BRIDGING THE GAP

Digital offset resides between analog and digital.

By Kim Crowley

Print choice is driven by many factors, including cost per page, run length, and application. Digital offset or direct imaging—also known as DI, a registered trademark of Presstek, Inc.—presses create plates from a digital document file, which are simultaneously imaged on press to produce a static print. They offer ease of use, limited makeready, quick turnaround, and spot-on registration.

Two companies actively research, manufacture, sell, and support digital offset presses—Presstek and Screen (USA). Competing among offset and digital print technologies, digital offset resides in the middle in regards to quality, run length, and cost. A range of commercial work is printed on DI presses. Ideal DI runs range from 500 to 10,000 impressions.

Left and right: Allegra Print & Imaging uses a Presstek 52DI to produce a calendar featuring photos from the Hubble telescope.

Comparing Science and Success

Digital offset users are generally small- to mid-size printers generating three to five million dollars per year in print revenue. According to Tom Leibrandt, product manager, Screen, between 80 and 90 percent of digital offset presses have been sold to printers in this category.

Print service providers (PSPs) select technology based on a variety of factors, such as typical run size, space limitations, quality expectations, and budget. Offset, digital, and DI print technologies each offer specific advantages.

Presstek's 52DI press is a highly automated, four-color digital offset press that consistently produces sellable sheets in approximately ten minutes.

Offset printers are hailed for quality and static print runs of 20,000 impressions and higher. They print onto a range of substrates and are not limited to coated papers. The process requires a metal or polyester plate using film negatives or computer-to-plate (CTP) technology.

A DI press offers automation while maintaining the consistency and quality characterized by offset. Due to this automation, makeready time is significantly reduced; resulting in profitable runs as low as 250. An industry study by InfoTrends, commissioned by Presstek, states that makeready on a DI press is between 23 and 28 percent faster than a conventional offset press.

Digital print technology is another contender vying for print volumes. Electrophotographic (EP) presses are typically reserved for smaller runs, targeting jobs such as brochures and photo merchandise. Digital, high-speed production inkjet technologies target higher volume digital runs for applications such as transactional print and book blocks.

Both forms of digital print allow users to benefit from shortened set up time and the elimination of makeready as well as the ability to handle variable jobs. However, some argue that the quality of digital cannot compare to offset or digital offset. Digital often requires a coated stock and large, saturated areas of color are prone to banding.

DI presses complement digital, enabling the cost-effective production of static color work. Although they do not allow personalized print, the effect can be achieved if the technology is used to print static shells, which are then overprinted on a digital press.

DI and digital inkjet technologies coexist in other ways. For example, a Screen customer is able to print, collate, and trim short-run book blocks ranging between two and 500 pages in less than two minutes on its Truepress Jet520 high-speed, single-pass color inkjet printer while book covers are produced on the Truepress 344.

DI History

Near the close of the 20th century, the print industry was poised to welcome DI presses from a handful of manufacturers including Dainippon Screen Manufacturing, Eastman Kodak Company, Heidelberger Druckmaschinen AG, Koenig & Bauer AG (KBA), Komori Corporation, manroland, Inc., Presstek, Sakurai, and Xerox Corporation. These companies all announced or introduced new DI presses around this time; some made it to market while others never did.

According to Mark Sullivan, director of DI press business, Presstek, a majority of DI presses that have gone public are enabled by Presstek's technology. An exception is Screen's digital offset press, which uses its own technology.

Presstek is the inventor of DI press technology and holds numerous patents in laser, thermal imaging, media, and press design. From 1987 to 2004, Presstek was a technology provider, partnering with the industry's largest press manufacturers. In early 2005, Presstek began distributing its DI presses under its own brand. Like all digital technology, DI presses have evolved over time, and today's DIs are more automated, provide higher quality output, and operate more efficiently than ever before. On Presstek DI presses, standard offset inks and stocks are used to produce 300 lines per inch and FM quality offset printing. The company's portfolio now includes the 34DI, 52DI, and 75DI presses.

Dainippon Screen Manufacturing and Screen (USA) have placed more than 15,000 CTP systems worldwide since 1995. The company's proven CTP imaging technology is the backbone for the Truepress 344, which was introduced in the U.S. at Print 05. Screen takes its experience of imaging on a high-speed cylinder to imaging on a no-process plate inside of the digital offset press. The press images with one laser head that goes across the entire plate with no fluctuations. The original design for the Truepress 344 is a result of a collaboration with Hamada Japan. Today, the press is still built by Screen in the company's own factory.

