

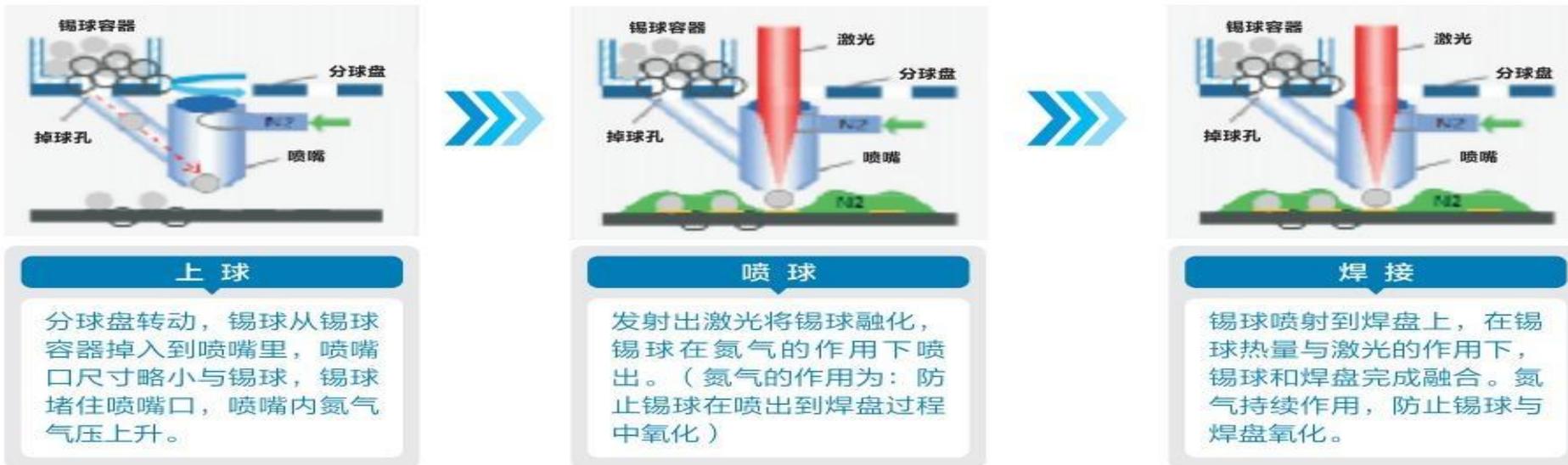
Automatic Laser Reballing Machine

DH-R1100



Principle of Laser reballing Machine

After the solder balls pass through the precision ball separation device, a single solder ball falls into the guide channel and finally stops at the bottom of the nozzle. Then the laser melts the solder ball in the nozzle, and the burned solder ball is sprayed to the surface of the solder body through nitrogen pressure, and the new solder joints are formed after the welded bodies dissolve with each other.



Features :

Suitable for micro, three-dimensional, non-contact reballing methods

Reballing method: Efficient laser melting ,non-contact reballing,(Eliminating external forces such as static electricity and friction)

Reballing space:

It can complete reballing in a tiny space and can be reballed three-dimensionally:

Minimum pad: 0.2mm; pad spacing: 0.25mm

Motion system:Using imported servo motors and high-precision accessories, better accuracy better, with 0.02mm positioning accuracy.

