

Traditional print methods require time-consuming set-ups. Direct imaging presses, however, can do in minutes what used to take hours. George Whalen sheds light on the technologies and trends of this less-involved digital system

The direct route

Throughout most of the 20th century, the predominant mission of printing was mass production – to print large quantities of identical work that could be put into many hands at the lowest-possible cost. It remained that way for nearly three generations, with printing technology focussed on improving the economics, speed, and efficiency of long runs.

The arrival of efficient process colour increased the prepress and press work needed to make each new job ready for printing. Colour presses had multiple printing units. Time- and labour-intensive platemaking, re-plating and set-up work had to be repeated on each of the four (or more) printing units. Plates had to be registered. Inkers and dampening had to be set carefully while the press stood idle for long hours in makeready. Yet, even so, printers who fulfilled the mission of producing long-run colour work generated bountiful sales revenue. They rarely complained about makeready costs. So, technology stayed focussed on ways to print higher volumes of identical products – faster, better and less expensively.

However, by the final quarter of the 20th century, the mission of colour printing had changed. The mass-market was fragmented into many, smaller, better-defined segments. Mass-production colour printing was declining and the era of shorter-run colour printing was arriving. Instead of ordering a run of 100,000 identical colour products, customers wanted 10 separate short runs of 10,000 different-content colour products, each appealing to a separate market segment. Society was

delivering a new mission to printers: produce short-run colour just as capably and economically as you produce long-run colour. It is a tall order. Smaller runs have less revenue potential. Costs of slow makereadies can cut deeply into short-run job margins. Shorter colour runs also mean doing more makereadies, idling the press more often. The combination can quickly add-up to lower profitability for printers.

Makeready time, efficiency and cost control have steadily moved up in printers' priorities, as job runs have grown shorter. Manufacturers have automated their conventional presses to save makeready time, but that has forced up press prices.

Meanwhile, efforts to reduce prepress costs have paid-off, as technology suppliers have developed computer-based workflows to eliminate costly, manual, film-based image assembly. Today, an all-digital, computerised network performs prepress. Software creates, assembles and proofs the job, then delivers it as digital data for printing.

The choice, then, is between computer-to-plate (CTP), if a conventional press is to be used; or, computer-to-press direct imaging (DI[®]), if a DI-enabled press is to print the job. If the job run is short, the cost of press makeready will hold the key to that decision. A short-run job can be unprofitable if a conventional press consumes too much makeready time.

Makeready problems with conventional presses stem from the break in the workflow,

Today, an all-digital, computerised network performs prepress. Software creates, assembles and proofs the job, then delivers it as digital data for printing.

where digital prepress ends and mechanical plate-hanging and press adjustment begin. Dealing with plate remakes, registration and dampening system issues, ink- and water-balance and other headaches can really stretch out makeready. (Ask any press operator!)

Conventional presses now appear to offer only limited additional potential for improvement of their makeready times, at prices printers can afford. The DI press, on the other hand, has been expressly designed to drive down makeready costs for shorter colour runs. DI printing technology integrates the press directly into the digital prepress workflow, to create an optimised short-run printing solution. Thus, the DI press is proving a more economical, hassle-free and profitable way to handle shorter-run colour printing.

Direct imaging technologies

Presstek DI-enabling technology

The first technology innovator to recognise the new, shorter-run mission challenges in colour printing was Presstek Inc., manufacturer, developer and marketer of non-photographic, digital imaging and printing plate technologies. It is regarded as the pioneer in direct-to-press imaging of printing plates.

As shown in Figure 1, Presstek's DI technology seamlessly unites the digital prepress system and the colour press, so that the press functions as an automated output device of the digital workflow. Thermal laser arrays are used to image digital files directly onto printing plates mounted on-press, thus automating the positioning and registering of plates and eliminating time-consuming adjustments normally associated with a dampening system. Presstek technology extracts the primary causes of prolonged makereadies from short-run colour, eliminating photomechanical, chemical processing and the time and labour associated with other plate-imaging methods, as well.