Heidelberg launched its first DI press 20 years ago. The company spent 15 years developing and manufacturing its Quickmaster and Speedmaster DI presses, boasting more than 2,000 installations. Following market developments and customer surveys, the company decided to discontinue DI press production in 2006 to focus on the trend towards modular offline CTP solutions combined with offset presses. Heidelberg and its service network continue to provide support, parts, and consumables for their digital offset presses.

Digital Offset Presses

Current availability and support for digital offset presses sold and operated in the U.S. today.

INFO#	Company/Web site	Product	Currently Manufactured	Parts/Services Available	Colors	Sheets per Hour	Max Resolution (dpi)
223	Heidelberger Druckmaschinen AG	Quickmaster DI 46-4	No	Yes	4	10,000	2,540
	www.heidelberg.com	Speedmaster SM 74 DI	No	Yes	4 to 6	15,000	2,540
224	Presstek	75DI	Yes	Yes	4 to 10	16,000	2,540
	www.presstek.com	52DI	Yes	Yes	4	10,000	2,540
		52DI-AC	Yes	Yes	4	10,000	2,540
		34DI-X	Yes	Yes	4	7,000	2,540
		34DI-E	Yes	Yes	4	7,000	2,540
225	Screen USA	Truepress 344	Yes	Yes	4	7,000	2,400
	www.screenusa.com						

Left to right: KC Printing Services, Inc. of Barrington, IL runs a variety of projects—including letterhead—on its Screen digital offset press. Screen's Truepress 344 digital offset press is built on the company's proven CTP imaging technology.

Other manufacturers—including Kodak and Xerox—bowed out of DI production and distribution to the U.S. KBA has a presence strictly in Europe with the Karat DI. Ryobi maintains the worldwide rights to sell its Ryobi 34DI.

Cost Tip Points

Investment in a new DI press starts at about $300,000. The Presstek 34DI is listed at $275,000 and the Presstek 52DI is $525,000. The average cost to the PSP—including consumables—are as low as one cent per letter-sized page with a Presstek 75DI, states Sullivan. Two significant advantages of DI presses are the elimination of click charges and duty cycles.

Operation of the Screen Truepress 344 consists of six dollars per plate, with additional costs for paper and ink. Total makeready time between jobs is five minutes, including imaging. The device is listed at $350,000.

In comparison, offset press investments climb into the millions. This type of press requires plate making equipment and a large amount of space. Offset purchases require high volumes of static print runs to rationalize an investment.

Pricing for digital presses runs in a broad range based on technology, size, and quality level. Print providers can expect to spend a little less than they would on a DI press—in the $200,000 to $300,000 range—for select EP-based digital presses, or up to two to four million dollars on a high-speed production inkjet device.

With a choice of technology, investment decisions are based on productivity, turnaround time, variable printing, print volume, and quality requirements.

Run Size

Digital offset presses produce high-quality, printed output in a sweet-spot range of 500 to 20,000 sheets. "With today's average print run length around 2,500 sheets, a direct imaging press is the most profitable for this type of work," says Leibrandt.

Allegra Print & Imaging of Cedar Rapids, IA, runs jobs as small as 50 on its Presstek 52DI, although Bruce Van Kerckhove, owner, Allegra, admits that a DI is more cost effective above 500 pieces. "Plates last in the 20,000 to 22,000 impression range, so under 20,000 is ideal," he explains.

The stated run length for the Screen Truepress 344 is 20,000 impressions, although Leibrandt says it can be higher with a good stock.

Print quantities targeted for offset now reach into the digital and the DI space. Leibrandt places the new Truepress Jet SX sheet-fed inkjet press in the one to 2,500 range for four-page, 20.8x29.1-inch output on conventional paper. He says the Truepress 344 is justified for conventional printing from 500 to 10,000 impressions; and the Truepress Jet Series of inkjet presses achieves volume from 500,000 to more than 100 million pages per month.

PSPs considering a digital or DI purchase should look at throughput. "Throughput on the DI is much faster than a digital production press," states Sullivan.

COMPANIES MENTIONED

dpsMAG DIRECT See page 32 for more information.

