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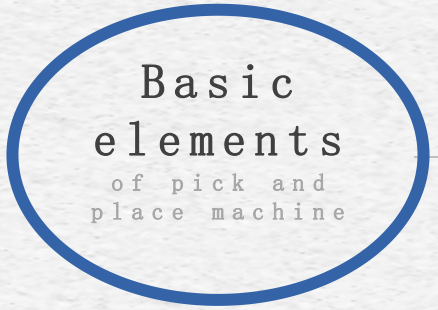
Basic Elements of SMT Pick and Place Machine

Several core elements you must know for purchasing machines

The Most Essential Elements of A Qualified Pick and Place Machine

Before purchasing a machine, we must carry out a reasonable appraisal and consideration of the most essential performance. The quality and price varies vastly due to the multiple brands,so customers can't even figure out how to choose one which is most suitable for him-self. And it is very necessary for you to make full preparation before purchasing.

Then how can we choose a mac-hine suitable for ourselves?



mounting accuracy

The resistor and capacitor above 0402 can not represent the accuracy of the machine. The mou nting accuracy and repeated mounting accuracy referred mean whether the precision chip with the lead pitch of 0.3mm can be accurately mou-nted. And the process can be completed without a second adjustment in a row for ten times.

mounting stability

After adjusting the program, the rate of finished products is higher than 99.5% under the conditi-on of continuous 24-hour mounting.

mounting Intelligence

The degree of manual involvement in the proce-ss of programming is less than 15%, most of the work is undertaken by the software part of the m achine and completed automatically.

mounting efficiency

It refers to the mounting efficiency of the equip-ment per hour,namely the number of compone-nts to mount in unit time under the premise of e nsuring the stability,for example, with stopwat-c h timing, the mounting efficiency of the machi-n e is 100 / 25 * 3600 = 14400 pc/h based on the calculation of 25 seconds for 100 pieces.

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* In accordance with International standards

Introduction of Accuracy Unit

0.05mm

Mounting Accuracy

0.01mm

Positioning Accuracy

0.02mm

Repeated Accuracy

24h

Non-stop Work

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HW-T4-50F/44FX

Independent high-speed multi-function machine with four heads which can hold 50/44 feeders

The Real Shot from the

Front

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Desk Machine

The Real Shot from the

Front

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Vertical Machine

External

Structure

of the Machine

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Desk Machine

Dimension

of the Machine

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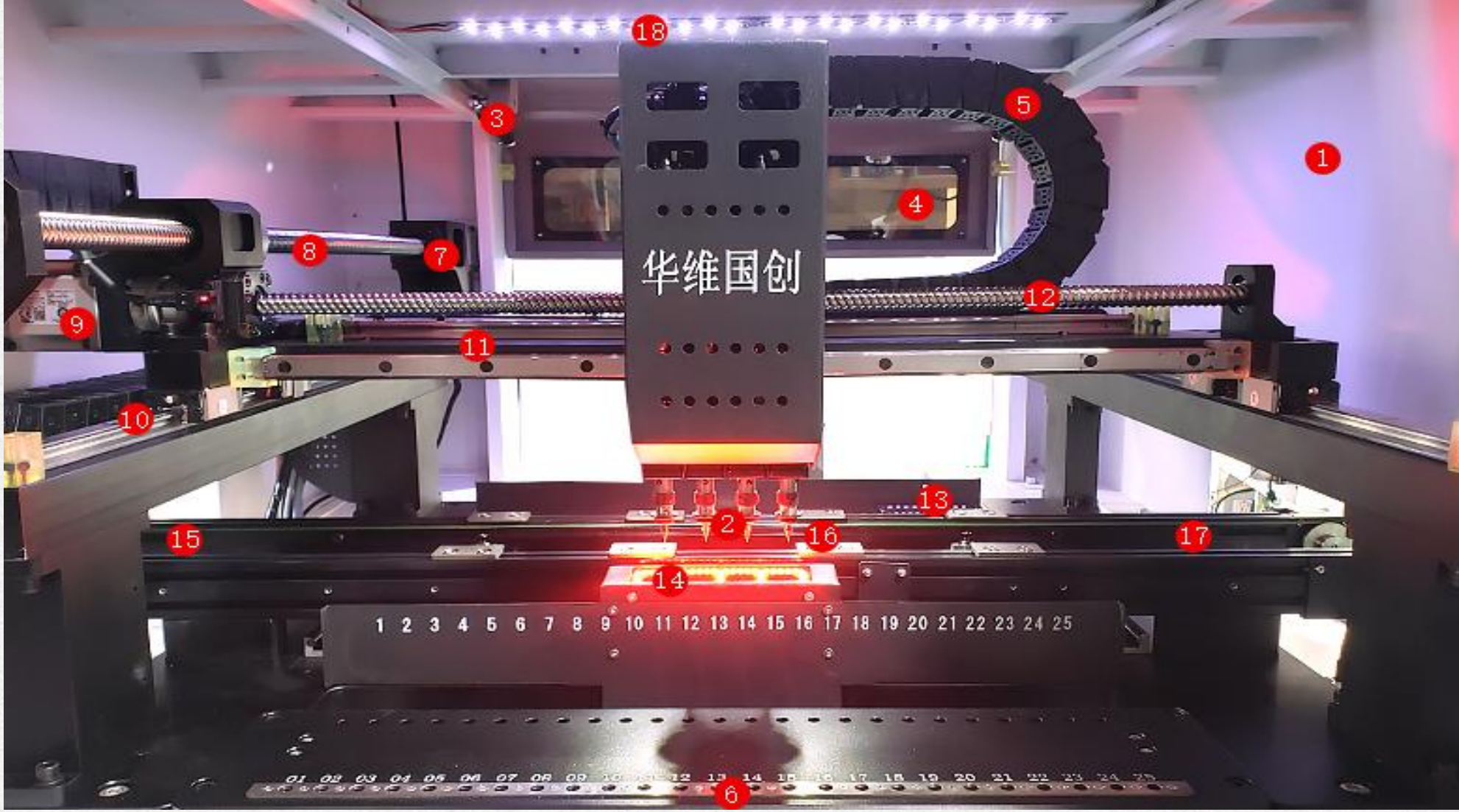
Desk Machine

Internal

Structure

of the Machine



1.Housing 2.Placement Heads 3.Pneumatic Support Bar 4.Safety shield 5.Flexible Silent Cable Carrier 6.Feeder Slots 7.Servo Motor of Y Axis 8.Ground Ball Screw of Y Axis 9.Servo Motor of X Axis 10.Linear Motion Guide of Y Axis 11.Linear Motion Guide of X Axis 12.Ground ball screw of X axis 13. 5MP HD Camera 14.1MP Fast HD Camera 15.Waiting Area 16. Mounting Area 17. Exiting Area

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Mounting Project Optimization

