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# The Introduction of Company

Beijing HuaweiGuochuang Electronic Technology Co. Ltd. is a Chinese high-tech enterprise with integrated research and development (R&D), production and sales operations. The pick and place machine, SMT's main equipment, is our key research and development equipment.

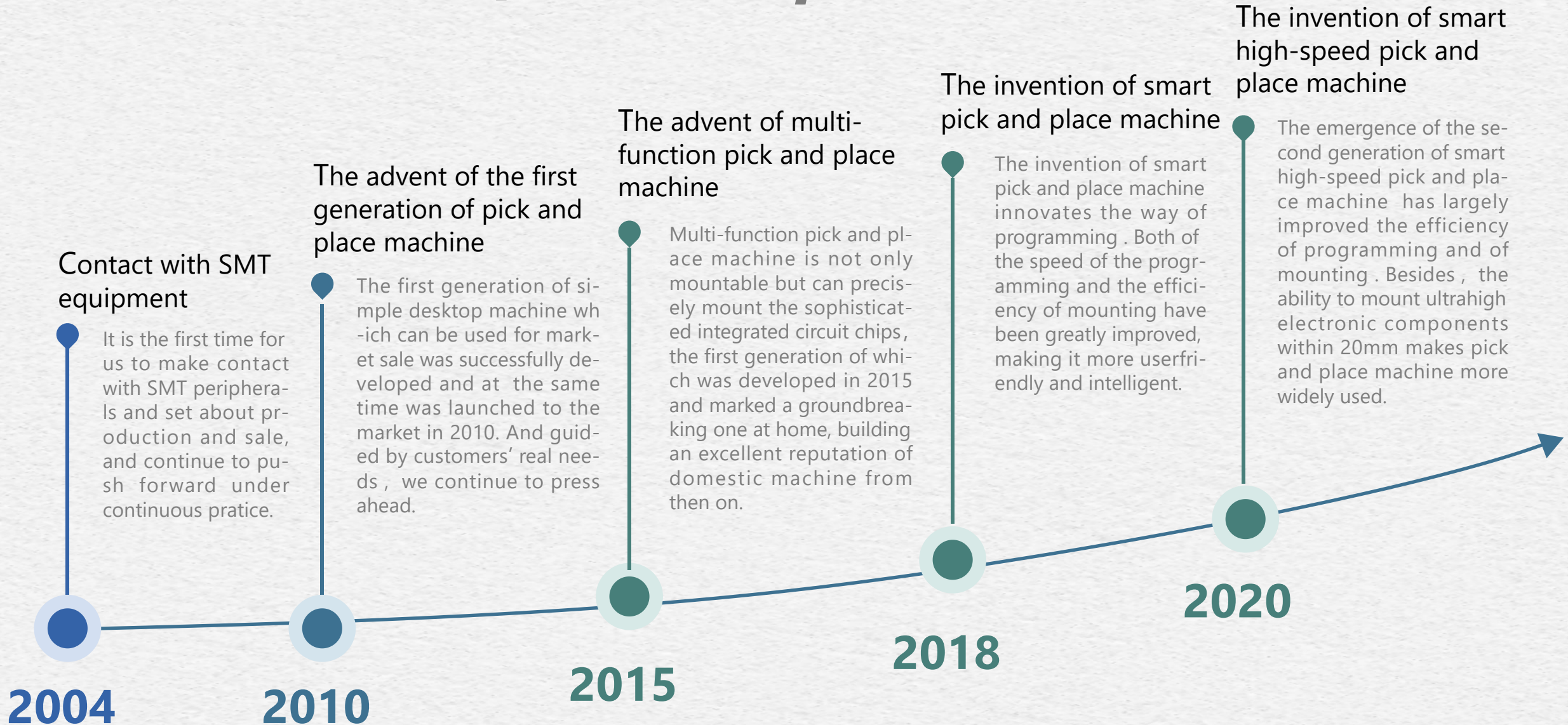
Our vision is to become an enterprise which makes cost-effective domestic pick and place machine of our own and we intend to break the current situation of international monopoly.

We have maintained the philosophy of being patriotic, pragmatic, innovative as well as serving the society. The products of pick and place machine on sale are not only appreciated by small and medium-sized enterprises at home, but also very well received by consumers abroad.





# The Course of Development

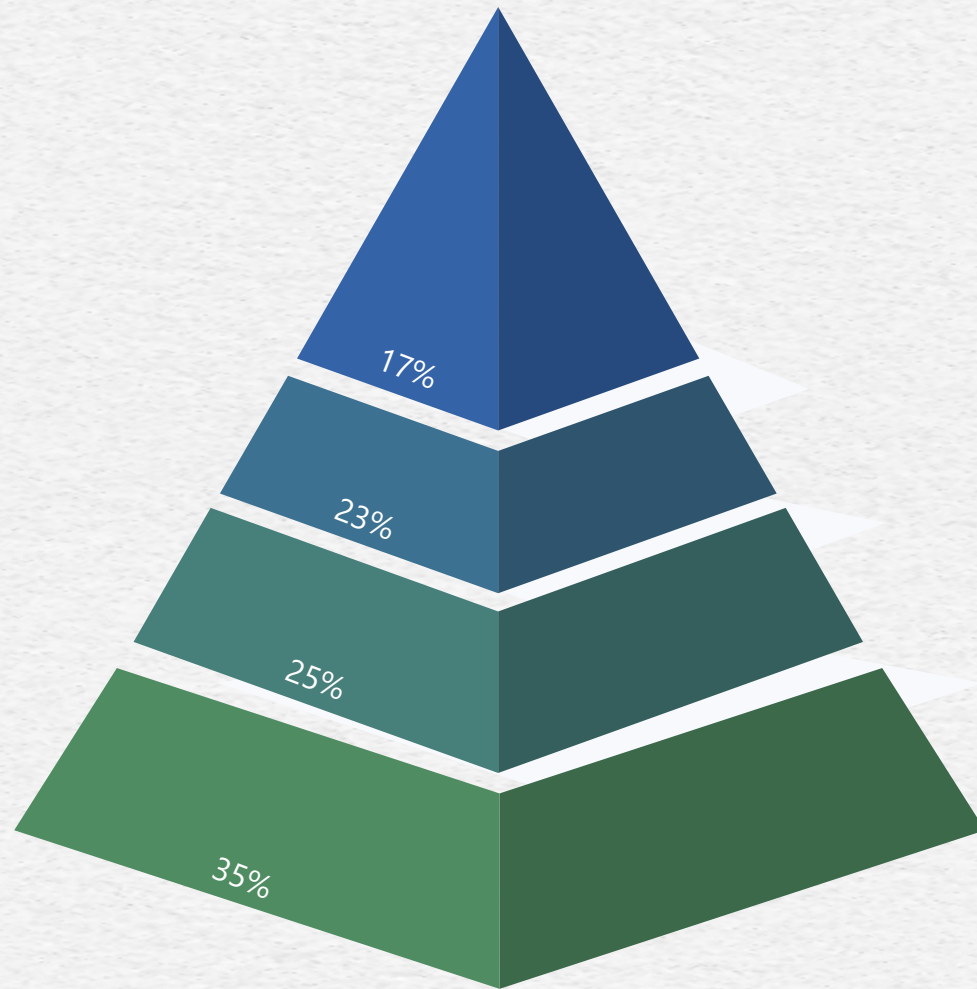




# **An Overview of Current Models**

Universality, high-precision, high-efficiency and high-smartness





### **Pick and Place Machine with Four Heads**

It is the main machine for PCB proofing in small volume of production.



### **Pick and Place Machine with Six Heads**

This type of machine runs at a medium speed and is of high precision, and it is universal for different requirements.



### **Pick and Place Machine with Eight Heads**

This high-precision, universal machine can be applied to the demand for mass production according to different requirements.



### **Innovative DU Series—Universal Pick and Place Machine at a High Speed**

In addition to meeting the basic needs, this type of machine is able to mount ultra-high electronic components up to 20mm.





# Basic Elements of SMT Pick and Place Machine

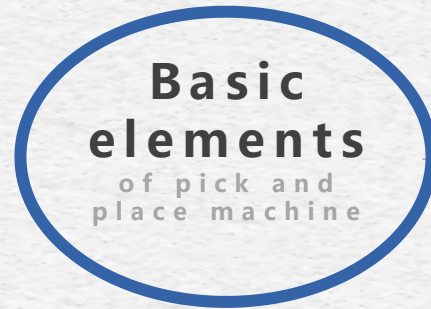
Several core elements you must know for purchasing machines



# 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 himself. And it is very necessary for you to make full preparation before purchasing.

Then how can we choose a machine suitable for ourselves?



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



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



The degree of manual involvement in the process of programming is less than 15%, most of the work is undertaken by the software part of the machine and completed automatically.



It refers to the mounting efficiency of the equipment per hour,namely the number of components to mount in unit time under the premise of ensuring the stability,for example, with stopwatch timing, the mounting efficiency of the machine is  $100 / 25 * 3600 = 14400$  pc/h based on the calculation of 25 seconds for 100 pieces.