The result is substantial time- and cost-savings in makeready, higher print quality, increased efficiency, decreased run-time, faster turnaround, higher productivity, lower overall costs, reduced waste – resulting in higher profitability for short-run colour printing.

Presstek began development of DI in the late 1980s, making possible imaging of digital file data onto plates, directly on the printing press. That work ultimately led to commercialisation of its patented, proprietary PEARL® and DI® direct imaging technologies, based on use of high-power thermal laser diodes, thermal ablation printing plate materials and unique press design.

In 1991, through agreement with Heidelberger Druckmaschinen AG (Heidelberg), the world's largest manufacturer of printing presses, Presstek DI technology and plate media became integrated into the world's first DI press, the Heidelberg GTO-DI.

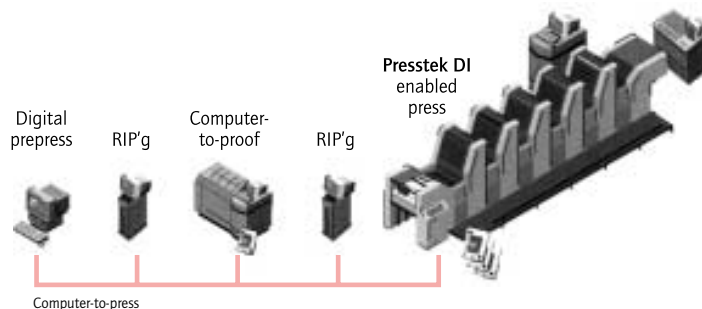
Presstek DI technology evolved, becoming a system of engineered plate media imaging and handling components that can be designed to work within a wide variety of offset press platforms. After engineering, the required system components are manufactured and delivered by Presstek to the press manufacturer in kit form. During press assembly by the manufacturer, the DI kit is integrated into the press platform. The press retains the attributes of its original design, but thereafter also provides the specific advantages of DI technology.

Since Presstek's DI technology is highly adaptable to different presses, Presstek has partnerships with many major press manufacturers in the industry that incorporate its DI technology into their presses. These now include Heidelberg, KBA, Ryobi, Sakurai, Adast, and Xerox.

Makeready and operational benefits of the DI-enabled press

A profit-oriented short-run printer must get up and running fast, producing saleable product just as fast as the press allows. Downtime and

Figure 1
Simplified diagram shows computer-to-press digital workflow through a Presstek DI-enabled press
Source: Presstek



labour costs can quickly consume the modest profit margin figured into a short-run colour job. With a DI press, makeready is highly efficient and automated, all to protect that profit margin.

A DI press using Presstek's technology holds PEARLdry media on a spool with 28 to 36 plates in the specially developed Presstek plate cylinders on every unit. At the start of a new job, fresh plate material is automatically drawn from the supply roll on to each printing unit. Digital page data is then received from the prepress network. The media is imaged in minutes by thermal laser diodes of 830 nm wavelength, controlled and driven by the digital imaging data. The laser diodes emit energy bursts concentrated by lenses in 21-micron spots at the plate surface. This energy ablates (removes) tiny areas of the top, image-forming layer from the plate media, exposing a like area of the ink-receptive base layer.

Imaging of all plates is done simultaneously on-press resulting in perfect register, ready for printing under computer control, without need for any human intervention or adjustment. Inking and other major systems are prepared in response to digital control signals and printing begins. Most DI presses are waterless, so colour is quickly reached, the colour is consistent throughout the run, and there is minimal waste.

Value, profitability and versatility of DI

The challenge to offset colour printing is to retain its leadership in a world of proliferating short-run colour alternatives. The arrival of toner-based and inkjet digital colour printers and copiers have begun chipping away at the 500-copy-and-below sector of the short-run colour market – particularly where their lower resolution, lower colour accuracy, and limited substrate range are acceptable.

On the other hand, Presstek DI-enabled presses shine in the shorter-run 500 to 20,000 impression market, where their true offset quality, colour-accuracy, high resolution, substrate versatility, fast turnaround and economy make DI the highly profitable choice.

