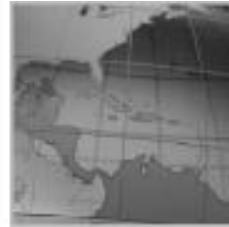


Analysis



Production Printing & Media



April 2012

A DI Press in B2+ Format: The Presstek 75DI

Service Areas

On Demand Printing &
Publishing

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Executive Summary

At drupa in 2008, Presstek executives hinted that a larger format DI press was under development. The Presstek 75DI was subsequently announced in March of 2010, and a prototype was shown at IPEX in May of 2010. Capable of speeds of 16,000 B2+ format sheets per hour and supporting up to 31 pt. (0.8 mm) stock¹ in sheet sizes up to a 31.02" x 23.62" (788 mm x 600 mm) format², the 75DI joins Presstek's 52DI and 34DI—providing top-of-the line speed, format, and other capabilities in a multi-unit press design. In this analysis, InfoTrends will look at the Presstek 75DI's capabilities in comparison to competitive digital production color and conventional offset press offerings.

Key Findings

The key findings of this analysis are:

- The Presstek 75DI elevates the DI product line in terms of productivity, imaging technology, format, stock selection, and the ability to print colors and effects beyond the CMYK process colors in a single pass.
- The device's large format and the multi-unit design open up new application opportunities that are out of reach of the current generation of digital production color printers.
 - With the addition of substrate support up to 31 points, additional packaging applications are now in reach.
- Ongoing Presstek developments, including Virtuoso (a new in-line, color management and defect detection system), indicate how Presstek continues to develop the 75DI platform.

Recommendations

InfoTrends makes the following recommendations:

- Automation is critical to success today. With on-press imaging and other features, the Presstek 75DI is highly automated and capable of going from digital file to saleable sheet in six minutes. As a result, the 75DI is well suited to print service providers looking to meet customer needs for high-quality quick turnaround jobs in the appropriate quantities.
- Current Presstek DI customers who value the low-running cost, productivity, and ease of use of the two-up format DI offerings should consider the expanded application set that a multi-unit, B2-format DI can provide.

¹ 24 pt. stock is supported in the standard configuration and 31 pt. (0.8 mm) is an option
² InfoTrends uses the term "B2 format" in this document to refer to devices that allow at least a four-up letter or A4 format imposition. The official B2 format size is 19.7" x 27.8" (500 mm x 707 mm). In fact, the Presstek 75DI's format is significantly larger than B2 and can handle six-up letter impositions (though it cannot handle six-up A4). For that reason, we call the Presstek 75DI B2+ format.

- Owners of digital color devices looking to add throughput, serve longer run lengths, and larger format capabilities should consider the 75DI because having a hybrid production portfolio allows production operations to choose the most profitable production method for any print application.
- Owners of conventional offset presses looking to offload short run work from their larger presses (or to reduce the need to outsource jobs) should consider a DI press for runs in the 500 to 20,000 range. This move will make better use of the conventional press by focusing it on the longer runs that it is best suited for.
- The B2+ format of the Presstek 75DI and its optional ability to handle 31 pt. (0.8 mm) stock positions it well for packaging applications, including prototyping, versioning, and other jobs requiring fast turnarounds and short to medium run lengths.
- In assessing a Presstek DI offering, purchasers should not overlook the impact of monthly service cost, which is significantly higher on electrophotographic or inkjet alternatives.
 - Other aspects, including the ability to use standard offset stocks and the ability to purchase consumables (such as inks) from multiple sources, contribute to overall low running cost on the DI platform. In addition, there are no click charges associated with a DI press.
- Toner- and inkjet-based digital printing devices are just beginning to make the move to cut-sheet, B2 format and are (as of yet) untested.
 - This trend acknowledges the importance of the B2 format, for which the Presstek 75DI is a market-tested solution.

Introduction

Presstek Inc. (www.presstek.com) is a publicly-traded company (PRST) with headquarters in Greenwich, Connecticut; a major manufacturing facility in Hudson, New Hampshire; and offices around the world. Founded in 1987, Presstek's product portfolio includes computer-to-plate (CTP) systems; thermal digital CTP plates; chemistry-free CTP plates; conventional offset, prepress, and pressroom supplies; as well as DI presses. The focus of this analysis is the Presstek DI portfolio, and specifically the 75DI, which was introduced at IPEX in 2010.

