

STE-800 Lead-free reflow oven



STE-800 Dual Lane Reflow 8 Zone Specification

Model :STE-800			
Dimension	5310*1430*1530mm	Control	Industrial computer
Heating zones quan.	Top 8,bottom 8	Cooling zones quan.	Top 2
Heating zone length	3110mm	Current plate structure	Galvanized plate
Weigth	APPROX:2400KG	Exhaust capacity	11m ³ /min×2
<u>Control system</u>			
Electricity supply	3P 380V/220V 50/60HZ	Temp. control range	Room temp.~300°C
Total power	67KW	Temp. control accuracy	±1°C (statical state)
Start power	32KW	Temp. control method	PID +SSR drive
Consumption power	10KW	PCB temperature deviation	±1.5°C
Speed control	3 Inverters adjust	Data save	All profiles can be saved
Warm up time	Aprx.30minute	Abnormal alarm	High, low temp. alarm
<u>Conveying system</u>			
Rail structure	2 sectional rails	Rail fixed method	Front fix
Chainstructure	Stuck-free type	Conveying height	900±20mm
PCB Max. width	400mm(optional to 450mm)	Conveying method	Mesh+ chain
Component height	Top:30mm /bottom 25mm	Conveying speed	300-200mm
Conveying direction	Left to right(right to Left)	Lubrication	Automatically or manually
<u>Cooling system</u>			
Cooling method	External water chiller		
<u>Heating features</u>			
Heating zones	Top 8,bottom 8 (3110mm) can meet the need of the peak lead-free technique.		
Cooling zones	After cool down by water chiller, PCB temp. is ≤70°C at the exit.		
Warm up time	From the normal temp. to set temp, approximate 30 minutes.		
Warm up sequence	Warm up from two side, save the power and time		
Profile transfer time	<15min		
Heating zone temp. control accuracy	±1°C		
PCB temp. deviation	±1°C		
Empty→ full load heat balance respond time	≤20 s		
Heating zones separately close funtion	Every heating zone can be closed separately on computer. When the bottom heating zones are closed, the PCB two sides temp. different reaches max.(PCB of different material, thickness, size, the temp. difference value is different.)		

<u>Heating parts</u>	
Hot air motor	Import anti high temperature motor,RPM:2800rpm。Adopts inverter to control, can adjust the speed of motor from 0to 3000, stepless. Motor warranty is 5 years.
Heater	The heater is specially made, with high efficiency and sensitivity, warranty time is 5 years.
Air lane structure	High efficient air lane, provides abundant air
Exhaust system	Forced exhaust device, ensure no escape of flux.
<u>Transmission parts</u>	
Anti torque rail	High strength and hardened rail, is very durable and wear resistant.
Rail parallelism	±0.3mm
Chain stretch out length	Standard: 5mm, the chain is anti stuck type, solve the soldering problem of small PCB
C/V speed set min.unit range	0.01m/min, 0~2m/min
C/V speed deviation range	Computer close loop, within ±2%
Chain tension device	Automatic adjust by spring, avoid the chain stuck due to the heating.
Conveying motor	Panasonic adjustable motor
Chain lubrication	The lubrication is controlled by PC, lubrication cycle and time can be set (there are three modes: fine, standard, economical. There is also manual lubrication in software)
Rail width-adjusting	Independent adjusting
Mesh	400mmstainless steel mesh, runs synchronized with chain
Transport rail fixing method	Front and rear rails fixed, central rails moveable
Dual rail transport	D for dual rails, 1, 3 or 1, 4 fixed, can pass the maximum PCB size of 250x250mm at the same time

<i>Machine structure</i>	
Frame	The frame is well soldered, firm and durable.
Door	Dismountable structure, provide wide space for maintenance.
Hood open method	Double electric cylinder to open the hood, with self-lock function, safe and reliable.
Cover open method	Self-made holder, easy to clean up
<i>Electrical parts and control performance</i>	
Control system	Industrial PC PLC+Modular+PID, stable and reliable, with high repeat accuracy
Operation interface	Windows7 with Chinese& English shift easily.
Machine&operator safety	With creepage protector
Electric part	All electric parts are imported, very durable, ensure the machine runs stably.
Working mode	Three working mode: operation, edition and presentation, with on-line editing function
Real time monitor	Generate the operation record daily, if there happens some problems, the responsible operator will be found easily.
Temperature profile	Generate the profile for each zone daily, user can review and analyze. This function is not for PCB profile testing, just for inspecting when some problem happens in a certain zone.
Production database	Generate production statement for all kinds of PCB and statistics, printable.
Alarm list	The system saves all alarm information for user to review the alarm item and time.
Alarm system	The system enters cool down mode when the alarm is strict.
Profile test	With temp. profile testing function, can analyze according to the profile.
Abnormal alarm	1.PCB runs abnormally 2.operation abnormal 3.temperature abnormal 4.conveyor speed abnormal 5.hot air devices abnormal.
Flux recycle device	Standard configured. When use nitrogen, as it is closed recirculation, if the flux fog can not be spread, it will pollute the PCB.

