

## Product range

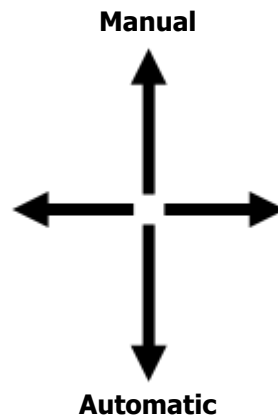
Modular design • Flexible system • High precision



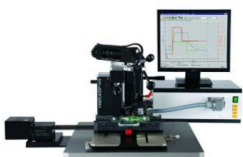
Rework systems



Bonding systems



## Product range



CW / CW<sup>plus</sup>



PW RS



JW



MW RS



MW / JW HVR

Manual systems

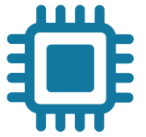
Semi-automatic systems

Automatic systems

### W-Tech

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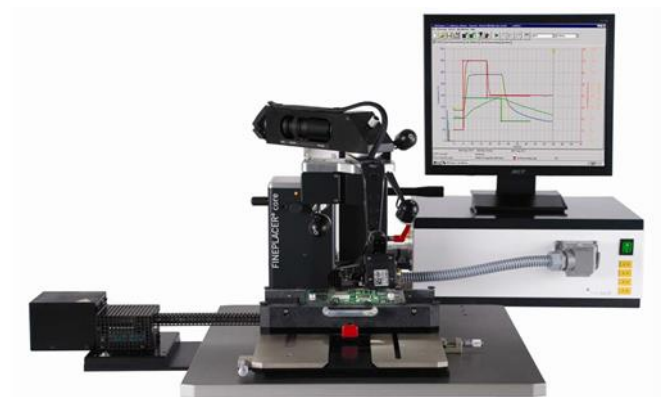
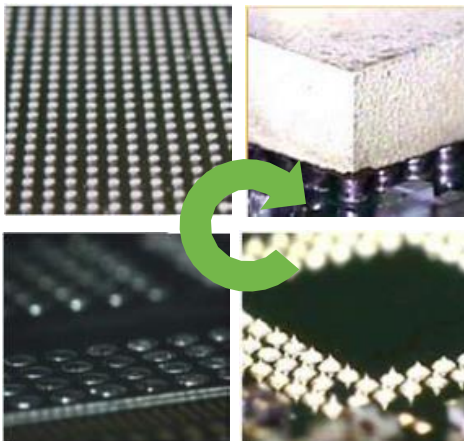
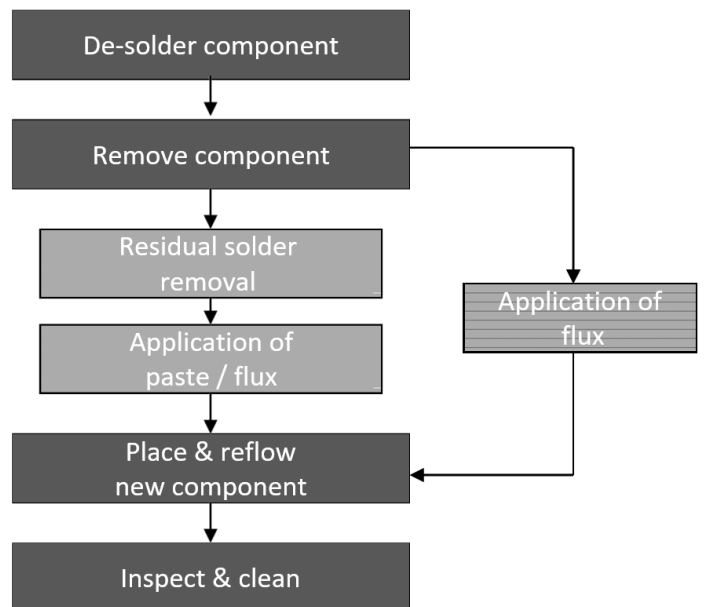


## Advanced rework

- Complete rework cycle in one system
- Hot gas principle / intelligent thermal management
- Reproducible and repeatable processes according to IPC/JEDEC/... standards
- Patented high-precision vision alignment
- Suitable for production environments
- Already field-approved from medium-sized companies to OEM

