kurtz ersa

REWORK- & INSPECTION SYSTEMS

For all applications from micro to mega!

GLOBAL. AHEAD. SUSTAINABLE.

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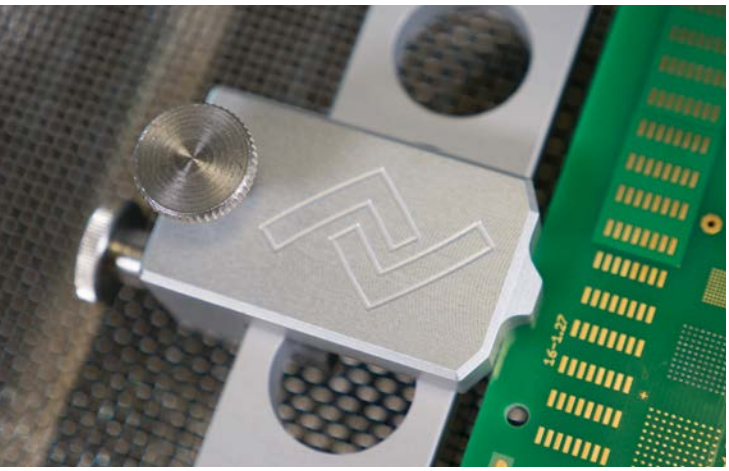
Ersa Rework Systems



Ersa Inspection Systems

ERSA REWORK AND INSPECTION SYSTEMS

Award-winning and a class of its own!

Jörg Nolte, Product Manager

Rework and repair of electronic assemblies is one of the most exciting and challenging topics in electronics production. It is fundamentally sustainable and ensures the added value. The increasing complexity of boards and assemblies poses additional challenges for rework specialists and their tools. Application-oriented, innovative solutions are the key to success in this environment.

The reasons for rework on electronic assemblies are as varied as the electronic itself. The following causes occur frequently:

- There is a defect on the component.
- The wrong component has been assembled.
- The component was assembled in the wrong orientation.
- A component has been soldered badly (bridges, open solder joints etc.).
- A component has been programmed incorrectly.
- A component is saved for reuse (recycling).
- A change is made to the assembly (redesign).
- The assembly is built as a sample, and one or more components are reassembled (prototyping).
- Tests are carried out on the assembly, e.g. cross-exchange (testing).
- Data of a component from a defective assembly must be saved (forensics).
- More powerful, compatible components are used in a circuit (upgrading).

Ersa took on the rework challenge over 25 years ago with the introduction of the first patented medium-wave infrared rework system. With thousands of systems installed today, we boast an installed base of equipment that is unmatched worldwide and comprises smaller benchtop solutions up to highly automated machines. Ersa rework systems are the undisputed leader when it comes to the widest range of rework applications. From the smallest 01005 chips to the largest SMT connectors (120 mm), from SMT flip chips to LEDs on aluminum carriers to MLFs, from BGAs on flex circuits to multilayer BGAs, and from shielding plates to plastic processor sockets: Ersa rework technology handles it all.

Users have also been benefiting from the inspection of hidden solder joints using the patented ERSASCOPE inspection technology for the last 25 years. Industry experts, including IPC, recognize the great importance of the ERSASCOPE technology for the inspection of solder joints. In combination with X-ray inspection, ERSASCOPE systems provide a complete picture of potential sources of defects in the production process.

ERSASCOPE technology thus adds a significant value to any quality assurance program.

Further information

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HR SOFT.

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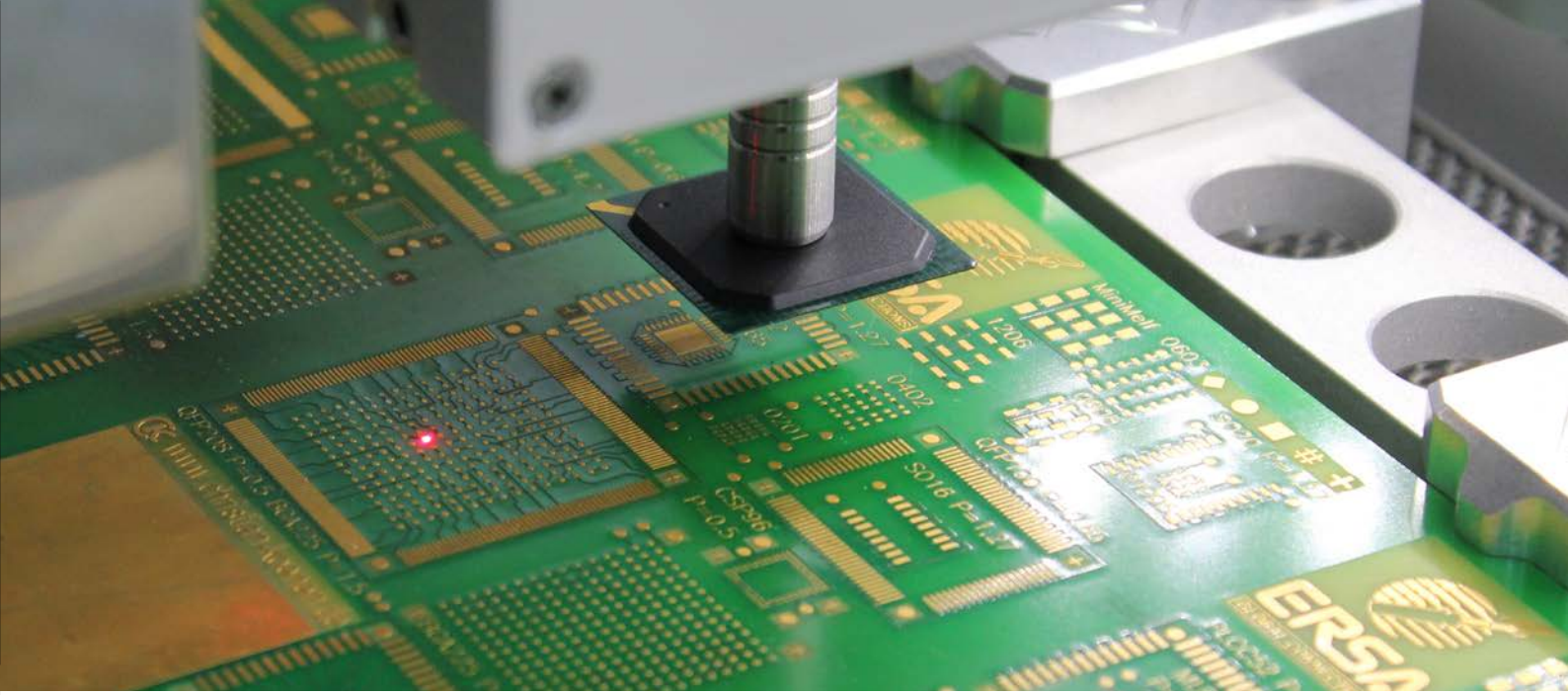


ERSA HR SOFT

Automated rework with proven technology and innovative image processing

By continuing the development of the universal control software platform of IR Soft, a new control software has been created for the HR 600 called HR Soft. All of the process steps of the HR 600/2 are supported by this user-friendly software.

Compatible with HR 600/2

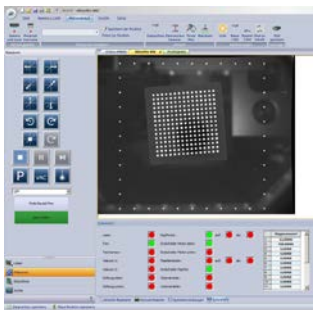
Through HR Soft, the user can manually control all functions of the system with a simple mouse click. During a rework process the user can select to operate the HR 600/2 in either a step-by-step or an automatic mode.

The library feature of HR Soft clearly displays the stored soldering and desoldering temperature profiles. A soldering or desoldering process can be started either manually or automatically, whereas the results are automatically recorded regardless of the starting method. Heating head, vacuum pipette and compressed air cooling can be activated by a click of the mouse anytime.

For placing the new component, the step-by-step mode or the automatic process mode are again available. At all times the individual functions of the system, axes and cameras can be manually controlled.

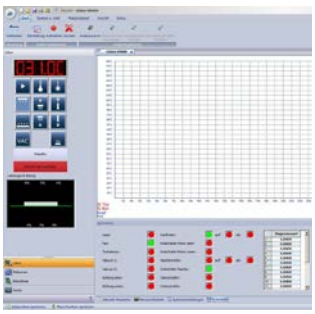
The integration of an optional USB Reflow Process Camera (RPC) for the HR 600/2 is also provided for. This camera with a wide-aperture lens and a LED point light source visualizes the soldering process in real time. In addition to the automated operation of the HR 600/2, HR Soft offers an archive in which all rework process records are administered and stored.

Image of the target position

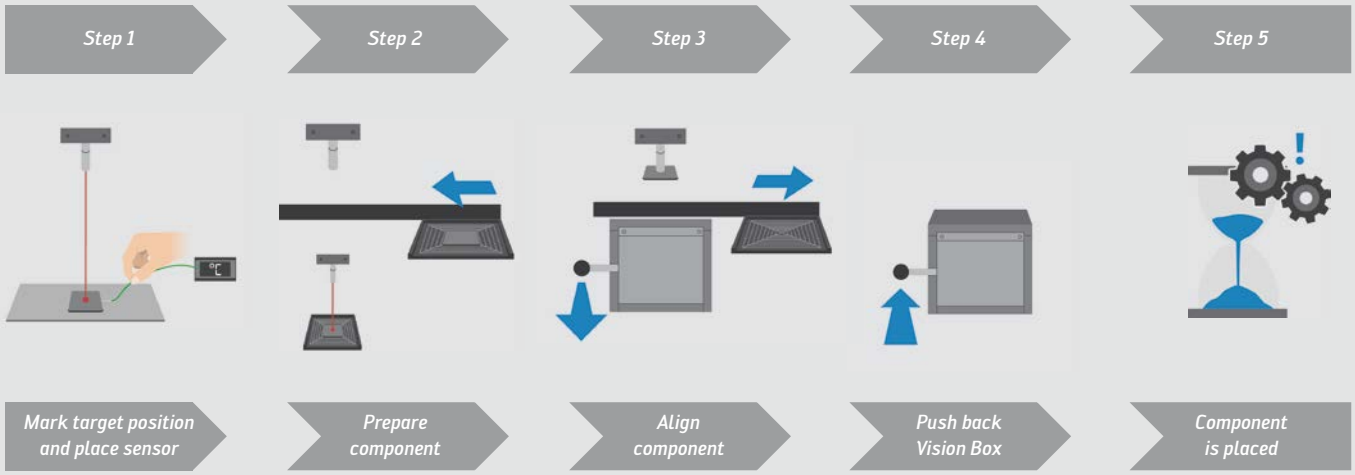


Determining the component connections

Superimposing of component and target position



HR Soft process recording



HR Soft 2 – User guidance via pictograms showing component placement as example

ERSA HR SOFT 2

Transparent user guidance in rework

Under the motto Enhanced Visual Assistant (EVA), the HR Soft 2 user surface offers every assistance for completing rework tasks quickly and reliably.

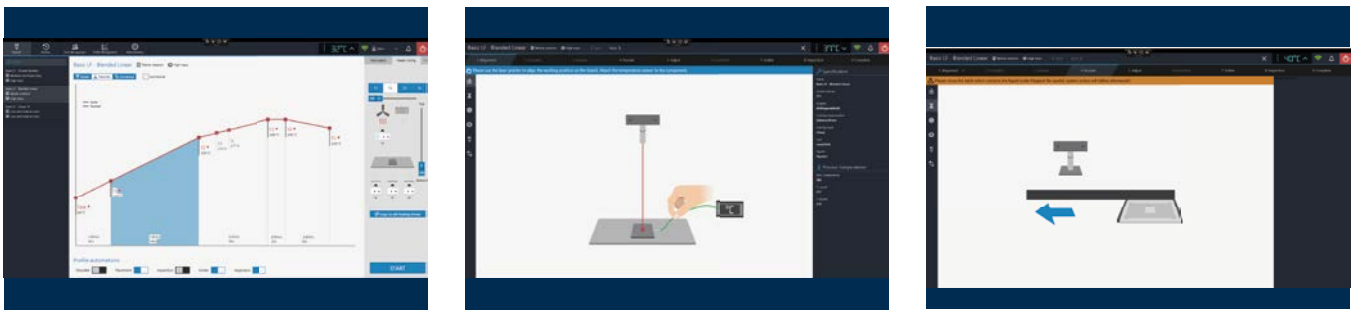
Even the novice user quickly becomes adept thanks to the well-structured and clearly laid out software. Predefined soldering and desoldering profiles are simple to select and the user is guided through all the rework process steps. Easy-to-understand pictograms and instruction texts provide direction for the user.

In the computer-aided placement of components, the new Ersa rework software HR Soft 2 provides the user with brilliant, high-definition images of circuit boards and component leads. In this way, all SMD models can be aligned very quickly and with minimum fatigue for the user.

Compatible with all rework systems, except HR 600/2

Together with a database-supported archive and further useful functions, special aids such as a digital split optics for aligning large QFPs round off the features of HR Soft 2.

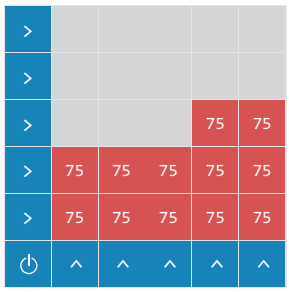
HR Soft 2 is compatible with all Ersa rework systems except the HR 600/2.



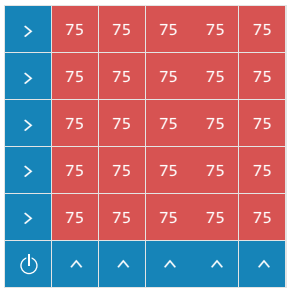
HR Soft 2 – Enhanced Visual Assistant

The modern operating platform for Ersa rework systems

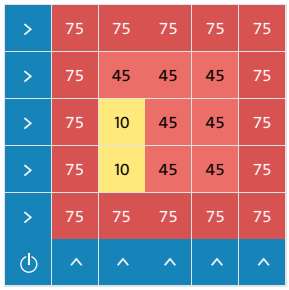
The user interface of HR Soft 2 sets new standards in rework, both technologically and optically. Being a clearly structured software platform for current and future systems, it offers the user all functions of the respective system and guides him through the single steps of the rework process.
Innovative image processing and powerful database management for profile and process parameters as well as the modern handling are just some of the features of this software package.
The use of different Ersa rework systems is also simplified by the fact that the same functions are represented in the same way. There is no need for a time-consuming adaptation.
Currently, the HR 500, HR 550, HR 550 XL, HR 600 P and HR 600 XL are operated by HR Soft 2. It is also the communication interface for connections to Manufacturing Execution Systems (MES).



