

# WVA VVE

Soldering  
Systems

GLOBAL. AHEAD. SUSTAINABLE.



## Ersa wave soldering systems A class of its own!

For over 50 years, Ersa wave soldering systems have set innovative trends in electronics manufacturing, whether in the entry-level class, as compact mid-size machines or as powerful high-end systems that can process XXL heavy-duty formats. Whatever your requirements, Ersa POWERFLOW wave soldering systems deliver quality and productivity, providing a safe and energy-efficient foundation for soldering processes.

### High-performance wave soldering

The electronics industry must deliver the highest quality at the lowest possible prices. In short, it must be efficient and flexible.

Modern wave soldering systems are central for the economical processing of wired components in mass soldering processes. Thanks to their modular design, Ersa POWERFLOW systems can be flexibly adapted to a wide range of requirements, whether as a high-end full-tunnel gas-shielded soldering system or an atmospheric wave soldering system.

### Requirements for a wave soldering system:

- Low operating costs
- Best energy balance
- Low energy consumption
- High machine availability
- Excellent serviceability
- Encapsulated, low-maintenance spray fluxer
- Freely programmable fluxer spray areas
- Powerful bottom and top heating
- Individually configurable preheating
- Freely selectable solder nozzle configurations for all product requirements
- Sequential soldering
- Process gas purification
- Tunnel temperature compensation
- Suction-independent N<sub>2</sub> control
- Flexible conveyor for all soldering frame systems and individual assemblies
- Split conveyor for optimum profiling
- User-friendly software
- Interfaces for digital connections and data exchange



POWERFLOW PRO

### Ersa POWERFLOW Family:

- POWERFLOW ONE
- POWERFLOW PRO
- POWERFLOW ULTRA
- POWERFLOW FIVE
- POWERFLOW

## How wave soldering systems work (with and without nitrogen):



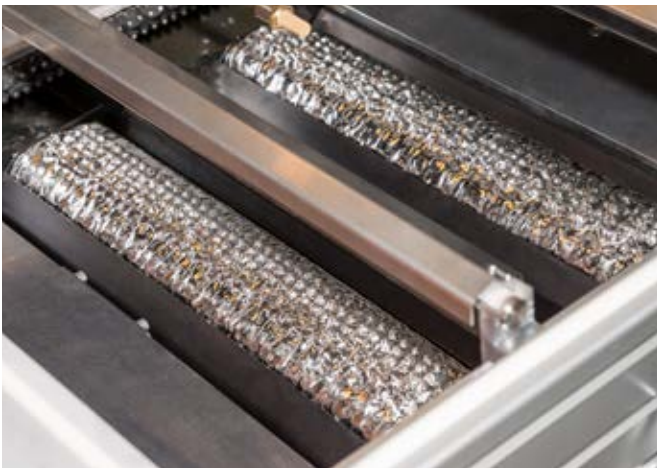
### Fluxing

Ersa flux spray systems and fluxers are designed not only for system reliability but also for cost-effectiveness (flux consumption and processing speed). Spray areas can be defined for specific products, which significantly reduces flux consumption. The use of high-quality materials enables the use of VOC-free fluxes.



### Preheating

During the preheating process in wave soldering, a significant proportion of the soldering heat requirement is already transferred. The POWERFLOW preheating section ensures a stable and reproducible preheating process, maintaining temperature profiles and process windows. The preheating process can be configured and assembled from various modules.



### Soldering module

The newly designed soldering unit is based on proven dual wave soldering technology and has enabled POWERFLOW systems to adapt to increased market requirements. This enables the use of a wide range of soldering nozzles.

The distance between the soldering nozzles and the printed circuit board, as well as the passage height, can be conveniently adjusted from the outside without opening the process tunnel. Alternatively, this can be done automatically using optional actuators from the soldering program.

This means that the passage height can be adjusted to suit specific assemblies in mixed operation, resulting in higher system availability.

## Wave soldering under nitrogen atmosphere – yes or no?

The use of nitrogen in soldering processes leads to a larger process window with better wetting conditions. An oxide-free solder surface has maximum surface tension and enables short, uniform detachment of the solder from the solder joints. This is essential for fine-pitch applications.

**Normal atmosphere:** The surface of the solder wave is covered with a thin, clearly visible oxide layer. The “flag” of the solder, which causes the break-off, is long and weak, and the detachment is irregular, leading to the formation of bridges and icicles.

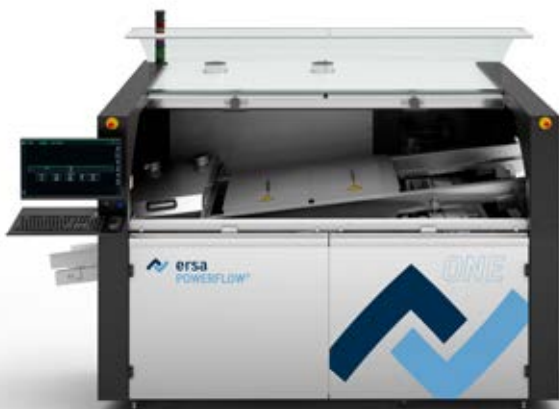
**N<sub>2</sub>/nitrogen atmosphere:** The surface of the solder wave is completely free of oxidation. The solder flag, at the end of which the break-off occurs, is short, strong and even. In addition, dross formation is significantly reduced. The amount of solder saved usually immediately offsets the nitrogen consumption.