## Complete rework cycle

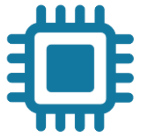
- De-solder and remove defective component with a specialized nozzle design
- Contactless residual solder removal
- (single-sweep, reproducible)
- Solder paste printing on PCB, direct component printing or dispensing
- BGA reballing
- Alignment, placement and reflow of new component



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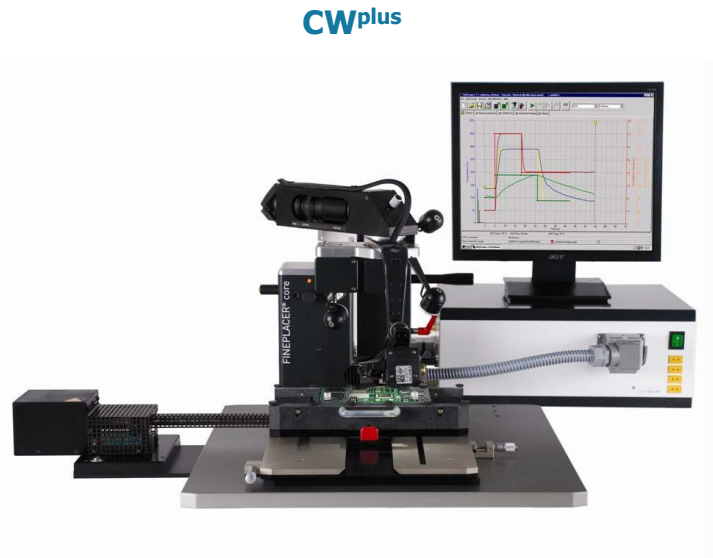
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## Overview base system

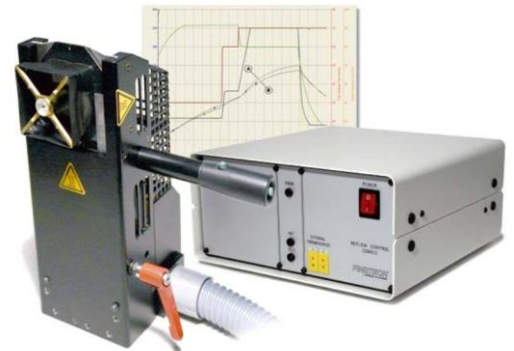
- Soldering arm with force load cell
- Board heater
- RC soldering software
- Process Gas Support
- Force measurement during placement and process
- Semi-automatic pick-up and placement
- X, Y, theta positioning table with board support and tender
- Video optic w/ manual zoom up to 140x
- FINEPLACER® vision alignment system
- LED illumination



## Heating modules

### Reflow Module

- Reflow arm with force measurement
- Hot air principle
- Unique "controlled mixed gas soldering system"



### RC software

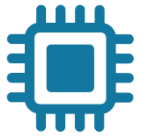
- Soldering software
- One profile represents entire process

### Bottom heater

- Programmable temperature and flow zones
- Preheating capability
- Local area 900 W or full-area 1600 W

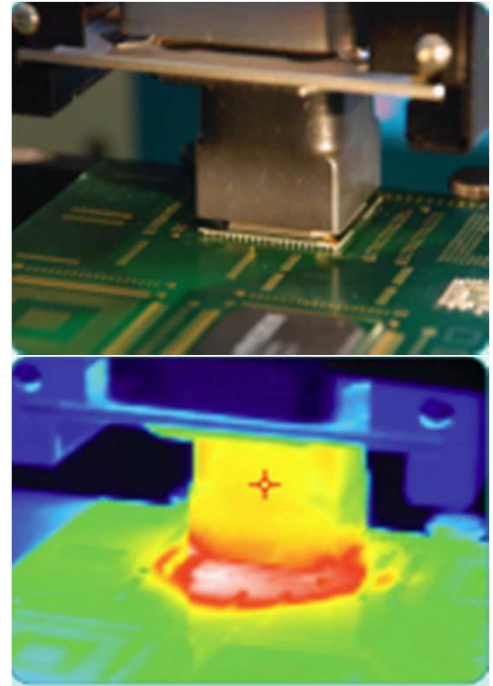


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## Intelligent thermal management

- Software-controlled balanced top and bottom heating
- Drag and drop to define heating ramps Reflow oven atmosphere
- Process gas support
- Highly reproducible soldering results Lead-free approved
- Calibration and measurement capabilities for certification



## Hot air principle

- Controlled mix of hot and cold air
- Contactless heating
- Process gas support
- Low temperature deviation
- Minimized thermal stress
- Rapid cool-down function
- Low thermal capacity soldering heads

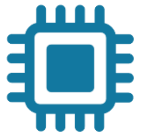
### Why is hot air better than IR ?!

