K2 Tech Capsule Inspection Machine Introduction

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High speed & capability

- High speed: 140000 pcs / hours.

- Productivity compare to others: 130%~150%.

- 4 kinds of unprinted capsule are supported:
  a. Opaque capsule
  b. Full transparent capsule
  c. Cap transparent capsule
  d. Body transparent capsule

- Support both Outside defects and inside defects detection.

- Printed capsule supported

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Independent design and production

- Software and hardware are designed and produced by K2 Tech.

- Independent intellectual property rights.

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Simple & Easy

- **Simple structure: Easy maintenance**
  a. One disk make 360 degree inspection available.
  b. Two motors make the machine to transport capsule smoothly.

- Easy to use.
  a. Less then 10 minutes change of product.
  b. Easy to use, both software and hardware.

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Simple & Easy

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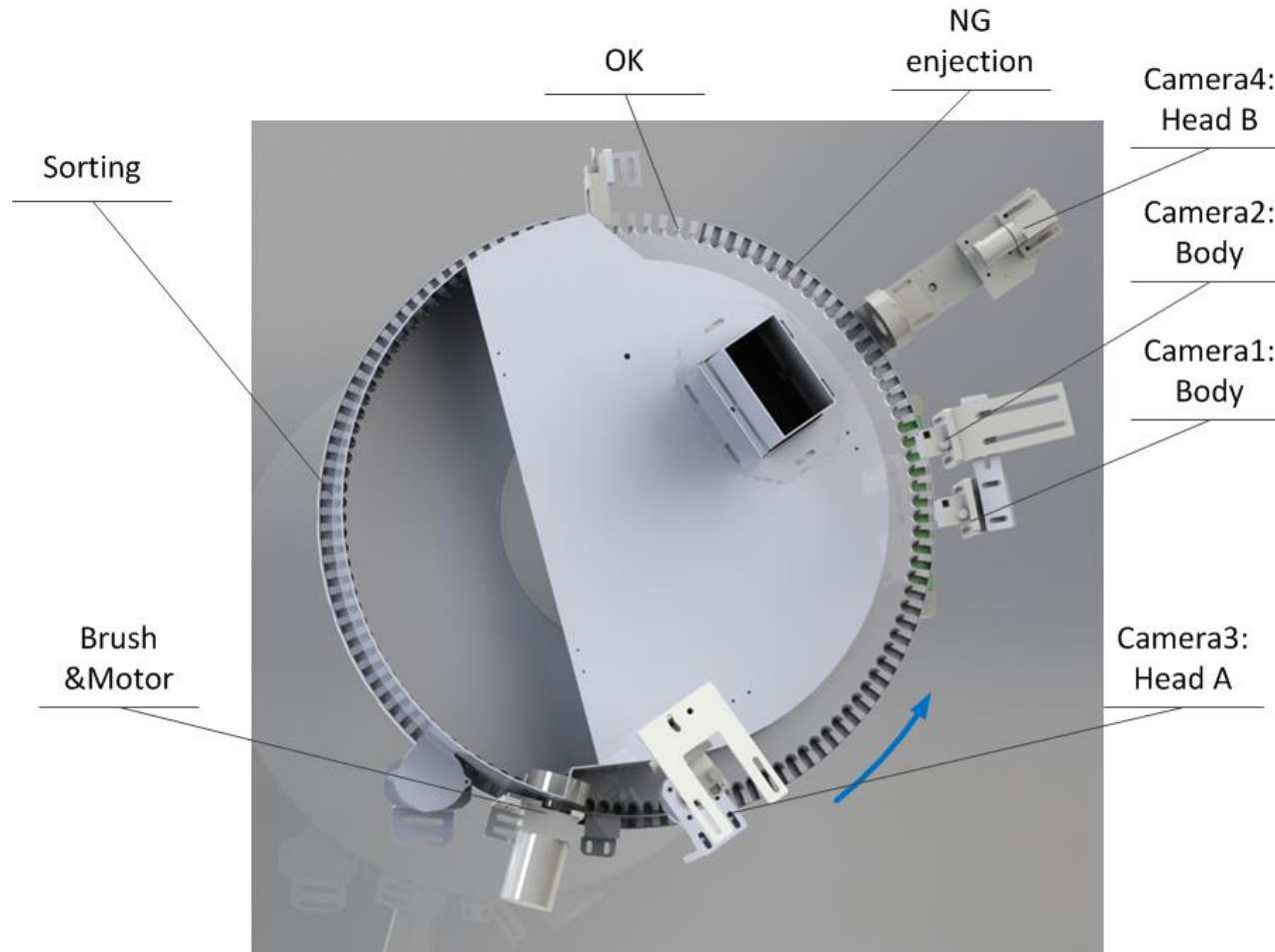
The main components & reliability

