

# Technical Data

Model: X-1000 (X-Ray Parts Counter)

Name: Microfocus X-Ray Parts Counter

Manufacturer: Shenzhen Zhuomao Technology Co., Ltd

**(2020 Version)**

**Professional X-RAY Inspection System Manufacturer**

## **X-Ray Solution X-1000**

### **Microfocus X-Ray Parts Counter Manufacturer**



This equipment is mainly used for the rapid counting of the reel type of material in SMT industry. Material types include all RC materials and IC materials. It is based on the high industrial 4.0 standard, intelligent modular design, and can be used for 7-17inch Tape Reel/JEDEC Tray/IC moisture sensitive package, etc. It is equipped with artificial intelligence deep learning software, cloud update system.

With X-ray imaging technology, it can detect the production materials and obtain image information. The image will be automatically counted by SEAMARK's self-developed image algorithm, to obtain the actual quantity of materials, and classify the number of materials at the same time. These data and information can be interfaced with the customer MES system.

## 1. Technical Parameters

Equipment	Dimensions	0.8M*1.26M*1.95M
	Weight	About 800KG
	Power supply	AC220V±10% 10A 50/60Hz
	Total power	Max 1.5KW
	Loading	Manually
X-Ray Tube	Brand	America VJ
	Max tube voltage	80 KV
	Max tube current	700 $\mu$ A
	Focal spot size	30-40 $\mu$ m
Detector	Brand	IRay
	Imaging area	427mm*427mm
	Pixel matrix	3072*3072 pixels
	Gray scale	16 bits
Reel Inspection	Max size	15inch
	Min size	7inch
	Max thickness	85 mm
	Min thickness	3 mm
	Min parts size	01005
Others	Speed	Appr. 15s/reel
	Accuracy	>99.99%
	Barcode scanning	Can be equipped with barcode, QR code scanner
	Label printing	Can print material code and counting results in real time
	Parts support	Resistance, capacitance, inductance, crystal, LED, diode, triode, multi-pin IC, etc.
	Software	Support for automatic saving of SPC statistics, images and results in any format
	System docking	ERP, MES, etc.
	Radiation	< 1 $\mu$ Sv/Hour