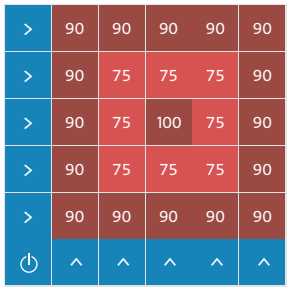
Segmented heating with homogenous power in all zones.



Full-size heating with homogenous power in all zones.



Full-size heating with edge enhancement and "cold spot".



Full-size heating with edge enhancement and "hot spot".

Profile setup with HR Soft 2 – Full-size heating with enhanced edge heating.

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REWORK-SYSTEMS.

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ERSA HR 500

Rework of standard electronic assemblies

PCB dimensions:
up to 380 x 300 mm (+x)
Component size:
1 x 1 mm to 50 x 50 mm

Technical highlights:

- 900 W high-performance hybrid heating element
- Full-area 1,600 W IR bottom heater
- High-resolution cameras for placement and process monitoring
- Ergonomically optimal system operation
- Modern, user-friendly operating software

The Ersa HR 500 hybrid rework system is the first choice for all common rework tasks on medium-sized SMD assemblies. The system is suitable for desoldering, placing and soldering PLCC, QFP and BGA components as well as MLF components or bipolar elements up to an edge length of 1 x 1 mm.
Like all Ersa hybrid rework systems, the HR 500 is equipped with a powerful hybrid top heater and highly dynamic infrared heating elements in the bottom emitter; whereas the bottom emitter offers two switchable zones.
Component alignment is carried out by means of fine drives and high-resolution camera images of the Vision Box. The component is set down almost powerlessly with the aid of a stepper motor with fine switch-off. All in all the HR 500 convinces by its intuitive operation and by the flexibility during its application.
The HR 500 is prepared to accept an Ersa Dip&Print frame, the component printing with solder paste is done externally on the Ersa Dip&Print Station. The dip-in of a component into a flux depot is motor-driven. For process observation and documentation, the device can optionally be equipped with a high-performance Reflow Process Camera with LED illumination.
The HRSoft 2 operating software (for Windows™) supports the user in all work processes and documents them. It is also the communication interface for connections to Manufacturing Execution Systems (MES).

Order information:

Order no.	Description
0HR500	**Ersa HR 500** with PCB holder 380 x 300 mm (+x)
0HR510	**RPC (Reflow Process Camera)** for HR 500, HR 550 and HR 550 XL
0PR100	**Dip&Print Station,** complete

Product video

ERSA HR 550

Guided rework & touch-up at the highest level

PCB dimensions:
up to 400 x 300 mm (+x)
Option:
up to 520 x 360 mm (+x)
Component size:
01005 to 70 x 70 mm

Technical highlights:

- High-resolution camera for placement and process monitoring
- Computer-supported component alignment, digital split optics
- 1,800 W high-performance hybrid heating with medium-wave infrared heater and additional convection heating with top heater
- Full-surface 2,400 W medium-wave infrared bottom heating
- Motorized heating head with vacuum pipette
- Field of view placement camera with 70 x 70 mm (wide-angle) & 25 x 33 mm (telephoto)
- Operation via HR Soft 2

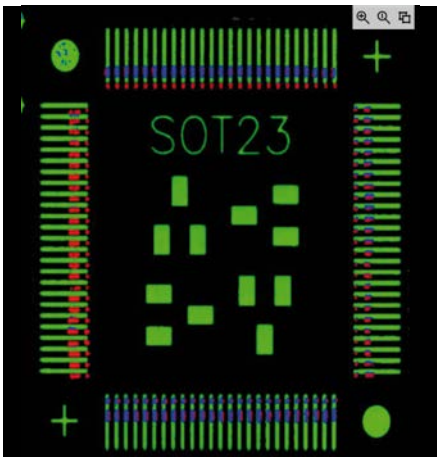
Product video

The Ersa HR 550 hybrid rework system addresses all users with highest requirements in terms of precision and process safety in electronic assembly rework applications. The HR 550 features a 1,800 W high-performance hybrid heating element to desolder and solder SMT components up to dimensions of 70 x 70 mm. The 2,400 W infrared bottom heater with three zones guarantees homogenous heating of the complete assembly.
Contact-free and direct-contact temperature sensing directly at the component and optimized process control guarantee ideal soldering and desoldering. The removal and placement of the components is executed by means of a high-precision vacuum pipette which is integrated into the heating head. Both the exchangeable heating head and the vacuum pipette are each activated by stepper motors. An integrated force sensor recognizes contact between component and printed circuit board.
A particularly beneficial feature for the user is the practical arrangement of the control elements and the computer-controlled alignment of components based on brilliant, high-definition camera images. The HR 550 is fitted for use with the Ersa Dip&Print Station.
The operation of the system is carried out via the HR Soft 2 software platform and control elements which are ergonomically arranged on the device.

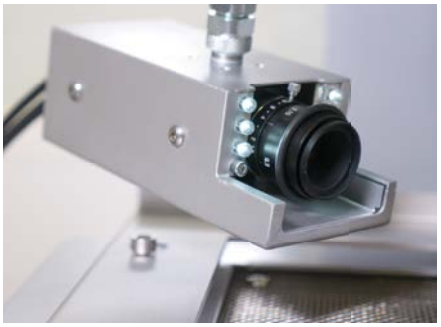
Order information:

Order no.	Description
0HR550	**Ersa HR 550** with PCB holder 400 x 300 mm (+x)
0HR550L	**Ersa HR 550** with PCB holder 520 x 360 (+x) mm
0HR510	**RPC (Reflow Process Camera)** for HR 500, HR 550 and HR 550 XL
OPR100	**Dip&Print Station,** complete

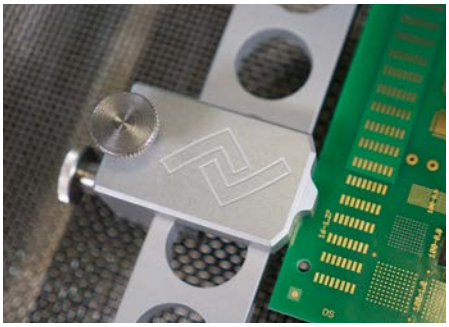
Processing an assembly in the HR 550



Computer-supported alignment of a QFP



Reflow Process Camera (RPC) on the HR 550



Flexible circuit board holder

ERSA SCAVENGER

Contact-free extraction of residual solder for HR 550 and HR 550 XL

The semi-automatic HR 550 and HR 550 XL hybrid rework systems can be equipped with the Ersa SCAVENGER for contact-free residual solder extraction. This separate module is connected to the Ersa rework system and gently and safely removes any solder remaining on the pads of the PCB after desoldering.

Following the desoldering process, the suction head of the SCAVENGER is moved to the working position and the suction nozzle is lowered to just above the board.

Meanwhile, the bottom heater of the rework system keeps the board at the required temperature. Then the solder is remelted with the use of precisely metered hot gas and immediately sucked off. The SCAVENGER can be retrofitted for both rework systems.

Order information:

Order no.	Description
0SC550	**Ersa SCAVENGER** module to remove residual solder, suitable for all HR 550 and HR 550 XL rework systems

ERSA HR 550 XL

Safe processing of large assemblies

PCB dimensions:
up to 610 x 530 mm (+x)
Option: up to 680 x 600 mm (+x)
Component size:
01005 to 70 x 70 mm

Ersa SCAVENGER, see page 11

Technical highlights:

- 1,800 W high-performance hybrid heating element
- Full area 6,400 W IR bottom heater
- High-resolution cameras for placement and process monitoring
- Computer-supported component alignment, digital split optics
- Ergonomically optimal system operation
- Modern, user-friendly operating software
- Motorized component rotation and x/y-adjustment
- Tip operation with resolution < 20 µm

Product video

The HR 550 XL hybrid rework system is for all users who place the highest demands on precision and safety when reworking large assemblies.
It features a 1,800 W high-performance hybrid heating element that can be used to desolder and solder SMT components up to the size of 70 x 70 mm. The 6,400 W infrared bottom heater with eight zones ensures homogenous heating of the entire assembly.
Non-contact and contacting temperature measurement on the component as well as optimized process control guarantee perfect soldering and desoldering processes. Component removal and component placement are carried out via a vacuum pipette that is integrated in the heating head.
The exchangeable heating head and the vacuum pipette are controlled by a stepper motor. An integrated force sensor detects the contact to the component and circuit board.
The motor-adjustable printed circuit board table is particularly useful for the large dimensions of the heating cassette. The component is also turned into the correct position by a motor.
HR 550 XL is prepared to accept the Ersa Dip&Print Station.
It is operated via the HRSoft 2 software and ergonomically arranged operating elements on the device. The connection to the customers' MES systems is prepared.

Order information:

Order no.	Description
0HR550XL	**Ersa HR 550 XL** with PCB holder 610 x 530 mm (+x)
0HR550XLL	**Ersa HR 550 XL** with PCB holder 680 x 600 mm (+x)
0HR510	**RPC (Reflow Process Camera)** for HR 500, HR 550 and HR 550 XL
OPR100	**Dip&Print Station,** complete
0SC550	**Ersa SCAVENGER** module to remove residual solder, suitable for all HR 550 and HR 550 XL rework systems

ERSA HR 600/2

Flexible, efficient, automated, reliable!

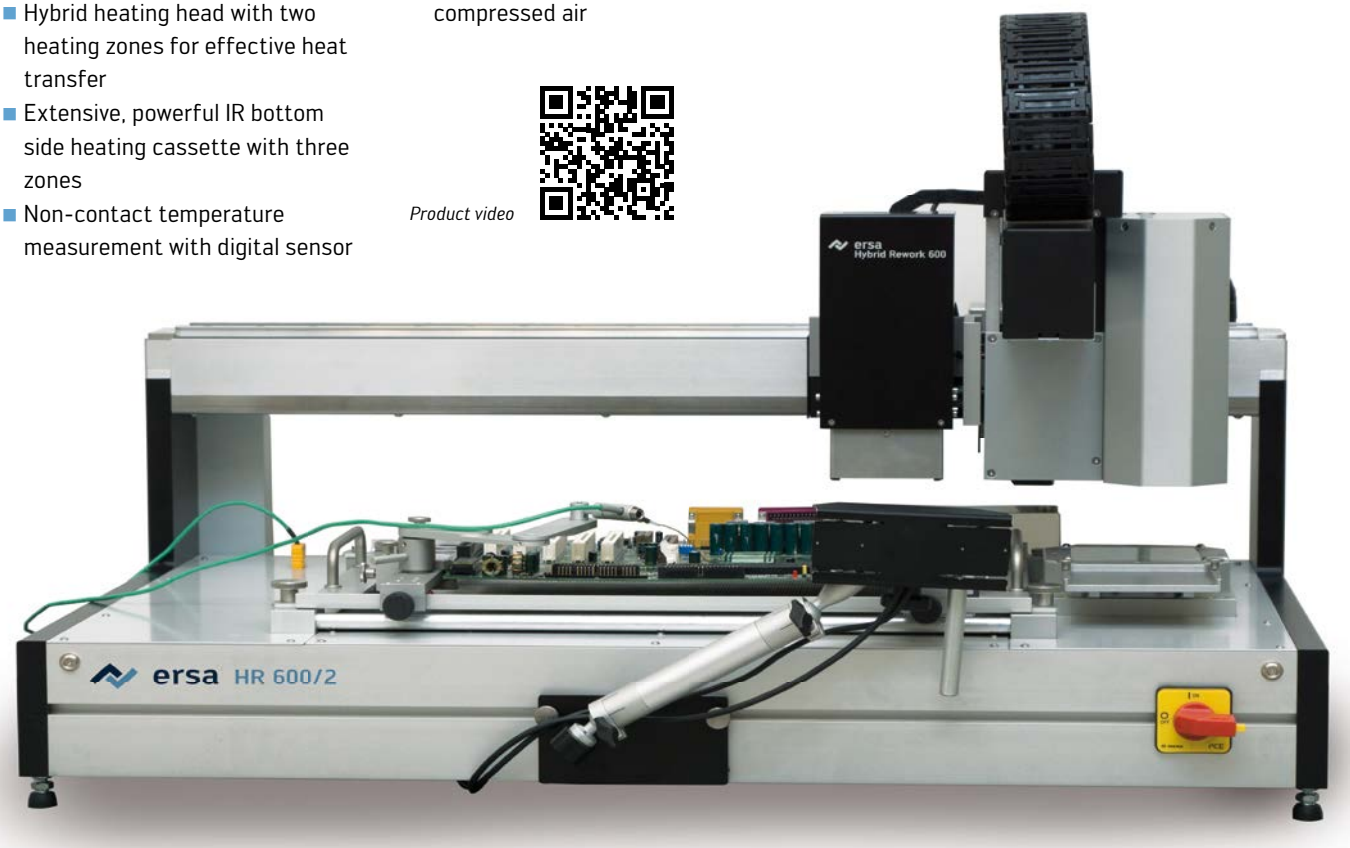
PCB dimensions:
up to 390 x 300 mm (+x)
Option: up to 535 x 300 mm (+x)
Component size:
1 x 1 mm to 50 x 50 mm

Software HR Soft, see page 5

Technical highlights:

- Automated component placement
- Automated desoldering and soldering process
- Hybrid heating head with two heating zones for effective heat transfer
- Extensive, powerful IR bottom side heating cassette with three zones
- Non-contact temperature measurement with digital sensor
- Two K-type thermocouple inputs
- AccuTC sensor
- Effective assembly cooling with compressed air

Product video



With the HR 600/2 hybrid rework system now at hand, almost all high pin-out components that may be found on modern board assemblies, and of virtually any shape, can be reliably and automatically reworked. The core competencies of this universal rework system are the placement of components, their lift-off and their controlled setting down, as well as the soldering process.
All operations can be controlled in a step-by-step mode by the operator himself, or they can be combined to automated operation, requiring very few interventions by the operator.
For component placement, image processing software is used to automatically calculate the required component position, and the component is placed user-independently using a vacuum gripper and axis system.
To preheat the complete board area of the assembly mounted in the board holder, the system utilizes highly dynamic IR heating elements in the lower heater cassette. A hybrid heating head combines the heat transfer method of IR radiation with that of convection heating for a targeted, and therefore highly efficient warming of the components to be worked on. Applying this method, quick and top-quality desoldering and soldering results are being achieved.
An optional Reflow Process Camera (RPC) with LED illumination is available for process monitoring and documentation.
The system is prepared for the use of the Ersa Dip&Print Station.

