A close-up, high-angle photograph of an Ersa wave soldering system. Two large, cylindrical rollers covered in a dense, multi-colored (silver, gold, and black) wave solder are visible. A metal rod with a gold-colored tip is positioned above the rollers. The background is dark, highlighting the metallic components and the texture of the solder waves.

**Ersa
wave soldering
systems**

In a Class of its own!

GLOBAL. AHEAD. SUSTAINABLE.





Ersa wave soldering systems In a class of its own!

The electronics manufacturing industry is faced with constantly increasing demands for efficiency and flexibility. At the same time, its customers require highest quality at unbeatable cheap prices. Manufacturers respond to these increasing, and sometimes conflicting, challenges by adapting their manufacturing facilities and strategies. In this tense atmosphere, modern wave soldering systems are an important part of the economic processing of wired components in mass soldering processes.

The high demands that complex electronic assemblies place on the manufacturing process require modern manufacturing systems that are able to adapt flexibly to a wide variety of requirements. The Ersa POWERFLOW concept allows to implement these different machine concepts into a system. Thanks to their modular design, Ersa POWERFLOW wave

soldering systems are available in a variety of configurations, including a high-end full nitrogen tunnel soldering system and open atmosphere wave soldering systems, all of which stand out in terms of availability, cost effectiveness and quality.

The Ersa wave soldering line includes the following systems:

POWERFLOW ULTRA
POWERFLOW PRO
POWERFLOW

The POWERFLOW ULTRA wave soldering system with full nitrogen tunnel represents the maximum expansion stage of this new generation of machines, from which the POWERFLOW PRO derives as a partially modular full tunnel system. The POWERFLOW ULTRA comprises diverse features: fluxer, preheating sections and soldering module offer a wide range of

configuration options, thanks to which the system can be adapted for special customer requirements.

Particularly noteworthy are the preheating section and the soldering module. The available options are specifically customized for the requirements of lead-free soldering processes and offer a safe base in the production of highly sophisticated and complex electronic assemblies with a high heat capacity.

For manufacturing environments, in which floor space is the main priority, the POWERFLOW PRO represents an interesting version. The partially modular design of this machine provides all the essential options in a compressed form, which makes the entire system more compact, thus requiring less floor space. The POWERFLOW has about the same



POWERFLOW ULTRA



POWERFLOW PRO

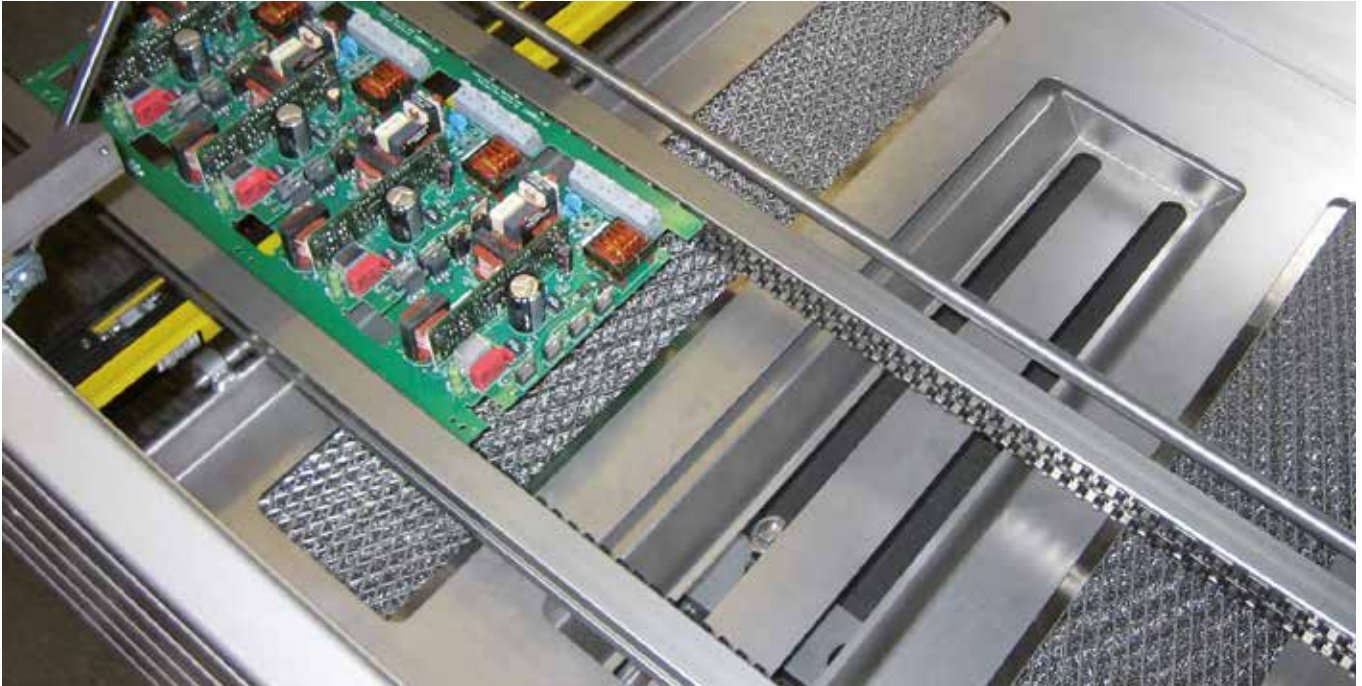


POWERFLOW

number of features as the POWERFLOW ULTRA, but does not have a full nitrogen tunnel. Optionally we offer a compact nitrogen tunnel over the solder wave. This creates a targeted and adjustable nitrogen atmosphere directly during the soldering process, which significantly reduces oxide formation. Due to the large capacity of its solder pot, long wetting times and a stable solder wave height of up to 16 mm, the POWERFLOW covers a very wide range of applications and offers solutions for almost all applications. Providing the security of absolutely stable processes and reproducible parameters, Erska wave soldering systems optimize quality, costs and delivery service in the production process of our customers.

