CRAWFORD TECHNOLOGIES

WHITE PAPER

Migrating to Inkjet

What You Need to Know

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Making the switch to full color continuous inkjet from a monochrome cut sheet toner operation can be a big deal. There are great benefits, but the transition involves more than just a hardware swap. Understanding the impact inkjet has on a traditional workflow and having the right tools to enable a smooth migration are critical success factors.

Many transactional print and mail operations are considering shifting from the cut sheet toner printing environments they have relied upon for years to a continuous inkjet solution. Though inkjet has been around for a long time, new developments are making the technology more attractive than ever.

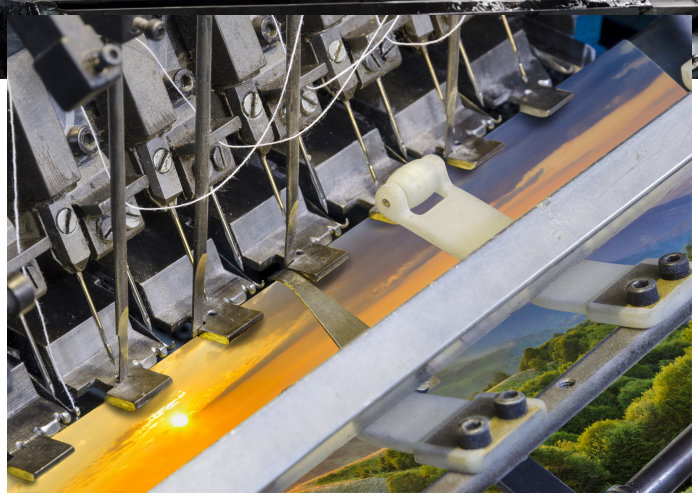
The first generations of production inkjet machines could not produce color text and images that met corporate standards for consistency and clarity. However, print quality has improved immensely since those early days. Substrate choices have grown as well, giving organizations the ability to print a variety of applications on the same devices. Expanded paper choices means they can add new applications, expand their markets, and optimize the capacity of their new inkjet presses. And lately, press manufacturers have introduced economically-priced equipment that make inkjet a reasonable option for organizations that in the past couldn't justify investing in machines designed only for very high production levels.

Best of all, the premium costs once associated with color printing have virtually vanished. The cost of adding color graphics, logos, and photos to documents traditionally printed in black toner is no longer the barrier it once was.

There are many benefits in making a switch to continuous color inkjet, but the environment is not the same as a traditional cut sheet toner operation. It pays to learn about those differences early in the evaluation process.

Not Exactly Plug and Play

Migrating to color inkjet can mean big changes for a shop whose transactional document experience is limited to cut sheet toner



devices. It isn't just a matter of unplugging one device and connecting another. There are plenty of issues to consider when making a decision about switching to new printing technologies.

Simply replicating cut sheet monochrome workflows on roll-fed color inkjet presses negates many of the benefits most shops are seeking when they make an investment in inkjet technology. To realize productivity improvements, lower their production costs, or add new applications requires that organizations make adjustments in how they design, assemble, and process their work. Given the disparity of document-generating applications, making these adjustments in the source systems is usually not an option.

Post-Composition Modification the Most Direct Route

The work processed by in-plant printing operations normally comes from several unconnected systems that generate documents. There may be billing applications, customer correspondence software, regulatory notice programs, and industry-specific applications - all generating documents destined for printing and mailing by the internal operation.

Making the changes required to take full advantage of a roll-fed white paper print factory includes modifications such as combining small jobs, reformatting print to accommodate window placements in a common envelope, adding color, or changing to print languages compatible with inkjet presses. These are complicated and time-consuming tasks. And most organizations lack the resources to make the necessary modifications to source code.

