



Industry:

Food and Beverage



Applications:

Bottle handling, cap delivery systems, and cap orienting feeders for freestanding capping machines or capping turrets integral to fillers that use plastic screw caps or aluminum roll-on caps.



Problem:

Failure to properly place and secure bottle caps during the capping process leads to significant profit loss through spoilage, waste and loss of consumer confidence in the brand. At issue is the ability to provide 100% in-line inspection at full production speeds and accurately detect defective capping applications.

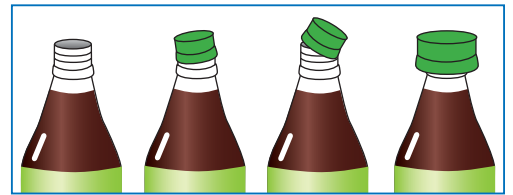
Typical capping defects include:

- Missing caps
- Mis-threaded caps
- Loose caps (insufficient torque)
- Wrong cap

Conventional inspection systems employ multiple sensors to detect all of these conditions leading to increased expense and machine complexity.



Application Diagrams



Sensing missing, mis-threaded, loose and wrong cap placement



Omron "FACTS" Advantage

ZX Laser sensor with Parallel-beam sensing heads

The Omron ZX "smart" laser sensor, a simple and elegant sensing solution, provides reliable, fast and accurate detection of all of the above listed defect types with a single, easy to use and operate sensor. The sensor's innovative "self peak" function also eliminates the need for a separate "trigger" sensor and provides 100% inspection each time a bottle passes the sensor head. The self-contained sensor features built-in High/Low/Pass control outputs and a proven 10 millisecond per cap inspection speed that lets you directly control reject gates to stay ahead of production speeds. Available sensor set up and monitoring software further simplifies set up and data logging.

Bottle Cap Placement Inspection Application Details

Issue

Food and beverage producers who fail to adequately inspect bottling processes for proper cap installation risk increasing waste and loss of profitability. The demands for increased throughput speeds and automation lead to the greater probability of mis-capped products in high-speed bottling systems. To reduce the risks, bottlers must employ capping inspection systems that will provide 100% inspection for a variety of capping defects and that would keep up with the high-speed production rates. Although generally reliable, conventional cap inspection techniques require multiple sensors to detect the variety of capping defects that can occur. This leads to complex and expensive systems that are difficult to install and maintain.

Cause

Bottle caps (plastic screw type or aluminum rolled type) can be misapplied in a variety of ways that is not always easy to detect. While missing caps - caused from jammed or empty feeders - are relatively easy to detect, loose and mis-threaded caps are more difficult to detect. Defects in cap or bottle forming may also lead to defective cap placement.

Omron's Unique Solution

Omron's ZX sensor with through beam type "parallel beam" sensing heads allow fast, accurate and reliable detection of numerous capping defects with a single sensor. With a proven inspection speed of 10 milliseconds per inspection, the ZX sensor can keep pace with the fastest bottling lines. Keying on the precise height of the cap, the sensor can determine a variety of problems from no cap to loose caps to mis-threaded or damaged caps.

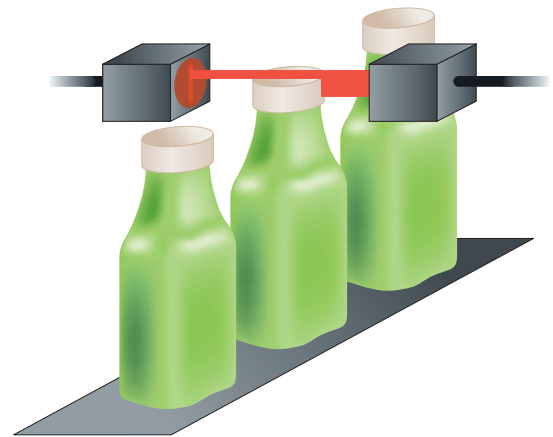
The sensor's built-in "self peak" function eliminates the need for a separate "trigger" sensor, further simplifying the system and lowering installation and maintenance costs as well as providing automatic 100% inspection.

Setup is fast and easy. Simply set the threshold of a properly seated cap and let the sensor's 4-micron (0.00015 inches) resolution do the rest. Built-in High/Low/Pass control outputs allow direct control of reject gates to remove defective bottles prior to shipping.

An available software package further simplifies set up, operation, inspection monitoring and data logging via PC.

Results

Increase profitability, reduce waste and maintain customer confidence by preventing improperly capped bottles from entering the supply chain. A single ZX "smart" sensor provides 100% cap inspection and takes the place of multiple sensors and controllers. The precision measurement and high-speed response ensures reliable accuracy with the ability to keep pace with even the highest speed bottling lines.



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