Technical highlights:

- Lowest cost of ownership
- Highest energy efficiency
- Lowest energy consumption
- Highest machine availability
- Extremely service friendly
- Enclosed fluxer with low maintenance
- Free programmable fluxing areas
- Powerful top and bottom heaters
- Individual configuration of the preheating section
- Wide range of soldering nozzles for all applications
- Sequential soldering
- Process gas cleaning
- Tunnel temperature compensation
- Extraction-independent N₂ control
- Flexible conveyor systems to handle all carriers and frames
- Separated conveyor for optimal profiling
- User-friendly software
- Kurtz Erska GATE / Kurtz Erska CONNECT



Fluxer – top view

Fluxer

Best process safety, even with high throughput

Today, spray systems are standard equipment for any wave soldering machine, however they differ significantly in detail. Erska offers many innovative solutions for the fluxer.

Particular attention is paid not only to the systems' safety, but also on economic efficiency, i.e. flux consumption and processing speed.

Using high quality materials Erska wave soldering systems can be operated with VOC-free fluxes.

Spray sections for specific products can be entered graphically on ERSASOFT 5. This highly convenient type of process

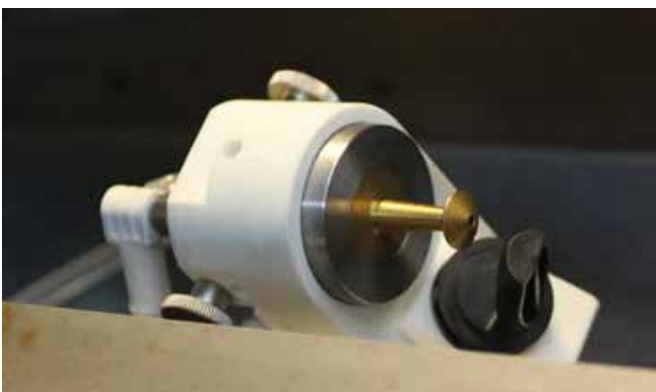
planning helps to greatly reduce flux consumption.

If there is no guarantee that the assemblies are always inserted in the same position in the solder frames or carriers during the production process, the PCB scanner can automatically detect the outline of the PCB for a targeted flux application.

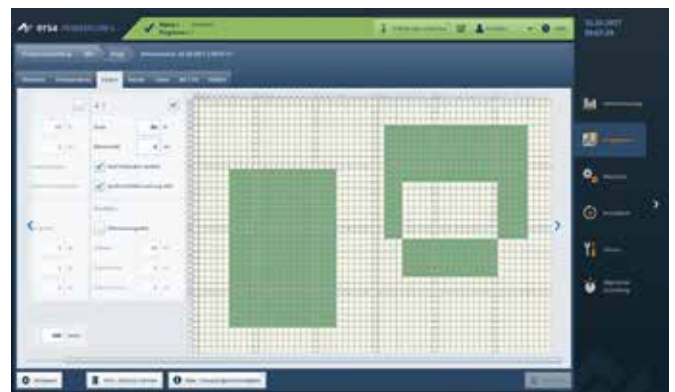
In addition to the standard spray head, an ultrasonic spray head is available as an option for POWERFLOW ULTRA, POWERFLOW PRO and POWERFLOW, which is characterized by effective flux application and minimal maintenance requirements.

Technical highlights:

- Low flux consumption
- Easy to maintain
- 2 spray heads
- Easy to program
- Standard containers up to 25 liters



Ultrasonic fluxer



Entry mask for sequential fluxing



Preheating – dynamic emitters

Preheating

Efficient, uniform, repeatable

The preheating process is very important in wave soldering since this is where a significant proportion of the required soldering heat is transferred. The preheating section of the POWERFLOW series ensures that the preheating process is always absolutely stable and reproducible and that temperature profiles and process windows are maintained. Preheating can be freely configured to meet even the highest demands and can be composed of various modules:

It is possible to heat the printed circuit boards gently, evenly and very effectively with convection modules that can be arranged above and below the PCB conveyor. This minimizes heat losses and high temperature differences. Speed-controlled fan motors realize different heat transfer rates at a constant temperature – a major advantage for the throughput of mixed assemblies.

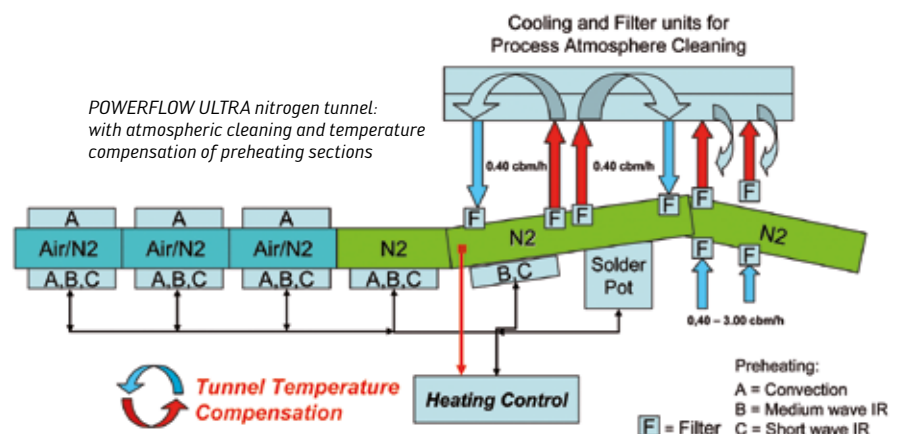
Medium-wave emitters also support the homogeneous heating of high-mass printed circuit boards, which protects temperature-sensitive components. Short-wave IR emitters transfer the different amounts of energy almost without inertia and are therefore ideal for mixed production.