## The One for everyone. Ersa POWERFLOW ONE

The POWERFLOW ONE is the ideal entry-level machine for electronics manufacturers who rely on the proven quality and reliability of Ersa products. The ONE has a small footprint and is built to reduce downtime to an absolute minimum. This is made possible by the use of tried-and-tested components, such as solder pots and heaters, which are well established in the POWERFLOW line of systems.



### Compact design and cost efficiency

The POWERFLOW ONE is a compact machine with a length of only 2.90 meters, which provides a cost-effective entry into the Ersa wave soldering portfolio. It focuses on the essentials of wave soldering and combines excellent price-performance ratio with proven Ersa quality. The basic version has a wave former and is designed for standalone operation with a soldering frame. The reduced pot volume supports cost-efficient operation. Optional extensions enable upgrades and adaptations up to high-performance inline operation.



Precise spray fluxer for reliable flux application



Powerful preheating with 3 cassettes  
(2x medium wave, 1x bright radiator)



Soldering module: Proven Erska pot technology  
with a filling volume of only 345 kg



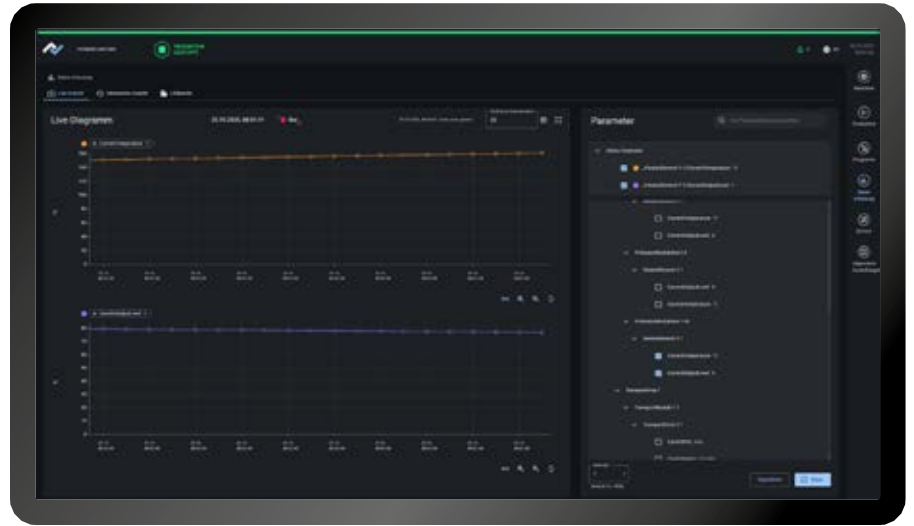
Designed for solder frame operation as standard.  
Finger transport optional.

### Technical highlights

- Entry into the POWERFLOW world at a length of only 2.90 m
- Powerful preheating on 3 cassettes (2x medium wave, 1x bright radiator)
- Proven solder pot technology with only 345 kg filling volume
- Nitrogen option
- Optional finger conveyor
- Optional inline capability



further information



### Innovative software platform

The POWERFLOW ONE is the first Erska machine based on the new KE.ON software platform. With its state-of-the-art design, it offers a future-proof, modern user interface and modular interfaces that enable expandability at any time.

#### The advantages include:

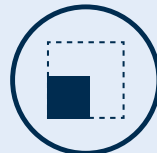
- **Modular state-of-the-art software architecture**  
Equipped for future requirements in terms of security, stability, and flexibility
- **Optimized collection of machine data**  
Efficient process design and smart features
- **Modern, intuitive user interface**  
Standardized across all Kurtz Erska products in the future
- **Familiar strengths**  
Comprehensive user management and easy operation



Proven POWERFLOW quality



Focus on the essentials



Compact dimensions

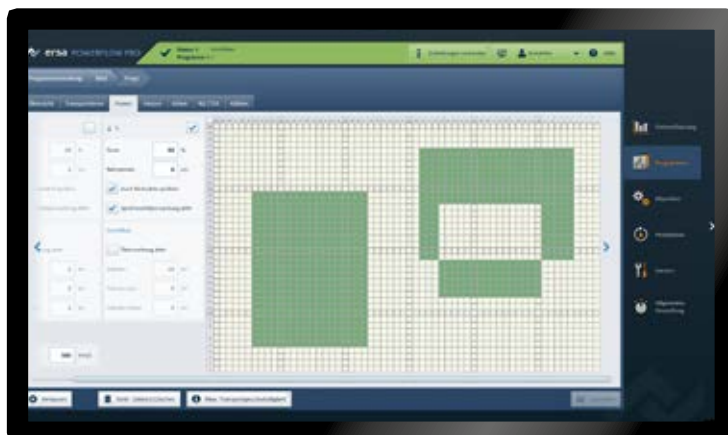


New KE.ON software platform



## The universal mid-size machine. Ersa POWERFLOW PRO

The POWERFLOW PRO from the proven Ersa POWERFLOW series is a powerful full tunnel system operating under a nitrogen atmosphere, enabling wave soldering to the highest standard. Designed for manufacturing environments with the strictest quality standards, it provides stable processes and consistent parameters for optimal performance in terms of quality, cost and service. Thanks to its partially modular design, the POWERFLOW PRO provides all the essential options in a compact form, thus saving valuable floor space.