System

Path Optimization Synchronous Picki-n g

+

Shortest Path Majority Priority

+

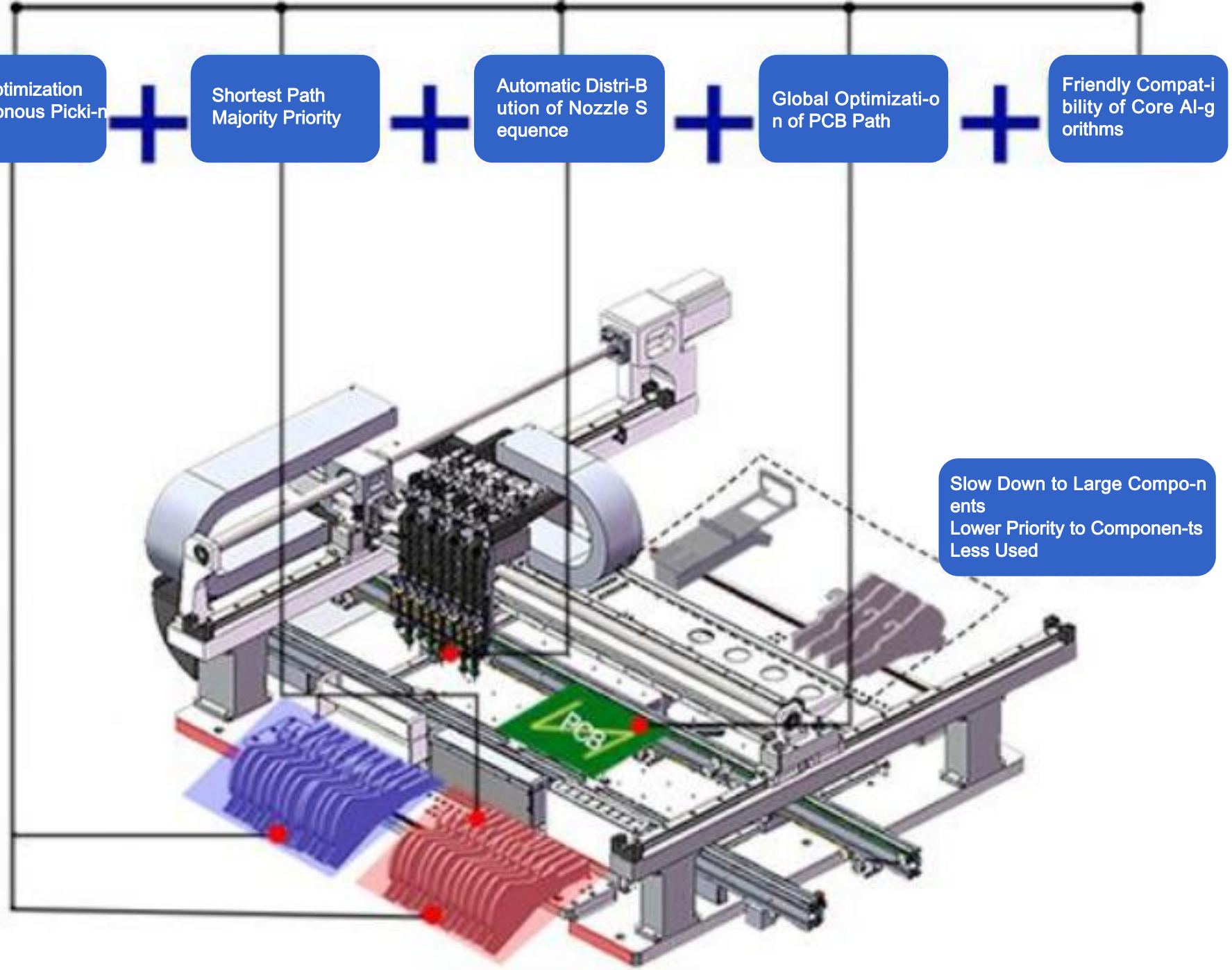
Automatic Distri-B ution of Nozzle S equence

+

Global Optimizati-o n of PCB Path

+

Friendly Compat-i bility of Core Al-g orithms



Slow Down to Large Compo-n ents
Lower Priority to Componen-ts Less Used

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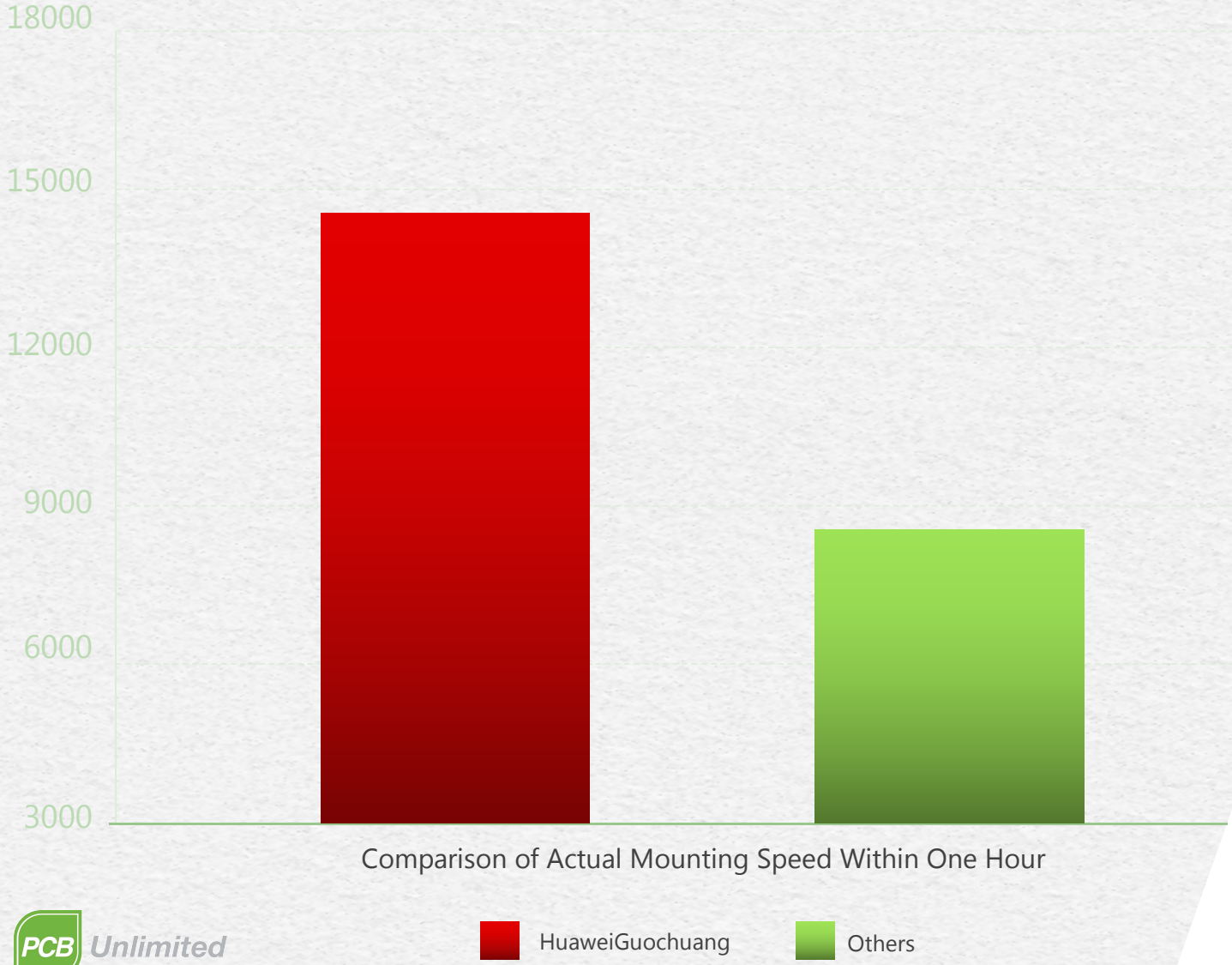

*The speed is the actual mounting speed calculated by manual hand-held stopwatch within one hour, so as to eliminate the possibility of exaggerating the data with false mark in the software.