Order information:

Order no.	Description
0HR600/2	**Ersa HR 600/2** with PCB holder 390 x 300 mm (+x)
0HR600/2BHL	**Ersa HR 600/2** with PCB holder 390 x 300 mm (+x) and lowered bottom heater
0HR600/2L	**Ersa HR 600/2** with PCB holder 535 x 300 mm (+x)
0HR600/2LBHL	**Ersa HR 600/2** with PCB holder 535 x 300 mm (+x) and lowered bottom heater
0HR610P	**RPC (Reflow Process Camera)** for HR 600/2
0PR100	**Dip&Print Station,** complete

ERSA HR 600 P

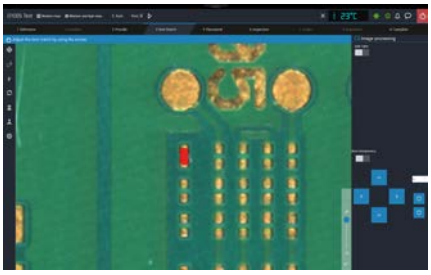
Automated rework precision for best results

PCB dimensions:
Up to 380 x 300 mm (+x)
Options:
Up to 645 x 420 mm (+x)
Up to 645 x 420 mm (+x)
Component size:
25 x 25 mm and larger*
to 01005

**with additional software features*

Technical highlights:

- High-precision axis system and high-resolution cameras
- Automated component placement and soldering and desoldering processes
- Hybrid heating head with two heating zones
- Process monitoring with Reflow Process Camera
- Powerful large-area IR bottom-side heating in three zones
- Non-contact temperature measurement with digital Virtual Thermocouple (VTC)
- Three K-type thermocouple inputs for AccuTC sensor
- Effective assembly cooling with compressed air
- Optional residual solder removal with AUTO SCAVENGER (also retrofittable)



Automatically determined overlay of a 01005 chip

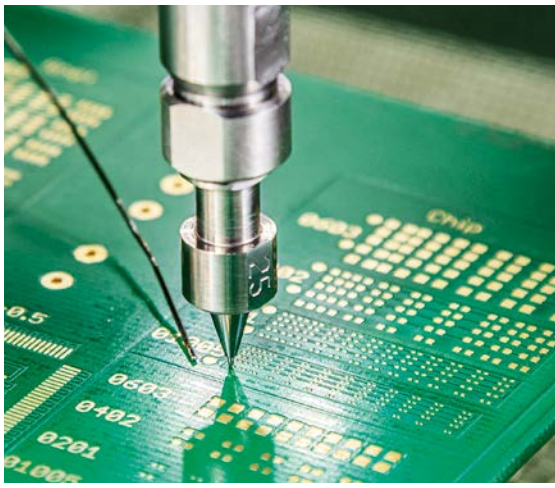
With the HR 600 P, Ersa takes the next technological step in professionalizing and automating the repair of electronic assemblies. A solid and highly accurate machine frame forms the basis for precise component placement and reliability. The HR 600 P is particularly suitable for very fine components having a pitch of 0.3 mm and smaller and for chip components of the sizes 0402, 0201 and 01005. The exact calculation of the component position is performed automatically. After the position has been calculated, the component is placed by means of a vacuum gripper via a precisely operating axis system.

For reliable soldering results, HR 600 P features the proven infrared heating elements in the bottom-side heater which provide for a homogeneous heating of the assembly. The highly dynamic hybrid heating head combines infrared radiation and convection heating for targeted and efficient top-side component heating. Closed-loop temperature control is provided either by high-precision thermocouples or by the non-contact Virtual TC.

The optional AUTO SCAVENGER offers fully integrated, non-contact removal of residual solder with highest precision. This automated, retrofittable module is coupled

01005 capable

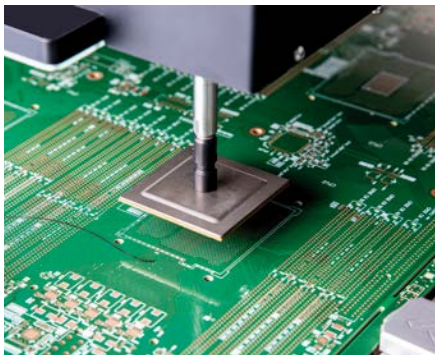
Automatic pick-up of a 01005 chip



01005 chip placement

Provision of 01005 components with a tape feeder

Metallic BGA above the light dome for detection of component connections



Handling of a metallic BGA

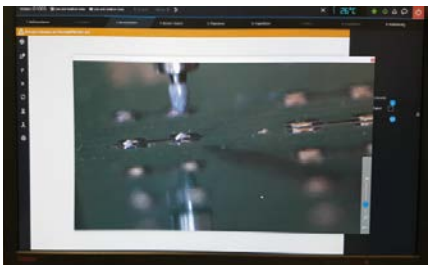
with the rework system and gently and reliably clears residual solder off the pads on the PCB.

A powerful Reflow Process Camera with LED illumination is available for process monitoring and documentation. The HR Soft 2 operating software (for Windows™) accompanies the user during all work processes and documents them. Furthermore, HR Soft 2 also allows the integration of the HR 600 P into customer MES systems.

The HR 600 P is available in different versions and can be optimally adapted to the customer's needs in the processing of electronic assemblies. In the version with the large PCB holder, significantly larger assemblies can be operated. A version with a lowered heating cassette creates additional free space on the underside of the assembly in case of high superstructures. Both versions can be combined.

In order to desolder or place chips of the sizes 0201 and 01005, special nozzles are available. Furthermore, these components can be picked up from a tape with the help of a tape feeder.

HR 600 P is prepared for the use of the Ersa Dip & Print station.



Pin transfer of solder paste for 01005 components

Order information:

Order no.	Description
0HR600P	**Ersa HR 600 P** with PCB holder 380 x 300 mm (+x)

Further configurations on request

HR 600 XL

Professional repair of big boards!

PCB dimensions:
up to 625 x 625 mm (+x),
Option:
up to 625 x 1250 mm (+x)
Component size:
0,5 x 0,5 mm to 60 x 60 mm
(01005 to 150 x 120 mm)

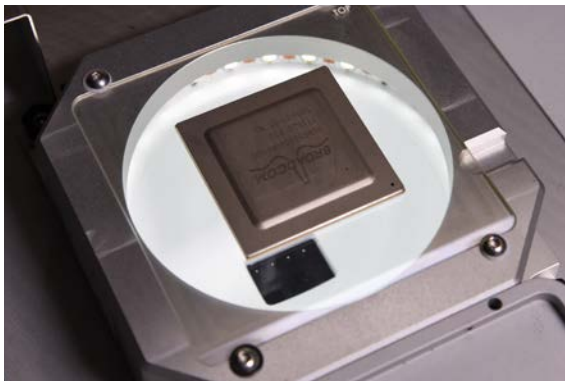
Technical highlights:

- Highly efficient 800 W hybrid heating head
- Large-area bottom-side IR Matrix Heater™ with 25 single heating elements
- Process monitoring with up to 8 thermocouples
- Automatic and precise component alignment with the help of image processing
- Highly accurate, motor-driven axis system for component placement (±0.025 mm)
- User independent, reproducible repair results guaranteed
- Process control and documentation via the operator software HR Soft 2
- Fully automatic or semiautomatic operation
- Suitable for the use of the Dip&Print Station

Product video

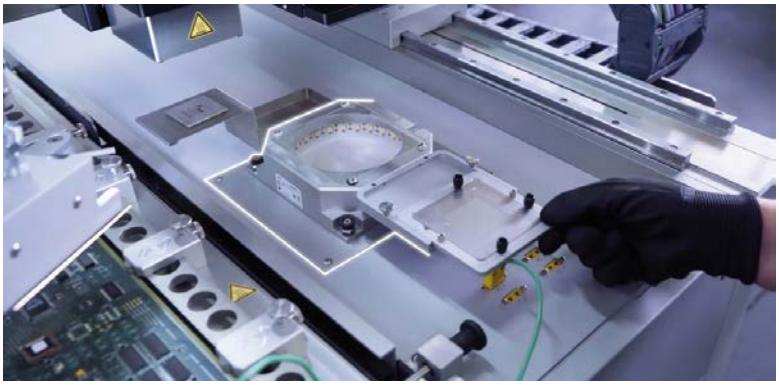
The Ersa HR 600 XL was designed for the professional repair of BTC (bottom-terminated components) on big boards. With an active heating area of 625 x 625 mm (24 x 24 in) and its capability to process PCBs with a thickness of up to 10 mm, the system opens up rework applications in telecommunications, network technology and IT infrastructure. The bottom-side IR Matrix Heater™ with 15 kW power consists of 25 individually controllable heating elements. In this way, the ideal heat distribution can be set for each application. The highly efficient 800 W hybrid heating head executes the desoldering or installation of components such as BGAs of up to

Automatic processing of large assemblies



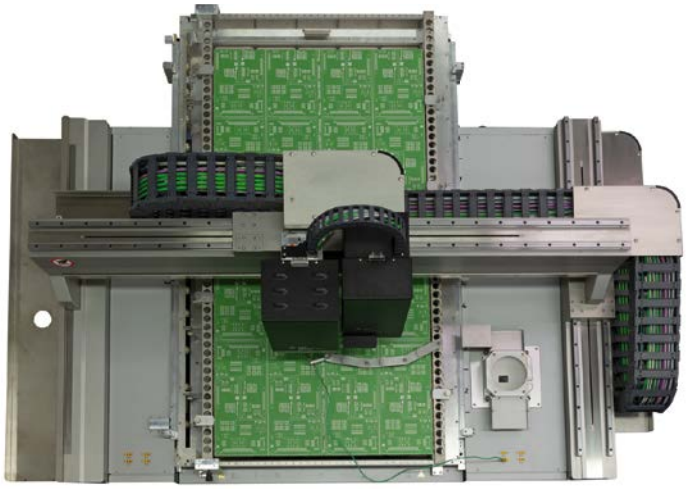
Metallic BGA on the light dome

The XL heating head of the Ersa HR 600 XL is suitable for components with an edge length of up to 150 x 120 mm



Dip&Print Station of the HR 600 XL - for a defined flux deposition on BGAs

The top view clearly shows that printed circuit boards with enormous dimensions can be processed with the HR 600 XL.



60 x 60 mm (2.36 x 2.36 in) to chip components with the usual high Ersa quality.
By means of image processing, the system performs a precise automatic component alignment and places components with an accuracy of up to ±0.025 mm thanks to its precision axis system. The HR 600 XL can be operated in fully automatic or semi-automatic mode and thus provides highest flexibility for the users.
Furthermore, the HR 600 XL is ready for use with the Ersa Dip&Print Station, to prepare components with defined amounts of flux and solder paste.
For visual process control, an optional high-resolution Reflow Process Camera is available. Process control and documentation is realized with the HR Soft 2 software package.

Live process monitoring on the HR 600 XL

Order information:

Order no.	Description
0HR600XL	**Ersa HR 600 XL** with PCB holder 625 x 625 mm (+x)
0HR610XL	**RPC (Reflow Process Camera)** for HR 600 XL
0PR100	**Dip&Print Station,** complete

Further configurations available on request.

SC 600

Automatic residual solder extraction for HR 600 XL and HR 600 P

Technical Highlights:

- Automatic height adjustment
- Automatic track definition
- Individual setting of the suction parameters
- Operation with N_2 as protective gas
- Available as option or as retrofit for all HR 600 P or HR 600 XL systems

Before a new component can be soldered onto a PCB, the solder remaining on the board after desoldering must be removed. For this purpose, the two high-end rework systems HR 600 P and HR 600 XL are equipped with the SC 600 AUTO SCAVENGER. In an automated process, the scavenger gently removes the residual solder from the pads of the PCB. The module can also be retrofitted and is fully integrated into the HRSoft 2 software.

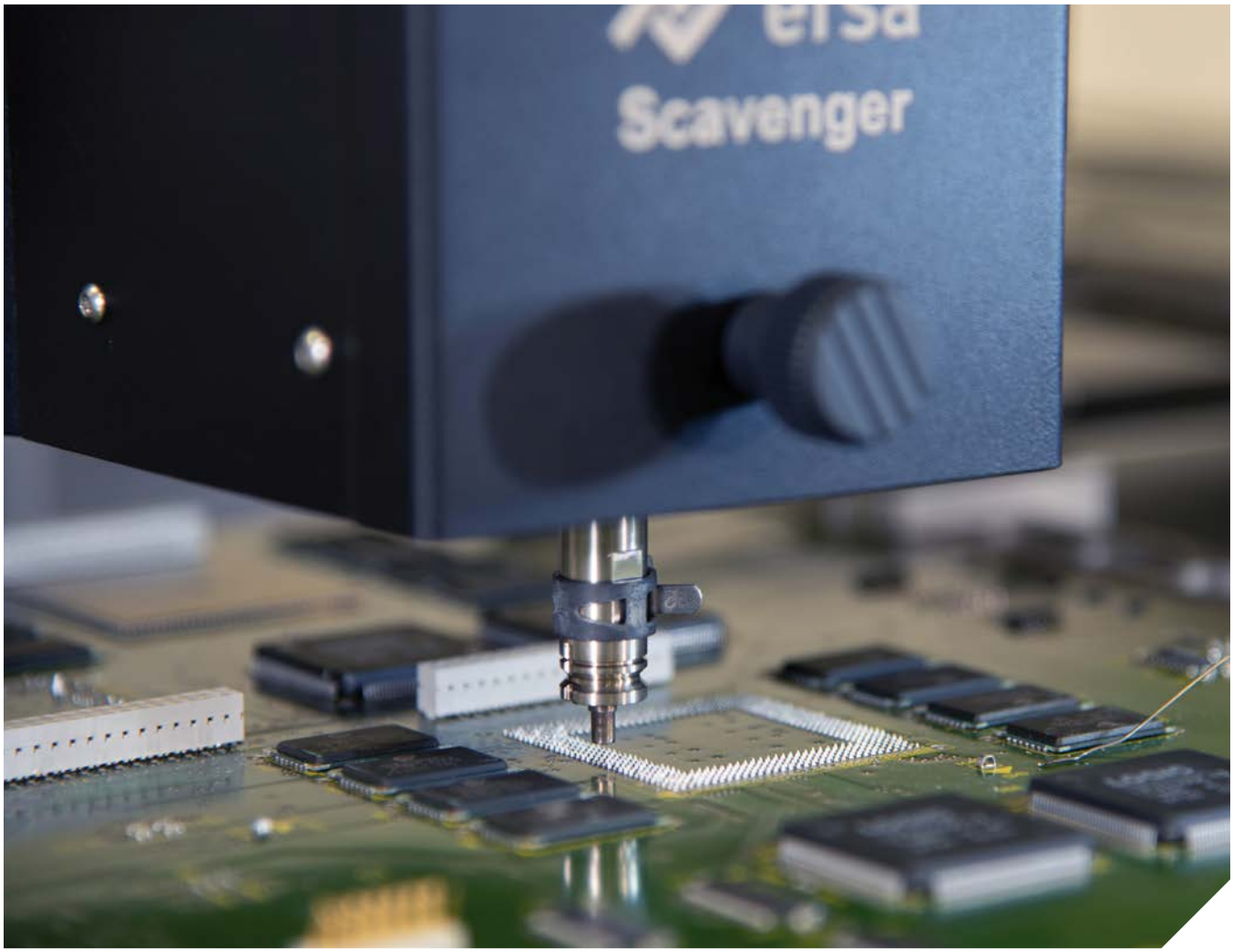
Here is how the process works:
The bottom heater of the rework system automatically keeps the assembly at temperature. The hot gas head at the top gently melts the residual solder so that it can be extracted with a vacuum via the interchangeable nozzles. An automatic height control ensures that the solder is extracted without the nozzle touching the PCB surface.

