

The Canon logo is positioned in the top left corner of the page. It consists of the word "Canon" in a white, sans-serif font, set against a red, trapezoidal background element. The overall background of the top and bottom sections of the page is a vibrant, abstract composition of overlapping circles and teardrop shapes in various colors, including purple, blue, green, pink, and orange. Some of these shapes have a glossy, 3D effect, resembling ink droplets or water beads.

Canon

THE *NEW* INKJET OPPORTUNITY

EXPANDING DESIGN POSSIBILITIES FOR DIGITAL PRINT



Welcome to a New Generation of Production Inkjet

Inkjet printing is now so fast, flexible, and colorful that it is opening up new opportunities for designers who work with print and even designers who didn't think print had a place in their world.

*This guide summarizes some of the key advantages inkjet delivers to today's designers, using content recently published in the **Designer's Guide to a New Generation of Inkjet**. Sponsored by Canon and think—the independent community of Canon inkjet users—the revised 3rd edition of the book helps designers embrace the creative potential of the latest generation of inkjet presses, understand the capabilities of different inkjet technologies, learn how to create design files that drive the process efficiently, and engage more effectively with their print partners.*

Canon inkjet customers can purchase a copy of the *Designer's Guide to a New Generation of Inkjet* through www.thinkforum.com.

It's All About More

In the past few years, inkjet printing has reached into more markets, like commercial printing, signage, graphic arts, and photo specialty. It has evolved into more formats, including familiar offset sheet sizes, narrow web widths, and high productivity web widths. It has become compatible with virtually all the digital and offset papers designers love, as well as a whole range of specialty media. And there's even more!

The new generation of inkjet offers more color, more coverage, and more overall quality. Today we can confidently say there are inkjet presses that deliver better print quality than typical offset presses — and that's before considering the benefits of more flexibility in terms of run lengths, versioning, and personalization.

AND THERE'S MORE TO TELL

There are now a lot more inkjet presses installed at printing companies all over the world. As of 2022, research consultancy I.T. Strategies* counted more than 7,000 production inkjet engines cranking out over 500 billion pages per year. Both the number of presses and the productivity of individual presses is increasing.

What does this mean for designers? It means a printing process that was already more cost effective than digital

toner presses is narrowing the gap on cost effectiveness relative to traditional offset printing. It also means it is more and more likely that printers who reply to your request for a quote will have one or more types of inkjet presses available.

While the new generation of inkjet presses offers more possibilities for designers, at the same time it makes the world of inkjet more confusing. The options can be overwhelming. There are older inkjet press models still





running strong. Your print provider may be running one of them, and it might work perfectly for your project and even cost a little less per piece.

However, if you are designing for the best that print production can offer, you will want to see what the latest and greatest inkjet has to offer.

WHAT DO I NEED TO KNOW?

Inkjet opens up a lot of possibilities for designers, but it also imposes constraints. To design effectively and get the best pricing, you need to understand your options. This means learning about a number of aspects of technology, how to design for them, and the economic trade-offs of your design choices. For instance:

- Web-fed presses are almost always much faster than sheetfed presses. This makes them more cost efficient to run with very large production quantities, and that can result in savings for you. However, web-fed presses can only handle one paper at a time so

they may not be as cost effective for a design that uses more than one stock.

- Some sheetfed presses can handle two or even three types of media in a single job, making them very effective for books or booklets or magazine-style mailings. Other, larger format sheetfed presses only handle one at a time and target very different work.
- Different presses use different types of inks, ink colorants, and sometimes pretreatments to drive everything from substrate compatibility to print quality and overall durability. They also may affect speed and production costs.
- The different types of ink and other press features make them compatible with different types of substrates. This may give you access to papers that are thinner or thicker, with different surface finishes, or to nonpaper media for your project. Each type of surface will perform differently with each type of (compatible) inkjet press.

- Some also have a higher number of channels for ink. This may expand your options beyond CMYK, offer specialty brand colors, or introduce processing and security features such as MICR or invisible ink.
- While more colors can be great, there are also inkjet presses that have been optimized for printing crisp black text for use in books, newspapers, and notices that need fine print that is easy to read.
- With any design, there are setup processes to be considered to ensure your intentions are communicated accurately by your design file

throughout the printing process. With inkjet, there will be different settings for every type of press and substrate you use. You can consult with your print provider to get your settings right for their specific equipment.

