BOOST QUALITY, PRODUCTIVITY AND EFFICIENCY
GETTING STARTED WITH MACHINE VISION INSPECTION

Samantha Frost
Product Marketing Manager, Machine Vision
AGENDA

- Examples of Machine Vision Systems
- Why Use Machine Vision?
- Application Categories and Examples
- Summary
- Q&A
WHAT IS MACHINE VISION INSPECTION?
EXAMPLES OF MACHINE VISION SYSTEMS

In-Sight® Vision Systems
- Image Sensor + CPU + I/O
- Wide range of lenses
- Powerful tools
- Complex decisions

In-Sight® 2000 Vision Sensor
- Image Sensor powered by In-Sight Explorer software and EasyBuilder
- Simple tools, simple setup
- Simple decisions (OK/NOK)

Industrial Vision Controller
- Computer + GigE Cameras + I/O
- Wide range of GigE cameras
- Powerful tools
- Programmable
- Multi-camera decisions
WHY USE MACHINE VISION?

- **Machine Vision**
  - ✔ 24/7/360
  - ✔ Fast
  - ✔ Reliable
  - ✔ Accurate
  - ✔ Flexible
  - ○ Cost
  - ○ Lighting
  - ○ Complexity

- **Photosensors**
  - ✔ Low cost
  - ✔ Simple
  - ○ Limited
  - ○ Rigid
  - ○ Binary

- **People**
  - ✔ Intuition
  - ✔ Powerful brains
  - ○ Attention span
  - ○ Slow
  - ○ Labor cost
APPLICATION CATEGORIES

- **Position**
  - Label location
  - Cap closure
  - Tamper seals
  - Glue beads
  - Screw Insertion

- **Quality**
  - Surface scratches
  - Needle tips
  - Foreign objects
  - Flashing
  - Injection mold cavities

- **Completeness**
  - Fill level
  - Package closure
  - Inserts
  - Blister packs
  - Machining
APPLICATION EXAMPLES

Food & Beverage
- Fill Level
- Portion Size
- Sealing
- Labeling

Pharmaceutical & Medical Device
- Capping
- Blister Packing
- Lot Codes
- Sterile Sealing

Automotive
- Assembly
- Measurement
- Surface Flaws
- Glue Bead

Other
- Assembly
- Measurement
FOOD AND BEVERAGE

- Fill Level
- Cap Closure
- Safety Ring
- Label Position

- Portion Size
- Shrink Wrap Seal
- Label ID
- OCR and Bar Code
Cap Closure
Safety Ring
Fill Level
Label Position
Inspection Result: Pass

Position Check

Size Check
Inspection Result: Defect

Size Defect
PART OK

Label Position

Label ID

Bar Code

OCR
  - Weight
  - Exp. Date

Weight OK

Date OK

Barcode OK
PHARMACEUTICAL / MEDICAL DEVICE

- Cap Crimp
- Tablet Shape
  - Missing Tablets
- Batch Code OCR
- Seal Integrity
Cap Inspection: OK

Cap Shape
Cap Inspection: Fail

Crimp Defect

Crimp Defect
Cap Inspection: Fail

Crimp Defect

Crimp Defect
Read String : 03A28G40

Verify Batch Code
Read String: 03A28C40

Mis-Read: 03A28C40
AUTOMOTIVE

- Screw Insertion
- Nut Insertion
- Thread Pitch
- Thread Damage
- Surface Flaws
- Measurement
- OCR
- Glue Bead Width
Diameters (mm)

19.18
19.20
19.19
19.21
19.18
19.20
19.31

Step
1.24
1.24
1.25
1.28
1.23
1.25

DEF
Gap Defect
OTHER APPLICATIONS

- Count Contacts
- Verify Position

- Wick Position
- Cap Closure
Pin Tip Position

Contact 1
Contact 2
Contact 3
Contact 4
Contact 5
Contact 6
Contact 7
Contact 8
SUMMARY

- Machine vision systems are always "on the clock"
- Most products have many inspection points
- Data can be used for process optimization
- Powerful vision tools makes the job easier to deploy
- Consider the stakes of defective products
QUESTIONS?
THANK YOU