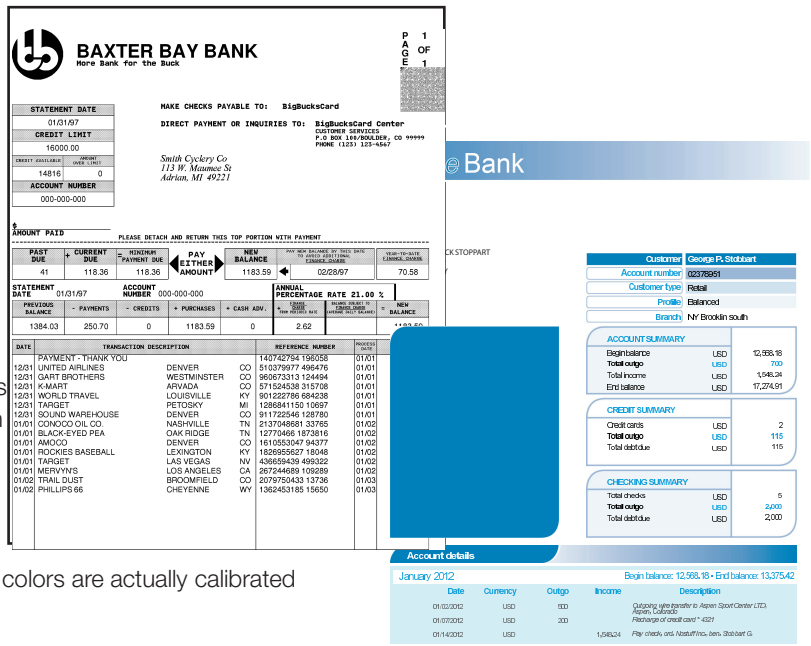
Print service providers face the same challenges, made even more difficult because they typically receive pre-composed pages or data already compiled from many sources. They do not have access to their customer's document composition environment or to the applications generating data that created the documents they currently print.

> Organizations are turning to document re-engineering and transform tools to make the transition to inkjet possible. There is simply no other way. Even if companies had adequate technical staff and knowledge of systems (some of which may be decades old), it would take years of development time to change the source programs. Post-composition modification is the only reasonable approach.

Adding Color

Many of the adjustments printing companies must make involve the addition of color to the workflow. Printing bills and statements with black toner on pre-printed paper stock requires no experience with the science and artistry necessary to produce full-color documents in an inkjet environment. The terms “color management” and “prepress” may not have been in the vocabulary of the transactional print operation. Color matching is an irrelevant skill when all the print is rendered in the same black toner.

Even companies with experience in offset printing will find that adjusting color for inkjet presses is different from their familiar procedures. With offset, operators can make color adjustments directly on the press. With inkjet, all the calibrations and settings are made to the data before it ever gets to the print engine.



Organizations lacking in-house resources familiar with color printing techniques should consider acquiring outside talent to help them with this new aspect of document composition and production.

The Importance of Paper

One factor often overlooked is the impact paper has on color text and graphics. Unlike laser toner, which sits on top of the paper, inkjet ink is absorbed. Paper properties, coatings, and shades will change the appearance of color text and graphics. In fact, the paper is essentially a fifth color added to cyan, magenta, yellow, and black. With inkjet production, colors are actually calibrated separately for different papers.

To realize the operational benefits of white paper workflows, service providers and in-plants will want to use a common paper stock for as many jobs as possible. They may have to explain to customers why colors appearing on their documents are slightly different from expectations. Most customers will be comfortable with small color differences on their transactional documents – particularly if they will enjoy faster turnaround time, greater personalization, or lower postage costs.

The Effect of Ink

The amount of ink used on each page can also be an issue. Color experts must optimize graphics to reproduce them efficiently and accurately. Artwork designed for the computer screen, for example, may require more ink than necessary to print the image on high speed inkjet presses. Something as simple as an un-optimized logo can cause quality problems or a spike in costs when the image appears on every page.

Manufacturers may configure inkjet presses to use pigment or dye-based inks. They will each produce different colors on different papers. Not only will durability of the print vary depending on the ink, but some papers are engineered for dye, and others for pigment. If color integrity

is critical, it is wise to test on different combinations of papers, inks and presses to find the solution that reproduces corporate colors most accurately before committing to a device purchase.