- + Hot gas common in most SMD production lines
  - IR no longer part of standard production
- + Hot gas offers proven safety for all components and PCB materials; never exceeds set temperature limits
  - IR needs setup/tests for every quality work on SMT
- + Hot gas can heat solder material directly
  - IR only usable for indirect heating (absorption)
- + Hot gas can be used to build inert atmosphere
  - IR usually comes without
- + Hot gas independent from surface emission values
  - IR hard to control due to different emission values

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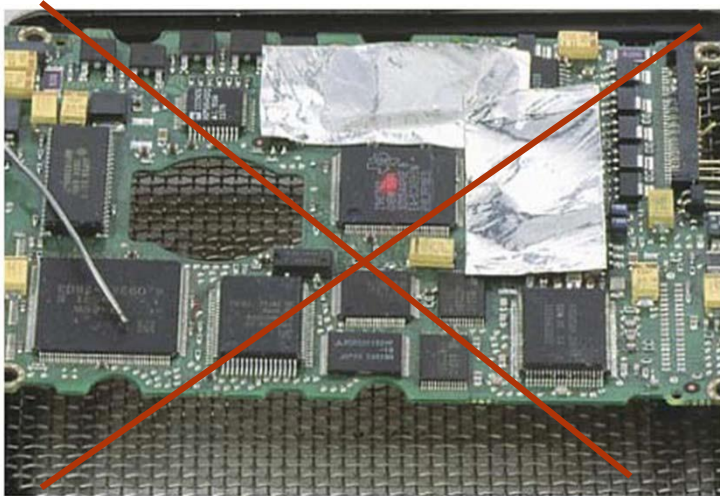
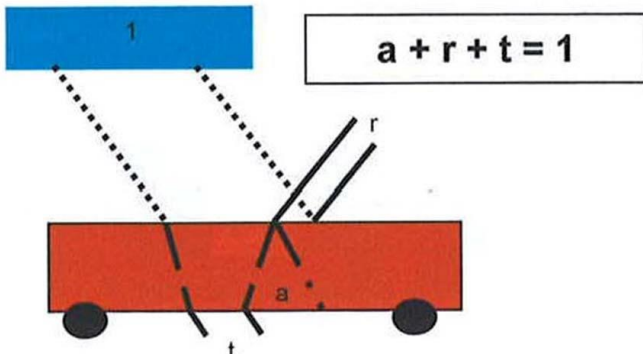
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## Disadvantages of IR

t – transmissi  
a - absorpti  
r – reflexi



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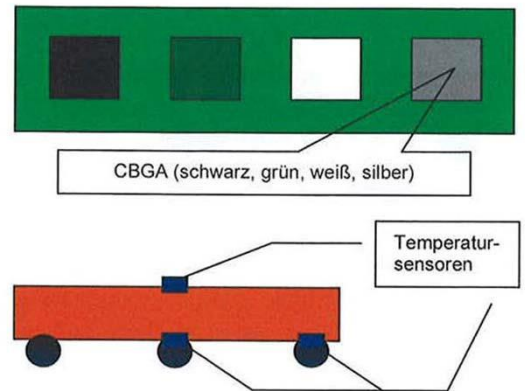


Abb. 7: Dummyboard mit CBGAs verschiedener Oberflächen und Temperatursensorimpfungen

IR - Temperaturen [°C]	Schwarz		Weiss		Silber		
	Blank	Blank	Schwarz abgeklebt	Blank	Schwarz abgeklebt	Blank	Schwarz abgeklebt
Peak Lötstelle Rand	222,7	179,0	206,6	179,6	200,4	178,1	204,8
Peak Lötstelle Mitte	223,6	179,9	206,8	180,1	200,6	178,4	205,2
Peak Gehäuse (oben)	253,8	206,1	213,4	199,2	208,7	204,2	212,2
dT gemittelt min./max. [°C]	30,7	26,7	6,7	-19,4	8,2	26,0	7,2