- Camara: Basler, Germany

- Lens: VST, Japan

- Computer: Fanless compact IPC, Taiwan

- PLC: Mitsubishi L series high speed, Japan

- Major parts: Round disk, China

1. The fan-less IPC makes the machine better reliability and performance.
2. The main components are worldwide popular parts makes the machine easy to maintain.
3. The main components enable the machine higher speed and performance.

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IPC(Computer) Configuration

- CPU: Intel core I7, 4 cores 8 threads
- Memory: DDR4 8G
- Hard Disk: 500G HDD
- Ethernet Card: 6xGigabit Ethernet
- USB Port: 4xUSB 2.0, 4xUSB 3.0

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User Interface & Cameras

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User Interface & Cameras

| ID	Type	Images
Camera 1	Mono(Black & White) camera Body inspection by IR light. 8 continuous images for one capsule. **Competitors: 6 images for one capsule.**	
Camera 2	Color camera Body inspection by visible light. 8 continuous images for one capsule. **Competitors: 6 images for one capsule.**	
Camera 3	Color camera Head inspection	
Camera 4	Color camera Head inspection	

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# User Interface & Cameras –Camera 1
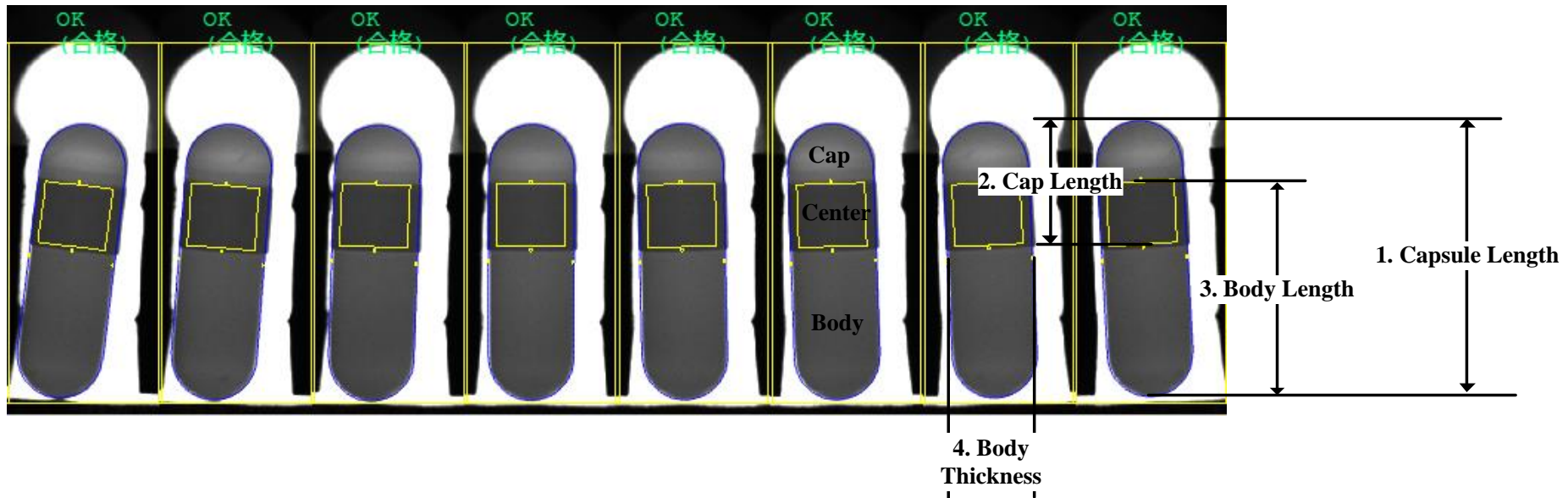
1. Camera 1 take 8 continuous black & white images for each capsule.
2. System can find the capsule and measure the capsule size(Capsule length, cap length, body length and body thickness) automatically. And the size range should be set individually to eject the Mini Cap/Body, Long Cap/Body, Locked/Loose capsules.
3. System can defect the defect in the cap, body and center part, and the parameters for each part should be set individually.
4. Camera 1 can detect both inside defects and outside defects.