How profitable? A 2001 independent survey of 480 users of Heidelberg Quickmaster DI

presses (which use Presstek DI technology) was conducted by CAP Ventures, a market research firm. It revealed that the DI printers enjoyed a 45% gross profit, as a percentage of sales, compared to the sector average of 26%, as reported by the Printing Industries of America (PIA).

These impressive figures demonstrate that DI technology makes shorter-run colour printing quite profitable. Other printing methods simply are not an economical choice for short-run colour work.

A DI press can profitably handle short-run versioning work, just-in-time and print-on-demand jobs. In the business literature, catalogue and brochure market, for example, geography, language and varied interests of individual groups of buyers may require using short runs of high-quality versions of a core printed product. A DI-enabled press produces colour work of true offset quality. Yet, its cost-saving makeready makes its colour products both affordable to customers and profitable for printers.

High productivity of DI

The productivity of DI is very high. It is not unusual to get 6–8 jobs on and off the press in one shift. This adds real capability to satisfy more customers, to promote a full-service image, to provide true fast-turnaround service, and to strengthen business relationships with customers, so that the first name that comes to mind is yours, because you never say no.

Literature by DI: just-in-time

The just-in-time (JIT) literature replenishment market is a lucrative opportunity that stems from the fast turnaround and quick-drying time of waterless ink used on DI presses. All colour-printed literature lying on a shelf is at risk of instant obsolescence. A recent survey found that half of all catalogues and brochures may wind-up being recycled, because changes in prices, products or other content suddenly make them obsolete.

However, by ordering and holding a minimum quantity of printed literature, such a loss to unforeseen change can be kept manageable. Printing on a DI press makes it cost-effective to print only the quantity of products needed

now. So, DI enables buyers to get top-quality colour right away, at very competitive prices. If changes are needed, the digital files are easily updated and literature can be replenished 'just-in-time,' with the quality, moderate cost and fast turnaround of the DI-enabled press.

Service bureaus as full service providers

To those who operate a service bureau, owning a DI press proves they provide 'full service' to their customers. If a bureau is servicing the needs of printers who have conventional presses and want to do only medium and long-run colour printing for their clients in-house, the bureau's DI press can take over the task of handling shorter-run jobs, as yet another service.

Printer customers can then accept and handle all their clients' work, turning it over to the service bureau to provide short-run colour with its DI press capability. Solid business relationships grow this way; while bureaus also enjoy good profitability from every short-run job their DI-enabled press produces. The bureau can also expand its business by producing on-demand, just-in-time and other short-run colour jobs, for which it is already doing the prepress. This service sells itself, building on the established customer base.

How printers can specialise their presses to optimise profits

By adding a DI-enabled press to the pressroom's conventional press line-up, a printer can begin specialising all its presses to job lengths that represent the best, most profitable use of the levels of makeready technology built into those presses.

Conventional presses have undergone considerable upgrading in makeready capabilities over the past two decades, so younger presses will likely have the most automation, labour-saving technology, and faster makeready times. Older presses may have few of these enhancements, with much slower makeready times. Yet, all may be able to print wonderful colour at high speed. By matching the run-length of any job, to the press with the makeready time that fits it best, overall profitability can be optimised.

The plan is simple. All shorter-run colour work should go to the DI press. It will automatically yield the highest profit per short-run job. Medium-run jobs go to younger conventional presses, which, by virtue of their reduced makeready times, will keep costs in line with revenues. Long runs should be produced on mature presses having the least makeready technology. Their makeready cost will look small compared to the substantial revenue a high-volume job will earn.

Presstek DI technology overview

ProFire® laser imaging technology

Presstek's ProFire laser imaging assembly, winner of a 2001 GATF InterTech Award, is designed to simplify implementation of on-press direct imaging through ease of integration into different press configurations and high reliability. ProFire provides an array of high-power, four-beam IR laser diodes to fit size and resolution requirements for various DI-enabled presses. Each diode delivers four unique beams with a laser spot size of 21 microns at the plate. High-speed laser drivers, digital electronics, and motion controls to position the laser diodes are also provided.