Consider Document Design

Designers may have to alter some document elements that work perfectly fine on laser printers. Because paper absorbs inkjet ink, some printed items may not appear as sharp when printed on production inkjet presses. This can be most noticeable with small print or in reverse print areas. Small adjustments in document design can improve readability.

Other items, such as large areas of solid color, can show flaws that occasionally happen as jets spray ink on the page. Modifying the background can make these flaws less noticeable. Document designers shouldn't blindly recreate pre-printed shells in digital form. Furthermore, ink is an important component of document production cost. The more ink used per page, the greater the cost. If printing the background color does not add value to the document consider changing to an outline box or spot color to decrease ink consumption.

There is another reason to avoid excessive ink application. Inkjet ink is mostly water - which contacts the paper and is quickly dried. The application of excess water to pages with heavy ink coverage can cause smearing or ink transfer. It might even be necessary to slow the press down to provide more drying time. Edge curl or stacking problems can impact finishing operations when the addition and removal of water causes paper to change shape.

> Many companies find that inkjet allows them to replace pre-printed inserts with variable graphics and text printed in-line, taking advantage of existing white space on documents. The lower cost of inkjet the elimination of job segmentation because of inserter set-ups makes this strategy attractive from an operations perspective. Print service providers may even create a new revenue stream by printing higher-value targeted promotional content on the documents instead of using generic, pre-printed inserts. Document re-engineering software can manage the white space and insert variable text and graphics into the printed documents.

The Benefits of Comingling Jobs

Combining jobs has dual benefits for document operations. Merging print from several small jobs into a single print stream improves throughput in printing and finishing operations. Fewer stops and starts to change materials, modify machine settings, or fill out job-logging

paperwork means the machines can process more work in a shift. An efficient white paper workflow will result in excess production capacity, allowing an organization to add more work without purchasing new equipment or hiring more staff.

Postal savings are also enabled by combining jobs. Rather than qualifying jobs individually for postal presort discounts, combined jobs can turn mail formerly sent at 3-digit rates, for example, into 5-digit qualified mail. Postage costs can decrease – sometimes significantly.

Inserting documents from different customers and applications into window envelopes requires that all the addresses print in the same place. Most operations use two-window envelopes to allow them to insert the documents created by combined jobs without interruption. Moving address blocks into a fixed position can be done automatically by document re-engineering software so that it is not necessary to modify legacy program code in order to reap the benefits of creating larger print and inserting jobs.

Naturally, software for tracking individual documents and mail pieces is essential for shops that combine jobs. Software must identify each document as it passes through steps in the workflow. Document re-engineering software re-positions sending and return addresses into fixed locations as well as generating barcodes used for finishing equipment control, tracking, and postal processing. Automated Document Factory (ADF) software tracks the documents.

Finishing Equipment

Most organizations generating transactional documents finish the pieces by folding and inserting pages into envelopes. Window envelopes are the most common configuration. Some shops use closed-face envelopes and add the address information in-line with inkjet heads mounted on the inserting equipment. Some document operations have integrated wrapping or envelope-making equipment in their production workflows.

Regardless of the individual methods, companies must ensure that their finishing equipment and procedures will be compatible with the new documents coming from inkjet presses. Seeking advice from their finishing equipment vendors before committing to purchase a particular inkjet press is a smart move.

Jams caused by slippery paper will kill productivity and increase the number of reprints. Read errors that occur when cameras or barcode scanners fail to interpret printed data will also cause the finishing equipment to stop. Smudging from rollers used to transport material through the finishing equipment can be an issue. Most of the inkjet paper typically used for transactional documents should run on existing inserting equipment without modification, but it is highly advisable to test.

Document operations must decide about in-line finishing or near-line. The advantage of in-line is, of course, productivity. Blank paper goes into the line on one end and finished mail comes out the other. However, there is also a risk. If one of the many moving parts of the finishing components fails, the entire production stops.