Competitive Comparison

of Mounting Efficiency

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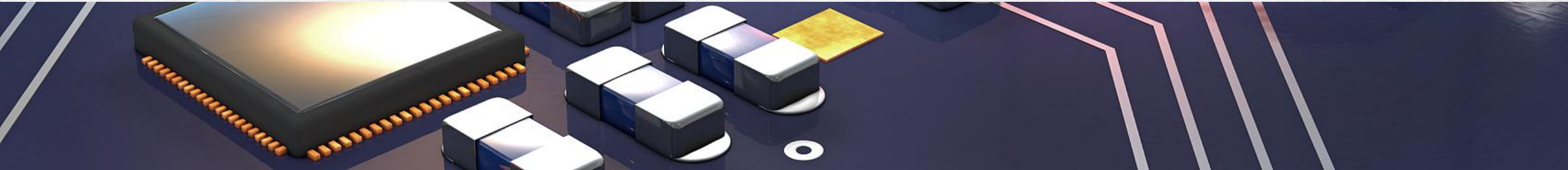
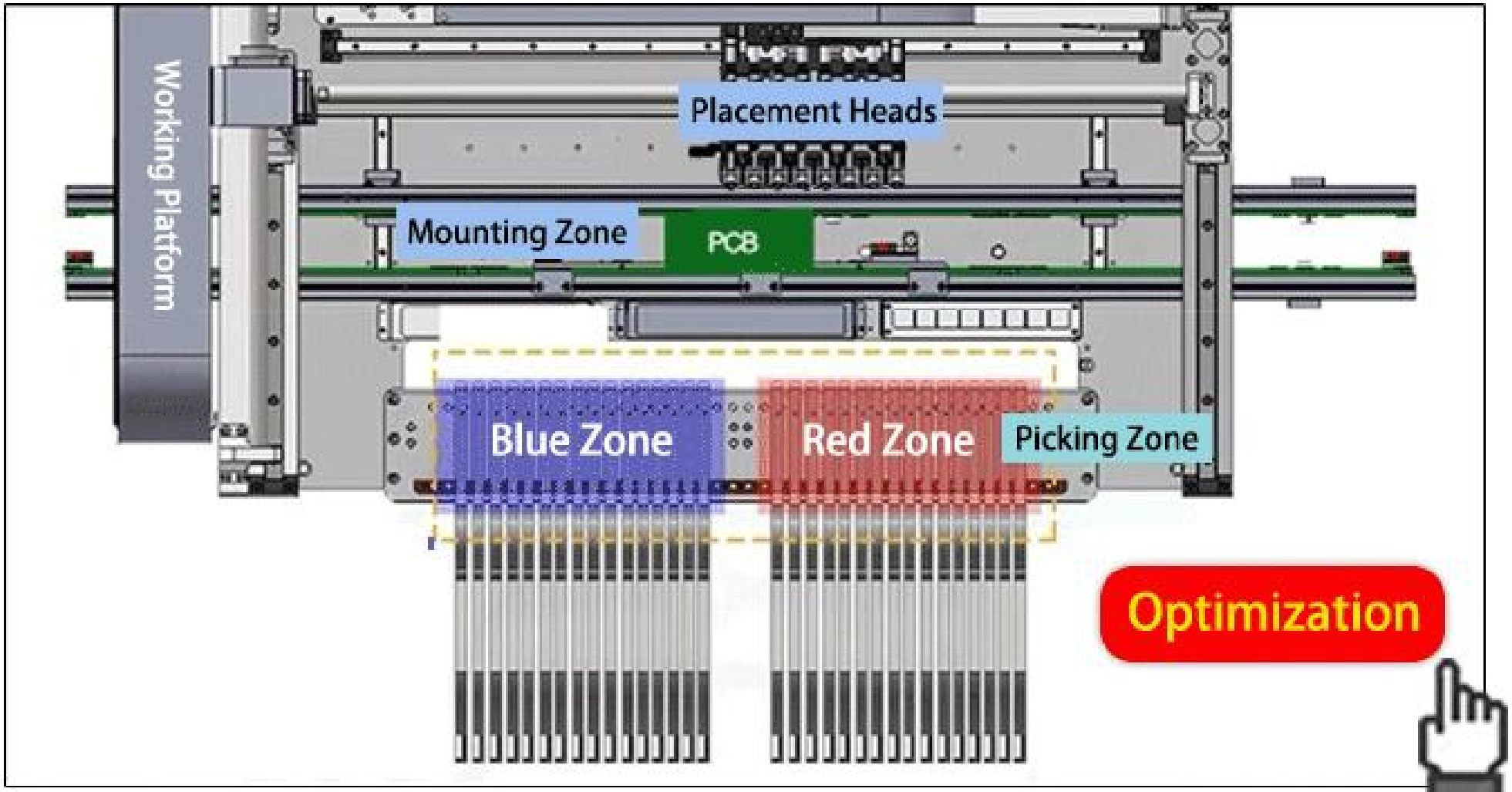
Product Advantages

Software



Intelligent optimization makes the troublesome distribution of multiple components' feeding more efficient and logical, compared with the traditional manual method.



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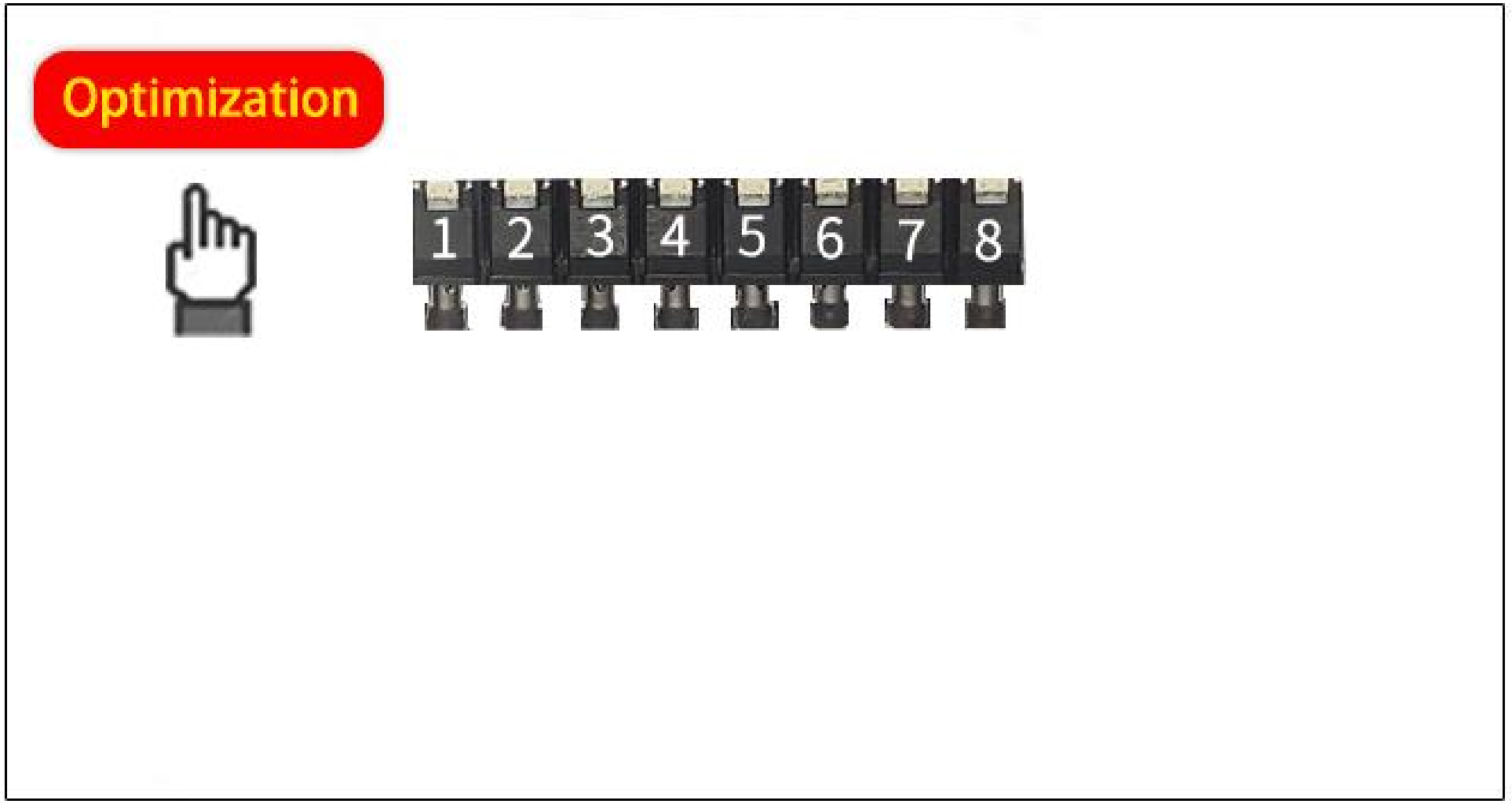
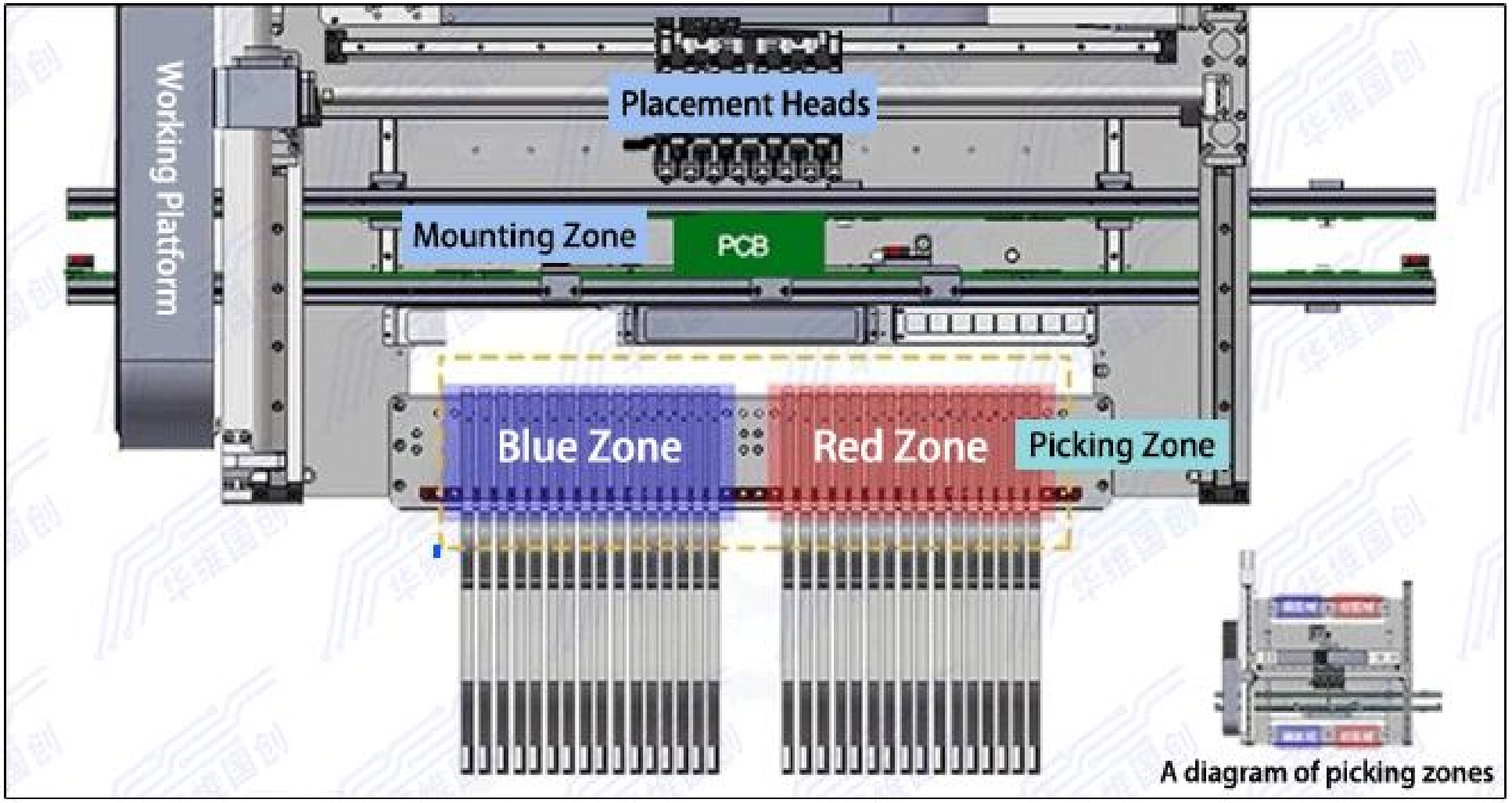
Automatic optimization of feeders' installation positions tackles the problem of tedious mannual distribution perfectly

