resources for logistics and marketing process management.

Format Wars?

It is too early to predict a format war, but there are certainly signs of early skirmishes. At the moment PDF/VT and AFP-IPDS are far from interchangeable and it's arguable whether they ever really could be. There will be increasing pressure on buyers of high speed digital printing engines to understand the differences between the two formats, but more importantly to fully appreciate the options available to their customers. That is what really matters.

– Laurel Brunner

Big softies

The Sign and Digital show in the UK may be one of the smaller shows in the exhibition calendar but this has always made it a good place to observe the industry and the punters as well as the new kit.

Much of the story of large format in recent years has been about new printers but just as the technology has matured so the sector has grown up. In part this is because the poor economic conditions have wiped out the smaller players and those that just saw it as a way to make a quick buck. But in part it is also because the rest of the print industry has taken an interest in large format, with many commercial printers now seeing this as a core part of their offering so it is no longer just about making signs.

There has been a clear trend within Europe towards textile printing. There are a number of obvious advantages, not the least of which is the environmentally-friendly aspect of soft signage. Textiles are printed to polyester, which can be endlessly recycled. More importantly, soft signs are very lightweight, which makes them much easier

Sign and Digital UK 2011 proved to be a busy, focussed show with plenty to see and do.

and cheaper to transport, significantly cutting down the overall CO_2 emissions. These signs can be clipped out of their frames, making them easier to store, and they can be washed. And of course, as well as banners and flags these printers can also be used to produce short runs of promotional clothing items such as corporate tee shirts.

So far the UK has resisted this trend but at this year's show some of the bigger players have thrown their weight behind textile printing with most vendors quietly confident that this would in turn lead to greater awareness amongst customers.

EFI used the show to launch its Vutek TX3250r dye sublimation printer. It prints at around 100 sqm/hr, either directly to textiles or to transfer paper. Unlike most dye

Jeff Biggs, managing director of Colourgen, holds up a polyester textile sample printed on the Mutoh Viper Extreme.

sub printers, this is using a solvent-based ink. However, Emmanuel Swolfs, EFI's regional sales manager for North Europe, says that although most other dye sub inks are water-based, they use glycol, which is a form of solvent, at the sublimation stage to help fix the print. Some of the other manufacturers we asked disputed this so its something that we'll have to look into in more detail in a future issue.

Keeping with the soft signage theme, Mutoh brought its latest textile printer to the show. The Viper Extreme is available in 1651 and 2240mm sizes and has a production print speed of 37 sqm/hr or up to 77 sqm/hr in its fastest mode. It uses two sets of CMYK water-based dye sub inks, though it is possible to use spot colours if desired. Resolution ranges from 360 to 1440dpi.

Standing just behind the Viper Extreme was a low cost calendar unit, the UniFixer that can be used for both transferring dye sublimation prints to fabric and for fixing

direct-printed materials. This has come about as a joint development between Mutoh and Kala, and should be able to handle the output from several textile printers.

In addition, Mutoh premiered its UV 3D inks with the 1651 mm-wide Zephyr printer. These inks can be stretched by up to 200 percent, making them suitable for vehicle wrapping applications where they can be stretched

Esko Artwork demonstrated its Kongsberg automated cutting table with its iCut software.

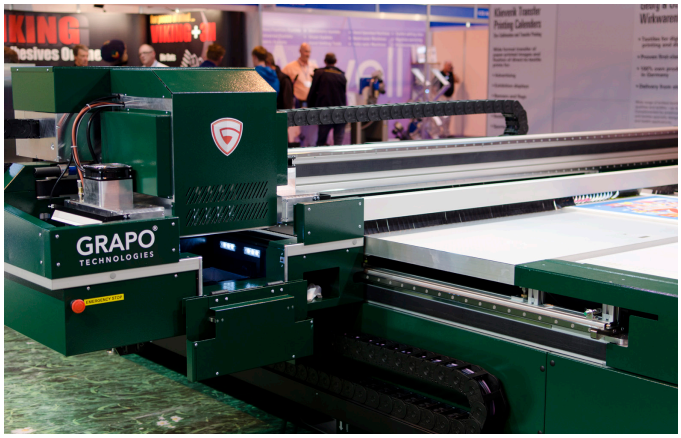
around curved and riveted shapes. The significance here is that vehicle wrapping has long been seen as the last preserve of solvent printer, and although other UV inks have had a certain flexibility none have been good enough up till now to be a real alternative to solvent inks.