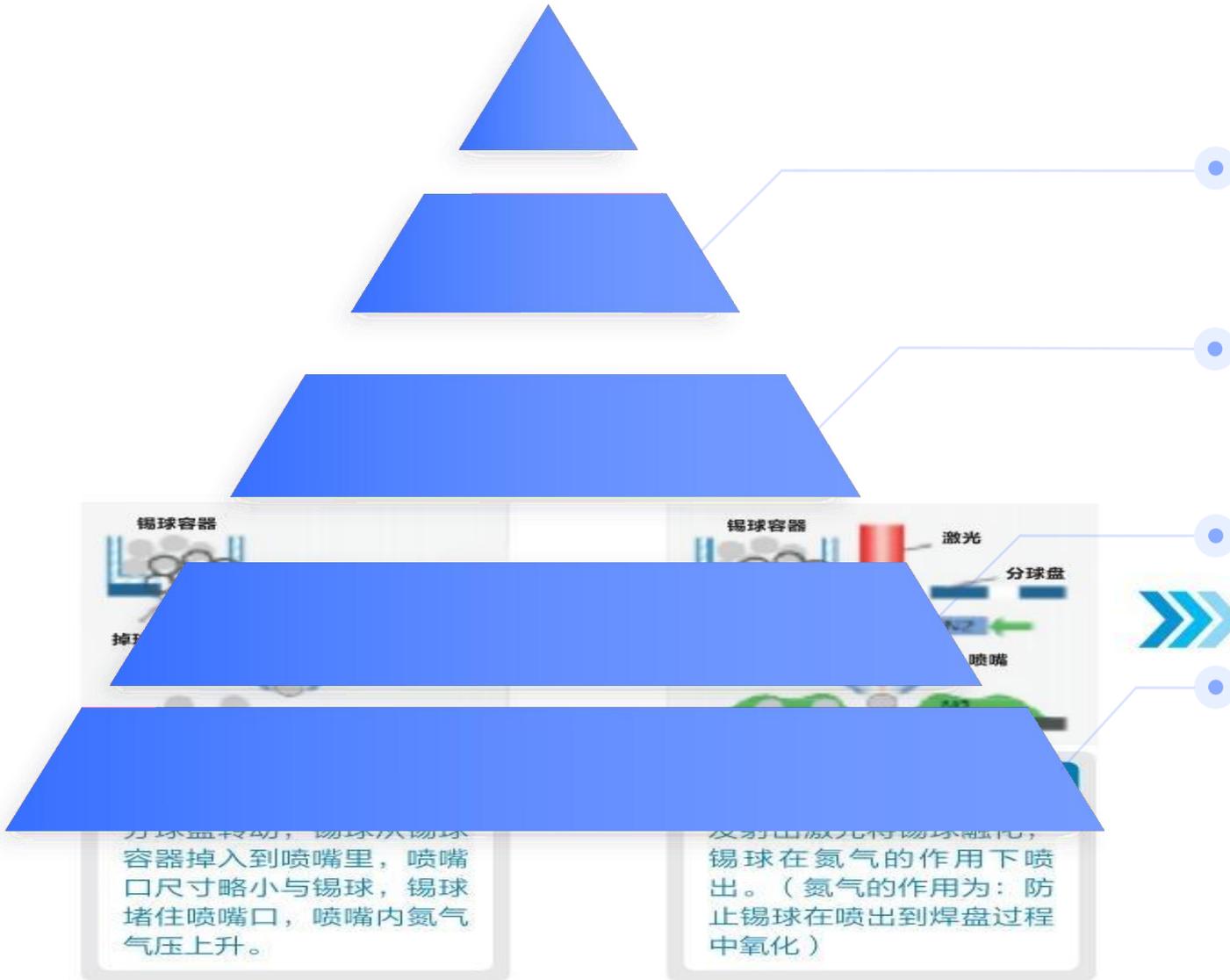
Structural System: With overall marble gantry platform structure(undeformed structure),better stability for long-term use.

Such as motion mechanism/measuring mechanism/Reballing unit, standard machine platform, load & unload, non-standard fixed position track

Reballing single ball speed:3 pcs balls/s **Yield:** Above99.7%



Suitable material of Laser Solder-Ball Reballing



Gold-plated pad

Gold plated surfaces do not oxidize easily,
Suitable for solder ball welding

Silver plated pad

The silver-plated surface is not easily oxidized
Suitable for solder ball welding

Tinned pad

Tinned pad and Tin ball are the same material, welding wettability, suitable for tin ball welding (to prevent tin oxidation in the air for a long time)

Brazing pad

The brazing pad is easy to oxidize in the air, and with poor wettability, so it cannot be welded with tin ball

