Nothing is more noble, nothing more venerable than fidelity. Faithfulness and truth are the most sacred excellences and endowments of the human mind.

– Marcus Cicero 106 - 43 BC

Dear Reader,

Welcome to 2011. Floods, tyranny, riots, broken promises and mistrust have replaced the dreary themes of pecuniary frailty in the news. But the printing industry seems to be picking up. Perhaps the two are related? Or perhaps the industry isn't so much picking up as moving from its nadir.

We prefer to believe that it's because print, despite the charms of Facebook and email, still works best when it comes to message effectiveness. The apparent rising use of print may be due to the realisation that the most effective message is the one that is seen, heard, read and retold the most often. Print is another dimension in this dynamic media environment.

Contraction in traditional print and publishing cannot be denied but it has been replaced by a new generation of energetic entrepreneurs selling print in new ways, mostly via the Internet.

So perhaps the last few years have been about progress towards a new reinvented printing industry, rather than just failures. Whatever it is that's been going on, we hope 2011 turns out to be the year when everything falls into place for all of us.

Enjoy.

Laurel, Nessan, Paul and Todd

In This Issue

Singing a Song of Profits

Rotolito Lombarda is an Italian success story having exploited digital technology to simplify complex processes. It recently installed a full colour HP T300 inkjet web press, which will be shortly be upgraded to the faster T350. Its subsidiary, Rotomail, has also installed a monochrome T300, as Laurel Brunner reports.

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Home Grown

Océ has thrown all its eggs into the inkjet arena as far as production printing is concerned, with the launch of the ColorStream 3500. Despite a great deal of success in inkjet, this will be the first inkjet printer designed and built entirely by Océ, as Nessan Cleary found out on a visit to the European HQ.

see page 16

Mutoh making moves

Mutoh has been somewhat of a slumbering giant in the wide format world. It is a Japanese company but its European headquarters is much more than just a sales channel, playing its own part in product development. And Mutoh does have a bewilderingly wide array of wide format printer products to choose from, as Laurel Brunner discovered.

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Regular & Special

News Focus

EskoArtwork has been sold to US industrial company Danaher by its previous owner, Axcel, a Danish investment group, for a purchase price of €350 million. Danaher is a diversified technology leader that designs, manufactures, and markets innovative products and services to professional, medical, industrial, and commercial customers.

Digital production house **Stroma** is to print international colour newspapers in London, from March, using Océ's JetStream 1000 inkjet technology. The quality is comparable to traditional newspaper editions and will allow publishers to expand colour production. Stroma has been using an Océ toner printer for the last decade.

Dalim has released the latest version of ES 2, its streamlined customer-facing environment as well as its Twist 6.3 workflow engine. ES 2 now uses the production workflow features of the Twist engine to extend its colour-accurate virtual soft proofing, the business logic of collaborative project management together with sophisticated approval cycles with fully automated prepress processes.

Adobe has released its Technical Communication Suite 3.0, a complete authoring and multi-device publishing toolkit for publishing technical information and training material. It comes complete with new versions of FrameMaker, RoboHelp and Captivate as well as Photoshop CS5 and Acrobat X and features better integration between these various tools.

EskoArtwork has launched WebCenter 10, a new version of its online collaboration and approval tool for the packaging and print supply chain. The interface has been redesigned to make it easier to use and there's new annotation tools and an approval module for multi-level approval cycles. It also boasts a stronger, bi-directional connection with the Automation Engine to extend workflow automation outside the walls of the printshop.

Enfocus has teamed up with Viki Solutions of Canada to incorporate the PitStop preflight technology into Viki's Vsuite platform of custom software solutions. Viki is also planning to bring Enfocus' Switch automation platform into its portfolio.

EFI has released its Fiery XF 4.5 advanced RIP solution for inkjet production printing as well as EFI Colorproof XF 4.5 for proofing. It offers better performance with support for 64-bit Windows and multi-threaded halftone production. There's also better colour control including improved control of spot colours, more versatile colour verification, and new support for special white, varnish, and metallic inks.

Agfa has shipped its Apogee 7 workflow, first previewed at last year's Ipex. It's built on the latest version 2.5 of Adobe's APPE and can drive wide format printers. It includes Apogee Impose, for rules-based imposition using JDF information. It also has a browser-based WebApproval function that allows print buyers to view their jobs, upload and replace pages, and reject or approve for further processing.

X-Rite has shipped version 6 of its InkFormulation and ColorQuality software packages. This offers a fast, accurate and consistent ink formulation, formula creation, storage, approval and retrieval solution for offset, flexographic, gravure and screen-printing inks. InkFormulation 6 and ColorQuality 6 give ink suppliers and printers more flexibility over recipes and assortments, improve basic

materials handling, automatically determines the right ink film thickness and helps to eliminate hazardous waste. InkFormulation 6 and ColorQuality 6 are now also XRGA compliant.

EFI and **Heidelberg** have announced a new deal in the USA for Heidelberg to distribute EFI's Vutek GS series of superwide format digital printers to the commercial print market. Heidelberg will also sell inks, parts and consumables as well as providing customer and technical support for the Vutek printers including installation and training.

HP, which was recently selected to chair the CIP4 workgroup set up to develop JDF for wide format printing, has now started a new certification program that allows partner workflow solutions to be HP Certified for Wide Format Printing JDF Exchange. Four Pees has signed up for this and announced that its PrintFactory 4 will be one of the first software suites to extensively support JDF for standards-based integrated production automation.

Océ has launched the ColorWave 600, capable of delivering instantly dry prints at a rate of 106 metres per hour. It uses Océ's toner pearls and works with economical uncoated paper and speciality media.

Océ has also shown off a new large format printer, the TDS50, targeted at the CAD market. It can print nine D prints per minute with no warm-up time, with a resolution of 600 x 1200dpi. The system can be loaded with six media rolls giving it up to 1,200m capacity for long uninterrupted printing. It uses solid radiant fusing technology giving it instant-on behaviour and low noise, heat and ozone emission as well as low energy consumption.

Goss International has agreed with the works council at its facility in Montataire, France on a social plan that will reduce the work force there by approximately 300 people in a bid to make its European operations more cost-effective.

The Cyan Group, based in Leicester, UK has launched both a single-pass and a multi-pass industrial inkjet printer, offering customers a choice of Xaar and Konica Minolta printheads. There's also a bespoke option, the Cyjet XP, for integrating inkjet heads into industrial systems. There's a choice of inks for different applications ranging from food production to textiles and ceramics.

Book.ish, one of a growing number of new ebook applications, now has a private beta program, selling books with retail partner Readings, an independent Melbourne bookseller. All the pilot program publishers are Australian independents, represented by SPUNC (the Small Press Network).

Quark has released a new App Studio module for the Quark Publishing System to help publishers develop their own iPad apps quickly and relatively cheaply. Quark has said that it will develop a similar App Studio for its desktop program QuarkXPress later this summer. In the meantime Quark is offering an online app development service for XPress 8.5 users.

Adobe has commissioned a report, conducted by Alex Wang, Ph.D, a researcher in integrated marketing communications, which unsurprisingly concludes that readers are more likely to engage with interactive than static ads. Titled "Digital Ad Engagement: Perceived Interactivity as a Driver of Advertising Effectiveness," the study tested the reactions of people aged from 18 to 32 to print or iPad versions of advertisements.

Agfa has added another media to its Synaps range of synthetic papers. Synaps XM is a polyester-based material for use in dry toner printing systems. It has been optimised for runability and image quality on all major platforms from the most important market players. It has a white matt topcoat that provides excellent toner adhesion and ensures smooth transport in most printing systems.

Océ has released its fourth quarter figures from the end of last year, which show a five per cent rise in revenues from €683m last year to €715m. Normalised operating income has doubled to €29m and the Canon portfolio has been integrated.

Lawrence A. Zimmerman will retire as CFO of Xerox in February. Luca Maestri, current CFO of Nokia Siemens Networks, will succeed him as Xerox's chief financial

officer and an executive vice president of the corporation. Zimmerman will continue with the company as vice chairman until April 1. Maestri joins the company on Feb. 16.

Glunz & Jensen has strengthened its position with the acquisition of 83.5 per cent of Italian firm Degraf, a graphic firm specialising in packaging and flexo. The deal is expected to close on 15 March this year.

News Analysis

Back in the November issue we looked at the Adobe Digital Publishing Suite and lamented the lack of a similar offering from Quark. But now Quark has announced an optional module for its Quark Publishing System, which it calls App Studio. Essentially this allows developers to put their app together using Quark's familiar graphical design tools without ever having to get their hands dirty learning X code. At $4000 it's not cheap but then QPS is an expensive system aimed at the kind of larger publishers who are already spending considerably more money than this in developing bespoke iPad apps.