STE-800 Lead-free reflow oven

- Excellent welding quality
- Top thermal engineering performance
- High efficiency and stable productivity
- Minimum operating energy consumption
- The control system of artificial intelligence



Top thermal engineering performance

An excellent reflow soldering product should meet the following standards:

- **Minimum blast temperature deviation of furnace chamber section**
- **Minimum PCB solder spot temperature deviation**
- **Higher heating efficiency**
- **Faster thermal compensation capability**

Top thermal engineering performance

- **minimum air temperature deviation in furnace section:**
 - 1. Get the actual temperature closer to the set temperature**
 - 2. More uniform temperature uniformity of furnace chamber can be obtained**

STE-800 product and other excellent product wind temperature comparison
(according to the industry standard)

The serial number	Test project	Other excellent products	STE-800
1	The set value deviates from the actual value	+1/-3°C	±1°C
2	Peak temperature deviation of wind temperature at 7 o'clock	≤1.5°C	≤1.0°C

Top thermal engineering performance

- **Minimum PCB solder spot temperature deviation:**

- 1. Prevent uneven heating of components with different sizes on the PCB board, cold welding or over-welding**
- 2. Easy to obtain consistent welding quality**

PCB temperature comparison between STE-800 product and other excellent products
(according to industry standard)

The serial number	Test project	Other excellent products	STE-800
1	The set value deviates from the actual value	250°C/≥230°C	250°C/≥235°C
2	Peak temperature deviation at 4	≤5-8°C	≤±1.5°C

Top thermal engineering performance

- **Higher heating efficiency**

What is thermal efficiency:

The extent to which the heat provided by the furnace is effectively utilized, that is, the percentage of the total heat absorbed by the heating element.

Higher thermal efficiency:

1. The more heat the components absorb
2. The higher the thermal utilization rate of the equipment is

Comparison of thermal efficiency of STE-800 products with other excellent products (according to industry standards)

The serial number	Test project	Other excellent products	STE-800
1	Single point thermal efficiency (deviation between set temperature and actual temperature)	300°C/≥220°C	300°C/≥235°C
2	Multipoint thermal efficiency (peak temperature deviation at 7 points)	≤7°C	≤4°C

Top thermal engineering performance

- **Faster thermal compensation capability**
 - 1. Significance of rapid thermal compensation capability:**
 - 2. To ensure that the furnace temperature still meets the production process requirements in the continuous mass production process**

Comparison of thermal compensation capability between STE-800 product and other excellent products (according to industry standard)

The serial number	Test project	Other excellent products	STE-800
1	Peak temperature deviation(no load and load data comparison)	$\leq 3-5^{\circ}\text{C}$	$\leq 1.5^{\circ}\text{C}$ (latest figures)

The electronic control performance of the product is guaranteed

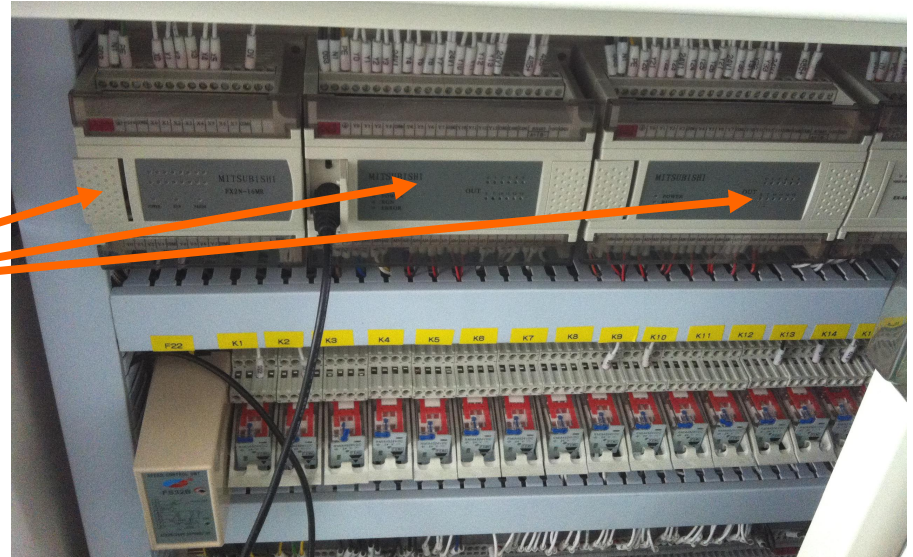
The electrical control box of each machine has been elaborately made, with the most excellent international brand, through strict testing, striving to achieve the best quality



The electrical control system of the international CE standard and the control system of the neat standard are one of the reference points to check whether a equipment is qualified.