A Brief History

The Table below provides a summary of Presstek's activity in the DI press market since the first product announcement at Print '91.

Table 1: A Brief History of Presstek DI product announcements

Date	Product Name	Description
1991	Heidelberg GTO DI	The first offset press to offer on-press imaging, the Heidelberg GTO DI used first-generation Presstek imaging on a Heidelberg GTO press platform. In 1993, the imaging was upgraded to the first laser diode based on-press imaging technology.
1995	Heidelberg Quickmaster DI	Heidelberg's Quickmaster DI was the first widely available DI press and first press designed for on-press imaging. Based on a compact common impression cylinder and second generation Presstek imaging technology, the Quickmaster DI was broadly adopted. There was an installed base of approximately 2,000 units at the end of 2006, when Heidelberg ceased manufacturing them.
2000-2007	Multiple	During this period, Presstek OEM'd its technology through partners who sold the presses under their own brands.
2006	Presstek 52DI	The first DI press designed to be offered under the Presstek brand, the 52DI offers significant enhancements over previous OEM versions, including new imaging and plate technology; landscape format design; larger sheet size; faster operating speeds; and a more robust press design, including a rotary stream feeder.
2006	Presstek 34DI	Previously offered as an OEM product, Presstek implemented the next generation imaging and plate technology, and started marketing the Presstek 34DI press under its own brand.
2010	Presstek 75DI	Announced at IPEX in 2010 and generally available in 2011, this B2+-format DI press uses fifth generation Presstek imaging technology and brings the benefits of DI printing to larger commercial shops and folding carton converters who require the larger format and other features.
2012	Presstek 75DI	At drupa 2012, Presstek will unveil new product features, including Virtuoso, an in-line color management and defect detection system.

What becomes clear as we look over Presstek's history is how DI technology has evolved over the years. Now in its fifth generation of imaging technology, the 75DI benefits from the ability to produce higher screen rulings and images much faster, not to mention the much more automated process that removes steps, such as manual cleaning, that were required by early product generations.

About the Presstek 75DI

There are now multiple models in the Presstek product line: the 52DI and 52DI-AC, the 34DI, the 75DI and the 75DI-AC. They have some key features in common, but are differentiated by factors such as speed, format, substrate support, technology features, and options.

Table 2: Specifications of Today's Presstek Product Line

	75DI & 75DI-AC	52DI & 52DI-AC	34DI
Maximum sheet size	31.02" x 23.62" 788 mm x 600 mm	20.47" x 14.76" 520 mm x 375 mm	13.39" x 18.11" 340 mm x 460 mm
Maximum imaging area	29.92" x 22.83" 760 mm x 580 mm	20.07" x 14.17" 510 mm x 360 mm	12.99" x 17.72" 330 mm x 450 mm
Minimum sheet size	10.98" x 7.87" 279 mm x 200 mm	4.33" x 3.94" 110 mm x 100 mm	3.54" x 3.94" 90 mm x 100 mm
Press sheet orientation	Landscape	Landscape	Portrait
Max. printing speed	16,000 sheets per hour	10,000 sheets per hour	7,000 sheets per hour
Imaging technology	Next generation single-lens, 16-micron, laser imaging	Presstek ProFire Excel 16-micron laser imaging	Presstek ProFire Excel 16-micron laser imaging
Digital file to printed sheet ³	6 minutes	10 minutes	10 minutes
Plate type	ProFire Digital Media	ProFire Digital Media	ProFire Digital Media
Press type	Up to ten-color waterless multi-tower offset	Four-color waterless common impression cylinder offset	Four-color waterless common impression cylinder offset
Resolution	2,540 dots per inch 100 dots/mm	2,540 dots per inch 100 dots/mm	2,540 dots per inch 100 dots/mm
Screen rulings	Up to 300 lpi (120 l/cm) plus FM/stochastic	Up to 300 lpi (120 l/cm) plus FM/stochastic	Up to 300 lpi (120 l/cm) plus FM/stochastic
Substrate support	Up to 24 pt. 0.0016" to 0.024" 0.04 mm to 0.6 mm Optional up to 31 pt., 0.8 mm, 0.031"	0.0024" to 0.020" Up to 20 pt. 0.06 mm to 0.5 mm	0.0024" to 0.020" Up to 20 pt. 0.06 mm to 0.5mm
Additional standard features	IR Dryer PDS-E Density Control	IR Dryer PDS-E Density Control	IR Dryer PDS-E Density Control
Options and accessories	Options include: In-line coating, Virtuoso color management and defect detection system, auto paper size preset, non-stop delivery racking system, non-stop feeder, PDS-E spectrophotometer	PDS-Pro-E Colorimetric Control Aqueous coating	PDS-Pro-E Colorimetric Control