Each ProFire can handle imaging data at up to 64 megapixels/second throughput, with digital data provided from a FireStation digital controller and data server, which includes a FireWire high-speed connection for fast data communication. Each ProFire thus requires only three press connections: digital image data; electrical power; and coolant circulation for the laser diodes.

Presstek PEARLdry processless plate media

To fit different DI presses, Presstek manufactures PEARLdry plates on aluminum-based sheets as well as on polyester-backed spools. The spooled media is supplied wound onto a core that fits into the Presstek plate cylinder on each printing unit. At the start of a job, a fresh plate is automatically drawn onto the plate cylinder of each unit, while used media is rewound on another core. Typically, there is sufficient media in a roll to allow printing from 28 to 36 jobs, before the PEARLdry media rolls must be replaced.

PEARLdry Plus plate media for the Heidelberg Quickmaster DI press provides a construction

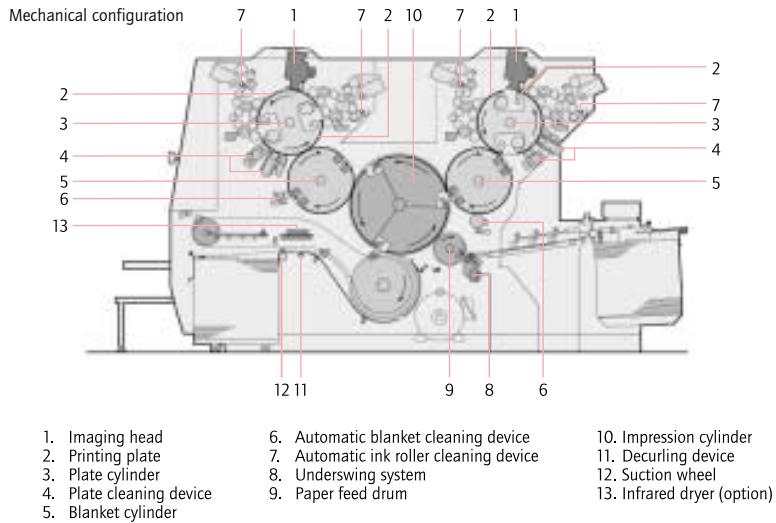


Figure 2

Configuration of common impression cylinder DI press equipped with Presstek DI-enabling technology
Source: Presstek

example. Made on a polyester base and supplied in rolls providing sufficient media for printing 36 jobs, the media is rated for 20,000 impressions. It consists of an ink-accepting polyester base layer covered by a vacuum-deposited, image-forming titanium layer of precise, uniform thickness, all protected by an ink-repelling silicone coating. The plate is imaged through ablation by high-energy laser beams, which remove the ink-repelling titanium and releases the silicone layers to form the image, exposing the polyester base layer, which accepts and transfers ink to the blanket cylinder, and then to the paper.

Presstek's laser imaging technology and PEARLdry Plus produce sharper, better-defined and harder-edged halftone dots than those from imaging other kinds of plates by film-based or visible light CTP methods.

How typical Presstek DI-enabled presses work

Figure 2 (above) shows an interior diagram of a KBA 46 Karat DI press, a central impression cylinder design equipped with Presstek DI-enabling technology. (The layout and operation are similar in the Ryobi 3404 DI and Xerox DocuColour 233 DI, which are also central impression cylinder designs.)

Operation begins with pressing a button and is fully automatic thereafter, from direct plate imaging, to ink pre-setting and test prints. Presstek's on-press ProFire Direct Imaging,

combined with the central impression cylinder design and single gripper system, completely eliminate the need for any registration adjustment by the operator.

The Presstek plate cylinder holds a supply roll of fresh PEARLdry plate media. Opposite this is a take-up roll for used plate media. Each of the two plate cylinders holds roll supplies of PEARLdry plate media material sufficient to print 28 jobs.

