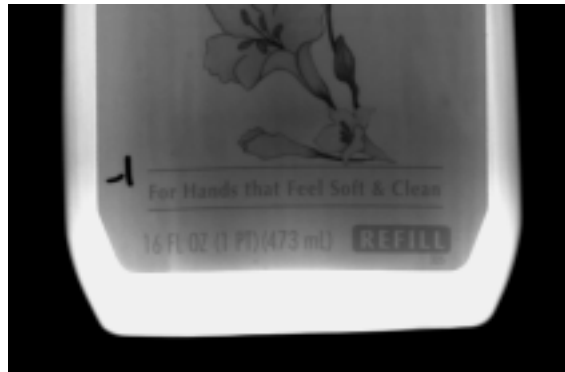


APPLICATION NOTE: **205**

Application: Packaging Inspection - Label Location Verification

Problems: 1) Poor Contrast - White Label on White Bottle
2) Space Limitations in Existing Machine



White on White

Solution:

Some of the most difficult imaging problems in the packaging industry arise from the use of the same color for two or more components that must be inspected. This creates big problems for vision systems that try to inspect for the proper placement and/or quality of various components including label, container, lot code sticker, cap, seal, etc. The color schemes that present the largest problems are white on white and black on black. The above application is an example of a white on white label placement inspection. Using front lighting, the existing vision system was having many problems reliably detecting the position of the label with respect to the bottom of the bottle due to the poor contrast between label and bottle.

To solve this problem, the variation in transmission characteristics of the bottle and the label were used to increase contrast. During the breadboard phase, the Applications Lab identified a high powered backlight as a possible solution. This solution was shown to provide the necessary contrast, yet it was not viable for this application due to mechanical constraints within the existing machine. The final solution was configured using the diffusing properties of the bottle itself. A lightguide and focusing lens were constructed to project a known spot through the bottle top and onto its bottom. The resulting "internal backlight" provided the high contrast differentiation between the bottle and the more opaque label.

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