MERCURY

AUTOMATED X-RAY
SMD COUNTER

PEMTRON

Key Features
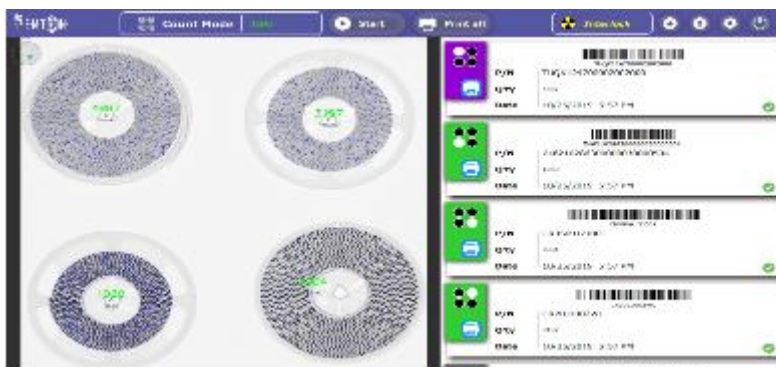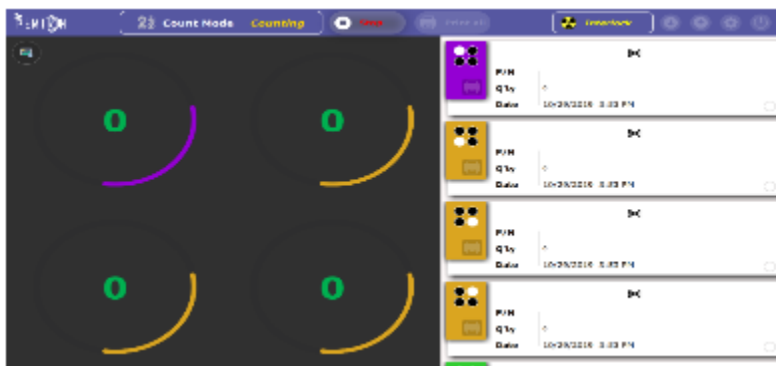
< Artificial Intelligence Basis >

- No Education Cost & No Teaching Process
- Automatic Counting & Components Recognition
- Automated Parameterizing
- Counts from Minimum 0402 Size Metric (01005 Chip) to Large Components such as Connector
- Counts (4) 7" Reels at once [Capable of Quad Count]
- Updates Learning Data through Cloud
- Delivers Learning Data with Free of Charge Periodically
- Lifetime Support for Deep Learning Data
- Supports MES or ERP

< Hardware >

- Fully Shielded Design from Radiation
- Touch Screen Monitor (Drag, Zoom In and Out)
- 430mm X 430mm (17"X17") Detector Space
- Simple and User-friendly UI
- Scanner and Label Printer Interface
- Auto & Manual Barcode Print

Very Easy to Use

1. No Education Cost & No Teaching Process

- Operators do not have to use teaching software program in order to count reels or other types.
- Eventually, operators can operate the machine without any separate education immediately.

2. Automatic Counting & Components Recognition

- It recognizes and counts automatically by pressing only "Start" button.

3. Automated Parameterizing

- Without entering any value in, it is automated parameterizing after pressing "Start" button for counting.
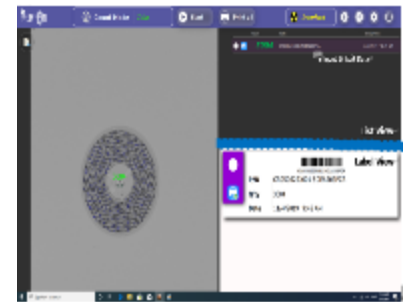
Eject Stage by pressing start button

Place Reel
(Photo sensors are installed in the stage)

Press Start

Start to Count

Scan Label using Hand-held Barcode Scanner

In case of the hand-held barcode scanner, it can be used for the scan like the picture illustrated, or you can take out the scanner then scan the barcode labels.
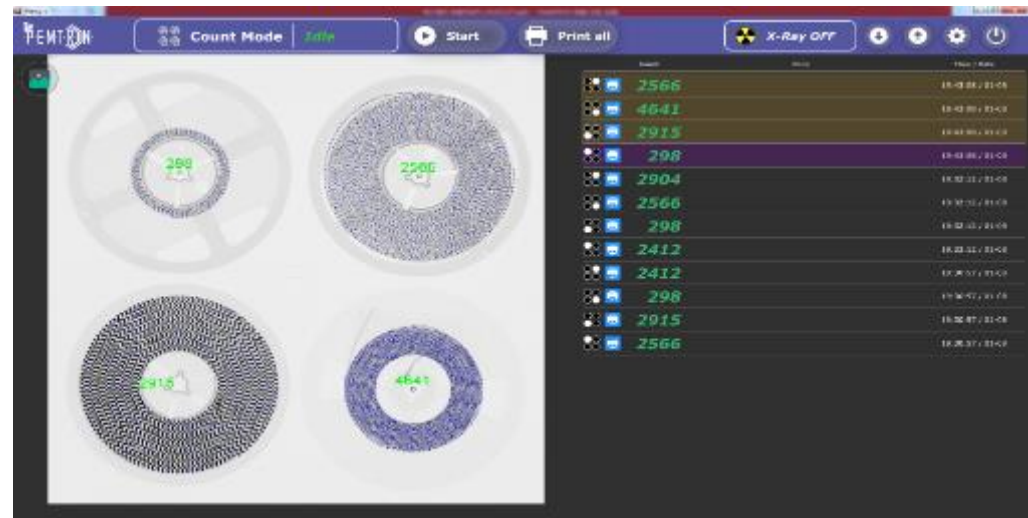
Label Printer prints barcode labels scanned.

Inspection Specification & UI

- **Accuracy**
  - > 99.99%

- **Reel**
  - Size : Standard reel up to 15"
  - Height : 120 mm
  - Weight : 10 kg