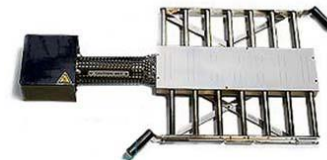
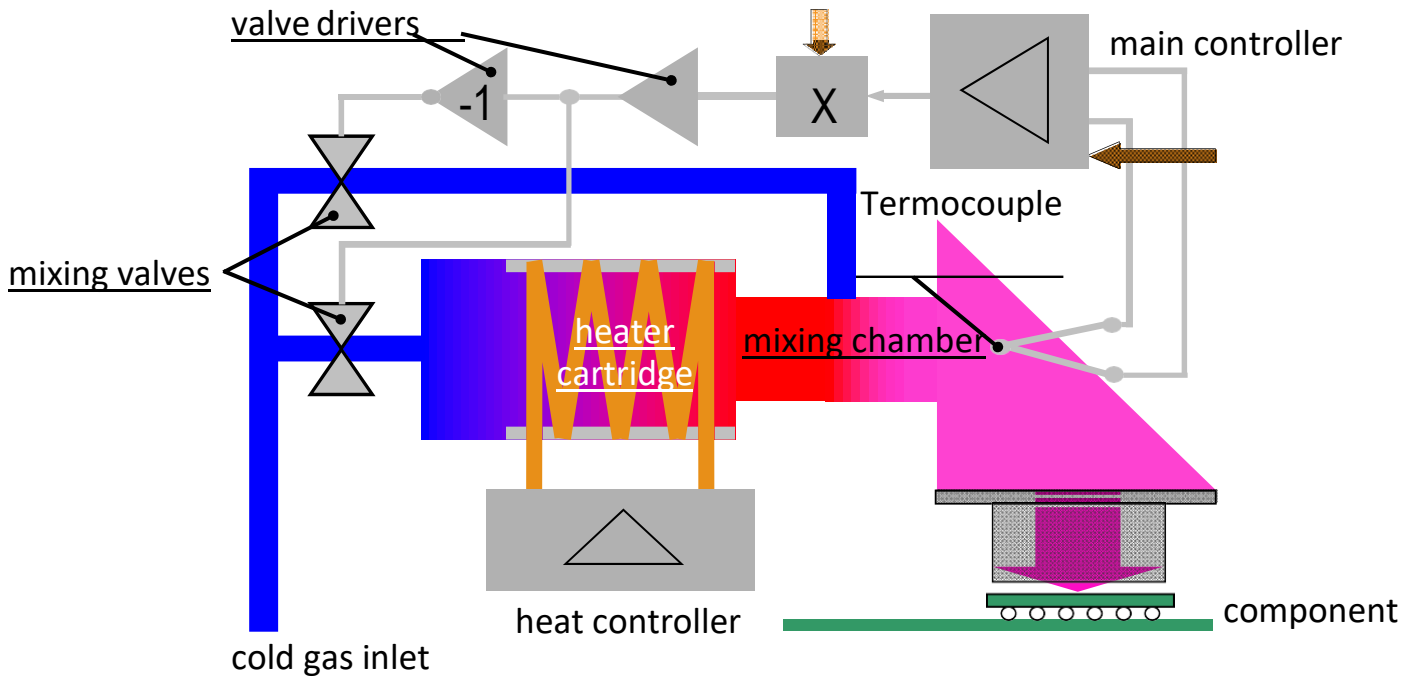
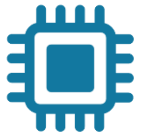
Typical method to safe other components from IR radiation influence

-> NOT needed when using hot air.

