

ZSW[®]

EVOL SERIES WAVE SOLDERING

Smart innovation brings the evolution of wave soldering process to the next level.



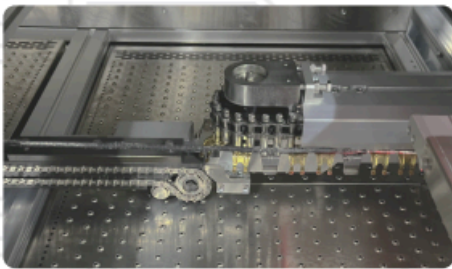
- ⚙️ **Evolution** of wave soldering machine concept
- ⚙️ Extended process window
- ⚙️ Independently controlled conveyors
- ⚙️ Automatic recipe switching and model changeover
- ⚙️ Selective spray fluxing
- ⚙️ Industry 4.0 ready & 24/7 full traceability



3-Stage Independent Conveyor System

Optimum Settings for Desirable Result

- ⚙ Traditional wave soldering makes fine-tuning tricky, as each setting adjustment impacts one another
- ⚙ In modern wave soldering machines (EVOL Series), different conveyor speed can be set at each stage
- ⚙ Quick and easy to optimize the setting at each module to get the best result
- ⚙ Provides wide process window due to individual control



INDEPENDENT CONVEYOR SYSTEM

With the individual conveyor speed control, EVOL Series wave soldering makes parameters refinement effortless and precise at each stage. For instance, adjustment in soldering zone won't affect fluxing or preheating, ensuring a wider process window for maximum production efficiency.

Better Flux Penetration

- ⚙ Conveyor at spray fluxer module can be horizontal with no inclined angle
- ⚙ Results in better flux penetration to the plated through holes
- ⚙ Ensures complete wetting and stronger solder joints

Elimination of Fire Hazard

- ⚙ No flux residues on spray fluxer module conveyor will be carried forward to other modules
- ⚙ Soldering module finger cleaning system comes with brush, no solvent needed to remove flux residue
- ⚙ No more fire hazard in preheating and soldering modules
- ⚙ Safer, cleaner and easier for maintenance

Improved Stability with Minimum Vibration

- ⚙ Finger conveyor is used at soldering module only
- ⚙ About 240 fingers in total only (~60% lesser than the traditional wave soldering machines)
- ⚙ Minimum conveyor vibration and better stability for consistent soldering quality

Longer Lifespan

- ⚙ Durable chain conveyors are used at spray fluxer and preheating modules
- ⚙ Fewer fingers give a longer-lasting conveyor system
- ⚙ Reduced maintenance needs and less consumables

HEAVY-DUTY FINGERS

Flexible combinations (V / L / 1V+1L / 2V+1L) support diverse production modes, whether running products in boards or using pallets.



Automatic Recipe / Model Switching

Shorter Machine Downtime

- ⚙️ Code reading for automatic recipe switching
- ⚙️ Automatic recipe switch: Flux spray path and wave height are adjusted automatically according to the recipe in mixed production mode
- ⚙️ Automatic model changeover: All parameters, including solder pot height will be adjusted automatically after selecting the desired model
- ⚙️ Increases machine flexibility and uptime



BARCODE READING SYSTEM

EVOL Series automatically adjusts fluxing path and wave height based on recipe settings once the barcode is detected. This smart automation supports seamless mixed production, minimizes operator intervention and reduces machine downtime, ensuring smooth production flow.

Selective Fluxing

Minimum Flux Consumption

- ⚙️ Selective area flux spray targets only where needed, reducing flux consumption and keeping boards clean.
- ⚙️ Upgradable to Z-Select-W ultrasonic selective fluxing nozzle (Optional)
- ⚙️ Z-Select-W ultrasonic nozzle - OEM by Sono-Tek (Optional)
 - Sauna infiltration effect (Excellent flux penetration to improve PTH top side fill)
 - Elimination of spattering from drop jet, and overspray from air atomizer
 - Nature of nozzle self-cleaning (Never clogs)
- ⚙️ Huge flux saving, cleaner chamber and better soldering result



SELECTIVE FLUXING

Selective fluxing with USA spray nozzle achieves significant reduction in flux consumption and delivers cleaner product compared to the traditional full-spray fluxing, saving flux and eliminates unnecessary cleaning costs.