- **Component**
  - Small up to 0402 Chip

- **Inspection time**
  - Single Reel : 8 seconds
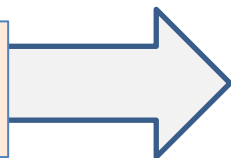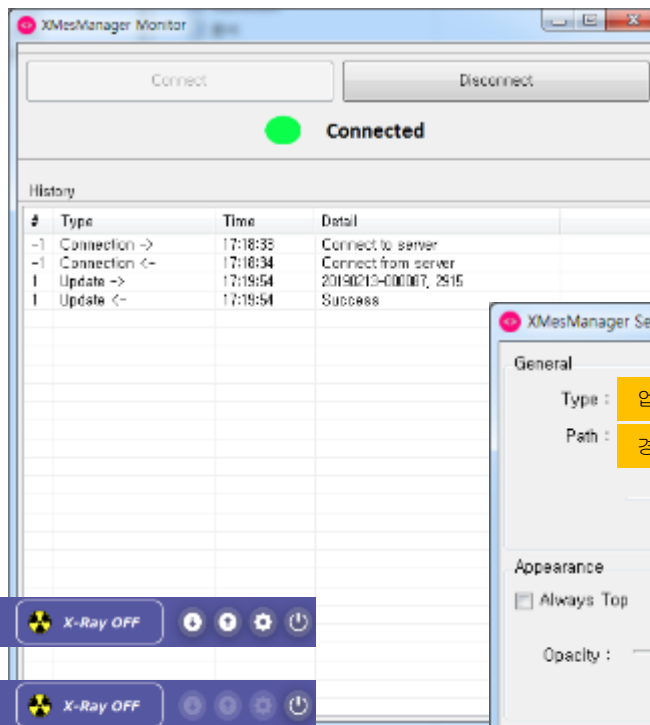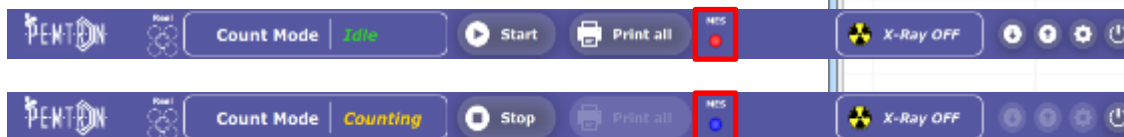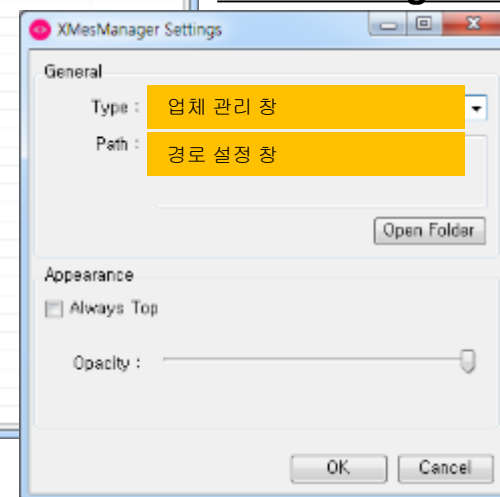 - 4 Reel : 12 seconds

MES Interlocking

MES System

MES Monitor Window

[Data Transmitting]
-. Managing Code
-. Quantity

MES Setting Window

Indicator Window of Mercury MES Operation

Prevention of Label Printer Error

- Previous Method

Operators have to scan barcode in order
(Possible to Make Mistake by Operators)

- Improved Method

Prevention Countermeasure of Operator Mistake

1. In case of counting 4 reels, operators do not have to keep an order to scan barcode for each reel. Machine is recognized its reel location by sensors. After lifting up one reel then scanning barcode, operators can check which reel operators scan through UI.

2. Reel lifted up by operators can be scanned by barcode scanner fixed to machine.
   (Its label will be auto-printed)

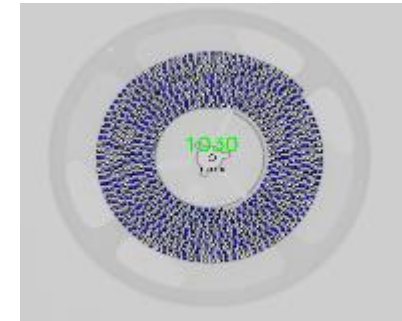3. Printed label can be attached on the reel, using opposite hand immediately

Scanner can be fixed to machine or table
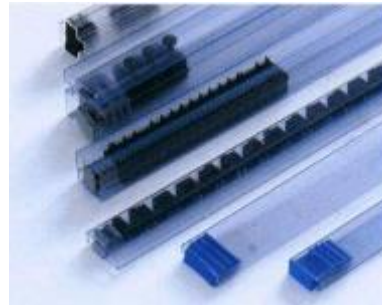
Counting Type

1. Vacuum-packed Reels with Desiccant

2. Reels Contained Foreign Object

3. Tube Packing

4. Tray Packing

**5. High Height Components
(Distance of Tube and Detector = 1000mm)**

6. Bulk Units

Vacuum-Packed Reel with Desiccant

Foreign Object

Tube Packing

Tray Packing

High Height Component
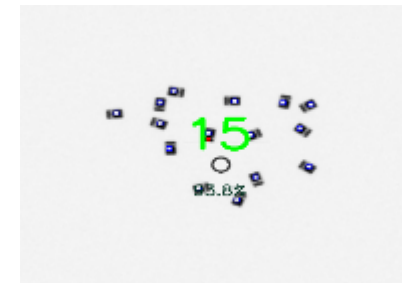
Bulk Units

Cycle Time

- **Cycle Time**

- Single Reel : **8 sec.**

2 sec.(Inserting) + 2 sec.(Shooting) + 2 sec.(Counting) + 2 sec.(Ejecting)
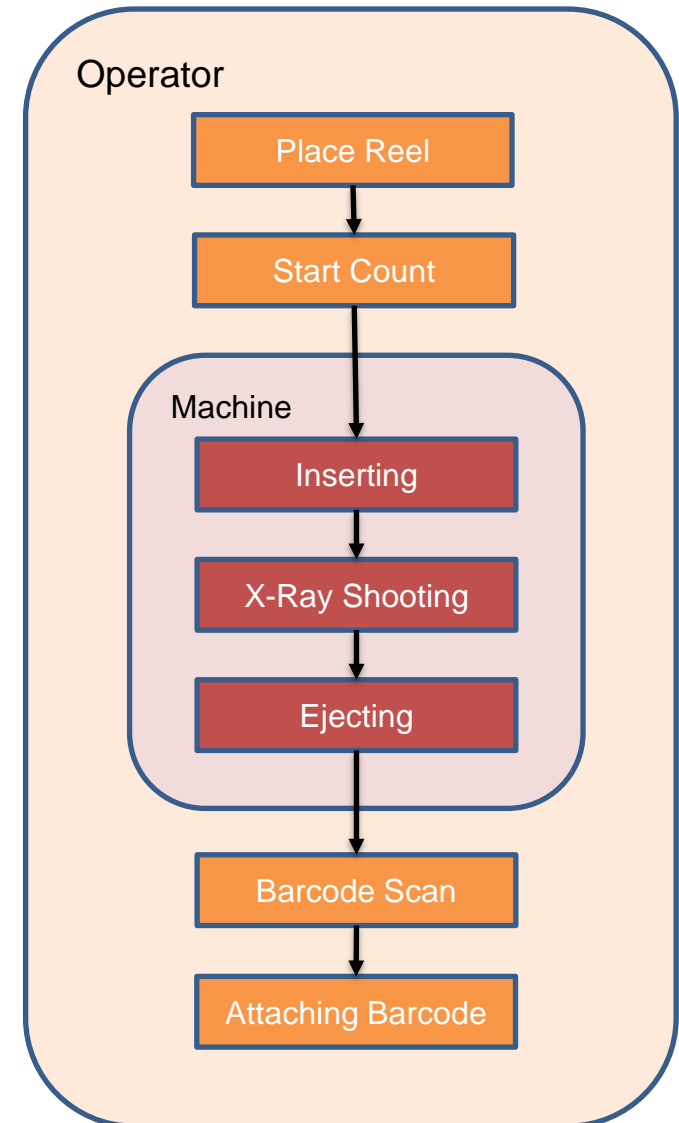
- 4 Reels : **12 sec.**