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User Interface & Cameras –Camera 2
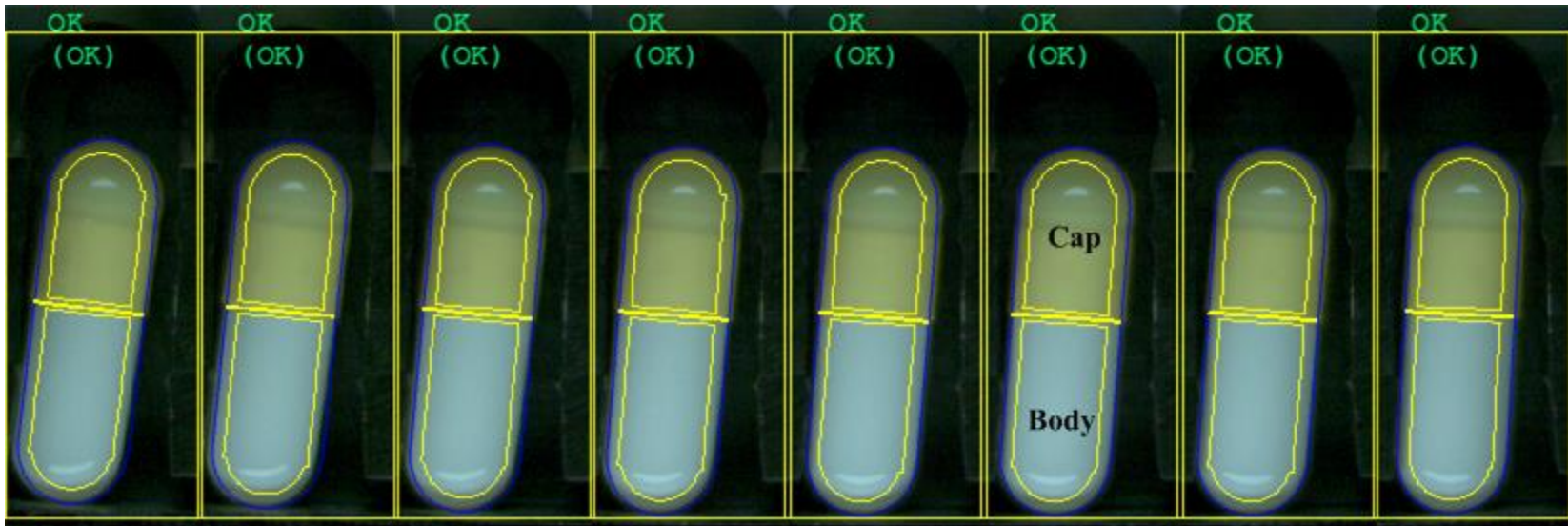
1. Camera 2 take 8 continuous color images for each capsule.
2. System can find the capsule automatically, locate the edge of cap, and separate the cap part and body part.
3. System can detect the color of cap and body, according to the color range settings foreign capsules should be detected and ejected.
4. Camera 2 can detect outside defects.
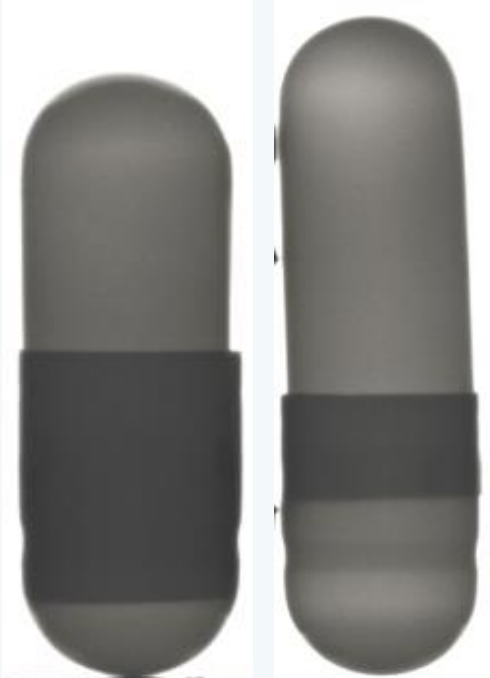
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User Interface & Cameras – Camera 3&4