Not surprisingly, Quark has found that many other publishers also want this sort of ability tied in with desktop editions of QuarkXPress. And there is an App studio in the pipeline for QuarkXPress but it won't be ready to ship until much later in the summer. But the folks at Quark are mindful that Adobe has its system up and running so in the meantime Quark will be offering an online service for QuarkXPress 8.5 users. It costs roughly $500 but for this Quark's team of designers will turn a publication into an iPad app. There's also a fee for registering the app with Apple, which starts at $349 per issue though the cost drops depending on the number of issues you have in a given year. It's a good move from Quark, and one that we think will help many small and medium sized publishers

get their newspapers, magazines and special issues into app form.

But of course this also assumes that apps will be a successful business model for publishers. The app store has put a price on everything, and many readers do seem willing to pay for content when it's delivered as an app, where they are not willing to pay to view web pages. In part this is because apps offer the possibility of a richer, interactive media experience, though that has been quite expensive to deliver up to now.

However, it could be that Apple is about to throw a giant spanner in the works. Publishing via individual apps is too unwieldy for regular magazines because of the long drawn out approval process. This is why Apple introduced in-app publishing, which allows publishers to sell a single app which functions as a reader, and then to make each issue easily downloadable through the reader. The problem with this model is that Apple likes to have control, and a cut of the revenues, of everything on the App store, and in-app publishing only gives Apple control over the initial reader app. Apple now appears to be changing the way that in-app publishing works so that it controls all the payments and distribution. This in turn will deprive the publishers of all sorts of useful demographic information about their subscribers, which helps them sell advertising.

It should also be noted that today is the day that The Daily is finally due to be launched. This is the fruit of Apple's collaboration with News Corp and may well offer a blueprint as to how Apple really sees the online publishing market, but it's unlikely to be good news for the publishing industry.

But of course, Apple isn't the only player in the tablet market. Quite a few vendors have shown off tablets based on the Android operating system and Google is due to have a dedicated tablet OS to show later this summer. RIM has already announced its Playbook tablet, running the Blackberry OS and HP is said to be readying a tablet based on the Palm OS, which it bought last year. And of course there is Microsoft with its Windows Phone 7 OS.

We think the next year or two is going to be an interesting one (or quite a scary one if you're a publisher). No one in

the publishing world wants to see Apple dictate terms in the way that it did to the music industry, yet with Apple on its way to becoming the biggest company on the planet, it may prove irresistible. Then again, many publishers may well conclude that a browser is a better way to get into interactive publishing.

Green Shoots

Digital Dots has signed the Cancún Communiqué and we are encouraging other players in the industry to do the same. Follow this link and add your company to the list: https://cambridgeprogramme.wufoo.com/forms/the-cancun-communiqua-signup-form/

China's government is attempting to cut the national economy's carbon intensity by setting obligatory regional emissions targets. They are to come down by 40 to 45 percent of 2005 levels by 2020. The model appears to replace prior practice whereby high energy consuming industries such as print were told to limit output in the latter part of 2010 so that China could apparently be seen to meet goals set for 2006-2010 industrial efficiency.

Two Sides, a British lobbying group for the paper industry, has managed to persuade some large UK corporates to agree to stop ambiguous language in their efforts to justify using electronic billing instead of print on paper.

The PrintCity Alliance is preparing to publish its latest environmental and energy report Carbon & Energy Reduction for the Graphics Industry Value Chain in early 2011. We peer reviewed this work late last year and the version we saw still needed some considerable editing but it looks sound enough. The final version is apparently being translated and should be available soon.

Epson is for the third time listed on the Dow Jones Sustainability World Index (DJSI World) and the Dow Jones Sustainability Asia Pacific Index (DJSI Asia Pacific), leading indicators for socially responsible investment (SRI). These stock indices assess companies around the world for their economic, environmental and social performance. Only the companies with the best future prospects for achieving sustainability make the list.

According to *Gannett Newspapers,* as of July last year 94% of the pages in its USA Today contained recycled fibre. In 2009 recycled paper made up 76.2% of the raw material used to print British newspapers.

For more green news, check out The Verdigris Project:

Verdigris

http://verdigrisproject.com

A Review

Normal proof or enhanced and validated proof?

One of the veterans of the proofing systems market is EFI, building on the colour knowledge accumulated from years of experience. EFI developed both the Fiery RIP series, and the BestColor proofing RIPs following the acquisition of BestColor way back in 2002.

numbered 4.5. We have concentrated our test on the Colorproof XF. In general the new versions are faster than ever, supporting 64-bit mode in the operating system and multi-threading. EFI claims a performance improvement of up to 177%, or even more for PDFs, compared with the previous version 4.1. The new workflow templates also help increase productivity.

But it's in the details that the new version comes into it's own. It now better supports the use of special inks like white, varnish and metallics, often used in demanding
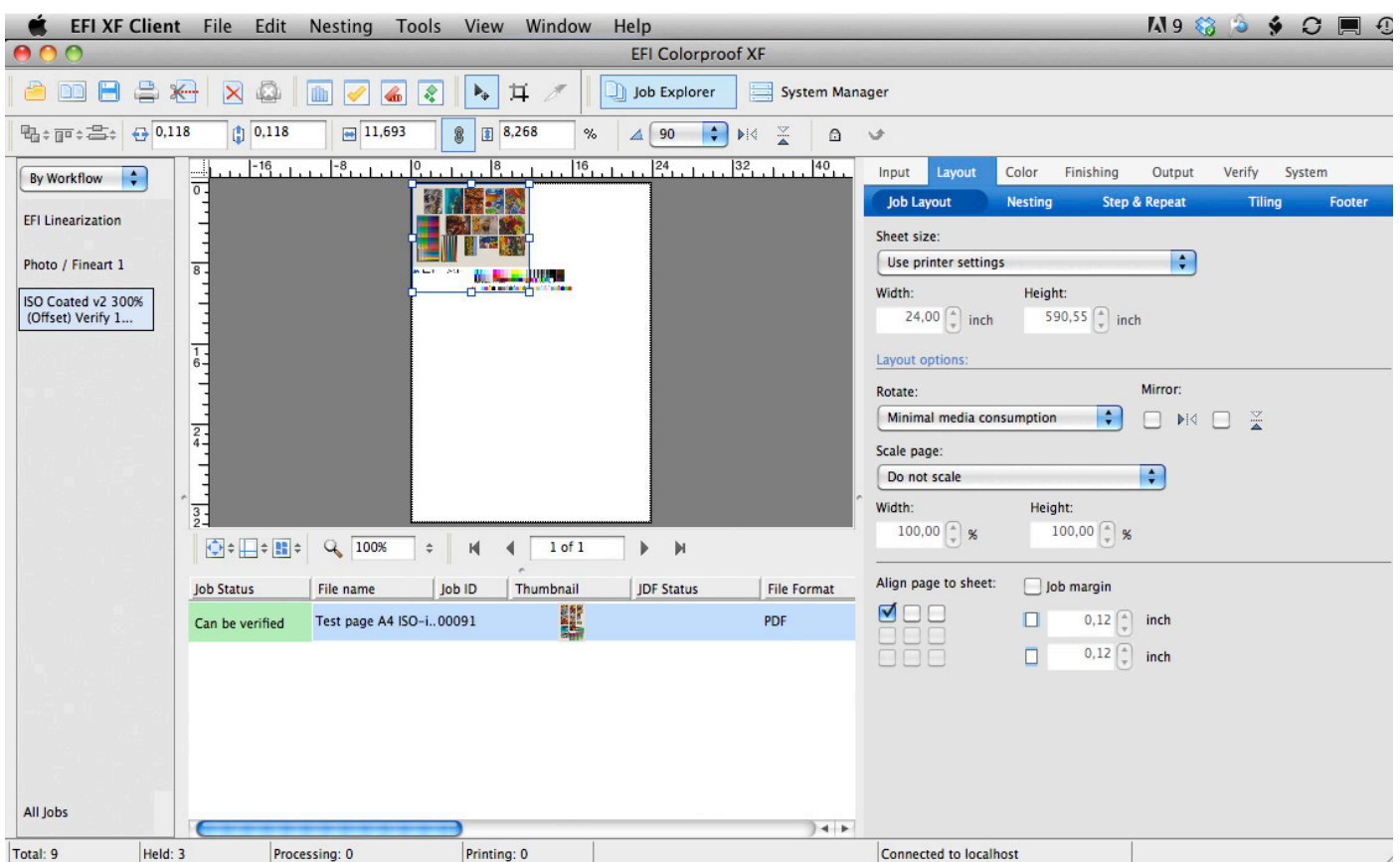
The user interface of Efi Colorproof 4.5 hasn't changed much since the big overhaul in 2009 when v 4.0 was introduced. One of the most important features is still to preflight and verify compliance to a set ISO printing standard.