Separate printing and finishing lines is common for print service providers and other organizations producing a variety of different documents, but this configuration can also have drawbacks. Waiting to print an entire roll before sending output to finishing might be undesirable in some circumstances.

Organizations running high volumes of the same applications every day generally opt for an in-line finishing configuration. For everyone else, some version of near-line finishing is the popular solution.

Another finishing decision document operations must address concerns the input modules for inserting equipment. If the shop was previously using cut-sheet printers, all their inserters will have sheet feeders. Replacing the sheet feeders with roll unwinders and cutters can be expensive. Physical space can also be an issue. Printing two-up adds complexity and requires the addition of slitting and collating capabilities.

The relative speed of the finishing equipment compared to the inkjet presses is a factor too. If a shop requires multiple finishing devices to keep up with each inkjet press then a roll-to-cut sheet configuration for the inkjet line probably makes the most sense.

Perforation and hole punching are finishing operations sometimes forgotten when transactional document printers switch from cut sheet to roll-fed environments. Paper vendors add these features to cut sheet paper stock when they manufacture it. This isn't the case for roll stock. Operations may find it necessary to add dynamic perforation or other modules to their inkjet production finishing line to create the paper attributes their applications demand.

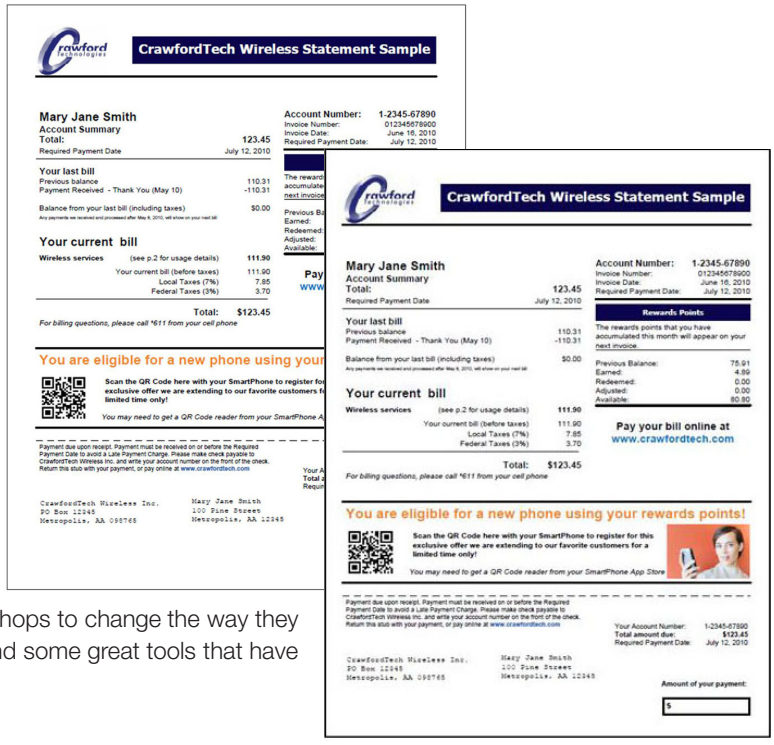
The finishing operation is the last chance to catch errors in documents before they go into the mail. Vision systems connected to piece-tracking software and databases allow an organization to compare physical results to anticipated output. If the piece-tracking system detects missing pages, extra pages, or mismatched components, it can divert the material or stop the equipment to allow for manual inspections. Automated Document Factory (ADF) systems handle these critical steps in document production and distribution workflows.

Color Inkjet Benefits for Transactional Document Printers

The traditional way to create transactional documents requires at least two steps. Forms are printed on offset presses where color branding and other elements are added. Then the forms are delivered to the transactional document print center where the variable data is over-printed using black toner.