PLC control module

The whole machine control system adopts Japanese mitsubishi PLC for control, temperature control mode adopts full closed-loop PID control mode, the control accuracy error value is within 1°C.



-- PLC is a programmable logic controller, which adopts a kind of programmable memory, used for its internal storage program, to execute logic operation, sequence control, timing, counting and arithmetic operation and other user-oriented instructions, and control various types of machinery or production process through digital or analog input/output.

Intermediate relay

Intermediate relay, from Swiss jiale, with high quality and stable performance, can ensure the stable operation of the control system and the normal operation of the machine.



Switching power supply plus filter

In the power supply, not only use the best quality switching power supply, but also in each power add a high-strength filter, so that all interference can not affect the performance of the equipment



Inlet filter

The power filter can separate the interference signal from the useful signal, improve the anti-interference and signal-to-noise ratio of the signal, and improve the analysis accuracy. To protect the electrical control system from interference current and voltage.

High stability
switching
power supply

----Switching power supply is a kind of power supply that USES modern power electronic technology to control the time ratio of switching tube on and off and maintain stable output voltage.

Inverter stability

transportation, air, cooling system are adopted AB inverter, stepless speed regulation, so that your welding speed, hot air, cooling speed can be selected to the best state.



The American
AB variation is
more stable

AB inverter is an industrial control terminal manufactured by rockwell automation, USA. AB inverter is manufactured according to European CE standard and Chinese CCIB standard

- frequency converter

The inverter is mainly composed of rectifying (ac to dc), filtering, rectifying again (dc to ac), braking unit, driving unit, microprocessing unit and so on.

How it works: change the speed of the motor by changing the output frequency.

Overcurrent protection air switch

We add an overcurrent protection switch above each heating zone to automatically cut off the power supply when the heater fails, thus protecting the fault from spreading. Of course our best hope is that he doesn't provide protection that hasn't worked.



---Air switch in the low-voltage control circuit, the air switch is the circuit breaker (must be separated in the high-voltage distribution), in the circuit for switching on, breaking and carrying the rated working current, and can be in heating and motor overload, short circuit, undervoltage in the case of reliable protection. The dynamic and static contact and contact bar of the circuit breaker are designed in parallel, and the electric repulsion force generated by the short circuit is used to make the dynamic and static contact disconnect, with high breaking capacity and strong current limiting characteristics.

Temperature patrol instrument

We also installed a temperature patrol on each machine to monitor the temperature of each temperature zone at all times, so that the temperature of each temperature zone is within the normal range, beyond the set temperature range immediately alarm.