\* 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





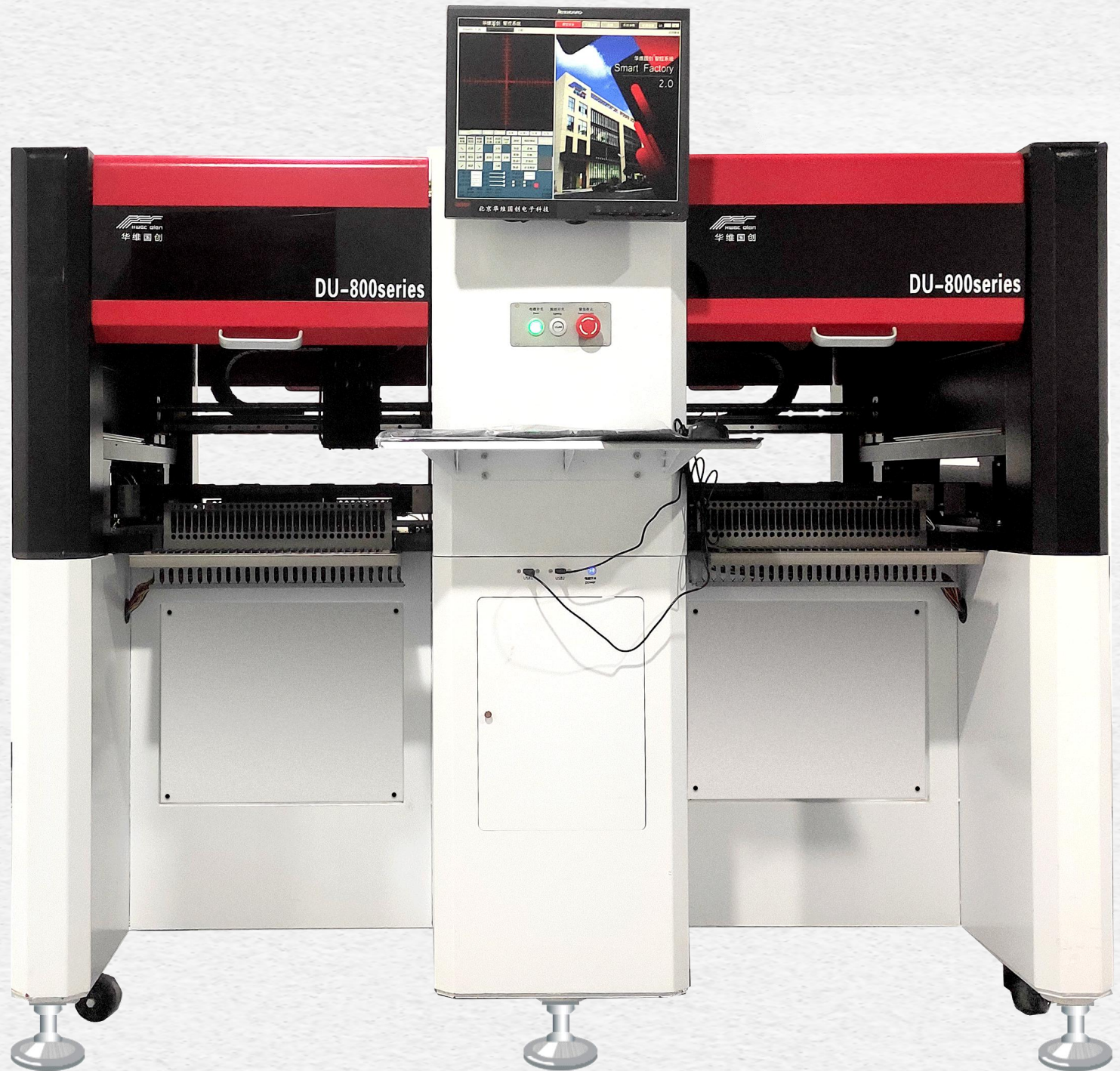
# DSQ400

Independent high-speed multi-function machine with eight heads which can hold 120 feeders





# The Real Shot from the Front







# External Structure of the Machine







# Dimension

of the Machine







Internal  
**Structure**  
of the Machine

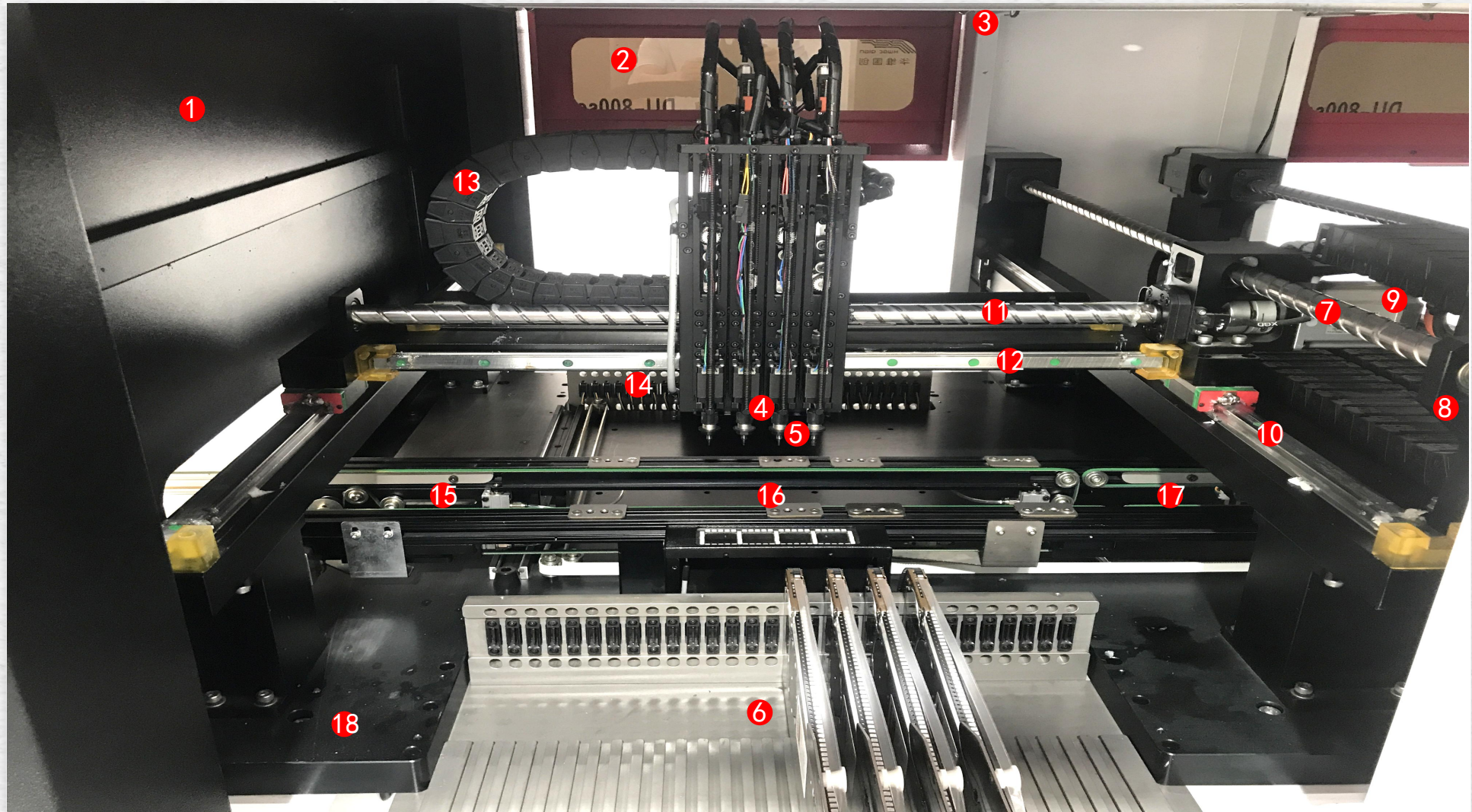


The Modular PNP divided into two working areas, which is controlled by only one computer and can mount components height up to 20mm





Internal  
**Structure**  
of the Machine



- 1.Housing 2.Shield 3.Pneumatic Support Bar 4.Placement Heads 5.1MP Fast HD Camera  
6.Feeder Slots 7.Ground Ball Screw of Y Axis 8.Servo Motor of Y Axis 9.Servo Motor of X Axis  
10.Linear Motion Guide of Y Axis 11.Ground ball screw of X axis 12.Linear Motion Guide of X Axis  
13.Flexible Silent Cable Carrier 14.5MP HD Camera 15.Waiting Area 16.Mounting Area 17.  
Exiting Area 18. Base





