The Business-Critical Nature of Automated Document Inspection Technology for High-Speed Inkjet Operations

Executive Summary:

- Organizations in Finance, Insurance, Healthcare, Government and Utilities are all tasked with delivering on-schedule, accurate, and data-centric printed communications to customers and/or associates.
- Commercial high-speed inkjet printing technology undeniably offers next-generation capabilities for enhanced communications, revenue generation opportunities and overall increased competitiveness.
- With the new capabilities afforded by high-speed inkjet – namely speed, color and job variability– also come increased risks to the quality and data integrity of output.
- Combined, these elements require quality and data integrity assurance beyond what any manual inspection regimen can deliver, especially as jobs continue to grow increasingly complex and incorporate sensitive personal information.
- In order to achieve the highest levels of customer service, efficiency, security and market competitiveness, it is essential that document services operations view real-time automated document inspection technology as a business-critical investment.

Document Services Evolution.

The function of a document services organization – whether they be a corporate in-plant team, or a service bureau – is becoming a function far more integrated with the sales and marketing disciplines of a business. With the growth of TransPromo communications strategies, one-to-one communications vehicles that have long been a direct marketer's dream are being brought to life on documents such as credit card statements, explanation of benefits (EOBs), negotiable documents and investment summaries. All of these documents have the advantage of being customer-critical in that they contain information the customer must review. The ability now exists to grow customer relationships by providing more relevant information and offering additional meaningful products and services – key to this is the fact that the technology to make this possible is here today - getting faster, and more advanced with each generation of inkjet printing system and Automated Document Factory (ADF) platform.

A critical asset to ensuring the productivity, efficiency and integrity of today's high-speed data driven print operation is Automated Document Inspection Technology. This provides the loop-closing capability to ensure all of the work to colorize and personalize documents doesn't end with scrapped jobs, wasted resources, missed SLAs - or worse yet - a lost customer.

In this white paper, we'll discuss why automated document inspection technology is an essential component to the IT infrastructure of a modernized high-volume transactional output operation.

Addressing the Challenges of High-Speed Inkjet.

The combination of speed and increasing document composition complexity - namely color and variable data – create the foundation for a more nimble, efficient and value-driven print operation. The ability to print roll-to-roll and operate a "white paper shop" afford a business far greater print job flexibility and reduced overhead through the elimination of form-stock. However, any one of those benefits can be the "Achilles' heel" of an operation's quality, security and customer service if they are not properly monitored and managed in real-time.

- ### Speed

  One of the greatest benefits of high-speed inkjet is also one of the greatest concerns to print managers – the sheer speed of the systems. At speeds now reaching upwards of 650 feet-per-minute, human intervention upon detection of an error becomes highly ineffective, resulting in unnecessary waste due to the time it takes an operator to react, or corrupted documents going undetected and entering into the mailing process.

  Automated real-time vision inspection systems have the ability to examine every printed page at speeds up to 1000 feet-per-minute. Additionally, through advanced printer stop control functions and inspection parameter flexibility, users can determine exactly what attributes of a document must be inspected

When is the right time to discover an error?

- A leading service bureau printed a 100,000-piece credit card statement job
- Finished materials were then stored for 3-days before being delivered for insertion and mailing
- A spot check prior to insertion showed that random documents had been printed out of alignment on the form, causing text to run off the page
- The entire 100,000 piece job had to be scrapped and immediately reprinted in order to meet the SLA

VIDEK

Jets On, Jets Off

Inkjets have the potential to cause document errors in 2 main ways:

1. Jets that stick on cause streaking, and can create a continuous streak for page after page

2. Jets that become clogged and can cause a color to drop out, or a complete void in page content.

In either case, the document has been corrupted. The magnitude of these errors can vary from being extremely intermittent and only affecting a small number of pages, to damaging an entire print job.

Real-time visibility to the fact that there is a jet-related problem becomes critical to mitigating the defect. The latest automated color inspection technology provides that capability – and enables inspecting the entire width of a document for streaks in Cyan, Magenta, Yellow and Black. In addition, testing to ensure all jets are functioning can be conducted throughout the job to assure there are no voids or drop-outs.

Jet-able MICR

Another key consideration is the utilization of jet-able MICR ink. Critical to any application producing checks or other negotiable documents, the ability to jet MICR characters directly through a 5th inkjet head eliminates the need for external specialty equipment. However, the components that make up jet-able MICR ink to provide its magnetic property also create a liquid consistency that increases the likeliness of clogging. The potential result is incorrectly formed or missing characters, which will prevent processing readability, and can in-turn lead to fines or processing delays.

Today, there is no viable solution for real-time, in-line signal strength verification of MICR print – but that does not mean that organizations lack the ability better manage MICR integrity. Vision inspection technology has the ability analyze the optical characteristics of each MICR character on every document. This is a powerful tool to ensure readability, because proper character structure and placement are essential to readability. This capability, combined with spot-checking for magnetic signal strength using specialized equipment, creates an environment for superior management of MICR integrity.