The systems of the POWERFLOW series also feature automatic temperature compensation. Heating of the process tunnel is recorded at suitable points and algorithms are used to correct the temperatures of the preheating modules accordingly. Result: constant operating conditions are guaranteed despite variable energy output.

Pyrometers for interactive temperature control, or documentation and subsequent traceability of the printed circuit board temperature complete the range of functions offered.

Technical highlights:

- Variable in length and combination
- Convection from below and above
- Pyrometer control
- Tunnel temperature compensation





Technical highlights:

- Double soldering module
- Nozzle height adjustment (manual and automatic)
- Easy maintenance: The nozzle shaft can be removed without tools; the support stand is housed in the machine
- Solder nozzle combinations for different applications/Vario Wave
- Exchange solder pot with trolley and heat-up station
- Solder bar feeder with monitoring for all commercially available bar formats
- Sequential soldering
- User-friendly
- Flexible solder nozzle configuration
- Optimal soldering results

Soldering module

Flexible options for maximum throughput

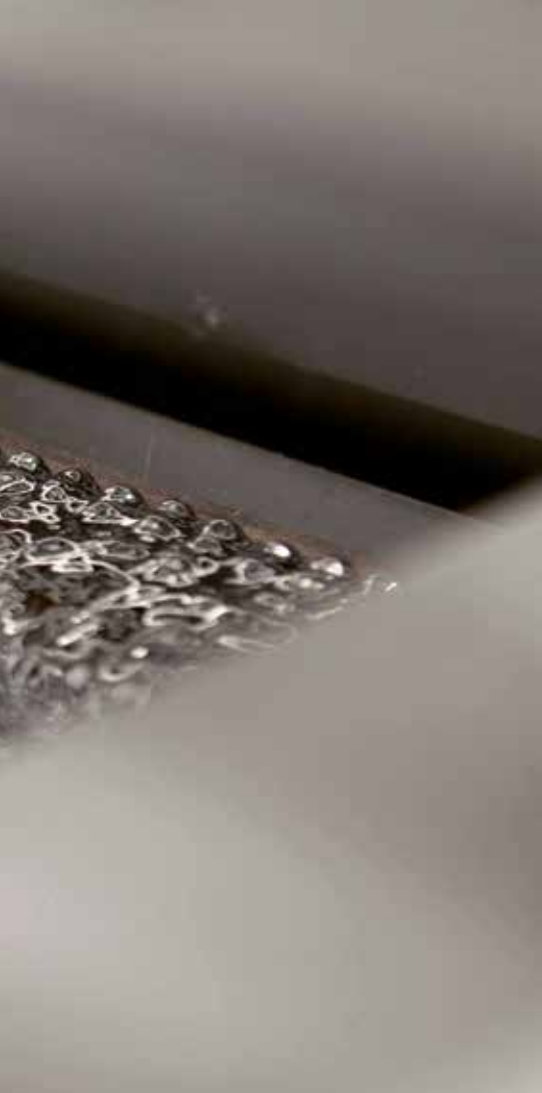
With regard to soldering modules, the POWERFLOW systems resort to the proven Erska double-wave soldering technology, on the basis of which the solder unit has been completely redesigned in order to meet the increasing market requirements and needs.

The solder unit is designed to be user-friendly and allows the use of a wide range of different soldering nozzles. The combination of soldering nozzles can be optimally adapted to user needs.

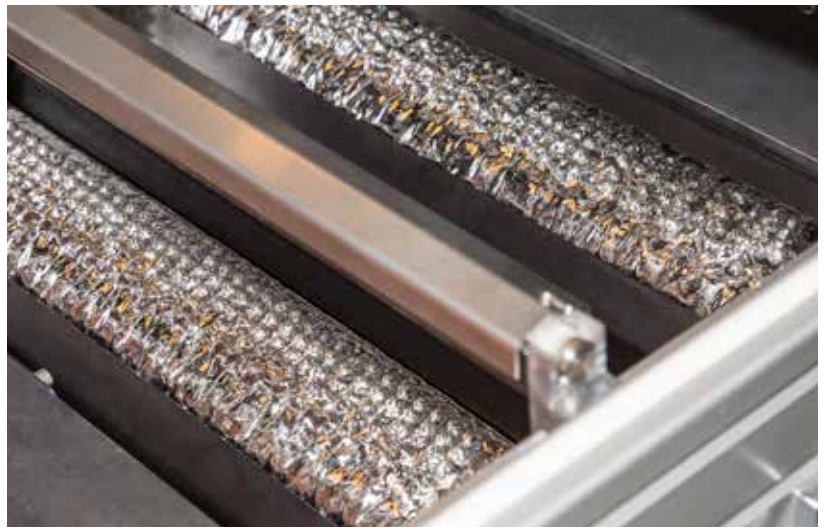
All relevant parameters of the solder units are continuously monitored, including the temperature of the solder, the solder level

in the solder pot, the speed of the solder pump drive, the supply of solder bars in the automatic solder bar feeder, as well as residual oxygen content of the nitrogen atmosphere in full-tunnel systems.