Good capsules	Bad capsules
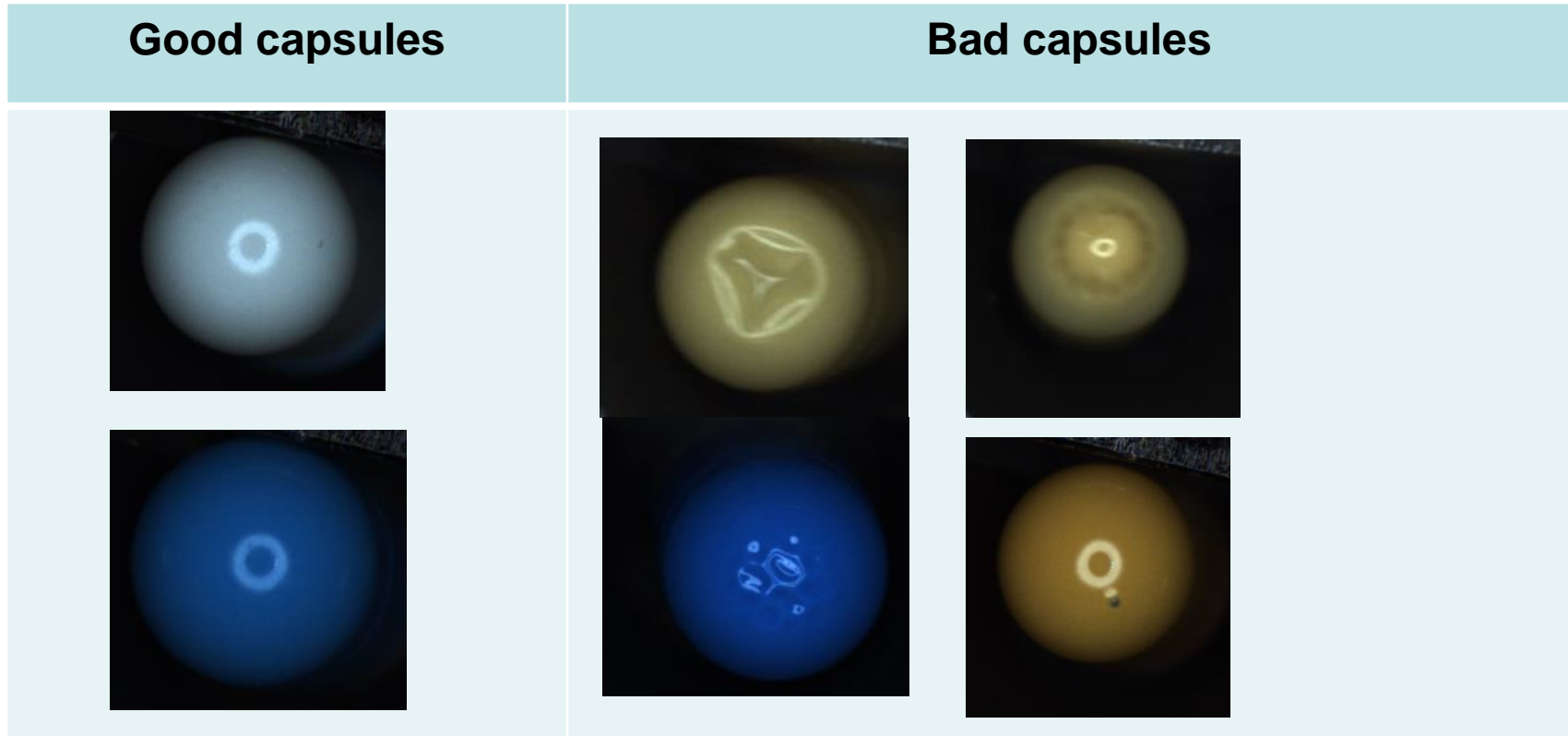
1. Camera 3&4 take one color image of the two heads of capsule.
2. System can find the capsule head automatically.
3. System can detect head defects(dent, star head etc.) according to the parameters settings.