Even using of black colored tape to cover metal surfaces is very instable since the tape is eventual going to get bubbling

-> undefined temperature differences

**Hot air depends NOT on any surface conditions.**



### CW station

#### Local area board heater

- Recommended for heating of defined PCB areas
- Nozzles are exchangeable with three diffuser sizes
- Recommended for rework of mobile devices

### CW<sup>plus</sup> station

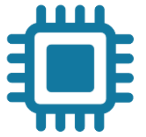
#### Full area bottom heater

- Hot gas bottom heating to heat entire PCB
- Hot air outlet is clamped into the positioning table
- Adapts automatically to PCB size
- Supports PCB sizes up to 400 mm x 310 mm

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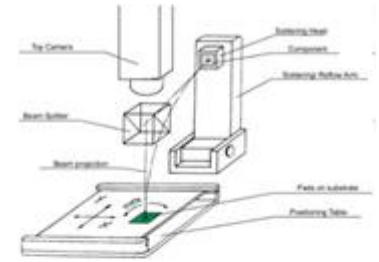
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## Base system

### CW vision alignment system

- Patented
- Fix beam splitter with overlay images



### Video optic

- Manual zoom (up to 140x)

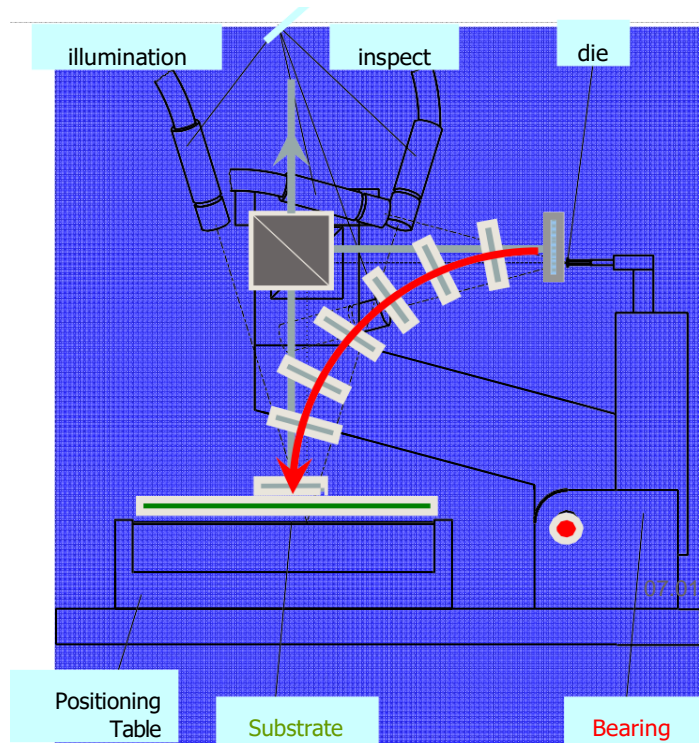
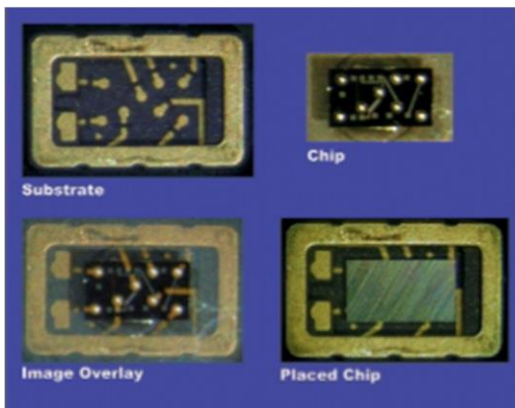


### 2x2 LED illumination

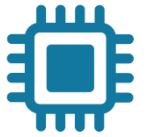
- Defined light spectrum
- Fixed color temperature
- Long life Shadow free, diffuse and glancing (option)

## Vision alignment system

- Patented Vision Alignment System with fixed beam splitter
- Unique patented FINEPLSCER feature

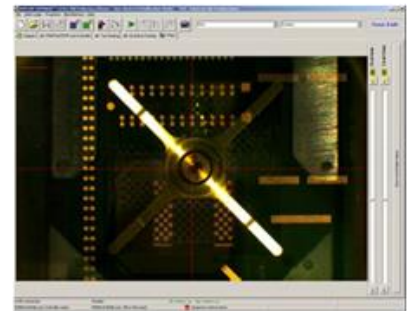
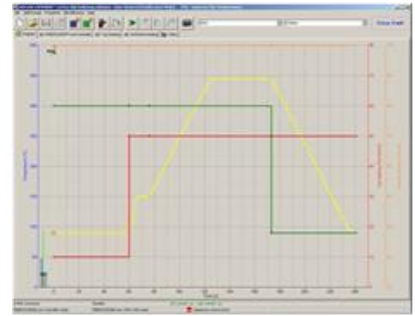


