4ᵗʰ Annual W.I.T Symposium

Vision Applications on a Bottling Line

July 14-15, 2008

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Machine Vision Overview

- **What is machine vision?**

- *A machine vision system brings together cameras, lighting and image processing software to create an installation that is able to "see" objects and inspect them for flaws at high speeds and with great accuracy.*

- *The heart of the system is the computer software—the brain that processes what the camera captures and evaluates it by comparing it to a memory of stored ideal images.*

Machine vision systems cost-effectively and accurately conduct product inspections and verify the accuracy of work-in-process.

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Typical Bottling Line Vision Applications

Machine vision has many practical and beneficial uses on a bottling line – from inspecting empty bottles to ensuring case integrity out the door.

Stations and Inspections

Bottle Washer Station
Empty bottle inspection – chips and debris

Filler/Capper Station
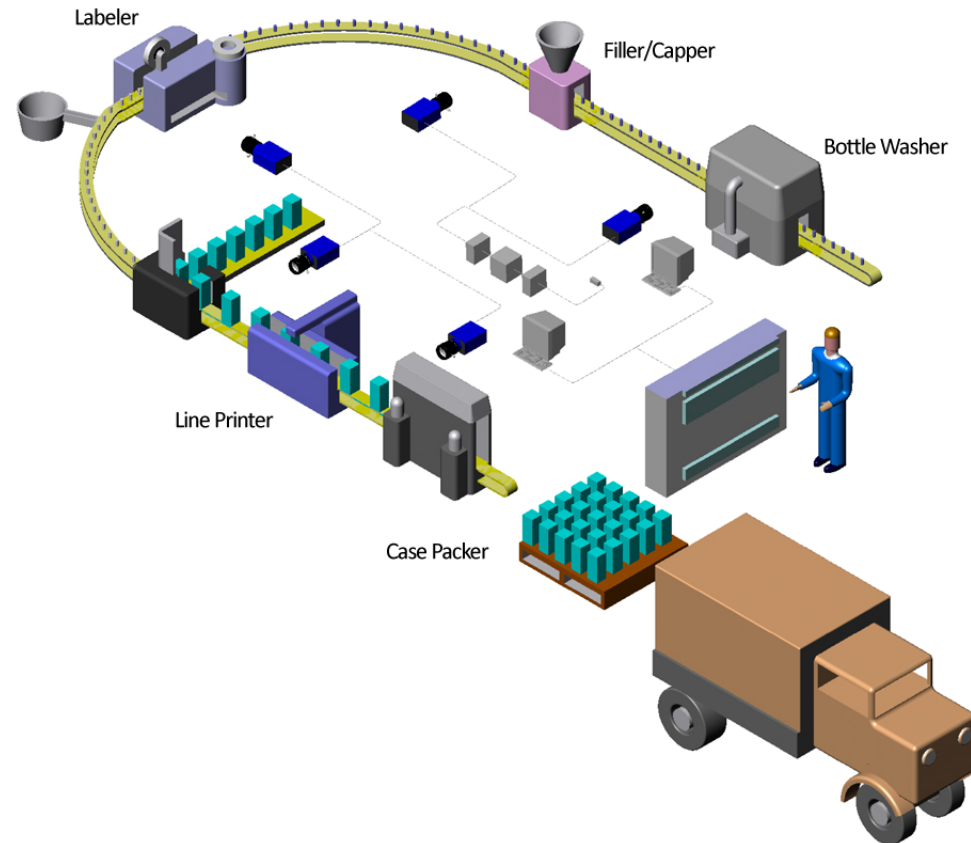*Fill level and cap/cork/capsule inspections*

Labeler Station
Label / Decoration inspections

Line Printer
Lot/ product/ expiration codes inspections

Case Packer
Internal and external case inspections

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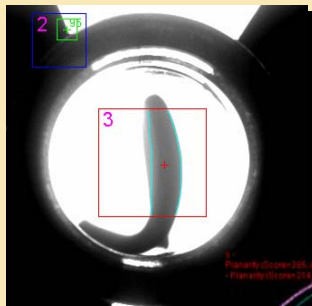WINE INDUSTRY TECHNOLOGY SYMPOSIUM

