Vision System Uses Flea2 Cameras For Bottle Cap Inspection

Liquid container and closure manufacturers are endeavouring to meet increased supplier demands and deliver higher, more consistent quality products. In addition, inspection is no longer limited to just the traditional checks of fill level and cap position; cap tamper bands are being used by more manufacturers to guarantee bottled product quality and freshness, and there is also a need to check other things such as color variation between caps. All of these factors are driving demand for faster and more accurate automated inspection systems.

MCSVision Inc. (Glen Ellyn, IL, USA; www.mcsvision.com) is a supplier of OEM vision systems, integration services and complete turnkey solutions. One of MCSVision's products, the 51R55, is a cap and bottle inspection system manufactured for Silgan Equipment Company (Downers Grove, IL, USA; www.silganequipment.com), a full-service supplier of equipment, parts and services for both closure equipment and container equipment.

The 51R55 is a conveyer-based system that uses three Point Grey 1024x768 RGB color Flea2 cameras, placed 180 degrees from each other, to provide a 360 degree inspection of a plastic bottle's cap tamper band. In addition to checking that the tamper band has no

missing or deformed segments, the system checks the cap for proper seating. By using RGB information in the image, the system can also watch for mixed caps, or color variation in the caps themselves.

"We originally used small B&W analog cube cameras in our earlier version," explains Jim O'Reilly, President of MCSVision. "To retain the small footprint of the camera enclosure, we needed the same 30x30mm size; at 29x29x30mm, the Flea2 was a perfect fit, and could also be used in our four-camera label inspection system."

An embedded PC with a Core™2 Duo processor from Intel® (Santa Clara, CA, USA; www.intel.com) and a PLC from Allen Bradley (Milwaukee, WI, US; www.ab.com) is used to control the cameras, lighting, and other hardware components. Bottles are moved by a conveyer belt through an enclosure that houses the Flea2 FL2-08S2C digital cameras. "The Flea2's IEEE-1394b 800Mb/s interface allows faster transfer speeds," says O'Reilly, "enabling the 51R55 to inspect color bottles at a rate in excess of 1280 bpm."

The PLC tracks presence of a bottle using a photoelectric detector from Banner Engineering (Minneapolis, MN, USA; www.bannerengineering.com). Upon detection of a bottle, the PLC sends a trigger signal to the cameras, which opens the electronic shutter and begins image acquisition. For illumination, the 51R55 uses a white LED system that is produced by MCS and contains a microprocessor for intelligent sensing (patent pending).

Image acquisition and camera control is performed by Point Grey's FlyCapture camera driver and software. Captured images are streamed over three 25-foot FireWire cables to a 3-port PCI Express FireWire card on the host PC, and used by MCSVision's proprietary

image processing software to inspect the cap and tamper band. By developing the software in-house, MCS has the ability to quickly modify either the inspection algorithms or the operator GUI to suit their client's needs.

"Our success is largely part of our close relationship with our clients," says O'Reilly. "In choosing our equipment we look to our suppliers for that same give and take, and Point Grey has provided an excellent product, coupled with the support necessary to quickly develop diverse applications."

More Information

» [51R55 article in Dec 2007 issue of Vision Systems Design](#)
» [Point Grey Research Evaluation Program](#)
» [Request Flea2 pricing](#)

Viz:
www.ptgray.com   **Monday, March 31, 2008**

http://www.ptgrey.com/index.asp