# Mounting Project Optimization System

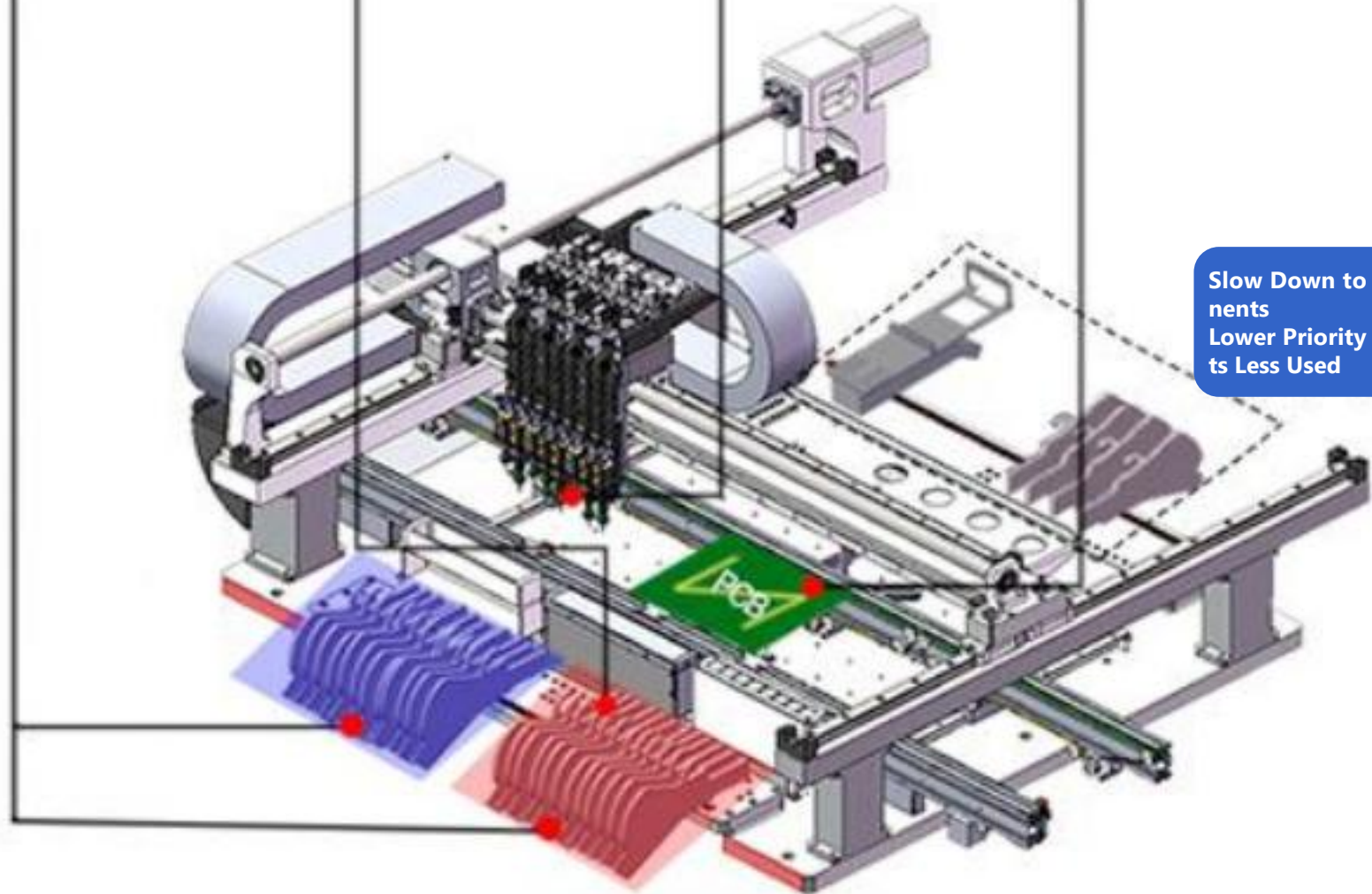
Path Optimization  
Synchronous Pick-  
ing