Today there are actually two lines of inkjet RIPs from EFI, the Fiery XF and the Colorproof XF. Fiery XF is aimed at large format production on inkjet printers, and the Colorproof XF, as the name clearly implies, is for contract proofing and validation of documents and proofs, also using a range of inkjet printers. Both were released in January 2011 as enhanced and expanded versions,

printing and proofing in packaging. The Dynamic Wedge technology, already introduced in 2009 in version 4.0, now supports calibration and characterisation of shades of spot colours. This might sound trivial, but in many RIP systems it's only the solid spot colours that are defined properly, and the shaded alternatives (different percentages used for a particular colour) could be way off. Printers and

designers who make heavy use of spot colours in their designs, will appreciate this new level of control.

EFI Colorproof XF performs preflight on the PDFs before output, and this preflight function has now been extended with the new PDF/X-4 and 5 formats (from the ISO 15930 series of print-ready PDFs). That is, if you have bought the optional feature EFI Color Verifier. EFI Colorproof XF is a modular Client-Server architecture, for both Mac OS and Windows, with a lot of features present in the Standard version, but more available should you need them.

The support for cutting information and placement of cut marks is also new or enhanced, according to standards like iCut, Fotoba, Grommet and Zünd. The JDF support has also been extended to include connectivity to EFI Web2Print (Digital StoreFront and MIS systems.

Last, but not least, for high-end photographic production the new Dynamic Rendering Intent decides on a job-specific optimised rendering intent for best possible output rendering of photographs. We made some samples using new and older test files, and we could see an improvement in shadow details and colour accuracy using this new version. The calibration and linearisation procedures were very straightforward and fast for the RGB workflow, using existing paper profiles provided by the printer manufacturer in the printer driver, but optimising and enhancing the final result.

The user interface is said to be somewhat simplified, but we still think there is room for improvements here. It's still a bit clunky, and not always very intuitive. There is a Light version of the Colorproof RIP, called EFI eXpress, and we would like to come back and report about our findings after testing this for mainly photorealistic production. But certainly the Colorproof XF 4.5 does an excellent job on photographic production.

All in all, it's a relevant and useful upgrade to an already very competent proofing system, with options to do, among other things, dot accurate proofing, still needed in many packaging production workflows, not least in flexo-based printing.

Heroes & Zeros

Hero

Tim Cook, the acting COO of Apple. Steve Jobs is taking his third leave of absence in two years from Apple for health reasons, leaving Mr Cook holding the Apple reins until he returns. The day after this announcement was made Apple announced its highest ever revenues and profits for the first quarter of its fiscal year 2011. Revenues were $26.74 billion and the net quarterly profit was $6 billion, or around $6.43 per diluted share. There is no way that such stellar results were not down to Mr Cook's efforts. Clearly he is a man Steve Jobs trusts.

Zero

Chitter chatter about Heidelberg's digital press plans dominated much of the trade press throughout 2010. Bernard Schreier had committed to announce the company's digital partner by the end of 2010, and reiterated that commitment during the Heidelberg press conference at IPEX in May. What a pity that not a word was released on the company's revised plans. It seems something will be said in the next couple of months. Ricoh or Konica Minolta are clear contenders.

Another Review

## Acrobat X Pro for good PDF/X files

Out of sync with the Creative Suite 5 release, which has been the case before, Acrobat 10 was released late last year. We would have liked to have been able to review this earlier, but for some reason Adobe opted not to invite Graphic Arts journalists in the UK to the launch press conference, and we had to struggle somewhat to receive a review copy. Still, good things come to those who wait, as the saying goes!

There are quite a few new features to report on, and overall Adobe has made a good overhaul of the user interface with less clutter and a better way to organise the myriad of tools.

An update on the X-files

While it is quite apparent that even though the main focus for the Acrobat development team has been on corporate, (read office users), and not so much on graphic arts designers and/or producers, there are some really good items for Graphic Arts Professionals as well. We were pleased to see that the PDF settings for Distiller now better reflect the latest versions of PDF/X (the ISO 15930-series of print ready PDFs), as well as PDF/A-1b and PDF/A-2a, b and u (for archiving).

This is also reflected in the new sets of preflighting profiles and fixing-scripts in the Preflight panel. As before, the preflight function, brought-in as a third party module from Callas, is a somewhat reduced toolset in comparison with Callas' own full-blown solutions. While there is still a slight confusion between the named year of the different PDF/X versions (versus what year the ISO insist they were published), it's a step in the right direction.
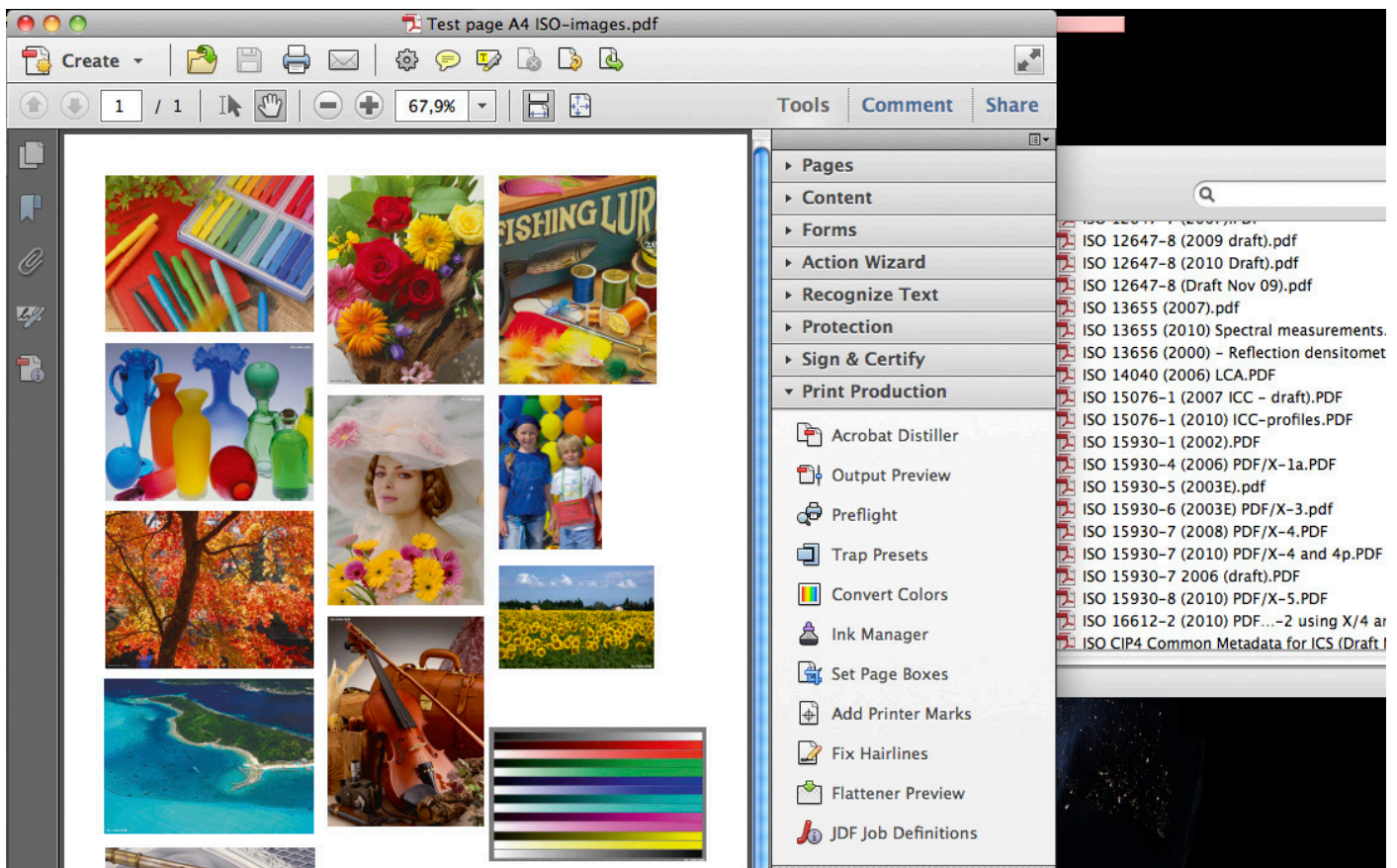
One of the most important functions in Acrobat Pro is to check the created PDF for printability and PDF/X compliance. With Acrobat X Pro both preflight and scripting/fixing is now up-to-date with the ISO 15930-series (PDF/X).
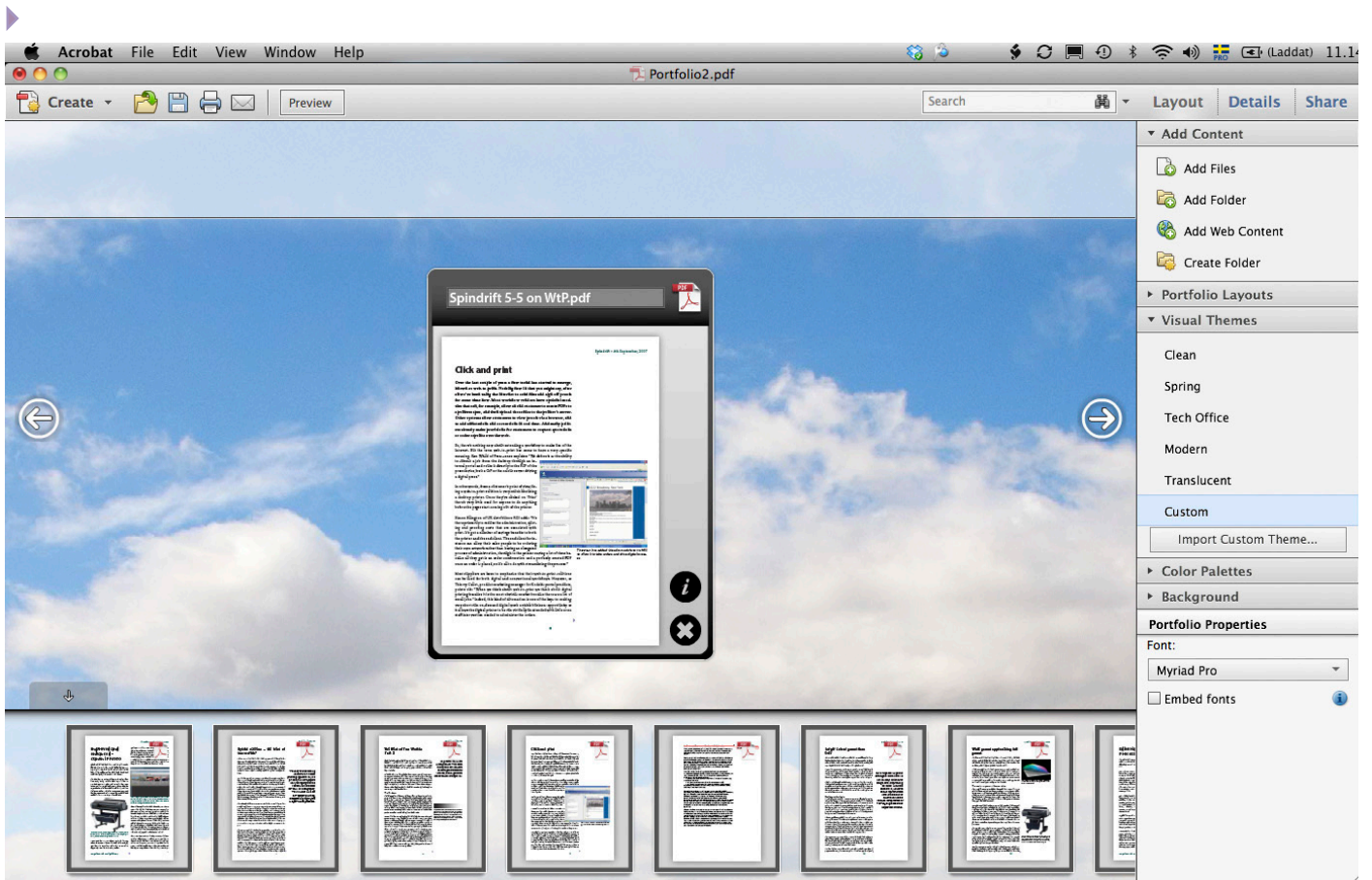
A function already present in previous version of Acrobat is the ability to group several documents into Portfolios. This feature is much enhanced in Acrobat X Pro.