The distance between the soldering nozzle and the PCB – the pass-through height – can be easily adjusted from the outside, without having to open the process tunnel. Alternatively, this can also be done automatically through optional actuators, whereby these parameters, as well as all other assembly-specific soldering parameters, are stored in the soldering program used.



Power Wave nozzle



Combination of Vario Wave solder nozzles

In this way it is possible to adjust the pass-through height specifically for each assembly in a mixed production, which leads to a higher system availability.

For maintenance work, the solder unit is electrically lowered and positioned out of the machine on a support stand. The support stand is integrated directly into the soldering module and, in order to be used, it only needs to be pulled out from the machine. Accessibility of the solder pot for maintenance or repair work is very convenient. For example, solder pump, canal and soldering nozzle units can be removed from the solder pot without using tools. In addition, during assembly, no tools or any kind of adjustment work are required.

Naturally, a high-quality protective coating on all parts that come into contact with the solder, providing protection against aggressive substances, is included in all Erska wave soldering systems.

A new generation of solder nozzles

The patented Vario Wave soldering nozzle has been especially adapted and optimized in order to meet the various market requirements. It is suitable as a presolder wave and/or final solder wave and offers a variable wetting length of 35 or 65 mm.

The use of two nozzles in a double-wave solder unit allows a variable wetting length of 35/65/100/135 mm. Thanks to the combination of the flexible wetting lengths with a high flow speed of the solder, this soldering nozzle is also suitable to process assemblies with high heat capacity in the field of power electronics, as well as for assemblies with low energy requirements.

Advantages:

- Optimal wetting characteristics for critical SMD layouts on the soldering side
- Particularly suitable for selective solder masks with different heights on the soldering side
- Improved peel-off behavior due to optimum flow characteristics
- Consistent positive feedback from customers
- Compatible with older Erska soldering systems
- Suitable for double soldering module, leaded/lead-free (without variable wetting length)
- Pre- and main solder wave combined in one soldering nozzle



Sequential soldering module with unmatched process control and flexibility

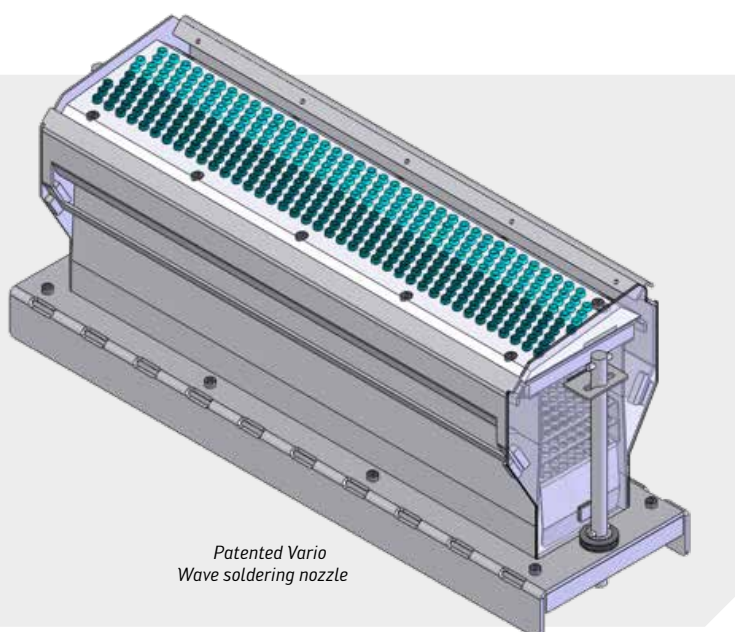
The new soldering module of the POWER-FLOW ULTRA offers unique process control and flexibility. Its innovative drive achieves speeds of up to 5 mm/s. The distance between solder nozzle and PCB is set via the ERSASOFT 5 operating software. In this way, all assemblies can be soldered with the appropriate distance.

Nozzle clearance and solder wave height can also be adjusted within an assembly. For this purpose, the printed circuit board is divided program-controlled into sectors which are assigned parameters. Thus each sector can be soldered with individual configurations, which ensures highly flexible processes.

In addition, the contact time of the solder wave with the assembly can be stored in the soldering program. This offers maximum process control both during insertion and removal of the assembly into the solder wave. Together with the nozzle distance, an optimum solder flow is achieved. The result: perfect solder joints!

A special highlight is the permanent measurement of the real solder volume, independent of pump speed and tin level, by means of a patented sensor and the automatic solder feeding. This shortens measuring times significantly and increases the system availability.

Together with flexible nozzle combinations that can be adapted to the products, you are ready for every challenge and can optimize production processes perfectly to your needs.