- As inkjet moves into new and challenging markets, like graphic arts and photobooks, more care must be taken in image setup and color management.
- The increased speed and automation of many new presses means that printing companies will expect their clients to deliver files that run efficiently as well.

INKJET IS DIFFERENT FROM TRADITIONAL OFFSET

The traditional offset process only produces static images. If you want to design a series of direct mail pieces on offset, each must be a separate job with its own films or plates. This makes any variation very expensive, and personalization is impossible without a separate overprinting process.

With inkjet, every page can be dynamically created with different text, images, and colors. This allows long runs with lots of variability and short, static runs to be produced more cost effectively on inkjet than on offset presses. This also allows for capitalizing on marketing trends like personal or regional targeting.

INKJET IS DIFFERENT FROM TONER

Color toner devices overcome the versioning and personalization challenges of offset. Top toner presses also can deliver great color and image quality. They just can't do it at the speed or volume capacity that inkjet printing can offer. High-speed inkjet presses turn jobs around in a fraction of the time that toner printers do and often at a fraction of the cost. Also, if you've ever had challenges with color drifting from one run to another in a toner environment, that problem is far less likely with inkjet.

INKJET IS DIFFERENT FROM INKJET

With the many new presses making up the new generation of inkjet, there are many approaches to quality and productivity. Inkjet options are expanding more rapidly than any other print process. The range of production inkjet solutions on the market today — and promised in the near future — provide a vast array of options for the educated designer. Many design decisions will come down to the capabilities of the specific press.



Exploring What's Possible

If you take the time to deconstruct your favorite examples of print design from the last decade, even the best probably could be improved upon today. The range of possibilities for materials, finishing, and embellishments — along with intelligent personalization and online integration — expand creative opportunities for designers with up-to-date skills. At the same time, the production speeds and cost effectiveness of inkjet have lowered costs and time-to-market, bringing creative innovation and efficiency together. Creative problem solving and visualization of innovative production techniques can be a force multiplier for design effectiveness.

Inkjet opens up opportunities not possible with static offset presses nor cost effective on other types of digital printing equipment. It is a strong presence where:

- Versioning is required by region, language, distribution channel, or some other factor that prevents a project from being produced as a single, high-volume job.
- Personalization of the material is needed.
- Printing in smaller quantities helps customers manage cash flow, control postage or freight costs, or reduce their environmental footprint.

While electrophotographic (toner) presses also can fulfill these needs, most inkjet presses can produce output at a lower price and with faster turnarounds.

As a designer familiar with the capabilities of production inkjet presses, you will have more creative options available to you and more opportunities to solve problems and improve results through design and cost-effective printing. So, let's look at some of the opportunities that open up when using high-speed inkjet devices to produce direct mail, customer communications such as bills and statements, commercial print, and books.

WHAT'S HAPPENING WITH DIRECT MAIL?

Direct mail marketing can be a great outlet for a designer's creative energy and one of the biggest tests of problem solving. Self-mailers and postcards can drive response with interest-grabbing folds, shapes, windows, and finishes. But designs that cannot be machine processed should be avoided. Understanding and staying current with constantly

changing mail automation standards is key. As postal rates rise, direct mail users may try to maintain budgets by mailing fewer pieces, reducing the weight of mailed pieces, and reducing the cost per printed page. Inkjet can help through its ability to version and personalize as well as its lower production cost relative to digital toner and small-batch offset.

USPS costs may be going up, but there also are periodic discounts and incentives for those who invest in personalization, new cross-channel technology (like augmented reality), and even post-coating capabilities. Inkjet variability and precision provides a cost-effective base to take advantage of these promotions.



DIRECT MAIL THE OLD WAY

A significant volume of direct mail still uses offset-printed shells as a base, with toner equipment used to add variable content. However, much of this volume is being displaced by inkjet, either substituting the toner overprinting with lower cost monochrome inkjet or producing the whole piece on a full-color inkjet press.

DIRECT MAIL THE INKJET WAY

With full-color inkjet, designers can create variable design frameworks that tailor color, messages, imagery, and even language to the intended recipient. While the cost per piece may be marginally higher than traditional offset printing for high-volume campaigns, this is usually a worthy trade-off due to the lift in response rates gained from added color, relevant personalization, and the improved speed-to-market for time-sensitive material such as credit offers, investment rates, and retail sales. In addition, the focus on data management tends to improve targeting and reduce mail-piece volume. Since postage is usually a significantly higher percentage of the overall cost than print, a well-managed list pays dividends. Today, direct mail design is about helping marketers mail smarter — and full-color production inkjet is a great way to do that.