Select nozzle models intelligently according to BOM, and update the position number of corresponding nozzle in the program synchronously.



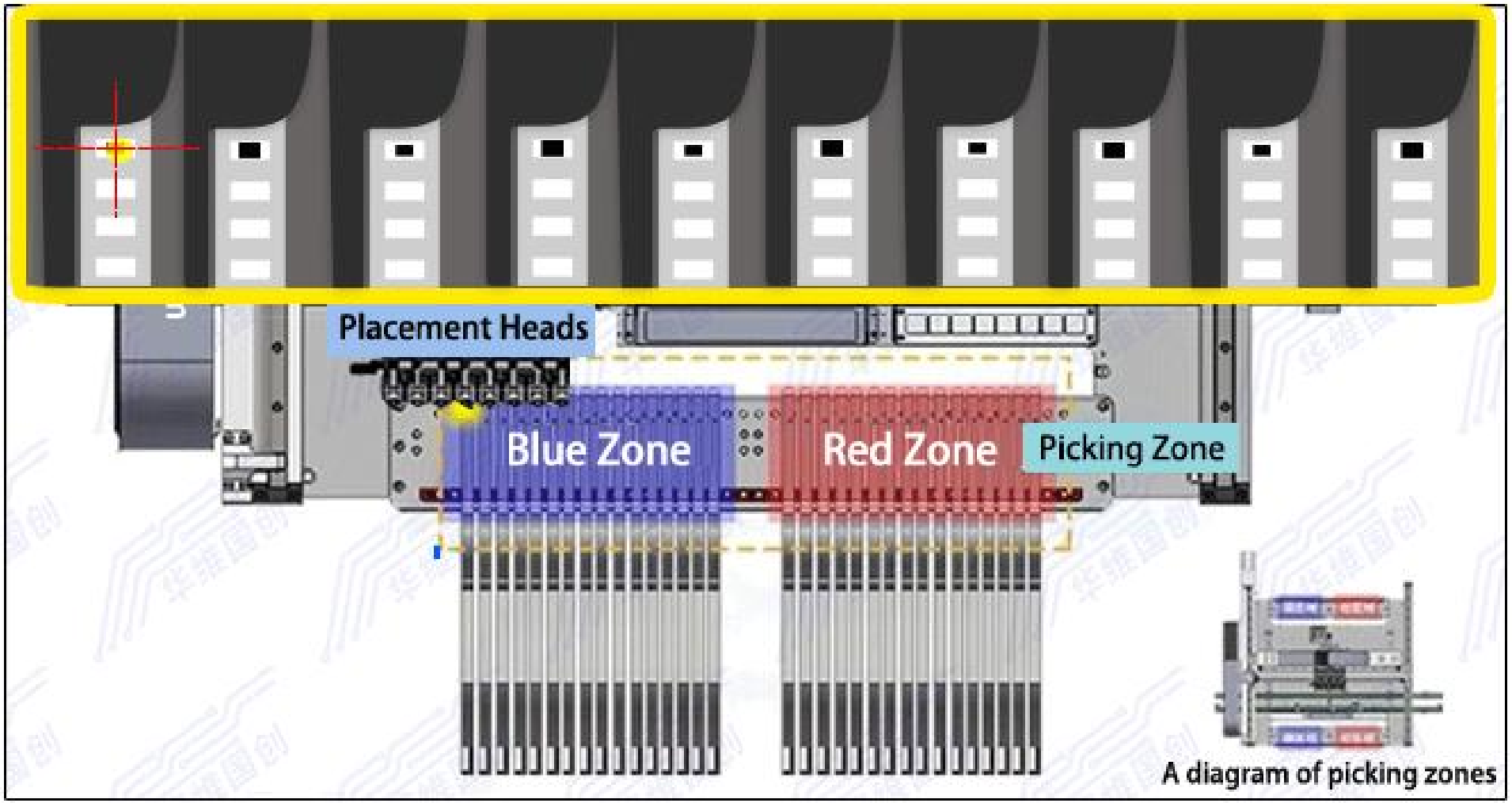
Automatic optimization of nozzles' installation sequence

The seamless connection between feeding and picking is achieved by the one-click optimization implemented by intelligent algorithms.