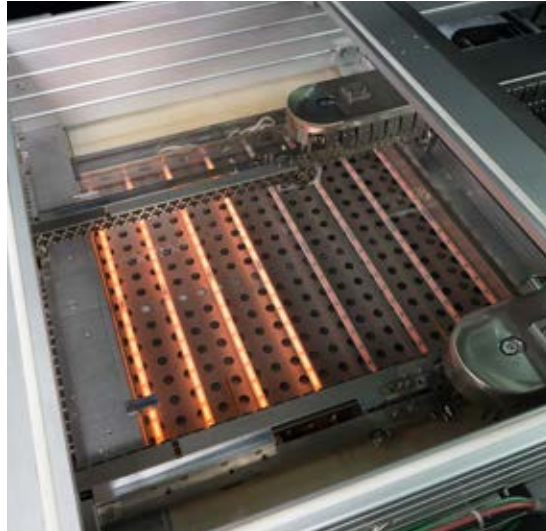
### Spray pattern programming for reduced flux consumption

Precise spray pattern programming using graphical input enables product-specific spray areas to be defined, ensuring that the flux is applied precisely to the areas to be soldered.

This matrix spray function reduces flux consumption to a minimum.

### Modular preheating concept

The combination of medium/short-wave IR emitters and convection modules can be optimally tailored to different applications and easily expanded in terms of length and power at a later date.



Dynamic IR emitters



Medium-wave radiator cassette



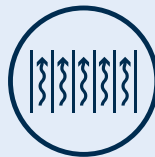
Proven Ersas dual wave soldering technology

### Proven soldering technology

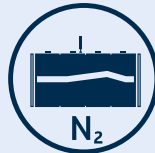
Ersa's proven dual wave soldering technology ensures a long wetting time with a consistently stable wave height.

Various nozzle combinations cover every application requirement, while the automatic solder bar feeder ensures continuous production. Optional alternating pot concepts increase flexibility, as the system can be quickly adapted to different solder alloys and production processes.

further information



Modular and flexible preheating concept with 1,500 mm or 2,000 mm length



Compact full-tunnel nitrogen system



Automatic bar feed



Spray pattern programming for reduced flux consumption



Frame conveyor with 330/400 mm or finger conveyor with 458 mm width



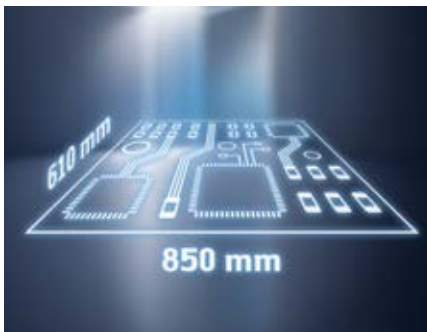
ERSASOFT 5 operating software: innovative user interface and process control



## Established high-end solution with proven technology

### Ersa POWERFLOW ULTRA

The POWERFLOW ULTRA is a state-of-the-art full-tunnel wave soldering system offering a wide range of options. It can be individually adapted to a wide variety of requirements. This makes it ideal for high-performance applications, such as the processing of server boards for 5G technology.



#### XXL capacities for maximum flexibility:

Depending on the configuration level of the POWERFLOW ULTRA, it is possible to process printed circuit boards with dimensions of up to 850 x 610 mm.



#### Sequential soldering:

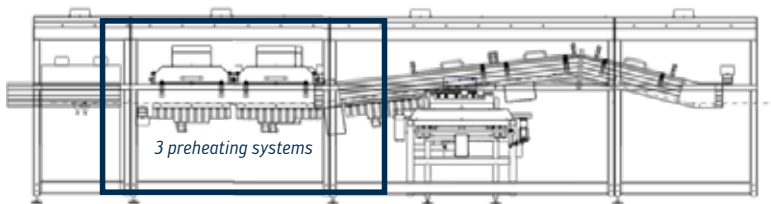
The soldering module of the POWERFLOW ULTRA offers unmatched process control through innovative sector-based processing. With 5–18 mm nozzle height adjustment, the system dynamically adapts to any assembly geometry. The program-controlled sector division allows individual parameters for each area of the printed circuit board. The patented sensor system continuously measures the actual solder volume.



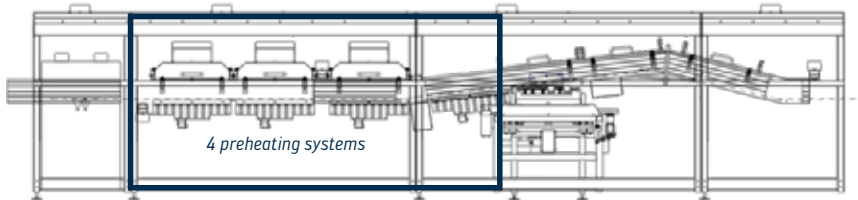
#### Connectivity and automation:

The proven ERSASOFT 5 software visualizes, controls, and monitors the entire system. Individual user interfaces provide each operator group with the necessary data and information at a glance. Production in code mode enables fully automated production processes.