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## Soldering software

- Control of all process parameters and modules: temperature, time, flow, vacuum, light, environment Visual representation in one reflow profile
- Simply drag 'n' drop to set temperature ramps or activate process modules
- Extensive data logging and protocol functions
- Ever-growing profile library for quick process development



## Base system

### Force measurement

- Exact force measurement during picking, fluxing, placing, soldering and removing
- Compensation of weight differences of different nozzles



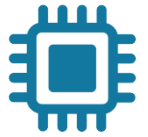
### X, Y, theta positioning table

- Air-bearing table
- Micrometer for precision alignment in x and Y direction
- Tender available for additional modules



## W-Tech





## Options

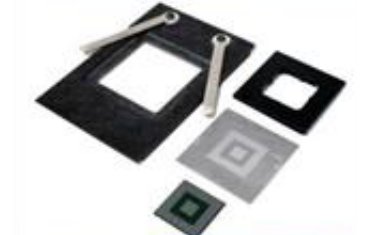
### Process Camera Module

- 640 x 480 px / 25 fps USB cam for 190° process observation around the working area
- For easy process development and documentation
- Fix or variable angle



### BGA Reballing Module

- For simultaneous placement of solder balls directly on a substrate after flux transfer



### Solder Removal Module

- For site dressing after component removal
- Contactless to prevent pads from damage
- Single-sweep



### Solder Paste Printing Module

- Printing heads to be inserted like a soldering head
- Alignment of stencil holes and PCB pads
- Manual printing with manual squeegee



### Direct Component Printing Module

- Reproducible solution for small pitch QFN/MLF
- Component contact pads are aligned to the stencil
- Fresh solder paste is aligned
- Transfer to soldering arm and alignment to substrate



### Flux Transfer Station

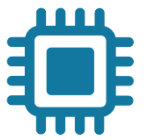
- Recommended For BGA rework
- Custom solder trays for various solder ball heights
- Exactly dosed deposit flux on component bumps



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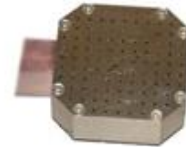
### Split field optics

- Alternative vision alignment system
- For large components with fine pitch



### Board heater diffusor

- 56 mm x 56 mm octagonal diffusor
- 100 mm x 100 mm diffusor
- 50 mm x 100 mm diffusor



### Component presentation

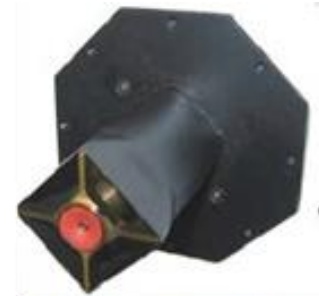
- Application specific presentations available



## Tools / Accessories

### Soldering Heads

- Low thermal mass
- Enhanced range and flexibility
- „One fits all" interface



### Solder Removal Head

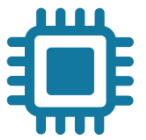
- Contactless solder removal in a single sweep
- Safe, careful, reproducible site dressing
- Suitable for very small sites on densely populated boards