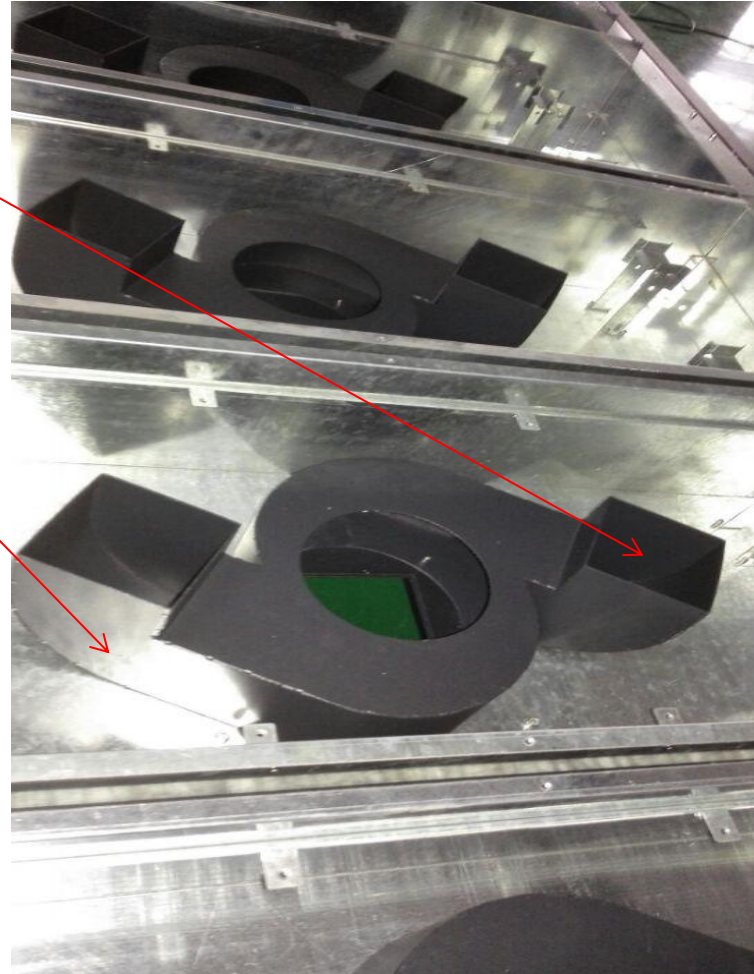


The temperature patrol produced by Shanghai hongrun precision instrument, the first brand in China, with real artificial intelligence calculation, no need for manual adjustment of parameters, temperature control precision up to $\pm 0.1^{\circ}\text{C}$, able to monitor the control temperature of each temperature zone, and further improve the quality of PCB components.

Double Angle fan cover function

Double Angle fan cover is our company's patent technology

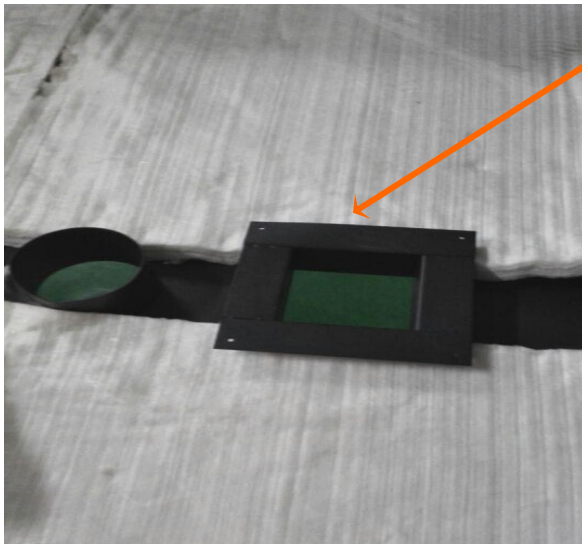
The double corner fan cover structure can effectively divide the air in the flow passage for the first time, which can reduce the temperature difference control precision of reflow welding at 3 points by 1°C immediately on the basis of the single corner fan



Heat insulation cotton in furnace



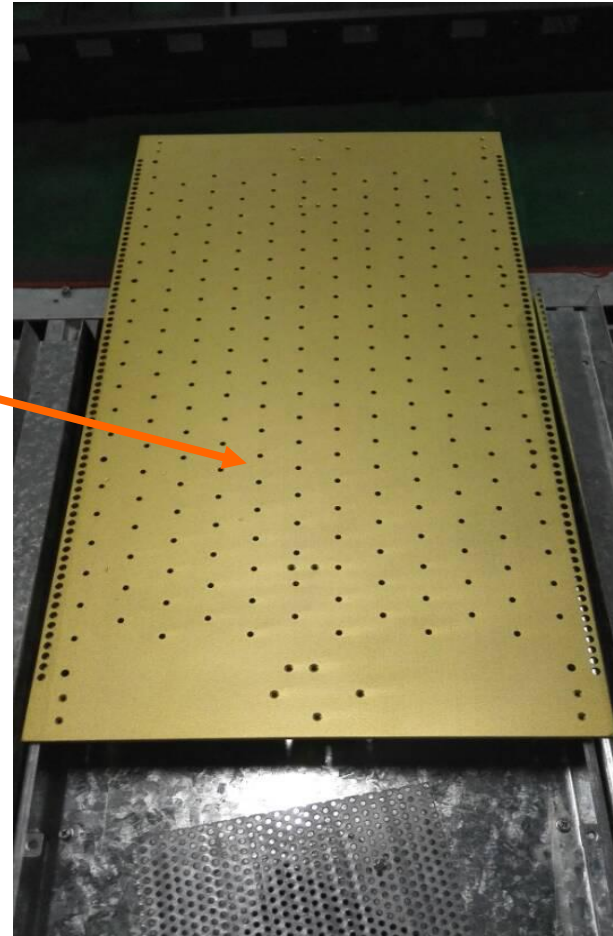
The intermediate heat shield of the liner is made of American high quality sisal heat insulation cotton, which effectively increases the thermal conductivity resistance by 3 times, and the reflow welding surface temperature does not exceed 30 ° c



Low-end equipment is glass fiber cotton, poor insulation, quickly aging, insulation more and more poor, and harmful to human health.