Energy from each of the ProFire module's laser diodes is directed at a defined area of the ablatable surface of the PEARLdry plate media. As the digital data streams fire the laser diodes, the plate media rotates and the fine, high-energy laser beams ablate the imaging layer and write the image onto the plate at 1270 or 2540dpi resolution.

In the DI-enabled central impression cylinder press, plate media for printing two of the four colours is automatically drawn out and imaged on each cylinder at the start of each new job. The two fresh sections of PEARLdry plate media on each cylinder are then successively imaged by a ProFire laser diode array, completing the four-colour plates. At 1270dpi, imaging takes only 2.3 minutes. For high-resolution (200 to 300-line/inch screens), imaging can be done at 2540dpi in 4.5 minutes. The press is in-register the instant this process is completed. Automatic cleaning and ink-setting follow, and the DI press is ready to print.

In the press shown, two separate sets of ink-train rollers feed waterless ink to each of the two plates on each cylinder. In turn, these transfer two ink images to the blanket cylinder. Each sheet remains in place on the impression cylinder as it makes two revolutions, so that the blanket cylinders evenly transfer the four ink colour images to the sheet in perfect register.

Presses in the market now using Presstek DI technology

There are over 2000 DI presses currently installed worldwide and about 98% of these use Presstek DI-enabling technology. Descriptions follow about each DI press model in use today:

Adast

705C DI series

The Adast 705C DI series features four-up sheetfed DI presses with a low cost-per page. Four- and five-colour models are available, with perfecting standard. These presses offer high-versatility and print with PEARLdry plates on a wide variety of stocks and substrates. The press receives digital data for on-press direct imaging via Presstek's DI server, a powerful workstation that is both a fast, versatile file server and raster image processor (RIP).

Heidelberg

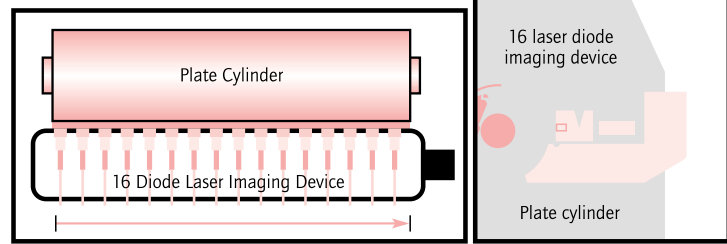
The Quickmaster DI 46-4 is offered in two versions and is the most widely installed sheetfed four-colour DI-enabled press platform in the world with over 1700 installed. Its innovative design is centered on Presstek's DI-enabling technology and PEARLdry plate media. The platform operates at speeds reaching 9000sph; 500 copies of a four-colour sheet can be imaged and printed two-up in about 22 minutes, start to finish. This includes loading fresh plates, RIPping the file, direct imaging the plates, and printing the job. The waterless printing of this press series is easy to operate and provides deep colours in the printed output.

Quickmaster DI 46-4 Plus

In addition to direct imaging of plates on press, the Quickmaster DI 46-4 Plus automates several key steps in the printing process. These include plate media feeding from inside the cylinder; console-controlled colour adjustments and automatic plate, blanket and impression cylinder cleaning. Two resolution choices are available: 1270dpi (sufficient for printing a 150lpi screen of very good quality), or 2540dpi (for jobs with very demanding requirements). PostScript level 2 digital data supplied over an ethernet interface is converted in the Raster Image Processor of the Quickmaster DI 46-4 into screen data. In turn, this is converted into control signals for the Presstek imaging modules on each of the press' four printing units.

Quickmaster DI 46-4 Pro

The Quickmaster DI 46-4 Pro is an enhanced version of the Quickmaster 46-4 DI Plus. Its



new control console builds on the successful Heidelberg CP2000 concept, providing users with an ergonomic work area, easier control procedures, and a simplified printing process. The new stream feeder ensures accurate sheet feed, registration, and dependable sheet orientation and travel that allow imprinting a fifth or sixth colour. Using Delta Technology 7.0 it can produce a 200lpi screen with 1270dpi.