For optimal suction results, the user sets the suction parameters individually for his application. After the residual solder is removed, the assembly is ready for the installation of a new component

Order information:

Order no.	Description
0SC600	**SC 600** Automatic residual solder extraction for HR 600 XL and HR 600 P rework systems

Further system configurations on request



Removal of the component from the print stencil

DIP&PRINT STATION

for Ersa rework systems

Technical highlights:

- Easy solder paste printing
- Component dip-in for flux and solder paste deposition
- Fits to all Ersa rework systems
- Easy to change stencils
- Easy to clean system components

Flux deposition in the dip stencil

The Ersa Dip&Print Station enables the user of an Ersa rework system to easily, reliably and reproducibly perform the preparatory work on the component (application of solder paste or flux).
Optional dip stencils permit to immerse the components into flux and in solder paste using defined parameters in order to build up a defined depot on the contacts to be soldered. This method is suitable for BGAs and for most Fine-Pitch components. For example, using a component-specific stencil, solder paste depots on QFN/MLF connections and those of other SMD components can be added easily and precisely.
To apply solder paste, the component is fixed in the print stencil at first. Then the solder paste is printed on the component. Subsequently, the placement unit lifts the component out of the stencil and places it on the target position.
A suitable rack fixation is available for each Ersa rework system to mount the stencil frame of the Dip&Print Station on the placment system.

	Order no.	Description
	0PR100	Dip&Print Station incl. stencil frame and squeegee
	0PR100-D001	Dip stencil, 40 x 40 mm / 300 µm
	0PR100-D002	Dip stencil, 20 x 20 mm / 150 µm
	0PR100-D003	Dip stencil, 20 x 20 mm / 100 µm
	0PR100-D004	Dip stencil, 40 x 40 mm / 100 µm
	0PR100-D015	Dip stencil, 55 x 55 mm / 100 µm
	0PR100-D016	Dip stencil, 55 x 55 mm / 150 µm
	0PR100-D017	Dip stencil, 55 x 55 mm / 200 µm
	0PR100-D018	Dip stencil, 55 x 55 mm / 250 µm
	0PR100-S001	Print stencil, type 1, BGA 225
	0PR100-S002	Print stencil, type 2, MLF 32

Customer-specific stencils on request

ERSA HR 200

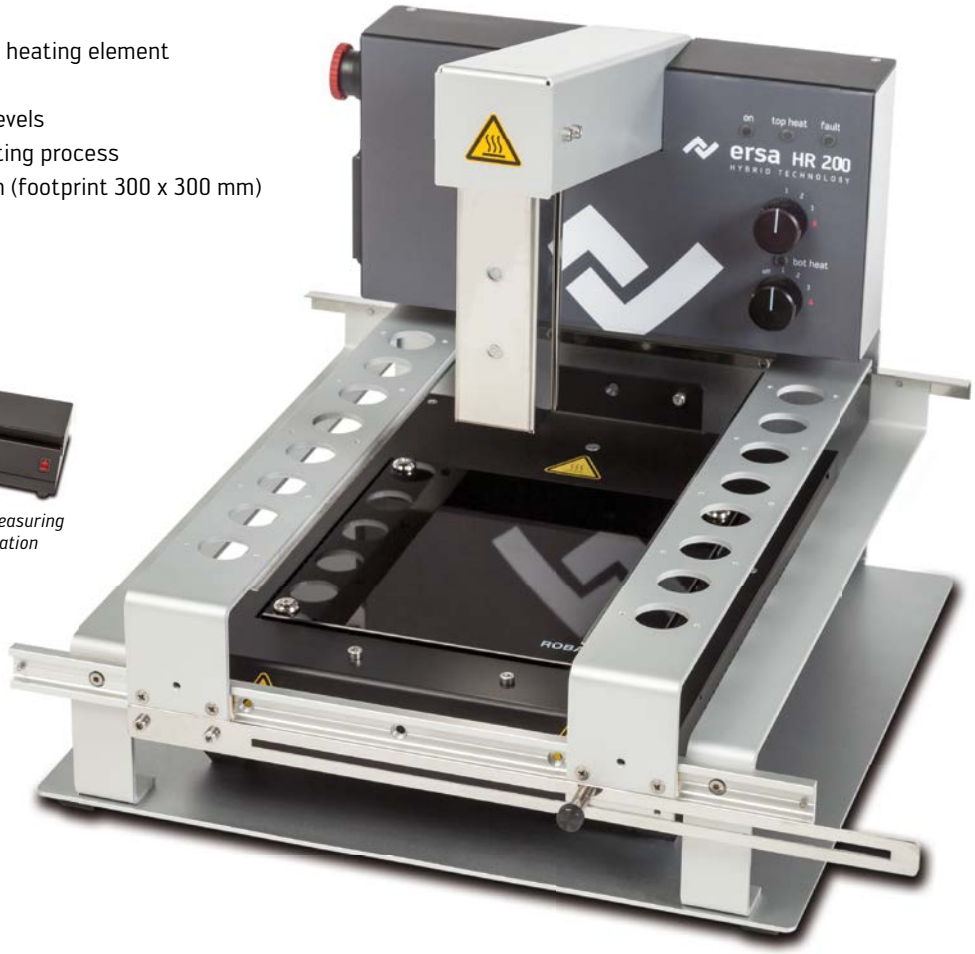
Rework out of the box!
As easy as one, two, three.

PCB dimensions:
from 20 x 20 mm
to 215 x 300 mm (+x)
Component size:
1 x 1 mm to 30 x 30 mm

Technical highlights:

- 400 W high-performance hybrid heating element
- Optional 800 W IR heating plate
- Simple power selection in four levels
- Foot switch to activate the heating process
- Very compact and handy system (footprint 300 x 300 mm)
- Runs without software

HR 200 with cooling fan and temperature measuring device - the right power level for each application



Useful hybrid adapter set

Unpack, setup, solder! It´s simple as that to rework a PCB nowadays. The Ersa HR 200 hybrid rework system contains a 400 W high-power hybrid heating element to desolder and solder SMT components of up to 30 x 30 mm.

In addition, the system can operate a powerful 800 W infrared heating plate. This bottom heater guarantees ideal preheating of the assembly to rework. The operator selects the required power for top and bottom heating with a control knob, each with four levels. A foot switch activates the heating process. The operator's hands are free to remove the desoldered component with appropriate tools.

Depending on the assembly and the preselected power a typical soldering time for components can range from 60 to 180 s (1 -3 min). During breaks, the bottom heater switches back to standby level. The integrated PCB holder locates the assembly in optimum working distance to top and bottom heater.

Ersa recommends an optional cooling fan, a thermocouple and a temperature measuring instrument to complete the workplace. Additional accessories including a Reflow Process Camera to observe the soldering processes round off the equipment.

Easy parameter setup

		Top Heater			
		smooth		intensive	
	time*	>180 s	180-120 s	120-90 s	90-60 s
	power level	1	2	3	4
Bottom Heater smooth	1	ultra light	sensitive bottom side		intensiv oben
	2	sensitive top side	typical SMT application		
Bottom Heater intensive	3				
	4	intensive bottom			heavy duty caution

Parameters

* Expectable soldering time, depending on application an preheating with bottom heater.

Order information:

Order no.	Description
0HR200	**Ersa HR 200** hybrid rework station
0HR200-HP	**Ersa HR 200** hybrid rework station with heating plate
0HR200-16	Hybrid adapter set **Ersa HR 200**

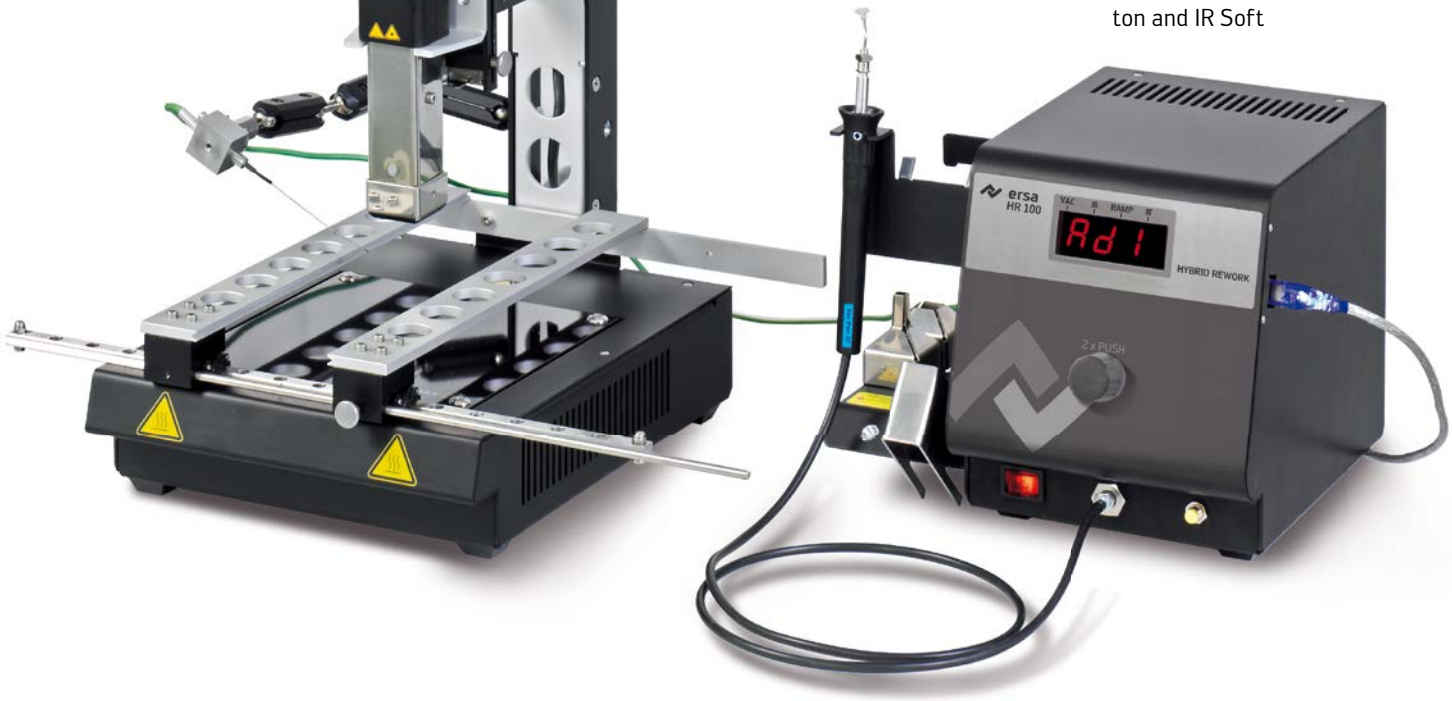
ERSA HR 100 & IRHP 100

PCB dimensions:
from 20 x 20 mm
to 290 x 250 mm (+x)
Component size:
1 x 1 mm to 20 x 20 mm

Combined handheld and benchtop rework system

Technical highlights:

- HYBRID TOOL with 200 W heating element
- Positioning laser and LED display in the HYBRID TOOL handle
- Three exchangeable hybrid adapters
- Low-noise rework blower (below 40 db)
- Integrated vacuum pump and Vac-Pen
- Temperature recording via AccuTC thermocouple (K-type)
- PC interface via USB port
- HYBRID TOOL holder with height adjustment
- 800 W high-performance IR heating plate with glass cover
- Board holder (250 x 290 mm)
- Control via rotary push button and IR Soft



The HR 100 uses Ersa's revolutionary and patented hybrid rework technology for safe removal and replacement of small SMDs. Safe, medium wave IR radiation combined with a gentle hot-air stream guarantees optimal energy transfer to the component.

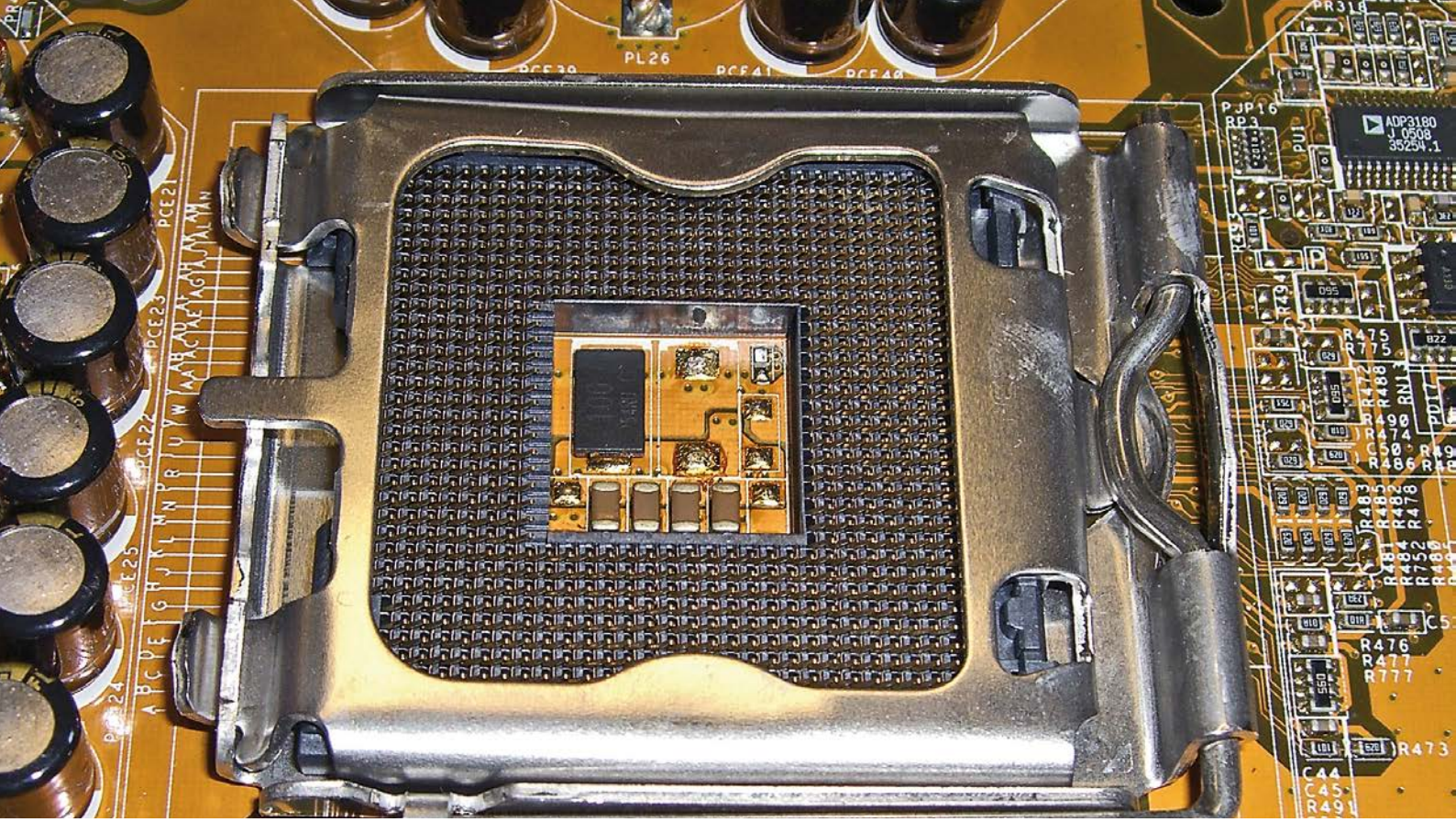
The HYBRID TOOL delivers smooth and homogenous heat to components. Interchangeable hybrid adapters direct up to 200 W of targeted hybrid heat to the component - and adjacent areas are protected.