Shortest Path  
Majority Priority

Automatic Distri-  
bution of Nozzle  
Sequence

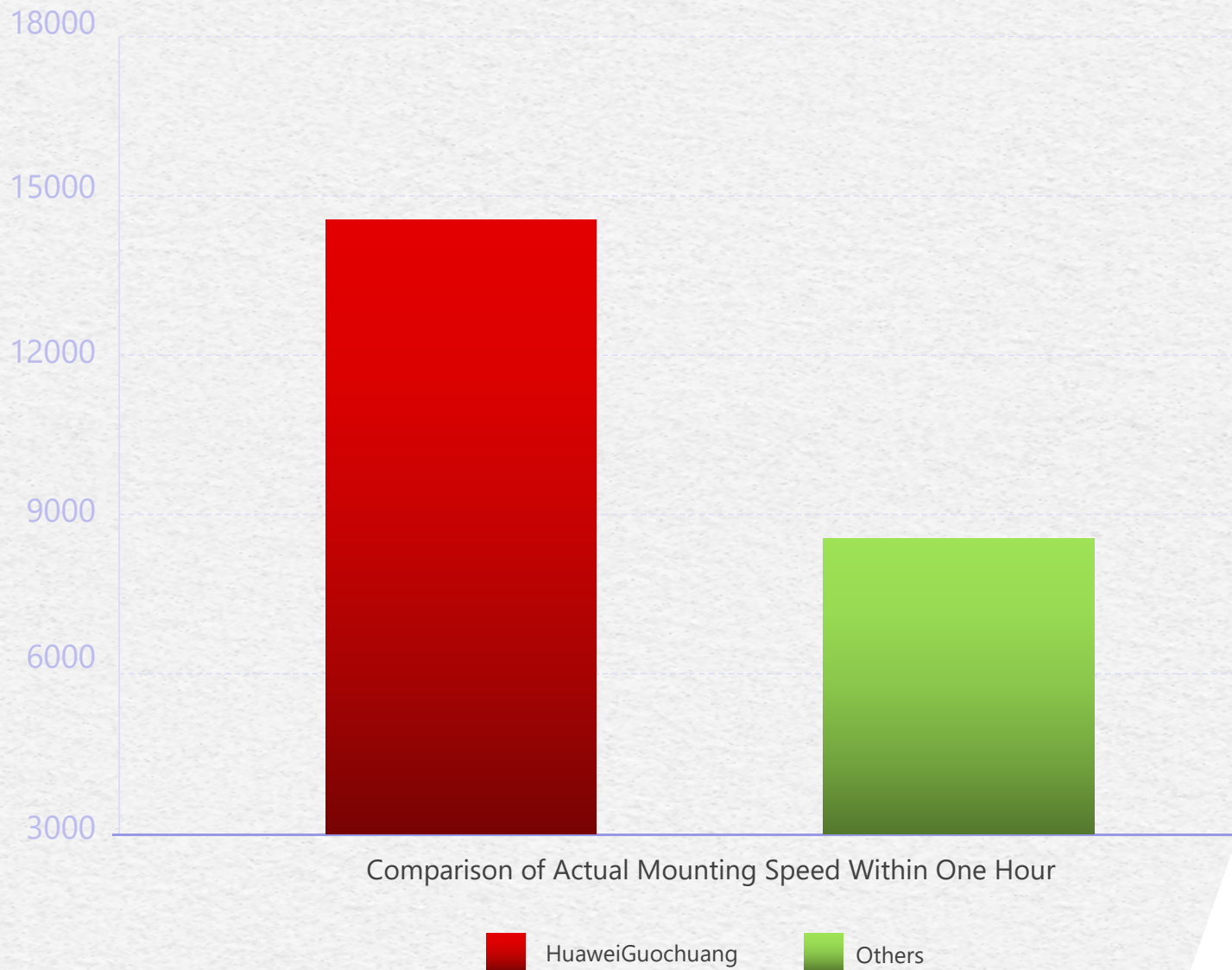
Global Optimizati-  
on of PCB Path

Friendly Compat-  
ibility of Core Al-  
gorithms



Slow Down to Large Components  
Lower Priority to Components  
Less Used





Comparison of Actual Mounting Speed Within One Hour

\*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







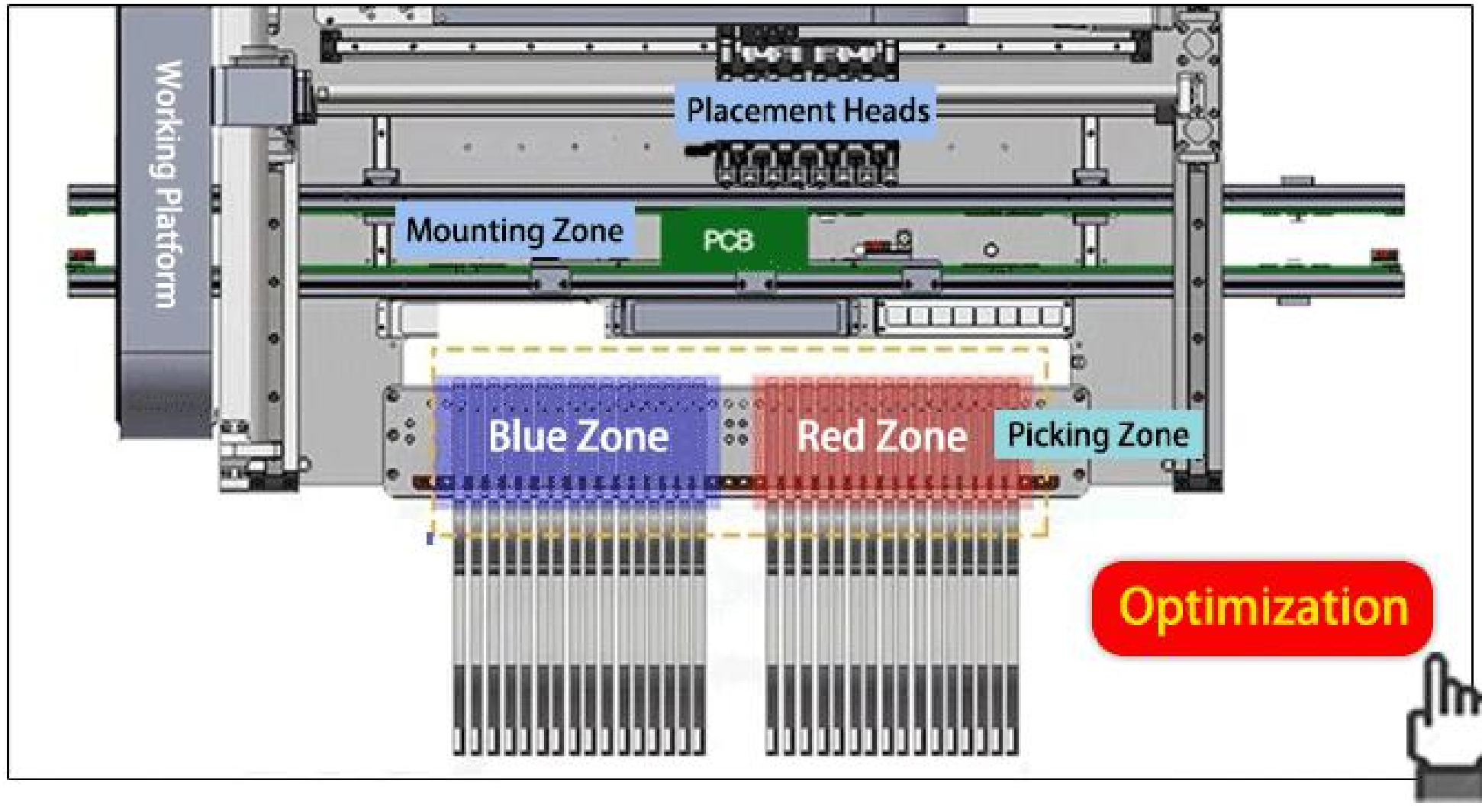
# Product Advantages

Software





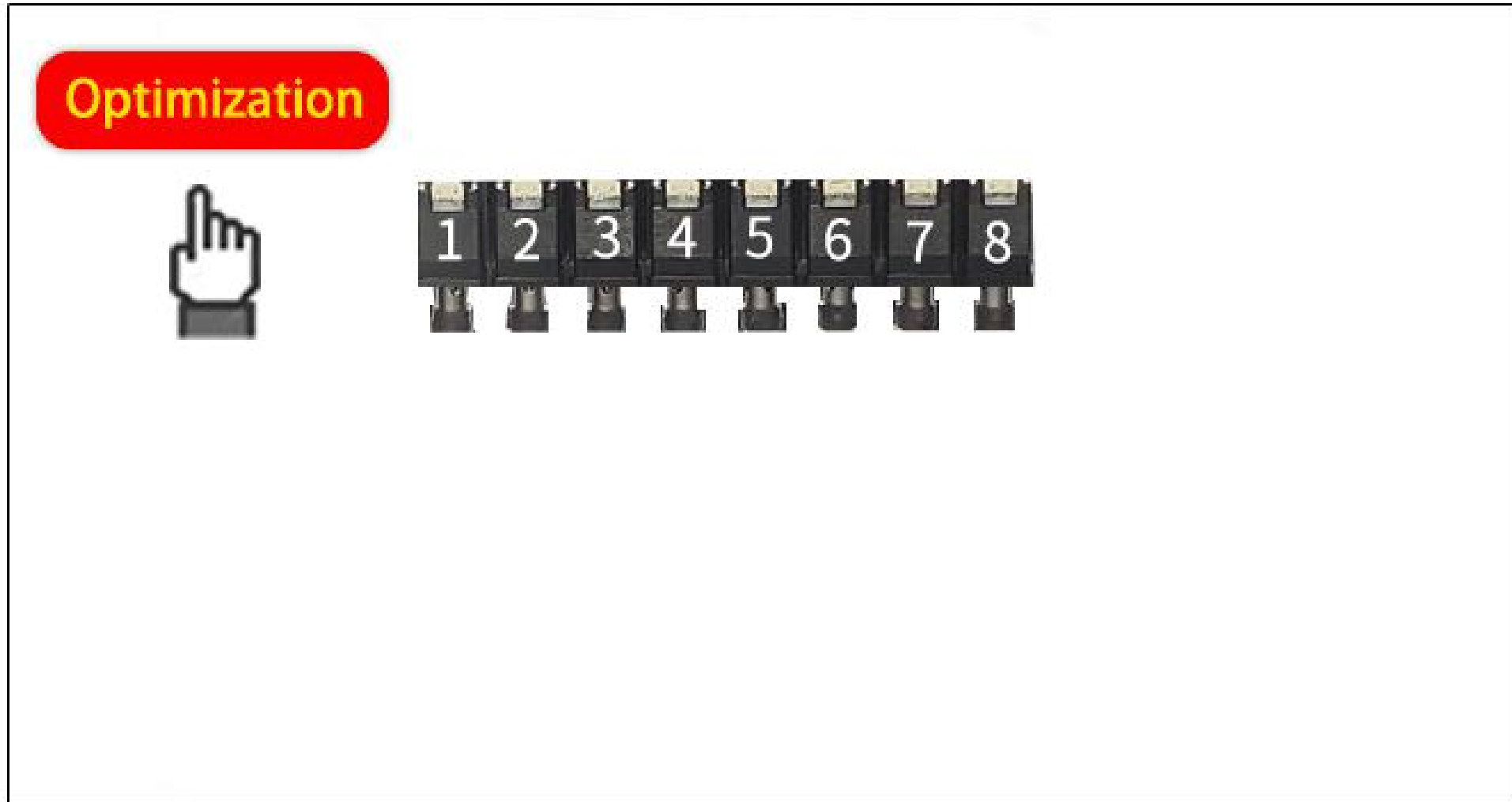
Intelligent optimization makes the troublesome distribution of multiple components' feeding more efficient and logical, compared with the traditional manual method.



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



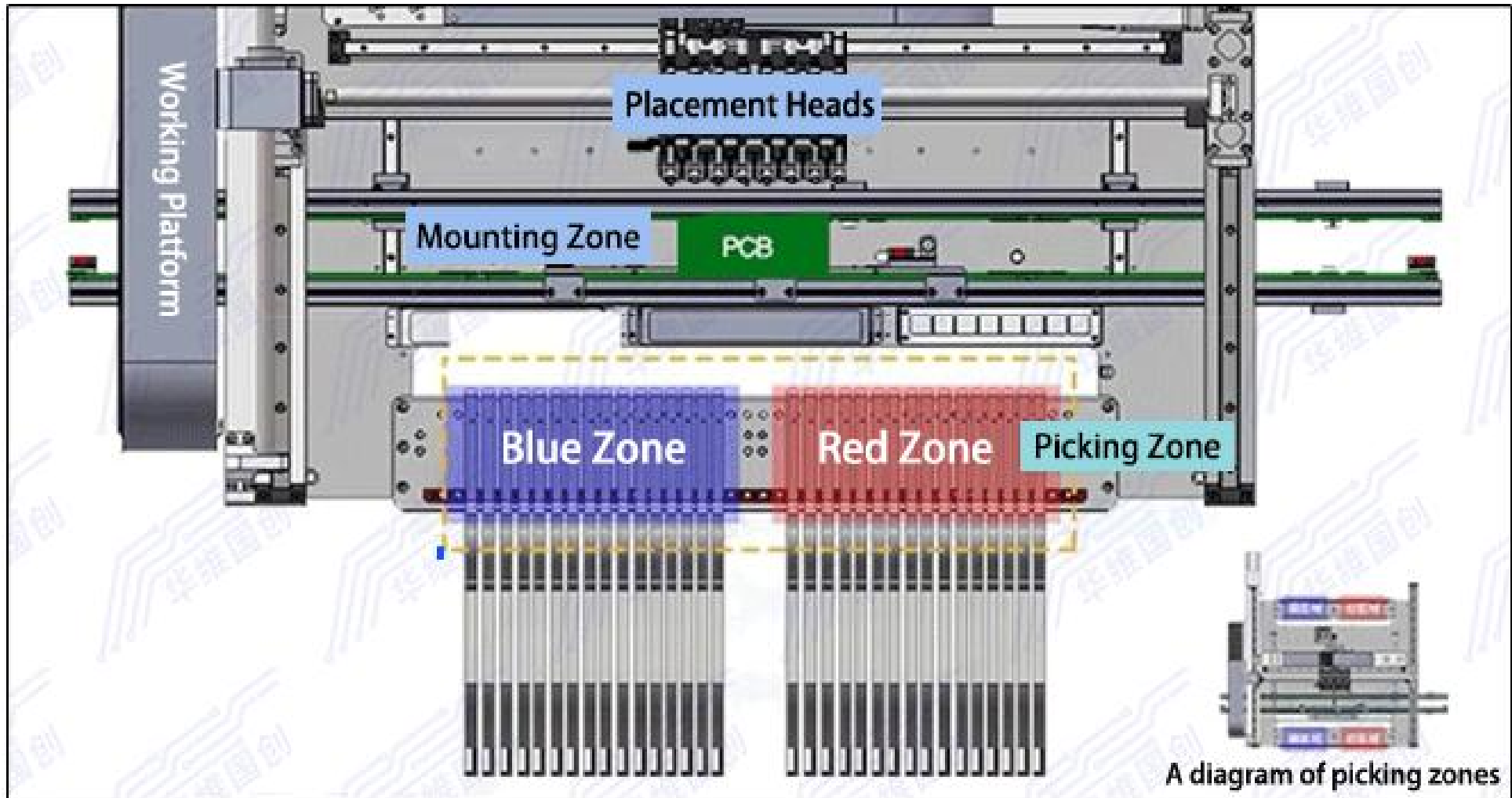
Select nozzle models intelligently according to BOM, and update the position number of corresponding nozzle in the program synchronously.



