

digital report



The Stylus Pro 7600 from Epson handles rolls or sheets up to 24" wide

GREAT PROOFS on a budget

Your best bets in the digital market

Traditionally, the gold standard for proofing at a print or design shop has been the contract proof produced from the same film separation negatives that are used to create the plates. Typically, a positive transfer is made pho-

tographically on transparency material from each separation negative. These are laid on top of a sheet of white paper, and

By Bob Atkinson

sometimes laminated together for easy handling. Several commercial systems have been in use for decades, including Chromalin, PressMatch and ColorArt.

What are the advantages of these traditional proofs? First, assuming the exposure

and developing are correct, these proofs will resemble the final press sheet quite closely. The key differences are a slight colour shift caused by the white of the base sheet as compared to the white of the actual paper used on the press, and the absence of press dot gain, which will make the actual press sheet darker. Second, since the proof is an actual photographic transfer of the final separation negatives, it will show the print screens and any moiré problems they may have, as well as trapping and overprints. In other words, a close look at the proof will reveal most potential problems before you get near a press.

The disadvantages of the traditional proof? The most obvious one is the cost and time they require. You must output film separation negatives, process them, make contact transparencies from each one, develop those and, finally, assemble them. For a typical single-sheet job, this can easily cost about \$40 for materials and take well over an hour. As you can imagine, proofing a 64-page annual report can be very time-consuming and expensive. Second, traditional colour proofing systems are designed for CMYK process colour, so they will not match Pantones with any accuracy, unless you use special—and expensive—Pantone proofing materials. Finally, there is the cost of the equipment normally used to make these proofs: a vacuum table with UV light source for making the positive transfers, a processor to develop them, plus, optionally, a laminator. It can easily add up to \$15,000.

Perhaps more to the point, the film negatives essential to these traditional proofs may not be with us much longer. With the falling cost of platesetters—currently starting about 40%-50% above the cost of comparably-sized negative imagesetters and dropping every year—and the rise of direct-imaging short-run presses like Heidelberg's DI series, which require no film or conventional plates at all, we may see the end of film negatives over the next decade.

The digital age

With traditional proofs becoming an endangered species, how do we replace them? First, we must make the distinction between different acceptable levels of proofing. For a very simple single-colour job with no halftones, almost any sort of a proof will do—a black-and-white laser or inkjet print or perhaps a colour laser or inkjet proof. For process or spot colour jobs, a colour laser or regular colour inkjet printer can be used to produce a rough colour proof—sometimes called a pleasing colour proof—but

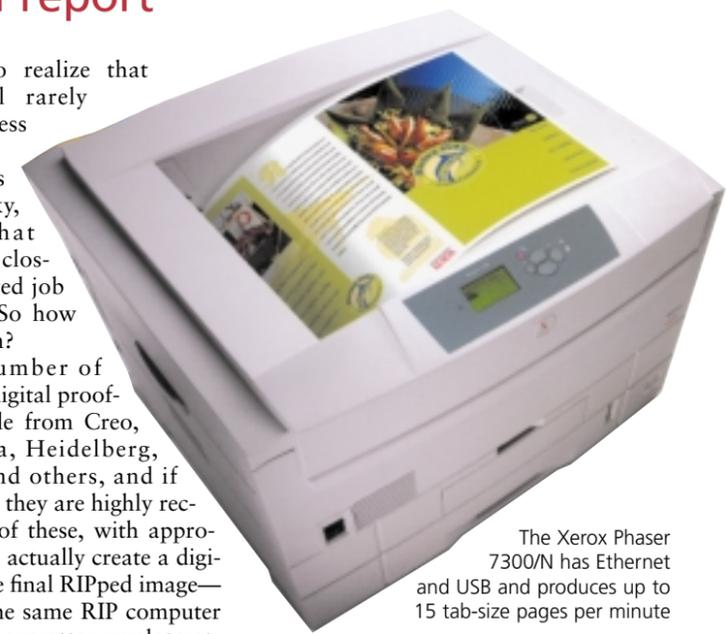
digital report

it is important to realize that these proofs will rarely match the real press sheet closely. If you have customers who are at all picky, it's important that your proof be a lot closer to the final printed job than these prints. So how do you satisfy them?