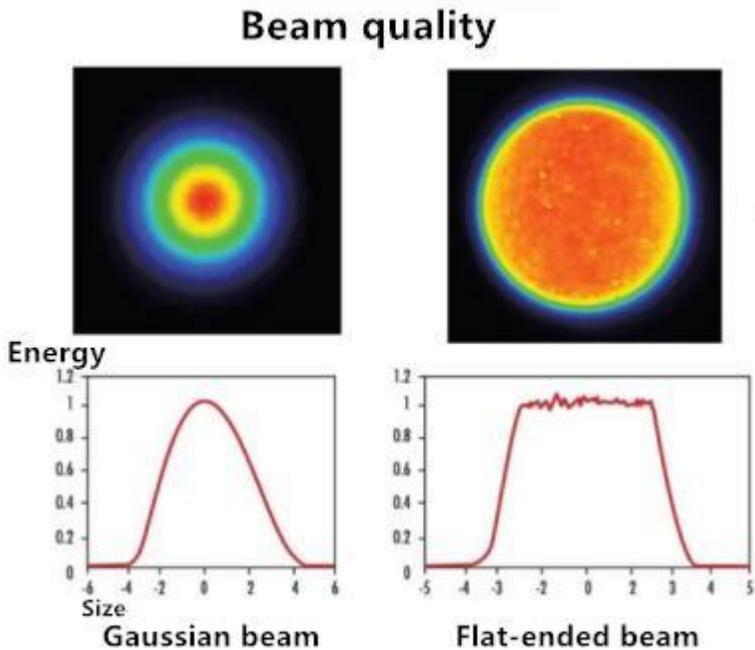
(BF-158 copper alloy, Cu-Ni15-Sn8)

Optical laser generator and transmission coupling module

This laser system is specially customized for laser soldering reballing. It's characteristic are:

1. The coupling spot can be changed according to the process, variation range: 105um-600um.

2. Compared with fiber laser source, the energy distribution of the focal spot is flat top light, and the energy is relatively uniform, with many years research, it is found that the Gauss spot energy of the general fiber laser on the market is too concentrated to suit the fluidity of the general tin ball after melting. However, the uniform distribution of energy is of great help to the fluidity of the tin after heating, and the welding effect is better and the solder joint is fuller.



上球
Fiber laser source
 分球盘转动, 锡球从锡球容器掉入到喷嘴里, 喷嘴口尺寸略小与锡球, 锡球堵住喷嘴口, 喷嘴内氮气气压上升。
Semiconductor laser source

喷球
 发射出激光将锡球融化, 锡球在氮气的作用下喷出。(氮气的作用为: 防止锡球在喷出到焊盘过程中氧化)