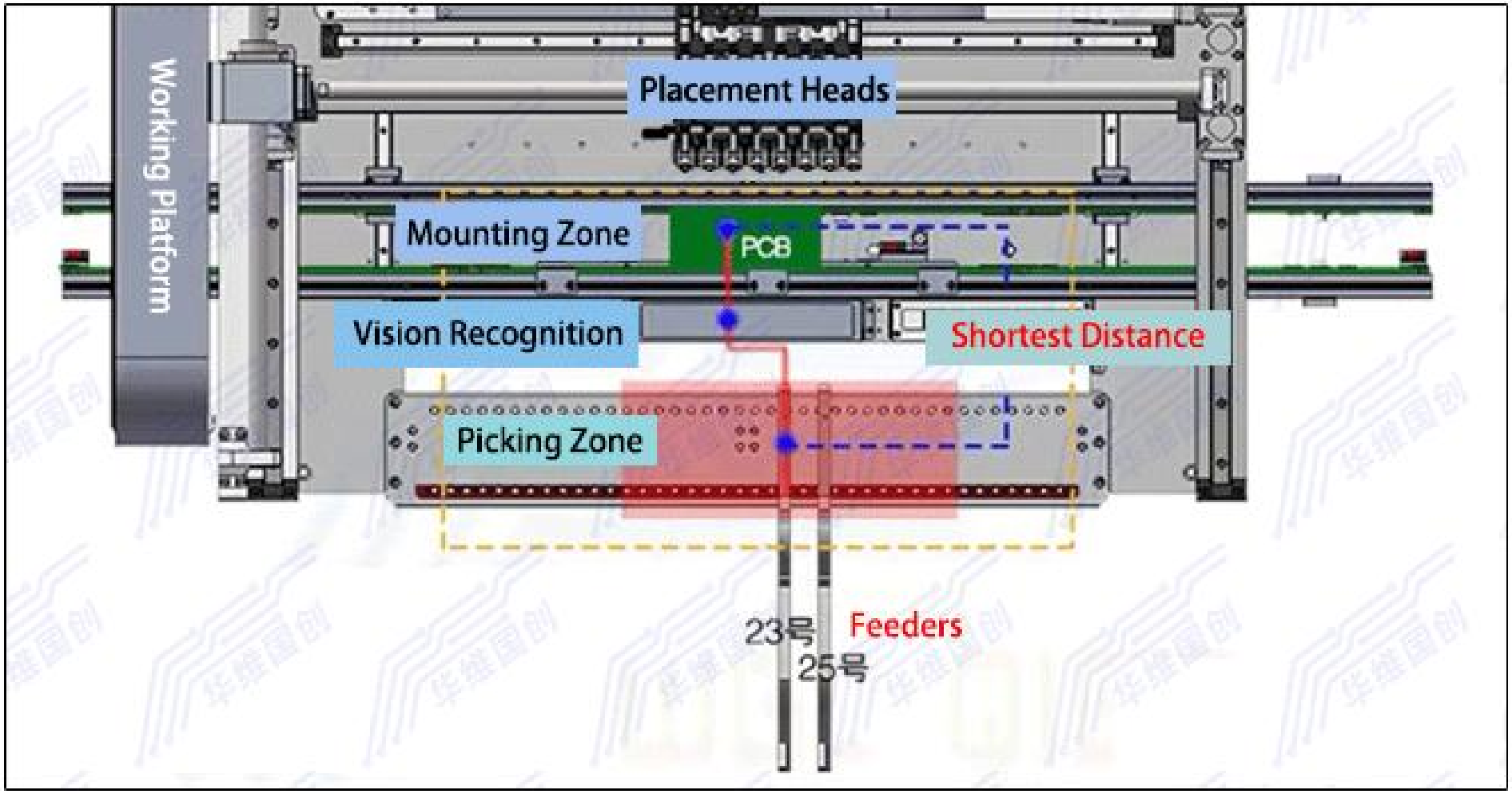
Concurrent picking with multiple heads,which maximize the efficiency of picking

The meaning of this function: It can save 30% programming time costs and greatly improve efficiency by fast,efficient and accurate one-click operation.



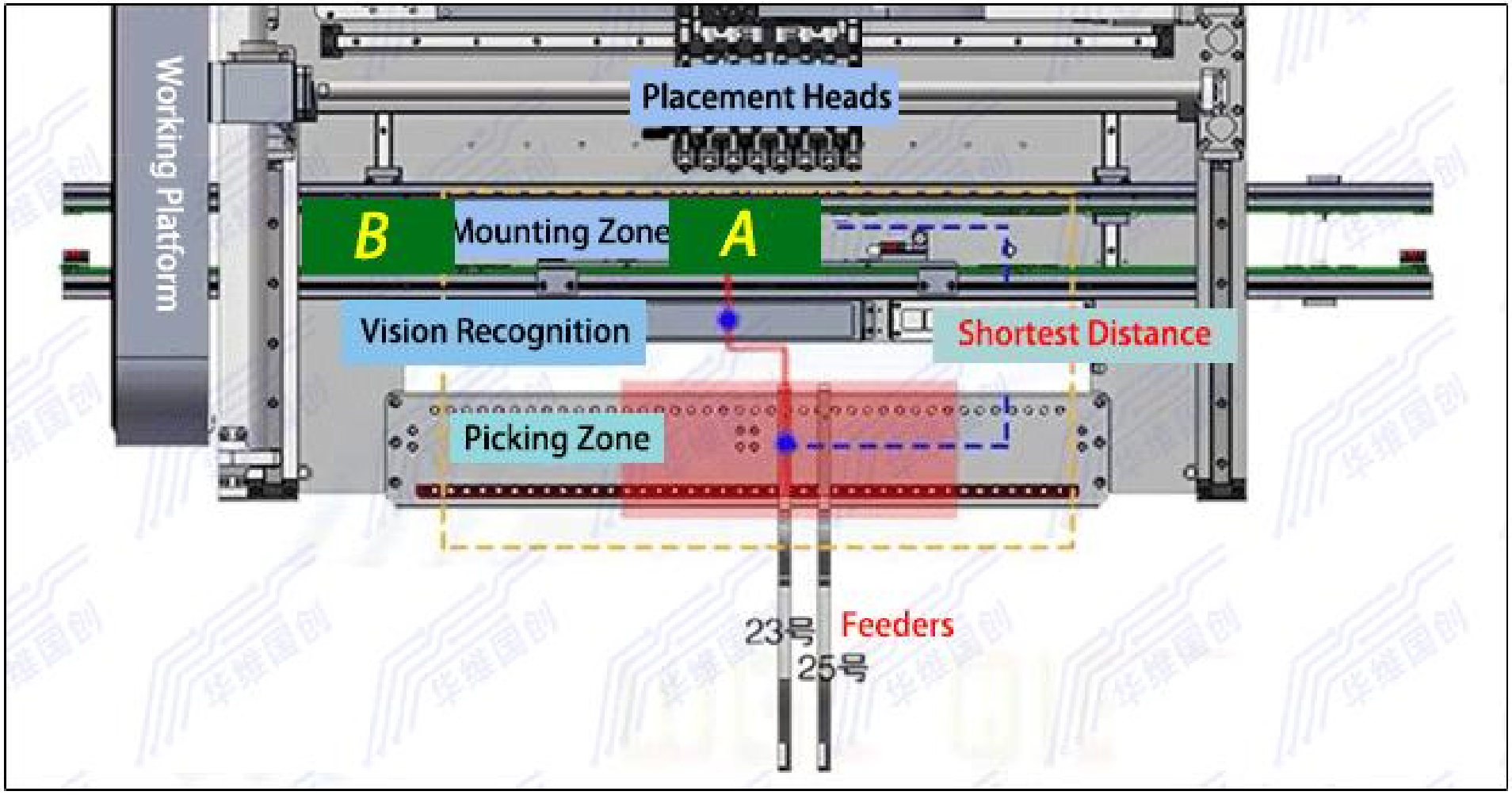
Automatic calibration of feeder picking coordinates

Using the system's intelligent algorithm, HuaweiGuochuang mounting system can help you make it with just one click instead of conducting tests and distributing the complex and massive layout by hand.



Full automatic layout of the shortest path for mounting

In order to save time costs as much as possible and realize high energy efficiency, we divide the entry process into three stages including waiting stage, mounting stage and exiting stage for finished products.



Three-stage entry

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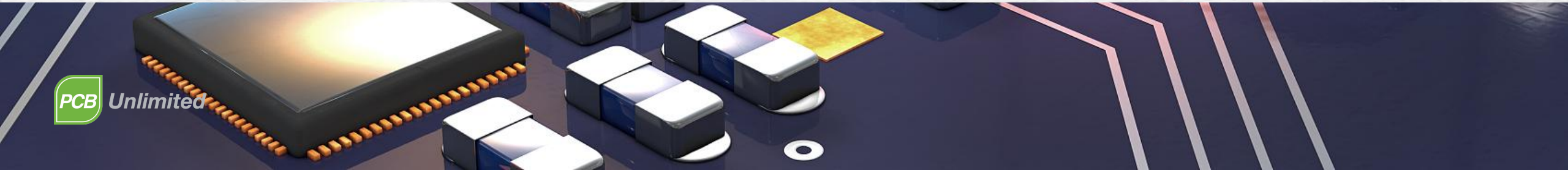
Details of Products

True precision, true high-efficiency and true smartness



Industrial Computer

17-inch display,keyboard amd mouse.

User-friendly OS already installed,supports WinXP / Win7, vision programming and PCB file importing etc.

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Precision Ball Screw and Linear Motion Guide

The use of imported precision ball screw and linear motion guide,will bring long term maintenance-free operation, high accuracy and noise-free runnning ,improves the machine performance effectively.

Guarantee the mounting accuracy of 0201-0402,QFN,QFP and BGA.

Achieve high stability of 24-hour continuous work without downtime, considerably improving the productivity.

