

# THE DOCUMENT COMPANY

**XEROX**

Production Systems Group  
Public Relations Offices

290 Woodcliff Drive  
Fairport, New York 14450  
(716) 383-7948

One Xerox Centre Drive 502  
El Segundo, California 90245  
(310) 333-2158

Background information

**HIGHLIGHT COLOR'S COMMUNICATIONS EFFECTIVENESS, PRODUCTION  
EFFICIENCY**  
**ARRIVES FOR NEW CLASS OF MORE GRAPHICALLY ORIENTED DOCUMENTS**

***Higher Resolution, Improved Image Quality, Enable Latest Highlight Color Production  
Printers to Tackle More Graphically Challenging Jobs***

Anyone who has watched U.S. television in recent years has probably seen one of the recent commercials that begins in black-and-white, then introduces a single color to spotlight the sponsor's product or logo. The effect is dramatic, immediately focusing the viewer's attention right where the advertiser wants it.

In full-color commercials, colors are selected and coordinated to establish the spot's mood, its "look and feel." But when black-and-white images are used to establish the atmosphere, color plays a much different role. While the color selected usually ties to the sponsor's brand identity, the color choice almost doesn't matter. Whatever the color, it will contrast dramatically with the black-and-white background and have the desired effect of getting the viewer's attention.

This distinction between the functions of highlight and full color has long been recognized in document production, and actually demonstrates a fundamental difference between transactional and publishing print applications. In transactional printing of invoices, statements and other documents that often are jammed with data, highlight color can help the reader make sense of the document by directing attention to the most critical information — the amount and date due, for example. In publishing, color more often is deployed artistically, to establish the look and feel of a brochure or advertisement.

(more)

Today, however, transactional and publishing applications increasingly borrow from one another, blurring distinctions between them. More publishing documents use variable data and images to personalize individual pieces in long print runs — a capability that had long been the sole realm of transactional printing. Similarly, transactional applications have grown more graphically sophisticated, moving from graphically limited line printers to laser models offering increasingly finer print resolutions and imaging capabilities.

Further, as corporate reprographics centers merge with data center printing operations, and as centralized applications move to distributed locations, printing equipment often is expected to serve a wider range of applications.

Today's announcement by Xerox Corporation of the first highlight color production printer that prints at resolutions of 600 dots per inch (dpi) responds to these trends. With the new model, two-color digital printing can now support the increasing requirement for sophisticated graphical capabilities and data stream flexibility in transactional printers.

### ***One Pass for Near Perfect Color Registration***

Since the 1991 introduction of the first printer based upon patented tri-level xerography, Xerox has had a distinct advantage among spot (black-plus-one) color printing vendors. The reason: tri-level xerography uses a single-pass process that achieves fast print speeds and provides the industry's only digital highlight color registration precise enough for effectively producing halftones and dozens of tints and shades.

One-pass printing unto itself is not unusual. Many full-color digital color printers today produce images at a single pass by simultaneously running substrates past four print drums, one for each of the four colors that together, produce the full color gamut. The difference in tri-level xerography is that two different toners — black plus one color — are delivered on a single drum.

Tri-level can image two toners on one drum because it makes use of three electrical charges, rather than the two used in traditional xerography. As in traditional xerography, positively charged black toner particles adhere to negatively charged areas on the drum. However, where the positively charged surface remains blank in traditional xerography, in the tri-level process, negatively charged color toner adheres to those areas. The sections that receive no toner carry a third, intermediate charge.

The process was invented at the Xerox Webster Research Center in suburban Rochester, N.Y. That lab traces its origins to the early days of xerographic development, and it also is credited with inventing MICR (magnetic ink character recognition) toner, among other technologies.

### ***Upping the Ante on Document Effectiveness***

Since entering the market in 1991, Xerox highlight color printers have gained a strong following in industries that rely heavily on transactional printing, including service bureaus, education, financial services, healthcare, insurance, manufacturing and the public sector.

A key reason for the technology's success is that documents using highlight color have been shown time and again to be more effective communications tools than their monochrome counterparts. They attract attention, and they make the most important messages stand out. Readers understand highlight color document more quickly, retain more of the information, and remember it more easily.

These performance advantages deliver tangible business benefits in many applications. Numerous studies have shown that bills using highlight color consistently result in faster payments than monochrome versions, a business benefit that goes right to the bottom line by increasing revenues. Response rates also measurably improve in a myriad of applications, including direct mail, overdue notices, and notices for medical patient appointments, jury duty, and other important dates.

Internally, highlight color documents can help staff reduce errors, thereby decreasing costs. Highlight-color packing labels reduced shipping and warehouse errors, and highlight-color service work orders at utilities help staff fulfill assignments correctly. Highlight-color statements help reduce incoming customer service calls and therefore the cost of handling them. Calls that do come in can be resolved more quickly and accurately, ultimately improving customer satisfaction.

Taking the technology one step further, documents that are delivered regularly to customers, such as invoices and statements, can be transformed into one-to-one marketing pieces that incorporate variable point-of-sale data for cross selling and promotion. The cost of producing these documents is minimal, because their production fits seamlessly into an existing process.

Low-cost communication improvements such as these have won considerable loyalty to highlight color from “document owners” in marketing, customer service, administration and legal departments, which traditionally have not paid much attention to transactional printing. Many of them also appreciate the role highlight color can play in enhancing a company’s image with distinctive, professional-looking documents for both internal and external communications.