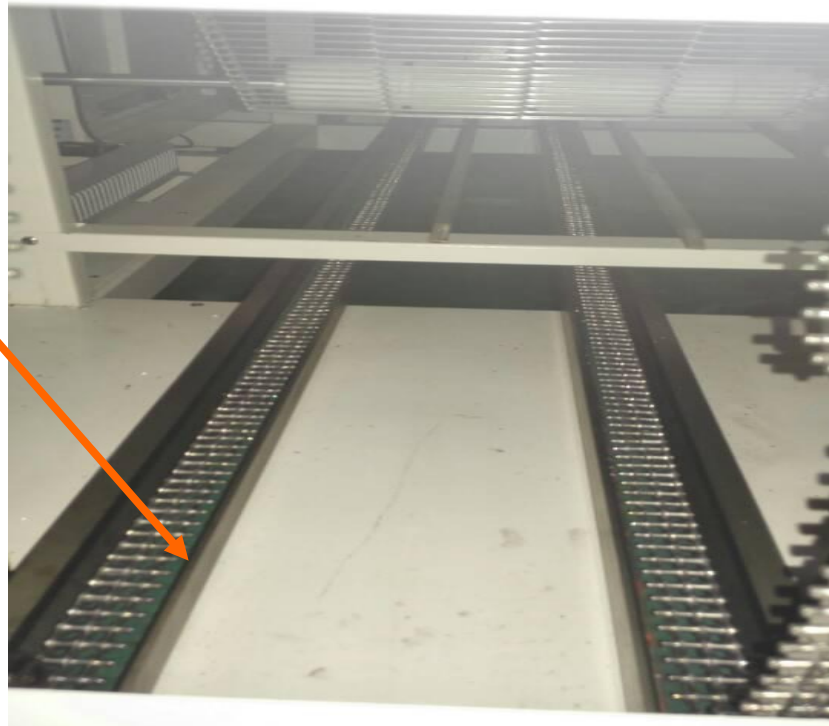
Rectifying plate moving structure

Rectifying plate adopts the imported from 10 mm thick (JT10MM) aviation aluminum alloy material, high temperature after hardening treatment, precision CNC machining, punching, polishing, make each hole location error value within 0.02 mm, its material itself has excellent effect on the heat storage, thermal radiation ability, make components get hot air permeability and thermal radiation penetration at the same time two heating mode, effectively reduce the influence of pulmonary circulation heating cape wind shadow, greatly improve the welding quality components, and reduce the power consumption equipment.



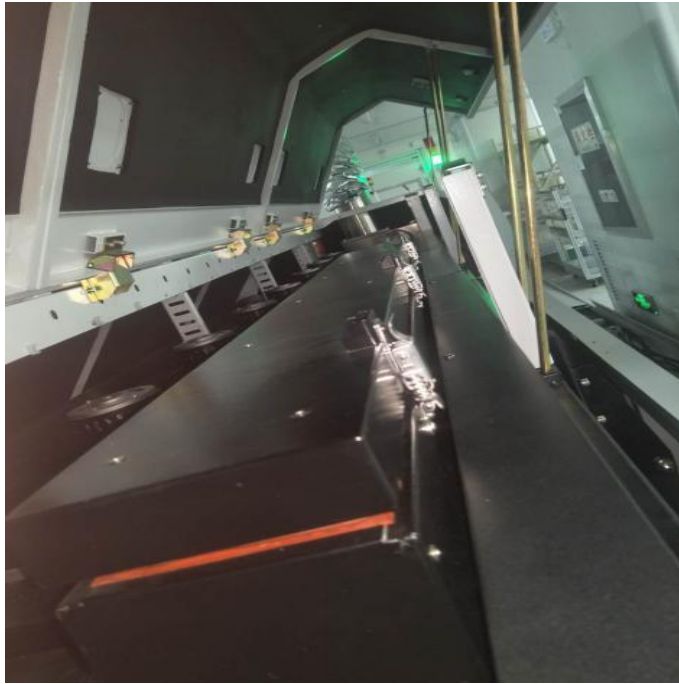
Chain loop construction

The chain loop adopts special guide rail for the loop to avoid chain jitter and displacement of components during welding



Rosin recovery system

- ◆ The inlet and outlet of the equipment and each temperature zone are equipped with rosin recovery system, you will never have to worry about rosin pollution of your products and furnace bile cleaning!