The user-friendly operation allows for even non-experienced operators to handle the HR 100 safely and quickly.

The handle of Ersa's ergonomically designed HYBRID TOOL contains a positioning laser which helps the operator to focus the heat precisely throughout the entire process. Via the USB 2.0 port, the HR 100 can be connected to Ersa's top-of-the-line and well-established IR Soft rework software.

Order information:

Order no.	Description
0IRHR100A	**HR 100** hybrid rework station with 200 W HYBRID TOOL, 3 hybrid adapters, adapter changer, Vac-Pen and HYBRID TOOL holder
0IRHR100A-HP	**HR 100 & IRHP 100** hybrid rework station, complete with heating plate incl. stand with HYBRID TOOL holder



LGA 775 processor socket

ERSA REWORK

Up to all requirements!

The purchasing decision for today's rework equipment goes to the company that can GET THE JOB DONE!

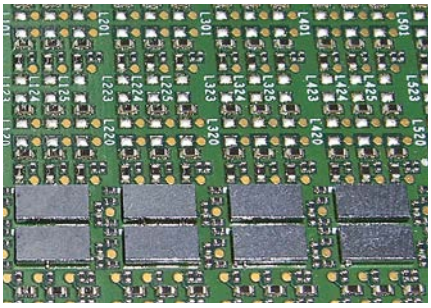
Rework applications specialists at Ersa have proven the flexibility of our systems by handling applications where other units failed.

Some of the most difficult of these applications include: stacked BGA packages (RAM, DIMM module), top- and bottom-side shadowed BGAs, mobile phone shield and BGA rework, rework on aluminium composite boards, BGA desoldering with heat sink glued on component, LGA775 THT socket exchange, BGA on flex circuit, reworkable epoxies, and large plastic BGA processor sockets, just to name a few.

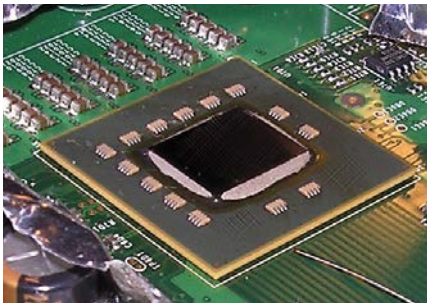
Contact


IPC
7711
Electronic Assemblies
Number 5.7.3
BGA Reballing Procedure
EQUIPMENT REQUIRED
OPTIONAL EQUIPMENT
MATERIALS
NOTE
CAUTION
PROCEDURE
Figure 1
Figure 2
Figure 3
Figure 4
Page 1 of 2

Ersa Rework Systems recommended for BGA reballing (source IPC 7711)



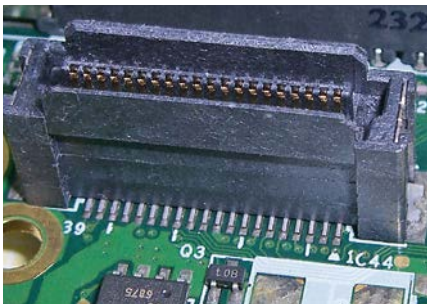
CSP, Micro-BGA 01005, 0201, 0402 chips



FCBGA

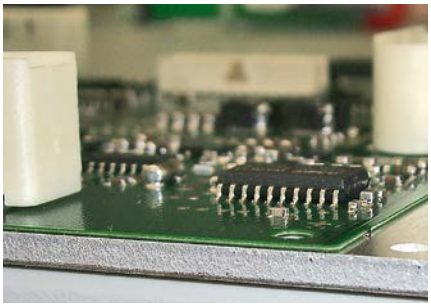
PBGA on aluminium carrier

CGA with heat sink

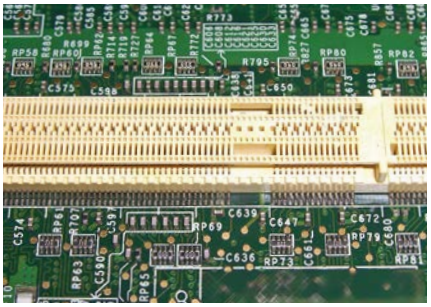


Plastic SMD connector

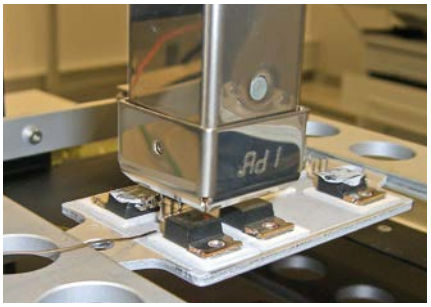
TO220 on aluminium carrier with hybrid rework system



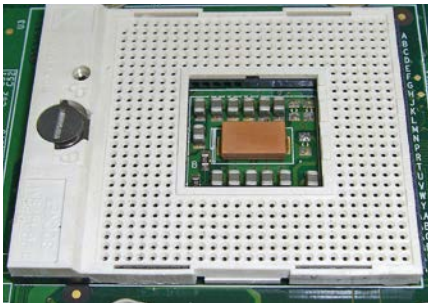
Plastic SMT aluminium carrier



Large plastic SMD connector



TO220 on aluminium carrier with hybrid rework system

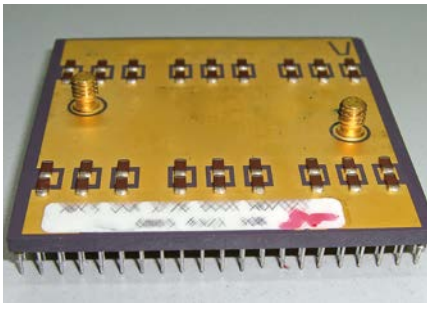


BGA processor socket

BGA GPU

Heavy-mass aluminium carriers, metal plates and shields, ceramic substrates and even plastic components can be safely reworked with the Ersa Rework Heating Technology!

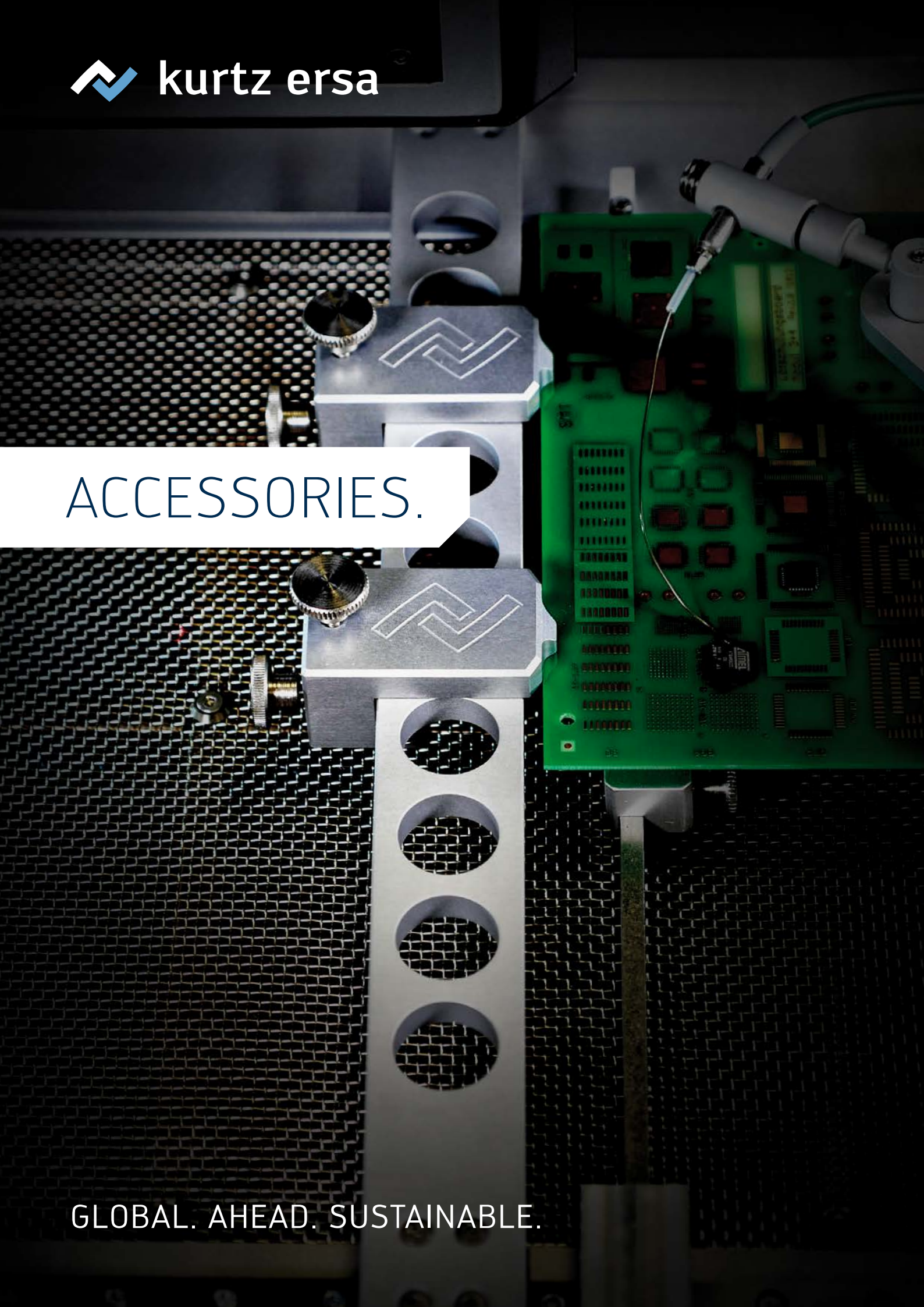
BGA plastic socket



High-mass ceramic Pin Grid Array

kurtz ersa

ACCESSORIES.



GLOBAL. AHEAD. SUSTAINABLE.

Accessories & spare parts in the Ersa Webshop

You need another PCB holder for your Ersa rework system, or a suction nozzle has to be replaced? An additional thermocouple with holder is required for the new customer order?

The Ersa Webshop offers a wide range of accessories and spare parts for your Ersa rework system. Navigate to your system via the corresponding tabs. Or enter order number or search term in the search window.
As an end customer, please contact your Ersa distributor or Ersa directly to place an order.

ersashop.com

SUCTION NOZZLES & SUCTION CUPS

Suction cups and suction nozzles for Ersa rework systems

In order to lift off components after desoldering and to place new components safely, Ersa offers an extensive range of suction nozzles and suction cups.
Pure metallic nozzles as well as nozzles with silicone suction cups or Viton® suction cups are available.

Please note when selecting in the Ersa shop whether the respective nozzle or suction cup is suitable for your rework system.
For more information, please refer to our homepage at **www.ersashop.com**

TEMPERATURE SENSORS

Thermocouples and holders for Ersa rework systems

In order to accurately measure the temperature at the components, Ersa rework systems work with K-type thermocouples. Sheathed thermocouples as well as thermocouple wires are available.
Convenient thermocouple holders are also offered for additional sensors.

Please note when selecting in the Ersa shop whether the respective sensors or holders are suitable for your rework system.

For more information, please refer to our homepage at **www.ersashop.com**

DTM 110 TEMPERATURE MEASURING DEVICE

In certified companies and from a quality point of view, the recording and monitoring of the process temperature is obligatory.
When repairing assemblies, the DTM 110 is used to record the soldering temperature in addition to the measuring channels of the Ersa rework systems.
With all K-type thermocouples, the temperature can be measured on sensitive components or on the underside of the assembly.

The DTM 110 is also suitable for controlling the temperature of soldering tips.

For more information, please refer to our Ersa soldering tools catalog or our homepage at **www.ersashop.com**

CONSUMABLES

Fluxes, tapes and solders

Ersa provides a proven range of auxiliary materials for the rework of assemblies. Heat-resistant, special adhesive tapes, solders and fluxes can be found in our on-line webshop, as well as flux removers or a special cooling pad to protect sensitive components.

For more information, please refer to our homepage at **www.ersashop.com**

i-CON VARIO 2 MK2

i-CON NANO MK2

SOLDERING STATIONS AND TIPS

A complete list of solders and desolderig wicks as well as further soldering stations and soldering tips for rework applications can be found in our Ersa soldering tools catalogue or on our homepage at **www.ersashop.com**

PCB holder, exchange frame for HR 600 (390 x 300 mm (+x))

CIRCUIT BOARD HOLDERS AND MORE

Support rails, additional holders, interchangeable frames

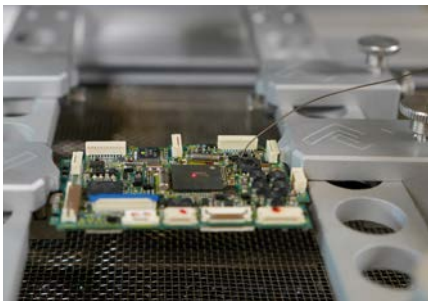
Various additional holders or support elements are available for the Ersa rework systems in order to ideally accommodate assemblies in the rework system. They ensure that circuit boards can be processed without distortion and can be easily fixed in the system. You can find additional holders and exchangeable frames in our online webshop.
Please note when selecting in the Ersa shop whether the respective PCB holders or support rails are suitable for your rework system.

If you have any questions, please do not hesitate to contact the Ersa team.