## 2. Computer Configuration

CPU  $\geq$  i7-7700K

Memory  $\geq$  8GB

Storage: 128G SSD+4TB HDD

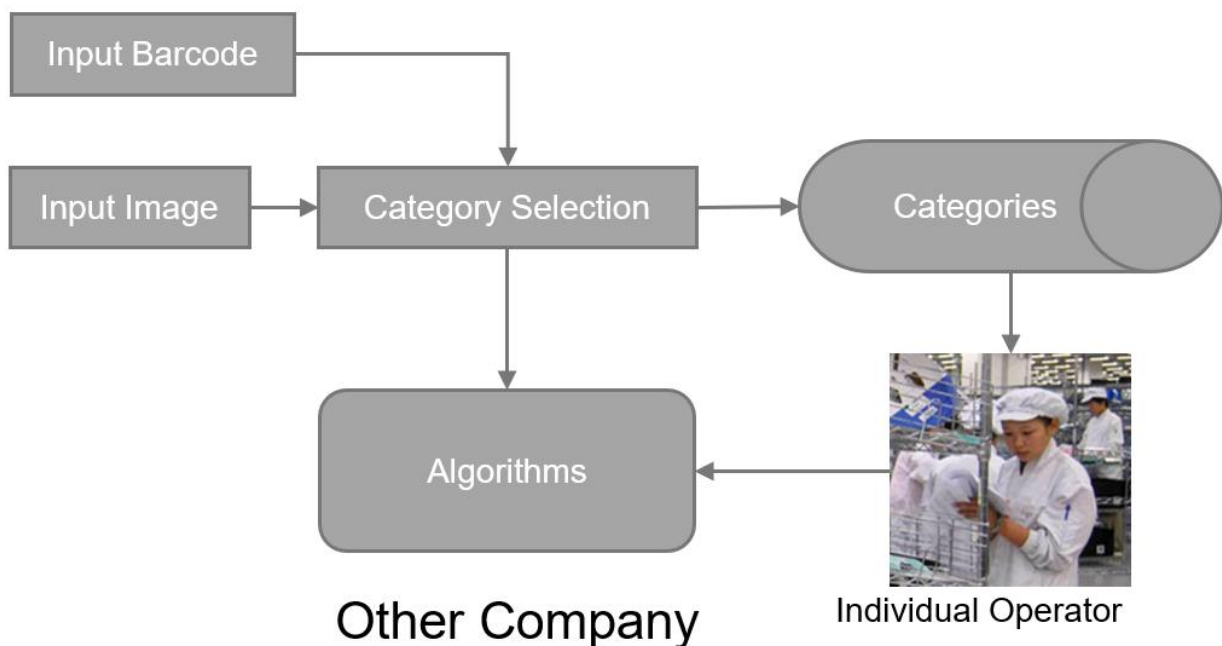
WIFI support

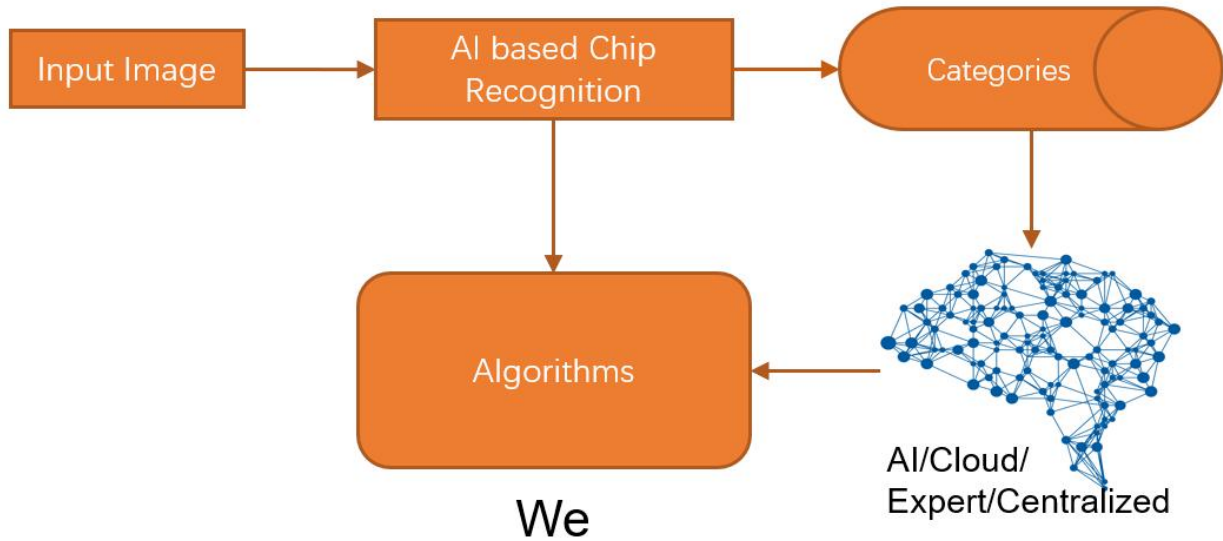
### 3. Key Features

1	Deep Learning based fully automated counting algorithm.
2	No parts teaching procedure, user can directly use it.
3	Accumulated counting database that shared with all machines.
4	The more data, the more reliable, and the more accurate.
5	Support four 7inch Reels counting one time.
6	Support random positions, excellent user experience.
7	Continuously algorithm/database updating and support.
8	Extremely reliable/repeatable based on Deep Learning.

### Why we can do better than others?

- Other companies give user too much work, counting is based on User’s ability.
- We use cloud/AI to centralize image data, counting is based on experts and deep learning.
- Other companies' users barcode as a link between algorithm and parts.
- We use AI to recognize parts and apply algorithm automatically.
- Other companies cannot put counting data together, algorithm is not sharable.
- We use centralized database to share all counting algorithm/information for each user.





#### 4. Testing Result

The counting time and accuracy of various sizes of trays are as follows:

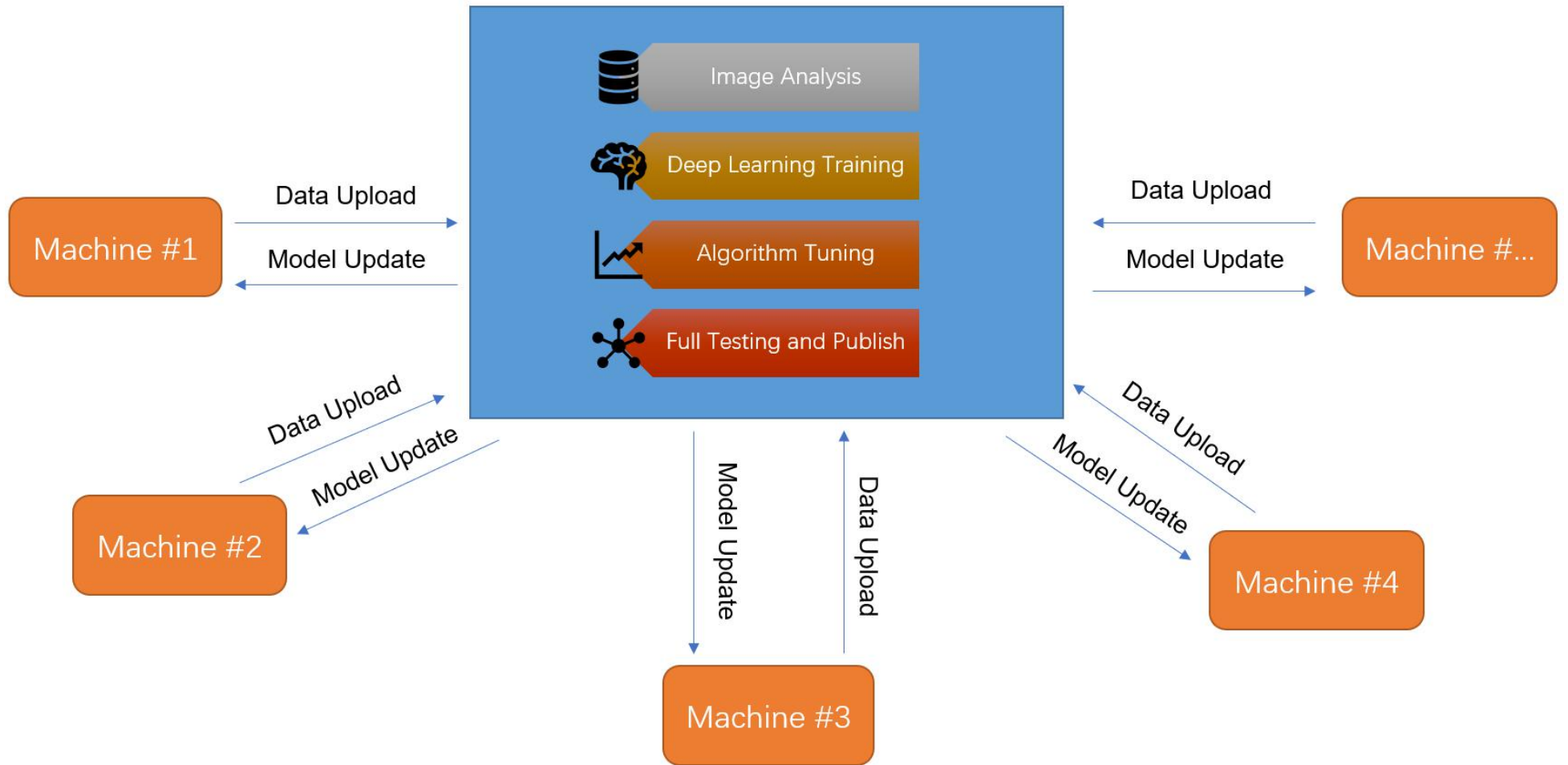
No.	Parts size	Reel size	Qty.	accuracy	Time
1	01005	7"	20000PCS	98.5%	16S-18S
2	0201	7"	10000PCS	99.9%	13S-16S
3	0402	7"	10000PCS	99.9%	13S-16S
4	0603	7"	5000PCS	99.9%	13S-16S
5	0402	15"	50000PCS	99.9%	15S-18S
6	10x10	15"	500PCS	99.9%	13S-18S