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High Durable Cable Carrier and Flexible Cable

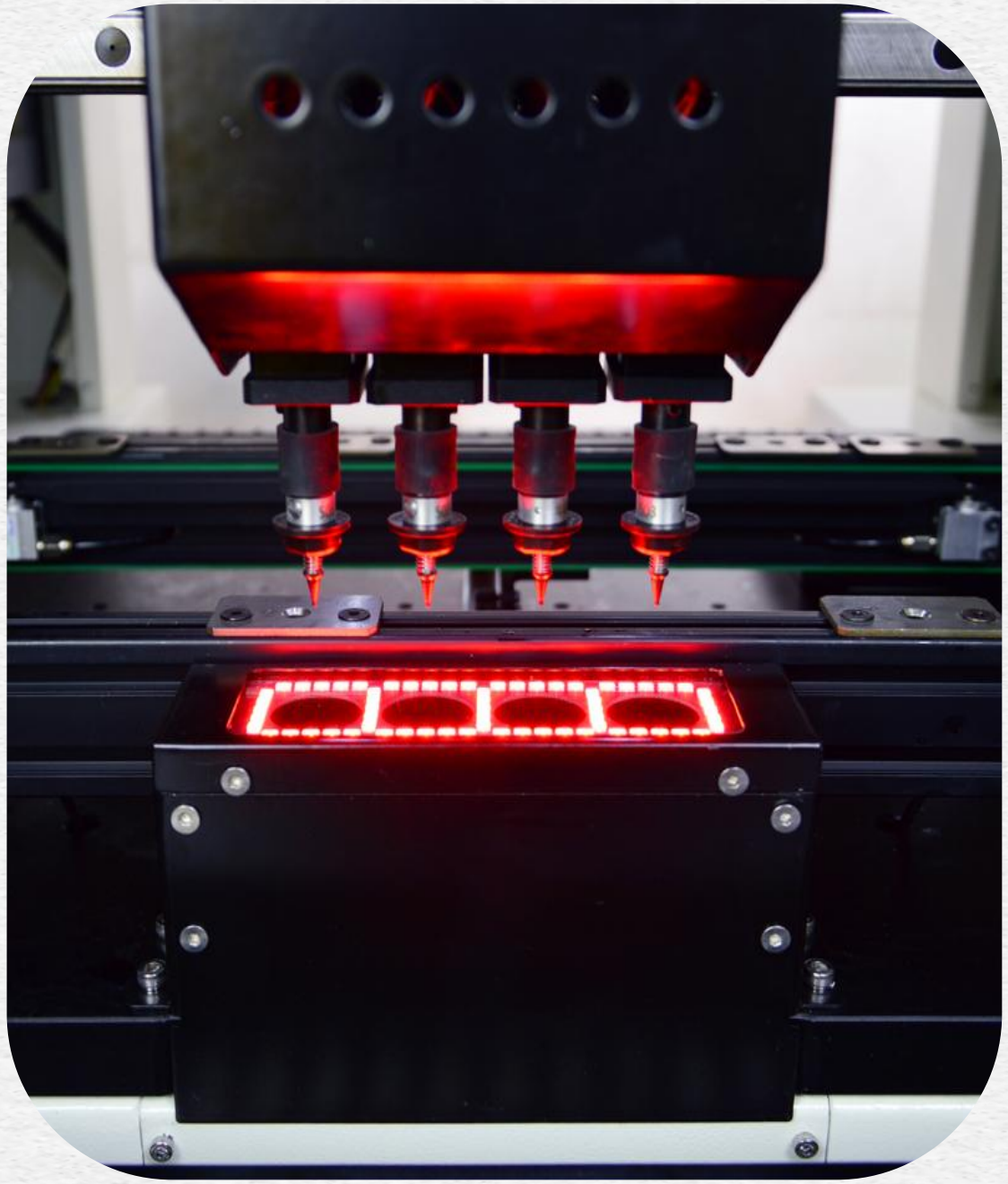
Use the same type of cable carriers bearing up to 10 million constant motions as imported machines.

Igus flexible cables designed for industrial motion application,which can resist a range of dangerous conditions, like extreme temperatures and oil, and can handle any type of motion, including horizontal, torsional or high speed, ensure the reliable connection of the electrical circuit in high-speed reciprocating motion.

HD Camera

Professional imported 5MP industrial calibration HD camera used for mounting chips and its supporting 5MP distortion-free induatrial vision HD lens.

Four 1MP industrial fast recognition cameras which can increase efficiency significantly by simultaneous recognition of 4 pl-acement heads.



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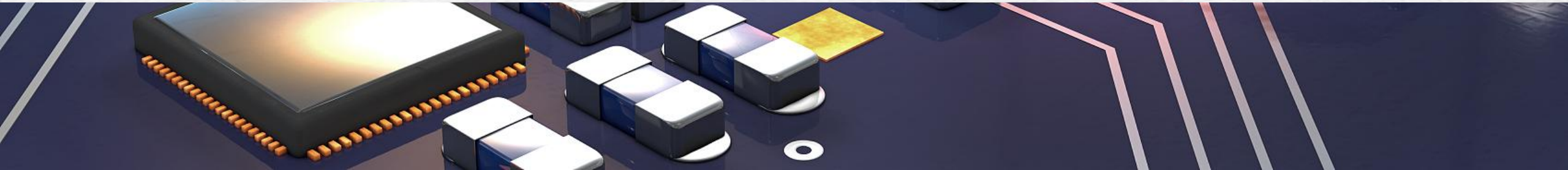
Product Specification

Software part



Model	HW-T4-50F / HW-T4-44FX
Number of Placement Heads	4(high-accuracy)
Number of IC Trays	48
Number of Feeders	50/44(subject to 8mm feeder)
Positioning Accuracy	0.01mm
Repeated Mounting Accuracy	0.02mm
Range of Mounting Speed	7000-8000Pcs/h
Applicable Components	resistor,capacitor,chip,lamp bead etc.
Supported Maximum Area of PCB	(50F)350*190mm /(44FX)350*280mm
Feeders	electric feeder, pneumatic feeder,vibrating feeder, IC tray etc.
Recognition Devices	mark camera x1,fast recognition camera x4, high-precision camera x1
Maximum Height of Applicable Components	≤7mm
PCB Convey Mode	three-stage entry,automatic connection from left to right, automatic PCB positioning
Mark Positioning	manual / automatic
Programming Method	automatic programming after manually importing files of PCB coordinates
Control System	HuaweiGuochuang control system
Maximum Step Length of XY Axis	629mm*679mm
Tracks of XY Axis	double linear motion guide + double ground ball screw
Motion Mode of XY Axis	intelligent linkage of acceleration and deceleration of curve and line, integrated linear interpolation algorithm.

Price	
Control Computer	industrial control computer with Intel high-performance processor
Adjusting Method of Tracks	electric
Range of Nozzle Buffer	4.5mm
Maximum Step Length of Z Axis	20mm
Range of Angle for Components	±180°
Motor	AC Servo Motor
Driver	high-speed DSP driver
Air Supply Requirements	oil water filter,≥ 50L,dust filter and air pressure stabilizer etc.
Vacuum Supply of Nozzle	Japanese CKD vacuum generator integrating the high-speed vacuum burst function
Range of Air Supply Pressure	0.5-0.6mp
OS	Independent research and development SMT intelligent OS based on Windows
Vision Display	17-inch industrial control display
Cable	German Igus durable flexible cable (10 million times)
Power Supply	220V 50/60Hz
Average Power	600W
Machine Dimensions	desk machine 1140*900*900mm vertical machine 900*1140*1340mm
Weight	(desk machine)210kg (vertical machine)280kg

Software Operation

S

Reduction of errors caused by manual edit and achievement of intelligent programming

Operating Manual

1

Create production project and set mark points

Import the .CSV file exported from PCB files, generate project coordinates through four corner coordinate positioning, and automatically generate mark points. Through the packaging library, the layout of material station and nozzle can be generated intelligently, and the picking parameters and mounting parameters can be generated at the same time, greatly improving programming speed.

2

Install feeder / nozzle

Install the corresponding feeders of electronic components and nozzles according to the assigned station of the system.

3

Calibrate feeder picking coordinates intelligently

One-click operation without manual work. It can automatically calibrate installed feeder picking coordinates.Originally, it took an hour, but through the function of automatic scanning, it could be completed in a few minutes.

4

Start mounting

After a short manual adjustment and efficient automatic programming, the process quickly enters the first board trial, then you can start mass production if it runs smoothly.