### Substrate Holder for PCB

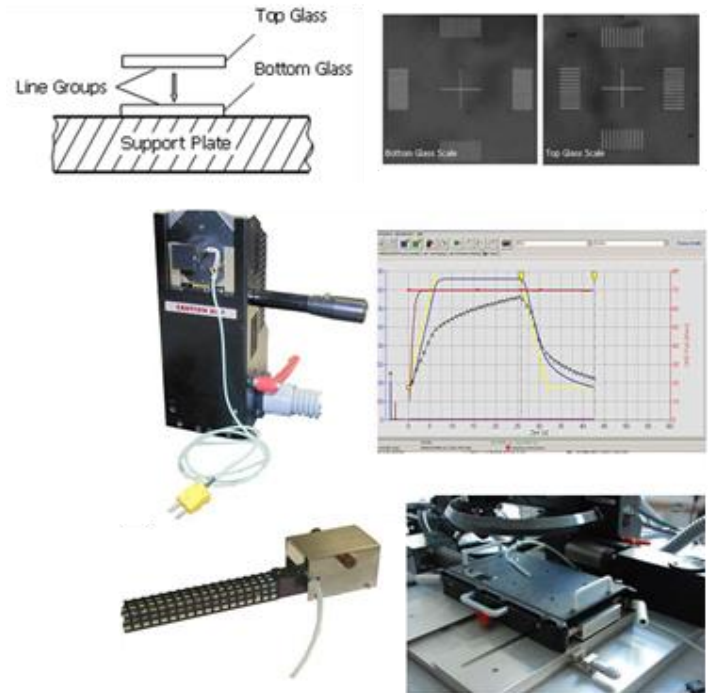
- < 100 mm or < 150 mm

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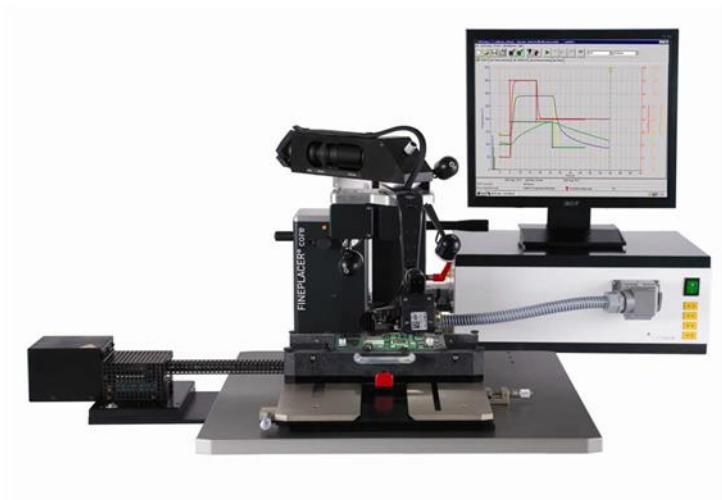
## Equipment and process reliability

- In-field testing of manufacturer calibration standards
- with certified tooling (option)
- Check of placement accuracy
- Check of temperature behavior of reflow module and board heater
  - Simulated temperature progress under realistic conditions
  - Reliable display of temperature deviations from given limits

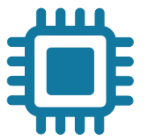


## Highlights

- Cost-effective professional hot air rework station
- Placement accuracy better than 25  $\mu\text{m}$
- Component sizes from 0.25<sup>2</sup> mm<sup>2</sup> to 90<sup>2</sup> mm<sup>2</sup>
- Capable to perform the whole rework cycle for a wide range of SMD
- Proven thermal management for hot air top and bottom heating
- Intelligent thermal management
- High process reproducibility
- Real time process observation camera
- 24/7 turn-on time without restrictions

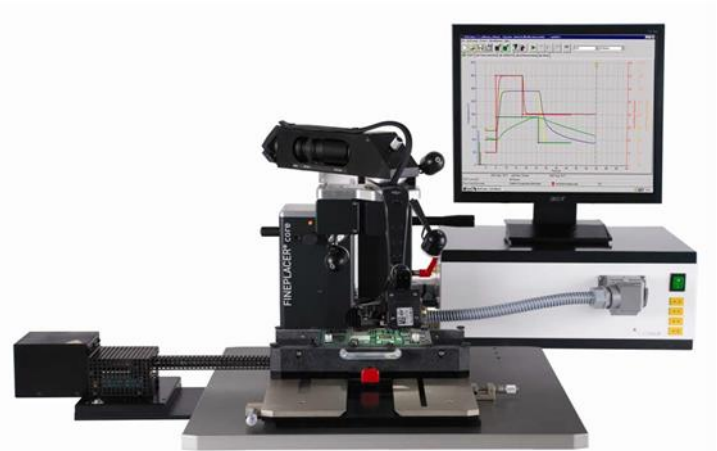


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## Features & Benefits

- Automated soldering process
- Compact and robust design
- Vision alignment system with fixed beam splitter
- Intelligent thermal management
- Real time process observation camera
- User-independent process operation
- Cost-effective system to perform the whole rework cycle
- Reproducible placement accuracy
- Intelligent thermal management
- • Immediate visual feedback reduces process development times