**Automatic optimization of nozzles' installation sequence**



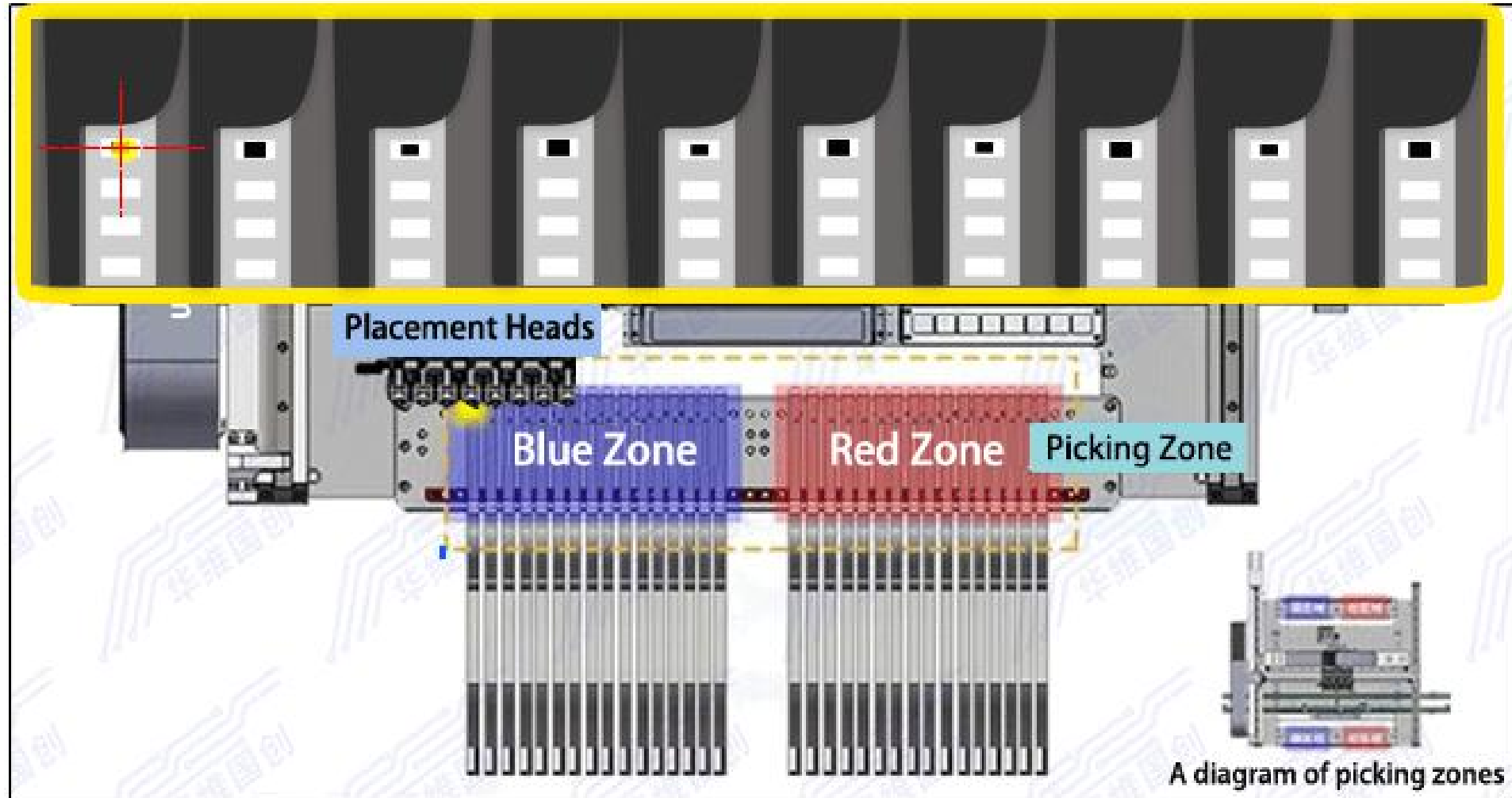
The seamless connection between feeding and picking is achieved by the one-click optimization implemented by intelligent algorithms.



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



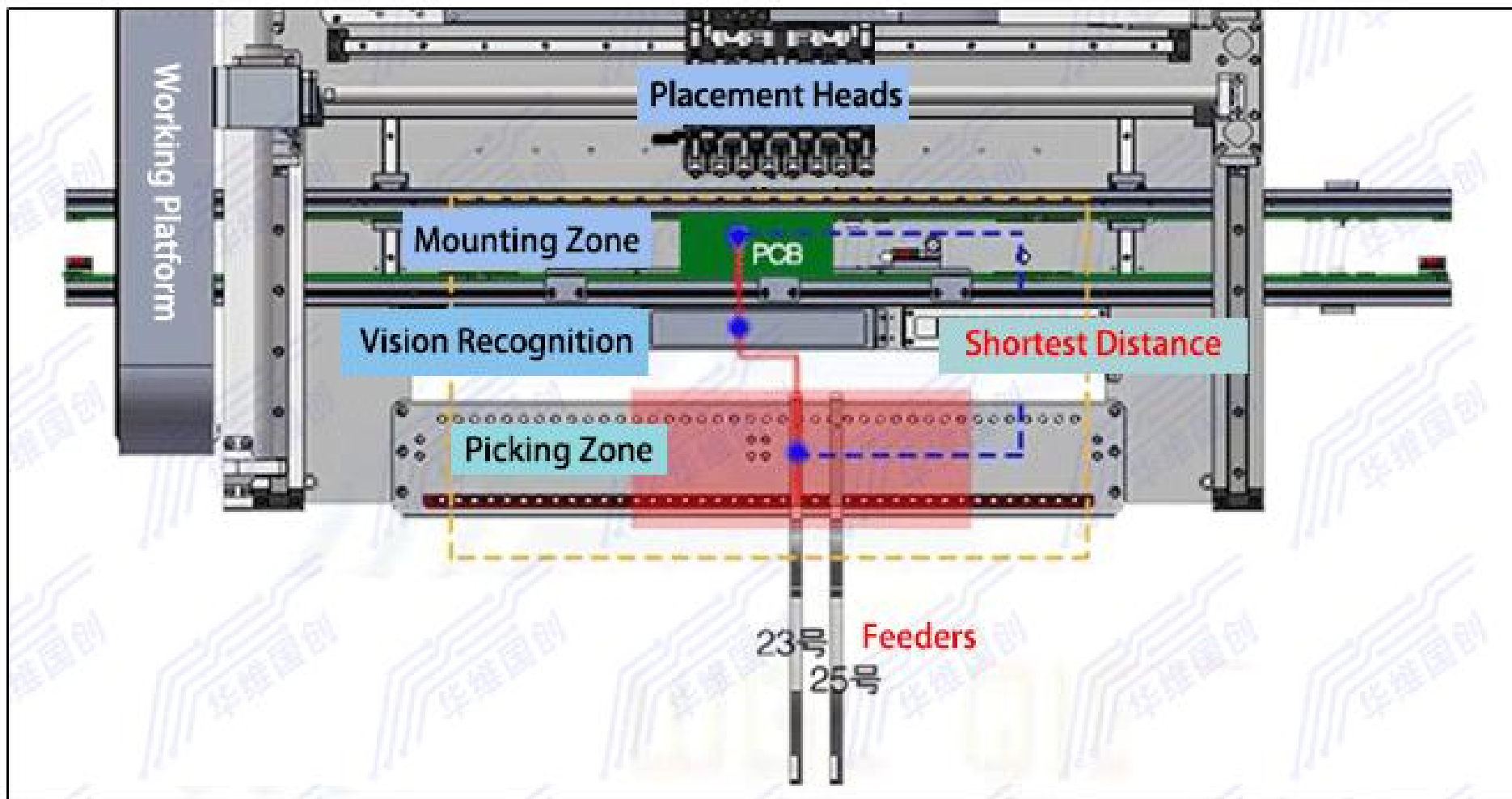
The meaning of this function: It can save 30% programming time costs and greatly improve efficiency by fast, efficient and accurate one-click operation.