Mutoh also showed its Bio-Lactate inks, which use a solvent derived mainly from corn. Mutoh claims that these are more environmentally friendly and do not release any harmful VOCs into the atmosphere. They're suitable for both outdoor and indoor use and do have quite vivid glossy colours. They can be used for both roll and rigid applications, and can also be used for thermoforming, which is useful for making 3D signs.

Colourgen, the UK distributor for Mutoh, also previewed the latest Seiko printer, the W64S ColorPainter, which should be available later this summer. This uses Seiko greyscale heads with resolution ranging from 360 to 900dpi. It's available in both 54 and 64ins versions. It uses CMYK inks and has an option to add light cyan and light magenta. Jeff Biggs, managing director of Colourgen, says that it uses high viscosity inks with a higher than average pigment loading so it should produce vibrant colours while using less inks, and running at higher speeds. He adds that it can print banners at 80 sqm/hr.

Mimaki went to town with not one but five new product launches at the show. Pride of place in the centre of the stand went to the JFX-1615plus, a medium format flatbed UV printer that uses LED curing. Mimaki also demonstrated the JV34-260, a 2.6m wide printer capable of taking both dye sub inks for printing to textiles and solvent inks for banner work, making this a highly flexible option for smaller sign makers. It runs at around 30 sqm/hr. Mimaki also introduced an entry-level TS3-1600 dye sub printer for the soft signage market. This uses dye sub inks and prints to polyester. There's a choice of four or six colours and resolution is stepped between 540, 720 and 1440dpi.

There were also white and metallic eco-solvent inks for the CJV30 and JV33 solvent printers. We believe that these inks are also compatible with models from Roland



Grapo's Gemini UV flatbed makes its UK debut.

and Mutoh since the inks themselves are made by Epson, which also supplies the printheads in these printers. In addition, Mimaki also demonstrated its new clear UV ink, which is useful for creating spot varnish effects and for building up texture on prints. It can also be used to print braille, useful for some packaging prototyping applications.

Roland showed off three new models. These included a 20ins print and cut model for light production with a choice of water-based or eco sol inks. There was also a desktop UV printer, with a 13ins print width, which

attracted a lot of attention. In addition, there was a new LED640, a 64ins wide printer due to ship in July. This will take rigid boards up to 12mm thick and has options for white ink and varnishing for embossing effects.

Czech company Grapo showed off its new Gemini printer, an extremely solid-looking UV flatbed that will

Colourgen previewed the Seiko Colorpainter W45s, a solvent printer that offers fast production for a reasonable price.

take boards up to 3x2m. There's an optional roll-feeder, which can be added to the front of the machine. It uses 10 Xaar 1001 printheads, with resolution ranging from 360 to 1080dpi. It uses inks from Sun Chemical and takes two lots of CMYK plus one white and one varnish, which can be used for spot varnishing or flood coating.

Neolt UV launched the AsterJet, designed specifically to be a reliable workhorse for the budget end of the market, with prices starting at around £45,000. It uses Xaar Proton heads, and the slightly old-fashioned control chips rather than a more modern motherboard, which according to Jean Philippe Martinez of Neolt is both more reliable and cheaper to fix. Indeed Neolt is so confident of this that it comes with a three-year warranty. It has a fairly unique transport mechanism, incorporating both a rotating vacuum cylinder for flexible media and a vacuum moving bar for rigid substrates into the narrow platen across the top of the machine. It's available in two sizes, 1650 or 2200 mm wide. It was demonstrated printing in CMYK+white, but there's also a light cyan and light magenta option.

Neolt has also launched a second printer, the X-Jet, though this was not at the show. It's a larger, more expensive beast, using the Xaar 1001 printheads and capable of printing at 90 sqm/hr.

South Korean firm Inktec used the show for the UK debut of its Jetrix 2513FRQ UV printer. This is a flatbed printer with a 2.4x1.2m bed, but there's also a roll-to-roll option. It runs at 10 sqm/hr for fine art work up to a maximum speed of 30sqm/hr. This printer uses Spectra Q-class greyscale heads. It has CMYK plus white inks together with either a primer or a clear varnish – users can change from one to the other by selecting an option at the control panel, which takes about 15 minutes.

Agfa demonstrated its new Anapurna M1600, making its European debut and promptly sold the first one to F1 Graphics. This is a 1.6m wide device with a maximum speed of 46 sqm/hr. It can handle boards up to 1.5 x 3.2m and rolls up to 1.56m wide. It uses Konica Minolta 1024 12-picolitre printheads which can produce text down to 6pt. It uses a five colour inkset with CMYK plus white.