³ Includes plate loading, imaging, automatic ink-key setting, pre-inking of plates & blankets, and coming up to color

Figure 1: The Presstek 75DI

Note: This is a five-color Presstek 75DI-AC version, which includes an in-line aqueous coater. The feed unit is at the far right followed by five printing units. The coating unit is next, and its dryer is contained in the horizontal dark gray section that precedes the press delivery unit at the far left.

There are a number of features that are exclusive to the 75DI relative to the other Presstek DI products. These include larger format, higher printing speed, the multi-unit design, fifth-generation imaging technology, faster file-to-sheet time, and support for thicker substrates. Another key differentiator is an optional in-line color management and defect detection system called Virtuoso, which will be introduced at drupa 2012. Virtuoso includes a high-resolution scanning device, viewing console, and software. Its four configurations manage color density, adjust registration on the fly, inspect sheets for print defects, and compare the print on the sheet to a master PDF. Throughout, a reporting and data collection feature saves job data to facilitate process and service enhancements.

The 75DI elevates the capabilities of Presstek's DI press offerings in terms of format and the multi-station design, bringing new capabilities and advanced levels of automation to a technology category with significant competitive advantages. These capabilities come at a price tag of more than \$1 million, which represents a significant capital acquisition that will put it out of the reach of some smaller print service providers who will look instead to the 34DI and 52DI for many of the same advantages, albeit in a smaller format. The 75DI was designed for larger commercial printers and folding carton printers who desire a product in this format, yet one that brings with it the advantages of a DI press.

Market Trends and Competition

The Presstek 75DI competes in a landscape marked by rapid technology change and increasing customer demand for timely and relevant information. The trends toward quick turnaround and short runs are as important as the competing vendors' products.

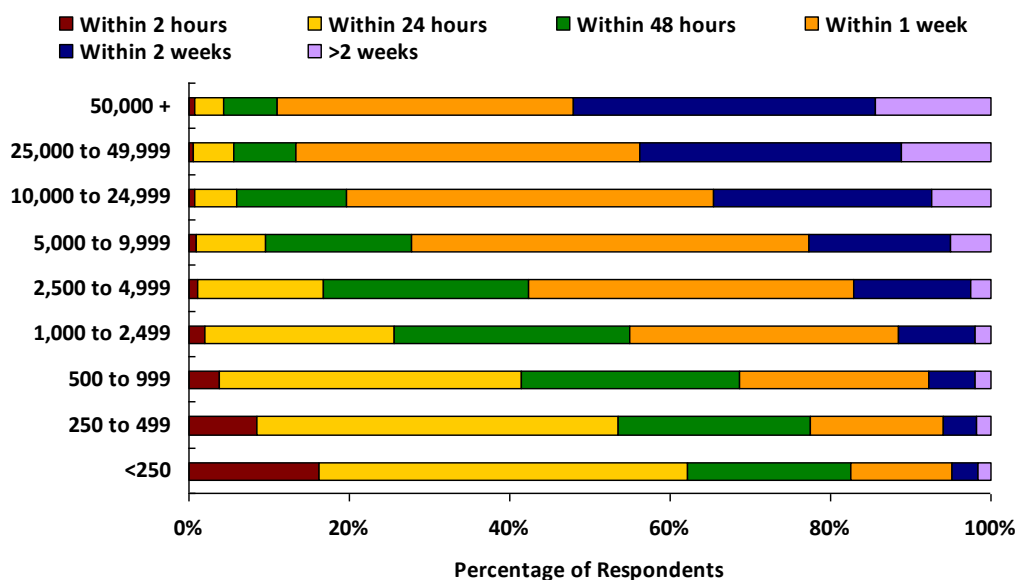
Market Trends

A recent InfoTrends statistic underscores what many in the field are experiencing. There are three top-line messages:

- Run lengths are getting shorter
- Turnaround times are getting shorter
- Print volumes for longer run jobs are dropping

In an InfoTrends study of 478 print service providers, respondents overwhelmingly expect to see increases in shorter run lengths (see Figure 2). InfoTrends has tracked this statistic over time and the results have consistently shown a move to shorter runs.

