

TRANSFORM

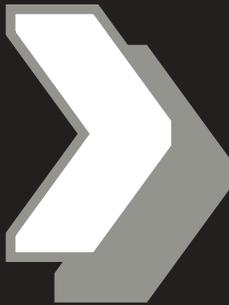
A PUBLICATION OF THE NETWORK COMPUTING ENTERPRISE ARCHITECTURE GROUP

TAKING CONTROL OF CONTENT & BUSINESS PROCESSES

SCANNER SHOOTOUT:

KODAK'S i660 VERSUS BÖWE BELL & HOWELL'S SPECTRUM 8125D

By Doug Henschen



Which high-volume workhorse has the edge?

"Is that a printer?" asked one of our IT employees when he caught sight of Kodak's i660 scanner in the Transform test lab.

"No, it's a \$52,000 scanner that can churn out 480 images a minute," I said.

"Huh," he replied, not quite understanding why a desktop machine should cost as much as a down-payment on a house.

I told him about my conversation earlier in the day with Mortgage Lenders, a Connecticut firm that captures more than 40,000 images a day. The company scans everything in its loan files, including mortgage applications, credit reports, income verifications, title documents, appraisals and photographs of properties. The images are exported to a Web-based document management system and are instantly accessible to employees in underwriting, secondary marketing, insurance verification, payoff, collections and customer service.

"Wow, that's pretty cool," he finally conceded.

Cool, indeed, and well appreciated by businesses that scan documents to speed paperwork-intensive business processes. The i660 is the top model in Kodak's i600 series, released in April, which competes head to head with Böwe Bell & Howell's Copiscan Spectrum 8000 Series, upgraded and rereleased in June. To give you our take on which models perform best, we took the i660 and Böwe Bell & Howell's Spectrum 8125D into our lab.



ONE SCAN, FOUR IMAGES

The i600 series combines a number of features Kodak has pioneered in recent years. Dual-stream output, for example, lets you output color and bitonal or grayscale and bitonal images of the same document (in simplex or duplex).

Oregon service bureau Scan One uses dual-stream output to capture color images for customer reference on its hosted Web archives. The company uses the bitonal counterparts for automated recognition and processing of the more than 50,000 health claims, accounting and other transactions entrusted to it each day.

The i600 also offers Kodak's iThresholding, which applies auto exposure control to bitonal images, and Perfect Page processing for auto deskew and crop of bitonal, grayscale or color files. The result is straight, uniform images that are highly readable to both the human eye and recognition software — results proven in my tests.

The i600 also supports Virtual ReScan (VRS), the widely used image processing system from Kofax Image Products. VRS addresses the same image-quality issues as iThresholding, Perfect Page and other processes built into Kodak's firmware, but many users prefer or are accustomed to working with VRS.

With few exceptions, the i660 met or exceeded all its performance specs. Adding image processing steps often slows scanners down, but the i660 beat its specs by two pages per minute (ppm), capturing 122 ppm/244 images per minute (ipm) duplex, all while scanning in color with auto cropping, deskew and rotation applied (the latter to turn landscape-scanned images to portrait orientation). When I scanned bitonally and threw in thresholding, deskew, crop, halftone removal, noise reduction and barcode detection, the i660 managed 125 ppm/250 ipm — five ppm faster than rated speed.

The exceptions to rated speed occurred when I piled on



processing steps while scanning in dual-stream mode. Scanning slowed by four ppm to 116 ppm/462 ipm when I applied rotation, deskew and crop to color and bitonal images.

Regardless of a scanner's speed, the key to throughput is uninterrupted scanning. In my tests, I didn't experience a single jam or doublefeed. And in a separate test, the ultrasonic multifeed detection system caught all the variations of taped-together bond, card stock and onion skin in the test batch.

DOCUMENT INTELLIGENCE: THE FUTURE OF SCANNING

Transform published an extensive test and review of the Böwe Bell & Howell's Spectrum Series last year (see "Color Capable Copiscans" in the July 2003 archive at www.transformmag.com), but a new automatic color detection feature led us to bring the latest version of the 8125D back into the lab.

Color detection automatically switches to color scanning when the scanner encounters documents with user-defined levels of color information. Whereas Kodak's i600s rely on patch-coded toggle sheets to switch color on and off, the Spectrums can make the switch automatically, promising to eliminate the time-consuming prescan preparation step of inserting toggle sheets before and after color pages or moving color documents to the end of a batch.

Color detection lets you dial in a desired color threshold based on a sample document. All images with as much color information or more are scanned in color while all those with less color content are scanned bitonally. A company such as Mortgage Lenders would likely choose a sample page with one picture of a white house to set the threshold, rather than a page with three pictures of a colorful house.

I tried a relatively low threshold with the idea of capturing text documents with color handwriting, but the scanner also switched to color for a number of documents with color logos and forms with tinted background tones — but no color handwriting. In other words, the feature is most reliable if the pages you want in color have more color information than most if not all of the other documents you're likely to encounter.