**Automatic calibration of feeder picking coordinates**

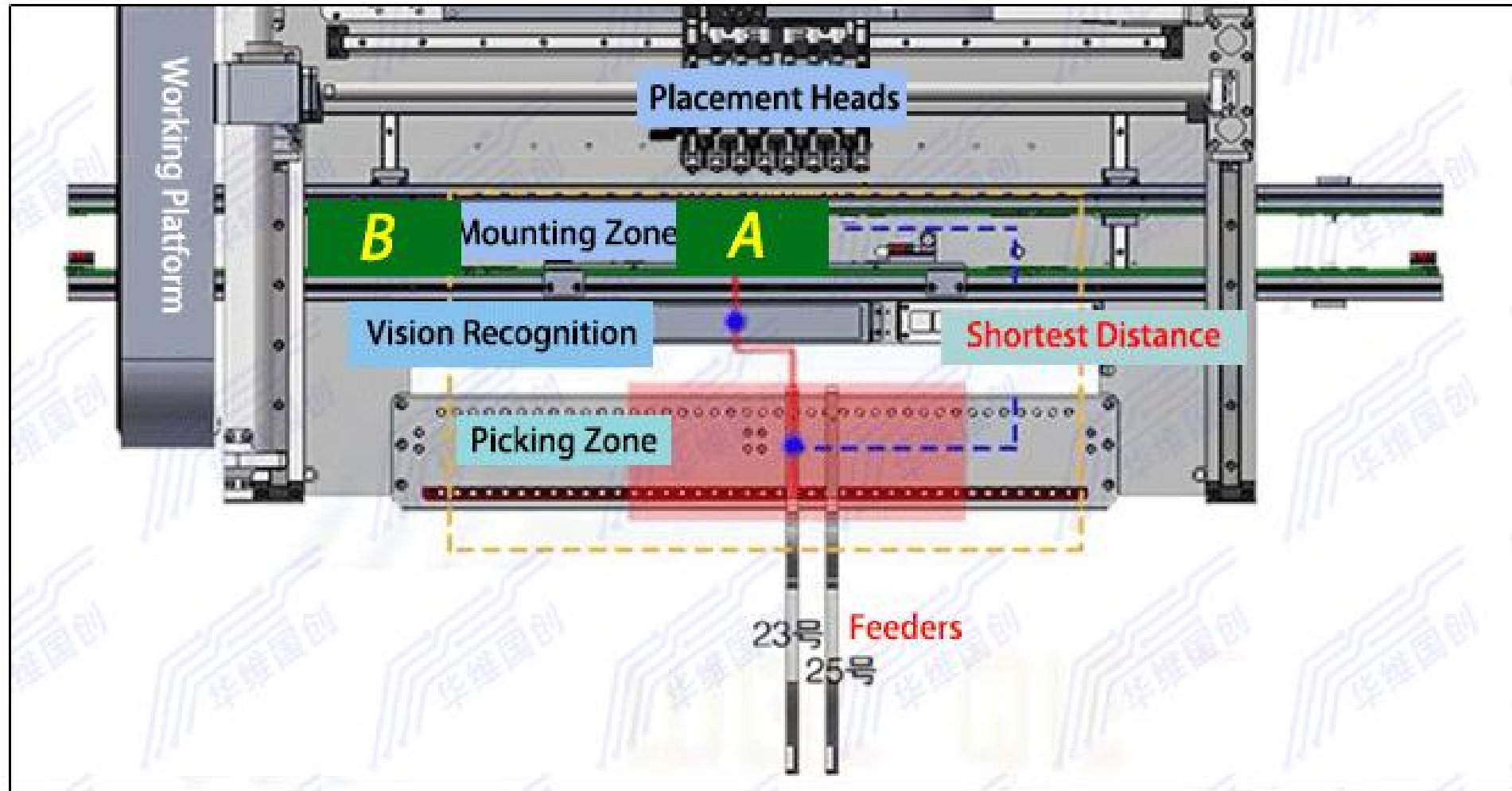


Using the system's intelligent algorithm, HuaweiGuochuang mounting system can help you make it with just one click instead of conducting tests and distributing the complex and massive layout by hand.



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





# Details of Products

True precision, true high-efficiency and true smartness



# Industrial Computer

17-inch display, keyboard and mouse.

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





# 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 running, 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.





# 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 applications, 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 industrial vision HD lens.

Eight 1MP industrial fast recognition cameras which can increase efficiency significantly by simultaneous recognition of eight placement heads.







# Product Specification

Software part





Model	HW-DU800-DSQ800
Number of Placement Heads	8(high-accuracy)
Number of IC Trays	96
Number of Feeders	120(subject to 8mm feeder)
Positioning Accuracy	0.01mm
Repeated Mounting Accuracy	0.02mm
Range of Mounting Speed	25000-26000Pcs/h
Applicable Components	resistor,capacitor,chip,lamp bead etc.
Supported Maximum Area of PCB	340*560mm
Feeders	NXTelectric feeder,vibrating feeder, IC tray etc.
Recognition Devices	mark camera x1,fast recognition camera x12, high-precision camera x1
Maximum Height of Applicable Components	≤20mm
Recognition Methods	simultaneous recognition and picking with eight heads
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 2021 control system
Maximum Step Length of XY Axis	423mm*734mm*2
Tracks of XY Axis	four linear motion guide + four 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	50mm
Range of Angle for Components	±180°
Air Supply Requirements	oil water filter,≥ 60L,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	1500W
Machine Dimensions	1740*1360*1440mm
Weight	1100Kg





# Software Operation

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.





# Automatic Assignment of Mark Points

华维国创贴片机智能版控制系统 V2.0 (2020智能版)

**MarkCam** **FastCam** **HighCam**

**Noz 1** **Noz 2** **Noz 3** **Noz 4** **Noz 5** **Noz 6** **Noz 7** **Noz 8**

Mark Para Mark Light Mark Led Fcam Led Hcam Led Zoom x2 Visual Debug Throw

Back Up PCB-fix In-Board

Left Rst Right Rvs Zero Cir PCB-rs Out-Board

Fwrd Down Track- Vacuum On

Track- Vacuum-Off-all

XY Step 10000 Speed 59 Track delay 0.5  
 Z Step 100 Speed 60 Track speed 8  
 A Step 78.00 Speed 64  
 Track Step 64 Speed 56

Rec  Cross  
 Circle  Scale

	Noz1	Noz2	Noz3	Noz4	Noz5	Noz6	Noz7	Noz8	XY Coord
Height	0	0	0	0	0	0	0	0	X10000
Angle	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Y10000

DISCONNECT Project Create/Open Project Close DU800\_96F.EE Registered System Setting Device Calibration 64

PROJECT: D:\Smt\Customer1\2020\_new41黄典盛\RH0120210129.qn

PCB Edit SMT Run PCB Standard Mode Feeder Para

PCB Edit Optimize Feeder Plug Feeder Para Diagnosis SMT Run

PCB Edit

Import PCB Import Coord Import BOM 0/41 Search PCB Check Angle X

n	n	n	n	n	n	n	n	n	n
R17	a0603	3.4							
R20	a0603	21.3							
R3	a0603	29....							
R25	a0603	21....							
R26	a0603	21....							
R27	a0603	21....							
R28	a0603	21....							
R32	a0603	26....							
R10	a0603	1.924							
C5	a0603	18....							
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				

Label  
Chip Value  
Footprint  
X  
Y  
Angle  
Re-Write  
Hidden Current Column  
Show All Columns  
Optional

Sign in PCB XY (mm) Sign in Machine XY (step)  旋转180放置

Auto Get Sign	Prise Mode	Sign	X	Y	Save	Save
Sign 1	<input checked="" type="checkbox"/>	X	31.4757	Y 113.698	Save	Save
Sign 2		X	17.606	Y 2.8071	goto	goto
Sign 3		X	32.9	Y 43.5	Save	Save
Sign 4		X	1.7	Y 32.7	goto	goto

PCB

X50000 Y50000 Sign 1 X50411 Y70245 Sign 3  
 X41416 Y73360 Sign 4 X46001 Y81981 Sign 2

Generate PCB data





# Automatic Creation

of Mounting Program After Manually Importing the File of Coordinates

PCB Edit    Optimize    Feeder Plug    Feeder Para    Diagnosis    SMT Run

### PCB Edit

Import PCB    Import Coord    Import BOM    0/41    Search    PCB    Check    Angle    X

	π	π	π	π	π	π	π	π	π	π	π	π	π
▶	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							

Sign in PCB XY (mm)    Sign in Machine XY (step)     旋转180放置

Auto Get Sign	Pricise Mode	Sign	X	Y
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sign 1	31.4757	113.698
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sign 2	17.606	2.8071
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sign 3	32.9	43.5
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sign 4	1.7	32.7

PCB

Sign	X	Y	Sign	X	Y
Sign 1	X50000	Y50000	Sign 3	X50411	Y70245
Sign 4	X41416	Y73360	Sign 2	X46001	Y81981

Save goto    Save goto    Save goto    Save goto

Generate PCB data





# One-click

Intelligent Optimization of Mounting Program

## 分类设置 优化生成贴装列表

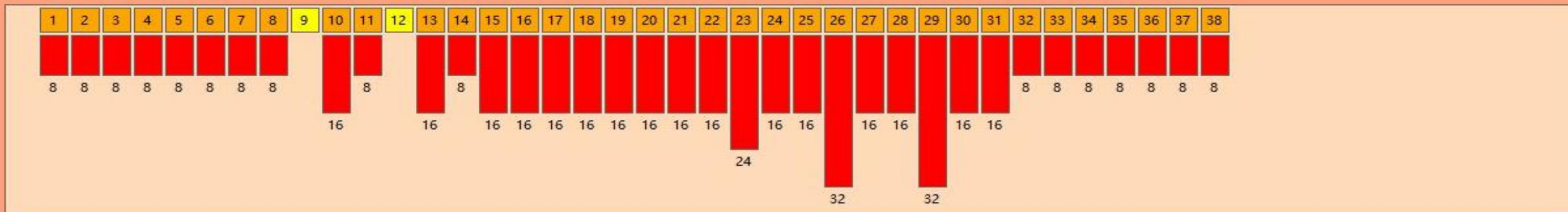
来自封装库    料槽吸嘴禁用设置     开启备用吸嘴    **一键生成**    本地料站库

删除选定    从其他工程导入料站号    2/2    优化结果

	型号	封装	数量	供料	料站号	多组供料	吸嘴	同取容差(毫米)	相机	视觉算法	识别模式	降速搬运	高度(毫米)
	2	402	48	CL8-4	自动	1	502	0	快速相机	标准视觉	二...	<input type="checkbox"/>	0
▶	5	LQFP1...	1	料盘	自动	1	505	0	高清相机	标准视觉	精...	<input checked="" type="checkbox"/>	0

# Automatic Optimization for the Layout of Nozzles and Feeders

Feeder Installation Chart





# Applicable Components

## Resistor and capacitor



Resisto      capacitor

## Lamp bead



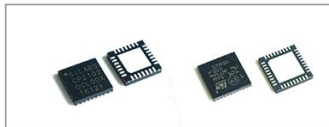
Lamp bead      Lamp bead      Lamp bead

## SOP TO



SOP      SOP      TO

## QFN



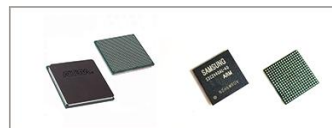
QFN28      QFN36

## LQFP



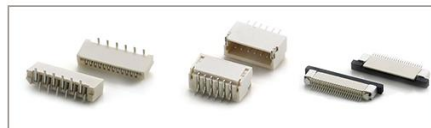
LQFP48      LQFP144

## BGA



BGA      BGA

## Pin header connector



Pin header connector      Pin header connector

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



# Honors

With the development of intelligent motion control system, visual recognition system, image processing system and other core technologies, our patch technology is becoming more and more mature.