2 sec.(Inserting) + 2 sec.(Counting) + 6 sec.(Counting) + 2 sec.(Ejecting)

- **Cycle Time for Others (Operators)**

- Placing Reel : 3 sec.
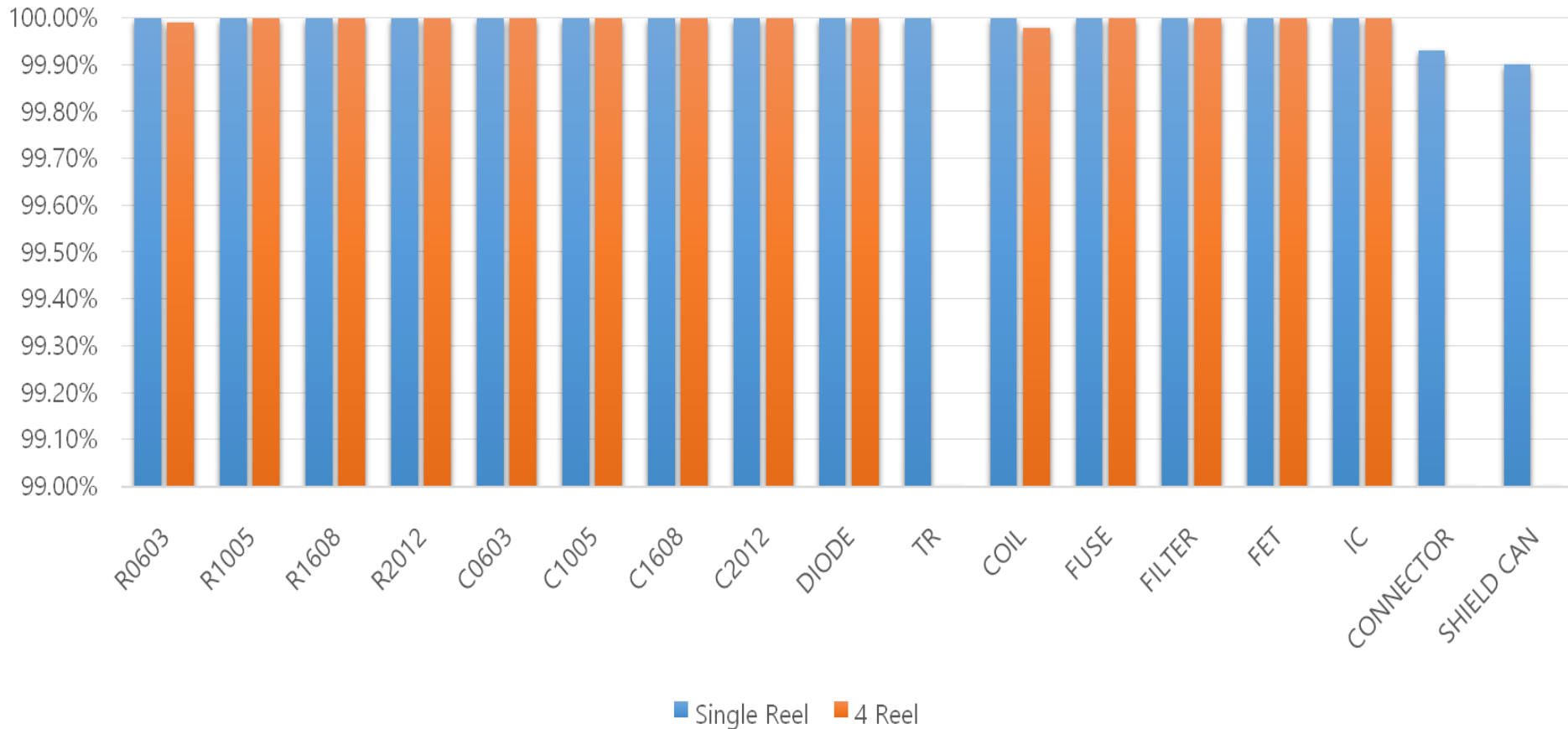- Scanning Barcode : 2 sec.
- Attaching Label : 2 sec.

```
Operator
  ┌─────────────┐
  │ Place Reel  │
  └─────────────┘
         ↓
  ┌─────────────┐
  │ Start Count │
  └─────────────┘
         ↓
  Machine
  ┌─────────────┐
  │  Inserting  │
  └─────────────┘
         ↓
  ┌──────────────┐
  │ X-Ray Shooting│
  └──────────────┘
         ↓
  ┌─────────────┐
  │  Ejecting   │
  └─────────────┘
         ↓
  ┌─────────────┐
  │ Barcode Scan│
  └─────────────┘
         ↓
  ┌──────────────────┐
  │ Attaching Barcode│
  └──────────────────┘
```
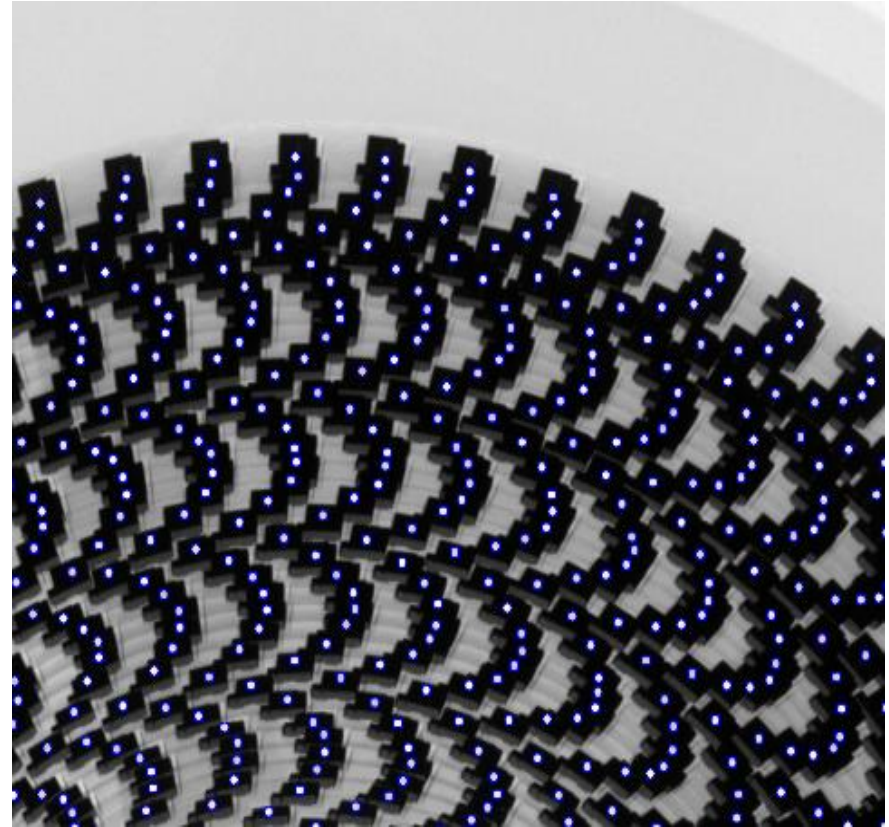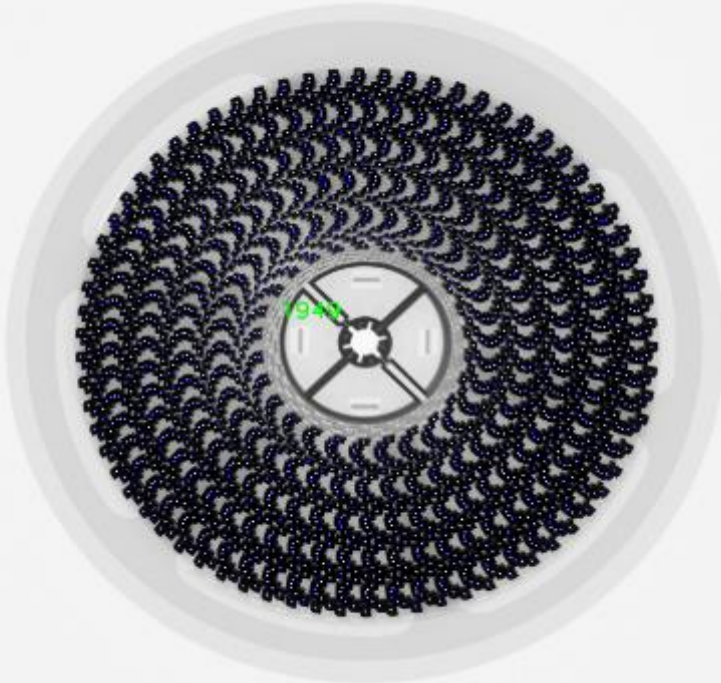
· Operation Concept of Counter