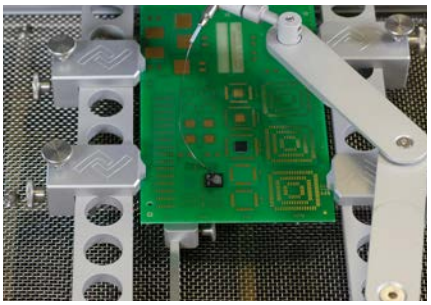
For more information, please refer to our homepage at **www.ersashop.com**

Support rail for HR 550 with 1 pin

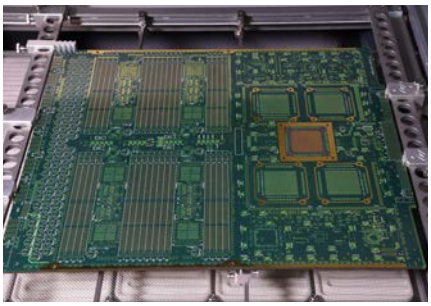
Additional PCB holder for odd shape PCBs (1 pcs)



Flexible board holders adapt to size and structure of an assembly.



Support rails with pins prevent PCB warpage...



...so that even XL PCB formats can be safely fixed in the rework systems .

kurtz ersa

INSPECTION SYSTEMS.

GLOBAL. AHEAD. SUSTAINABLE.

ERSASCOPE M & ERSASCOPE M PLUS

Optical inspection systems for hidden solder joints

Technical highlights:

- High-resolution 5 MP USB camera
- Interchangeable high-quality lenses
- Multifunctional tripod and x/y-table with rotation for difficult inspections
- Completely ESD safe
- Including ImageDoc Basic software

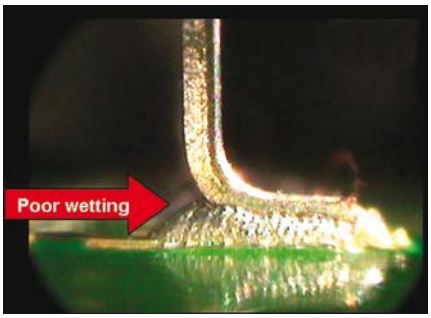
ERSASCOPE M

The ERSASCOPE M and M plus are multi-purpose inspection video microscopes to analyze hidden solder joints in electronic production environments.

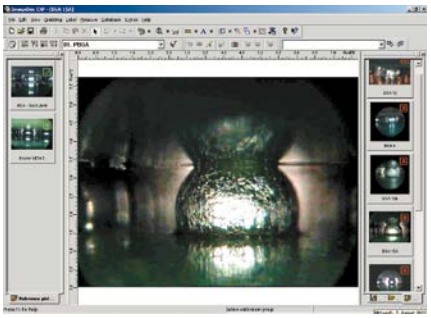
Both units have been designed for optical inspection and digital image recording including measurements of solder joints on Ball Grid Array (BGA) and many other SMT packages. Their application field covers the visual inspection of components on printed circuit boards in Surface Mount Technology (SMT) or Through-Hole Technology (THT) in general, but also the visual inspection of PCB lands or solder paste prints. The devices can be used in quality assurance, production, laboratories or R&D departments.

The compact ERSASCOPE M units connect with a PC or any portable computer via a USB interface, and within minutes they are ready for operation. Thanks to high-quality BGA optical heads, the inspection of components with hidden solder joints is easy. A MACROZOOM lens allows top-view surface inspection in various magnifications.

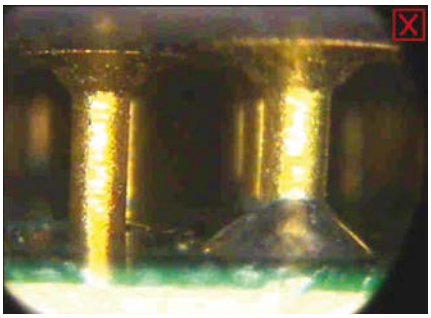
All optical heads are plugged onto the high-resolution digital color camera hand piece with a “Quick Snap” connection. Changing the optical heads in accordance with the inspection task is a matter of seconds. Long-life and very bright controllable LED lights are integrated in all optical heads and provide optimal illumination of the solder joints



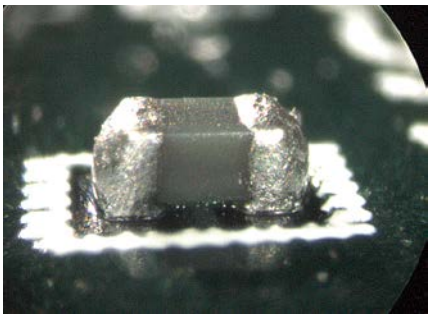
PQFP interior heel fillet inspection: non-wetting with lead-free paste



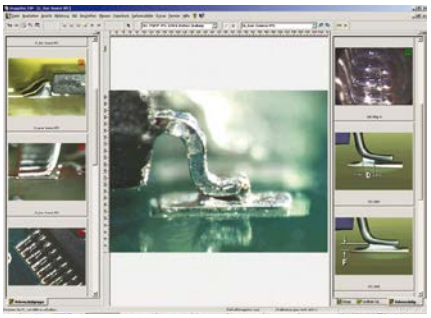
BGA inspection with reference pictures



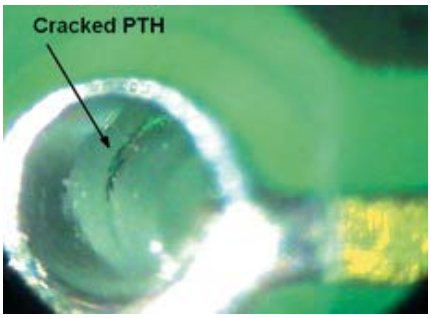
THT inspection under PGA



High magnification inspection of 0201s



ImageDoc Basic inspection software



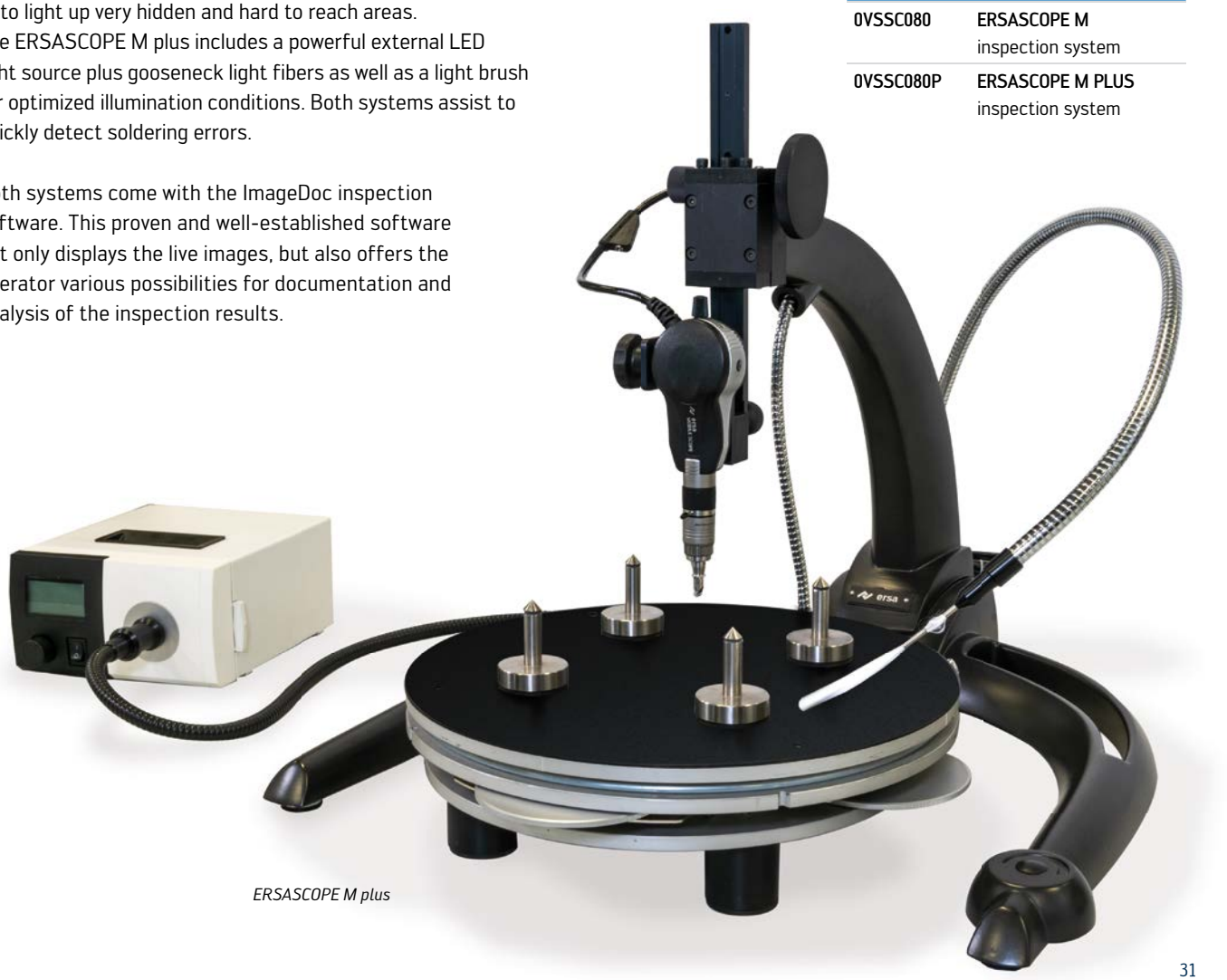
PCB inspection inside via hole

The ERSASCOPE M is equipped with an additional LED brush light for BGA inspection. It is essential for backlight illumination or to light up very hidden and hard to reach areas.
The ERSASCOPE M plus includes a powerful external LED light source plus gooseneck light fibers as well as a light brush for optimized illumination conditions. Both systems assist to quickly detect soldering errors.

Both systems come with the ImageDoc inspection software. This proven and well-established software not only displays the live images, but also offers the operator various possibilities for documentation and analysis of the inspection results.

Order information:

Order no.	Description
0VSSC080	ERSASCOPE M inspection system
0VSSC080P	ERSASCOPE M PLUS inspection system



ERSASCOPE M plus

ERSA MOBILE SCOPE

Mobile optical inspection system for electronics production

Technical highlights:

- High-resolution USB camera
- Interchangeable high-quality lenses
- Optional 0° optical head (80x)
- Integrated, adjustable LED lighting
- Optional LED fiber optic lighting
- Stand units and further accessories
- ImageDoc Basic or ImageDoc EXP software for both beginners and advanced operators
- Recording, measurement and reporting functions
- Mobile application

Mobile quality assurance in no time at all

The Ersa MOBILE SCOPE is a compact and handy, portable video microscope to inspect solder joints in electronic production environments. It has been designed for optical inspection and digital image recording including measurements of solder joints on Ball Grid Array (BGA), µBGA, CSP and Flip-Chip packages.

Furthermore, the Ersa MOBILE SCOPE can also be used to visually inspect lands, solder paste prints or, in general, to visually inspect components in Surface Mount Technology (SMT) or in Trough-Hole Technology (THT) on the board. The device can be used in quality control, production, laboratories or R&D departments.

The compact Ersa MOBILE SCOPE connects with a PC or any portable computer via a USB interface and is ready for operation within minutes in any location.

By means of the high-quality BGA optical heads, components with hidden solder joints can easily be inspected, a MACROZOOM lens allows top-view surface inspection in various magnifications. All optical heads are plugged onto the high-resolution digital color camera hand piece with a "Quick Snap" connection. Changing the optical heads in accordance with the inspection task is a matter of seconds.

Long-life and very bright, controllable LED lights are integrated in both optical heads and provide optimal illumination of the solder joints. In BGA inspection an additional LED light brush is essential for backlight illumination or to light up very hidden and hard-to-reach areas. Thus, soldering errors can be detected quickly and easily with the Ersa MOBILE SCOPE.

The Ersa MOBILE SCOPE is supplied together with the well-established ImageDoc Basic inspection software. This software not only displays the live images but also provides various possibilities to document and analyze inspection results.

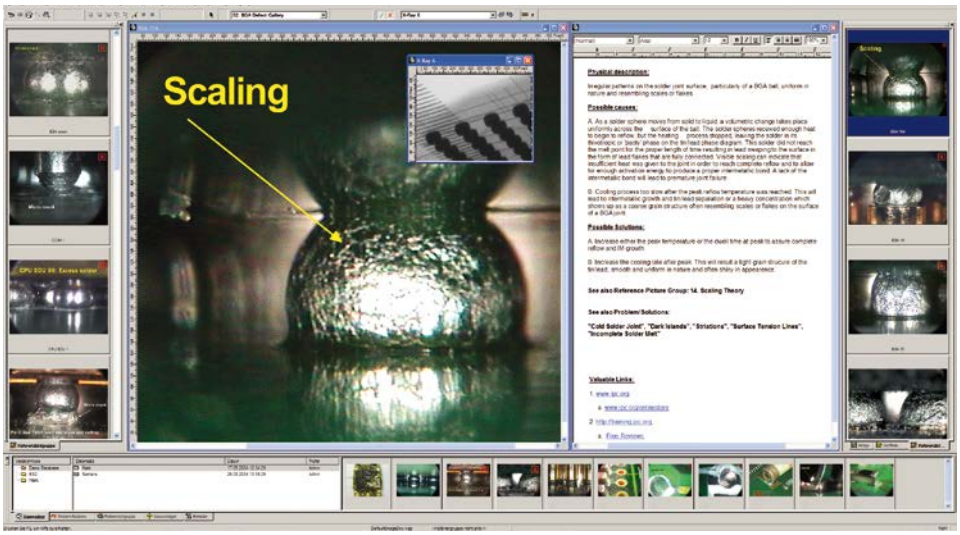
Extensive accessories allow the operator to compose his individual Ersa MOBILE SCOPE inspection system according to his needs. A practical aluminum case offers safe storage of the inspection equipment and facilitates the transportation of the system to any location wherever it is needed.

QFP solder joints – taken with the Ersa MOBILE SCOPE MACROZOOM optical head

ImageDoc inspection software

Order information:

Order no.	Description
0VSCA060	Basic camera unit
0VSSC060VK1	Sales kit 1, for details see page 42
0VSSC060VK2	Sales kit 2, for details see page 42
0VSSC060VK3	Sales kit 3, for details see page 42



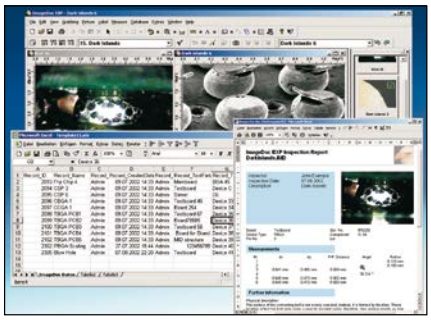
Reference picture databank, live image with "good/bad" reference images

ERSA IMAGEDOC

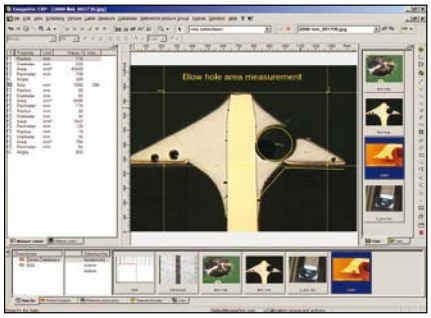
Inspection software for inspection staff with documentation from experts!

