

Code Assurance

Automated code detection for increased uptime and coding accuracy

The challenge

Ensuring accurate best-by dates, lot numbers and similar information coded onto products is often mandatory. Although most packaging operations have standard operating procedures that detail inspection frequency, manual inspection has its limitations, as many products may be mis-coded in-between inspection events. Although companies have invested in solutions to address proper message selection and set-up, automated code inspection has often been complicated or costly, deterring adoption.

The Videojet advantage

For over 2 decades, Videojet has been successfully integrating machine vision systems from leading vision companies in-line with our printing equipment. These solutions offer advanced quality control checking, and can be integrated with third party packaging line execution systems or a Videojet CLARISUITE™ print job creation and management solution. However, these advanced solutions may offer more functionality than some customers require. With the introduction of an automated code detection product, Videojet has brought a simple means to provide automated inspection capability for every product.

Importance of code inspection

Many manufacturers have sophisticated operational strategies that focus on elements of productivity and quality. Quality losses continue to be an important issue because of the impact on plant OEE and the implications for scrap, rework, and lost throughput. Many companies have implemented rigorous manual inspection of their product lines, but these inspection processes inevitably are periodic which creates the possibility for a significant number of incorrectly coded products that are missed between inspection events.

With multiple factors that can impact the coding process, inspection of printed codes is important to minimize waste and rework associated with missing, mis-positioned or distorted codes. Issues that can affect code quality are not always printer-related and can include:

- **Moved/misaligned product detectors that allow products to be missed by the printer**
- **Slippage between product and material conveyance system, resulting in the product being marked in the wrong location on the box**
- **Wet or distorted substrates**
- **Foreign matter in coding area obscuring product (no code)**

A recent Videojet survey showed that 95% of companies regularly check the codes on their products.* Of that group, more than one half of them reported having to reject or rework product at least once a month, with 20% of them having coding errors that caused waste or rework at least once per day.

Detecting coding errors continues to be primarily a manual process in the industry, with the survey showing that only 14% of coding users employing automatic defect detection.

* Survey of 130 respondents who utilize continuous ink jet printers in their production process.

Manual checks can miss improperly coded products

Manual checks are often performed at specified time intervals, so depending on the production line speed, you could have hundreds or thousands of products sent through the production process in-between inspections. Even when the defect is detected quickly, many other products may already have been printed with unacceptable codes, resulting in increased scrap and rework expense.

Periodic checking of products can also miss printing problems which may only be present temporarily. Debris in the coding area, excessive moisture and other disturbances that can cause bad codes can be present for only a short time and return intermittently. Often these are not detected with manual spot checks.

Benefits of automated code detection

Automatic code detection provides an inspection of every printed code and delivers an earlier alert than would be provided using a manual process. This allows for corrective action to be made sooner, helping to reduce waste and rework.

Historically, automatic detecting of codes was accomplished via more advanced machine vision systems. While those systems have a purpose, they can sometimes be complex and provide more capabilities than most companies need to augment their manual inspection processes. For those customers that are looking for a simple solution, there are a few considerations for selection, including:

- Place the automatic inspection device as close to the coding position as possible
- Select solutions that provide alerts or can send control outputs to the main production system to automatically take actions such as send a warning signal, send a signal to trigger an action such as product eject, and/or stop the production line
- Consider solutions where parameters can be adjusted to match your quality goals, including systems with configurable alert parameters such as consecutive defects or percentage of defects
- Identify solutions that require minimal camera or lighting adjustments
- Consider the needs of line operators and the value of simple, intuitive user interfaces for easy set-up

Operational and coding requirements vary among companies, so the ability to easily tailor the system to meet these needs is critical. User-defined parameters and set up options help companies easily achieve their individual level of code detection.



The Bottom Line

Line performance (throughput) and Availability (uptime) are key focus areas for customers interested in increasing OEE. High output and machine availability are critical in driving ever higher OEE, however, if quality lags, OEE lags accordingly. Catching coding errors quickly before they cause unnecessary or excessive scrap is a simple and cost-effective way to increase quality. Early detection also can prevent rework, which increases productivity.

Ask your Videojet representative for more information, a production line audit or sample testing on your substrate.

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