

100% web inspection – fact or fallacy?

LABEL VISION SYSTEMS ■ Many web inspection systems claim to inspect the printed web at 100%, but what do they really mean and are they doing 100% inspection?

In order to obtain 100% web inspection the entire web needs to be inspected. This means traversing the web or using an area scan camera will not accomplish the task. A line scan camera needs to be used that enables inspection across the entire width of the web. The use of high resolution line scan technology enables the harvesting of an image of the entire area to be inspected in a single pass.

Narrow-web printers now have available a wide variety of print technologies to meet their custom-

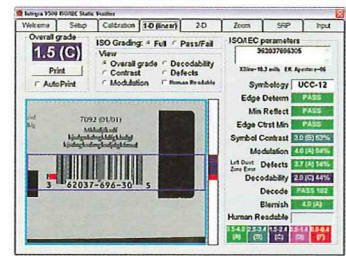
the narrow-web printer but also introduces potential problems with the printed image. Ink and toner can run out or spatter or jets can clog causing print quality issues. Inspecting this type of print is essential.

When it comes to inspection of barcodes and matrix codes, they can be inspected to two levels. There is the inspection to determine if the code is readable, meaning it was printed and then read. This assumes that any other barcodes or matrix reading device can read the code as printed notwithstanding the fact that the quality may be less than perfect. A more important inspection of bar codes and matrix codes is to verify the quality of codes to the

can still be mechanically damaged at a later stage.

If a vision system cannot read and or verify barcodes or matrix codes it cannot be considered a 100% inspection system in today's narrow-web printing world.

It is also important to have the ability to inspect some areas of the printed image to more exacting criteria than others. Inspecting sectors of the label allows the inspection to be tailored since inspection criteria may be different from one customer to another, or even from one job to another. For instance to inspect a barcode in one sector and a logo in another sector is useful if their inspection criteria are different. If a bar code is to fail on a grade less than a B grade (ISO grade 2.5), that can be accomplished while the logo may have a less stringent require-



ers demands. It is not just static printed images any more. Variable demand printing is becoming a requirement with increasing frequency. Most vision inspection systems cannot meet the demand of inspecting variable data so they cannot be classified as doing 100% inspection.

What is meant by variable data printing? Some examples are:

- Barcodes that have a sequence number either ascending or descending.
- Human readable numbers that have a sequence number either ascending or descending.
- Numbers that are derived from a base number sequence like Base 36 therefore using a combination of numbers and letters.
- A mix of barcodes (1D codes) or Matrix codes (2D codes) that have number sequences.
- Number sequences that are random and generated via a database extraction.

The technologies used in most cases are inkjet or toner based laser systems. This gives a lot of ability to

relevant ISO symbology standards for each bar code and matrix code type. This will assure the code can be read by other reading devices at subsequent stages.

The ISO standards are very rigid in the method of verifying the print quality of the code. The position of the read head including the lights and the camera is very strictly regulated by ISO 15415 (for 2D symbologies) and ISO 15416 (for 1D symbologies). Furthermore, ISO 15426-1, ISO 15426-2 are verifier conformance standards. It is also a requirement of ISO to calibrate the vision system on a periodic basis. If a vendor states a system is ISO compliant, make sure they can calibrate the system. If they cannot, it is not an ISO compliant system. It is these strict requirements that assure the code meets ISO standards and can be read further down the stream from the time it is printed. Verification is a quality measurement process in which a code is allocated a grade based on the quality of print as well as the adherence to published standards. Of course codes

ment. When a failing condition is determined it can be communicated to the printer or rewind inspection system to take the agreed appropriate action such as stop and rewind to the splice table or some other action.

A true 100% vision inspection system can perform all of the above functions. However there is one requirement that is critically important to a vision inspection system. It needs to be simple and easy for the operator to use or he simply will not use it. The best inspection system in the world is useless unless the operators find it easy to use.

When looking for 100% inspection of the printed web, be sure to ask if all of the above functions can be accomplished. Look beyond what you do today to what you could be doing tomorrow. It is always good to look at 100% web inspection as a strategic direction to increase your business by offering quality checking that your competitors cannot offer.

→ www.lvs-inc.com