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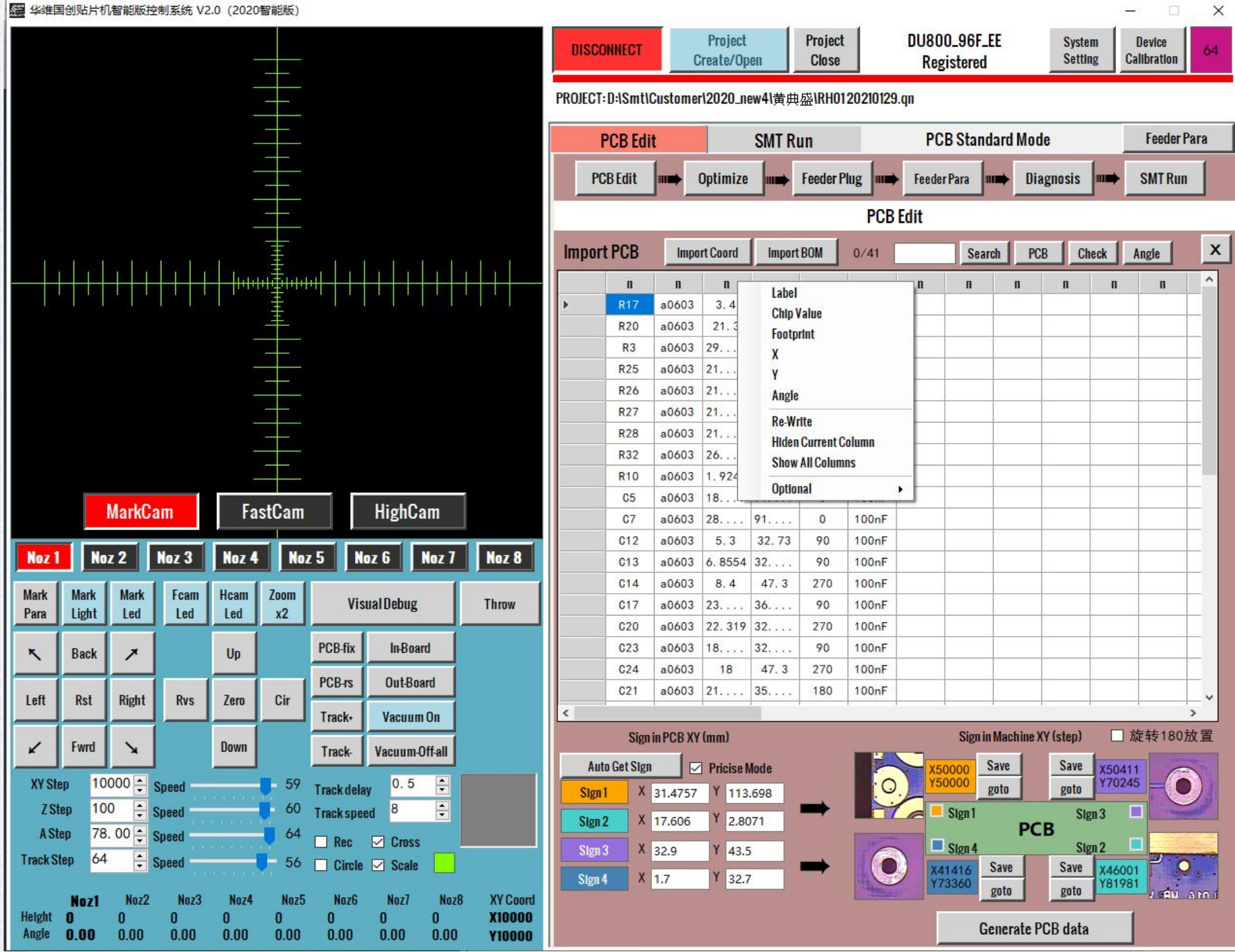
Automatic Assignment

of Mark Points



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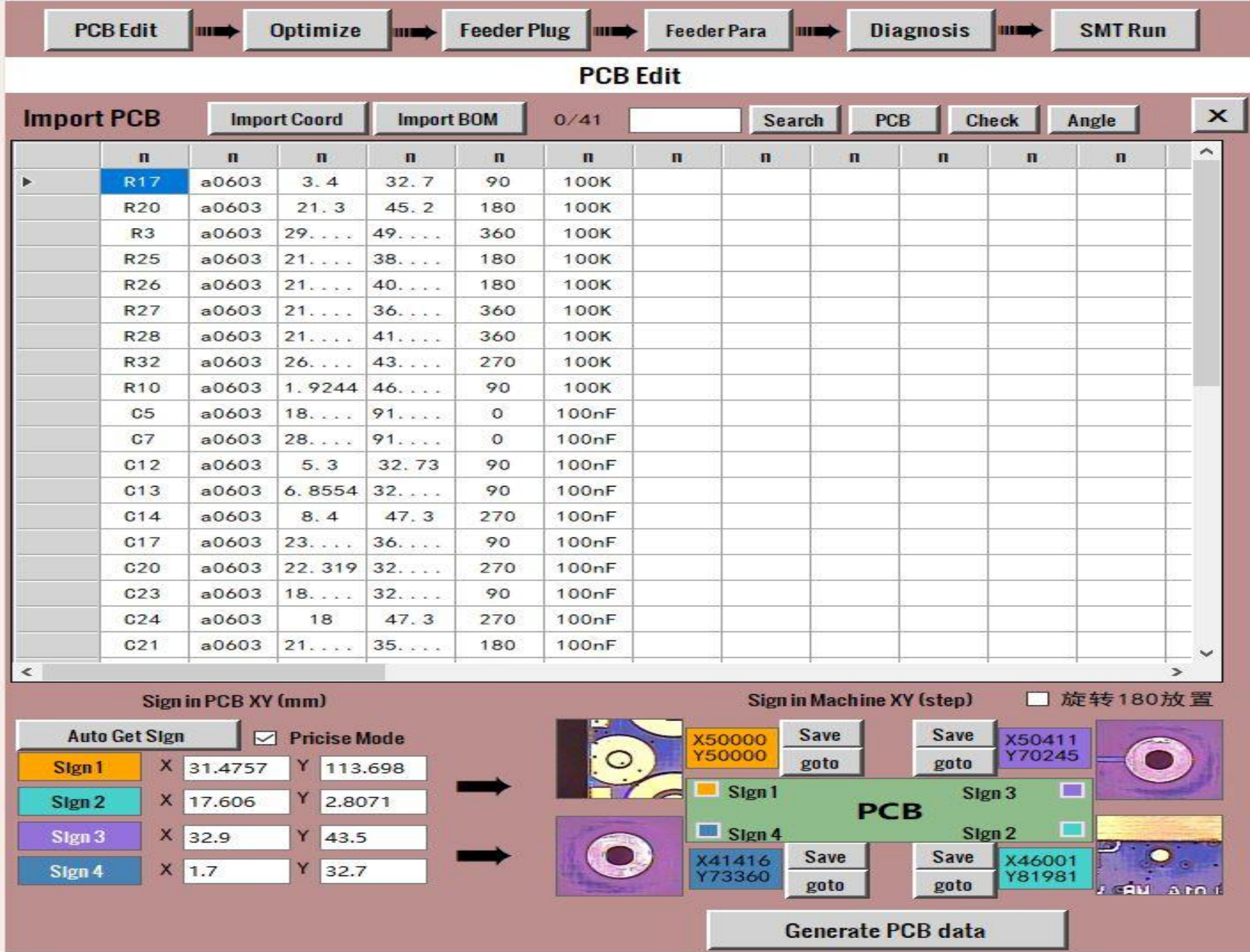
Automatic Creation

of Mounting Program After Manually Importing the File of Coordinates



	n	n	n	n	n	n	n	n	n	n	n	n
▶	R17	a0603	3. 4	32. 7	90	100K						
	R20	a0603	21. 3	45. 2	180	100K						
	R3	a0603	29. . . .	49. . . .	360	100K						
	R25	a0603	21. . . .	38. . . .	180	100K						
	R26	a0603	21. . . .	40. . . .	180	100K						
	R27	a0603	21. . . .	36. . . .	360	100K						
	R28	a0603	21. . . .	41. . . .	360	100K						
	R32	a0603	26. . . .	43. . . .	270	100K						
	R10	a0603	1. 9244	46. . . .	90	100K						
	C5	a0603	18. . . .	91. . . .	0	100nF						
	C7	a0603	28. . . .	91. . . .	0	100nF						
	C12	a0603	5. 3	32. 73	90	100nF						
	C13	a0603	6. 8554	32. . . .	90	100nF						
	C14	a0603	8. 4	47. 3	270	100nF						
	C17	a0603	23. . . .	36. . . .	90	100nF						
	C20	a0603	22. 319	32. . . .	270	100nF						
	C23	a0603	18. . . .	32. . . .	90	100nF						
	C24	a0603	18	47. 3	270	100nF						
	C21	a0603	21. . . .	35. . . .	180	100nF						