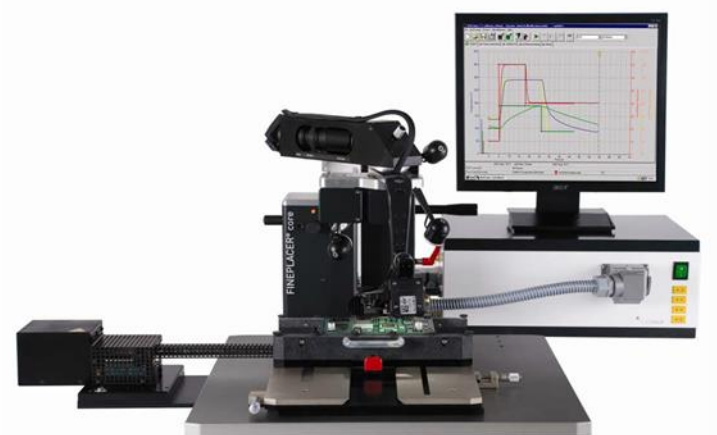


## Technical specifications

	CW	CWplus
Placement accuracy	25 µm	
Field of view min. / max.	12.1 mm x 7.6 mm / 65 mm x 45 mm	
Component size min. / max.	0.25 mm x 0.25 mm / 60 mm x 60 mm	
Reflow module	<b>900 W</b>	
Temperature ramp rate	1K/s – 50 K/s	
Flow range	10 NI/min – 70 NI/min	
Board heater	<b>900 W</b>	<b>1 600 W</b>
Heated area (max.)	100 mm x 100 mm	280 mm x 192 mm
Flow range	10 NI/min – 70 NI/min	10 NI/min – 160 NI/min
Thermocouples <sup>2</sup>	4	

## Application overview

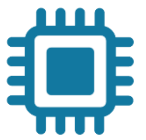
- BGA, µBGA, CSP, QFN, PoP, QFP, PGA, ...
- Small Passives down to 0201
- RF shields, RF frames
- Connectors, sockets
- Sub-assemblies, daughter boards
- THT pin-in-paste
- Reworkable underfill, conformal coating



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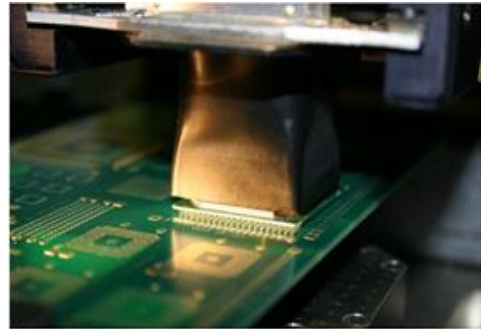
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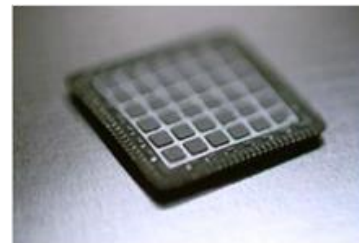
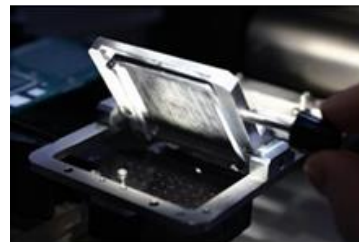
## BGA/CSP rework

- Remove, clean, paste, reball, replace:
- the whole rework cycle within one system Split field optics and zoom magnification Precise thermal management
- Contactless solder removal Programmable nitrogen switching
- QuickStart profiling



## QFN rework

- "All in one" solution for QFN and MLF
- Direct component printing (DCP) of paste
- Time-saving method for high rework yield
- For fine pitch of 300 µm or below
- One reflow process only
- QFN rework in OEM quality



## PoP Rework

- Soldering heads conform to unique shield shapes
- Consistent shield removal after solder melting
- Contactless residual solder removal from PCB
- Leave neighborhood undisturbed
- Solder paste dipping
- Exact alignment of new shield Precise thermal management



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