Switching to color inkjet eliminates one of those steps. Printing the form elements and the variable data simultaneously eliminates waste due to obsolescence, delays caused when supplies are not adequately restocked, and errors caused by printing on the wrong forms. Printing companies can react immediately to customer requests to change their forms. They can offer their customers a quicker time to market.

Post-composition document re-engineering software allows printing companies to add personalized color promotional messages to transactional documents – without requiring customers to make changes to their software. The documents become more valuable for relaying important account information (and reducing calls to customer service), upselling, cross-selling, and driving customers to additional content through techniques such as QR codes and personalized URL's. By adding value to the documents, bill printing companies advance their customer relationships from vendor to strategic partner.

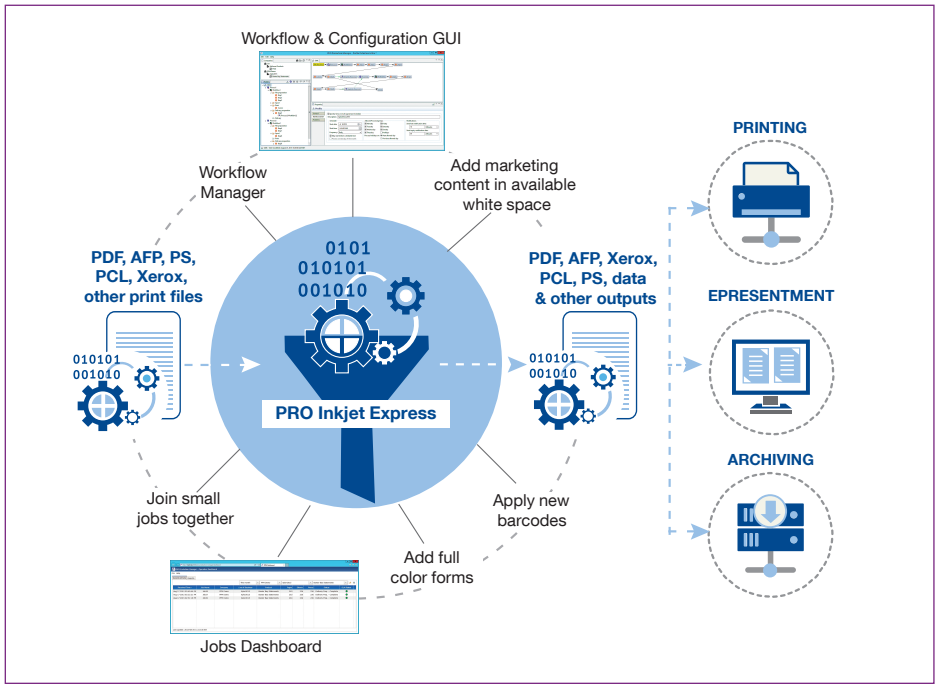


The transition isn't simple though. Taking advantage of all the benefits color inkjet has to offer requires that cut sheet toner shops to change the way they process work. Fortunately, there are knowledgeable people and some great tools that have been built to help companies make the switch.

One of those tools is Pro Inkjet Express from Crawford Technologies.

PRO Inkjet Express is a set of tools specially designed to help organizations implement and manage the production workflows necessary in a color inkjet environment. Components of this software allow companies to migrate without changing source code or recomposing existing print streams.

The integrated functionality of PRO Inkjet Express allows organizations to make the transition from cut sheet toner to continuous inkjet thanks to software and support tuned for this specific task. Adding PRO Inkjet Express allows printing organizations to confidently make the switch to continuous color inkjet knowing they have all the tools and support they will need to move volume to the new equipment quickly and confidently.



CrawfordTech Solutions

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With over 1,800 customers on six continents, CrawfordTech solutions and know-how enable the largest banks, insurers, healthcare providers, utilities and print services companies to use their existing technologies, documents and data in new ways. We help them navigate the challenges in leveraging legacy applications in the platforms and applications of the future.

CrawfordTech's products, services and domain expertise reside at the nexus of content, data, and output management and are essential components of our customers' digital transformation, output management and document accessibility strategies.