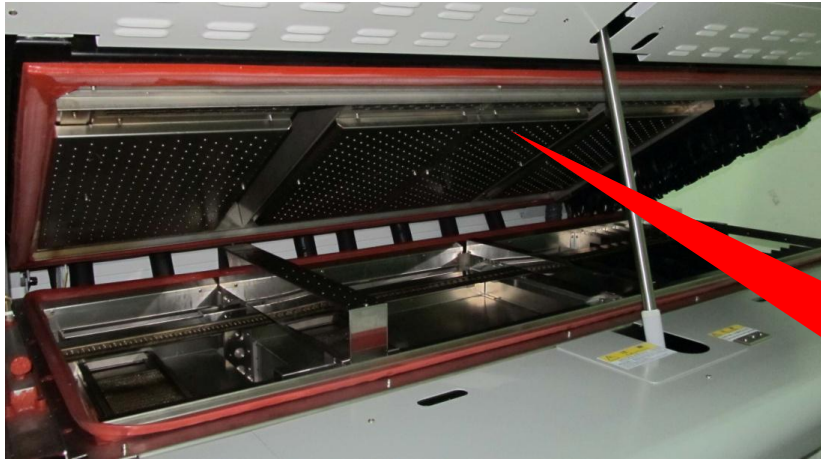


Unified waste gas recovery pipeline; During the welding process, each temperature zone has a different effect on the solder paste, thus the residual gas is also different, and in each welding zone there is a recovery pipe, the exhaust gas is uniformly recovered and discharged into the outdoor.

Efficient production capacity

At present, reflow welding equipment production chain speed is limited within 100cm/min for all manufacturers

KT series products
Maximum heating zone :12
Maximum heating
length :4305mm
Fastest chain speed:
160cm/min



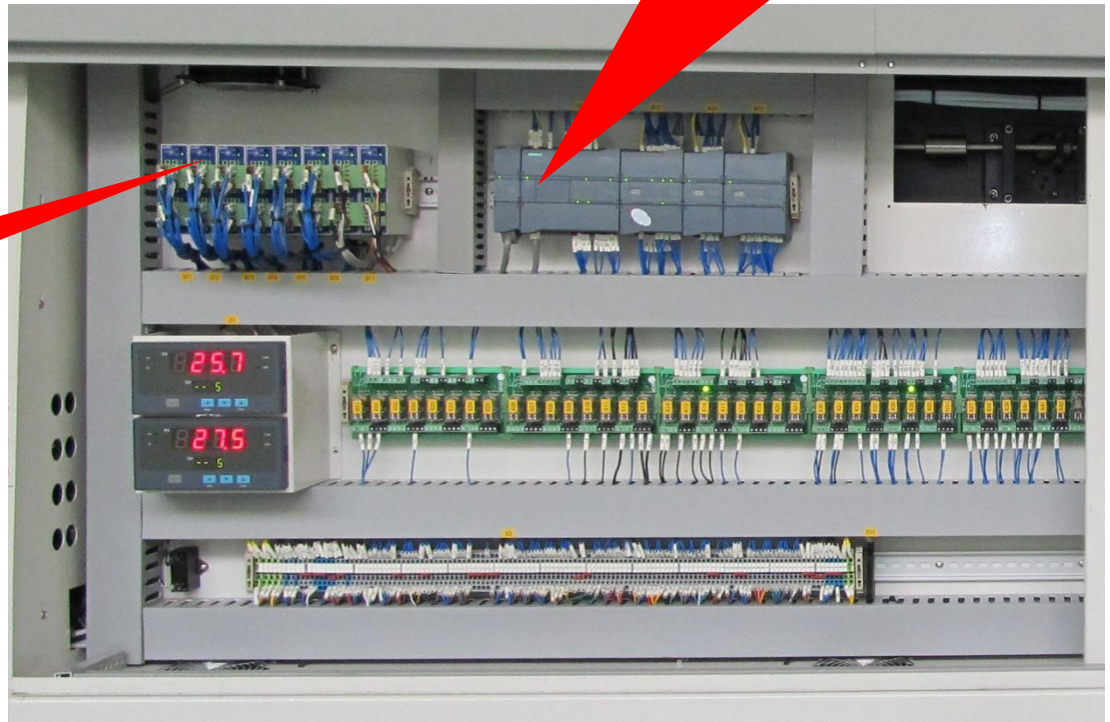
Standard 3 cooling zones
Effective cooling
length :1397mm
Guarantee the cooling effect
of high speed production