In Creative Suite 5 the export settings and preflight profiles refer to outdated versions of PDF/X-versions. When the Creative Suite is next updated, the export settings for InDesign can be fully integrated with those for Acrobat X Pro. For Distiller this isn't so much of a problem, since Distiller is 'frozen in time' – only relevant to use in old PostScript-based workflows. If you want to use the PDF 1.6 format and upward (we are at present at PDF version 1.7) and make full use of live transparency and layers et cetera, then you cannot use Distiller to create PDF/X 4 or 5 files, since Distiller needs PS or EPS files as input, and PS 3 is roughly speaking on a par with the very old PDF version 1.3 format!

Easier and better Portfolios, OCR and Macros

A function that existed already from before, but has been enhanced and simplified, is the tool for making what Adobe calls Portfolios. This can be a selection of PDF-files grouped into, well, a portfolio. The Wizard function helps the user to create a nice design and layout for those

Portfolios, and there are also different Themes to choose between for the backdrops and design. And more Themes can be imported and exported to and from Acrobat X Pro.

An old feature, to detect pixel-based data in the PDF (typically scanned documents) and perform OCR on those pages, has been re-introduced and enhanced. One would think all documents by now have gone digital, natively, but especially in an office environment, a lot of printed documents still enter the business workflow. Such documents can be scanned swiftly and turned into searchable text- and/or vector graphic based documents.

For automation and efficiency Acrobat Pro now supports Actions, already present since way back in Creative Suite. The seven sets of Actions offered are a good start, with macros performing tasks such as Reduction, Archiving, Preparation for review et cetera. Handy users can add more Actions according to their needs, but the line could easily become a bit blurred between what you perform early as Preflight inside InDesign, and/or later in Acrobat

A new and nifty feature is how Adobe has tied in a service called SendNow to Acrobat X. Large files are uploaded to Adobe for hosting, and the receiver gets an email saying there are documents to fetch.

Pro on already made PDFs as an Action. But it's good that the user has the option to choose in which way he or she prefers to automate repetitive tasks.

Send large files and collaborate on proofing

Coinciding with the launch of Acrobat X Adobe has also started offering the service of transmitting very large files as an alternative to attaching them to an email. The service is called Adobe SendNow, and the service is free for files up to 100 MB. For larger files and added features to SendNow there is a fairly modest fee. We have tested both Adobe SendNow and competing services like YouSendit and DropBox, and they are all very useful.

For collaboration Adobe X introduces more tools than ever, and these can be found under one of the three main sections, under the Comment tab. This now includes live chat, and to get started the novice user is guided by a Wizard. There is a lot of use of Wizards in Acrobat X, and

this is probably a good and welcome thing for most users. The comments and collaborations tie into the Adobe.com concept, loosely connected in turn to the Adobe webinar and e-Learning platform Adobe Connect (we think, but here things get a bit confusing). We strongly recommend Adobe to tie the Adobe.com idea, and Adobe Connect, and other Collaborative functions better with one solid and coherent user interface and single source platform. For now it is more than a little confusing as to what's what, and whether or not there are bridges between the different solutions.

Too many options

As with previous releases of Acrobat we are somewhat sceptical of the different editions. Adobe now offers three different packages, Acrobat X Standard, Acrobat X Pro and Acrobat X Suite (Windows only). Those who think they only need the Standard version, will soon be disappointed when they realise they have missed out on functions like the new extended Portfolio capacity, the
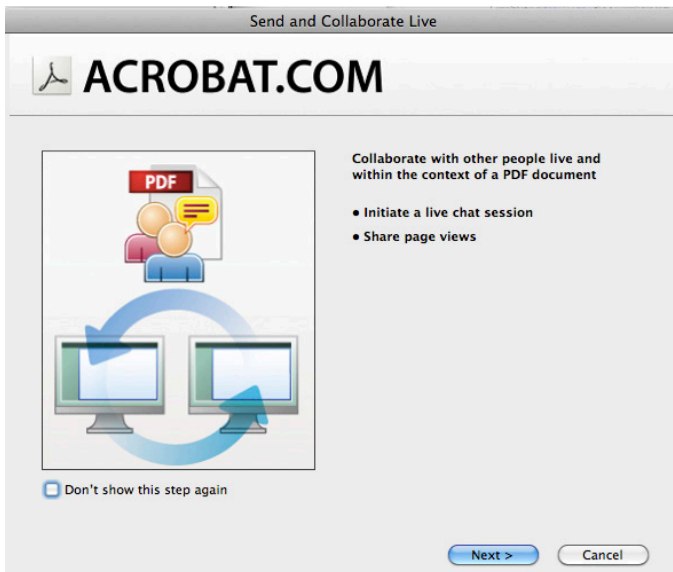
The functions in Acrobat for collaboration in proofing have been enhanced through the connection to Adobe.com (yes, this is confusing). Those features are found under one of the three main tabs in the new user interface, named Comment.