Also on the Agfa stand was the Jeti 1224 UV HDC. This is a flatbed device but with a flat to roll option for

Jean Philippe Martinez (left) and Federico Lovatello of Neolt with the AsterJet, a UV printer designed specifically to be affordable and reliable.

banners. It's a solidly built machine designed for three shift production with an average speed of 50 sqm/hr. It uses Ricoh greyscale heads can print at up to 1200dpi resolution.

Screen appears to have updated its Truepress Jet 2500UV machine so that it can now print five and seven layer

Mimaki demonstrated its new JFX-1615plus, a flatbed UV printer with LED curing.

images. This means that you can print a double sided image onto a clear substrate without any show-through, and without the need to put the media through the machine twice.

Durst also had a new printer but weren't keen to tell us anything about it on the basis that journalists can't be trusted. They did tell us that the machine was the Omega 1, and it has a resolution of 1728dpi and maximum throughput of 35 sqm/hr. It uses CMYK inks with options for light cyan and light magenta, or orange and violet, or grey and white. It's described as an entry-level machine but since they were the only exhibitor at the show to refuse to discuss prices we assume that "entry-level" really means "prohibitively expensive".

Indeed, one of the most encouraging aspects of the show is that, apart from Durst, all of the other vendors were willing to have grown-up conversations about the prices of the machines and their inks, to talk about who manufactured the various components such as inks and printheads, as well as warranty and maintenance issues. Indeed all the vendors made the point that visitors were highly knowledgeable and keen to discuss workflows and applications, and even, colour management.

Overall the show felt more integrated than it has in previous years with the different parts of this diverse sector, from printers to LED lighting, more at ease with each other. It was almost as if the wide format industry has finally come in from the cold, to take its rightful place as part of the printing industry.

– Nessan Cleary

The compact, automated proofer

Following the success of the Stylus Pro 7900 and 9900, Epson finally (and expectedly) launched the smaller version, the Stylus Pro 4900 for substrates up to 17ins wide, at the end of last year. We opted to test the printer early on, but for various reasons it took a while to get our hands on a review sample.

One of the attractions of the Epson Stylus Pro 4900 is that it can be fitted with a built-in spectrophotometer, called the SpectroProofer. Besides making calibration and the measurement of ICC profile data automatic, the enclosure

The Epson Stylus Pro is a 17ins inkjet printer that can be fitted with an integrated spectrophotometer for high end and automated contract proofing.

for the X-Rite manufactured spectrophotometer also contains extra fans, to dry the print faster and to ensure accurate colour measurement.

Another handy feature of the SP 4900 is the capacity to automatically switch between roll-fed paper and sheets. When choosing sheets of paper, either from cassette or manually fed, the paper on the roll is held in a standby-position, and automatically loaded when needed again.