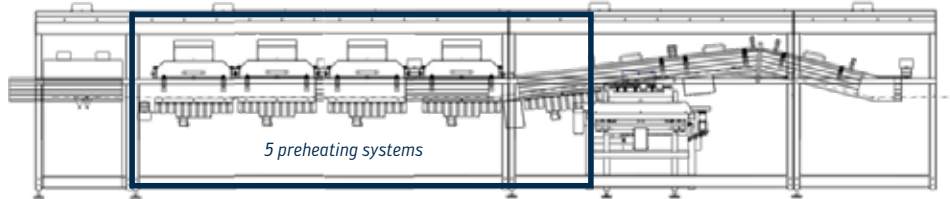
Total machine length: 6,200 mm (including infeed 500 mm)\*



Total machine length: 6,950 mm (including infeed 500 mm)\*



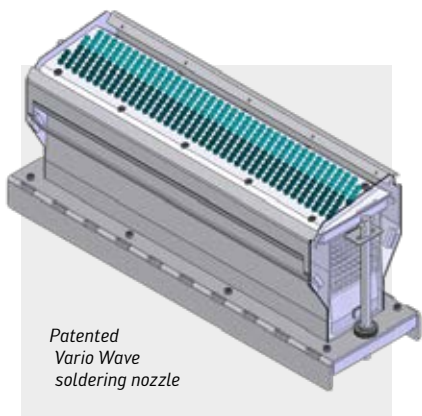
Total machine length: 7,700 mm (including infeed 500 mm)\*



\*Machine length specified without outlet

**Modular preheating concept:**

The combination of medium/short-wave IR emitters and convection modules can be optimally adapted to the respective assemblies. With a maximum configuration of 5 preheating modules, the POWERFLOW ULTRA achieves a heating length of up to 3,000 mm.



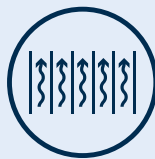
Patented Vario Wave soldering nozzle

**Technical highlights:**

- XXL version for processing printed circuit boards up to 850 x 610 mm (L x W)
- Up to 5 preheating modules possible (heating length 3,000 mm)
- ERSASOFT 5 operating software based on a database



**Spray pattern programming for reduced flux consumption**



**Modular and flexible preheating concept**



**Sequential soldering**



**Processing of PCB sizes up to 850 x 610 mm**



**ERSASOFT 5 operating software**

further information

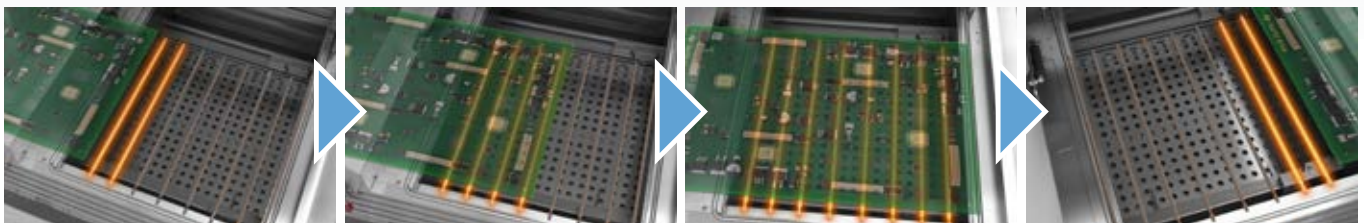




## The new flagship for ultimate wave soldering

### Ersa POWERFLOW *FIVE*

The Erska POWERFLOW FIVE is the latest generation of Erska wave soldering systems, setting the benchmark in the ultra-high segment. Designed to meet the dynamic requirements of today's and tomorrow's markets, it is particularly suited to the areas of e-mobility, 5G and smart grids. The POWERFLOW FIVE is aimed at electronics manufacturers, particularly those working in power electronics.



#### Energy efficiency revolution: SMART IR RADIATION

The new preheating system uses SMART IR RADIATION. It consists of eight pairs of controllable infrared emitters which automatically

switch to standby mode as soon as the flat module reaches the next pair. This significantly reduces operating costs.

