



TapTone

APPLICATION NOTES

News and information from Teledyne TapTone, a leader in the package inspection industry.

Fill Level Inspection Using an Integrated Camera Solution for Visual Inspections

Application: Vision inspection for Fill Level on various products

Products: 16.9 fluid oz. (500 mL) Colored Beverage and a 33.8 fluid oz. (1 Liter) Natural Spring Water

Inspection: Underfill and Overfill

System: Front View Backlight (FVBL) SelectVu™ System

Challenge: Fill Level inspection allows bottling companies to be more consistent in properly filling their containers to a specified level. Overfilling results in profit loss and underfilling can lead to unfavorable customer reviews and a damaged brand image.

With the 'sloshing effect' of the product in every passing container, overfilled and underfilled containers can be challenging to identify in today's high speed production lines without a high speed fill level inspection system. The SelectVu sensor can inspect containers at production line speeds up to 2000 containers per minute and offers scalable solutions to meet a variety of inspection needs.

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.



▲ The TapTone SelectVu



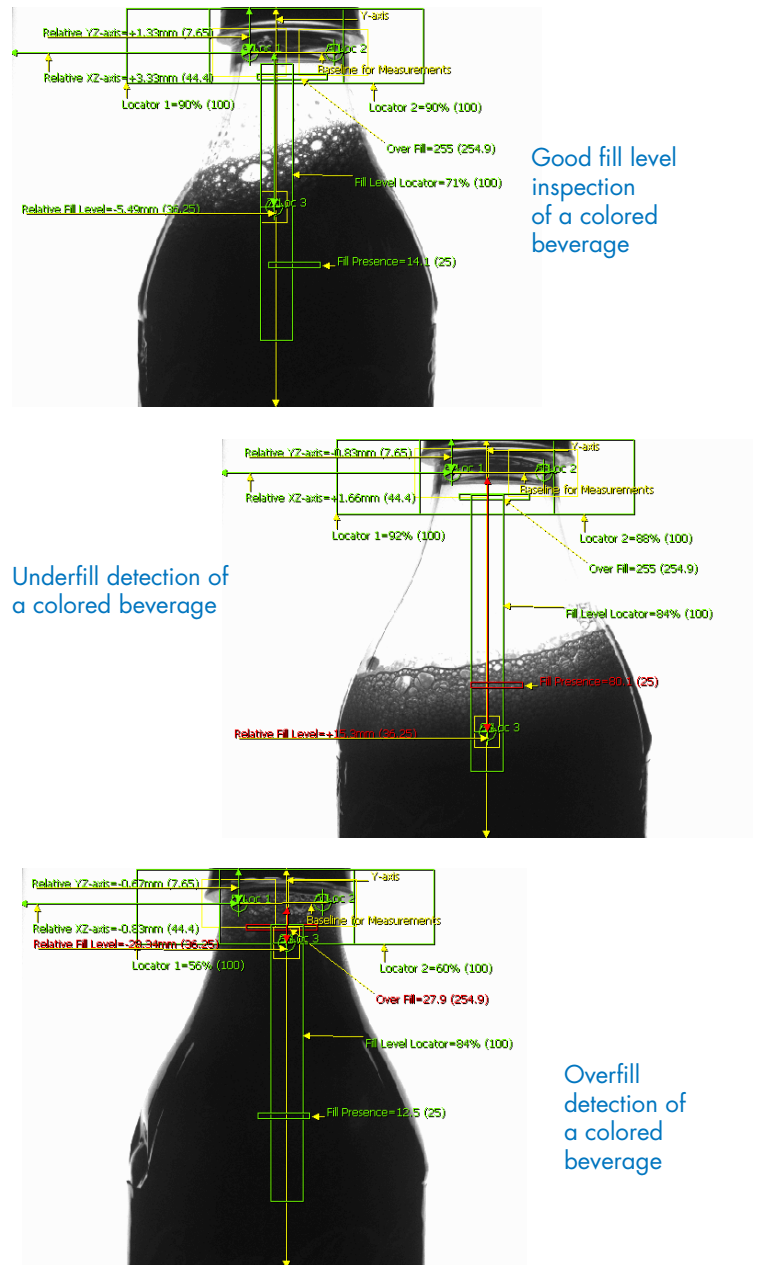
Overview

The objective of this application is to demonstrate the fill level inspection capabilities of a SelectVu system for a clear PET beverage bottle filled with a dark colored product.

The images below represent actual inspection images from a sample test performed on a 16.9 fluid oz. (500 mL) PET bottle. Acceptance tolerances were defined and preset into the inspection solution of the configured camera for criteria comparison. Inspected components in the container's region of interest that meet the acceptance inspection criteria resulted in a Green inspection tool status indicator while components that didn't resulted in a Red inspection tool status indicator. The Green and Red status indicators clearly outline the accepted versus rejected areas for production line purposes.



Fig. 1 Featured Products: Colored beverages in PET bottles



Application Summary

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

The SelectVu inspection system allows for easy management of product changeovers during production. Configurations for each product are stored within the camera and selected by line operators during product changeover. With a few simple adjustments, an operator can perform a product changeover in just 3-5 minutes.



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