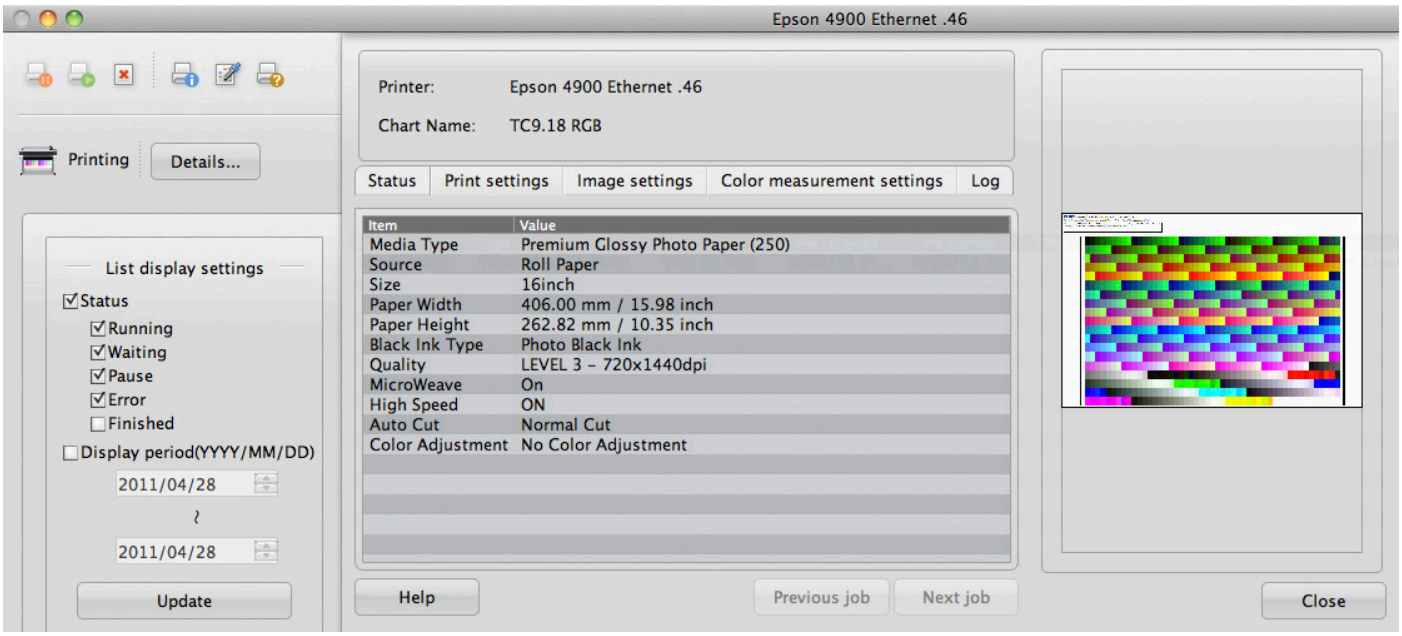
For colour gamut reasons there is of course a third attraction with the 4900 – it uses the Ultrachrome HDR ink set, where the additional Green and Orange ink push the gamut to embrace 98% of the Pantone Color System. Or in the terms we test printers – you can achieve about 875,000 colours on glossy photo paper (which is more than twice the gamut of quality offset printing on coated paper). So matching the colours when producing a colour accurate contract proof is really a fairly simple task for the 4900.

Having said that, contract proofing is probably not something you would normally try using just the printer driver that comes for free with the printer. This is a task for a dedicated RIP system, with a module for the validation of contract proofs installed. The good thing is that the built-in spectrophotometer can communicate with a third-party RIP system, and so enable an automated and efficient proofing system.

We have tested the Epson SP 4900 with a selection of RIP systems including ColorGate Production Server, Efi ColorProof XF and FourPees ProofMaster, and they all support the X-Rite spectrophotometer inside the 4900. Calibration, linearisation and the measurement of ICC profiles data have never been easier! Well, you of course have to decide if you need a spectrophotometer with or without UV-filter, since the SpectroProofer comes in those two flavours, and you can't switch between the two types of measurements. What you can do, is switch between measurements with black backing or white backing, which might be of crucial importance when proofing towards a certain substrate.

The test – pros and cons

While we fell in love with the 4900, not least for the built-in spectro, we still have some suggestions for Epson for some improvements. First of all it would be very nice if there were a proper stand to have as an option. It would make both the moving around of the printer, and the accessibility when changing paper (or worst case dealing with jammed papers) much easier. This, we are told, will become available in June, at a recommended price of €436 ex VAT.



The built-in spectrophotometer can either be used via the software SpectroProofer Utilities from Epson, or linked directly with third party RIP systems.

Secondly, the Utility software for the Spectroproofer part could do with an option to update the existing ICC profile data after re-calibration (or re-linearisation) of the printer. For now you need to call upon a third-party solution to create ICC profiles. This is not a problem if you have a third-party RIP to drive the printer but, for example, a photographer who is pleased with the result using default profiles, and wants to achieve a stable and predictable result, would benefit if this were possible in the SpectroProofer Utility. To some extent this functionality is available with the Mirage Pro software from Dinax. Epson is currently making this available as a free of charge software utility with all the Stylus Pro SpectroProofer versions, but ideally it should be a more integrated solution, working in tandem with the printer driver.

That said, there are many positives to the 4900, though we can't help wondering as to why Epson insists on not adding a dedicated blue ink (or violet). Yes, the gamut is impressively large as it is, but it would naturally be even bigger if the normal primary colours cyan, magenta and yellow would be complemented with the triplets of red, green and blue. The Hexachrome colour set of CMY + OG comes a long way, but is a compromise any way you look at it. But reaching 98% of the Pantone spot colours should satisfy many packaging producers and their customers.