Color

Color adds a new dimension to printed communications vehicles. It also presents new challenges for quality control – especially when brand integrity is critical. Poor color quality has the ability to detract from the effectiveness of your document just as much, and likely more so, than high-quality, accurate color usage enhances it. Factors including paper stock, environmental conditions and functioning of the printer itself can all cause variability in color documents. Left to the operator's eye, color quality assessment is a subjective measurement that can vary widely from one inspector to the next, with no true parameters for quality in-place.

Registration of colors is also an aspect that must be monitored.
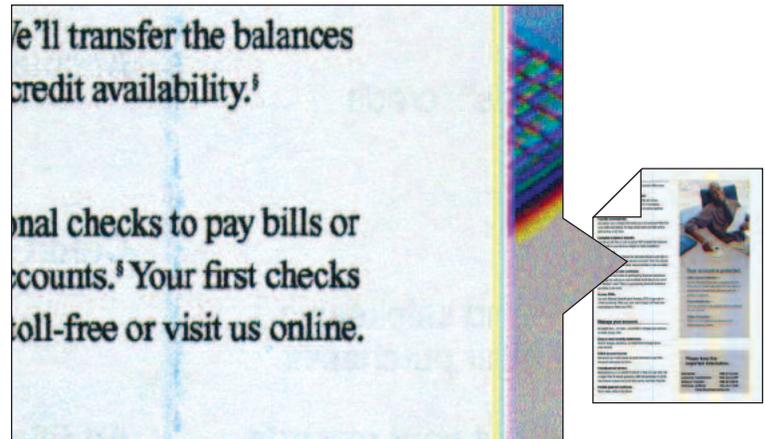
Inkjets stuck on can result in a continuous streak throughout a document or an entire print job. Advanced full-page color document inspection technology has the ability to identify streaking anywhere on a document in real-time.

As print speeds increase, so too does the liability for color planes moving out of register. The result being incorrect colors, as well as image and text fuzziness that can lead to visually displeasing or even illegible documents.

Both of these issues can be mitigated as sources of waste and customer dissatisfaction through the implementation of cutting edge color quality assurance tools. With an advanced color matching capability, brand-essential colors such as those found in a corporate logo, can be trained into the system and subsequently monitored for the entire print job using automated analysis of each document. Parameters of acceptability that are fully defined by the user, enable operators to set a warning or automatic printer stoppage if a specified color goes out of acceptable range.

Similarly, color registration can be assessed by inspecting a test element such as a crosshair. The vision system's ability to isolate CMYK colors enables measurement of each color plane. If a color moves out of register, the vision system is able to identify the problem as well as which color(s) have moved.

Mis-alignment of colors can drastically corrupt brand assets and document readability.

Data to Enhance Operations

By applying real-time vision inspection, it enables the digital extraction of hard-copy printed data as well as document printing metrics, and subsequently converting that into valuable information for the digital workflow. Inspection systems truly designed for today's and tomorrow's data-driven environments will offer the ability to generate local (system-level) reporting, as well as support interoperability with enterprise ADF platforms for broader capitalization on intelligence across print and mail.

Examples of applications where data can be "unlocked" from printed documents using vision inspection include the following:

■ Job auditing & accountability

As an example, check numbers and amounts can be collected and placed into a report, comparing the original print file data to actual production output results. This enables assuring the job was completed with no duplications or missing checks. Additionally, totals for all check amounts can be tallied to ensure the total job value matches the original print file.
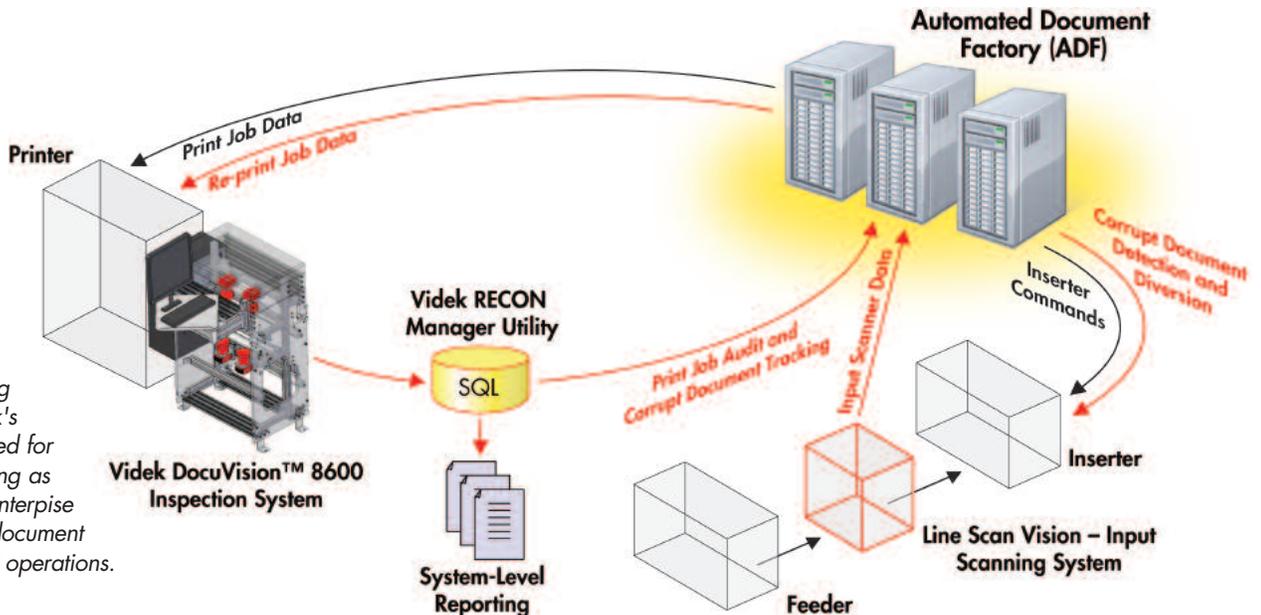
■ Proof-of-work

Data collected and used for internal auditing can also be assembled into a report, or made available in real-time via a web portal to customers. Another possibility is the ability to capture digital document images, which can then be archived and indexed for later use.

■ ADF Interoperability and Downstream Process Control

Vision inspection has the ability to act as an important layer of data commonality, and when combined with an enterprise ADF system, helps standardize connectivity to critical print information across potentially diverse printer platforms in an operation. In addition, data collected from print operations can be used to provide piece-level traceability through the mail process. This capability can be leveraged to automate re-print processes, helping to ensure mail piece integrity.

An operational insurance policy.

Based on an average cost for today's high-speed inkjet printing systems, automated document inspection typically equates to less than a 6% addition over the initial print line investment. In some cases, prevention of a single data breach or missed SLA will pay for the system.

Benefits to the Bottom Line Through Efficiency Creation

Investment in inkjet technology is commonly driven in-part by a desire to improve efficiency. Vision inspection is tied directly to this strategy, and is integral to assuring efficiencies are maximized.

Reduced Waste

- Real-time inspection leads to immediate error detection and responsive action
- Printers can be stopped at the time of detection, eliminating the expenditure of further paper, ink and production time

Increased Productivity & Throughput

- Meeting service level agreements (SLAs) by assuring production integrity up-front
- Minimize or eliminate re-work
- Helping maximize the value of operational time
- Post-processing efficiency assurance by ensuring the quality of barcodes

Reduced Personnel Requirements

- Labor-intensive manual quality inspection can be reduced or eliminated – enabling workers to be re-deployed to more beneficial tasks

In this potential networking scenario, data from Videk's DocuVision platform is used for local (system-level) reporting as well as injected into the enterpise ADF system, connecting document output information to mail operations.

Choosing the Best Partner – A Key to Success

Just as critical as your choice to implement automated document inspection technology, so too is the partner you choose to assist you in the planning, deployment and on-going support of your program. Videk provides a collaborative approach to helping customers define and solve their document integrity needs. We call it The Videk Difference, and it's based on a fundamental commitment to ensuring an unsurpassed customer experience and assured success:

- Focus on customers with enterprise-class document integrity requirements

- Dedication to process for pre-deployment solution definition – setting clear goals and expectations that align with customer needs

- Industry-leading core technology offering – hardware and software – combined with unmatched implementation experience and expertise

- Tools to enable the use of Vision data as an enhancement to the overall digital workflow

- Vendor-neutral interoperability, with best-of-breed industry partnerships across print and mail

Videk offers field-proven solutions for high-speed inkjet, laser continuous and cut sheet print operations, as well as inserter input / output scanning technology.

For over 25-years, Videk has been providing innovative, cost-effective solutions for customers in banking & finance, insurance, government, utilities and commercial printing – enabling superior customer output services, and a competitive edge.

For more information, call us at 800-248-4335 or visit www.videk.com

Solution Overview:

DocuVision 8600 Color Print Verification System

The Videk DocuVision 8600 is an in-line, full-page print quality and data integrity inspection system built for interoperability with today's high-speed color inkjet printers. Providing 100% inspection of every document at web speeds up to 1,000 feet per minute, the 8600 is optimized for high-volume transactional and TransPromo applications where the quality and accuracy of color documents are mission-critical to success.

- Real-time, full-page inspection
- Variable data integrity assurance
- Document quality inspection
- Brand-critical color quality measurement