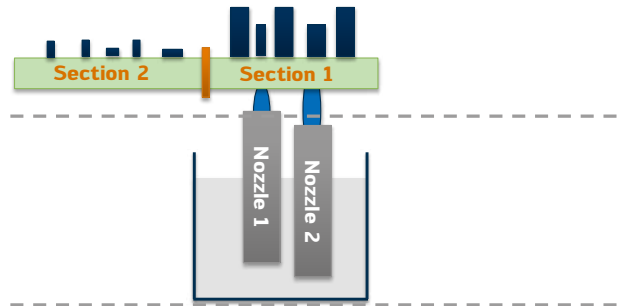
Patented Vario
Wave soldering nozzle

Soldering in sections

- 5 - 18 mm solder nozzle height adjustment
- Traversing speed of 5 mm/s
- Component clearance up to 18 mm from the bottom
- Permanent measurement of the real solder volume

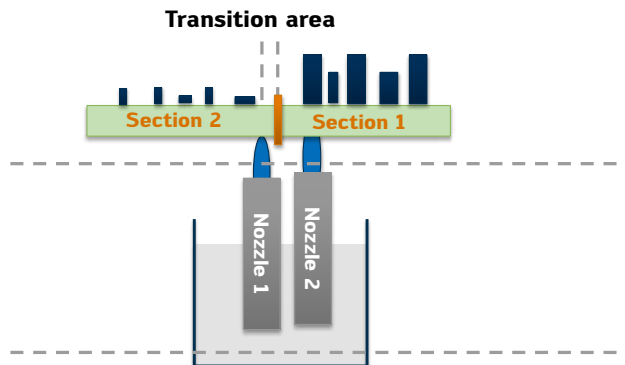
Step 1:

Section 1 is soldered with the predefined program parameter 1



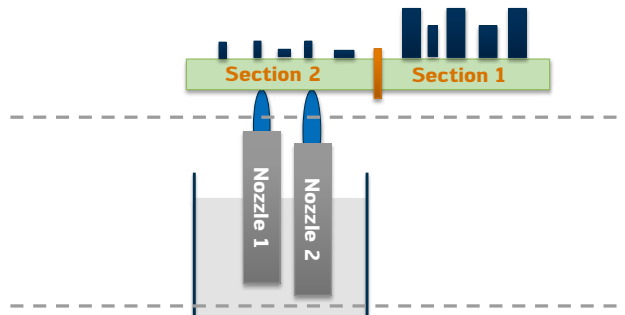
Step 2:

Nozzle 1 reaches section limit – the new nozzle height and wave speed is set by program control



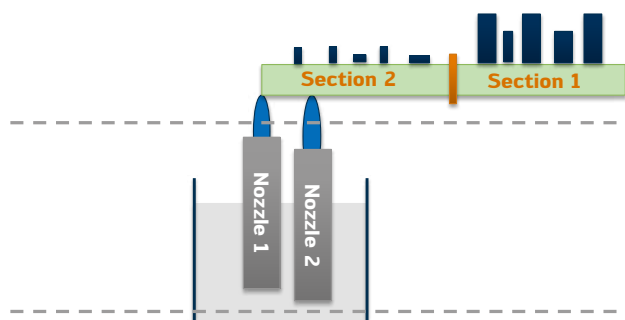
Step 3:

Section 2 is soldered with the predefined program parameter 2



Step 4:

Nozzle 1 reaches the end of the board. Accordingly, it goes to standby and reduces the wave height & -speed

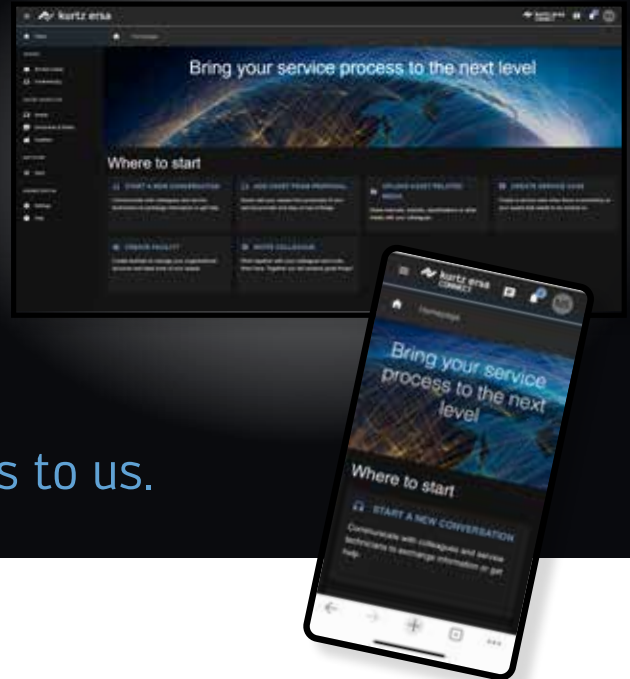


KURTZ ERSA CONNECT

Added value through digitization

Features

- Integrated hardware and software infrastructure
- Available for the whole Kurtz Ersa machine portfolio
- Standardized interfaces and systems
- Available for web browsers and smartphones
- Access independent of location and device



One Tool. All Services. Your Access to us.

Intelligent ticketing system "Service Cases"

Optimized service processes

With the intelligent ticket system "Service Cases", Ersa GmbH optimizes service processes worldwide. Thanks to standardized communication between the customer and Ersa Service via ticketing, error situations can be resolved quickly. Digital real-time information from the machine and other modules will be added, e.g. digital machine database, monitoring or machine data. In addition, there is access to modules such as E-Learning or E-Maintenance, including an intelligent evaluation of completed tickets.