Accuracy by Component

Accuracy chart is generated, based on slide 9 ~ slide 17

- Shield Can - 1 / Accuracy 100%

PEMTRON
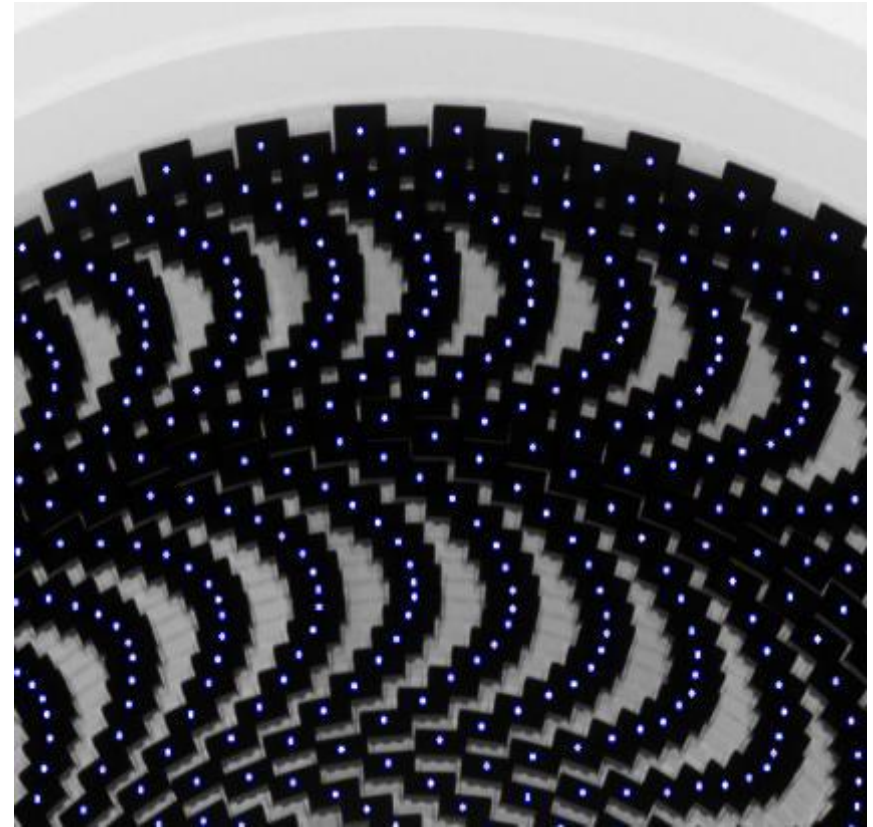