There are a number of excellent high-end digital proofing devices available from Creo, Kodak, Fuji, Agfa, Heidelberg, DuPont, Screen and others, and if your budget allows, they are highly recommended. Many of these, with appropriate software, can actually create a digital hard proof of the final RIPped image—often running off the same RIP computer that drives your imagesetter or platesetter—showing screens and traps. But, since we're talking about great proofs on a budget, let's focus on using lower-price proofing devices.

Given that, we should first look at the technologies used in the lower-cost, from \$3,000 to \$10,000, tabloid-size or larger, colour-proofing printers available. In this price range, the key technologies still in use are colour xerography using a four-colour CMYK toner, and colour inkjet printers using CMYK inks and, often, additional ink colours. A key element of these low-cost proofers is their ability to be ICC colour-managed, and all of the models discussed here have this capability.

Generally, colour laser printers have a much faster print engine and lower per-page cost than inkjet printers—about 15¢ per square foot, on average—but their colour quality, produced with solid-powder CMYK toner, is limited by comparison, especially in near-highlight and shadow details. Inkjet printers using liquid CMYK inks will often do a better job, but the best results are often obtained with the extended CMYK inkjet printers using six ink colours—CMYK plus light cyan and light magenta—or even seven colours—the same six colours plus a light black or a medium grey. Adding these two or three



The Xerox Phaser 7300/N has Ethernet and USB and produces up to 15 tab-size pages per minute

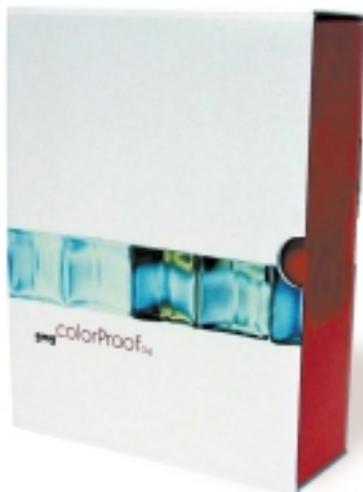


The Epson Pro 4000 is available in an UltraChrome seven-colour version



HP Designjet 30 & 130 with different width abilities, both produce prints quickly

digital report

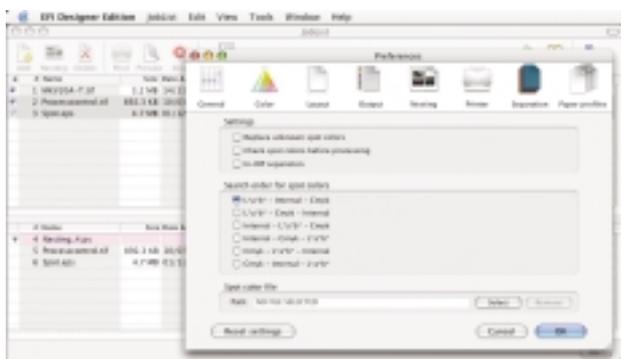


GMG colorProof is a good high-end proof management software to create a close match

light colours produces much better detail and subtlety in the midtones. These inkjet printers average about 40¢ to 65¢ per square foot, depending on the paper used.

Here is a quick look at some of the products available for proofing.

■ Perhaps best among the colour laser printers, **Xerox** offers its popular and capable **Phaser** line, with built-in Adobe PostScript 3, Pantone certification, stock sizes up to 12" x 18", very fast print engine and good paper handling. For example, the 7300/N, at \$5,537, has a 500 MHz processor, 136 built-in fonts, 2,400dpi and 192 Mb of RAM. It produces up to 15 tab-size pages per minute—excluding RIP time—has Ethernet and USB, and a very high, 83,000 pages-per-month duty cycle. The more expensive 7750/DN model, at \$9,369, adds automatic double-sided printing, a 715 MHz G4 processor for fast RIP times, and a huge 150,000 pages-a-month duty cycle for really busy shops.



