Date and Lot Code Inspection Using an Integrated Camera Solution for Visual Inspections

**Application:** Vision inspection for Date & Lot Code on different container surfaces

**Surfaces:** Top of a 38 mm Flat Plastic Screw Cap and Bottom of an Aluminum Beer Can, and Side of a PET Plastic Bottle

**Inspection:** Code Presence and Code Recognition

**Systems:** Top View Top Light (TVTL) and Front View Backlight (FVBL) SelectVu™ Systems

**Challenge:** The demand for producers of both consumable and non-consumable goods to have a system in place to identify products by date code or lot code for the marketplace is apparent. Codes or lot numbers provided on packaging are critical to successful quality control measures and product tracking. Many production facilities do not have adequate measures in place to inspect the integrity and validity of their codes.

An improperly coded product can be impossible to identify in today’s high speed production lines without a high speed inspection system. The TapTone SelectVu system offers a scalable line of vision systems specifically designed to meet these requirements.

**TECHNOLOGY CORNER  How it works**

Each SelectVu camera is programmed with a product solution to inspect through a series of taught images and protocols to determine a ‘Pass’ or a ‘Reject’. Utilizing DSP technology, the controller analyzes the measurements and assigns merit values to each measurement taken on a container. Any merit values outside of the user set tolerances signals a remote reject system to properly separate good vs. bad containers.

The SelectVu system is the most versatile and compact inspection system in the TapTone vision product line for non-contact package inspection. The system utilizes a fully integrated Dalsa “smart” camera designed to capture multiple inspections in a single pass. Its multifunction design coupled with a small footprint captures and processes images of passing containers within a fraction of a section.

The SelectVu system can operate as a stand-alone system or can be integrated with other TapTone inspection systems. Applications include Cap / Closure Inspection, Visual Fill Level Inspection, Label Inspection, Date & Lot Code Verification, 1D and 2D Barcode Verification and more. At its maximum operating speed, the SelectVu vision inspection system can reliably inspect up to 2000 containers per minute.
Overview

To demonstrate the SelectVu’s capabilities for date and lot code inspection, tests on three (3) common consumer products of beverage containers were performed. The objective of the tests was to detect code presence and utilize optical character recognition (OCR) for proper code verification.

The illustrations below represent actual inspection images from tests performed with the SelectVu sensor on 10 oz. PET juice bottles, 12 oz. aluminum beer cans, and 16.9 fluid oz. (500 mL) PET bottles. Tolerances were defined and preset into the Inspection Solution of the configured cameras for criteria comparison. Inspected components in the container’s region of interest that met inspection criteria resulted in a Green inspection tool status indicator while components that failed resulted in a Red inspection tool status indicator. The Green and Red status indicators of inspection tools used in each solution clearly outline good versus problem areas for production line process enhancement consideration.
Solution for a date & lot code presence inspection on a 38 mm flat plastic screw cap

Good date & lot code presence inspection for code rotated 90°

Good date & lot code presence inspection for code rotated 180°

Missing date & lot code detection
APPLICATION NOTES

Solution for a date & lot code OCR inspection on the bottom of an aluminum beer can

Missing character detection

Good date & lot code OCR inspection for code rotated 135°

Good date & lot code OCR inspection for code rotated 270°
**Application Summary**

This application demonstrates the effectiveness of the SelectVu system in identifying and rejecting containers that fall within and outside of the preset acceptance criteria for date and lot codes. SelectVu provides the tools to allow operators to view inspection data/statistics in real-time or logged to a file.