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One-click

Intelligent Optimization of Mounting Program

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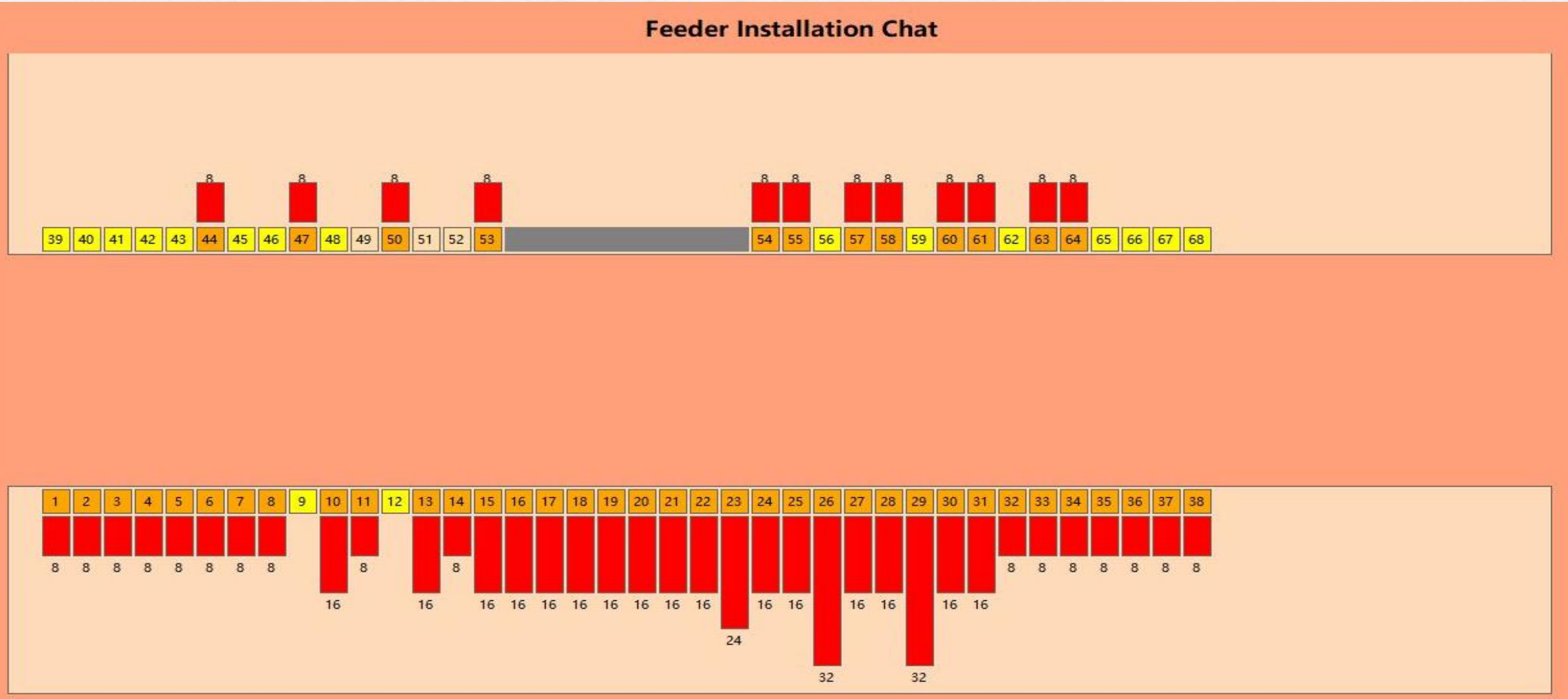
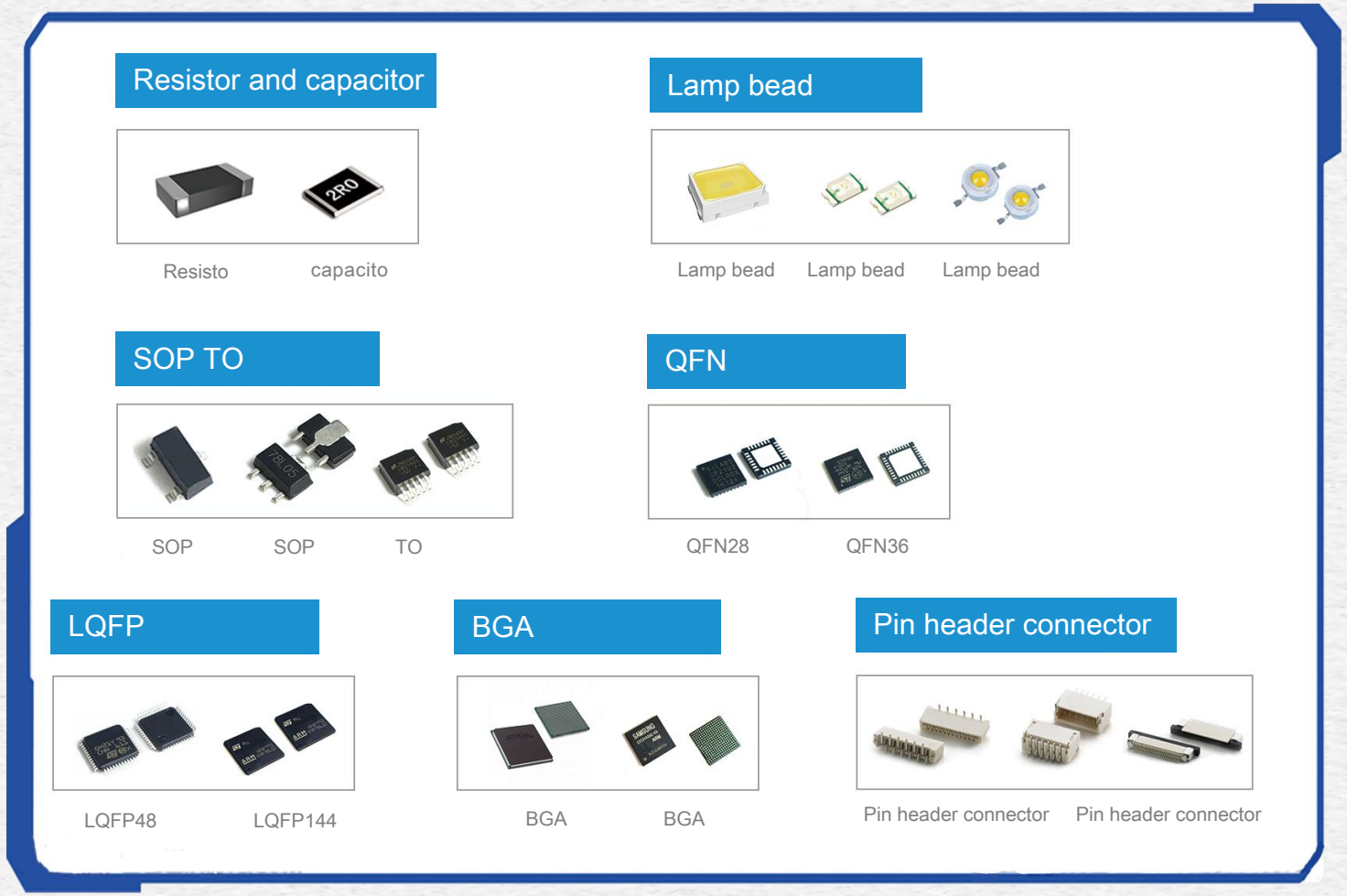
Automatic Optimization for the Layout of Nozzles and Feeders



Applicable Components



*0201 , 0402 , 0603 , 0805 , 1206 , diode , triode, SOT and QFP , BGA with lead pitch ≥ 0.3mm (subject to dimension of 40*40 mm and lead center distance 0.5mm) etc.

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