Technical highlights:

- Live and still picture window for documentation and control
- Image database with examples of good and bad solder joints for evaluation purposes
- Reference pictures
- Basic problem/solution database, set up by Ersa, Fraunhofer and the industry
- Measurements and automatic measurement control function/calibration
- Image processing and labelling
- Basic reporting/e-mail out of application
- Plug-and-Play setup

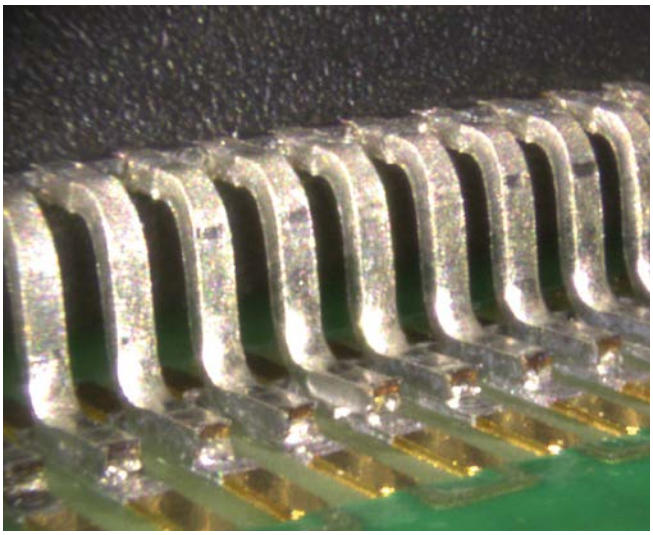


Database & reporting modules to store process information and failure analyses

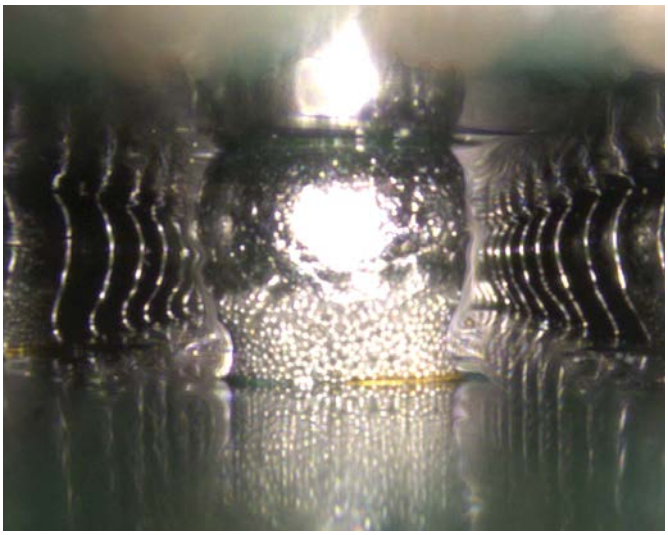


Extensive measurement and labelling functions

Based on the four fundamental principles of "Inspect, Classify, Analyse and Document", the ImageDoc software platform was designed especially for the inspection personnel. Lead-free implementation required a complete re-training of how operators classify solder joint quality. The days of "If the solder joint looks good, it most likely is good!" are over! By means of software-guided inspection processes the personnel can be properly trained for lead-free.
The Ersa ImageDoc software guides the operator through the critical and time consuming process of determining whether a defect exists, and then directs the operator where to look in the process in order to correct the problem. Inspection subjectivity is reduced, problems are solved more quickly and valuable process information is documented for future use. The included database can be modified and extended by the user at any time. The user can add own reference pictures (with good/bad marking) and problem/solution references.



"Focus Fusion" – view of QFP solder joints



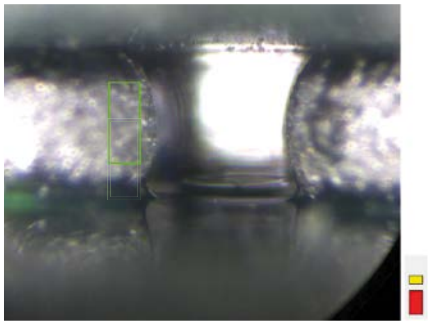
"Focus Fusion" – view of a BGA printed with solder after it has been placed

ERSA IMAGEDOC EXP

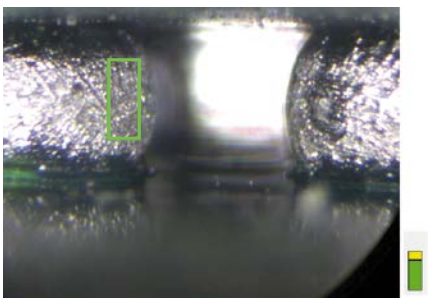
Additional functions for sharper views at even more depth

Technical highlights:

- Live and still picture, AVI recording, sequence module, presentation mode
- "Best Focus" and "Focus Fusion"
- Guided failure analysis, supported by an extensive expert database
- Reference pictures
- Large problem/solution database, set up by Ersa, Fraunhofer and the industry
- Measurements, automatic measurement control function/calibration
- Image processing/labelling, filters and macros
- Network operability, multi-user licensing
- User administration
- Report generation in *.doc and statistics in *.xls/database, import/export, e-mail
- Online updates and user forum



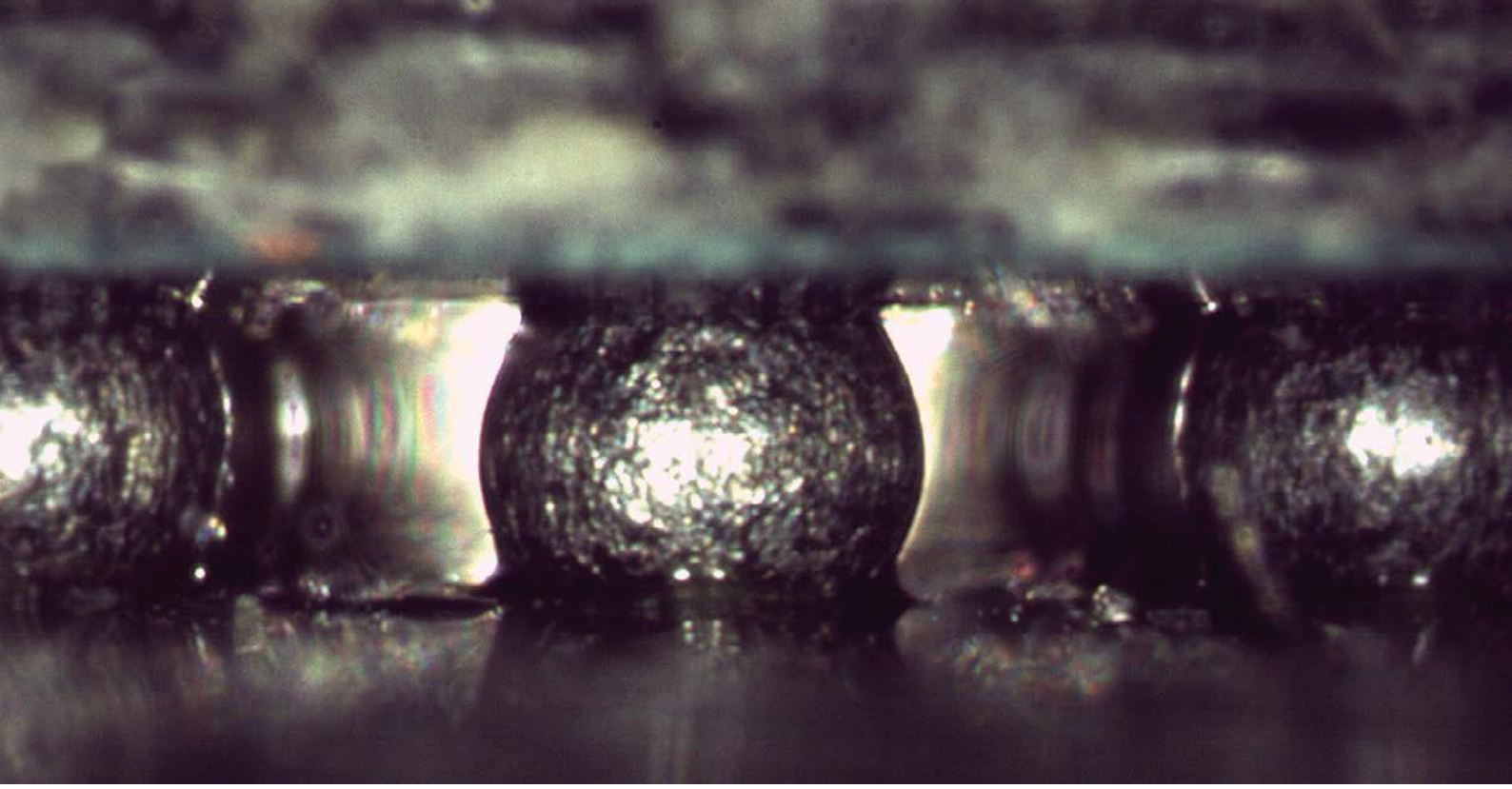
Best Focus – blurred picture in the green framed section (Area of Interest) – red bar graph



Best Focus – focused picture in the green framed section (Area of Interest) – green bar graph

The image process function "Best Focus" enables the ERSASCOPE user to easily find the objectively best sharpness setting for any freely determined portion of the image. This is an especially useful feature when measurements are to be taken within the image.
The second function serves to improve the presentation and documentation of the inspection results. With "Focus Fusion", the software calculates a composite image with excellent depth of sharpness from a number of previously recorded images. Balls of a BGA, aligned in one row, can thus be viewed with a high clarity and sharpness, for example. Solder defects or irregular solder joints can be inspected far more easily. The inspection result of a component with high pin-out is documented in only one image.

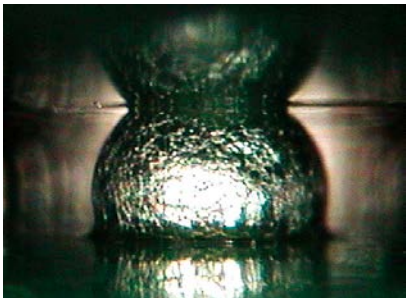
Both functions are available starting with version 3.0 of the well-proven ImageDoc EXP inspection software. An update is available for existing ERSASCOPE customers.



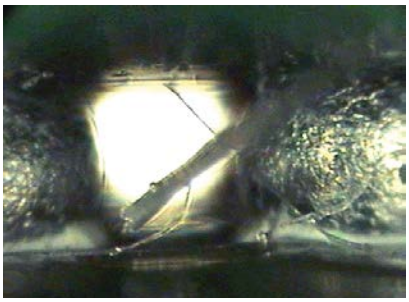
APPLICATIONS

Hidden solder joints and further applications

The inspection of hidden solder joints is one of the most important areas in a quality assurance program. The images shown on these pages underscore the flexibility of the ERSASCOPE inspection systems.
Whether SMDs or THTs, BGAs or Flip Chips: the ERSASCOPE offers the perfect complement to existing microscopes and X-ray systems for a total quality assurance program.

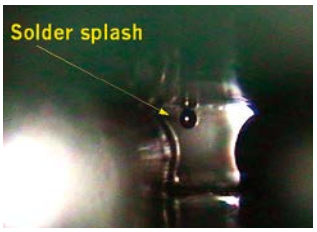


PBGA – scaling: insufficient heat

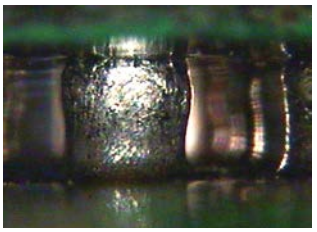


BGA: contamination (fibre)