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Defect Samples

ID	1	2
Defect	Bubbles	Spots-Black / Color / Gelatin / TiO2
Images		

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Defect Samples

ID	3	4
Defect	Loose Cap / Loose Body	Lock / Semi Lock Capsules Long Joining
Images		

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Defect Samples

ID	5	6
Defect	Double Caps	Mini Cap / Body, Long Cap/Body
Images		

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Defect Samples

ID	7	8
Defect	Uncup cap/body	Foreign Capsule: Camera 2 check the color of cap and body to detect the foreign capsules
Images		

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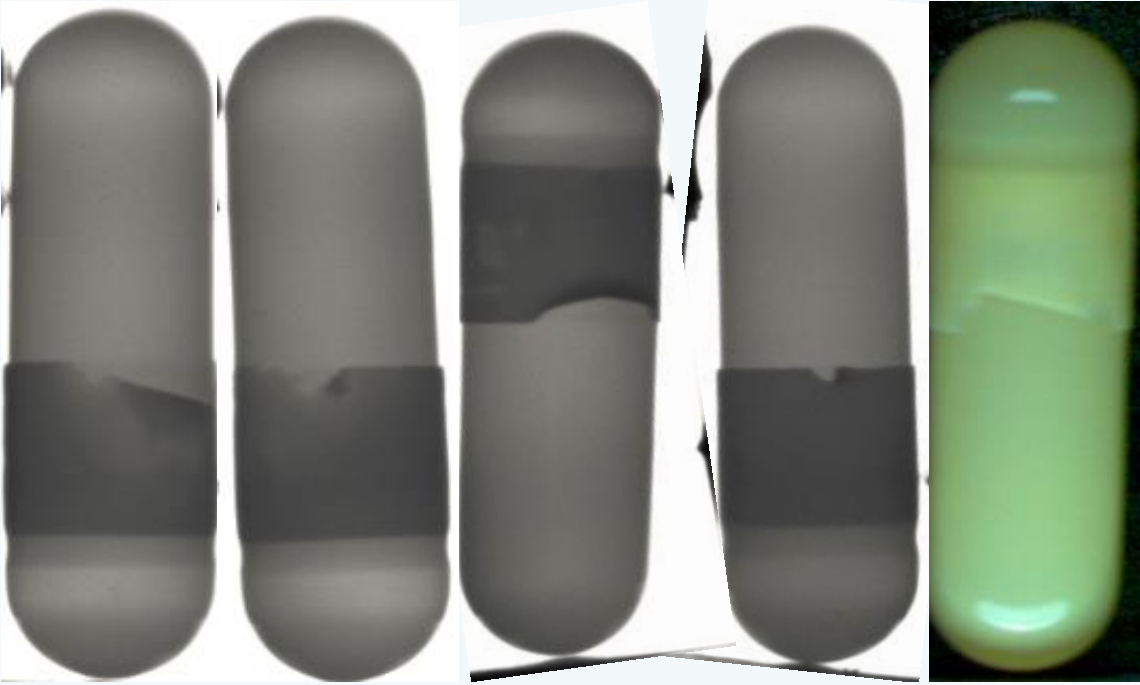
Defect Samples

ID	9	10
Defect	Inside defect: Folded Capsules Inside / Loose ring inside	Stripper hole or andy type of Hole Cap / Body
Images		