Depending on the amount of material, the time efficiency will vary slightly. The efficiency will be improved as the cloud or software database updates.

#### 5. Artificial Intelligence Cloud Database Introduction

The equipment comes with an artificial intelligence cloud database function. Each equipment's tray image will be automatically stored in the cloud database through the network every day. Engineers will optimize these images and then update to the database every month, to increase the counting accuracy. As time goes by, the accuracy will be higher and higher until 100%.

When the parts used by the customer have existed in the database, they can be counted directly, no need to build the data of the reel again, so the efficiency and accuracy is higher.



## 6. Why use an X-RAY counting machine? (ROI)

6 workers\*4 working hour

VS

X1000\*1 worker\*1 working hour

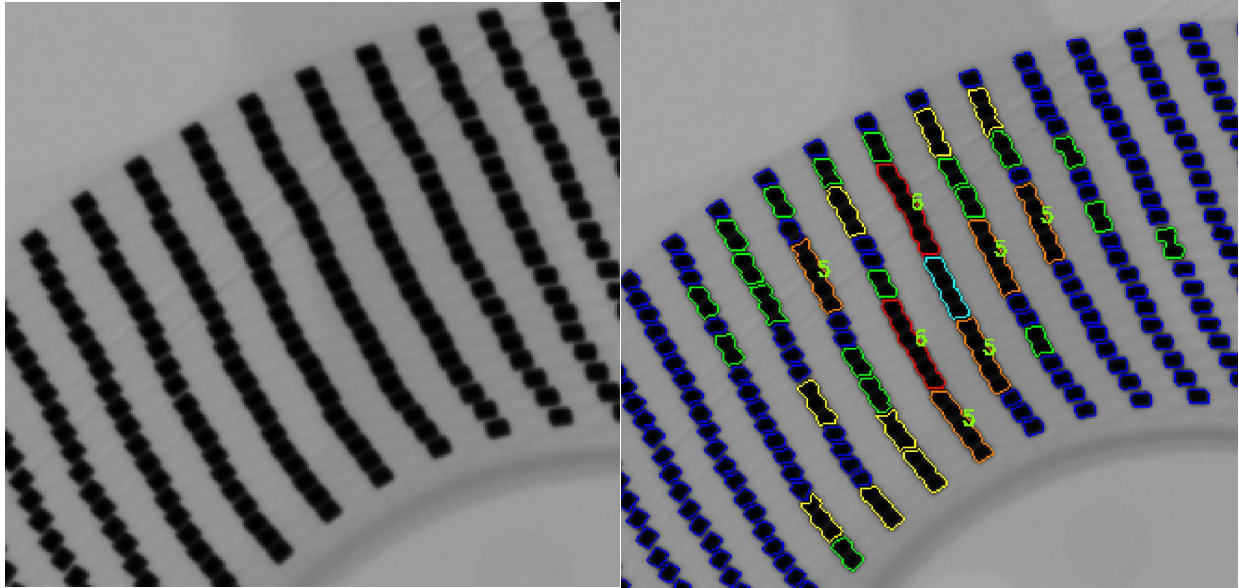


With X1000 Machine, you can save labor cost for 5 workers\* 3 hours per day, within one year, you can get the machine investment back.