In terms of hardware manufacturing, the core parts are imported brands to ensure more stable, reliable and long-term product performance. After winning a variety of invention patents, utility model patents and software copyright, the current mounting standard has reached the international level.

We not only have a stable customer base in China, but also get more and more favor overseas.







## Installation Requirements

- Air Pressure: range of 0.55Mpa-0.65Mpa
- Air Quantity: according to the scale of production line
- Air Condition: oil water removal
- Voltage: 220V for pick and place machine  
380V for reflow oven
- Temperature: 17°C~28°C
- Humidity: 45%~70%RH





## Customers in East of China

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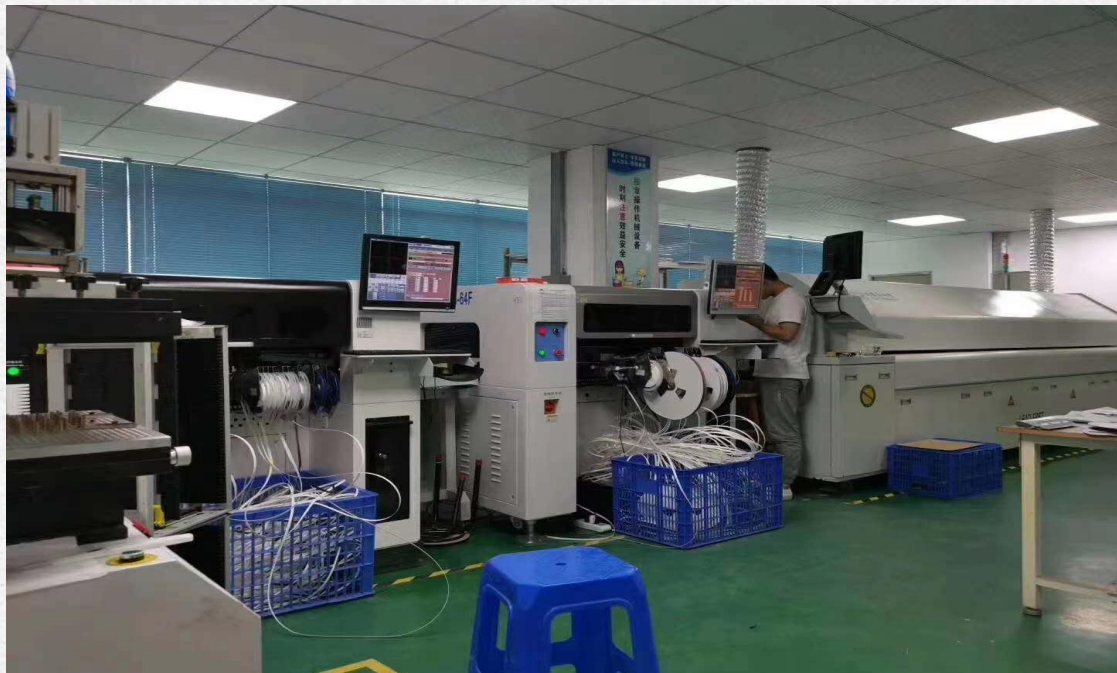


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## Customers in North of China







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**Customers in South of China & Overseas**





# Common Production Line Configuration

The production line will be different according to different mounting needs, the following is for reference only





北京华维国创电子科技有限公司

Beijing Huaweiguochuang electronic science and technology Co., LTD.

八头贴片机生产线方案

Scheme of 8-nozzles mounter producline

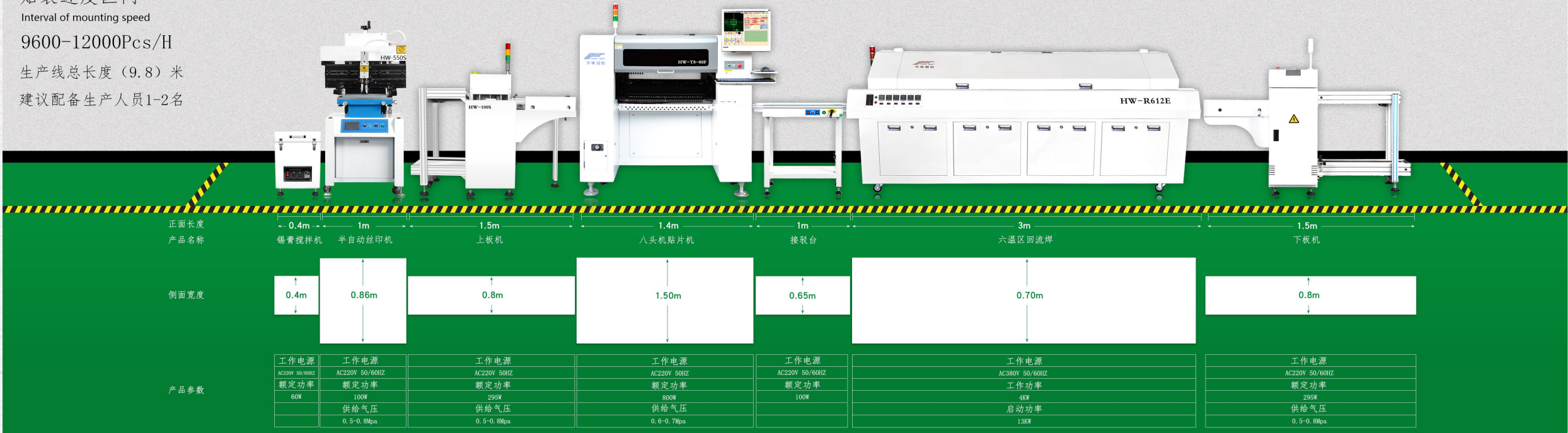
贴装速度区间

Interval of mounting speed

9600-12000Pcs/H

生产线总长度 (9.8) 米

建议配备生产人员1-2名



A production line plan which combines an eight-head machine and a reflow oven with six heating zones



北京华维国创电子科技有限公司

Beijing Huaweiguochuang electronic science and technology Co., LTD.

### 八头贴片机生产线方案

Scheme of 6-nozzles chip mounter production line

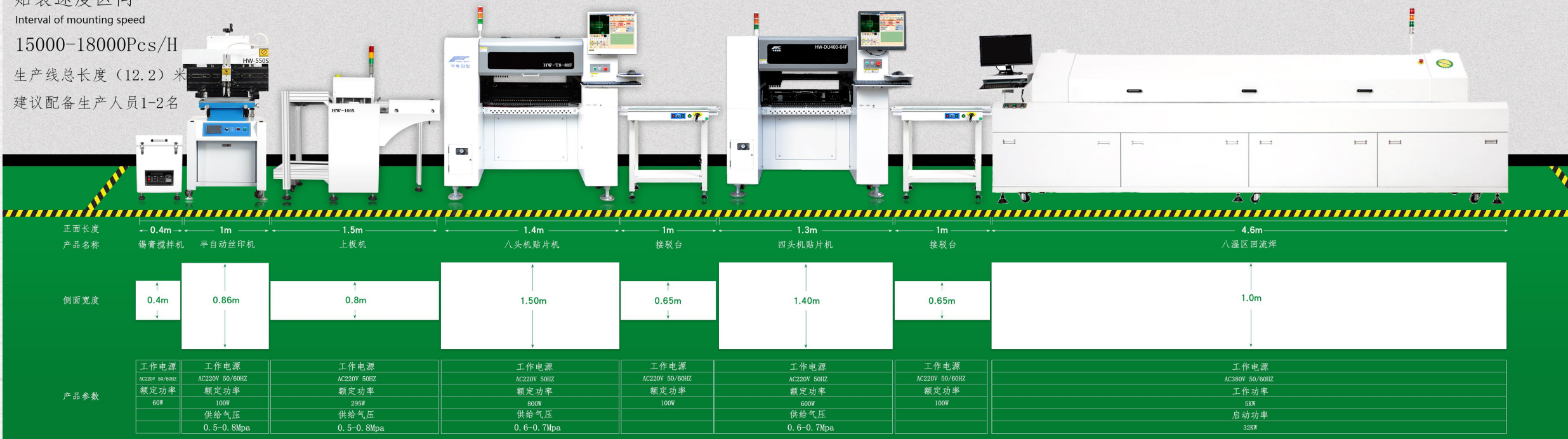
### 贴装速度区间

Interval of mounting speed

15000-18000Pcs/H

生产线总长度 (12.2) 米

建议配备生产人员1-2名



A production line plan which combines an eight-head machine, an independent four-head machine and a reflow oven with eight heating zones



北京华维国创电子科技有限公司

Beijing Huaweiguochuang electronic science and technology Co., LTD.