Remote Service

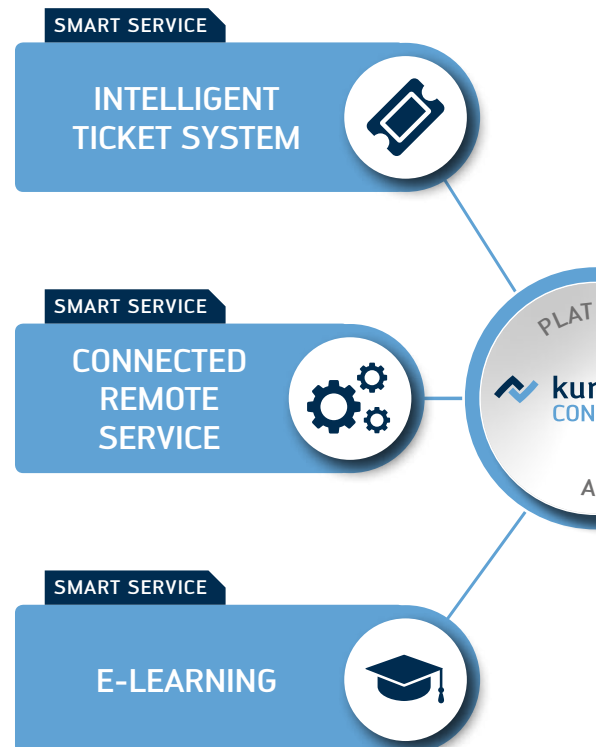
Remote analysis and quick support

Malfunctions in the customer's systems must be remedied immediately, as these machine downtimes are often associated with high costs. The remote service of Kurtz Ersa CONNECT offers a simple and safe possibility for remote diagnosis and fast first aid. With the help of the Edge Gateway Ersa Service immediately carries out a detailed troubleshooting, diagnosis and correction. Good to know: Remote maintenance is always carried out via digital switch at the invitation by the customer and cannot be started externally.

E-Learning

Location and time-independent access to the knowledge database

The interactive and module-based E-Learning courses include 3D animated machine illustrations and training videos. Learning progress is documented and verified via exams and certificates. The access to the E-Learning platform is independent of location and time. Via this knowledge database personnel worldwide can be trained uniformly. Thus, the need for on-site training is reduced, and waiting times for classroom training are eliminated – best conditions for increasing efficiency in the production process.

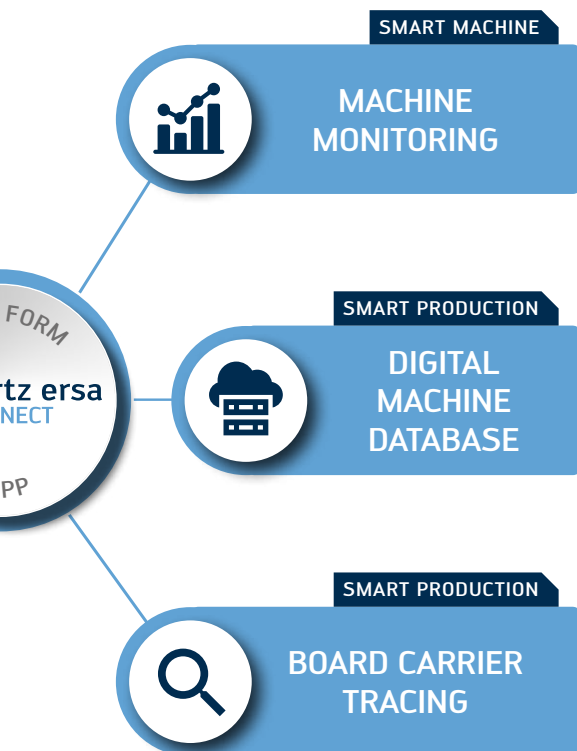




Machine monitoring

KPIs for the condition monitoring of your production

This provides real-time monitoring of relevant machine and process data. Location-independent access to the status of machine parts allows for quick actions if necessary. Machine monitoring enables the visualization of key figures and deviations within the range of predefined tolerances. Limit value violation is displayed in order to keep an eye on the control loop of the production.



Digital machine database

Your machinery at a glance

With the digital machine database, you always have relevant real-time data at your fingertips, such as customer data and general machine information, the visual representation of the current configuration (hardware and software) and the location of the machine.

Also within reach are important documents such as customer acceptance tests/machine capability tests (MCT), service reports and instructions, safety documents and waybills/customs documents.

Workpiece carrier tracing/Kurtz Ersa line control

Monitoring, tracking and process control

In the case of product carrier tracing, all product movements and related processes within a complete line are controlled. Individual PCBs, e.g. with product carriers, masks or holders are linked using the product IDs. The components and parts used are recorded and documented, and important process data of the line is linked with the product IDs. Automatic product carrier cycles are likewise managed.

**You too can benefit from our future-oriented service offers.
Feel free to contact us!**



Ersa Powerflow ULTRA

The benchmark

POWERFLOW ULTRA is the technology carrier in the wave soldering field. The system is characterized by its wide range of options and can be individually adapted to the most diverse requirements.

The fluxer can be equipped with two independent flux supply systems. Exhaust units above and below the assembly and a separate conveyor system guarantee maximum cleanliness for the process tunnel. The entire spray unit can be pulled out of the machine for maintenance.

An individually configurable preheating section of up to 3 m allows the production of high-mass assemblies with high throughput at the same time. Medium-

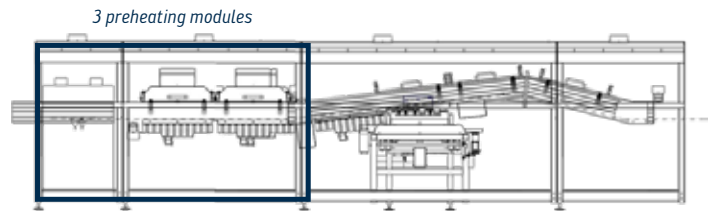
wave and short-wave IR emitters as well as convection heaters are available as heating modules.