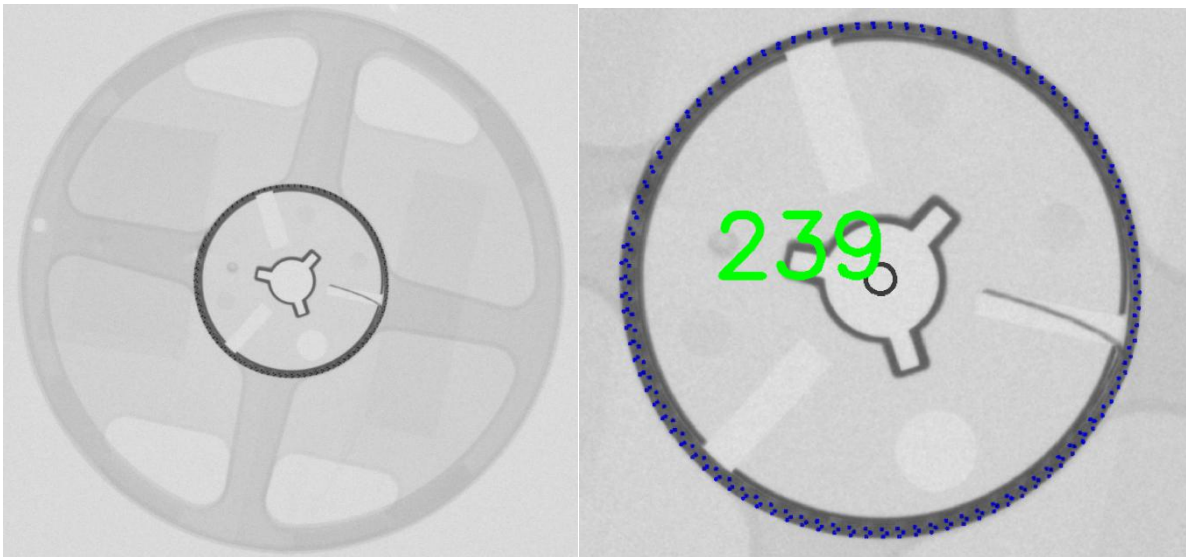
	Traditional Counting machine	X1000 X Ray Counting Machine
Workers per shift	6 workers	1 worker
Counting time per reel	80 seconds	12 seconds
Reels quantity per shift(8 hours)	1800 reels	1920 reels

1. It is not necessary to open the packaging bag to maintain the integrity of the material roll and will not affect the moisture resistance of the material.
2. Significantly reduce the inventory time, eliminating the need for extra manpower, can be turned to assist other people to take over or change the line, shorten the time to change the line.
3. The X1000 Counting machine uses digital data to print barcode stickers or directly upload the database. The traditional method of counting equipment request operator per equipment, occupying a large space, and the result of the inventory is manually filled in, and it is possible to write a wrong or missed writing.
4. The X1000 counting machine can greatly improve the shortage of material, material loss, material leakage etc, digitally manage material storage, reduce material inventory cost, and improve material inventory accuracy.
5. To meet the trend of Industry 4.0, for SMT production line, we need to be intelligent, less people, and more efficient.

## 7. Sample images

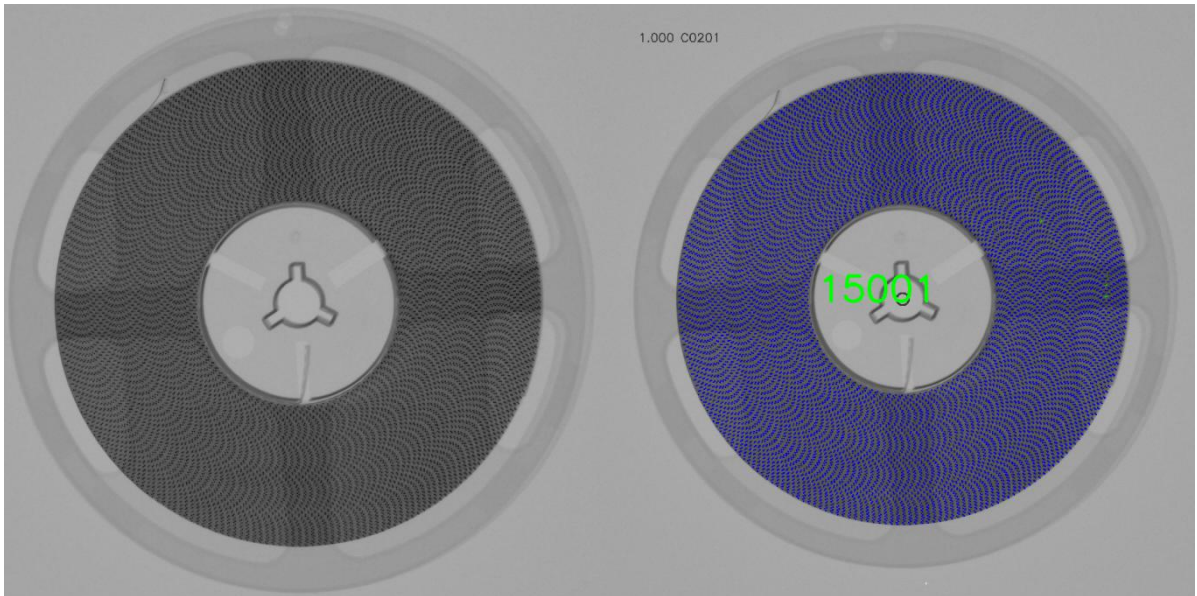


(AUTO) Advanced Image Breaking Algorithm --- to handle connected chips (Tall)