Böwe Bell & Howell anticipated the tinted-page problem and added a Color Background Saturation and Dropout feature. You don't avoid the unintended color scans, but this feature lets you cut down on the size of the resulting images.

The color detection feature is supported only in Kofax ImageControls-compatible software (such as Kofax Ascent or FileNet capture software). The feature doesn't currently work with industry-standard ISIS and TWAIN applications,

but Böwe Bell & Howell hopes for ISIS support by the end of the year.

Color detection is an innovative example of what *Transform* calls document intelligence. Another intelligent feature built into the Spectrum series is an ultrasonic multifeed detection system that lets you ignore expected



overlaps without turning off detection. You dial in the overlap you expect — two inches for Post It notes, four inches for photos, nine inches for envelopes. This feature worked flawlessly in last year's test, but as with color detection, it calls for consistency. If you don't want Post Its covering up important information, you can't also exclude larger photo attachments from detection. Another drawback, this feature is set through the scanner control panel and can't be exposed or stored in the driver software.

These document intelligence features hold a lot of promise, but for now they're in their infancy. They'll become increasingly important as they gain sophistication, accuracy and support within drivers and applications.

THE BOTTOM LINE

When investing this much money in a scanner, the most important thing to look for is usable image throughput, a metric affected by paper handling, image quality, image processing and raw speed. In at least two of these crucial respects, the Kodak i660 came out slightly ahead in my tests.

While the i660 quietly scanned every document we fed it, the Spectrum 8125D jammed twice and creased two other pages — not many incidents considering the thousands of scans performed, but the i660 was smoother.

Images from these scanners were comparable in quality. The Böwe Bell & Howell does offer a higher native optical resolution of 400 dpi, but Kodak's optics capture at 600 dpi and then down-sample images at up to 300 dpi — the maximum typically called for in high-volume document applications.

Image processing can do a lot to improve images, but in this respect the scanners are comparable. The Spectrum series has built-in support for VRS 3.5, the latest release of Kofax's system for auto thresholding, deskew and cropping as well as other image processing steps. The Kodak i600s let you choose between built-in iThresholding and Perfect Page or Kofax VRS.

Examining speeds, the Spectrum 8125D has a five-ppm edge in rated bitonal speeds, but in our tests the scanner started to slow as I added image processing features beyond VRS thresholding, deskew and crop. The Kodak i660, on the other hand, beat all

its ratings with auto thresholding, deskew and crop as well as other image processing steps applied.

Color scanning is a real differentiator because Böwe Bell & Howell's official speed ratings are all based on 150 dpi resolution. Color speeds are 12 to 14 percent slower at 200 dpi. This is a drawback, particularly when considering that the Spectrums don't support dual-stream output. Lower-resolution color images are fine for human readability, but most OCR engines now demand 300 dpi for best performance and 200 dpi at a minimum. Thus, if you want color readability plus resolution high enough for OCR accuracy, you're stuck with slower scanning.

Durability and service are important to high-volume operations. Both of these scanners are rated to withstand 60,000 scans per day. (This durability is what separates these scanners from lower-priced models in the same speed range.) Kodak adds a lifetime duty cycle rating of 75 million scans, while Böwe Bell & Howell doesn't publish a lifetime rating.

Kodak's three-month warranty is too short, but the service coverage is excellent, with four-hour response times in most markets. Böwe Bell & Howell, in contrast, offers a generous one-year warranty, but the guaranteed service response time is a glacial 72 hours. Most high-volume operations can't afford to have work piling up for three days, so they would likely purchase a service contract for faster service — even within the warranty period.

Finally, there's the question of price. At \$47,295, the Spectrum 8125D is nearly \$5,000 less (about 10%) than the i660. The question is, what are you willing to pay for? If you're primarily interested in bitonal scanning, but you need something that at least approaches production-level speeds in color, the Spectrum 8125D deserves serious consideration. An even better bargain is the Spectrum 8100D, which costs 36% less yet is only 20% slower.

For our money, however, the Kodak i660 is the more capable scanner overall, with better speeds for demanding image processing and color scanning and an edge in paper handling.



SCORESHEET PRODUCTION DOCUMENT SCANNER SHOOTOUT

	KODAK I660	BÖWE BELL & HOWELL SPECTRUM 8125D
PAPER HANDLING (15%)	5	4
IMAGE QUALITY (15%)	5	5
IMAGE PROCESSING (15%)	5	5
BITONAL SPEEDS (15%)	5	5
COLOR/MULTISTREAM SPEEDS (5%)	5	2
DOCUMENT INTELLIGENCE (10%)	3	4
PRICE (10%)	3	4
WARRANTY/DUTY CYCLE (10%)	3	4
ERGONOMICS (5%)	5	3

SCORE

4.4

4.3

RATINGS ARE ON A SCALE OF 1 TO 5. EACH RATING IS MULTIPLIED BY ITS WEIGHTING PERCENTAGE, AND THESE FIGURES ARE TOTALED TO DETERMINE THE SCORE.