Company	Web Site	INFO#
Eastman Kodak Company	www.kodak.com	210
Graphic Whizard	www.graphicwhizard.com	211
Heidelberger Druckmaschinen AG	www.heidelberg.com	212
Koenig & Bauer AG	www.kba.com	213
Komori Corporation	www.komori.com	214
manroland, Inc.	www.manroland.us.com	215
Presstek, Inc.	www.presstek.com	216
Ricoh Americas Corp.	www.ricoh-usa.com	217
Ryobi Limited	www.ryobi-group.co.jp/en/	218
Sakurai USA, Inc.	www.sakurai.com	219
Screen USA	www.screenusa.com	220
Shinohara	www.shinohara.com	221
Xerox Corporation	www.xerox.com	222

The two-up Presstek 34DI ends up printing 14,000 letter-size impressions per hour (iph), the 52DI prints 20,000 letter-size iph, and the oversized six-up 75DI prints 96,000 letter-size iph.

According to Leibrandt, the Truepress 344 is not a niche product, noting that some customers put over five million impressions per year on the presses. The 344's TrueFit Advance printing control system is designed to provide superior quality and repeatability by scanning every sixth sheet, automatically adjusting color balance throughout the run.

Quality and Other Concerns

Print providers and buyers agree that the quality gap between offset, DI, and the latest digital equipment is closing. "Digital printing has come a long way, and can now easily be sold as 'printing' where it used to have to be qualified as 'digital,'" claims Creston Dorothy, president, Pro Print, Inc.

Pro Print, based in Duluth, MN, experiences great success running jobs with heavy coverage on very thick stocks on its Presstek 52DI, whereas, "the digital machines may leave belt tracks or have trouble painting the sheet with lots of toner," Dorothy says.

The shop's DI handles most paper types, ranging from onionskin to heavy board stock. "Quality is good off of all of the machines. Many people would never know which press the work came from," he adds.

Comparing quality, Leibrandt states that the range of stock compatible with the Screen Truepress 344 and its inkjet devices make it virtually impossible to tell which device printed a sheet. "This diversity gives the print provider the flexibility to mix and match the right equipment for a job without sacrificing quality," he adds.

Allegra's Van Kerckhove is thrilled with the quality and consistency of its DI output. The 30-year-old commercial print shop uses two Heidelberg QM 46 two-color presses, one color and two monochrome EP digital production machines, and a Presstek 52DI to create applications such as marketing collateral, mailings, promotional products, and signage.

The Presstek 75DI features a simultaneous imaging and cleaning process that optimizes makeready times between jobs.

Choosing a Path

Print providers must consider the required quality level, quantity, and operational costs of a job to determine whether it is best suited for offset, digital, or DI.

KC Printing Services, Inc. of Barrington, IL runs a variety of projects including sell sheets, brochures, newspaper inserts, and letterhead on its Screen Truepress 344 digital offset press. Typical run quantities range between 1,000, 5,000, and 30,000 sheets.

Philip Claps, president, KC, appreciates the 344's automated set up and print quality. The shop's workload is constantly changing; so the ability to use digital offset or digital is important. "They work together well, and it gives us great flexibility," comments Claps.

Price and quality weigh on the print platform chosen for each job. KC charges more per piece for small orders on the 344 than on the digital press. "It still is a press and you have to make plates, so the Truepress is still more than digital on small runs," he explains.

The shop's workload is balanced on multiple platforms. Approximately 15 percent of the shop's output is digital print; 15 percent is DI; and 70 percent litho, mailing, and fulfillment. In addition to the Presstek 52DI, Pro Print has six offset presses from Heidelberg, Ryobi, and Shinohara; five digital presses from Ricoh and Xerox; and a Graphic Whizard sequential numbering press.

Pro Print invested in a DI to pull shorter runs from conventional offset. The 52DI handles the 2,500 and 5,000 quicker and more cost effectively. "That in turn frees up press time on our large presses for longer runs," comments Dorothy.

Pro Print uses a 2,000-sheet threshold minimum to run 11x17-inch sheets on the DI. "The speed alone makes it better at that rate than digital, since you can run 8,000 or more per hour. The maximum is usually in the high teens to maybe 20,000 impressions, before it makes sense to put on the large offset presses," he explains.

The shop determines the most cost-effective machine to use. Jobs migrate from digital to DI and offset presses as the run size increases and stock requirements vary.

DI Longevity

DI presses are a valuable solution nestled between offset and digital printing. They meet the quality of offset presses without the cost, time, and chemical requirements of plate making and allow for printing on varied substrates.

Although some innovators of DI manufacturing have retreated, the technology remains a wise investment. **dps**