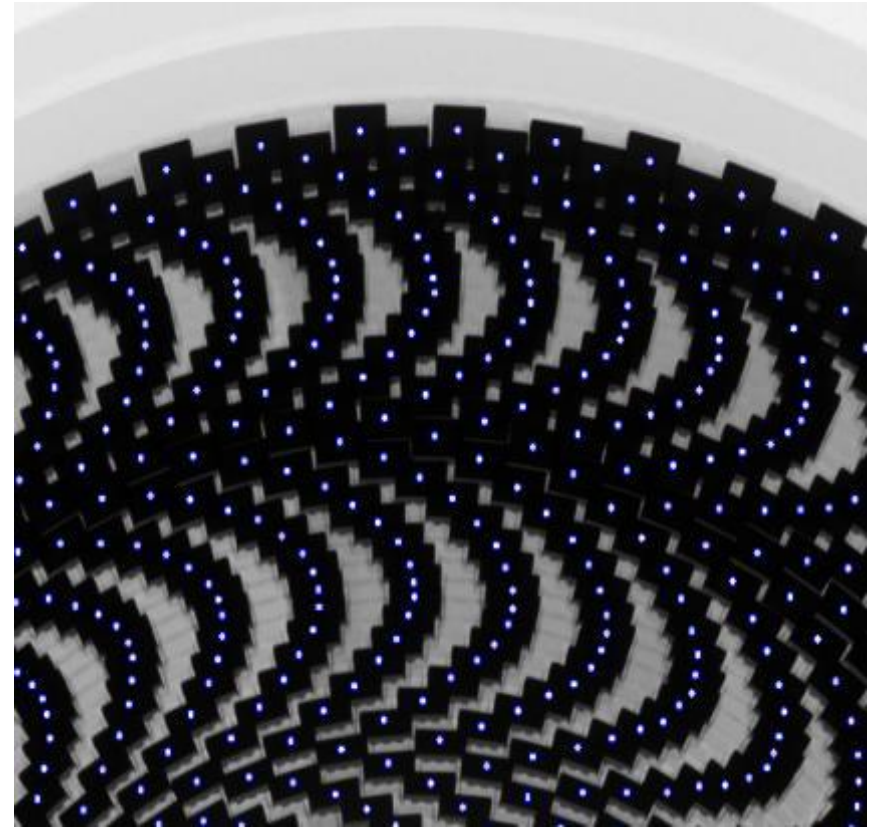
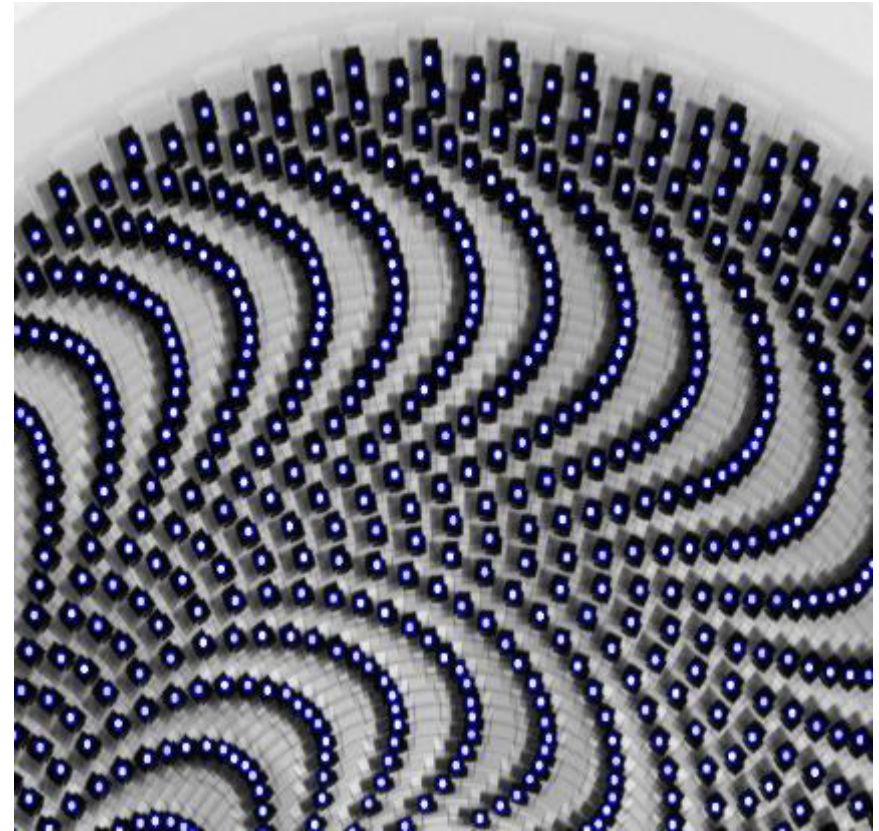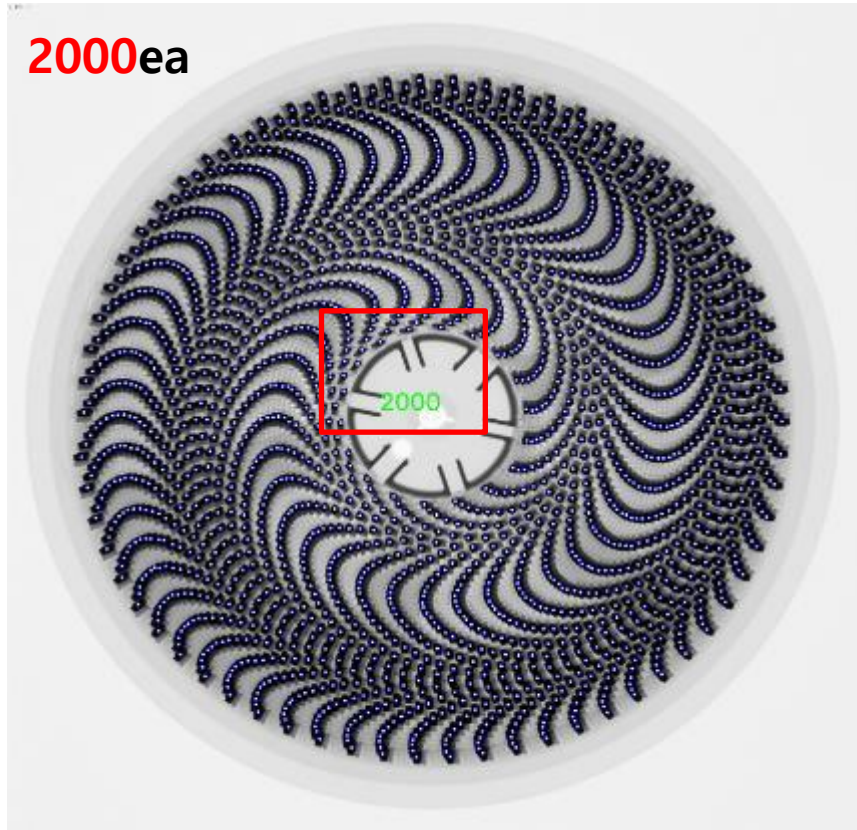- Shield Can - 2 / Accuracy 100%

Inspection Result (Shield Can)