While the benefits of cost-effective personalization is one of the clearest reasons to design for inkjet, many direct marketers send static jobs to inkjet presses based on the order quantity. As the speed and web widths of inkjet printers increase, the size of the break-even order (relative to traditional presses) also moves up. Experts estimate that order quantities of fewer than 5,000 letter-sized images are more efficient on inkjet than traditional presses. Order quantities as high as 10,000 may be cost equivalent on inkjet presses and traditional presses — depending on the specific equipment, size of the printed piece, and pricing strategy of the printing organization — even before considering personalization or versioning benefits.

WHAT'S HAPPENING WITH CUSTOMER COMMUNICATIONS?

As a market segment, customer communications is referred to in the trade as transactional printing. It includes important documents — like statements, bills, policies, customer onboarding, and notices — and is a major segment of the printing business.

While many corporate mailers would like to transition their customer communications from print to online due to postal cost increases, many of their customers don't feel the same way. With conversion of customers



to online channels stalled, large corporate mailers are revisiting their print communications to improve customer service and drive down cost through production efficiencies, reduced call center costs, and process-friendly design.

By using full-color inkjet, the design frameworks for customer communications can take full advantage of sophisticated messaging tools and “big data” for increased personalization and customer engagement. And designers can help businesses use statements as a customer messaging platform that supports cross selling and upselling.

WHAT'S HAPPENING WITH COMMERCIAL PRINT?

It took longer for inkjet presses to deliver the quality needed for high-color, high-coverage jobs like marketing collateral, magazines, catalogs, and other work known as commercial print. But the new generation of inkjet presses is unquestionably delivering the color quality required, with added benefits only a digital press can provide.

SO WHAT MAKES INKJET A GOOD FIT FOR COMMERCIAL PRINT PROJECTS?

- New-generation inkjet presses have enhanced inks or have added additional ink stations to expand gamut and color-matching capabilities.
- The production quality of inkjet is continuously improving, and some inkjet presses rival offset presses in terms of color gamut and image quality.
- Offset-coated papers are now being utilized on many inkjet presses with the use of primers and/or specially formulated inks, minimizing substrate compatibility issues relative to offset.
- Many inkjet inks and fluids are compatible with similar post-coatings and varnishes available for offset.
- Individual commercial print order sizes are falling, making inkjet economical for more work. (Makeready times for traditional presses make small order sizes unprofitable.)
- Most important, personalization and versioning have become more common and desirable in commercial work and can't be accomplished with a static offset press without the support of a digital process, like toner or inkjet.

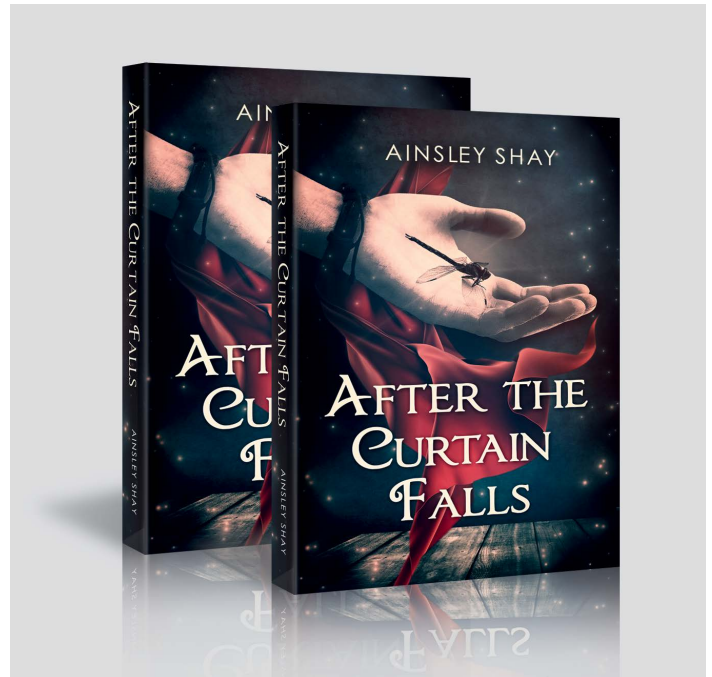
INKJET ECONOMICS FOR COMMERCIAL PRINT

In the old days, print buyers would order in large quantities to get better per-unit costs, perhaps ordering the collateral needed for a full year (or more). But now, most understand the full impact of obsolescence costs due to branding or program changes, storage expenses, shipping costs, and time lags to deliver from a warehouse to multiple locations. From an economic and risk management perspective, inkjet is often the better platform choice.