Action- and Wizard tool, the advanced Print Production Toolset and other very valuable tool sets. We think Adobe could skip the Standard version in the future.

The Acrobat X Suite is only offered as a whole for Windows users, since the professional tool for creating and editing electronic forms, the LiveCycle Designer ES2, has its origin on the Windows platform, and isn't likely to be brought to the Mac OS platform. Some modules in the Acrobat X Suite can be bought separately, like Captivate and Photoshop (of course).

We believe that most publishing professionals would benefit from upgrading their existing Acrobat 9 version to the X Pro version. The simplified user interface is actually a relief, and the added features for validation of PDFs, and more efficient editing and management of PDF files, is well worth the extra €150!

Rotolito Lombarda Singing a Song of Profits

Everyone accepts that digital technologies have wreaked havoc on the printing industry, starting with early digital typesetters in the sixties. But HP's current marketing director, for its Graphics Solutions Business EMEA, François Martin, had a rather bolder take on its influence. Speaking at Rotolito Lombarda's glamorous Milan headquarters last November he rightly said that "without digital the printing industry would be shrinking".

Rotolito Lombarda, in common with all thriving printers, has exploited digital technology to simplify complex processes, from platemaking through to gravure cylinder preparation. It is transforming its value chain with

Rotolito is based in this gorgeous plant in Milan, Italy.

conventional and digital printing, and web-to-print. The company is ISO 12647-2 and -4 compliant and is using the symbiosis of digital data to further its business and that of its customers, which includes Pearson one of the world's biggest publishers.

Founded in 1976 by Paulo Bandecchi, with eight people and an ageing press, Rotolito Lombarda now occupies four sites and employs 370 people. The company offers a complete package of services: prepress, sheet fed and web offset, gravure, digital printing and bindery and serves the entire European market managing worldwide campaigns for their customers. Forty-five percent of its volume is

exported and the company wants to extend its reach to emerging markets in Africa, Russia and the Middle East.

Rotolito Lombarda's business has grown 50% by paper volumes over the last nine years to 120,000 tonnes and 1,350,000,000 square metres of paper per annum. According to Federico Bandecchi, responsible for finance and administration, this is the highest growth rate in Italy. Sales volumes have remained stable despite the recession at €150,000,000. EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortisation) per employee is €40,000 and the ratio of EBITDA to sales is ten percent.

Spending to Earn

Federico attributes this success to Rotolito Lombarda's willingness to diversify its product offerings, in response to changing needs in the printing market. The company has invested €140 million since 2000 into a diverse range of technologies and digital work is growing fastest. The latest purchase is a 762mm width 122 metre/minute HP T300, the only full colour T300 with inline finishing (Müller Martini) in Europe. Rotolito Lombarda expects to run the press over three shifts, producing 50 million impressions per month and adding €5 million to turnover.

They are upgrading the press to the 188 metres/minute (600 feet/minute) T350 as soon as possible, to give a breakeven of 4000 copies and steal yet more work from the Rotolito Lombarda offset presses. This engine will have new heads and inks, and a data pipeline designed for extremely high volumes. It's due for mid-2011.

The T300 is actually the current bottleneck in the Rotolito Lombarda factory. The two metre per second finishing speed is matched to the output of the press, but the finishing components can actually outrun the press making the T300 currently the slowest link in the chain, which is why Rotolito Lombarda will install the T350 as soon as possible.

Rotolito Lombarda worked with HP to expand the colour gamut of the T300, asking HP to optimise colour performance to yield a 50% increase in colour gamut. The cooperation continues in order to improve PMS conversions so that spot colours can be accurately rendered in CMYK. The 762mm wide press prints 4000

books per hour, with an average run of 2500. Printhead replacement has been required "one every five shifts" according to the company's business development manager, Emanuele Bandecchi.

The Mail of the Species

Rotomail is a subsidiary of Rotolito, founded in 1998 to provide on-demand, transpromo and colour print services to the direct mail sector. Rotomail has 170 customers and employs 123 people, producing annually over 130 million mail pack products and newspapers and over 500 million A4 pages, 92% in full colour.

It is an outsourcer, co-sourcer and processor of customer information, but doesn't provide data services apart from storage. It provides both electronic and print services

Rotolito's business development manager, Emanuele Bandecchi

including electronic mailing for customers in finance, tourism, direct mail, insurance, publishing and tickets. It is now one of the largest providers in Europe and in 2009 it moved into remote digital newsprint.

Rotomail has also recently invested in the HP inkjet web press technology, choosing an HP mono T300 over a Kodak Prosper because the Prosper wasn't ready. But according to Rotomail "you should never say never", so Kodak may yet install a Prosper at Rotomail. A more likely scenario is that this T300 will also be upgraded to the T350 for higher throughput.

Together Rotolito and Rotomail have built two new plants, installed four new digital colour web presses,

new conventional presses, digital binding for medium runs and print on demand. They offer services of from one to one million copies and provide analytics for their publisher customers. According to Rotomail's Giovanni Antonuzzo the excitement surrounding the iPad and e-books is swamping the company: "Everybody who's now creating systems to sell e-books is contacting us to provide on-demand printing services and print options for enhanced web-based processes and tracking. For self publishers too we're going to increase revenues a lot by adding value."

The Pearson Perspective

Pearson is one of Rotolito Lombarda's most significant customers. It employs 37,000 people worldwide and publishes educational materials (Addison-Wesley, Longman et al), newspapers (Financial Times Group) and consumer titles (Penguin Group). Ed Febinger is responsible for Pearson's global supply chain. Speaking at the Rotolito event he stated that "if there's any one reason why inkjet printing is important to the publishing industry it's the iPad" because digital devices are changing the content supply chain.

Febinger is a huge fan of digital printing because it eliminates offset's fixed costs. Instead publishers can work with a true variable cost structure, with shorter times to market, automatic inventory replenishment and management, support for variable data for sampling, customisation, versioning and customer specific (format specific) publications. Most importantly, digital printing eliminates the waste of unsold books.

Conventional printing, of course, has the advantages of lower cost per unit for longer runs (over 4,000) and its speed. Offset also still offers superior quality, despite inkjet's improvements. And unless an inkjet printed book isn't identical to the offset version, the book will be perceived as, and might well be, pirated, so there can be no compromise.

For inkjet to replace offset it must truly match its quality, durability and overall robustness. It has to have the same look and feel and be as affordable. For Febinger this means an inkjet printed book must have equivalent economics and be cost-substitutable. "Toner was never

cost-substitutable", according to Ed. He added that: "Inkjet can compete on a cost per page basis with offset" but publishers need automation to exploit printing technology without the administrative overhead. For Pearsons, he said, inkjet "is a multicolour weapon".

Pearsons is following Pareto's Law (80% of the objective is achieved with 20% of the means) to indentify the 80% of its titles that generate 20% of profits with a view

Monitoring the press during the run.

to producing them on inkjet. The company envisages huge savings in administration and people, through detailed demand forecasts and more accurate inventory requirements. The long-term goal is to have print centres within two zip codes of US customers and throughout the rest of the world.

The first step is to distribute fulfilment processes and to use print sources closest to customers, to cut shipping times and costs. The commercial potential in this model is considerable, however, publishers need to fully understand their digital content management and delivery options to exploit it and until that happens progress in true digital publishing will be slow and impeded.

Part of the problem is that no one seems to know what a book is these days, which makes predictions of its future rather tough. The book is not just a fixed format content carrier. Books are things we want or need to own, not just read. Books can be objects of beauty and as long as that's true, the number of book pages will continue to grow along with the world's population. This much we can confidently surmise.

Information Grazing

We are unconvinced by the wild numbers put out by commercially driven research organisations for the future of book printing. They fail to take into account underlying trends in media consumption and how it is changing; much of the data seems plucked from the air. We prefer instead to look at the historical shifts in the book business, the volumes put out by the likes of Macmillan, Penguin and Random House, and at shifts in the production technology base.