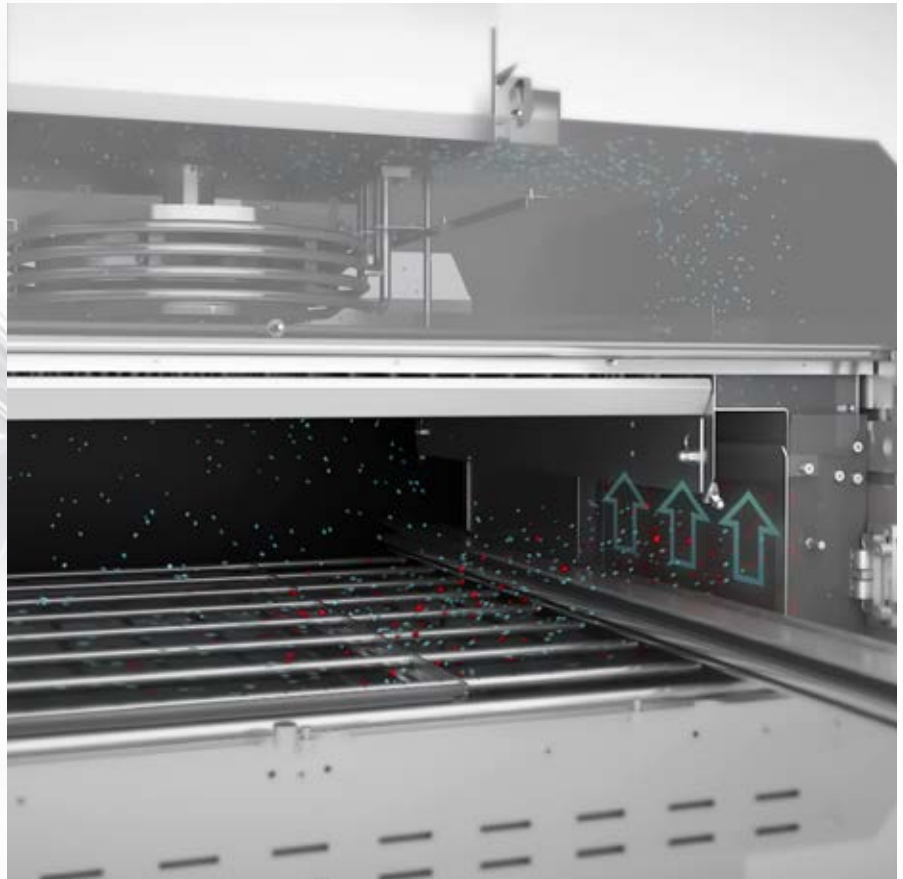


Illustration of the operating principle of Erska SMART ELEMENTS® process gas purification





View of the preheating zone of the SMART ELEMENTS® cassettes, which are attached to the side of the efficient Erska process gas cleaning system.


**SMART ELEMENTS® Process Gas Purification:**


The granulate-based SMART ELEMENTS® system absorbs contamination highly efficiently and extends operating times by reducing maintenance. The easily accessible design minimizes maintenance times and maximizes productivity. The system thus ensures consistent process quality with reduced operating costs.




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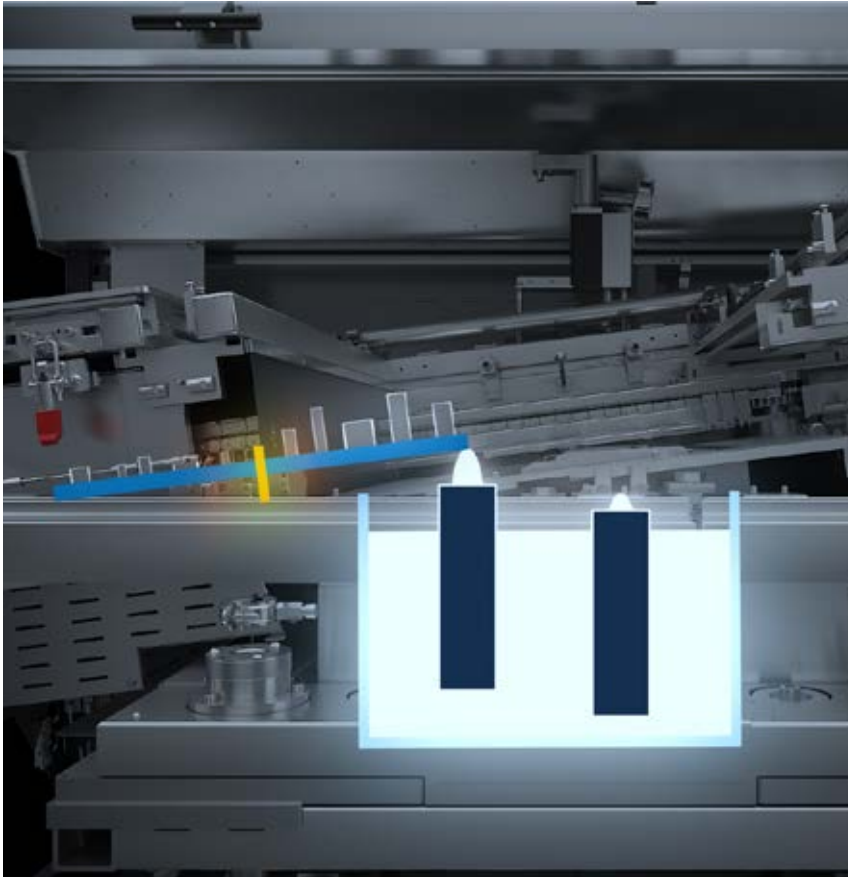
**Soldering module with dynamic Z-axis & sequential soldering**
- 

**SMART WAVE GUARD for precise wave height adjustment**
- 

**Heavy-duty conveyor up to 25 kg**
- 

**Highly efficient SMART ELEMENTS® Process gas purification**
- 

**Energy savings through hybrid heating and SMART IR RADIATION**



### Dynamic Z-axis and sequential soldering 2.0:

In future electronics production, more and more power electronics and digital components will be combined within the same product.