KBA Karat

74 Karat

Licensing Presstek's on-press imaging and using Presstek's PEARLdry plates, the four-page 74 Karat makes possible high-quality, four-colour printing at a very low cost-per-job. Utilising Presstek's DI methodologies, precision laser beams image the plates directly on-press. A single impression cylinder allows fast and efficient printing without sheet transfer. Overall operations are easier because the press automates many steps, such as press parameter settings, inking and ink handling, and provides immediate, predictable colour. Makeready time is less than 15 minutes.

46 Karat

The new, two-page 46 Karat DI press utilises Presstek's ProFire imaging technology and PEARLdry thermal plates. The compact central impression cylinder design of the 46 Karat features conventional roller-type inking units with ink keys and four form rollers. The 46 Karat is engineered to provide quick turnaround time for short-run colour at an output of 7000 sheets per hour. Job changes take just 10 minutes, due to its advanced level of automation.

Ryobi

3404DI

Ryobi has introduced the A3 format four-colour sheetfed 3404DI central impression

Figure 3

All laser diode modules simultaneously write imaging data onto the media as it rotates beneath the head, while the lens end of each diode is precisely moved laterally, within a defined-width zone. The sum of all zone images is the plate image
Source: Presstek

cylinder press. It is a compact, two-page, central impression cylinder offset press that incorporates Presstek's ProFire imaging, automated plate cylinder design, and PEARLdry Plus spooled plates. This press is designed to appeal to quick printers, in-plant printers, and copy centres seeking to expand their services to include offset colour printing. Its quality short-run four-colour printing applications include catalogues, posters, direct mail, and promotional literature. The 3404DI is equipped with a high degree of automation, is easy-to-use and labour saving.

Sakurai

Oliver 474EPII DI

The Oliver 474EPII DI merges Presstek's new technology with a revolutionary press design, which makes possible a high performance DI press at a competitive price. Sakurai Graphic Systems has incorporated Presstek's new ProFire DI technologies in the new A2 (29-inch) Oliver 474EPII DI press, which is also available with a perfecter. The combination of Presstek DI-enabling technology and the capability to run conventional plates make it a true hybrid among four-page presses. The Oliver 474EPII DI press is user-friendly and fully automated, making it valuable for applications from press-proofing to short-run colour.

Xerox

Xerox offers two DI-enabled colour presses for the US market, the A3-format DocuColour 233 DI for the quick printing/on-demand market, and the B3-format DocuColour 400 DI for commercial printing.

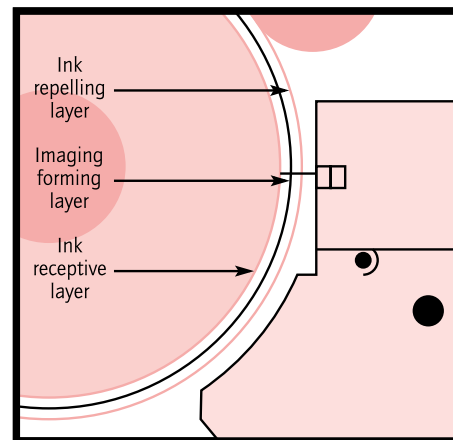


Figure 4
This side detail shows how laser a beam ablates the ink repelling layer of revolving PEARLdry media on plate cylinder, to expose image-forming layer and ink-receptive layer
Source: Presstek

DocuColour 233 DI

The DocuColour 233 DI is a compact, two-up, four-colour, central impression cylinder digital offset press that incorporates Presstek's ProFire imaging technology and PEARLdry Plus plates. Four-colour imaging time is just 5 minutes at 2540dpi, or 2.5 minutes at 1270dpi.

Advanced automated features carry out the entire printing process, from plate advancing and imaging, to inking control, printing and blanket cleaning. Total imaging, makeready and printing time for a typical two-page, 175lpi, four-colour spread, 1500 sheet job is under 24 minutes. Delivering up to 7000 four-colour impressions-per-hour, the DocuColour 233 DI is a solution offering profitability, productivity and true offset quality in the short-run colour printing market.