EFI's Designer Edition is priced by the size of printer you work with



Canon's W7250 is mid-range in price

Moving to the inkjets, it's important to note that they do not have PostScript RIPs built-in. While the Mac and Windows print driver software included with these printers let almost any program—including QuarkXPress, InDesign, Illustrator or other PostScript-based programs—print on the device, it's not actually

using the PostScript to produce the printed image. So the type and certain PostScript-specific functions will not be reproduced as well as they would by a real PostScript interpreter. To solve this problem, some inkjet manufacturers offer separate PostScript RIPs for their printers, either as a stand-alone RIP box or as software. In addition, there are some excellent third-party products out there that work with a variety of inkjet printers.

■ **Epson** has had considerable success with its **Stylus Pro** (SP) wide-format line. All current models offer an UltraChrome seven-colour version, 1,440 x 2,880 dpi printing on a wide range of paper stocks and USB and FireWire connectors. The SP 4000, at \$2,700 with Ethernet option, uses various

paper stocks up to 17" wide, and will produce a 17" x 22" print in about 2:10 minutes. If you need larger proofs, the SP 7600, at \$4,370 with Ethernet option, handles rolls or sheets up to 24" wide and can produce a 21" x 29" proof in about five minutes. Finally, the SP 9600 at \$7,450 with Ethernet option, has similar specs but handles up to 44" wide paper. If you want a real Adobe PostScript 3 RIP for either of these printers, Epson offers EFI's Fiery Spark Pro 2 software for Windows 2000 at \$2,695.

■ **Canon** offers its **imagePROGRAF** line of high-quality, six-colour inkjets, with 600 x 1,200 dpi or 1,200 x 2,400 dpi and USB, Ethernet and FireWire connectors. The W2200 model, with a price tag of \$4,595, handles sheets up to 13" x 19" and the W7250, costing \$7,995, handles sheets or rolls up to 24" wide, producing a 21" x 29" proof in about six minutes. The larger W7200, at \$11,400, has similar specs but handles rolls up to 36" wide.

■ From **HP**, two six-colour 1,200 x 2,400 **Designjet** series are worth noting. The 30n, \$1,195 model, handles sheets up to 13" x 19" and puts out a tab-sized print—in best-quality mode—in about six minutes and its larger brother, the 130nr, at \$2,540, has similar performance on paper up to 24" wide.

■ And if you get an inkjet printer without a PostScript RIP and want the best possible quality from it, try the software proofing packages from **EFI**. Its **Designer Edition 4** handles PostScript Level 3, PDF or PDF/X files, ICC profiles, and is quite easy to use. It's priced by the size of printer you work with: the M version, at \$695, handles up to 13" x 19", and the XL version, priced at \$995, up to 24"-wide media. For larger shops, consider the Best ColorProof 5 RIP software for Windows. It creates your own press and proof printer ICC profiles and creates a very close match to the final press sheet on a variety of popular inkjet and colour laser printers, including most of the models mentioned above. It is also priced according to the size of printer you work with: the M version is \$1,850 and handles up to 13" x 19"; the XL version is \$2,880 and handles up to 24"-wide media, and the XXL version, at \$3,600, handles up to 36" media. All versions work with most current spectrophotometers for calibration and, of course, you'll need a reasonably powerful Windows machine—2.5GHz P4 with 1Gb of RAM or more—to run it on.

■ Germany's **GMG** also makes excellent high-end proof management software that allow most of these printers to very close-

digital report

ly match the printed sheet, including all popular spot colour systems. The ColorProof software creates press and stock-specific proofer settings and much, much more. Such power comes at a price, though: the basic software starts at about \$3,400, but typical systems with a spectrophotometer for measurements average about \$20,000.

It's important to note that while all of the printers mentioned here are capable of producing excellent-quality colour images, they will not produce accurate proofs out of the box. All require careful colour management using ICC colour profiles to restrict them to the narrow gamut that regular CMYK printing presses can produce.

Typically, this involves using ICC-aware software—like QuarkXPress, InDesign, Acrobat, Illustrator or PhotoShop—and assigning ICC profiles to the files you work with. An input profile tells you what sort of device produced digital images, such as a scanner or digital camera; a monitor profile tells the system what type of monitor your computer has; an output profile tells the software what your final intended use for the file is, such as sheetfed press with coated stock; and a printer profile, used only when proofing, tells the system what proof printer you are using at the moment.