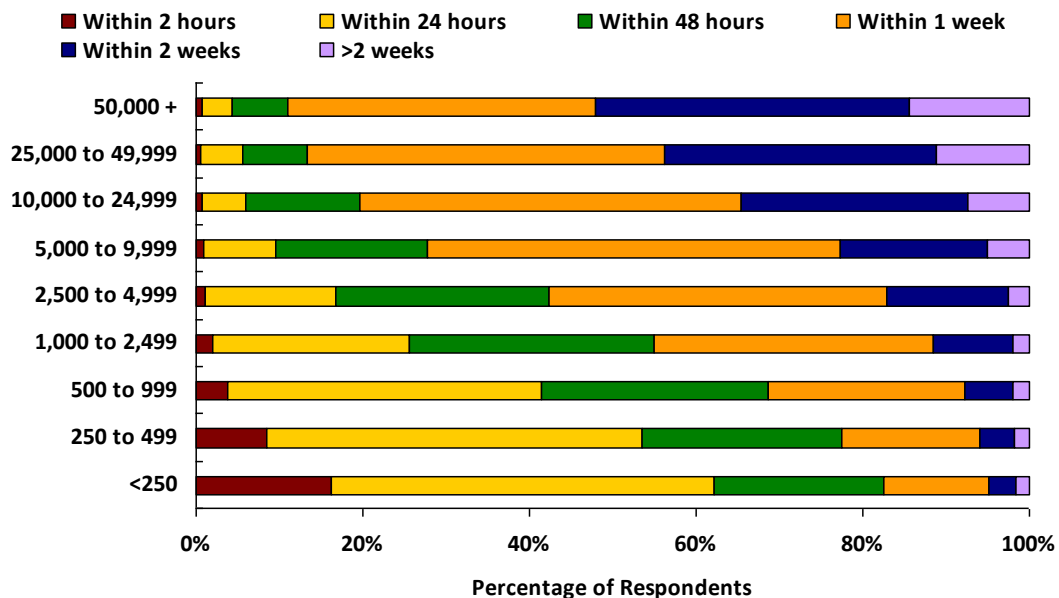
Figure 2: Run Length Requirements



Source: Run Length, Turnaround Time, and Print Volume; InfoTrends, 2011

The direct impact of this pushes volume from longer run offset print applications to shorter run digital and DI options. Simultaneously, the move to electronic delivery and mobile connectivity increases end-users' expectations for immediacy and quick turnaround. This is reflected in another response to the same survey in which InfoTrends asked about turnaround time requirements in in-plant environments. For run lengths up to 4,999, half of respondents reported turnaround requirements within 48 hours. This level of service can be difficult to achieve with conventional offset.

Figure 3: Turnaround Time Expectations



Source: Run Length, Turnaround Time, and Print Volume; InfoTrends, 2011

Conventional offset printing is really swimming against the tide when it comes to these run length and turnaround time trends, yet significant demand still remains for shorter and mid-volume run lengths, as long as the jobs can be turned around quickly.

Market Competition

In any discussion of competitors, some key 75DI advantages stand out:

- Automated platemaking and plate handling
- Waterless printing and its associated environmental and quality benefits
- Low supply and service cost without click charges
- Offset quality at a format, speed, and running cost that is well suited to today's market needs

In general, the Presstek 75DI's competition falls into two major categories: B2-format offset presses and production color digital printers. Neither provides an absolute apples-to-apples comparison.

The operation of B2-format offset presses is complicated by off-press platemaking processes. In a very real sense then, the purchase of any DI product has implications not only for the press room, but also for the prepress and plate room operations, where the cost and maintenance of offline plate imaging and processing equipment are an operational reality. The DI's ability to automate the platemaking process should be a key consideration in the purchase of a DI press.