***Cost-cutting Efficiencies***

The relative low cost of highlight color printing is another of the technology’s important benefits. A range of efficiencies accrues from the fast print speeds, high reliability for consistently meeting mission-critical deadlines, and the applications flexibility inherent in cut-sheet printing.

Most highlight color applications use electronic forms, eliminating the need for pre-printed stock and its associated costs and storage requirements, while still permitting use of a second color to enhance letterhead. Document assembly is streamlined with double-sided printing, multiple programmable input trays for automatic insertion of different paper stocks, and a range of Xerox and third-party in-line finishing devices for delivering finished document packages automatically. Many of these steps can accelerate turnaround and reduce some of the less obvious costs associated with production, including paper consumption, shipping and labor costs.

More obvious production costs can be cut, as well. The cost of printing a highlight-color page, for instance, is only about two-tenths of a cent more than monochrome, making it a cost-effective and convenient alternative to full-color printing.

***The Impact of Higher Image Quality***

The higher resolution and improved image quality of the latest Xerox highlight color printer puts the technology’s excellent registration to its best effect, producing crisper text and graphic-intensive images with richness and depth that evokes the high quality of duotones. This capability to address more graphically demanding applications is expected to have its greatest impact on three types of documents.

One is the broad category of transactional printing applications — nearly any document that is delivered to an external audience can benefit from the improved image quality and more sophisticated business graphics. One anticipated result: the trend toward increased use of icons and images to guide readers through financial statements and other transactional documents will gain new momentum.

The printer's capability for producing excellent quality photographs and synthetic art expands the range of newsletters and direct mail pieces that highlight color can support. Most newsletters and direct mail pieces produced on 300-dpi printers are either text-only or make limited use of graphics.

The higher resolution also will spread the technology to some new applications. The new model's capability to produce fine text and line art, for example, qualifies it to satisfy such applications as technical drawings and manuals, which are too demanding for 300-dpi printing.

In many instances, the improved image quality may entice users who have shied away from highlight color in the past to take another look. As a replacement for line printers, it dramatically expands the possibilities of document design, while eliminating expensive pre-printed forms. As a replacement for offset, it introduces variable data printing capabilities, accelerates turnaround, and enables on-demand printing in short runs, cutting storage requirements, waste and out-of-date inventory while keeping content current for anytime, anywhere printing.

### ***Serving Workgroups and Production Facilities***

Some of the demand for more graphically sophisticated transactional printing documents comes from shifts in the way these documents are being produced. Traditional data center production facilities are merging with central reprographics departments to handle both publishing and transactional style applications. Distributed printers are providing output of transactional documents closer to the point of need and taking on many of the more publishing-oriented workgroup tasks.

Both shifts involve more printing from popular network data streams, such as PostScript and PCL, which increasingly are deployed for transactional printing, as well as workgroup and publishing output. Still, many print operations also must support one of the more traditional mainframe data streams, such as ASCII, Xerox Line Conditioned Data Streams (LCDS) and IPDS and AFPDS for IBM Print Services Facility (PSF) platforms (IPDS).

## ***Highlight Color Background / 6***

The new Xerox model is designed to support applications wherever they are printed — in production centers or office workgroups — and in whatever data stream they are delivered. In particular, network-printing capabilities have been enhanced with several enablers from Xerox and third parties.

One is Xerox Variable Data Intelligent PostScript Printware (VIPP), which provides dynamic document construction in PostScript that is similar to LCDS. Print and format commands are more efficient for variable data documents than native PostScript, and document construction also is enabled from ASCII and EBCDIC data so that legacy applications do not need to be rewritten for PostScript printing.

A second key enabler is Xerox DigiPath Production Software, which provides key functionality for print-on-demand services. DigiPath accommodate Web, network and hardcopy input, provides scan and make-ready services that can add highlight color to black-and-white originals, and offers a digital library for document storage, management and viewing on the Web.

With these tools and improved image quality, the new Xerox highlight color printer is well suited for the ongoing transition in many data centers. It can serve admirably as a fully functional stand-alone solution for centralized transactional printing. And if the CRD is merging with the data center production printing facility, the model's PostScript publishing capabilities permit it to handle CRD applications, too. It also can augment production runs on faster Xerox printers, such as the 180-pages per minute (ppm) DocuTech and DocuPrint models, with color covers and inserts.

In workgroup printing roles, use of the two standard paper trays only keeps the machine footprint small. The PostScript and PCL enablers address the heartland of network workgroup printing applications. On-board intelligence automatically translates full-color document files to highlight color for cost-effective production of slide handouts to support an otherwise full-color presentation, for example.

### ***Highlighting the Advantages***

Highlight color printing has provided many companies with a competitive advantage during the 1990s by improving the communications effectiveness of their documents as well as the efficiencies of their production environments.

(more)

Now, as many transactional applications move to distributed networks and those that remain in centralized facilities increasingly find the operation merging with CRDs, Xerox has retooled its highlight color printing technology to bring value to these evolving environments and their graphically demanding applications.

These new capabilities will give many enterprises reason to rethink their print strategy to take better advantage of highlight color as an enhancement to monochrome documents and a cost-effective alternative to full color.

- XXX -