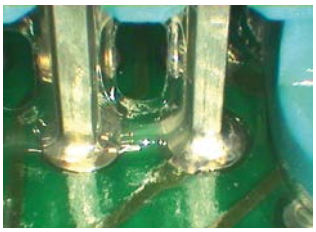
BGA – "dark islands": overheat



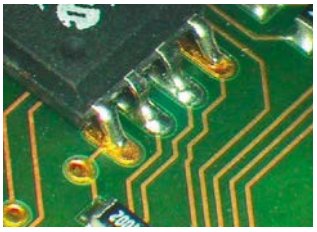
BGA: via hole solder splash



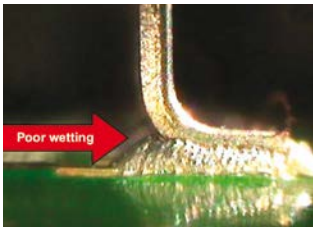
CBGA: good wetting angle



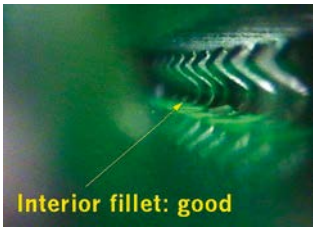
Conformal coating inspection



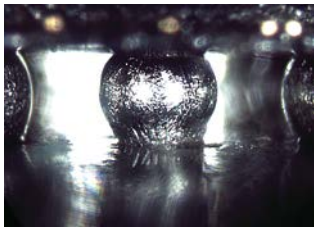
Lead-free assembly: non-wetting



PQFP – interior fillet: poor wetting



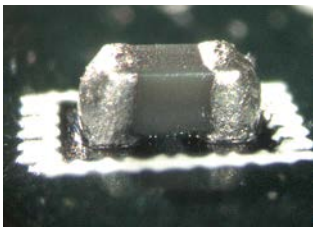
PLCC – interior fillet inspection



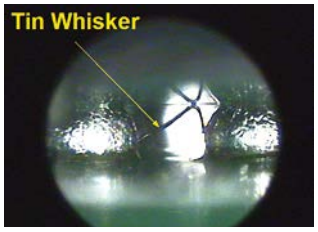
PBGA – cold joint: insufficient heat

CCGA: insufficient solder

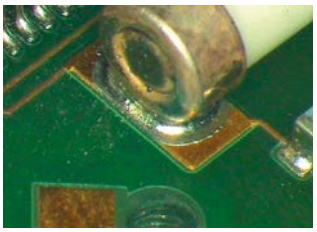
BGA – piggy back: bad alignment



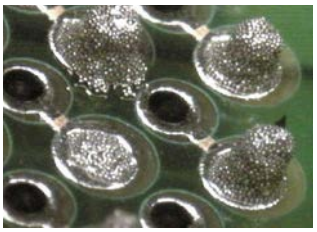
0402: bulbous solder joint



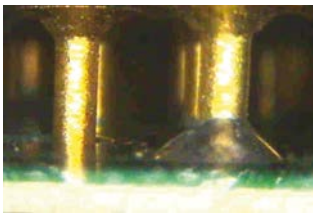
PBGA: tin whisker



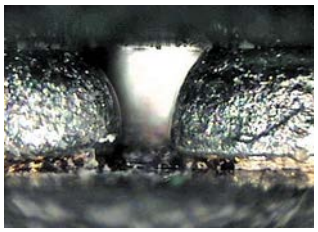
Lead-free assembly: non-wetting



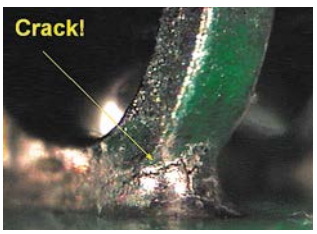
BGA – paste print: insufficient solder



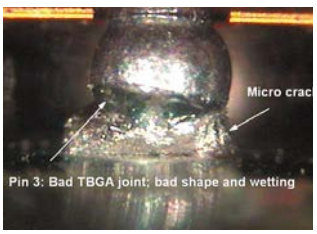
PGA – no flow thru: insufficient heat



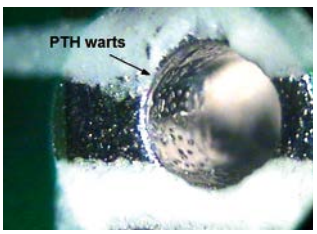
PBGA – scaling: insufficient heat



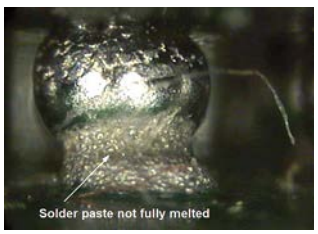
Lead-free PLCC: micro crack



TBGA: disrupted joint & micro crack

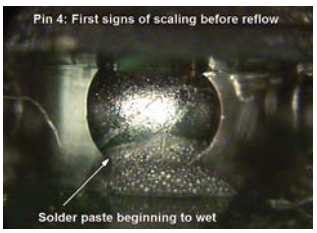


Plated thru-hole: disrupted wall

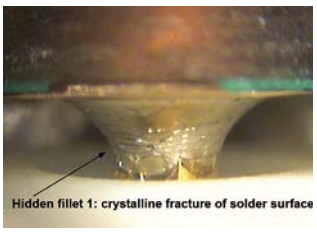


PBGA – scaling: insufficient heat

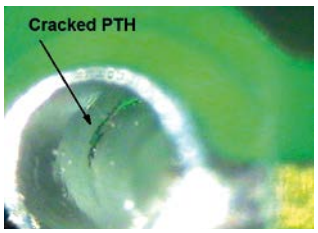
SMD LED inspection



PBGA – scaling: insufficient heat



THT joint: crystalline fracture



Plated thru-hole: cracked wall

SYSTEM COMPONENTS

for Ersa MOBILE SCOPE, ERSASCOPE M and M plus

Order no.	Descritpion	Technical data	Part
0VSLS400	**Dimmable LED light source** Energy-saving LED illumination for all ERSASCOPE inspection systems	approx. 170 x 196 x 98 mm (W x H x D), 12 VDC, 5,420 mA, max. 65 W weight approx. 2.1 kg	
0VSLF200	**Light brush**	length 35 mm, width 5 mm	
0VSRM100	**Glass calibration scale**	10 µm lines at 100 µm pitch	
0VSLC100	**Lens cleaning kit**	cleaning cloth, papers and liquid	
0VSXY100	**x/y-table with fine adjustment** and 4 PCB supports	X-Y-ϑ-movement with fine adjustment and antistatic mat with grid dimensions: ø 320 mm; weight: approx. 5 kg	
0VSID300L	**ImageDoc EXP 3.x**	upgrade licence for ImageDoc EXP professional inspection software	
0VSID135	**ImageDoc Basic**	general inspection software	

Basic camera unit

Image sensor	1/3" N-MOS solid state color image sensor
Resolution	2592 (H) x 1944 (V) pixels (5.0 MP)
Interface	USB 2.0 serial bus
Dimensions	114 (L) x 36 (W) x 51 mm (H), without cable

0VSCA060

BGA lens, 90° optical head

Magnification	5x up to 280x
Working distance	0.5 mm - 100 mm (focusing range)
Field of view (FoV)	1.2 - 50 mm
Footprint	0.8 x 7.1 mm

0VSSE060-90K

BGA lens small, 90° optical head

Magnification	25x to 350x
Working distance	0.3 - 40 mm (focusing range)
Field of view (FoV)	1.0 - 20 mm
Footprint	0.8 x 6 mm

0VSSE060-90KS

BGA lens ultra small, 90° optical head

Magnification	25x to 350x
Working distance	0.2 - 40 mm (focusing range)
Field of view (FoV)	1.0 - 20 mm
Footprint	0.4 mm x 3,4 mm

0VSSE060-90KUS

MACROZOOM lens 80x, with LED

Magnification	8x to approx. 80x on 14" monitor
Working distance	approx. 5 mm - 200 mm (focusing range)
Field of view (FoV)	approx. 5 - 45 mm
Dimensions	43 (L) x 19 (Ø) mm (85 x 35 mm max. incl. tel-escopic support)

0VSSE060-MZ80

LED brush light

Illumination	Cool white LED illumination
Illumination level	64 x 0.250 mm (ø) plastic optical fibers
Power source	3 x AA (LR06) batteries (alcaline cells recommended)
Dimensions	ø 26 x 250 mm (max. 40 x 250 mm)

0VSLS030

Ersa MOBILE SCOPE sales kits

Order number	0VSSC060VK1	0VSSC060VK2	0VSSC060VK3
Basic camera unit, digital	1x	1x	1x
BGA lens, 90° optical head	1x	--	1x
MACROZOOM lens 80x with LED light	--	1x	1x
LED light brush with dimmer	1x	--	1x
Desktop holder for camera unit	1x	--	1x
Operating manual	1x	1x	1x
ImageDoc Basic (inspection software)	1x	1x	1x
Aluminium case for Ersa MOBILE SCOPE	--	--	1x

ERSA PORTFOLIO

Stencil Printers

The Ersa VERSAPRINT series embodies "Best in Class" stencil printing: The high-end VERSAPRINT 2 PRO² and VERSAPRINT 2 ULTRA³ models offer unique advantages with fully integrated, full-area SPI after printing at line speed. The VERSAPRINT 2 ELITE marks the entry into line production and is ideal for customers who expect perfect printing combined with an easy-to-use printer.

Reflow Soldering Systems

The HOTFLOW THREE opens up a new chapter in the long success story of Ersa reflow soldering systems, of which more than 5,000 HOTFLOW reflow soldering ssystems: During the past 20 years alone, over 5,000 HOTFLOW reflow ovens have been installed worldwide. It makes a clear statement for even more quality in soldering - with exact soldering profiles, minimal maintenance, and the lowest consumption values.

Selective Soldering Systems

With top technology and modular design, Ersa meets the highest demands for flexibility and throughput – yet fitting any budget. VERSAFLOW, SMARTFLOW and ECOSELECT are on offer by the no. 1 specialist in the field of selective soldering – among them you will also find the ideal solution for your requirements!

Wave Soldering Systems

Thanks to modular design, Ersa POWERFLOW wave soldering systems are suitable for any customer requirement – from high-end full-tunnel inert gas soldering systems to open atmospheric wave soldering systems. Each model relies on stable processes and reproducible parameters with impressive values in terms of availability, economy and quality to master all wave soldering tasks efficiently and flexibly.

Rework Systems and Stations

With strong price/performance ratios and patented IR and hybrid rework technology, Ersa systems have placed themselves at the top of the market. Even in the most challenging SMT/BGA rework applications, they deliver repeatable best-in-class results. Ersa Rework Systems stand for successful rework from the very first process.

Soldering Robot

The Ersa SOLDER SMART soldering robot is an alternative to classic manual soldering, especially for applications where machine soldering processes reach their limits: e.g. when a cable strand is to be soldered to a board. It delivers solder joints with consistently high quality and reproducibility.

Optical Inspection Systems

For over 20 years, thousands of users worldwide have benefited from the ability to non-destructively inspect hidden solder joints. Whether inspecting under Ball Grid Arrays (BGA) or in areas where other microscopes reach their limits, ERSASCOPE technology adds significant value to any quality assurance program. Convince yourself of the many advantages of ERSASCOPE inspection systems!

Soldering and Desoldering Stations

Ersa soldering and desoldering stations impress with compact dimensions, high performance, energy efficiency and low operating costs as inexpensive replacement tips are used. The i-CON TRACE is the first fully networkable soldering station in the world, making the complete hand soldering process traceable and documentable.

Accessories & Auxiliaries

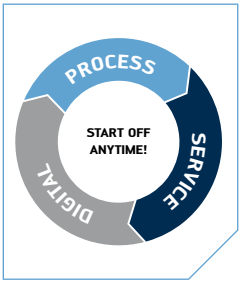
All about soldering – everything from a single source: Ersa offers not only special equipment, tools and temperature measuring devices, but also auxiliary materials and consumables for the manufacture and repair of high-quality electronics. Ersa solder wires are made of high-quality raw materials and meet all quality requirements.

Solder Fume Extraction

Ersa solder fume extraction units ensure a healthy working environment. Super quiet operational performance, low noise emissions. Adaptable to suit various workplace environments. Standby operation for efficient, material-friendly use. Easy maintenance and servicing.

Sales and Service Network

Around the world, our service technicians are on duty 24/7 to respond to customers' needs and requests. Our global service network consists of 85 service employees, 79 representatives with their own service teams and spare parts warehouses.

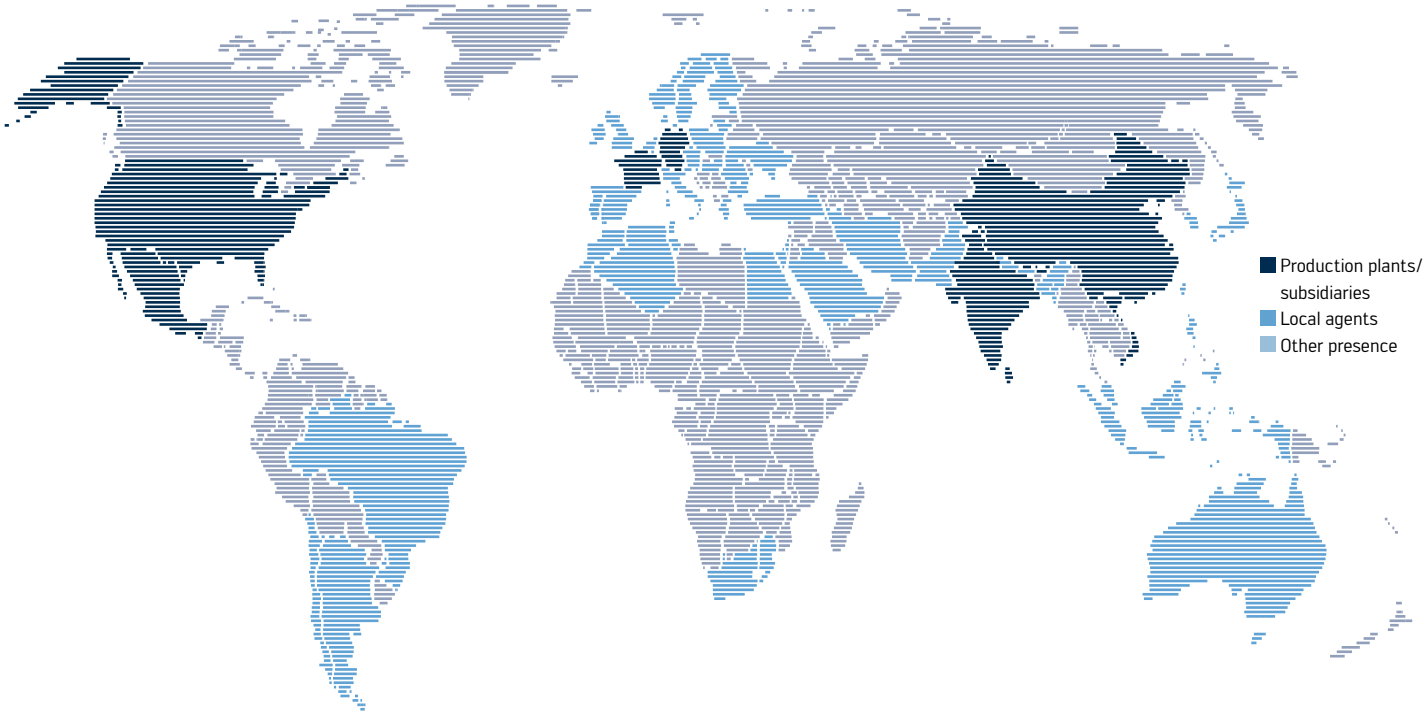


Workshops, Seminars and Trainings

Benefit from our machines and our knowledge: Ersa offers a comprehensive range of workshops, seminars and trainings in all areas of soldering. All courses incorporate theoretical and practical sessions.

ELECTRONICS PRODUCTION EQUIPMENT

Worldwide presence



America
Kurtz Ersa, Inc.
1779 Pilgrim Road
Plymouth, WI 53073
USA
Phone +1 920 893 3772
aus den US: 1 800 363 3772
usa@kurtzersa.com
www.ersa.com

Mexico
Kurtz Ersa, S.A. de C.V.
Av. Lopez Mateos Sur Núm. 1450 Int. 7
Col. Las Villas (Plaza las Villas)
Tlajomulco de Zúñiga, Jalisco
C.P. 45643
México
Phone +52 33 15 93 18 63
info-kmx@kurtzersa.com
www.ersa.com

Asia
Kurtz Ersa Asia Ltd.
Unit 03-05, 8th Floor
One Island South
No. 2 Heung Yip Road
Wong Chuk Hang
Hongkong
China
Phone +852 2331 2232
asia@kurtzersa.com
www.ersa.com

China
Ersa Shanghai
Room 720, Tian Xiang Building
No. 1068 Mao Tai Rd.,
Shanghai 200336
China
Phone +86 213126 0818
info-esh@kurtzersa.com
www.ersa.com

Vietnam
Kurtz Ersa Vietnam Company Limited
B916 Road 3, Kizuna 2 Factory Area
Lot B4-3-7-8, Tan Kim IP,
Can Giuoc Dist.
Long An Province
Vietnam
Phone +84 2723 733 682
info-kev@kurtzersa.com
www.ersa.com

India
Kurtz Ersa India – Smart Production Technologies Private Limited
Plot No. 16A,
Bommasandra Industrial Area,
Bommasandra Attibele Hobli,
Anekal Taluk,
Bangalore 560099
Phone +91 973 954 5461
india@kurtzersa.com
www.kurtzersa.com

France
Kurtz Ersa FRANCE
2, Avenue de Wissembourg
67500 Haguenau
France
Phone: +33 6 07 78 01 87
kefrance@kurtzersa.com
www.ersa.com

Ersa GmbH
Leonhard-Karl-Str. 24
97877 Wertheim/Germany

Phone +49 9342 800-0
Fax +49 9342 800-127
info@ersa.de
www.ersa.com

kurtz ersa