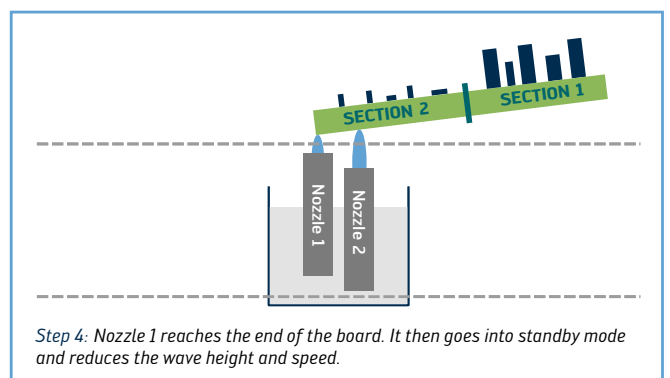
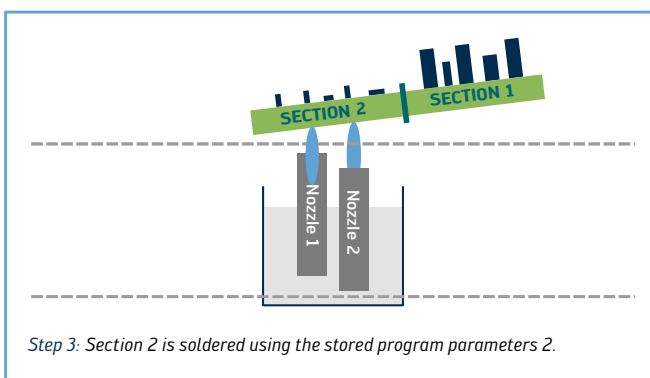
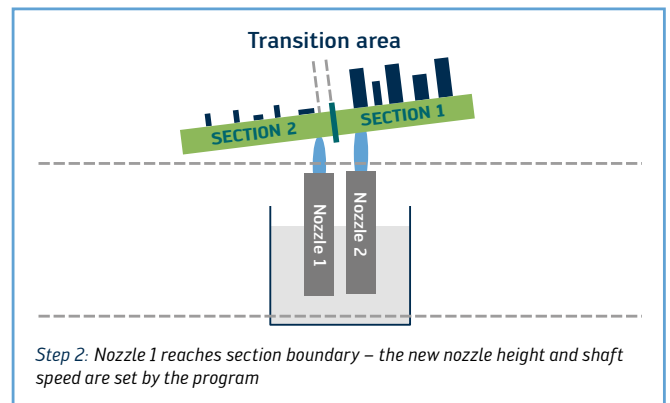
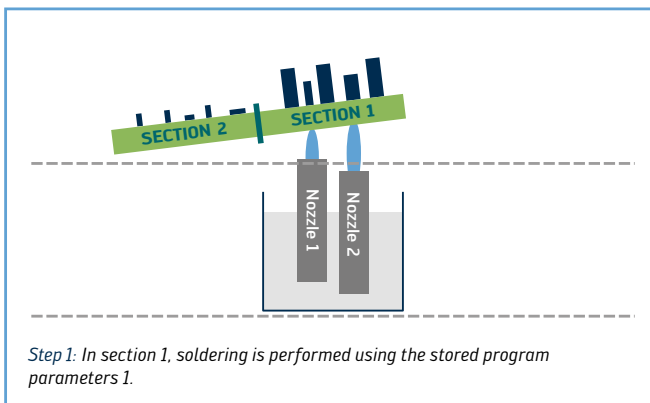
This makes it necessary to adjust the distance between the nozzles and the circuit board individually for each product, as well as being able to specify different distances within a product. The POWERFLOW FIVE features new dynamic Z-axis control for sequential soldering 2.0. The new Z-axis allows distances between the waveformer and flat assembly of 5–18 mm. The second waveformer is also independently adjustable in height.

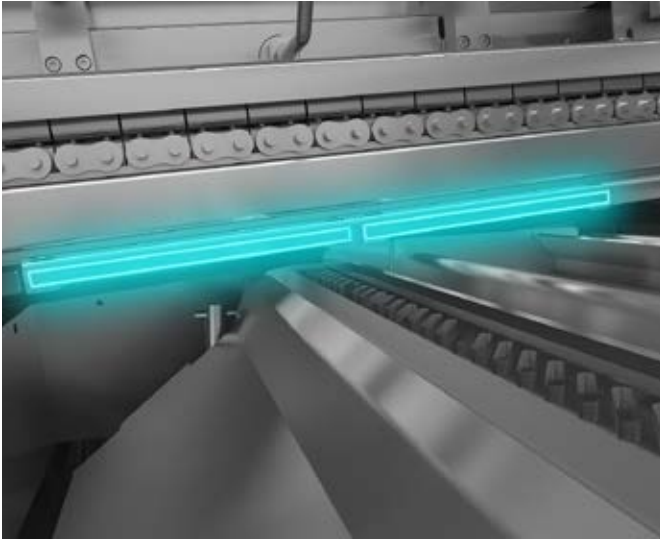
All settings are conveniently made via the operating software. The independent nozzle adjustment dynamically adapts to different requirements.

With an accuracy of 0.1 mm and 10 individually controllable sections, sequential soldering 2.0 guarantees perfect solder joints for even the most complex mixed technology assemblies.