In addition, the waterless operation of Presstek's DI presses has the advantage of removing ink/water balance from the equation of variables associated with conventional offset printing. This has many implications for color control, dot gain, paper waste, stability, and drying time. For those interested in additional details, these factors are covered in a recent study⁴ by the International Waterless Printing Association. This study also identified color space advantages as measured using G7 color control methods. Accommodating rush jobs with last minute changes while maintaining the ability to print Pantone colors and other non-CMYK inks (such as metallic or white ink), all on a full range of standard offset stocks, is a defining aspect of Presstek's 75DI.

In comparison, most production color digital electrophotographic or inkjet devices today do not offer B2 format. Those that do are still early in their rollout process and have not been extensively market tested. Smaller format digital color devices do have the advantage of being able to print variable data jobs, but with some notable exceptions they are primarily four-color-only devices.

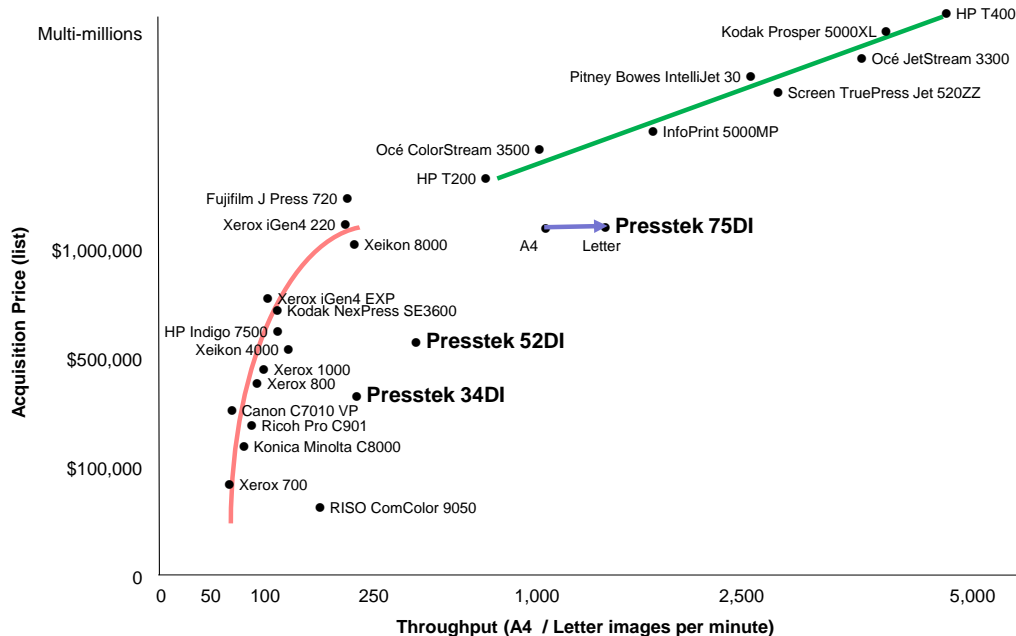
Another key advantage of Presstek's DI offerings over production color digital electrophotographic or inkjet devices is that the service cost of DI is quite low. Monthly

⁴ "A Current Comparison of Waterless Printing to Conventional Lithographic Printing: An Updated Assessment Using the G7 Process" published by the International Waterless Printing Association, 2011. See <http://www.waterless.org/Default.aspx?pageId=1129057>

service and consumable costs, as well as click charges, are a key consideration and should not be overlooked when comparing the overall cost of operation.

The digital market today, as shown in Figure 4, breaks out along technology lines. The graphic includes a range of color electrophotographic, inkjet, and DI press products. The products clustered along the red line are all electrophotographic, and range in price from less than \$100,000 to around a million. Their speed tops out at around 250 A4/letter-sized images per minute. Another cluster, along the green line, shows the new class of high-speed continuous-feed inkjet products, which offers very high speeds (up to around 5,000 A4/letter sized images per minute) at prices that are in the multiple millions of dollars. A few products fall off of these trend lines. RISO’s ComColor 9050 is a very fast cut-sheet inkjet product, but its business color quality limits its use in graphics environments.