焊接
 锡球喷射到焊盘上, 在锡球热量与激光的作用下, 锡球和焊盘完成融合。氮气持续作用, 防止锡球与焊盘氧化。

Automatic laser solder ball reballing machine

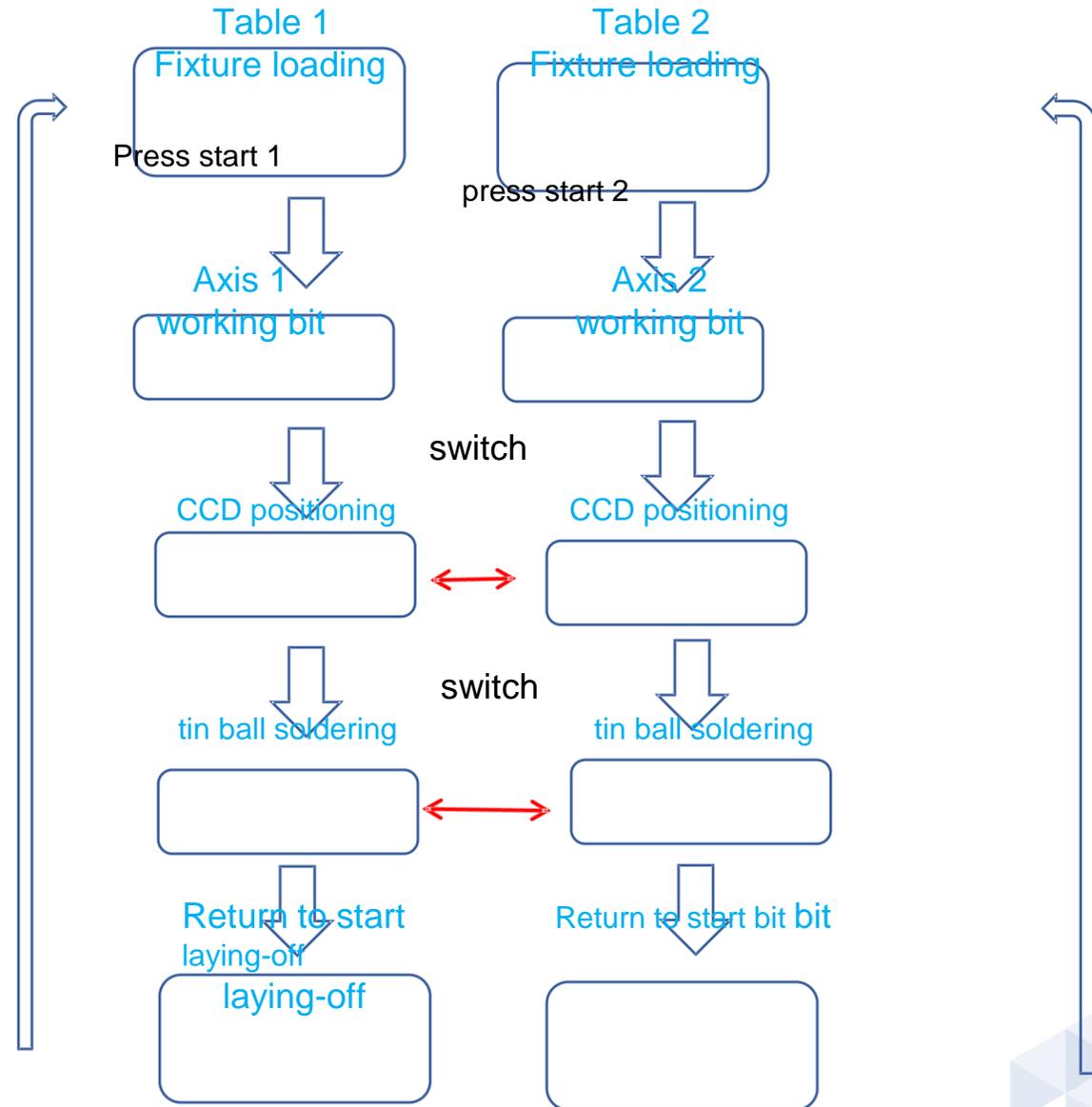
Core component	Function	Parameter	Remark
Laser generator chip	The electrical energy is converted into a laser by the semiconductor chip	Incident photon-to-electron conversion efficiency (IPCE) : 50%	Imported
Fiber optic transmission system	Transmit the laser into the coupler	Length : 3m/5m	Customized
Laser power	Continuous laser	90W-150W	Customized
Coupler	Couple the laser path into the nozzle	Laser spot : 0.3-0.5mm (standard 0.5mm)	Customized

1. Independent research and development of core accessories

The ball distributing system is mainly composed of the main channel of the ball distributing system, the ball distributing system, the nozzle and the precise ball distributing motor. All the core components come from Dinghua independent processing and assembly. Our company has independent intellectual property rights, can be customized at any time according to the customer's welding needs, and provide the industry's fastest and professional services.

Laser source: Dinghua laser can be selected according to our customer's needs. The laser uses the internal closed-loop control mode to accurately control the laser power (laser energy tolerance less than 3%), and its stability is much better than that of other brands of similar lasers on the market now

3. Working diagrammatic sketch



Automatic Reballing Machine (standard type) (double-station)

Parameter

Size	1150mm×950mm×1700mm
Nominal Voltage	AC220V
Maximum current	25A
Rated Power	4.5KW
Compressed Air	0.7MPa
Nitrogen	0.5MPa 99.99%~99.999%
Laser Power	60~150W(915nm)/200W(1070nm)
Laser Wavelength	915nm/1070nm
Working Range	200mm×200mm (double Y shaft)