### Sequential soldering 2.0

- 5–18 mm nozzle height adjustment
- Travel speed of 5 mm/s
- Component clearance from below up to 18 mm





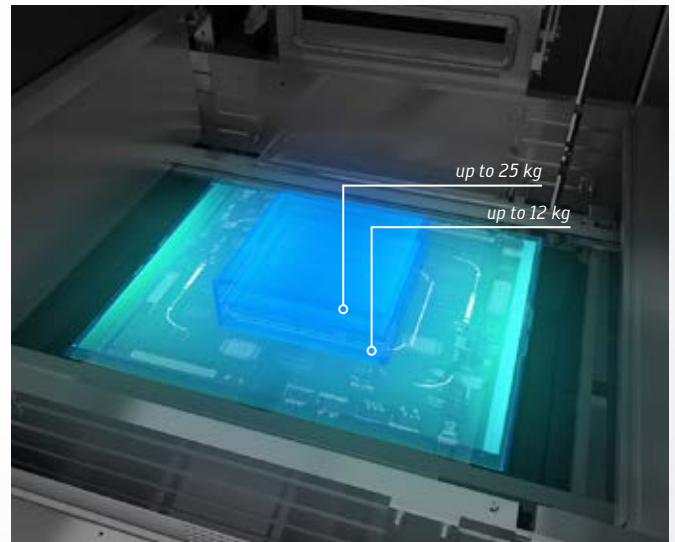
Automatic solder wave height control and adjustment ensures reproducible soldering quality with minimal scrap rates.

#### SMART WAVE GUARD wave height control and adjustment

The soldering module enables 1.5 million maintenance-free strokes, guaranteeing maximum availability. To maintain a constant wave height, the POWERFLOW FIVE features new measurement technology that regularly checks the soldering wave height and automatically adjusts the solder overflow if necessary. This ensures uniform wetting and constant pressure at the nozzle outlet.

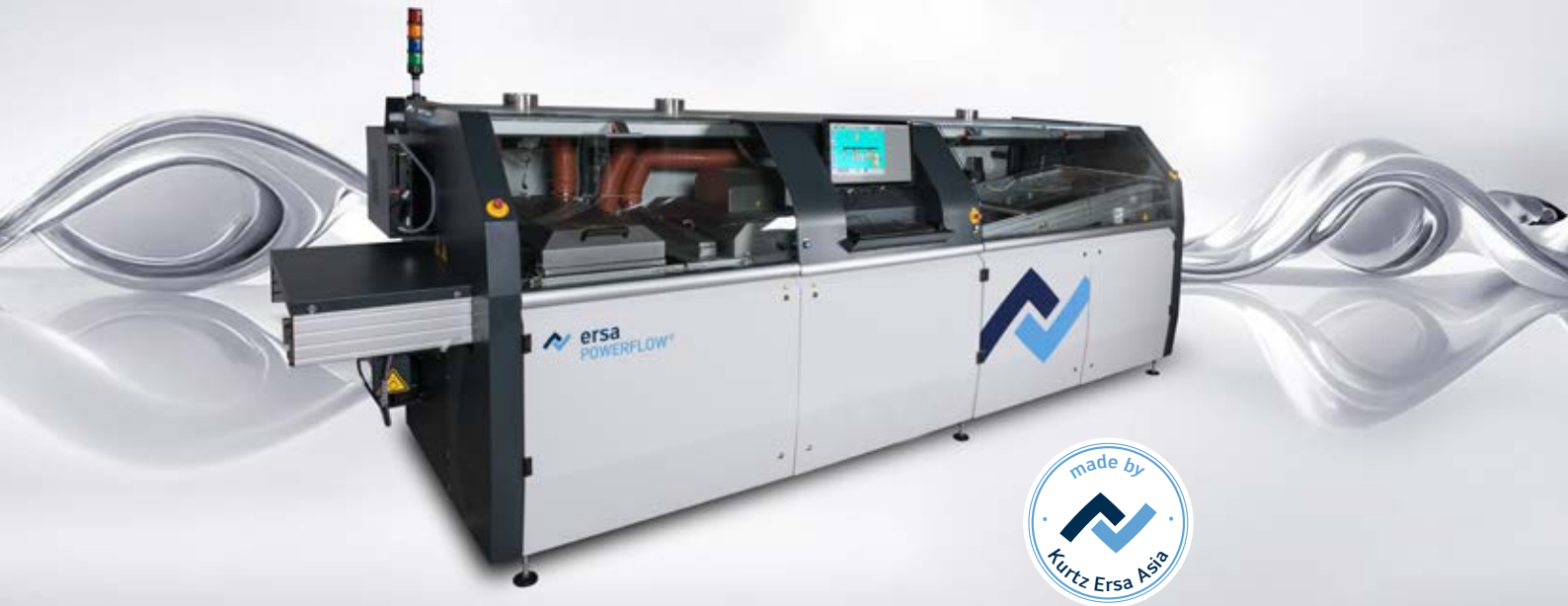
#### Heavy-duty conveyor

To cover the expanded range of applications, the POWERFLOW FIVE features a new heavy-duty conveyor system that safely transports printed circuit boards weighing up to 25 kg. The design is geared toward long maintenance intervals, while wear parts can be replaced quickly and easily.