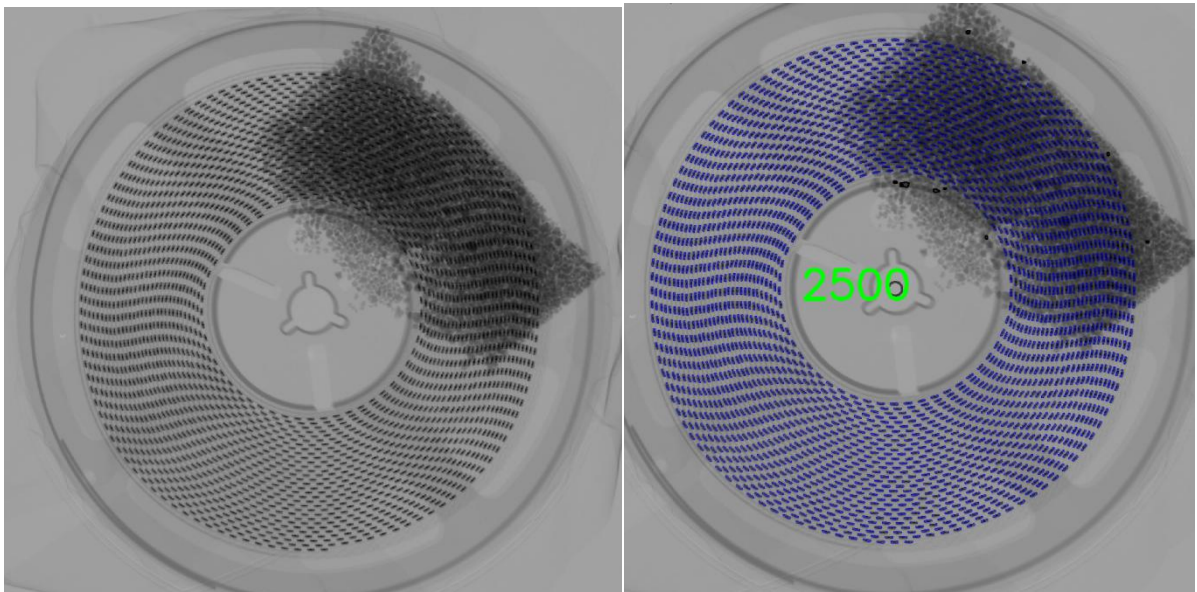


(AUTO) A small amount parts are countable (0201)