Vision Applications for Empty Bottles
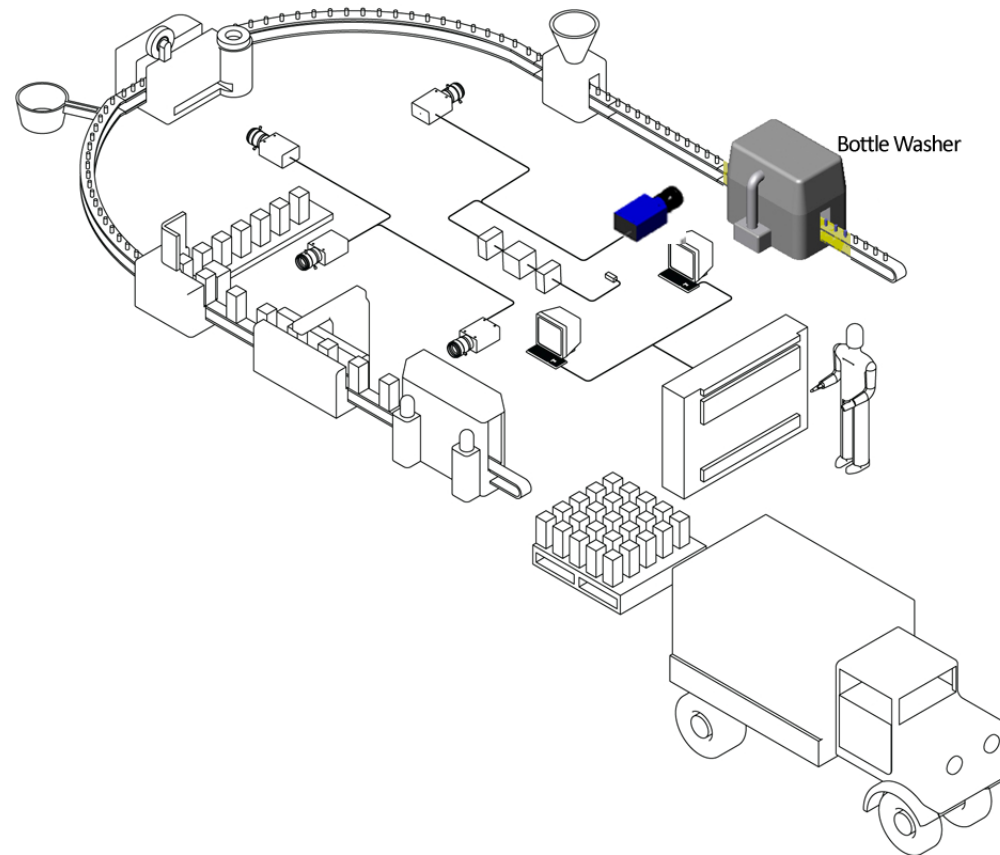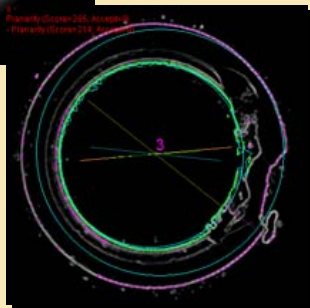
Empty Bottle Inspections

After Bottle Washer Station
Empty bottle inspections include:

Internal debris inspections; chipped neck, choked neck, pinched neck, elongated or bent neck; bottle ovality.

Debris Detect

Chipped Neck

Bottle Washer

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Vision Applications for Fillers and Cappers

Caps, Corks, Capsules, Fill

Filler/Capper Station *Inspections include:*
Gross Fill Level checked.