WHAT'S HAPPENING WITH BOOK PRINTING?

There are many types of books, from graphic novels and workbooks to paperback literature, hardcover textbooks, and coffee-table art books. It's a diverse market with a wide range of sizes, shapes, bindings, and tolerances for print quality. A unifying factor in this market is the dramatic shift in the publishing supply chain. Of the print markets discussed so far, books may have experienced the greatest level of change.

Catalysts for this change were the introduction of e-readers, the rise of online purchasing, and a slow realization by publishers that their whole publishing supply chain was inefficient. To determine economical order quantities for each title that weigh the benefits of lower per-unit costs against the potential for long-term storage and distribution costs, publishers now carefully examine every book release in terms of the potential buying curve for the book along with distribution locations. This is very similar to the print buyer considerations for marketing collateral discussed earlier. Due to the prevalence of online book buying, many book orders are "jobs of one," taking the whole economical



order quantity discussion off the table. It's challenging to be economical at an order quantity of one, but inkjet makes it work.

Because "onesie-twosie" order quantities in the book market are becoming the norm, there also is increasing use of personalization and versioning. Personalization can be as nearly invisible as individual inventory codes printed on each book to prevent fraud and as overt as changing the name of the main character in a children's book to match the child who will read it. Versioning can be used to identify or promote the distribution channel, to translate books into different languages, or to support readers who need larger fonts. However, to be cost effective, each small order has to be incredibly efficient.

Inkjet is

S

Speedy

M

Measurable

A

Achievable

R

Relevant

T

Timely



STANDARDS FOR EFFICIENCY

Each small run or “job of one” must function as a seamless part of a much larger batch to be cost effective. Managing these small, customized batches within larger print runs needs to be coordinated, processed, and distributed differently than traditional static book production. Inkjet is the platform that offers the necessary versioning, flexibility, scalability, and production quality. But even on inkjet, tightly integrated production workflow is required to keep small-run or versioning book printing profitable. This has led publishers and print providers to limit production to a small range of standard sizes.

While standardization in size and paper types is important for cost management and production efficiency, there is still vastly more flexibility when printing books on inkjet than on traditional presses. The leaps and bounds in production quality that the newest generation of inkjet has taken means that even photobooks are not out of reach. Want to highlight your graphic design portfolio? Create your own photobook and produce it on demand for clients. You can even link it to content on your multimedia projects that is relevant to a particular client using personalized links. That’s just a taste of the power of inkjet.

BEFORE SELECTING YOUR MEDIA, ASK YOUR PRINT PROVIDER:

- What are your choices for uncoated, inkjet treated, inkjet coated, or offset coated?
- Are they qualified and compatible with the inkjet press you will be using?
- Is pretreatment applied during print production?

Expanding Your Choices

Some of the greatest opportunities for designers are found in the amazing array of inkjet-compatible substrate options now on the market. The media you select for your project provides the foundation for everything you do in print design. Not all substrates, or even all papers, are compatible with all inkjet printing processes and even if they are compatible, there are many factors that can impact the final result.

More often than not, paper price is the first consideration used to limit your range of choices. However, choosing the lowest cost option before reviewing the impact on print expectations can cause unintended consequences. It is always best to request printed samples from your print provider and discuss print and color expectations with your paper buyer before finalizing your design. The architect and the builder both have a role to play in laying the foundation of your design project.

CONSIDERING COMPATIBILITY

At the highest level, there are papers that are formulated specifically for inkjet and offset grade, and papers that are not. While inkjet development has moved away from requiring special paper, some aqueous inkjet devices still require their use, and some simply perform better on papers formulated for inkjet. The new generation of inkjet presses supports printing on a broader range of media, including uncoated and even many coated offset-grade stocks. But it is always important to understand the type of inkjet system your print provider uses before selecting your paper.