Figure 4: The Spectrum of Color Products (Price versus Throughput)



Note: Scales are not linear

The Presstek 34DI and 52DI provide offset quality at speed levels and price points that move them off the typical electrophotographic curve. The Presstek 75DI takes this price/performance to the next level. The extended blue line indicates the special productivity advantages the 75DI has for letter pages in six-up format.

Table 3 shows how Presstek's 75DI press bridges the gap between the offset and digital product set by providing benefits common to conventional cut-sheet offset presses, while adding other capabilities that are typically associated with digital print processes.

Table 3: Bridging the Gap between Offset and Digital

	Digital	75DI Press	Offset Press
B2 format	Very few B2 format digital models today	B2+ format	Range of sizes available
Service	Click or monthly maintenance	Typically a la carte	Typically a la carte
Standard stocks	May require or perform best with special digital stocks (which tend to be more expensive)	Uses common offset stocks	Uses common offset stocks
More than four colors	Only available on some models	A common option	A common option
Pantone inks	Rare; typically users settle for a four-color CMYK match	Can print a Pantone ink	Can print a Pantone ink
In-line coating	Relatively rare	A common option	A common option
Support for thicker stocks	Best suited for thinner stocks	Up to 31 pt. as an option	Thicker stocks supported
Support for specialty stocks	The heat of the fusing process imposes limitations	Waterless has some substrate advantages over conventional offset	Broad support for a range of stocks
Long runs	Not competitive	Competitive	Very competitive
Medium runs	Less competitive	Very competitive	Very competitive
Short runs	Very competitive	Very competitive	Less competitive
Micro runs (<100)	Very competitive	Possible	Not recommended
Versioned work	Very competitive	Very competitive	Less competitive
Quick turnaround	Very competitive	Very competitive	Less competitive
Ink/water balance	Not required	Not required	Required
Plate processing	Not required	Not required	Required
Variable data	Possible	Possible with hybrid inkjet configurations	Possible with hybrid inkjet configurations
Runs of 1	Very competitive	Not feasible	Not feasible

Strengths, Weaknesses, Opportunities, and Threats

When looking at any new device, InfoTrends discerns the product's strengths, weaknesses, opportunities, and threats (SWOT). These factors are summarized in the Table below.

Table 4: SWOT Analysis of Presstek's 75DI

<p style="text-align: center;">Strengths</p> <ul style="list-style-type: none"> • Fast job-to-job turnover compared conventional presses • Digital file to saleable sheet in 6 minutes • Environmental benefits, including reduced waste, chemistry-free plates, and waterless printing • Cost-effective short runs • Low service and supply cost • High speed/throughput • Easily handles B2-format with up to 10 colors/effects • Low cost of ownership with cost per page as little as 1¢ per sheet⁵ • Wide range of standard offset and specialty stocks • Versioning 	<p style="text-align: center;">Weaknesses</p> <ul style="list-style-type: none"> • Static printing only (except in hybrid inkjet configurations) • Relatively large capital acquisition price
<p style="text-align: center;">Opportunities</p> <ul style="list-style-type: none"> • Cost-competitive short-run offset printing • Packaging applications • Providing offset shells for use by digital devices • Versioned/segmented output • The market move to shorter runs and quicker turnaround times builds on the key strengths of a DI press 	<p style="text-align: center;">Threats</p> <ul style="list-style-type: none"> • Lower-cost toner-based devices • Printers' unwillingness to invest in larger capital purchases • Automated processes for conventional offset presses using chemistry-free plates

Looking Ahead

Presstek has shown that the company is dedicated to the DI press market and believes that today's market conditions are very favorable for printing with DI technology.

Presstek has continued to invest in the development of its 75DI product line, and will be offering new UV inks and curing, UV coating, perfecting capabilities, and customized DI presses with integrated inkjet heads that will enable the benefits of DI printing to be combined with the marketing value of personalization at drupa 2012.

⁵ The 1 cent per sheet figure is a Presstek estimate based on the following assumptions: a four-color Presstek 75DI configuration fully amortized over seven-years, run on a three-shift, operation. This figure includes the cost of the press, press consumables, and prepress/platemaking costs. Paper, pressroom labor, and other site specific overhead costs are not included.