- Shield Can - 3 / Accuracy 100%

1705ea

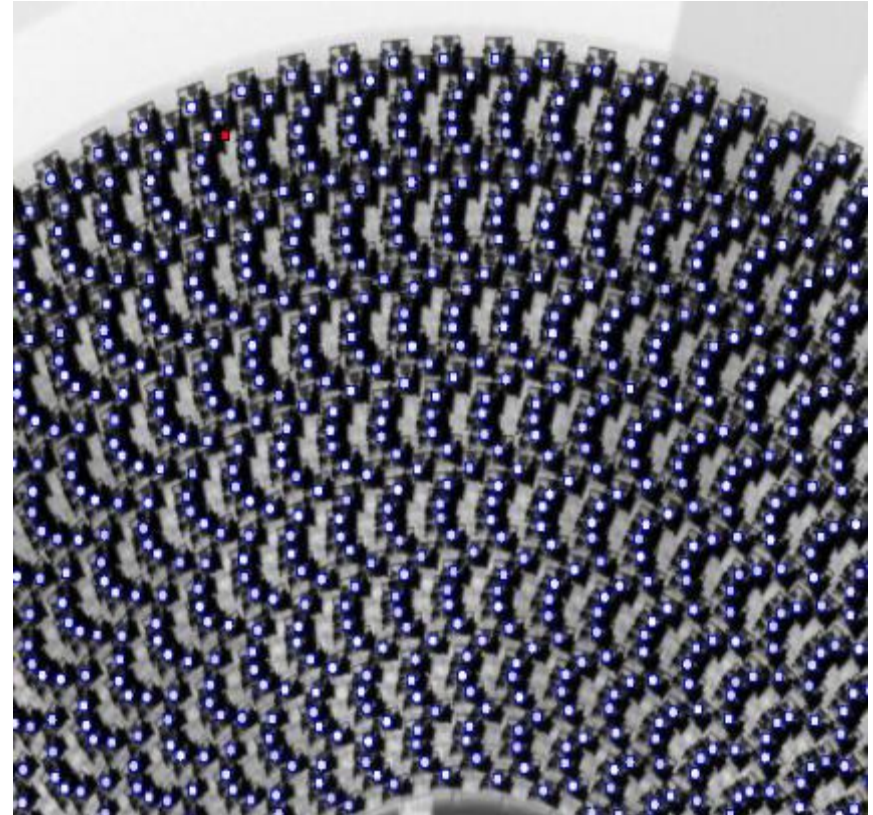# Inspection Result (Connector)

- Connector - 1 / Accuracy 100%

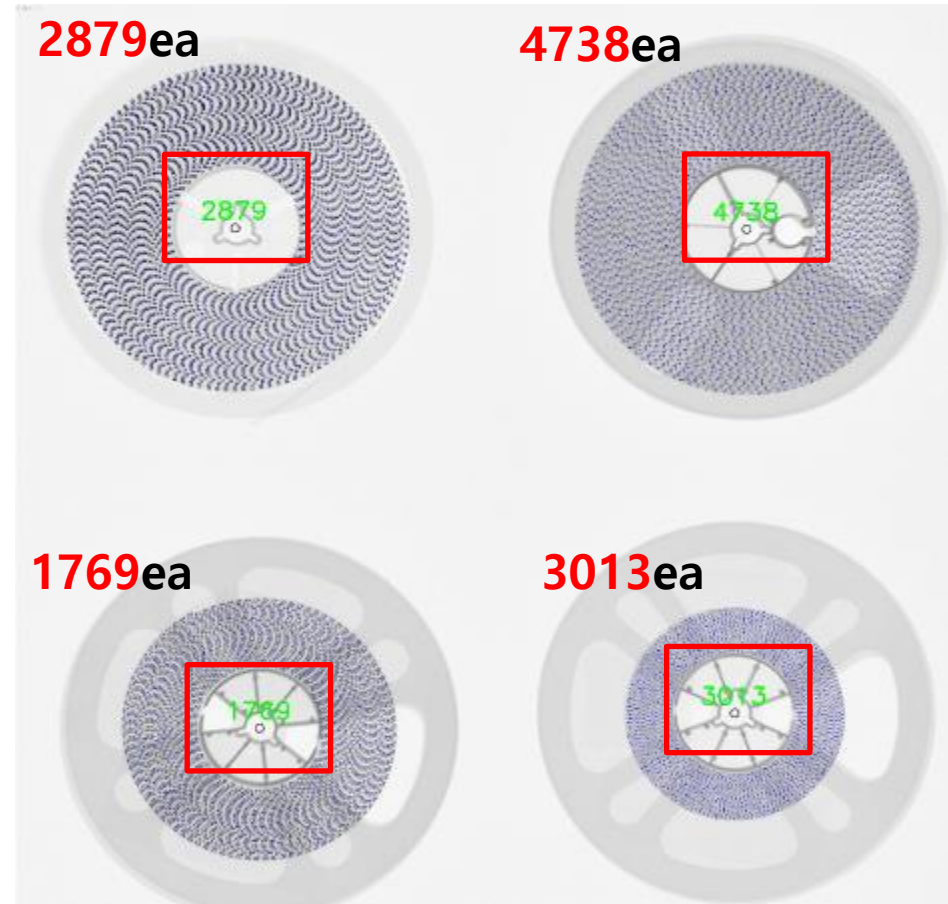# Inspection Result (Connector)
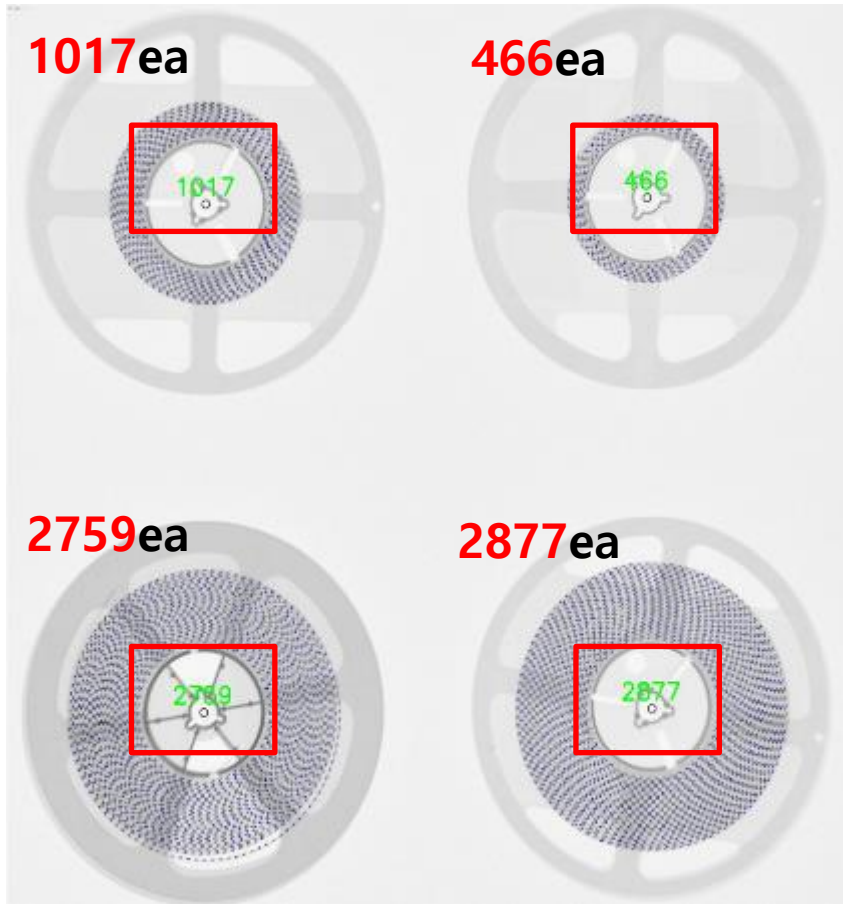
- Connector - 2 / Accuracy 100%