八头贴片机生产线方案

Scheme of 6-nozzles chip mounter production line

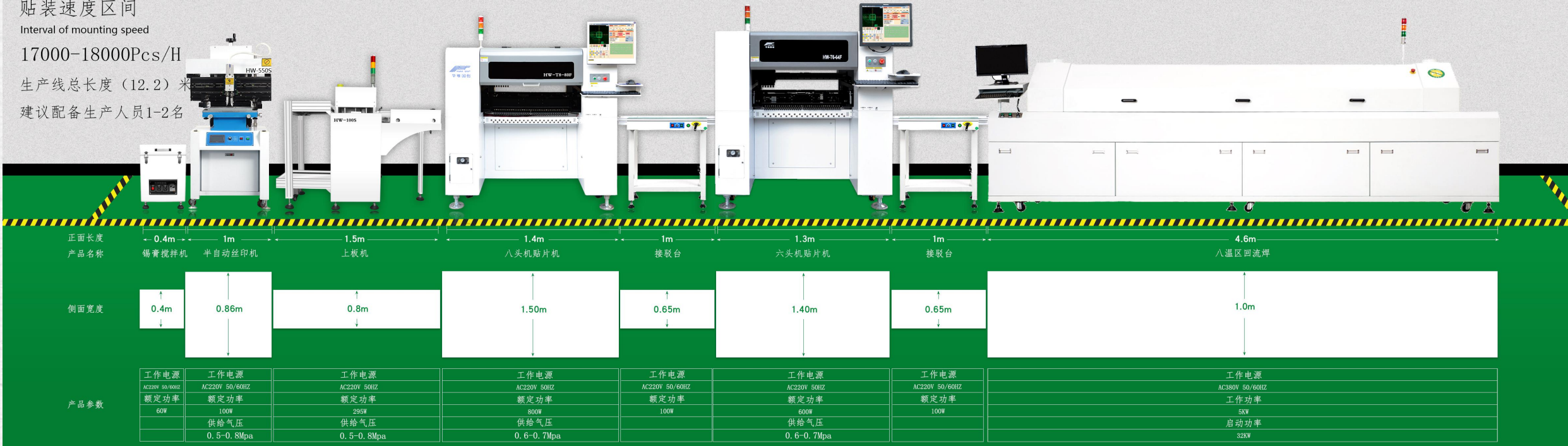
贴装速度区间

Interval of mounting speed

17000-18000Pcs/H

生产线总长度 (12.2) 米

建议配备生产人员1-2名



A production line plan which combines an eight-head machine, an six-head machine and a reflow oven with eight heating zones



北京华维国创电子科技有限公司

Beijing Huaweiguochuang electronic science and technology Co., LTD.

八头贴片机生产线方案

Scheme of 6-nozzles chip mounter production line

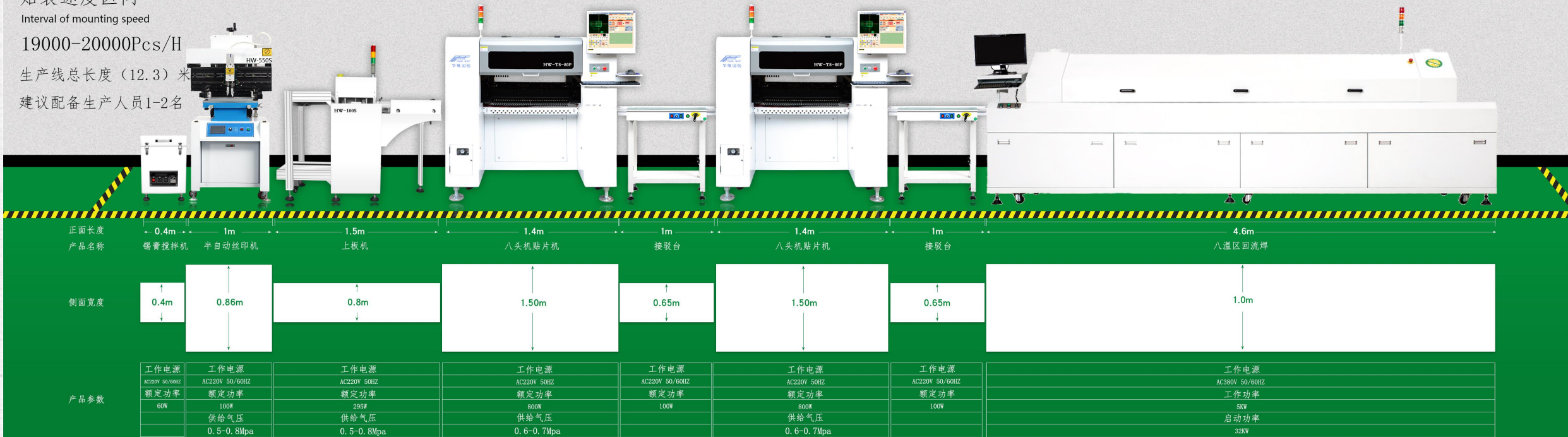
贴装速度区间

Interval of mounting speed

19000-20000Pcs/H

生产线总长度 (12.3) 米

建议配备生产人员1-2名



A production line plan which combines two eight-head machines and a reflow oven with eight heating zones



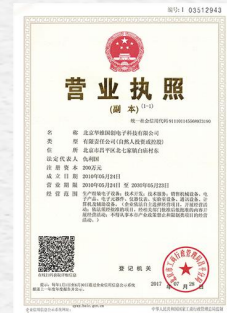
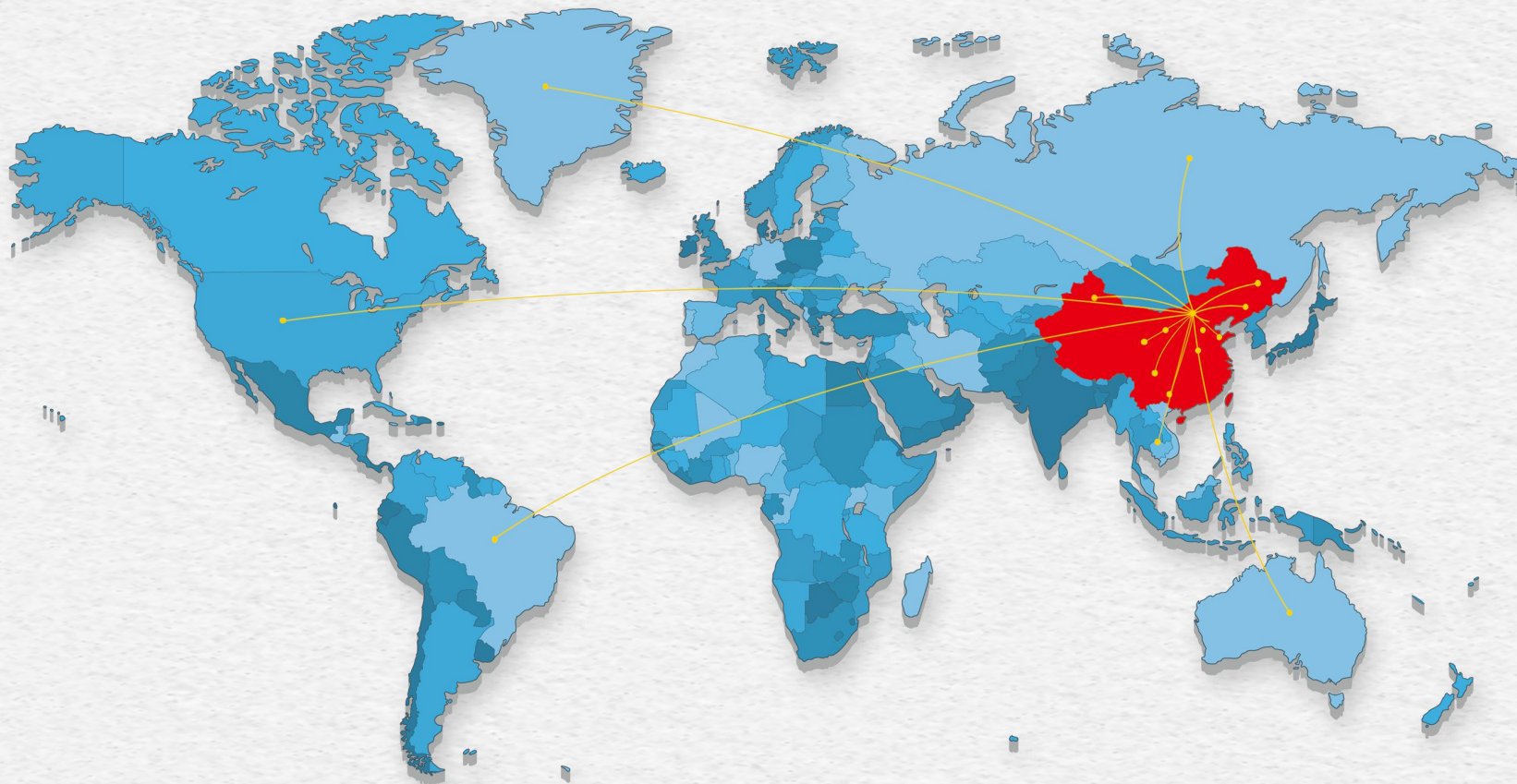
The R & D Department of the company is in Beijing with offices in Hangzhou and Shenzhen. In addition, we have a wide range of domestic users, and Based on the international market, we have a professional foreign trade sales team, our international market share is growing year by year.

Facing the market, we do not inflate parameters, and do not exaggerate the publicity; Facing the customers, we are practical and responsible for the products.

The pick and place machine produced by HuaweiGuochuang is high-end equipment used in electronic processing industry, and is mechatronics equipment which integrates motion system and software control system. Its main function is to mount the components on the circuit board. Product design is aimed at user groups who are in need of batch processing, and in order to achieve 24-hour non-stop work and continuous profitability of products, we consider the long-term non-stop work demand from the material selection, life, durability and other aspects.

HuaweiGuochuang is one of the few domestic manufacturers with R & D capability. We have been engaged in SMT equipment manufacturing for ten years.

Company R & D team: Software Engineer, architect, algorithm engineer, with more than 10 years of SMT R & D experience under master's degree.





# Thank you

for your attention to HuaweiGuochuang

HuaweiGuochuang takes scientific and technological innovation as its core competitiveness, aiming to realize the full intelligence of SMT production line and "zero" interval line change which means the maximum reduction of PCB switching time.

We have strict requirements on products, and will continue to follow up, develop and upgrade SMT equipment more suitable for industrial production, so as to meet different production needs and help each partner's long-term development.

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