Efficient production capacity

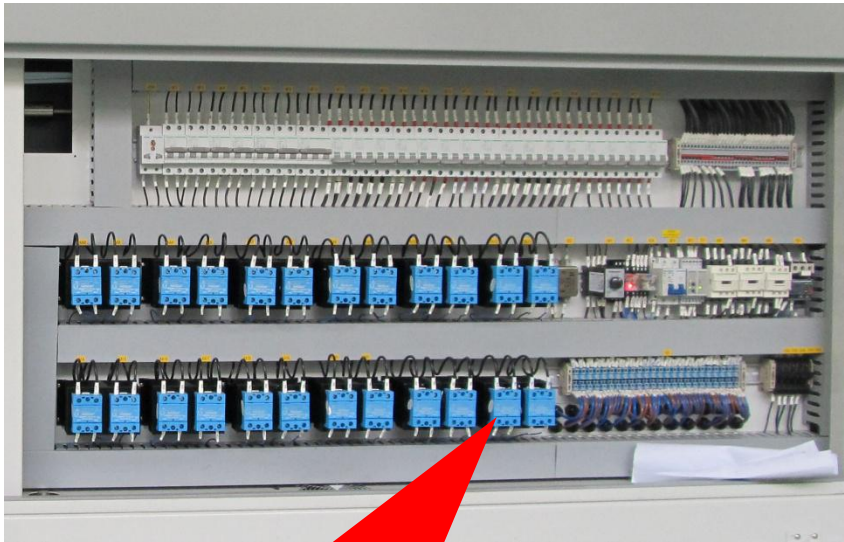
Whether the operation of the equipment is stable and reliable,
Decided whether the equipment can continue to produce benefits!

Mitsubishi PLC control
system, stable and reliable

Mitsubishi temperature
control module, with
self - tuning function,
high repeat accuracy of
temperature control



Efficient production capacity



PID control +SSR drive,
accurate temperature
control

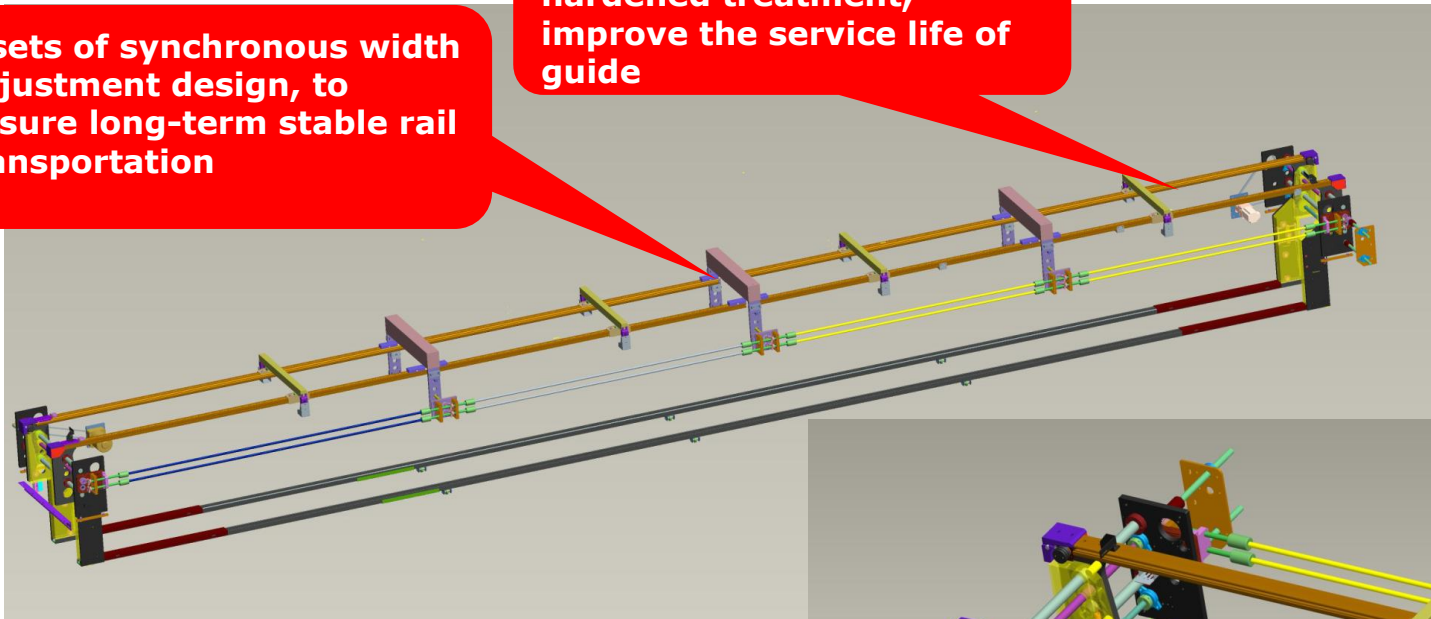
Each temperature zone is
protected by independent
inspection of temperature