2955ea

Inspection Result (R/C Chip)

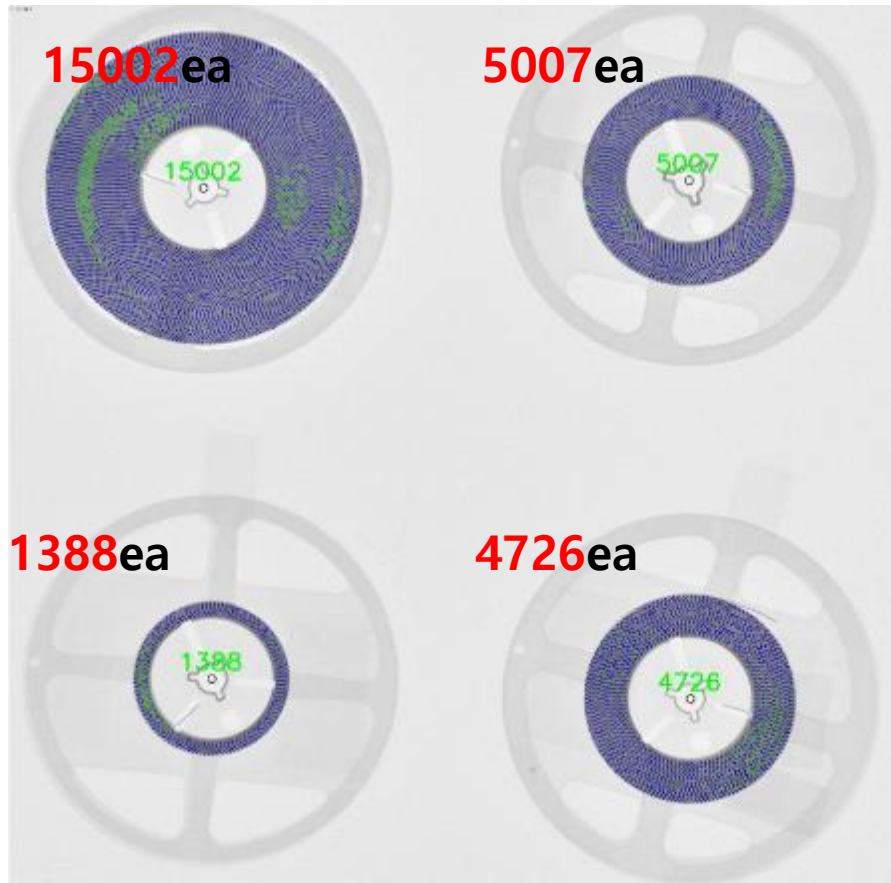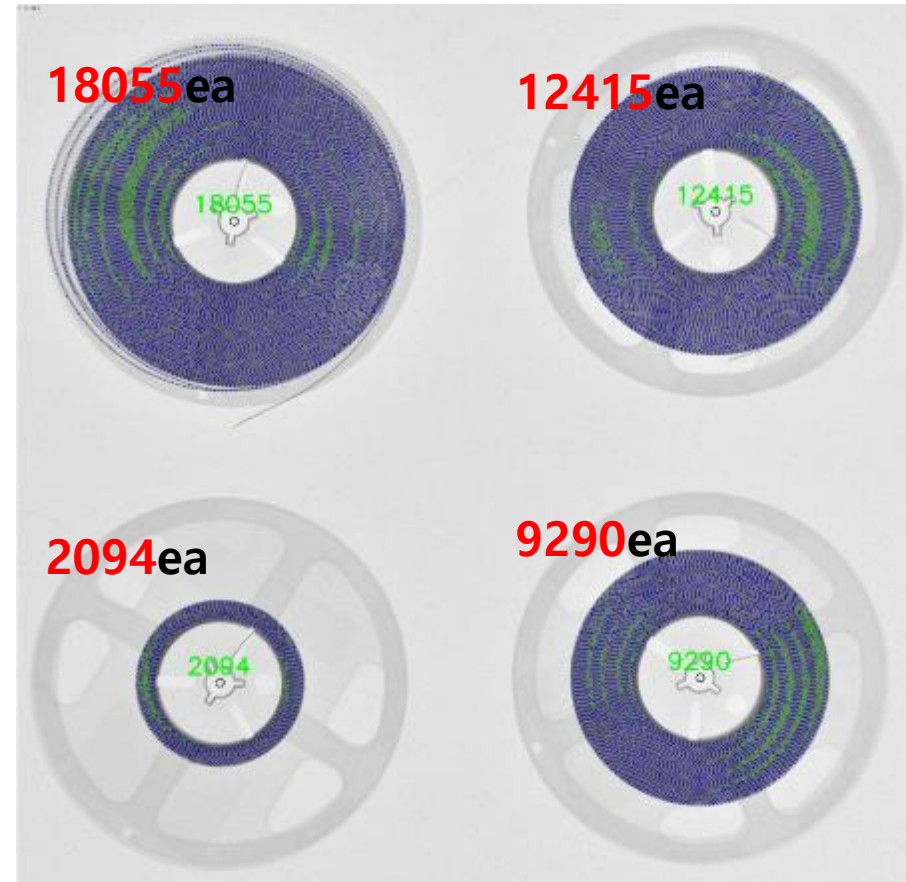R/C [0603] Chip / Accuracy 100%   R/C Chip [0603] / Accuracy 100%
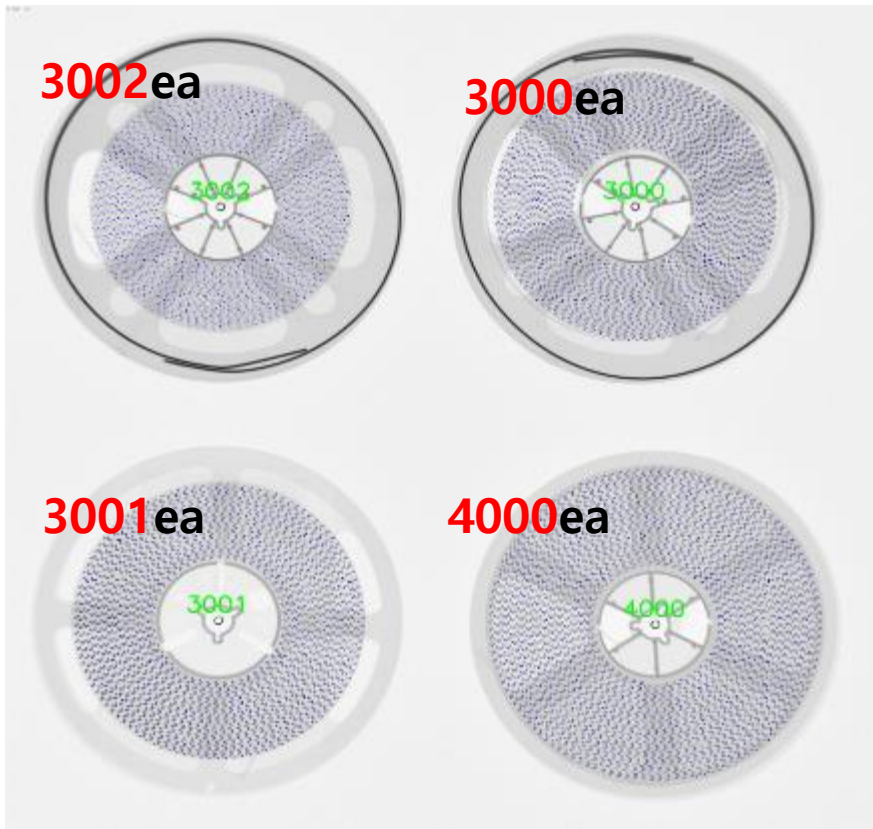
Inspection Result (C0603)