UNCOATED (OFFSET) PAPER

As you might guess, uncoated means there is no surface treatment applied to the paper during manufacturing. Uncoated paper is more absorbent than the other paper types. Some inkjet processes apply a precoating or primer to the sheet prior to inkjetting to increase the print and color quality on offset grades. The chemistry of pretreatment fluids slows the migration of aqueous ink colorant into the sheet, increasing color fidelity.

Uncoated offset stocks are most commonly used in the transactional and book printing markets where low paper costs are required but high print quality and color are not.

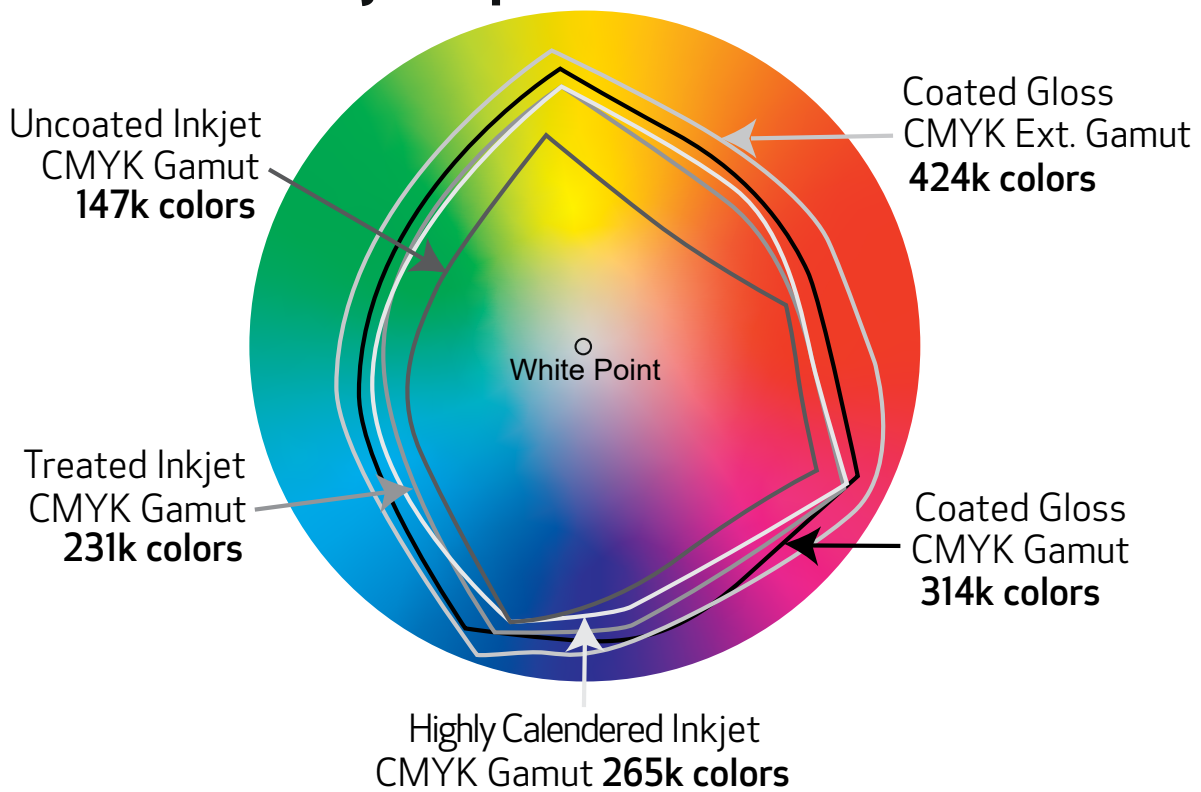
OFFSET COATED PAPER

Offset coated papers are the polar opposite of uncoated papers in terms of porosity and their challenges to the inkjet process. On offset coated stocks, a sealed, water-resistant surface is created by applying multiple layers of coating after the sheet is completely formed and off the paper machine. The resulting sheet has very low porosity and therefore low absorption.

Your paper choices should take into consideration the quality expectations and finishing requirements particular to the market for which you are designing. When choosing paper, it is good to understand relevant market expectations, such as:

- Print quality
- Color fidelity
- Color matching requirements
- Finish and feel
- Finishing requirements
- Mailing requirements
- Paper cost

Inkjet Reproducible Gamut



Because the majority of printed pages are still produced on offset presses, offset papers are more widely used and available. That makes the ability to use them on inkjet presses very valuable. Several options have been introduced to enable aqueous inkjet devices to use offset coated stocks: priming solutions, spot coating, and high-density pigment inks. (UV inkjet was already compatible with offset papers.)