The POWERFLOW ULTRA uses the proven Ersa double-wave soldering technology. Its soldering module has been completely redeveloped on this basis. Using various combinations of soldering nozzles, the user-friendly soldering unit is optimally adjustable to each application. High wave heights and also long wetting times are possible.

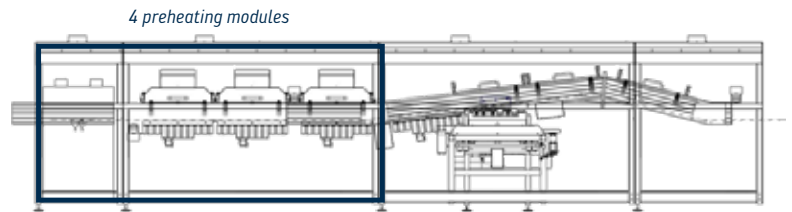
The machine is available with both frame and finger conveyor. Working widths range from 330 mm up to 610 mm in the XXL version.

The process tunnel is equipped with process gas cleaning which permanently filters out any impurities. The residual oxygen content of the nitrogen atmosphere is optionally monitored and/or controlled.

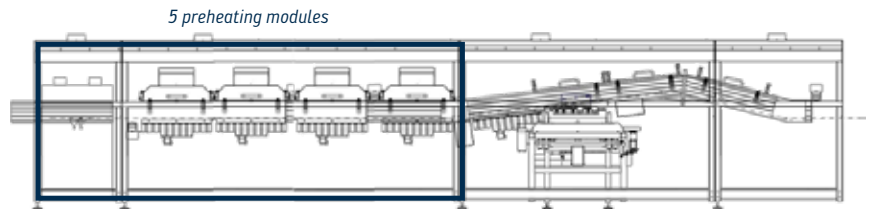
POWERFLOW ULTRA is controlled via a PC with touchscreen. The new version of the established ERSASOFT 5 software with user-friendly interface visualizes, controls and monitors the entire system. Individual user interfaces provide each operator group at a glance with the data and information it needs.



Total machine length: 6,200 mm (incl. infeed 500 mm)*



Total machine length: 6,950 mm (incl. infeed 500 mm)*



Total machine length: 7,700 mm (incl. infeed 500 mm)*

*The machine lengths above are indicated without outfeed.

The process recorder continuously logs all the soldering system's relevant data and production-relevant data can be made available to a higher-level system.

Thanks to the modular machine design, the POWERFLOW ULTRA can be individually adapted to customer requirements. For this purpose, three different preheating lengths of 1.8 m, 2.4 m and 3 m are available. This configuration option ensures that the preheating throughput does not affect cycle time in a negative way.

In addition, the POWERFLOW ULTRA scores with different conveyor systems: A frame transport is available for working widths of 330 mm and 400 mm. Using a finger conveyor, the working width is max. 406 mm.

The POWERFLOW XL offers larger working widths of 500 mm for frame conveyor and max. 520 mm for finger conveyor. But it can also be even larger:

The POWERFLOW ULTRA XXL provides a working width of 610 mm. In addition, PCB lengths of up to 850 mm are possible. However, this machine version is only available with finger conveyor and a preheating length of 2.4 m.

Technical highlights:

- XXL version for processing PCB sizes of up to 850 x 610 mm (L x W)
- Modular preheating concept with convection heating and emitters; variable in configuration
- Up to 5 preheating modules possible (heating length 3,000 mm)
- Sequential soldering
- Automatic production with code operation possible
- ERSASOFT 5 operating software on database basis
- Digitization with Kurtz Ersä CONNECT and Kurtz Ersä GATE
- Ultrasonic fluxer



Ersa POWERFLOW PRO

The compact solution

For manufacturing environments, in which floor space is the main priority, the POWERFLOW PRO represents an interesting version. The partially modular design of this machine provides all the essential options in a compressed form, which makes the entire system more compact, thus requiring less floor space.

The pneumatically-driven, flexibly programmable spray fluxer is equipped with a spray head and supplied with flux from the original container.

With regard to preheating, the POWERFLOW PRO offers the option to extend process length. Options include medium or short-wave infrared emitters or convection modules. Furthermore, convection heaters can be installed above the conveyor in the process tunnel, as well.

The soldering module is designed as a double-wave unit and offers, without limitation, the opportunity to use the wide range of proven Ersa soldering nozzles. The parameters of the soldering module, which are relevant for manufacturing, are

continuously monitored by the system control.

Frame conveyors or finger conveyors are available for this wave soldering system.

The POWERFLOW PRO is operated via touch panel or PC. The optional machine PC offers an extensive range of functions for the user, such as a display for the process recorder and the soldering report.

The ERSASOFT 5 operating software is neatly designed and allows intuitive and safe handling of the machine for the user. Soldering programs can be stored and activated manually or via a coding on the solder frame. A weekly time switch ensures operational readiness in time for the start of a shift. The control system continuously monitors all relevant unit states and shows their actual values and operating conditions on the operating panel.

All these features ensure a safe, stable and repeatable soldering process.

Technical highlights:

- Low investment volumes
- Economical footprint
- Modern control concept
- Extractable flux module
- Full nitrogen tunnel
- Different preheating systems available
- Finger or frame conveyor
- ERSASOFT 5 operating software on database basis
- Digitization with Kurtz Ersa CONNECT and Kurtz Ersa GATE



Ersa POWERFLOW

The powerhouse

Ersa's POWERFLOW is a high-performance wave soldering system with flexible solder bath technology and an attractive price-performance ratio. The system has a modular design and features state-of-the-art technology. Manufactured with the proven components of the POWERFLOW series and with a maximum working width of 508 mm, it is also designed for medium to high production throughputs.