Cap Presence, Position (height and skew), Correctness and Color;

Cork Presence & Position;

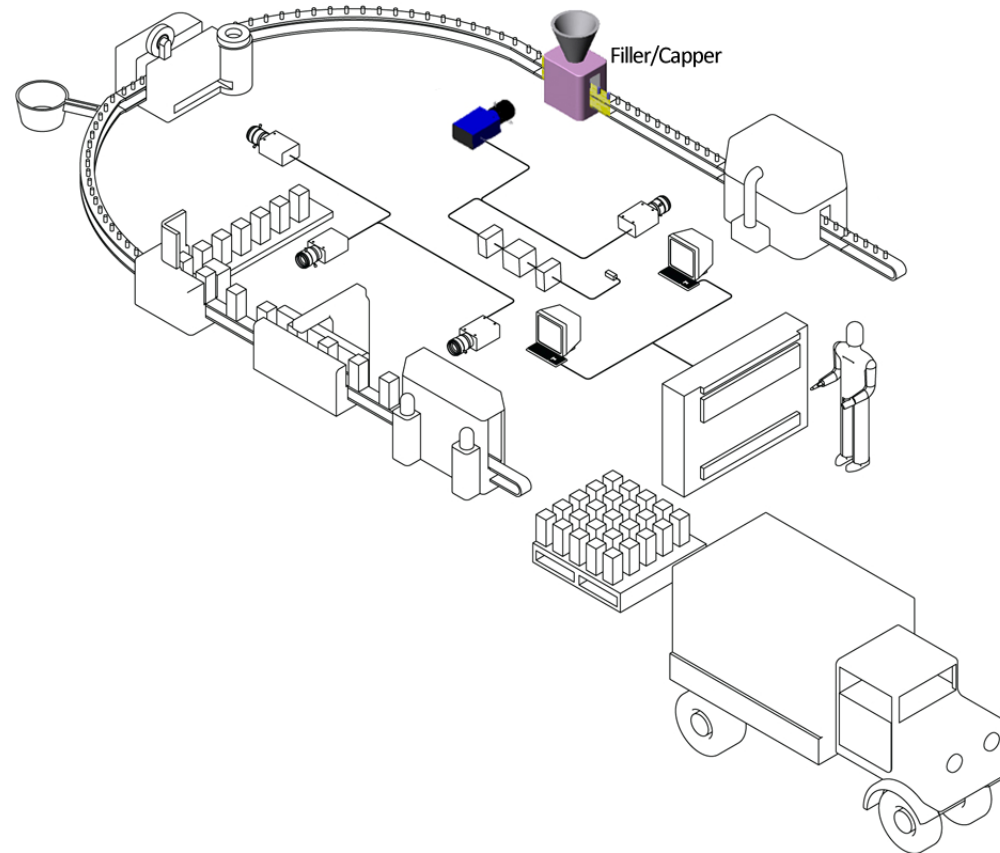*Capsule Presence, Position (Correctness and Color;*

Cork Detect

Cap Inspection

Filler/Capper

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Vision Applications for Labelers
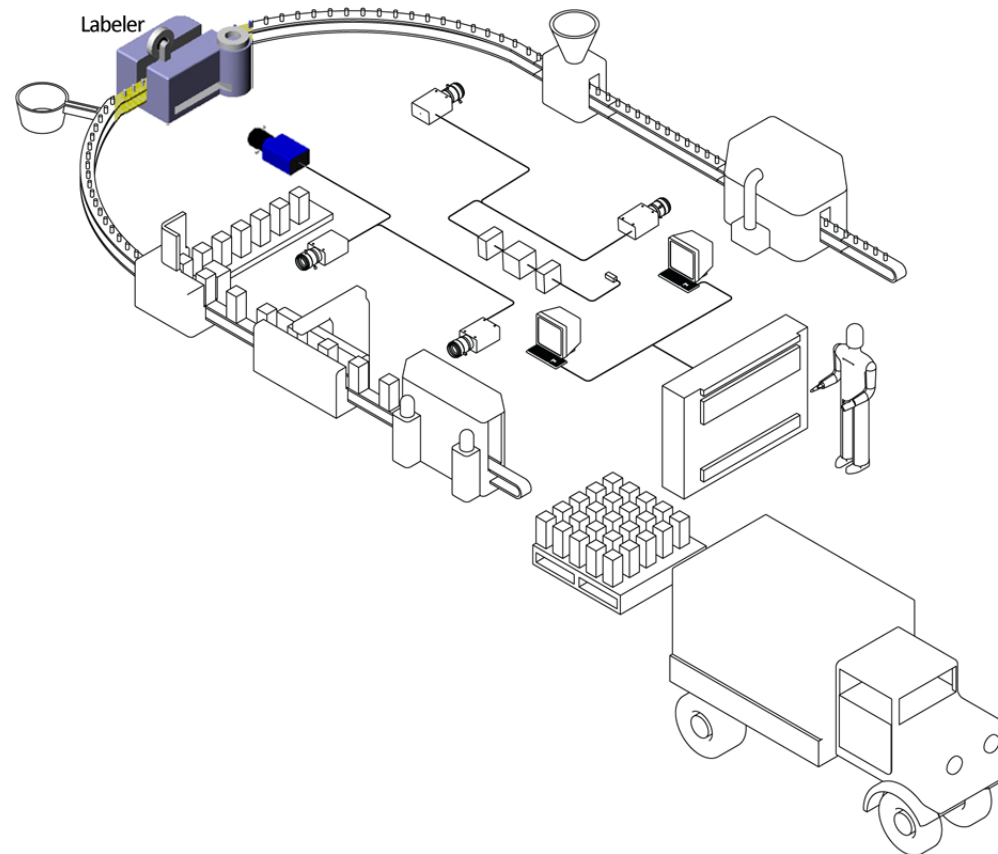
Labels and Decorations