Offset coated papers, when used under the right conditions, can provide direct mail and commercial markets a paper option with high print quality, color fidelity, and color matching that is comparable to the quality of inkjet coated papers at a lower cost.

INKJET TREATED

Inkjet treated papers may look like uncoated paper to the naked eye but are specially formulated for aqueous ink. They have surface treatments or coatings that allows more colorant to stay near the paper surface. The paper is still able to absorb liquid, but the porosity is reduced enough that the colorant does not absorb along with the liquid. So inkjet presses may deliver a better result in terms of clarity and color gamut.

Treated stocks cost more than their uncoated offset equivalent and are generally used when an uncoated sheet cannot deliver the necessary color fidelity and print quality requirements. While uncoated may be fine for letter mail and customer communications with black only or very limited color, other projects will benefit from inkjet treated stocks. Such markets include full-color direct mail; educational books; and any customer communications with an emphasis on colored charts, graphics, logos, or brand colors.

INKJET COATED

Inkjet coated paper is available in a variety of surface finishes that can be very shiny (high gloss) or have a low shine (matte), but all are formulated for inkjet inks. Shiny inkjet papers sometimes look like traditional offset

BEFORE YOU DESIGN,
REQUEST PRINTED SAMPLES
USING EACH INKJET-
QUALIFIED PAPER THAT YOUR
PROVIDER HAS AVAILABLE.

coated paper grades, but they are very different. The coating of all inkjet formulated papers is designed for the fast drying of aqueous inks. Fast drying surfaces restrict the amount of ink that can be absorbed by the paper, keeping more ink colorant on the surface. Inkjet coated stocks have a very fast drying surface that results in a broader color gamut than either uncoated or inkjet treated papers.

But this type of paper can be more expensive. Due to the additional expense, inkjet coated papers are used when both the highest print quality and color fidelity are required (and other compatibility enabled options such as pretreatment are not available). Inkjet coated papers are most often used for high-end direct mail and commercial marketing collateral.

HIGHLY CALENDERED INKJET TREATED

There is also a subcategory within the inkjet treated family of papers called highly calendered inkjet treated paper. Technically, it is an inkjet treated stock, but it behaves much like an inkjet coated stock. The calendaring process creates a highly compressed paper with a smooth matte or silk surface.

As a treated sheet, it has the formulation to keep the pigment higher on the surface, plus a slick, smooth surface with reduced porosity. Markets such as high-end color books, direct mail, and some commercial printing will turn to this paper option to meet demanding print quality needs at a lower cost than inkjet coated.

BE READY TO EXPERIMENT

For each of the paper types discussed, there are trade-offs between a better surface, larger color gamut, ability to work across devices, and cost. There is also the variable of using a lower cost paper plus the cost of additional fluid to enable the process. Understanding these trade-offs will help you communicate more effectively with your print buyer or printing partner when choosing one paper over the other.



Don't be "penny-wise and # foolish." Your paper choice is certain to affect your creative design and print expectations. If any portion of your project will be printed using an inkjet press, evaluate your paper options before the creative process begins, always request a printed reference chart, and consider the impact of paper characteristics throughout the design process. Then be ready to experiment and get creative!

Conclusion

EMBRACING THE POTENTIAL

Right now, there are few print opportunities out of reach for inkjet and the designers who understand its capabilities. Opportunities exist to bring more design impact to outdated customer communications or direct mail applications and to deliver best-of-the-best designs for marketing communications and graphic arts projects. This brief summation of content from the *Designer's Guide to a New Generation of Inkjet* is intended to help you understand and embrace all this creative potential.

Because inkjet can't deliver without you . . . the designer.

Strengthen relationships and improve customer satisfaction by sharing a copy of the *Designer's Guide to a New Generation of Inkjet*. Inspire them to unlock the potential of inkjet and help them create better projects from concept to file preparation.

GIVE THE GIFT OF KNOWLEDGE TO YOUR PRINT CUSTOMERS.

<https://learn.thinkforum.com/designers-guide-to-a-new-generation-of-inkjet>



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Canon recommends forward-thinking strategies to help achieve the highest levels of information management efficiency for your unique business needs. Using superior technology and innovative services, we then design, implement, and track solutions that help improve information flow throughout your organization while considering the environment, helping to result in greater productivity and reduced costs.

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