Spray systems are nowadays part of every wave soldering machine's standard equipment. So, the POWERFLOW is also equipped with a spray fluxer which ensures reliable and efficient flux application. The operator simply specifies the spray areas graphically in ERSASOFT. This allows significant savings in flux consumption.

Medium-wave and short-wave emitters as well as convection heaters are available for preheating. Short-wave IR modules respond highly dynamically and are therefore excellent for mixed production. The inert medium-wave heating modules ensure gentle heating of the printed circuit board without temperature shock.

Convection modules demonstrate their strengths when there is a need to heat densely populated assemblies or when using temperature-sensitive components that must not be overheated during the preheating process. The separate modules can be individually combined for perfect configuration of the preheating section and, if required, preheating can also be adapted retrospectively.

Like all Ersa wave soldering systems, the POWERFLOW works with the proven double-wave soldering technology. With three combinations of the soldering nozzles, the user-friendly soldering unit allows optimum adjustment of the process to the user's needs. In addition to a long wetting period, it also permits a wave height of 16 mm.

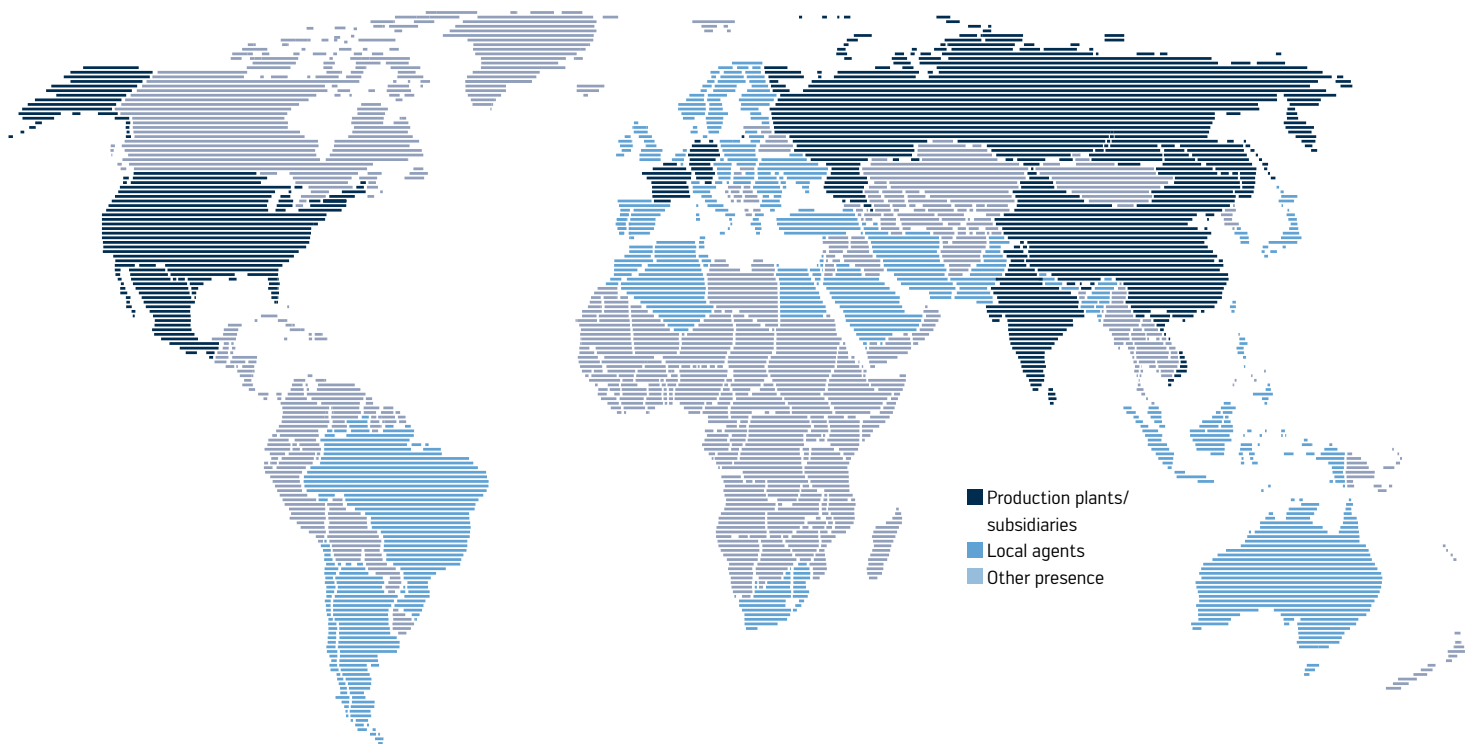
A compact nitrogen tunnel above the solder wave is available as an option. This creates a specific and adjustable nitrogen atmosphere directly where the soldering process takes place which significantly reduces oxide formation.

Technical highlights:

- Spray fluxer with intelligent spray pattern programming
- Modular, flexible and individually expandable preheating concept with convection heating and emitters; variable configuration in length and performance (also possible at a later date)
- Motorized height adjustment of the soldering nozzle
- Long wetting period
- Stable solder wave height (up to 16 mm)
- 3 nozzle combinations for every requirement
- Automatic production with code operation possible
- Digitization with Kurtz Ersa CONNECT

ELECTRONICS PRODUCTION EQUIPMENT

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