



3D Inspection and Volumetric Measurement

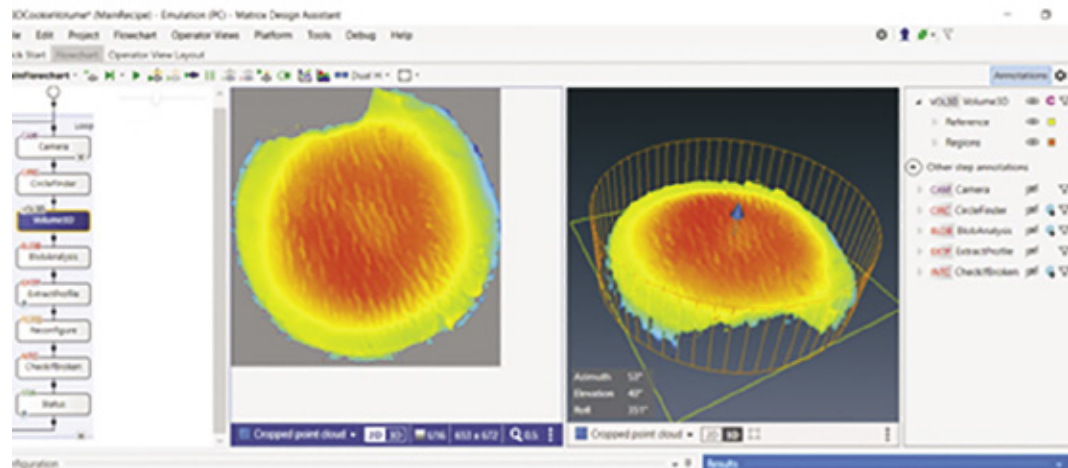


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Key Points

- Eliminate inconsistencies in package fill levels
- Protect and enhance brand reputation and customer satisfaction
- Identify foreign materials during packaging process with smart cameras, 3D sensors, and machine vision software
- Measure content heights and cap-and-seal inspection with 3D imaging





Challenge

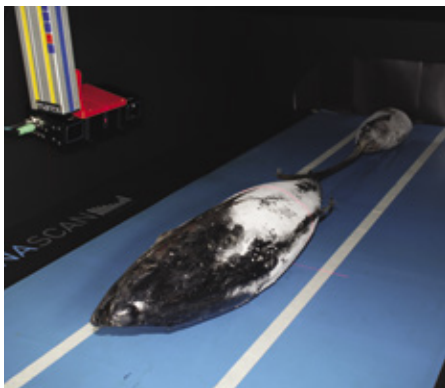
Manufacturers rely on inspection techniques to ensure consistent and accurate fill levels in containers, presence of all items in packaged kits, and correct placement of caps and lids. Conventional weight-based measuring or traditional 2D imaging isn't always effective in fast-moving automated inspection or when packaging is nontransparent. Containers with unequal fill lines or incorrectly placed items leads to poor customer satisfaction, risks shipment rejection, and decreases overall productivity for manufacturers.



Solution

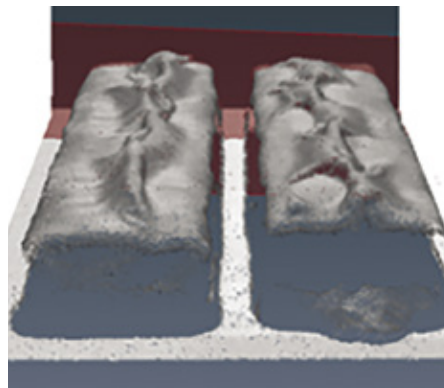
Zebra Technologies' Altiz 3D laser profilers deliver 3D machine vision techniques that facilitate high-speed measurement of volume and dimensions, enabling quick detection of damaged or missing products during production. The factory-calibrated Altiz generates a surface map and returns length, width, height, and volume information in real-world units. This ensures accurate inspection and verification of fill levels, lid and cap placement, and detection of missing product in kitting and case-packing applications. The improved consistency of packaging routines, increased productivity, and reduced waste result in higher customer satisfaction, leading to increased profits and elevated brand value.





Location, Sortation, and Volumetric Measurements

For material-handling applications, Zebra's Altiz 3D laser profilers are well-suited to determine dimensions, shape, and height of items to ensure they meet specifications and customer standards. Taking packaging optimization further, 3D profilers can scan boxes, enabling correct categorization for palletizing or storage. They are also able to determine placement and alignment of items on a conveyor and can communicate those precise details to robots, facilitating accurate picking, stacking, and palletizing operations.



Product Quality Inspection

Many consumer packaged goods (CPG) manufacturers rely on weight measurements for product inspection, but this approach has proven inadequate for identifying the absence of lightweight items or those that are incorrectly placed. By measuring the size and shape of objects, Zebra's Altiz 3D laser profilers present an improved solution for measuring portions, confirming correct placement, for identifying damaged products, and determining overall product completeness.



Container and Fill-Level Inspection

CPG manufacturers commonly use containers such as bottles, jars, or cartons. Zebra's Altiz 3D laser profilers are a solution of choice for manufacturers who need to verify fill levels at the end of the manufacturing line and can also add value earlier in the packaging process. Defective or damaged containers can leak or fail quality inspection, adding to waste for manufacturers. The Altiz 3D can inspect containers for defects and faults before they are filled, reducing product waste and eliminating post-packaging rejection and quality issues.



Missing Product Detection

In applications that make use of case-packing or kitting, ensuring that all items are present—such as bottles in a shipping box or meal components in a meal tray—is a critical step near the end of the packaging process. Zebra's Altiz can scan open boxes or trays to determine that all expected items are in their proper location and in the appropriate quantity or volume. This final step before sealing a package helps to prevent shipment rejections and improves customer satisfaction.



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