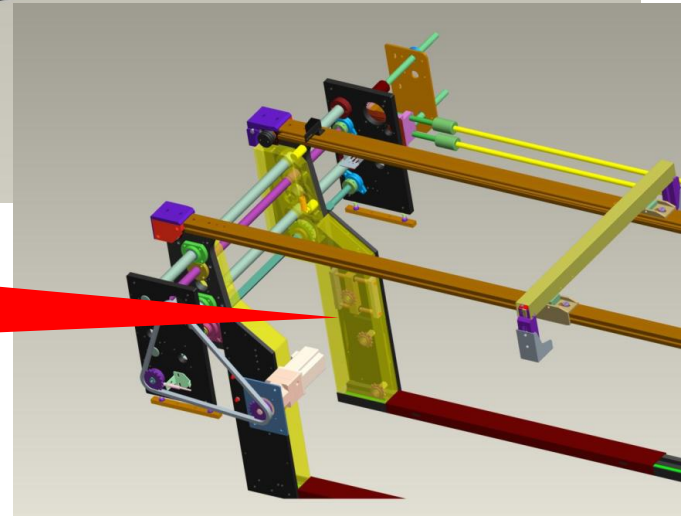
Efficient production capacity

5 sets of synchronous width adjustment design, to ensure long-term stable rail transportation

Transportation guide hardened treatment, improve the service life of guide

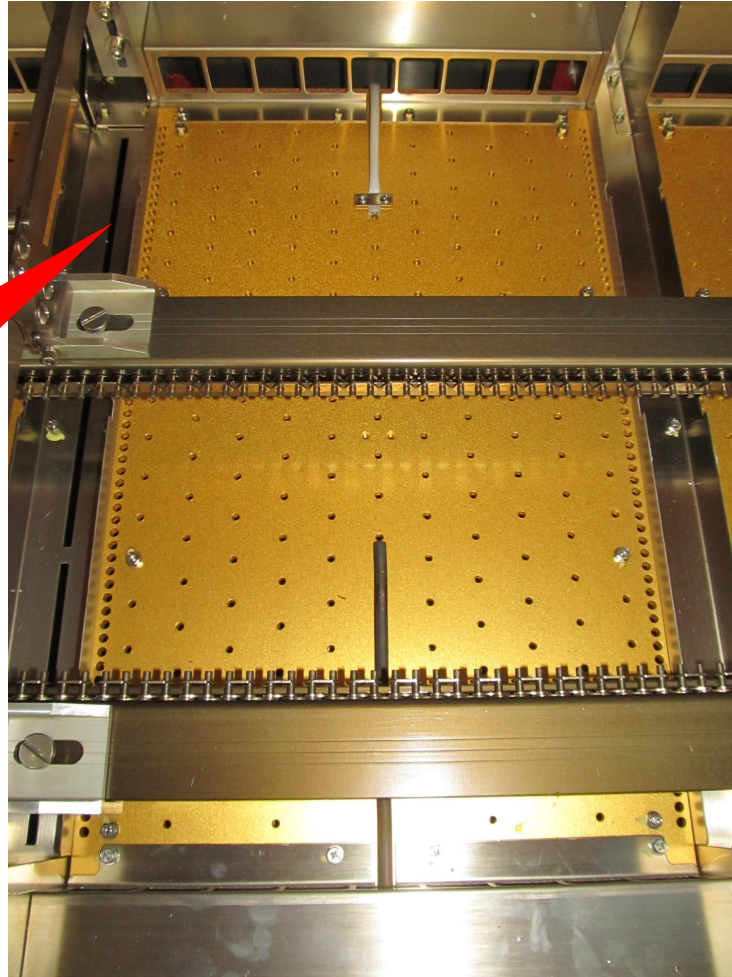


Transport chain cover, prevent foreign body from entering, avoid transport vibration, even stuck



Efficient production capacity

The draft design under flux avoids the problem of drip dirty plate caused by traditional draft design.



Minimum operating energy consumption

Power consumption is the main operating cost of the equipment!

The factors that determine power consumption:

1. Electrical and thermal conversion efficiency
2. Heating efficiency of equipment
3. Heat dissipation of furnace body
4. flux recovery heat loss
5. Production saturation

KT series products
Low power consumption,
compared to similar
products on the market
to save electricity 20%



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