DocuColour 400 DI

The DocuColour 400 DI is an automated, two-up, direct imaging press that can print up to 12,000 impressions an hour. Two resolutions (1270/2540dpi, or 50/100dpm) are provided. The DocuColour 400 DI uses Presstek's internal, automatic plate cylinder design, ProFire imaging technology, and PEARLdry Plus plates. The five-colour DocuColour 400 DI has the fastest makeready of any five-colour press in the world, taking less than ten minutes for imaging, plate, paper and ink loading, plate cleaning, ink profiling, register and colour balance. Optional perfecting is available in 4/1, 2/2 and 2/3 configurations. Total imaging, makeready and printing time for a typical two-page, 200lpi, four-colour spread, 1500-sheet job is just over 20 minutes. Delivering up to 12,000 four-colour impressions-per-hour, the DocuColour 400 DI offering versatility, profitability, productivity, speed and true offset quality for the short-run colour printing market.

Other direct imaging technologies

Creo SQUARESPOT™

SQUARESPOT is the trade name for imaging technology developed by CreoScitex in the mid-1990s, which was able to image a variety of thermal plates on-press. The thermal laser receives digital file data and images this onto plates already on the press (via plate changers). Creo says that 2400dpi resolution plate-imaging on an 8-up press of up to 12 units takes less than four minutes, and that

the process makes economic sense for a run-length as short as 500 sheets. Intended for incorporation into larger (up to eight-colour) wet offset presses, SQUARESPOT is said to enable users to have the full range of offset press reproduction and finishing, instead of having to make do with the print-and-finish limitations of toner-based colour copying. The high-power thermal lasers (18 watts delivered on the plate) can image ablative, thermal transfer and other commercially available thermal plates on the market. Heidelberg, Komori, KBA and MAN Roland use SQUARESPOT technology in some products. The Heidelberg Speedmaster 74 DI (introduced in 1998) incorporates SQUARESPOT technology and no fewer than 100 are installed worldwide.

Komori has also exhibited its full-size, 8-up 'Project D' press with SQUARESPOT technology, which it says is aimed at giving printers substantial opportunities to print high-quality, full-format jobs efficiently at short run lengths. It is the largest direct imaging press on the market.

MAN Roland DicoWeb

MAN Roland uses SQUARESPOT technology in the four-colour DicoWeb system, which continues in beta testing at five sites. Commercial availability is forecast in 2003. The technology received a 2001 GATF InterTech award. This dampener-equipped press prints wet, offset on a web up to 20 inches wide, using tubular metal sleeves that are direct-imaged on the press. The laser energy transfers the digital data to the cylinders by firing through an imaging tape, housed in a cassette similar to those used in home VCRs. The tape features a polyester carrier that hosts a thermoplastic coating. The laser bursts adhere the thermoplastic media onto the image-carrying sleeve, where it is fixed by a 30-second heat treatment. The result is a water-repelling surface that constitutes the printable image area, said to be durable enough to produce up to 30,000 impressions at 3.5 metres/second. After the run is complete, each sleeve is automatically cleansed of its image, on-press, and is ready to be imaged again. Makeready is said to average 10 minutes. With an estimated pre-market price of \$3.75 million (€4.28 million),

DicoWeb is the most expensive of all direct imaging presses.

Screen TruePress 744

The TruePress 744 is a four-up, four-colour hybrid DI press, adding to the current family of conventional TruePress models. The press platform for the TruePress 744 is made by Sakurai, while the imaging and printing units are manufactured by Screen. The imaging system comes from Screen's Tanto imagesetter and uses a 660-nm, 120-beam infrared laser that moves across and images digital silver plates as the plate cylinders rotate.

