CASE STUDY

A Global Security Printer

Automated UV printed variable data validation on Security Labels

As a leading, UK based security printer, our client is the world's largest commercial banknote and paper maker, involved in the production of national currencies and a wide range of security documents such as passports, authentication labels and fiscal stamps.

With revenue loss from counterfeit goods growing at an alarming rate, the company is well positioned to provide anti-fraud and anti-counterfeit document solutions and services, including the design and manufacture of authentication labels, brand licensing products and other security documents, along with the associated software and systems.

NEW PRODUCTION FACILITY

Security labels leverage complex material combining and specialised print layering techniques to produce overt, covert and tamper-resistant labels. This, linked to digital authentication and tracking solutions, ensure that revenues from high value goods are protected and that consumers can be confident of buying a genuine product.

In 2013, the company's deep technical and production expertise was a key factor in securing a significant contract with a global company to design and produce a security label to protect their new product launch.

Each label must also carry an unique identifier so that when attached to a licensed product, it can be traced as it is released into the supply chain by their licensees. Furthermore the unique identifier must be secured by an anti-counterfeiting technology that can be easily authenticated when required. This provides a highly effective barrier against intellectual property and software piracy to ensure that product investments are not undermined by poor quality and unauthorised distribution.

Working jointly with the client, the company's technical designers decided to print the unique identifier using UV fluorescent Ink, which is only visible when exposed to UV light. This achieves a significantly higher level of security without interfering with the labels decorative or branding strategy.

CHALLENGES

On securing the contract, the company's production team, led by Rob, the Production Technical Support Lead, set to work in producing the labels to the required specification.

The company's modular and narrow web presses enable complex, multiple layered printing using specialised substrates and a variety of security print processes to add the specific overt and covert features to each label. With the press running in excess of 30 m/min, an inkjet print head system digitally adds a unique identifier number to each label, using a specially formulated UV fluorescent ink.

To maintain the high quality standards required, a small subset of the label run is manually inspected periodically by their QC department, for readability and is validated against the original data file. Furthermore, the identifier is printed using a font with a small point size, which makes the inspecting task all the more challenging.

As Rob puts it "We needed an automated inspection solution that could read all the UV fluorescent code on labels as they are being printed."

Following an internal process review, Rob determined that they needed a high-speed, camera-based OCR inspection system that integrates within their existing workflow.

CUSTOMER PROFILE

- World's largest commercial security printer and security paper maker for banknotes, passports, fiscal stamps and authentication & licensing labels
- Services include a leading design capability, production of innovative security components, manufacture of security paper and polymer substrates and sophisticated printing along with associated software and systems
- A long standing FTSE 250 company, employing over 4,000 people across 31 countries.

BUSINESS CHALLENGES

- A new security label incorporating a unique identifier printed using UV fluorescent Ink which needed to be verified
- Existing process to manually inspect a subset of the labels fell short of their client's requirements, increased production costs and introduced potential business risks
- The company determined they needed an automated inspection system that inspected ALL labels to mitigate potential risks.

SOLUTION SUMMARY

- Implemented Discovery MultiScan with an 8K linescan camera system, mounted on the label press with specialised LED UV illumination
- MultiScan software matches the unique identifier to a data file to maintain label integrity and automatically logs duplicate, missing and unreadable labels
- MultiScan RollReview, allows the QC team to review errors off-line and generate a remake file based on human review
- Integration with the company's proprietary process management software and InkJet print head's control system.

CASE STUDY

SOLUTION

As an existing supplier to the company, Lake Image Systems has built up an impressive track record in providing integrity and inspection solutions within the business. Even so, Lake Image went through a rigorous selection process. As Rob explains "We took each supplier through a solution scoring process which took into account; ability to meet technical requirements, price, support capacity and suitability of their references and it was no surprise that Lake Image came out on top!"

Lake's technical consultants, working alongside the company's production team, quickly understood the requirements and proposed a credible solution. This consisted of an 8K linescan camera mounted inline on the press, incorporating a finely tuned UV LED light source to capture an image of each label and the fluorescent printed code. Lake Image's Discovery MultiScan software was deployed to OCR hundreds of labels per second to extract the unique identifier, inspect and grade it for readability. MultiScan software then matches the unique identifier against the original data file to ensure all codes are correct and automatically track and trace all unreadable, duplicate and missing labels.

Finally MultiScan RollReview, an off-line label roll inspection system, allows the company's QC team to quickly view each label flagged as in "error" showing; an image of the suspect label, the inspection result and the expected data, enabling an operator to review errors and generate the label reprint file. This is an important step to maintain overall label job integrity and to keep reject rates to a minimum.

IMPACT

With the inherent complexities in manufacturing a security label, a well designed quality management system is a crucial component for any security printing business to ensure production integrity and ultimately commercial success.

The company's investment in an automated security label inspection system has delivered many benefits for the production team and for the business as a whole. "Throughput has more than doubled, enabling us to meet the tight delivery timescales imposed by the client" comments Rob. "At the same time, we have raised the production efficiency for this application by removing the need to do manual inspection, improving our overall bottom-line."

When producing security labels with variable data that are being used to track product placements and protect revenue streams, any production errors that produce duplicate, missing or unreadable labels, can have a significant financial impact for the end client.

As Rob sums it up "Ensuring the integrity of every single label we produce is of paramount importance to us. Our robust quality control system ensures that the customer requirements and quality standards are consistently met. We quickly identified that manual inspection was a risk which we had to be mitigate. Lake Image Systems has once again demonstrated their expertise in this market and has helped us to manage our risks and at the same time satisfy a key requirement for one of our strategic clients."

BUSINESS BENEFITS

- The company has mitigated a significant business risk and satisfied a key requirement for a major, prestigious client
- Automating the process to inspect and validate all labels has increased productivity by over 100%, enabling the company to meet tight SLA targets
- Relieved the pressures on the QC teams to validate hundreds of labels and improved overall profitable for this applications
- By being able to offer high integrity, covert, variable data security labels, the company has strengthened its position as the world's largest security printer

"WE TOOK EACH SUPPLIER THROUGH A SOLUTION SCORING PROCESS WHICH TOOK INTO ACCOUNT; ABILITY TO MEET TECHNICAL REQUIREMENTS, PRICE, SUPPORT CAPACITY AND SUITABILITY OF REFERENCES AND IT WAS NO SURPRISE THAT LAKE IMAGE CAME OUT ON TOP."

Production Technical Support Lead