Two versions for 12 or 25 kg





## Powerful wave soldering system with flexible solder bath technology

### Ersa POWERFLOW

The Ersas POWERFLOW is a modern wave soldering system based on proven components from the POWERFLOW series. With a maximum working width of 508 mm, this system offers excellent price-performance ratio and ensures the highest quality standards through stable processes and reproducible parameters. The proven Ersas dual wave soldering technology with a user-friendly soldering unit offers maximum process stability for your production requirements.

#### Basic configuration:

- Consistent, complete lead-free capability and resistance to VOC-free, water-based flux
- Precise spray fluxer with motorized axis drive and 25 l storage facility
- Finger conveyor with 508 mm working width 1,800 mm preheating
- Modern control concept
- Easy operation via desktop PC or touchscreen (optional)
- Continuous monitoring of all relevant soldering parameters
- Standard nozzle combination: Arc nozzle (item 1) and laminar nozzle (item 2)
- Intermediate heating module

#### Highlights:

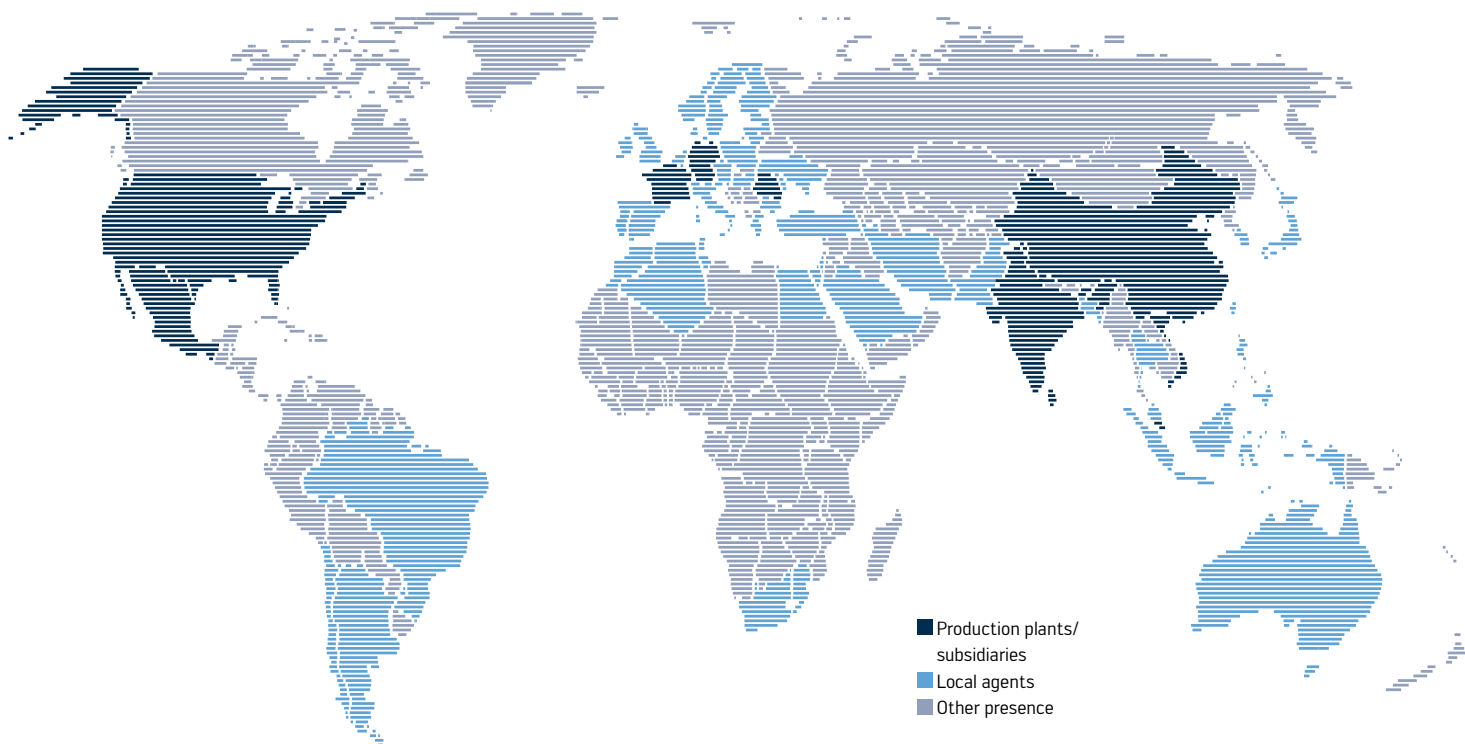
- Compact nitrogen tunnel
- External or integrated fluxer
- Multi-functional exit module with PCB cooling and process gas cleaning
- Spray fluxer with intelligent spray pattern programming
- Modular, flexible, and individually expandable preheating concept with convection and radiant heating; variable configuration in terms of length and power (can also be retrofitted)
- Motorized height adjustment of the solder nozzles
- Long wetting sequence
- Extremely stable wave height (up to 16 mm)
- 3 nozzle combinations for every requirement
- Optional interchangeable pot concepts
- Sequential soldering
- Automatic production with code operation possible
- Ready for traceability

further information



# ELECTRONICS PRODUCTION EQUIPMENT

Worldwide presence



## USA

Kurtz Ersa, Inc.  
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