Drawing conclusions about DI's future

Studies of the US printing industry reveal trends suggesting that a significant change in printing technology is now well-underway, to enable printers to meet the new shorter-run colour printing mission. DI is reaching critical mass. There are over 2000 DI presses installed worldwide, of which approximately 98% are enabled by Presstek technology. The number of DI presses will continue to grow as the demand for true offset quality, short-run colour printing continues to expand and printers seek less-costly alternatives to be more profitable.

The CAP Ventures study mentioned earlier reveals that virtually all owners see their DI-enabled presses as decisive contributors to their present and future growth. Notably, the reported average growth rate in that study was 40%.

DI-enabled presses are making shorter-run colour printing into a newly profitable printing business segment. Not only printers, but service bureaus, and in-plant printers are discovering that owning one or more DI-enabled presses is a profitable, business-building investment.

An NPES study also noted that, although just 200 DI presses were operating in the US in 1997, the number is expected to swell to over 2700 DI presses by the end of 2002. Another study, conducted by industry research group State Street Consultants, reports that nearly 18% of US printers say they want to adopt DI technology right away – over 47% saying they will move to DI within the next two years.

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Today the offset printing market looks a little less rosy, due in part to the recessionary economy. Though there is increasing use of colour, and more automation in the process, printing deadlines are becoming shorter, overall revenue growth is only moderate, and the number of printing plants in the United States is reportedly decreasing, due to closings and consolidations. There are still some 190,000 conventional sheetfed presses in operation and the average plant size now stands at 24 employees.

GATF estimates that conventional offset's share of the US market will decline from the 65% it held in 1997, to just 49% in 2006. Over that same period, the market share category of digital printing, including DI is slated to rise from 20% to 35%. Though not specifically a pure DI press figure, the trend from conventional to digital technology is unmistakable.

A DI press, with its fast makeready, allows a printer to do more jobs in the same amount of time resulting in a positive return on investment. Over time, as more DI presses enter the market, look for pricing of DI presses to reach a level where the decision to buy a DI press over a conventional press plus a CTP imager becomes academic.

Those who now compare the higher cost of a DI plate to that of a conventional plate and judge DI media too expensive are ignoring the value of all the 'avoided costs' that DI makes possible, including the cost of film, plate processing, chemical disposal, etc. This also ignores the true value of DI media as part of the DI-enabling technology that makes possible high-profitability, fast-growth short-run colour printing.

DI is now well past the introductory stage and poised to enter its strongest growth phase. As the DI market develops, there will be even more suppliers of DI presses. More suppliers mean healthy, robust competition – with more choices in DI technology and favorable influence on prices. You will know that the price of DI is 'right' when a printer thinks of buying a press – and the decision in favor of a DI press is automatic ■

TAKE AWAY

- DI printing technology integrates the press directly into the digital prepress workflow, to create an optimised short-run printing solution; is a more economical, hassle-free and profitable way to print shorter-run colour
- Thermal laser arrays are used to image digital files directly onto printing plates mounted on-press, thus automating the positioning and registering of plates and eliminating time-consuming adjustments
- DI presses make substantial time- and cost-savings in makeready, can achieve higher print quality, increased efficiency, decreased run-time, provide faster turnaround, higher productivity, lower overall costs and reduced waste
- Most DI presses are waterless, so colour is quickly reached, the colour is consistent throughout the run, and there is minimal waste
- Toner-based and inkjet digital colour printers and copiers have made inroads into the 500-copy-and-below sector of the short-run colour market
- DI-enabled presses do well in the 500 to 20,000 impression market, where their true offset quality, colour-accuracy, high resolution, substrate versatility, fast turnaround and economy make DI the highly profitable choice
- DI printers have recently seen a greater gross profit, as a percentage of sales, compared to the sector average
- DI printers can get several jobs on and off the press in one shift, thus satisfying more customers and promoting a full-service image
- By adding a DI-enabled press to the pressroom's conventional press line-up, a printer can begin specialising all its presses to job lengths that represent the best, most profitable use of the levels of makeready technology built into those presses
- The number of DI presses will continue to grow as the demand for true offset quality, short-run colour printing continues to expand

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