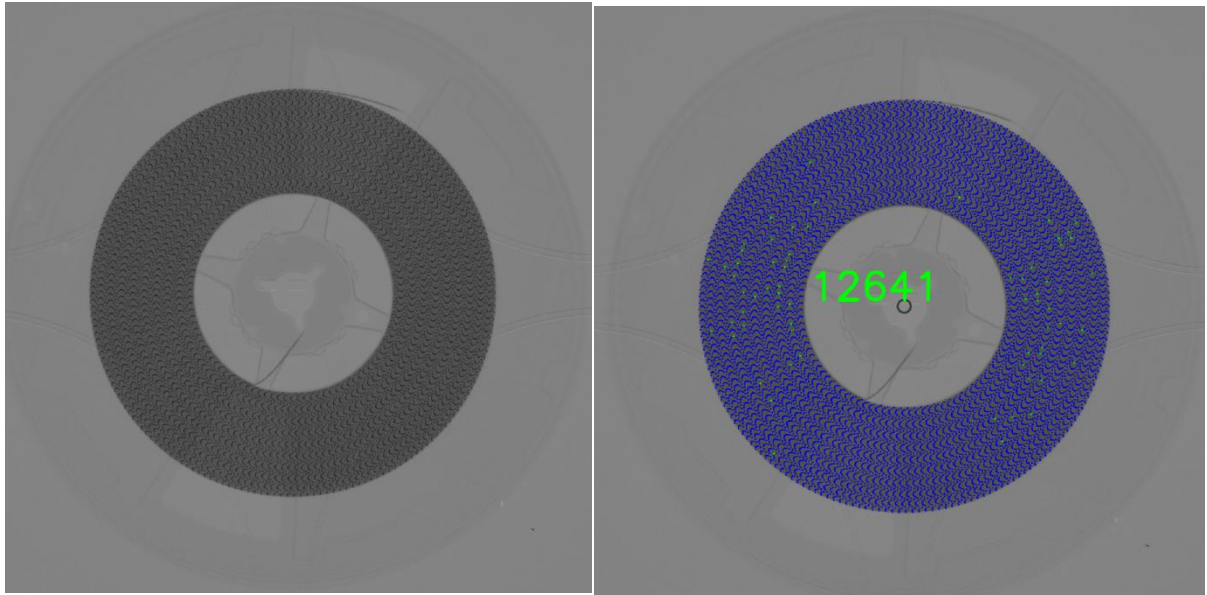




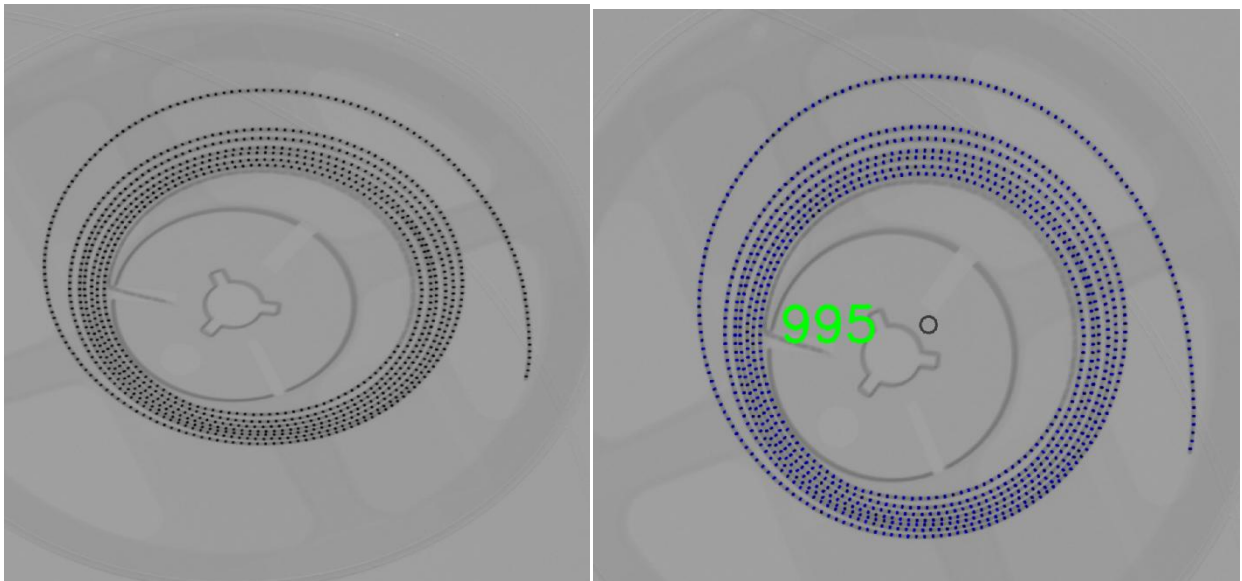
(AUTO) Full Reel (0201)



