Adoption of inspection is critical for efficient print processes

Founded in the UK in 1994, Lake Image Systems has become one of the world leaders in the design and development of imaging and scanning technologies for the printing, labelling and packaging industries.

With company subsidiaries across the world, the company has installed over 3,500 systems globally and has since become one of the biggest solutions providers for all variable print and document integrity applications, focusing on inspection, verification, tracking and feedback reporting.

The company started out reading batch and sell-by data in bottling and tin can production, but saw significant opportunities in the supermarket loyalty cards and direct mailing markets. As a result, Lake Image took its main inspection disciplines and began focusing on print.

Here, managing director, Martin Keats, and Nick Khatri, the company's marketing manager, speak exclusively to *Converter*.

"In packaging environments speeds are increasing and new substrates and print technologies are constantly evolving," says Keats. "Moving webs cannot readily be stopped in the event of an error, so it's about identifying print errors and tracking them through the process to deal with later. With traditional print inspection, it's rare to get one individual defect. With variable data on packaging, you can get a single defect, which may be data integrity or print quality related. As we move into this area, our software is being developed further."

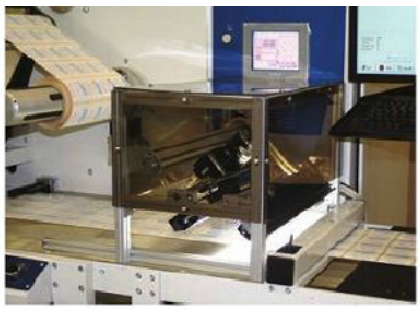
Lake Image's main product is its core Discovery software platform that is customisable across different printing and finishing processes to identify and report back on various kinds of defects or errors, such as incorrect variable data or poor print quality. The system provides options for the machine to alert the operator and log all errors during the complete print run to either re-print the defected pages or cut the segment out altogether. Keats says that provides a complete end-to-end solution.

Waste reduction is key

"In the digital press area we could be working with sheets or web. With conditional processing, a growing quality issue can trigger information to be sent to the print controller to initiate a test pattern, to stop the press, drive a print purge, or perform a head clean. The primary aim is to reduce paper and ink waste," he explains.

"People look at waste-saving as an added benefit, but the importance of this is growing. In the US, printers regularly over-print by as much as 10 per cent to ensure they can deliver 100 per cent of a perfect product. In Europe, the driver for environmental standards is greater. Most printers are pushed to reduce waste in order to comply with environmental standards."

"Typically on a web, we wouldn't stop production unless it's a very gross error that's being repeated," adds Khatri. "For individual errors, it'll be recorded and reported back so that it can be eliminated afterwards. Our system would typically alert the operator in the event of an error, who can then make the decision whether to stop the press or not; this can also be automated."



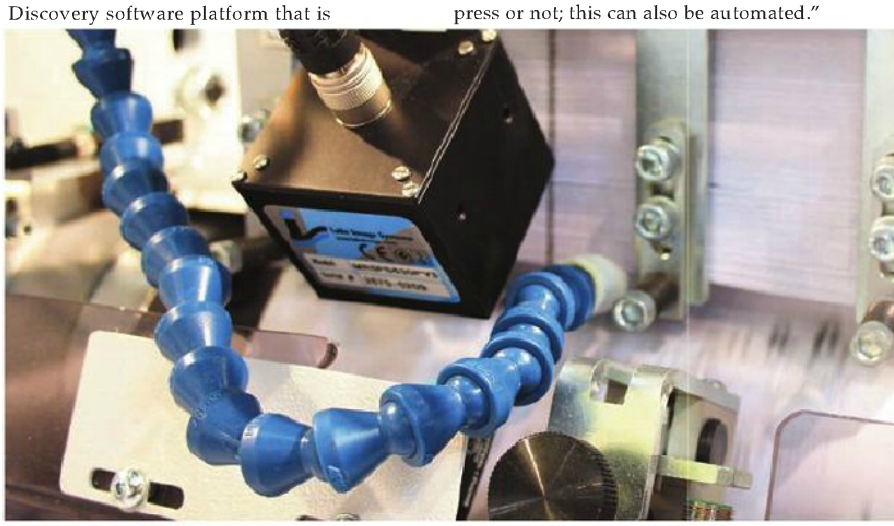
Khatri also explains how some security printers have intensive manual quality control processes, but Lake Image's technology can work automatically to save on labour costs and mitigating substantial liability risks. Return on investment in these areas can be very quick.

