



Shining a Light on Lightweight Papers: A Digital Printing Breakthrough

A White Paper by Cary Sherburne

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Abstract

We've all seen them: Bibles, directories, prospectus documents and other publications printed on paper so thin you can almost see through it. And those pharmaceutical inserts that seem to be folded a gazillion times before they are inserted into tiny boxes. These printed products have typically been produced in long runs using conventional offset printing, bucking the trend of shorter runs with more customized content. Why? Because paper that thin simply can't be run through a digital press, especially a sheetfed digital press...until now.

This white paper discusses how revolutionary technology in both web- and sheetfed digital presses has brought lightweight papers and the applications that require them into the realm of digital printing, while at the same time opening the door to new applications and cost savings on existing applications.

Legally Speaking...

Legal Directories Publishing Company, Inc. is—well—a publisher of legal directories and bar association pictorials. These aren't just any legal directories. They have lots of helpful features that ensure that important contact information is at the fingertips of legal professionals in 22 states. And there is lots of information. Some directories for larger states like Texas have to be produced in as many as four volumes.

According to Richard Klein, Manager at Legal Directories, directories are printed in multiple sections on either yellow, blue or white paper, with the bulk of the book being the section of listings of attorneys practicing or licensed to practice in a particular state, which is printed on white paper. These books were being produced on a Komori® 40" perfecter offset press as 32-page signatures, folded down to finished size, placed on a skid and sent out to a bindery to collate, bind and send back as finished books. Directories can range from a few hundred pages to over 1,000 pages. For example, in the case of Texas, the last directory was over 5,000 pages broken out into four volumes. Book counts range from 1,000 to 10,000.

"Because of the volume of pages," Klein says, "these directories must be printed on lightweight paper. In our case, we are using 16 lb. bond paper. Because we need to produce a directory about every two weeks, we were looking for a way to cut cycle time and cost out of the process."

After looking at various options, Klein learned that the Océ VarioPrint® 6000 Ultra press could run lightweight sheetfed paper on Océ approved media with specifications ranging from 27 to 35 lb. offset text. "Océ was willing to work with us to test even lighter weight paper," he says. In addition to the Océ VarioPrint 6000 Ultra press, the company acquired a Canon imagePRESS C6010 digital press to produce color covers for the directories.

"We had looked at digital before," Klein adds, "and the biggest problem, besides the difficulty running lightweight stock, was sheet size versus registration. Some of our books

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are 6"x9", which we wanted to run 4-up on 12.5" x 18.5" paper with only about a 1/8" leeway for trim. What impressed me about the Océ VarioPrint 6000 Ultra press was its tight registration that allowed us to meet those specifications and the sharp reproduction of photos in our pictorial directories."

Legal Directories feeds white paper into the sheetfed press from a roll, and blue and yellow sheets are fed from input trays on the press. "There are several advantages for us in being able to move this to digital," Klein says. "First of all, we only need one operator to run the press, versus three with the Komori and pre-press operations. Secondly, the books come out of the press pre-collated, saving a lot of time, cost and potential for error. Finally, this press just runs and runs. When the operator leaves at 3:30 in the afternoon, we have jobs queued up to run unattended for several hours more. We rarely have an issue with the unattended operation; so, in effect, we get almost two shifts out of one operator."

Light Beach Reading

Well, maybe *War & Peace* isn't exactly beach reading. But if you did take it with you in paperback, you certainly wouldn't want to lug two volumes along. One volume in hardcover is an option, but wouldn't it be nice to have one volume in paperback that weighs a lot less?

Using lightweight paper and the Océ VarioPrint 6000 sheetfed press, *War & Peace* can be printed in one paperback volume. This offers an obvious advantage for the intellectual beach-goer, but it is also an example of the benefits of digital printing on lightweight paper for book publishers, printers and retailers. Using *War & Peace* as an example, the table below breaks out the costs for printing the book in paperback, comparing traditional versus lightweight papers.

For example, a traditional 2-volume paperback version of *War & Peace* shipped 2-day USPS from Chicago to Miami would cost \$17.11 for paper and shipping, not including covers, while the same book, printed on lightweight stock in one volume would cost \$10.77 for paper and shipping not including covers, an overall cost savings of 37%. As you might imagine, these costs can add up quickly.

These advantages have not gone unnoticed in the book printing marketplace. According to Océ, its largest book-printing customer has grown its fleet size by 25% in 2012 with more than 50 Océ print engines in production in five locations across the U.S.

Table 1. Printing Lightweight Delivers Savings

Component	Description	Cost	Delta	% Savings
Book Block, Traditional	60# Lynx opaque smooth, 12x18 sheets	194 sheets @ \$0.0338/sheet = \$6.56 per book		
Book Block, Lightweight	Ariva/Océ 30# Digital opaque smooth 87 bright, 12x18 sheets	194 sheets @ \$0.0149/sheet = \$2.72 per book	\$3.84 per book	59%
Cover	100# Chorus Art Gloss Cover white	1 cover with lightweight v. 2 covers for traditional 2-volume set		50%
FedEx Shipping, Traditional	2 volumes, Chicago to Miami, FedEx Ground (2-day)	\$9.68		
FedEx Shipping, Lightweight	1 volume, Chicago to Miami, FedEx Ground (2-day)	\$7.51	\$2.17	22%
USPS Shipping, Traditional	2 volumes, Chicago to Miami, USPS (2-day)	\$10.55		
USPS Shipping, Lightweight	1 volume, Chicago to Miami, USPS (2-day)	\$8.05	\$2.50	24%

Weaving a Gossamer Web

Lightweight digital papers can also benefit applications that are run on roll-fed digital presses with many of the same benefits.