These last two are very important. If you tell the system that you'll be printing a job on a sheetfed press with SWOP inks

and coated paper at a later time—the output profile—but that you're proofing it with an Epson 7600 now—the printer profile—it will cause the Epson to simulate the sheetfed press fairly accurately. All of these printers ship with their own ICC colour printer profiles, and you can use the standard ICC output/press profiles that come with all Adobe products. For more accurate results, you may want to invest in a spectrophotometer and software to create your own custom ICC profiles for your presses and proofers. ■

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Be smart about soft proofing

Soft-proofing means producing an accurate simulation of the final printed job on a computer screen, whether it be in your shop or on the client's own computer. While tempting in principle—you get a proof on-screen in seconds, with no materials or shipping cost—this approach has a number of impediments.

■ First, a computer monitor is an RGB additive imaging device: it displays red, green and blue light together on the pixels of your screen to create its colours. A piece of colour-printed work is a CMYK subtractive medium, where ambient light bounces off white paper stock, losing certain colours on its way through the inks on the paper. These are completely different ways of producing colour. Next, the gamut, or range of produceable colours, of a monitor is far wider than any normal printing press. Also, an uncorrected monitor's depiction of white is much bluer than any paper used in printing. Finally, monitors vary enormously in their depiction of colour as a result of many factors: brand and model, phosphor type, age, monitor settings, system software settings and more.

■ As a result, all soft-proofing techniques and systems rely on monitor calibration, usually working with ICC colour management profiles for the monitor and for the intended printing environment such as paper, press and ink characteristics. With these you can, to a large extent, overcome the inaccuracies of a monitor and simulate the job's appearance on the press. Since ICC colour management is built right into recent versions of both Windows and Mac, and into recent graphic arts programs, it is possible to achieve a basic do-it-yourself soft-proof by assigning the manufacturer's ICC profile for the monitor and a generic press-job-type ICC profile as your CMYK working space when you save the job file. Both PhotoShop and InDesign 2 allow you to assign these profiles to a file and then select Proof Colours to generate a very fast on-screen soft proof, all done under the View menu in these programs.

■ These proofs can be a lot more accurate if you create custom ICC profiles for the specific monitors and presses you work with, but this requires some time, expertise and specialized software and hardware. (For more information on colour management see the Digital Report Real Colour in the August 2004 issue of *Graphic Monthly*.)

A number of commercial products and services exist to help you create accurate soft-proofs on monitors. The high-end ones, like Kodak's excellent MatchPrint Virtual Proofing System, tend to be rather expensive, so we'll focus here on a low-cost system that offers very good value for the money. The software is called Remote Director—for Mac OS/X only at



Remote Director creates accurate inexpensive proofs on a monitor

the moment—from Integrated Color Systems, and it's actually free. You are just charged about \$14 for a soft-proofing session. The only cash outlay required is a small spectrophotometer capable of reading monitor colour on each system used to soft proof. ICS recommends Gretag Mactech's Eye One Display spectrophotometer for \$299.

■ Here's how the system works. The Remote Director software and a spectrophotometer are first installed on all systems that will be soft proofing in your shop, or remotely at any client site through the Internet. The spectro must be attached whenever a system uses the software. One system, usually the one in your print or design shop, starts the proofing session, acting as the session's host. If other people at different sites want to participate in the session, they connect to this host with their copy of RD. You are charged the same \$14 per session, regardless of its length and the number of stations participating. The host assigns the output profile for the job file being viewed—TIFF, PDF, PhotoShop or JPG—and every system has its monitor automatically calibrated on the fly by RD, using the spectro. In this way, you get a soft proof that is calibrated for both individual monitors' differences and for the planned printing environment. If any of these is not properly calibrated, a red light appears to warn all participants. The software also has extensive collaboration, notes and approval/signoff capabilities. All in all, a clever and easy-to-use solution to soft proofing. The hardware requirements are a bit steep: a G4 or G5 Mac with 1.5Gb of RAM and an Apple or Sony display, and the lack of a Windows version may limit its remote use with some clients, but it's definitely worth looking into.