Book volumes increase in line with technology advances. Volumes printed with older technologies decline as new technologies grow in output sophistication. Digitally printed books and e-books will sit alongside one another and clever publishers will create content that straddles all platforms, offering complementary and dynamic reader experiences. We are already seeing the seeds of that habit in the way in which readers use Facebook, Twitter, YouTube, news sites and Wikipedia. We are becoming information grazers and this creates all sorts of creative
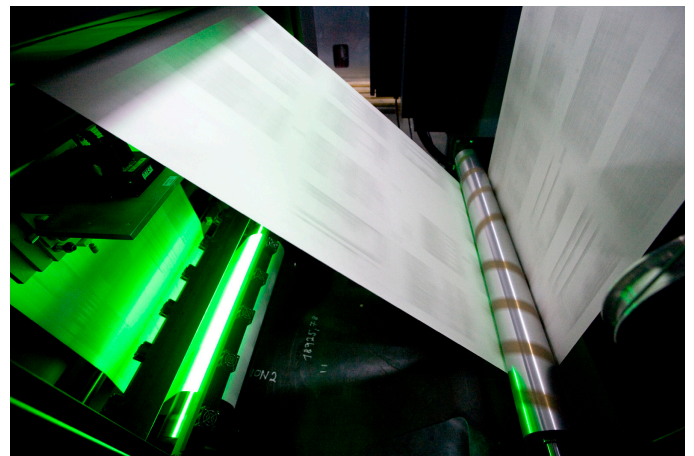
On demand printed books are ideal candidates for high speed inkjet printing technology.

opportunities for writers, musicians, audiovisual artists and of course, publishers. Only printers with digital capabilities are placed to work with publishers and to fully exploit this reality.

The progress in output technologies is enough for the time being to support the gradual evolution of the market towards this model. HP for instance has sold (yes sold) 42 T300 engines and installed them at 21 real production sites. Aurelio Maruggi, HP's vice president of

high speed inkjet printing, explained that the inkjet press is seeing such momentum because it is "a tool that has to produce wealth for customers". Of the initial tranche of customers for the inkjet web press technology O'Neil Data Systems, CPI and Courier Books have all bought additional machines to cope with rising volumes. O'Neil

The HP T300's curved paper path optimises ink/substrate performance.

Data Systems in Los Angeles has already upgraded to a T350 which is running 24/7. The installed base passed the threshold for annual production of one billion pages in October, with 50% produced from August to October. Someone's doing something right.

Happy People

HP is of course thrilled with the market response to the inkjet web press, which has been far better than anticipated three years ago. Of the 21 machines installed Maruggi said the "vast majority is with book printers" and the first installation in Asia Pacific is coming soon. HP estimates that of the 53 trillion pages printed annually, half of them come from publishing but only 0.7% of these are printed digitally. Maruggi also said that "we [HP] expect rates reaching 50% by 2014" for the publishing sector and HP is expecting a 26% compound annual growth rate from 2010-12 of pages in publishing and direct mail to 346 billion pages.

Much as diehard traditionalists would like to blame digital technology for uprooting the printing industry, without it print would long ago have been consigned to the scrapheap, outmoded and outmanoeuvred by far nimbler alternatives. Digital technologies have created new communications models, but they have also driven innovation in print since the 1960s. The digital press is merely the most recent iteration and although it's only part of the story, its future is bright.

But it could be brighter for books, a sector still limited by the imaginations of publishers. Too many publishers and consumers (with the possible exception of toddlers) think of books as something static, a fixed reading experience. We expect this to slowly change. Digital communications and media technologies will gradually change readers' expectations and reading habits and drive a two-way multichannel communication between readers and authors. This, rather than technology, should become the driving power for inkjet digital printing. But in the meantime, as Maruggi said of the T350 "this is not the end of thermal inkjet".

– Laurel Brunner

Home grown

With its ColorStream series Océ has opted to combine both electrophotographic and inkjet digital technology.

At the end of last year, Océ showed off a new inkjet printer, the ColorStream 3500. Given that Océ is now firmly branded as a Canon company, it was perhaps not surprising that the launch took place in Tokyo, Japan. But the real story behind this printer is that it is a European printer, developed and built at Océ's plant in Poing, near Munich in Germany.

Océ was very quick to get into the high-speed inkjet business with its JetStream series and has had considerable success, placing 141 units from January 2008 to January 2011. This was largely due to a strategic partnership with the Japanese firm Miyakoshi, which makes offset presses and which built the chassis for the JetStream printers.

But the new machine has been built entirely by Océ, having gained the necessary expertise through its collaboration with Miyakoshi. Sebastian Landesberger, executive vice president of Océ's Production Printing division, says that there's nothing wrong with the JetStream line: "But we wanted to develop our own technology and that's very important to us which is why we decided 18 months ago to develop our own machine." Océ will continue to sell the JetStream line and Landesberger adds that many offset customers will still prefer to buy the JetStream because it appears to have a more solid build. Certainly the CS3500 has a softer, more rounded appearance, but underneath the white paneling is a solid enough chassis with plenty of room for further improvements.

Océ has also designed the machine so that it can be dismantled into sections small enough to fit through standard size industrial doors, to avoid any problems with installing the machine. It's lighter than the JetStream, having roughly half of the floor loading weight. It also prints left to right so that it's easier to fit into existing lines. At first glance the machine is twice as wide as it needs to be. This is because the paper path, and the printing stations are on one side of the machine, but the heads move to the other side, where the ink reservoirs are, for easy access for maintenance. A dual reservoir system means that the inks can be replaced while the printer is still printing.

Variable sized droplets

The biggest single problem facing inkjet printing at the moment is the lack of suitable papers. There's a much better range now than there was two years ago but still nothing like the flexibility and choice that end users have become used to for other types of printing. Instead customers have had to work out for themselves which papers are best suited for which printers and for each particular application.

All of the inkjet vendors have developed their own strategy for helping the ink to adhere to the substrate. Océ's approach has been to tune the size of the ink drop to the paper in use. The CS3500 uses the same Kyocera

Sebastian Landesberger, Executive vice president of Océ's Production Printing division.

printheads as the JetStream and the same 600 x 600dpi resolution. These deliver a single sized ink droplet out of each nozzle, but Océ fires multiple drops that merge in flight so that the actual drop which lands on the substrate can vary from seven to 12 picolitres in size. The size of the droplet can be optimised for the type of paper in use, in order to reduce dot gain. This greyscale approach also allows the CS3500 to have an apparent resolution of 600 x 1200 dpi. However, this does add an extra layer of complexity and some customers prefer not to take advantage of it.

Océ's ColorStream 3500, an entirely home grown printer that will be the blueprint for Océ's future inkjet range.

It's a four colour machine, but with an option to run in monochrome only. The standard problem for inkjet printers is that the inks dry in the printheads and clog the nozzles if the heads aren't in constant use. However, the three CMY stations can be parked to one side and capped to allow for long runs of black and white printing. Unfortunately, it's not possible to use any of the colour heads independently, as that would have added extra cost. Nonetheless, the monochrome ability is absolutely key for the target market. Océ's main strength lies in having a large market share in transactional printing, which for obvious reasons is mainly a black and white market. This is why Kodak and Screen have both developed monochrome versions of their inkjet printers.

But conventional wisdom suggests that this largely monochrome market can be converted to colour to take advantage of transpromo marketing opportunities. It's clearly in the interests of vendors such as Océ since printing in more colours translates directly to more ink sales. But it's tough, particularly in the current economic situation, to ask customers to buy a more expensive colour machine without any guarantees that they will have the work to fill it. So, an inkjet that can cope with both colour and monochrome work is a useful advantage. HP has also applied the same arguments to its T200, which is primarily a black and white printer capable of producing

colour work. At 75 metres per minute, the CS3500 is faster than the T200, which runs at 64 metres per minute in colour mode. However, the T200 runs at 125 metres per minute in monochrome mode, while the CS3500 has the same speed regardless of how many colours are in use.

However, there is room within the CS3500 for two extra print stations. Océ's priority at the moment is to develop MICR ink for one of these stations. The other could be used for spot colours. Interestingly, several Océ staff also floated the idea of using a bonding agent in one of these print stations, much as HP does with its inkjet web presses.

For now it's using pigmented inks which appear to have a slightly better quality than the dye-based inks that are used with the JetStream. However Océ plans to add the pigment inks to the JetStream, and the dye-based inks to the ColorStream so that customers can choose which suits their work and budget best.

For the drying system, Océ has chosen to use a fusing unit from its dry toner printers. It's a careful balancing act, to ensure that the water-based inks are dried but without removing too much of the moisture content of the paper. Roland Stasiczek, director of marketing for Océ's continuous feed printers, says that the system is

optimised to allow for a small amount of paper shrinkage but that overall the paper has the same moisture content leaving the printer as it had when it entered. There is also room within the machine to add a bigger fusing unit later if and when Océ develops a faster version.

Another useful feature is that the CS3500 is able to match its print speed to the speed of the paper transport. Normally when a machine is stopped there is a period where the paper has to slow down, or speed up, before it reaches its standard speed and this means that there is a

Roland Stasiczek, Director of marketing for Océ's continuous feed printers.

blank area which not only means a lot of wasted paper, but also causes problems in post processing. Océ has developed complex algorithms to match the speed of printing with the speed of the paper transport so that there is no wasted paper when the machine starts at the beginning of a run, nor any gaps if an operator stops the printer in the middle of a run.