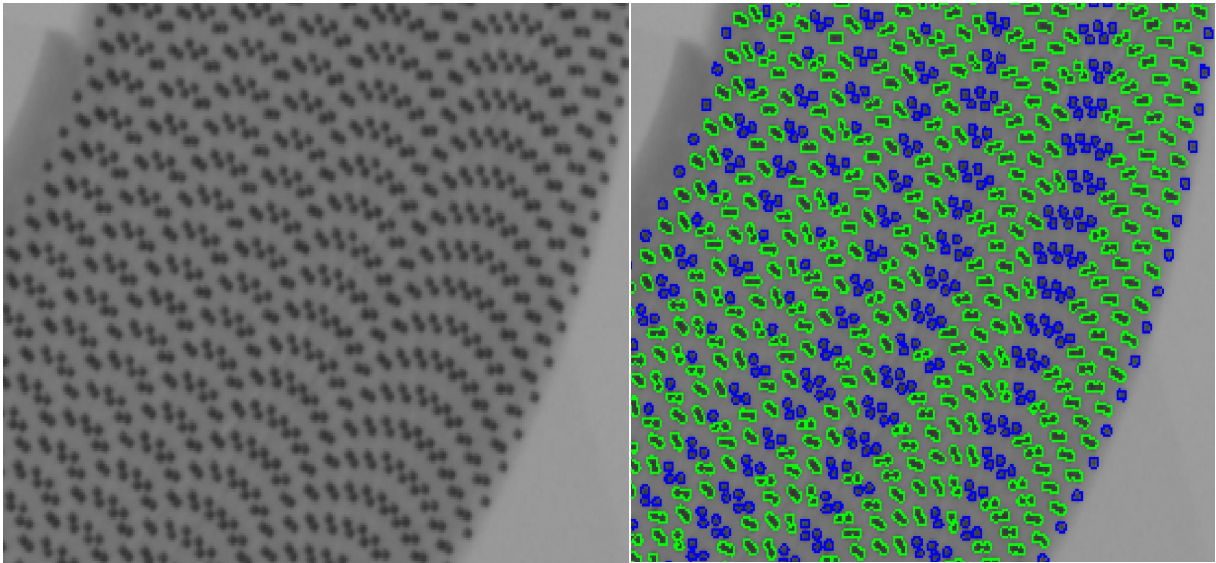
(AUTO) Moisture barrier bag



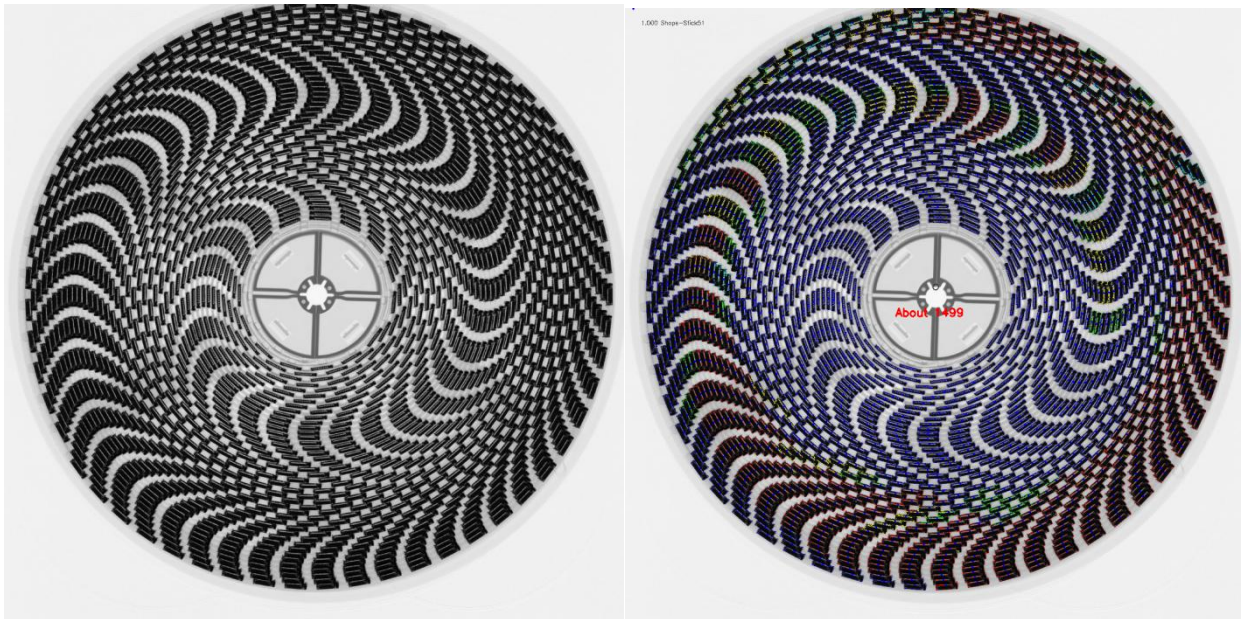
(Auto) 01005



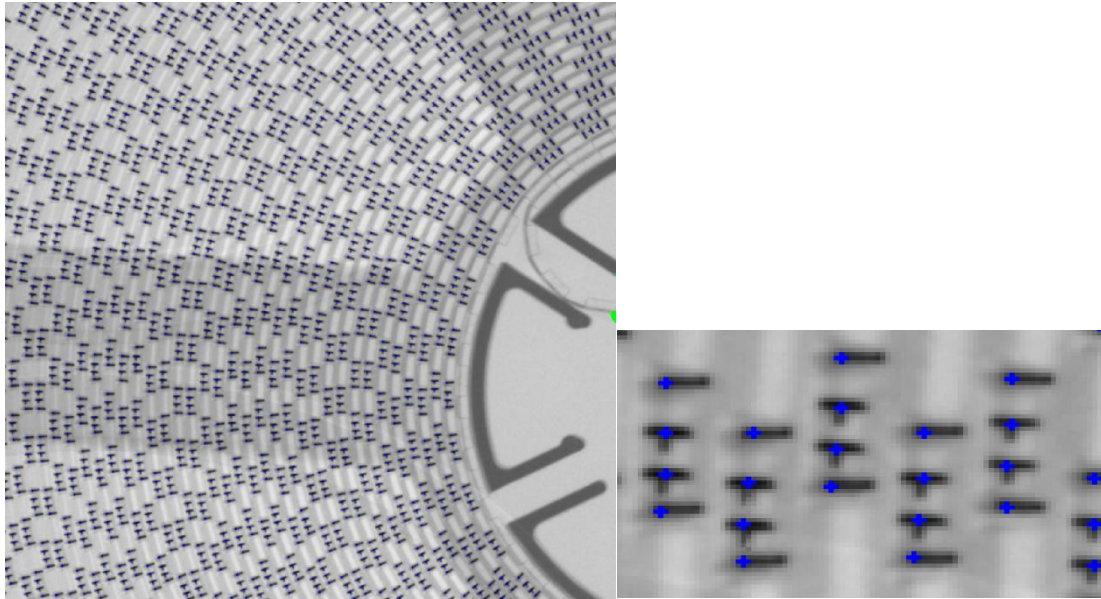
(AUTO) Scattered Chips are countable



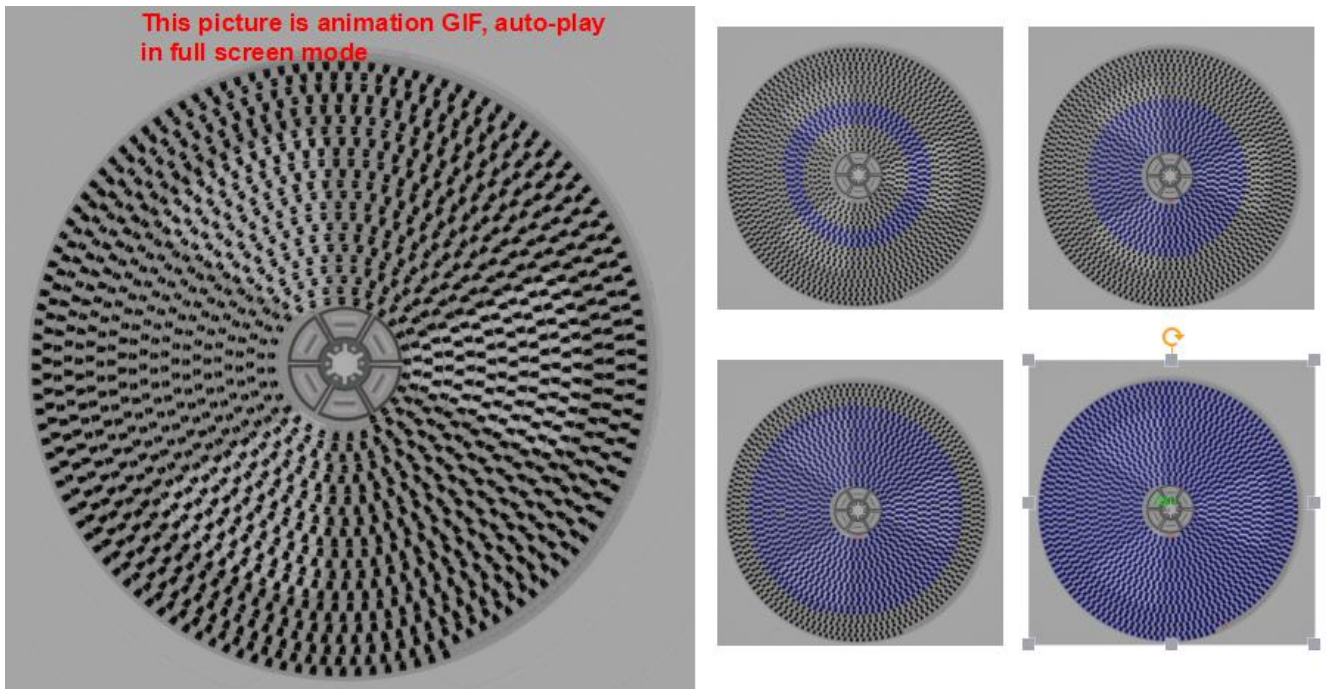
(AUTO) Accurate counting for connected chips