Labeler Station
Label / Decoration inspections

Label Presence, Position, Orientation &
Skew; Detect double and gross flagging
labels; Label ID; Label to Cartouche
Placement;

Decoration Presence, Position,
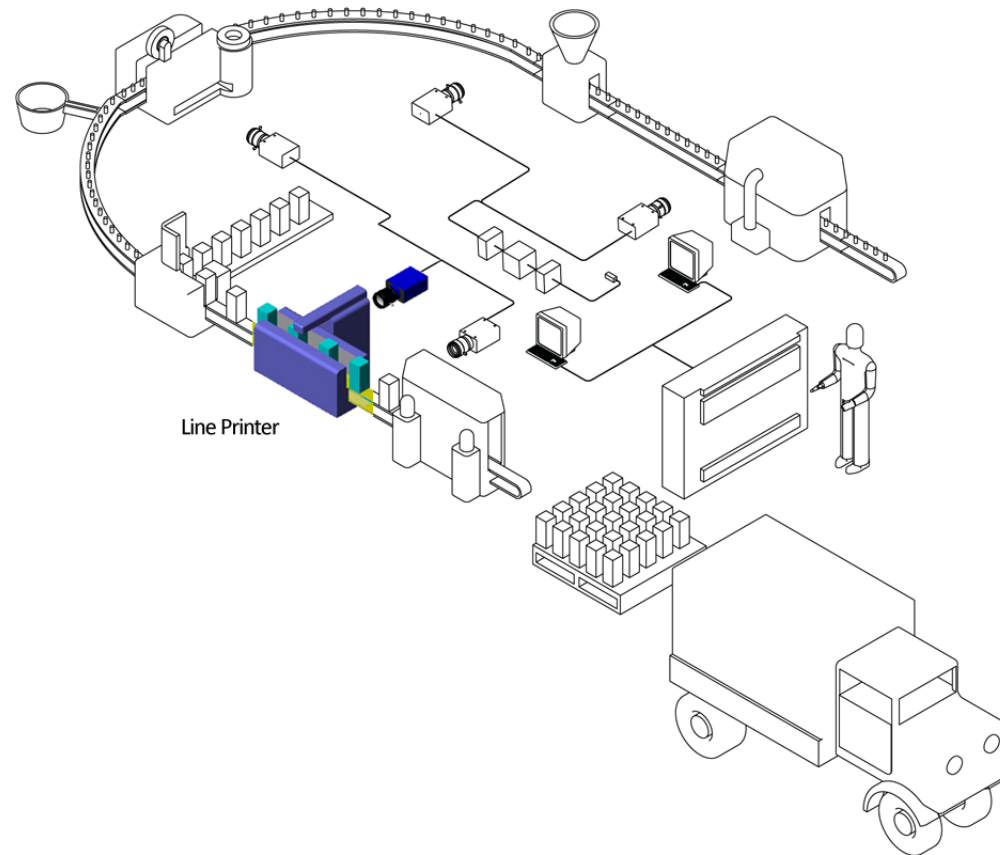Orientation & Skew; ID and Color