For example, McArdle Solutions, founded in 1947, has a unique inline manufacturing system comprised of a 4-color Océ ColorStream® 10000 Flex web press with an in-line Hunkeler UW6 unwinder, CS6 rotary cutter and Standard Horizon StitchLiner 6000 Digital Saddlestitcher.

The company's President, Lisa Arsenault, reports that many of the applications the company produces for its financial services, health care, association and other customers require lightweight paper. These include regulatory reporting, mutual fund statements, prospectus documents, directories and other 4-color perfect bound reports. Previously, these applications were run on two offset web presses.

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“As the market for print continues to consolidate,” says Arsenault, “we, like many other firms, have seen a strong demand for shorter runs that were not cost efficient to run on offset web. Roll-fed digital printing, especially for lightweight papers, has now reached a point where it is competitive at high enough run lengths for it to make sense for us. On shorter runs, there is simply too much waste generated by web offset; our Océ ColorStream 10000 Flex press generates very little waste and is cost effective for runs as high as 1,000 to 2,000 units.”

Arsenault points out that McArdle uses these numbers as a general transition point between offset and digital, adding, “Of course, if you are talking about variable data, we may be running as many as 100,000 units digitally.”

Although McArdle purchased the Océ ColorStream 10000 Flex press to migrate existing work from offset to digital, Arsenault indicates that the company has also been able to secure new work it couldn’t do before because of the ability to produce shorter runs on lightweight paper. “We are primarily using Twin Rivers 30 lb. Lightweight,” she says. “Some documents are self-cover, and for others, we print a cover on heavier stock and merge it with the document during inline finishing.”

Arsenault is also very pleased with the unique inline configuration the company was able to acquire by working with Océ and Standard Finishing that gives the company a significant competitive advantage in the short-run arena.

“After we acquired the Océ ColorStream 10000 Flex press,” Arsenault adds, “we were able to completely shut down one of our offset webs, keeping the other one for long runs. And the Océ only requires one operator per shift—our web presses required three per shift, so we have seen a significant labor saving as well.

Pharma Opportunities

There are also significant opportunities for digitally printed stocks in the pharmaceutical industry. Pharmaceutical inserts can be folded into as many as 20 or 30 panels, which simply can’t be accomplished using standard digital stocks. Like most manufacturing industries, pharmaceutical manufacturers are seeing a growing need for smaller lot sizes. Océ estimates that as much as 25% of the insert volume for new pharmaceutical products can be produced digitally. Transition of existing products is more difficult due to FDA regulations that mandate FDA approval if anything about the manufacturing process is changed—which can be costly and time consuming.

Another pharmaceutical application for lightweight paper is the small saddle-stitched booklets that doctors provide to patients with information about various pharmaceutical products they may be recommending.

A Word About Equipment

In designing both the Océ VarioPrint 6000 press and the Océ ColorStream 10000 Flex press, Océ has focused on engineering workhorse presses that are not only reliable, but can handle a wide range of substrates and weights. Océ ColorStream 10000 Flex Product Manager Scott Robertz says, “The Océ ColorStream 10000 Flex press is unique in the industry in that it is a perfecting press, and that is one of the things that allow us to reliably print on lightweight papers as low as 24 lb. (36 gsm) Bible stock.”

Robertz points out that finishing can also be a challenge with lightweight papers. “That’s why we have chosen to work closely with partners like Standard Finishing and LaserMax Roll Systems to ensure that the entire configuration, from the digital front end through the final delivery of the product, is flawless.”

“Today”, Robertz says, “most customers using lightweight stocks on the Océ ColorStream 10000 Flex press have some extent of inline finishing – typically folding, sheeting, and/or stacking. McArdle is a great example of the trend in the industry to complete end-to-end solutions in line. They produce finished saddle-stitched booklets from a roll of white paper in one pass.” In terms of the Océ VarioPrint 6000 Ultra press, as Legal Directories’ Klein pointed out, tight registration (less than 0.5mm front-to-back variation) and a reliable paper path are critical to running lightweight stocks. Océ Product Manager Alex Gergely says, “Lightweight stocks are a unique selling point for the Océ VarioPrint 6000 Ultra press. No other cut-sheet digital press I am aware of can reliably run stocks lighter than 50 gsm, and we have been successful with weights as low as 40 gsm, as in the Legal Directories’ example.”

Paper Suppliers

Océ has a process in place to certify papers for usability on its equipment, and certification of lightweight stocks is no exception. Today, there are two primary product offerings for digital lightweight stocks for use with the Océ VarioPrint 6000 Ultra press: co-branded Océ/Ariva Lightweight Digital Opaque in 30 and 35 lb. offset weights. Moving forward, Océ expects to expand the range of papers available and is flexible in working with customers who have requirements that fall outside the norm, such as was the case with Legal Directories.

A Lighter Future

Lightweight stocks for digital offer many new opportunities for printing firms to migrate shorter runs from offset to digital as well as to develop new applications across a variety of markets.

Océ has taken a leadership role in the development of lightweight printing applications and expect the range of both applications and paper stocks to continue to grow over time.

This white paper was sponsored by Océ, a Canon company. For more information on digital printing, visit www.oceproductionprinting.com.



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