Choice of configurations

It's sold as a single simplex engine but Océ says that most users will buy two and so Océ offers a choice of configurations. The simplest is to run the two engines inline for straightforward duplexing. There's also an 'L' configuration with the two engines at right angles to each other so that they can be used as two simplex units, or as a duplex unit with a turn bar in between. A slightly more complex variation of this is a 'H' configuration, with the two engines sitting side by side, which necessitates a more awkward paper path between the two but does mean

that the paper exits both machines in the same direction regardless of whether they are used in simplex or duplex mode.

The first European installation is at Corus in France. Corus is a large print provider, headquartered in Lyons, but with production sites in St Germaine in Paris and Pringy in the South of France. There's already a twin-engined unit installed in the Paris plant, with a second ordered for the Pringy factory later this year.

The printer comes with a Prisma workflow which includes Adobe's APPE v2.5 and can handle a range of datastreams, including PDF as well as AFP and most other variable data formats. The same front end can also be used to drive other presses, such as the ColorStream 10000.

It's hard to get an exact price given the range of different configurations available - but Oce have quoted around €1.8m for a four colour twin engine set up for the CS3500.

Electrophotography

Landesberger says that a couple of years ago there had been difficult discussions within Océ as to which digital technology to support: "We had planned to double the speed of our ColorStream 10000, but at that time inkjet came up so we decided to switch very heavily to inkjet because of its price and productivity."

However, he adds that electrophotography still has value because of its image quality and ability to work with a wide range of substrates. For this reason Océ intends to continue with its electrophotographic ColorStream 10000 Flex, offering customers the choice of both technologies.

Conclusion

Océ is in a very strong position, now that it is backed up by Canon. For the production printing division, this means specifically the opportunity to approach the Asia pacific market, which currently accounts for just 6 percent of Océ's sales (51 percent of sales are to Europe).

Océ has also recently announced a new arrangement whereby Manroland will sell its inkjet printers, giving Océ added momentum into a traditional offset market

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that is now looking for digital solutions. Manroland is particularly strong in the newspaper and book printing sectors, where Océ itself has also played well.

Although the original announcement specifically covers inkjet, Landesberger says that Manroland could also sell Océ's toner-based printers if it wanted to. The announcement also mentioned cooperation on future technology but Landesberger says this will more likely be in developing hybrid workflows rather than new digital devices.

For now though the production print strategy is clearly all about concentrating on the high volume transactional markets and trying to move those customers to full colour machines. Despite the range of machines in the Océ portfolio, it's clearly the ColorStream series which Océ will be pushing hardest. There is room for further development of the electrophotographic 10000 Flex but all the R&D effort is going to go on the inkjet range. Océ clearly believes that it is only a matter of time before it can improve the image quality and widen the range of suitable substrates enough to make the dry toner printers all but redundant.

– Nessan Cleary

Mutoh Making Moves

Technology for wide-format digital printing has moved apace over the last decade, but the rate of hardware developments is starting to slow down. Instead the focus is on substrate and ink developments to meet new application demands so we are expecting some important advances in both areas over the coming months.

One of the leading suppliers in wide-format is Mutoh, a somewhat camera shy company with bases in Japan and Europe. We recently had a chance to visit Mutoh to learn more about it and its latest developments, particularly the Mutoh inks of which the company is very proud.

There are three bits to Mutoh, but the bit that's of most interest to us is Image & Information, which produces the sign and graphics printers, CAD printers, plotters, cutters, software and the supplies for them. Founded in 1952, this Japanese company set up a business in Oostende, Belgium in 1991 to provide head office with a toehold into the European market. The toehold rapidly became a dynamic link to the Japanese headquarters for ideas for new product development, manufacturing and market information.

Today the Mutoh Europe division handles local procurement, product development, assembly and support. Mutoh is a global business employing 1100 people and in Europe had a 2008/2009 turnover of €70 million, with €65 million expected for the current year ended March 2011.

Mutoh's go-to-market strategy has been to work with OEMs such as Gerber, Agfa, Océ and Xerox, plus distributors and dealers. The company's also big on partnerships for media (Avery Dennison and 3M for instance) and RIP technology (Caldera and Onyx). Over the years a clear division of effort has emerged between the two Mutohs, with Belgium driving large format printers from 108 cm to 330 cm wide (the Blizzard, Spitfire, Rockhopper and Viper models), and Japan focused on

technologies for the mass market such as the Valuejets, Draft Station and Osprey products. Mutoh's UV-curable machines were developed in Belgium as were its engines for outdoor, outdoor and indoor, water-based and dye sub applications.

Products

Mutoh Europe has an "all under one roof" philosophy for shortest lines of communication and to ensure the best service and response for its staff as well as customers. The Oostende facility is a sprawling place

Mutoh's European headquarters in Oostende, Belgium.

which includes manufacturing, demonstration suites, research and development, sales, marketing and support, administration et al. It produces 54 Mutoh models, including its water-based machines for the drafting and CAD markets.

Graphic arts customers can choose from an extensive range of machines differentiated by technology and the inks they use. For UV curing inks Mutoh offers the Zephyr 65; for solvent inks it's the Osprey, the Blizzard and Spitfire. Mild solvent and eco solvent ink versions of these machines are also available and there are also mild and eco solvent models of the ValueJet and Rockhopper. And there's a version of the Valuejet for bio solvent inks. All of them are designed for sign and display makers, varying in their performance attributes and of course in price.

Mutoh is a leading developer of printers for the soft sign market for printing onto textiles. Its Viper printers are available to print on either dye sublimation substrates, which requires high temperature and pressure, or direct

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textile printers that just require heat. The dye sublimation machines print either direct to coated closed polyester fabrics or via paper transfer to fabric or objects. The dye sub machines (six models!) are designed for volume production of soft sign banners for indoor and limited outdoor use and can print on transfer papers as light as 70gsm. The direct models (another half dozen) can be used in conjunction with post treatment equipment, including washing machines, for volume production of such things as flags and sportswear which see extensive outdoor use, plus garments and industrial applications such as home furnishings.

Partnerships

Partnering, as one might expect with a company working to the OEM model, is very important to Mutoh. It works with RIP manufacturers such as Onyx and SAi and has developed its own Grip RIP based on Caldera's technology.

Partnering extends to inks (for instance Epson), substrates (Avery Dennison and 3M) and hardware. The Zephyr Traffic Sign UV printer, for example, is a modified Zephyr developed in partnership with Nippon Carbide Industries. Mutoh has also developed its i^2 Interweaving software to help prevent banding and to optimise output for the viewing environment. The software endeavours to improve the way dots land on the output. It is available on all Mutoh engines apart from the Osprey, which supports weave/wave printing, but lacks the sophisticated controls. (This hard solvent engine is generally sold to customers who want long outdoor durability, cheap ink cost and high production speed.)

In response to market segmentation between soft signs (inflatables, banners, flags, sportswear and gadgets) and traditional textiles (fashion, interior decoration and bedding) which need special inks, Mutoh has been working with strategic partners to tweak its hardware. It took this route about ten years ago on the flawed assumption that traditional textile companies would want to start printing digitally.

Mutoh believed that fabric printers would want shorter runs, minimal inventories and design flexibility. But it's not worked out that way, largely because of market

Mutoh & Green

For a company that has based its business on machines that produce noxious solvent fumes, to claim a mantle of green is a bold thing to do. But Mutoh has published a white paper outlining its position with its insights into matters green relating to wide-format printing that its customers can use. And green is a recurrent theme throughout the company's ink and engine product descriptions. Mutoh's approach is to encourage customers to balance the pros and cons of green depending on what end users want.

Mutoh rightly states that digital printing is environmentally friendly in that only the number of prints required are produced close to their point of use, minimising waste and the associated energy required for transportation and warehousing. Making sure that the overall business operation minimises waste and keeps energy usage under control is obvious advice.

Advising customers to assess the sustainability of products when considering purchases is less obvious but equally important, as is encouraging them to think about the logistics of what they do. Keeping packaging down, using lightweight materials and planning delivery schedules to minimise the miles all help make a difference. Overall the message seems to be for customers to strike a balance between the production demands for creating a particular product, and its environmental impact. And to be accountable to their customers, which is probably the best advice to offer, to encourage a greener ethic.

ignorance and the lack of digital data processing and management knowledge. This has been a problem for commercial applications too, but things are slowly changing as the knowledge base grows. We hope that things will change in the fabric printing market, and that we might soon see variable data and custom content fabric printing, both of which could really create waves in the retail fashion business!

Mutoh has expanded its portfolio to support application specialised media handling, printing on transfer paper and optimising inks to get the most out of media. The company now has the industry's widest range of digital transfer and direct textile printing machines, including machines for printing on natural fibres such as cotton and silk which are hairy, with rough edges which creates dust. Also they do not stay flat as they move through the

machine, all of which can upset printheads and transport systems.