C [0603] / Accuracy 100%

C [0603] / Accuracy 100%

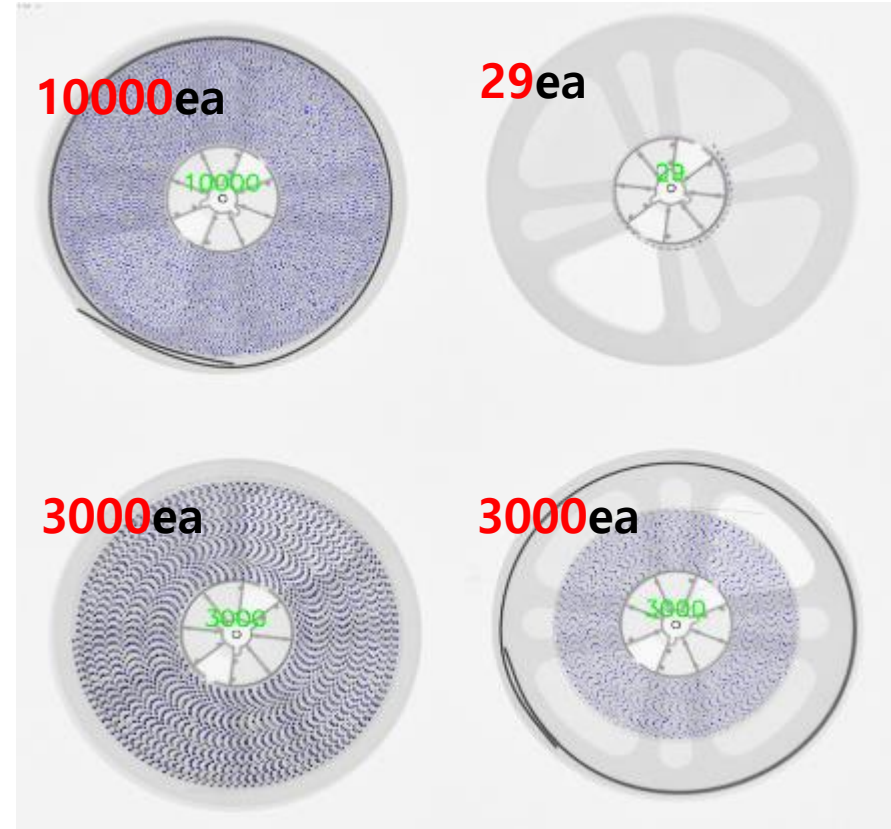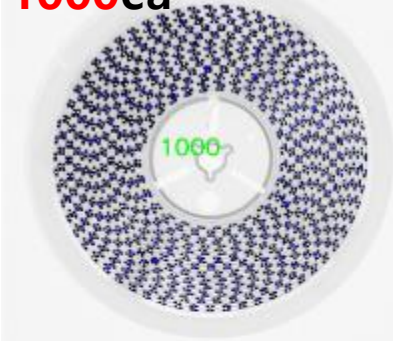# Inspection Result (Diode)

Diode / Accuracy 100%

Diode / Accuracy 100%

Inspection Result (Coil)

Coil / Accuracy 100%

Coil / Accuracy 100%

1. Specification

Reel Size	Standard Reel up to 15"
	Height : 120 mm / 4.7"
	Weight : 10 kg / 22 lbs
	Component : Small up to 0402 Metric [01005] Chip
Accuracy	> 99%
Tube	80kV, 50W Sealed
Detector	17" x 17" FPD
PC	Window 10 Professional / Touch Monitor
Power	220V 50/60Hz Single Phase
Default	Hand-held Barcode Scanner
	Graphic Card
Option	Label Printer

2. Exterior Dimension
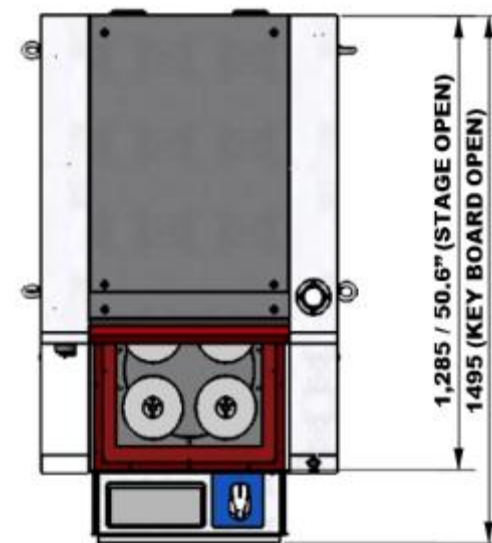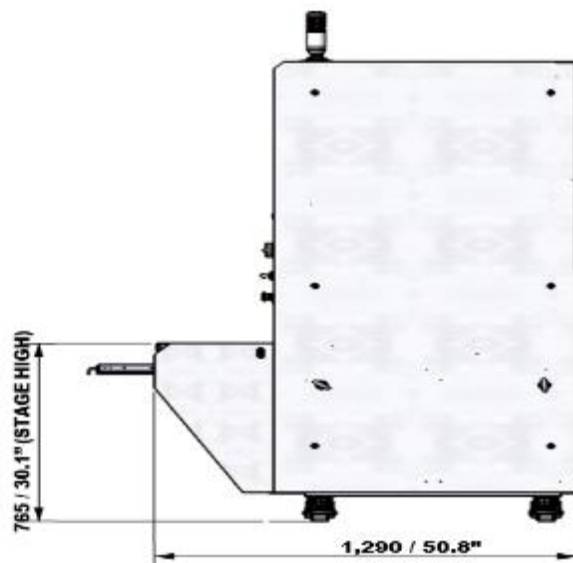
THANK YOU

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