Customer Success Stories

The 75DI began its full commercial rollout in 2011 and continues to gain momentum with placements around the world. Presstek has sold 75DIs on three continents to printers from the commercial, digital, direct mail, packaging, and in-plant segments of the market. Here are some selected examples that have been publicized in Presstek press releases or case studies:

- **Advanced Digital Printing (Brooklyn, NY):** Advanced Digital Printing added the 75DI to increase production capacity and to expand the range of applications they can produce. (The company also operates a Presstek 52DI-AC.) Advanced Digital leverages its internal laser die cutting, folding and gluing capability, and—with its DI offerings—produces a range of materials, including books, marketing collateral, direct mail, as well as sample and promotional packaging materials.
- **Blue Cross Blue Shield of Tennessee (Chattanooga, TN):** Blue Cross Blue Shield was looking to transform its internal print operation from a copy center mentality to a modern print, mail, and fulfillment operation. A key objective of the transformation was to bring outsourced print work back in house for better control and quality as well as reduced cost and lead time. A Presstek 75DI press with aqueous coater, a new digital toner device, and expanded bindery capabilities are facilitating this change. Blue Cross is using its 75DI to produce an array of marketing materials and in-house correspondences.
- **Graphicolor (Côte d'Ivoire, Africa):** A leader in graphic arts on the African continent, Graphicolor serves the dual role of print service provider and distributor. Graphicolor continues to operate its previously installed Presstek 52DI. With its new five-color Presstek 75DI in place, Graphicolor now provides a greater range of fast-turnaround, cost-effective, and high-quality commercial printing.
- **Quad Graphics:** Quad/Graphics, one of the world's largest commercial printers, installed a five-color Presstek 75DI digital offset press with an inline aqueous coater. Quad also operates a Presstek 52DI-AC.

To see case studies on Presstek DI presses, visit the Presstek website at www.presstek.com/casestudies.

InfoTrends' Opinion

With its B2+ format, multi-unit design; on-press imaging; and additional features, Presstek's 75DI makes a compelling argument for cost-effective, offset-quality, print automation with a workflow that allows last-minute changes and opens up a range of new application opportunities. This should be very appealing to today's print service providers who are increasingly asked to provide a wide range of work within ever tightening turnaround times.

This material is prepared specifically for clients of InfoTrends, Inc. The opinions expressed represent our interpretation and analysis of information generally available to the public or released by responsible individuals in the subject companies. We believe that the sources of information on which our material is based are reliable and we have applied our best professional judgment to the data obtained.

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Appendix A: Other Presstek Product Offerings

In addition to its digital offset printing offerings in its DI series, Presstek has other products that fall into a few general categories as summarized in Table 5.

Table 5: Presstek Product Line Overview

Category	Description
DI presses	Includes the Presstek 75DI, 75DI-AC, 52DI, 52DI-AC, 34DI, certified pre-owned DI presses, and DI press supplies
CTP systems	<p>The Compass series of platesetters includes 4- and 8-page devices. Production speeds from 15 to 40 plates per hour, imaging up to 450 lpi. Compass systems are semi-automatic and feature continuous plate loading. Users can add several options including single or multiple cassette autoloaders and inline punches.</p> <p>The Dimension Pro Series includes the 4- and the 8-page systems with a range of production speeds from 15 to 50 plates per hour. Can be factory configured with an automatic loading and unloading option</p> <p>Vector FL52 small format (52 cm and under) chemistry-free metal platemaking solution</p> <p>DPM Pro 400 small format polyester platesetter</p>
CTP Plates	Chemistry-free, waterless, and thermal CTP plates
Workflow	Includes Presstek's Latitude prepress workflow solution, Momentum Pro workflow and Momentum RIP, the Dynagram inpO2 imposition solution, and the EFI ColorproofXF proofing solution
Offset presses	Duplicator and two-color conventional offset printing presses
Finishing equipment	Bindery and finishing products, including stitching products, numbering devices, folders, cutters, drills, perforators, and scoring machines
Supplies	Presstek offers a full-line of pre-press and pressroom supplies. North American customers can order online at shop.presstek.com .

Additional information about Presstek and its products can be found at www.presstek.com or by e-mailing info@presstek.com.