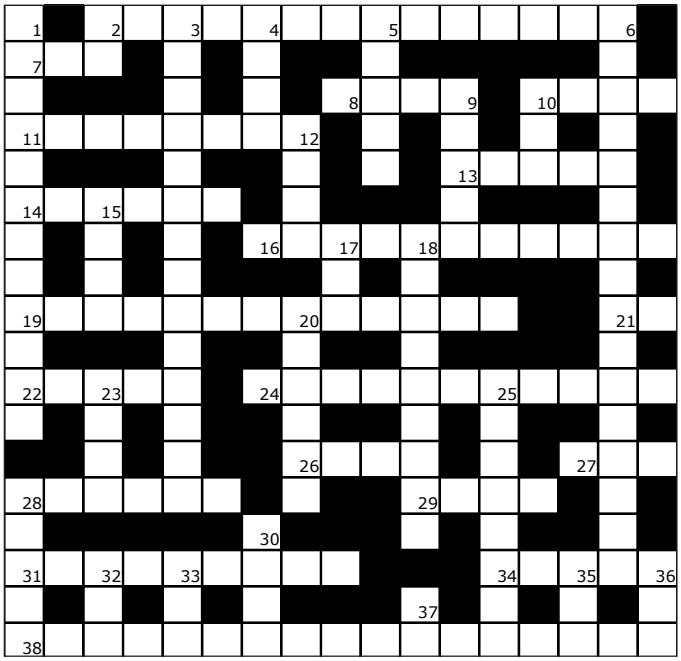
Epson dominates the market for proofing devices, and with this new smaller model complementing the 24ins 7900 and the 44ins 9900, Canon and HP will have to fight hard to make a dent in the market share Epson holds here. For example, the Canon iPF 6350 (reviewed in Spindrift number 8-7 in 2010) doesn't have a built-in spectrophotometer, so while having a slightly larger colour gamut, it might not attract those who want an automated proofing solution. The HP Z3200 (reviewed recently in the March issue 8-10 of Spindrift) does have a built-in spectro, and a large colour gamut, but is a 24ins printer and so comes at a higher price than the Epson 4900.

Talking about price, the recommended price of the Epson Stylus Pro 4900 is €2495 ex VAT for the standard unit and €3395 ex VAT for the SpectroProofer version. This is a good price we think, since stand-alone handheld spectrophotometers on their own often cost at least €1000.

– Paul Lindström

X-word Puzzle

Number 29



Across

2. A common application for a wide format digital press. (7, 7)

7. Tristimulus values. (3)

8. Important to get the resolution and TVIs right for this content. (4)

10. How many print units for CMYK plus one? (4)

11. Substrates dressed for a killer digital printing application. (8)

13. Opposite of outer. (6)

14. To use? (6)

16. These are tricksters for toner and inkjet presses. (8, 3)

19. A related application to 2 Across. (4, 3, 6)

21. Slightly bigger than an n-dash. (2)

22. Do this before you turn the guy loose on new kit. (5)

24. The answer to every ailing business's prayer. Not. (1, 3, 7)

26. A type of array, or disc storage system. (4)

27. Not nothing. (3)

28. What we should do to, but rarely bother, with brain pickers. (6)

29. Stickiness. (4)

31. Pretty pages that stick to the inside of book covers. (3, 6)

34. Groups generally pulling in the same direction. (5)

40. The thing that made a difference to early imagesetters. (10, 7)

Down

1. Controlled for quality assurance on press. (5, 7)

2. They give paper its stark whiteness. (2)

3. This is what everyone should do to guard against digital obsolescence. Think about it. (6, 8)

4. Important shared characteristic of early operating systems. (4)

5. A single unit of print? (5)

6. The practice of caring for the world around you. (16)

9. This print run amounts to the same as a wet run. (5)

10. Another word for a good time. (3)

12. A tool for blocking access, or a chance for halting files for preflight checking? (4)

15. Onamatopaeic means of formating a digital graphics file? (4)

17. We'll let you know. (3)

18. If it's too small it'll do for a PDF's preflight check, even today. (4, 5)

20. If hexadecimal is too complex, this is too simple. (6)

23. One of the Internet's early funders and users. (4)

25. A tool for controlling grey levels and colour gamut. (5, 3)

28. To tread steathily towards the edge with a dubious companion. (5)

30. Describes the sheet for advertisers, what we weep and a rip? (4)

32. Without it where would Mr Gates be? (3)

33. A higher performance programming language: applied to source? (3)

35. Eveything suffers from this. (3)

36. A last cry for help? (3)

37. Identification. (2)