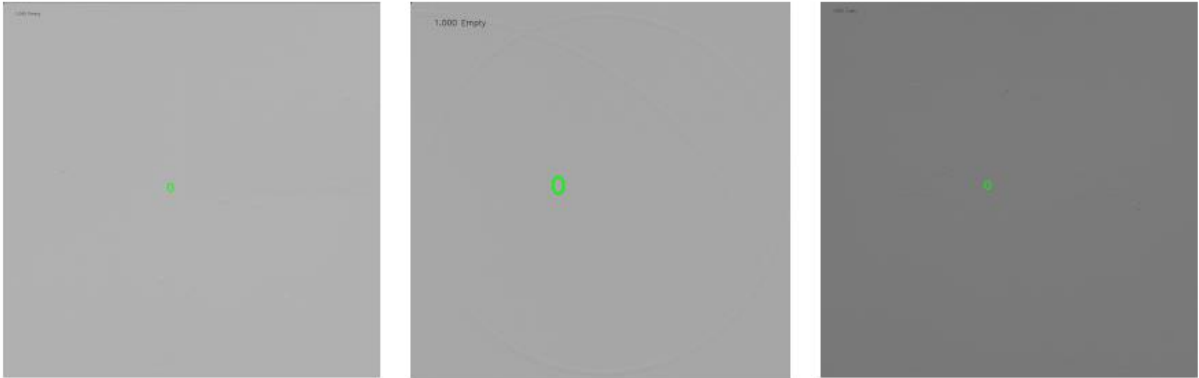
(AUTO) Complex Tall ICs



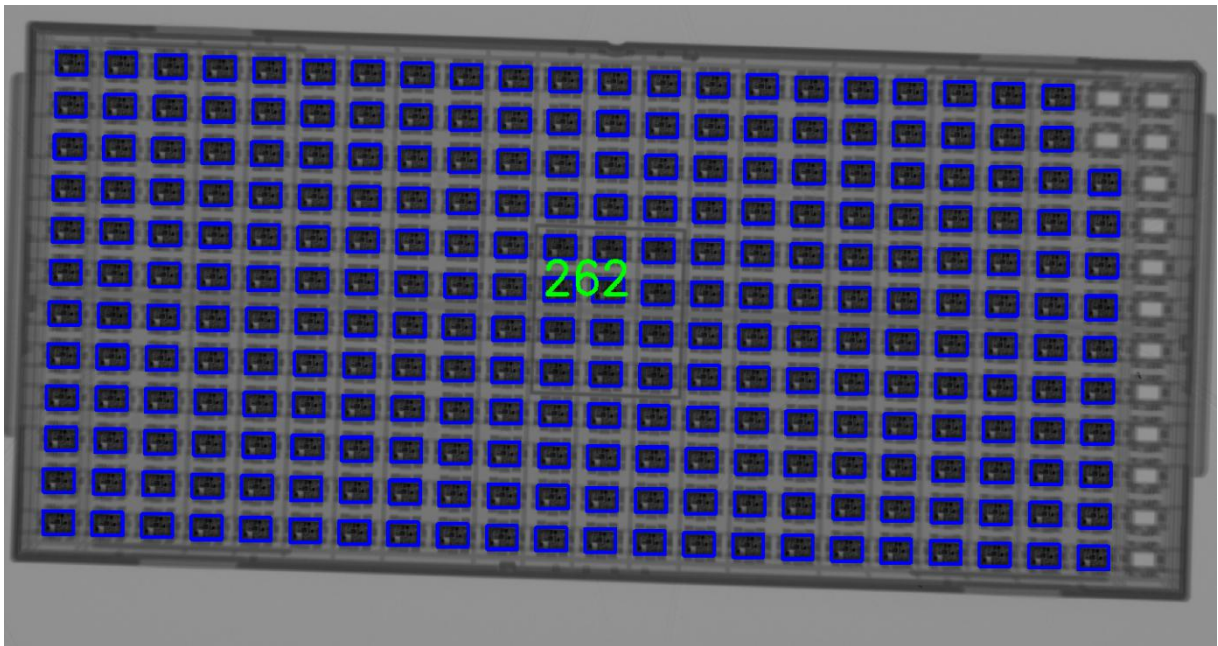
(AUTO) World first point counting technique



(AUTO) World first chip tracking technique



(AUTO) World first empty detection technique



(Semi-Auto) JEDEC