CASE STUDY

Custom Can & Packaging Inspection Machine

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JOB OVERVIEW

Key Features

- Custom machine designed, built and integrated into packaging line by EPIC
- Machine vision system with 360 degree view
- Custom form factor lighting, and collimated lenses on cameras
- Color verification through machine vision inspection

Challenges

- Graphic/art elimination for dent inspection
- Downstream tracking of rejects after machine exit
- Dent parameters definition 360 degree can inspection
- High speed application

Impact

- Greatly improved ability to detect surface dents on cans
- Improved reliability of capping and better seals
- Reduced can explosion, line stoppage and problems in filler
- Minimized quality complaints

THE EPIC SOLUTION

EPIC designed, built, and integrated an existing production line with a custom machine system to inspect dents on pressurized canisters and increase production rates for a major food and beverage company. Cans enter the inspection machine through an in-feed screw, which spaces them correctly into a star-wheel. An overhead color camera inspects for the presence of varnish on the lip of the canister and checks for unwanted debris inside the canister.

From the star-wheel, cans are transferred to a platen which are timed to rotate a can 360 degrees within a 180 degree turn through one-side of machine. Six overhead cameras scrutinize the can as it is rotated. Cans are checked for dents that might impede the puck rising. A custom lighting set-up is required to complete the inspection.

Defining the type of dent that might impede the puck is a difficult process for a machine vision integrator. A shallow but large dent or a small but sharp dent may stop the puck. These differences had to be combined into one fail process. The inspection machine has an 80% successful identification rate, which exceeded customer specifications. An 8th camera was added later to inspect for crushed or misshapen can lips.

If a can fails inspection, for missing varnish, debris, crushed lip, or dents, it triggers a shift register. Cans leaving the machine continue onto a conveyor. The conveyor is unable to mechanically track 'fails' due to conveyor slippage. At this point, the shift register hands off the 'fail' signal to a photo eye system which detects the cans based on position in queue. Rejects are eliminated from the packaging line after they pass a second photo-eye.