The company's vision and inspection system is a consolidated product - it combines print quality inspection and variable data verification onto a single software platform that interfaces to a wide range of printing and finishing equipment. There are three main functions; firstly, capturing high quality images, using varied camera technology, including the latest area and line scan cameras as well as its recently launched high-resolution linear scanning device, called Discovery MaxScan.

Secondly, processing the images to do a print quality inspection and to read and verify any variable data such as barcodes and text. Lastly, the final stage, where the analysis of defects takes place and action is taken to notify the operator and log the location and type of defect so that the print errors can be rectified or even replaced. The software constructs a variety of productivity and integrity reports to provide a complete closed-loop overview of the whole printing job, all while the press is still producing product at very high speeds.

"We are finally seeing inspection being considered as a critical part of the print process," says Keats. "With digital print maturing and now moving into the packaging markets, businesses are beginning to realise they need to inspect their products as clients are becoming more demanding and much more educated."

"Those who are successful with digital print understand and adopt inspection as an integral part of the project, rather than just as an after thought. While print quality



may be perfect, a data integrity error, such as the wrong data on a label, can lead to very costly re-runs. Printing technology cannot always be 100 per cent relied upon and therefore third party inspection technology is becoming a requirement."

Identifying inkjet errors

Other areas where Lake Image is seeing growth is in inkjet printing, but this brings a wealth of potential issues, such as blocked or out-of-sync print heads. This is where the company's niche lies, according to Khatri. In the more traditional commercial printing market, inkjet is added as a bolt-on, but by working with inkjet manufacturers like Domino, the company can devise better solutions to detect errors and initiate quality improvements allowing the operator to make adjustments and monitor their performance.

Also, inspection cameras have to sit outside or above the printing line in order to capture an image of the whole web or material. With wide webs, the camera has to sit even higher above, which then leaves it subject to vibrations and other flaws. As a result, Lake Image has started working directly with digital print companies to build systems as part of the actual press.

In terms of technological advancements, Khatri says that systems will be put under more pressure as print quality and resolutions increase and machines get faster. There is also more data to verify, sometimes across multiple operations or devices.

Looking to the future

The company is set to grow into new markets in the coming years, including Latin America, Asia and Eastern Europe, but it will require further research into what the issues and trends are, says Khatri. "We're heading for more of an application focus rather than a product focus; offering all the product specifications is useful, but advising on what the benefits are for the customer is key."

Keats agrees: "Spreading into new markets and technologies is the key to our success. Package printing will be one of our focuses at the drupa show later this year, but we also want to focus on security, like security labels, and track and trace.

"Our expansion approach is much more educational - teaching people what inspection can do, how it can reduce waste and costs, and improve product quality. We're keen to position ourselves as providers of variable data verification and print quality inspection systems to a broader market, leveraging our 20+ years of expertise in the printing industry."

Lake Image's MaxScan system is one of the newest additions to the company's Discovery MultiScan family. The MultiScan Manager pulls together the images and data from a wide variety of cameras to read, control, inspect, verify, log, track and report – providing 100 per cent quality inspection.

Fully integrated into a single housing, the MaxScan technology uses a unique sensor, lens and illumination arrangement that enables the unit to operate at a close working distance while maintaining clear, sharp image definition over its entire length.

Unlike standard camera technology, the MaxScan image sensor array produces an image with 600dpi resolution for print inspection applications at web or sheet widths up to 929mm. This enables a variety of inspection functions including missing or blocked ink jets and the MaxScan also provides full colour images with excellent colour representation and repeatability.

MaxScan has a working distance of just 12mm and with a maximum headroom requirement of less than 130mm, it is perfect for integration within the transport system of a press. Furthermore the MaxScan can be placed unobtrusively inside printers, winders and cutters preventing it from collecting dust and being knocked - causing unnecessary maintenance or calibration issues. MaxScan units are available in three different lengths, enabling it to fit a wide range of devices and applications.

At the end of September last year, Lake Image was jointly awarded the 2015 Label Industry Global Award for Innovation for the MaxScan product. The award was presented at the Awards ceremony that took place at the Labelexpo Europe 2015 event in Belgium. The judges "were particularly impressed with MaxScan key benefits over traditional line scan camera technology, such as uniform 600dpi inspection resolution and virtually no angular variation, to provide label converters with tools to accurately detect print defects without the need for expensive additional rollers, re-designed web paths or complex optical assemblies."

"This is a wonderful milestone for Lake Image Systems," says Keats. "We constantly strive to develop solutions for our customers to help them produce error-free print, easier and more efficiently, thereby mitigating risk, reducing production costs and minimising waste. We recognised the need for a compact, integrated and high resolution vision solution for data verification and print quality inspection which can be integrated without any modifications."

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