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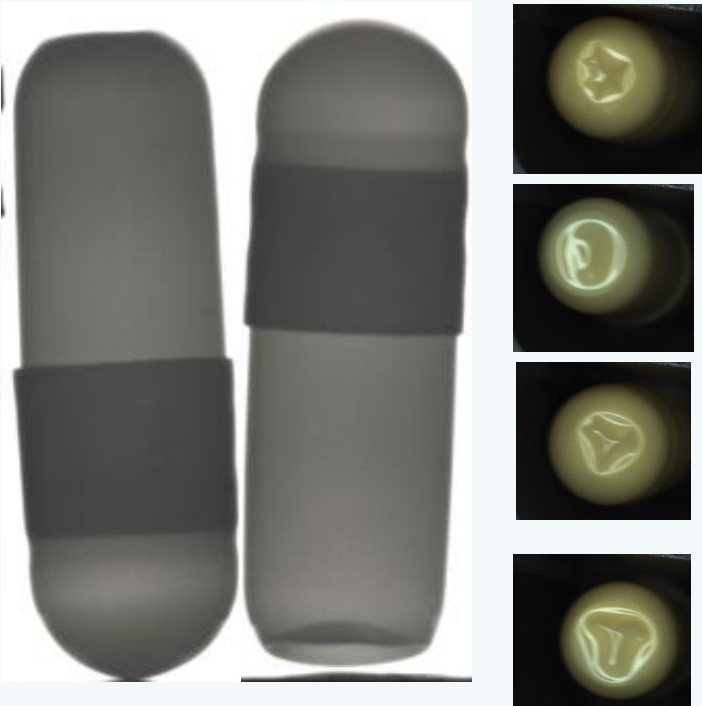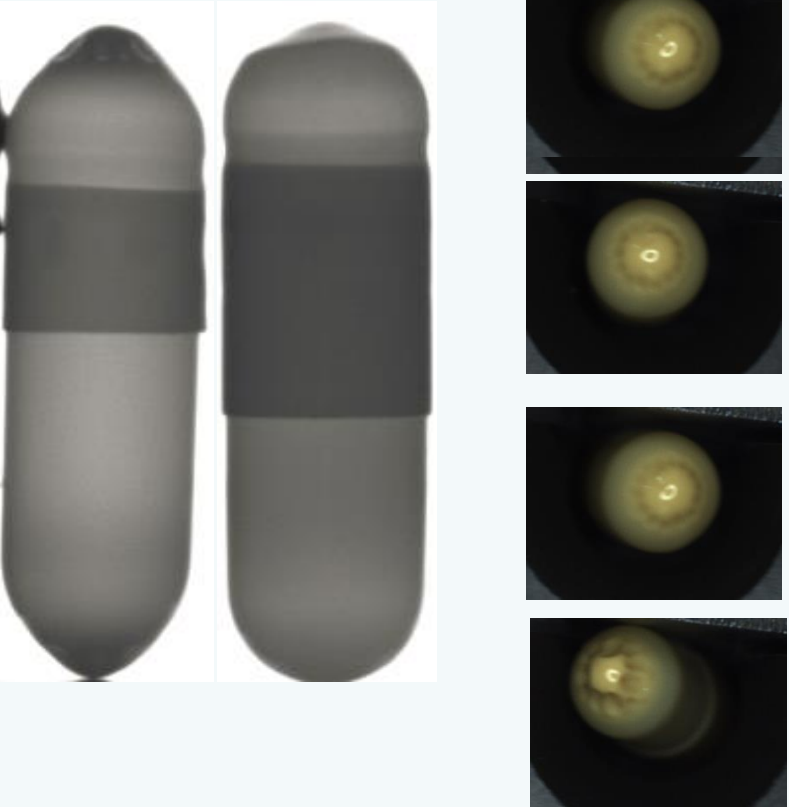
Defect Samples

ID	11	12
Defect	Cut Edge: Uneven Cut / Bad Cut Cap / Body	Cut Edge: Split Cap / Body
Images		

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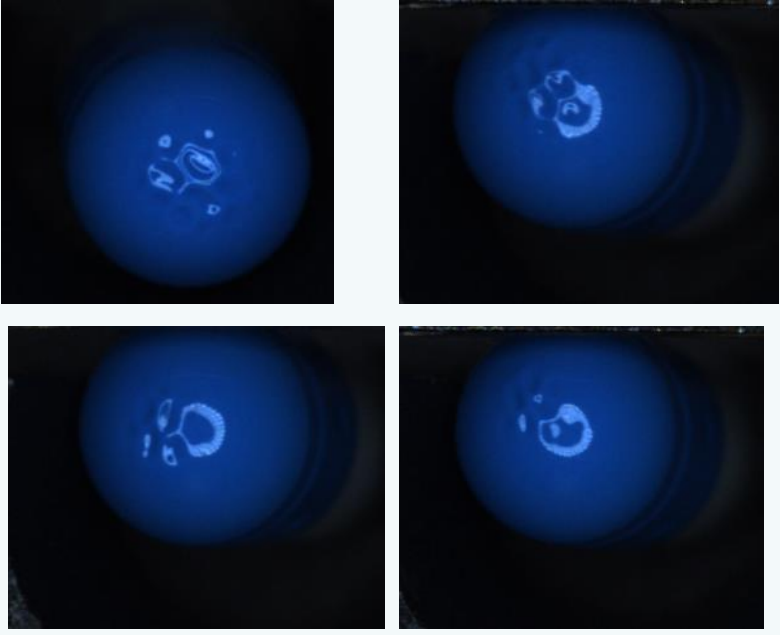
Defect Samples

