

## Case Study

### Baumer ensures that shampoo bottles are correctly sealed on high-speed packaging line

*The Vision Design team's cost-effective, intuitive vision solution aims to help shampoo packager verify that bottles are correctly sealed without working up a lather.*

The plastic soft tube is a common packaging choice for personal care, medical, home improvement, and food and beverage products. Whether tubes are crimped shut via hot air sealing, ultrasonic technology, or hot jaws, reliable inspection of seal integrity is essential to maintain a clean production line, high packaging quality, and a positive manufacturer-customer relationship.

The Baumer Vision Design Center helped one leading shampoo brand upgrade its patchwork inspection system to achieve a simple but very accurate vision sensor, some savvy illumination, and years of expertise in machine vision design.

#### Losing the shadows

The job required Baumer to work within the constraints of the manufacturer's existing production line, in which shampoo tubes travel along a conveyor in custom trays that position the crimped end at the top of the tube. So the Design Team mounted a downward-facing vision sensor about 6 inches above the production line to capture close-up images of each tube's crimped seal.

The team selected a two-megapixel monochrome VeriSens® smart vision sensor from Baumer for the job. The smart vision sensor incorporates a 1600 x 1200-pixel CMOS sensor capable of performing up to 100 inspections per minute. An 8-mm lens captures crisp images of the seals.



*Baumer helped one leading shampoo brand retrofit its patchwork packaging inspection system into a high-speed imaging solution, with a VeriSens® smart vision sensor, the right illumination, and VeriSens® Application Suite.*

Since open or poor-quality seals tend to appear darker in captured images, Baumer wanted to eliminate all natural shadows within the sensor's field of view. Baumer recommended that the customer use a white conveyor belt to ensure that tubes were imaged against a pale background. It further eliminated shadows by positioning a 3-inch ring light 1.25 inches above the crimped ends of the tubes and slightly off axis to make proper seals appear bright in the images. This ensured that bad seals would be the only dark patches in the images.

The Design Team's hardware configuration significantly simplified the computational work. After a simple point-and-click setup and calibration, the system can identify images of bad seals with a single check. The intuitive tools and interface of Baumer *VeriSens*<sup>®</sup> *Application Suite* and its after-sales support for *VeriSens*<sup>®</sup> smart vision sensor empowered the CPG manufacturer's nontechnical line operators to easily program the newly installed inspection station once it came online.

**Baumer Group**

The Baumer Group is one of the worldwide leading manufacturers of sensors, encoders, measuring instruments and components for automated image processing. Baumer combines innovative technologies and customer-oriented service into intelligent solutions for factory and process automation and offers an unrivalled wide technology and product portfolio. With around 2,700 employees and 39 subsidiaries in 19 countries, the family-owned group of companies is always close to the customer. Baumer provides clients in most diverse industries with vital benefits and measurable added value by worldwide consistent high quality standards and outstanding innovative potential. Learn more at [www.baumer.com](http://www.baumer.com) on the internet.

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