Elastics are even trickier for the same sorts of reasons. Mutoh has responded with the Viper TX 100 2.6m machine introduced at Fespa. This is Mutoh's first 2.6 metre wide direct-to-fabric printer. It has an adhesive belt to keep fabrics stable and a built-in switchable and rotatable print bed, so it can either print direct to fabric or to transfer paper. It can print at up to 76 m²/h depending on the output quality needed.

All About Inks

Any discussion of ink has to begin with the reminder that there is no such thing as the perfect ink for all uses. And for inkjet printers, it's sometimes difficult to grasp the subtleties of inks. For conventional printers ink requirements are pretty basic: colour gamut and consistency, viscosity, drying characteristics and durability. There is no need to tune the ink for its performance with a

Mutoh machines nearly ready to ship.

printhead or substrate, as is the case with digital printing inks. Ink determines the media, throughput speed and machine configuration, so although it is only a small part of a much larger process, it is crucial to a machine's performance. For these reasons also it has an impact on the carbon footprint of a device.

Inkjet inks are obviously developed in response to customer needs, imaging technology advances, environmental concerns and cost per metre, which is another reason why there are so many alternatives. Inkjet inks also have to fulfil a range of performance criteria, such

as UV stability, abrasion resistance, chemical resistance, media compatibility, gloss preservation and gamut. The first three are all about durability, and the last three are about quality; all six determine the applications for which a given ink formulation is suitable. Inks must also meet expectations for output quality, cost, drying and energy requirements, stability, speed and compatibility with different technologies, and increasingly biodegradability.

Mutoh has been an ink pioneer since 2002 and works with partners to support a wide range of products. The Zephyr Traffic UV curable ink for example was developed specifically for NCI's Nikkalite retro-reflective sheeting (glass bead-microprismatic). It meets EN12899, the European standard for road traffic signs to print the standard set of sign colours: blue, red, orange, yellow, black, green, dark green, brown and can last up to ten years outdoors.

New Inks

MS Ultra is a new set of mild solvent CMYK inks suitable for indoor and outdoor applications up to three years without lamination and specially tuned for Mutoh's piezo DOD heads as used in the Blizzard and selected Spitfire engines. This is a third generation of Mutoh's mild solvent inks and it has specially selected pigments for an expanded colour gamut relative to the previous generation, improved gloss level preservation and better media adhesion. The company claims it "will increase productivity through more efficient printing". These inks also have wider media compatibility and a longer shelf life (18 months) than the previous generation. Crucially they do not need to be printed every day, which is generally the case when working with mild solvent inks. Mutoh estimate that for ink coverage of 67% the ink costs are 0.92 €/m².

In 2010 Mutoh introduced its second-generation BioLactite ink for roll-to-roll and rigid printers. This ink replaces MuBio ink and will print on anything and will work with any machine, according to Mutoh. The new BioLactite ink is 50% ethyl lactate, a biodegradable solvent which comes from corn so there are no HAPs or VOCs. The ink has up to two years durability without lamination. This ink acts like a solvent ink in that it bites into the media, and Mutoh claims has an excellent colour gamut

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equivalent to that of MS Ultra with low maintenance. It can also be used in some 3D applications.

The latest Zephyr 3D ink is a UV-curable stretchable ink for use in wrapping applications. This exciting new 3D version has no HAPs or VOCs and is an alternative to mild solvent inks for these applications, which Mutoh claims provides top quality and lower ink costs. It has been tested by Avery and other Mutoh partners and supports 200% elongation by virtue of its long and soft monomers, which make the ink more flexible. It lasts 18 months outside without lamination and altogether is a very real contender for 3D applications such as car wrapping. Mutoh is working with manufacturers including Avery to provide performance guarantees. Avery's ICS Performance Guarantee for digitally inkjet printed graphics guarantees the performance of a specific Mutoh printer and ink combination, such as the Zephyr UV and the Zephyr 3D UV inks due for release shortly.

These three new inks fulfil much of Mutoh's customer requirement criteria, but of the three, the 3D UV seems to hit the most. The ink lacks the gloss preservation and has a lower colour gamut than the other two, but Biolactite which is better in both respects does not penetrate the media so it lacks resistance to chemical and mechanical abrasion, and has a lower production speed. MS Ultra has the greatest attraction to customers who are cost sensitive and mostly print onto PVC, which is most of Mutoh's.

What next?

Developments in this sector depend on advances in substrates to drive technological advances. The performance of substrates will also have a substantial impact on the carbon footprints of the machines, and of the prints they produce. Customers want less than €1.50/ m² ink prices so that could be a new basis for competition. We expect to see rising demand for complex 3-D applications such as furniture or appliances, which will have new performance requirements for stretchability beyond 300% and durability. New applications will place increased demands on RIPs, which will have to support

more sophisticated colour management than they do at present, as well as more complex workflow management.

– Laurel Brunner

Photos courtesy Melanie Enser of Colourgen UK.

X-word Puzzle

Number 27

Some sweet fool made the mistake of complementing us on our graphic arts crosswords, with the added remark that they enjoyed doing them because they could usually finish them. Big mistake. In this month's effort we've included a couple or so of three letter acronyms to get you started but the rest should keep at least one reader chewing their pencil for a while.
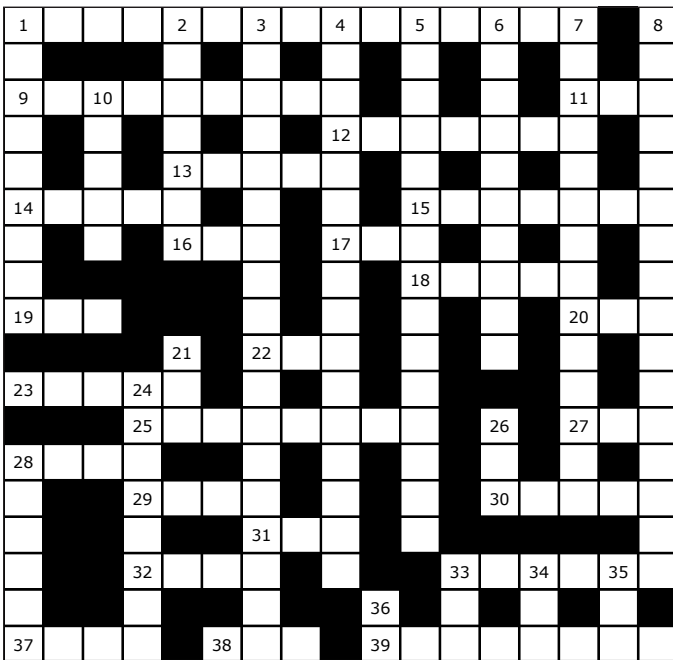
Across

1. Often produced on wide format engines, one and many. (4, 3, 8)

9. Contrary to faith. (4-5)

11. Total Cost of Management. (3)

12. Infinite. (7)

13. How you feel when something wonderful happens. (2, 3)

14. Vital to the running of some presses, unnecessary for others. (5)

15. With claws or a chemical addition to aid ink adhesion. (7)

16. Relative anagram of toner, or not. (3)

17. A small collection. (3)

18. State of doing not much. (5)

19. Evil Post Script. (3)

20. United Press International. (3)

22. Environmental Protection Agency. (3)

23. Single sheet folded to make many pages. (5)

25. Thinness personified, spider silk or thread? (8)

27. It's past its sell-by date. (3)

28. One of the basics for setting a date. (4)

29. Black or moonstone or the north coast of France? (4)

30. An ink component that stretches the possibilities. (5)

31. Controlling one of these is what print's all about. (3)

32. Ammunition? (4)

33. Graffiti artists have competition for these, from wide-format printers. (6)

37. A style and size of types with shared characteristics. (4)

38. Frequent. (3)

39. The route that digital information follows in a workflow. (8)

Down

1. Software that is freely passed around. (5, 4)

2. Material supplied for print production. (7)

3. What and where is the printer's greatest show on earth? (5, 2, 11)

4. For opposite reasons the bane of debtors and debtees alike. (8, 8)

5. All technology and standards advances are about improving it. (10, 5)

6. PostScript to PDF? What went before to begat what's now. Or maybe not? (10)

7. Fix rate at the beginning of the run? (3, 7, 4)

8. A tactical way to do, may keep. Solve sticky short-term problems, fast. (2, 4, 5, 5)

10. Shades of colours. (5)

21. To seek affection or favour. (3)

24. Lacking in knowledge. (8)

26. Lots of love or laugh out loud? (3)

28. Supposing? (4, 2)

33. Something to sit or cut upon? (3)

34. References ads that can appear anywhere in the newspaper. (3)

35. Look up tables. (3)

36. Identification. (2)