360 Inspections available

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Vision Applications for Line Printers

Codes

Line Printer
Inspections include:

Verify commodity and expiration codes;
Read and Verify bar, 2D and Data matrix
codes; ID

Line Printer

# Vision Applications for Cases / Case Packers

Cases – Inside and Out

Case Packer
Inspections Include:
Content /Interior inspections: Product count, presence, position & color.

Case exterior inspections: OCR/OCV of lot, product & expiration codes; proper case ID, decoration verification; RFID tag read/write, presence & placement; proper flap position and presence.

Case Packer
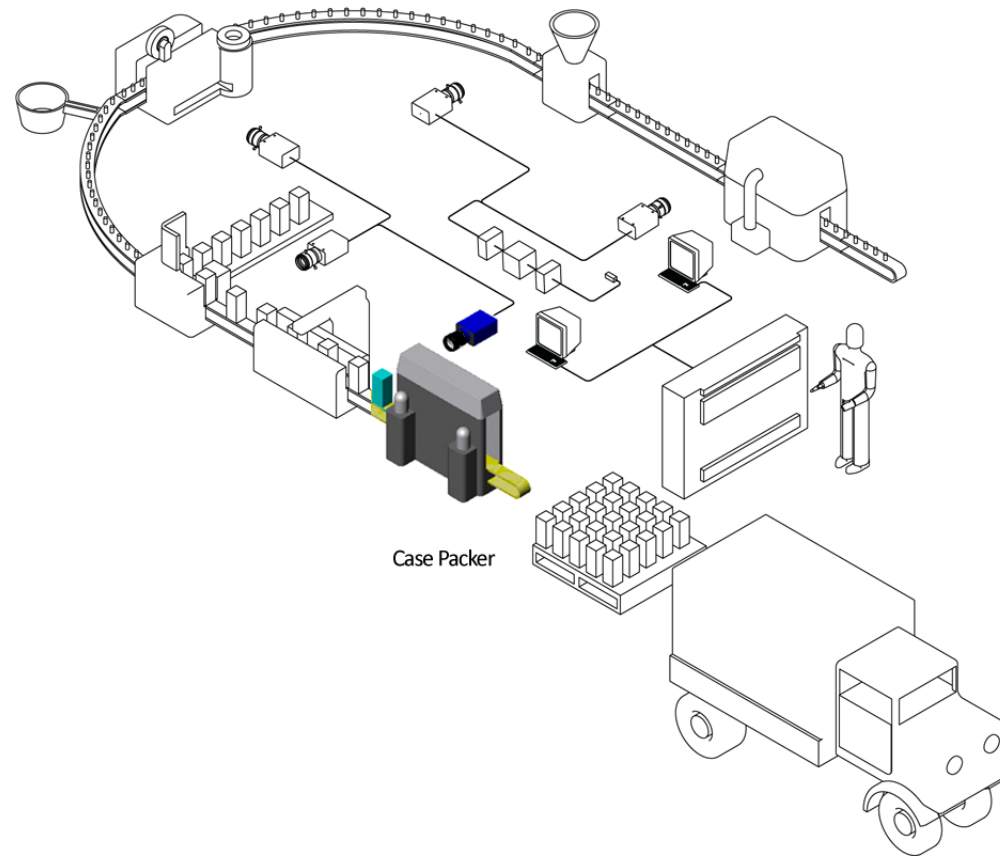
Challenges and Considerations of Vision Implementation

There are many considerations and challenges that should be thought out before implementing a vision system on the bottling line.

- *Challenges -- Tweaking, Marketing changes (graphic mods), Label updates, etc.*

- *Data visibility (MES)*

- *Security – Granularity, Windows network security*

- *Operations/Serviceability (Cache of jobs and temporary changes)*

- *Performance – Ability of software to perform while on a corporate network that requires anti-virus and management of PCs*