ID	13	14
Defect	Cut Edge: Rough Edges etc.	Dirty Capsules Outside
Images		

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Defect Samples

ID	15	16
Defect	Dent Cap / Body	Double Dip Cap / Body
Images		

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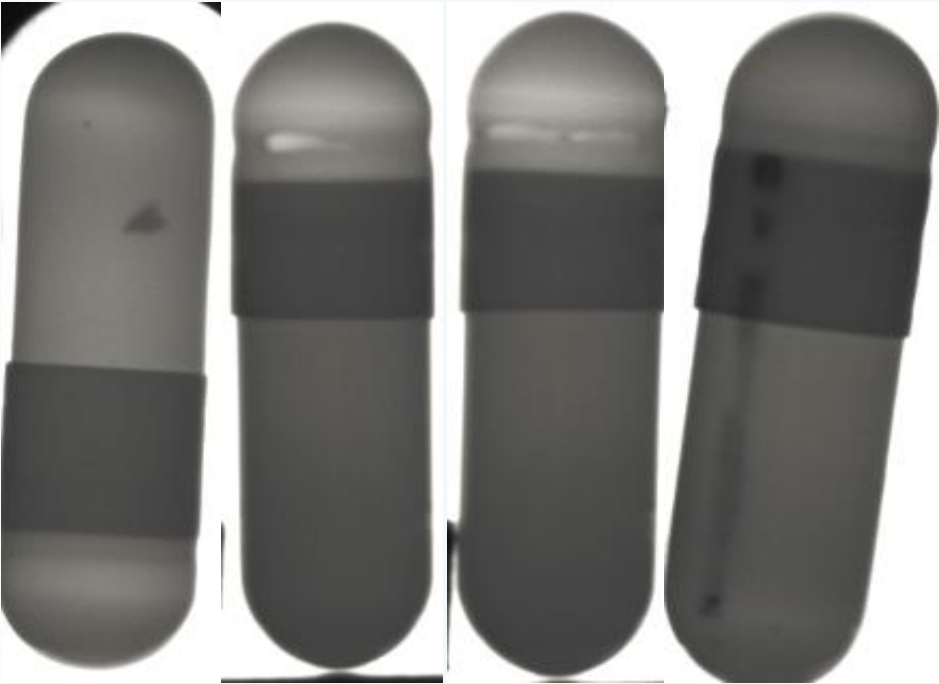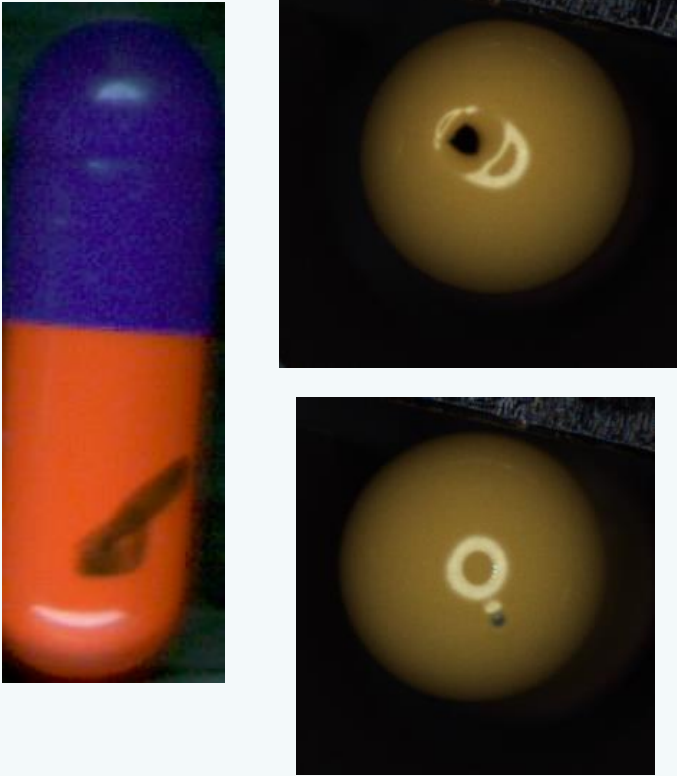
Defect Samples

ID	17	18
Defect	Colette Pinch Cap / Body	Head Defects: Star head
Images		

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Defect Samples

ID	19	20
Defect	Mashed Capsules	Loose ring Outside
Images		The system can detect the defect of loose ring outside.

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Defect Samples

ID	21	22
Defect	Gelatin problem	Other defects
Images		

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Print Defect Samples

ID	23	24
Defect	Missing print	Print defect
Images		

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The End

Thank you for your attention

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