SONO-TEK ULTRASONIC FLUXING Z-SELECT-W (OPTIONAL)

Sono-Tek ultrasonic fluxing nozzle gives ultra-fine spraying and superior through-hole penetration. The upgrade eliminates spattering and overspray, cuts flux usage up to 60% and ensures consistently excellent soldering results.



OPTIMIZED
PRODUCTION OUTPUT



ASSURED
OPERATIONAL SAFETY

Specification

MODEL	EVOL-350	EVOL-350N	EVOL-510	EVOL-510N	EVOL-610	EVOL-610N
GENERAL						
Dimensions: L x W x H	4,985 x 1,743 x 2,143 mm		4,985 x 2,003 x 2,143 mm			
Weight	Approx. 2,000 kg					
Control system	PC (Windows 11 Pro) + PLC					
Exhaust flowrate	Fluxing zone: $\geq 30 \text{ m}^3/\text{min}$ x 1 pcs; Preheating & soldering zones: 15 - 20 m^3/min x 3 pcs					
Exhaust opening diameter	200 mm					
Power supply	3 phase 5 wire, 380 V AC, 50/60 Hz 125 A					
Power requirement	45 kW		50 kW		50 kW	
Normal operating power	12 kW		15 kW		15 kW	
Compressed air requirement	0.4 - 0.8 MPa					
CONVEYOR SYSTEM						
Max. board size: L x W	600 x 350 mm		600 x 510 mm		600 x 610 mm	
Board clearance	Top: 120 mm (Option: 150 mm) ; Bottom: 16 mm					
Edge clearance	5 mm					
Conveyor type	Fluxing & preheating zones: Chain; Soldering zone: Finger					
Finger type	Heavy-duty V or L or 1V+1L or 2V+1L combination					
Conveyor speed	600 - 1,800 mm/min					
Conveyor angle	5.5°					
Conveyor direction	Left to right (Option: Right to left)					
Conveyor height	Entrance: 780 $\pm$ 20 mm (With casters) / 750 $\pm$ 20 mm (Without casters) Exit: 1,097 $\pm$ 20 mm (With casters) / 1,065 $\pm$ 20 mm (Without casters)					
Conveyor adjustable width	100 - 350 mm		100 - 510 mm		100 - 610 mm	
FLUXING SYSTEM						
Spraying height	70 - 90 mm					
Spraying stroke: X x Y	130 x 350 mm		130 x 510 mm		130 x 610 mm	
Positioning repeatability	± 0.2 mm					
Flux flowrate	6 - 60 mL/min (Manual adjustment)					
Flux tank capacity	3 L					
PREHEATING SYSTEM						
Preheating mode	Hot air convection (Blower fan)					
Number of preheating zones	3 bottom					
Total length of preheating zones	1,800 mm					
Preheating temperature range	Room temperature - 280°C					
Temperature control system	PID + SSR					
SOLDERING SYSTEM						
Solder pot type	Mechanical pump					
Solder pot capacity	600 $\pm$ 30 kg (Lead-free)		690 $\pm$ 30 kg (Lead-free)		740 $\pm$ 30 kg (Lead-free)	
Solder pot operating temperature	Max. 300°C					
Solder pot warm-up time	180 minutes (Set temp.: 260°C)		210 minutes (Set temp.: 260°C)		210 minutes (Set temp.: 260°C)	
Temperature control system	PID + SSR					
Wave driving power	1/2 HP x 2 (3 phase 220 VAC)		1 HP x 2 (3 phase 220 VAC)		1 HP x 2 (3 phase 220 VAC)	
NITROGEN SYSTEM						
Nitrogen consumption (To achieve ≤ 100 ppm)	N/A	12 m^3/h	N/A	15 m^3/h	N/A	15 m^3/h
Nitrogen source requirement	N/A	0.5 - 0.8 MPa, ≤ 10 ppm	N/A	0.5 - 0.8 MPa, ≤ 10 ppm	N/A	0.5 - 0.8 MPa, ≤ 10 ppm
STANDARD FEATURES						
Selective area flux application with 1 spray nozzle (Made in USA)						
Double wave soldering						
Titanium alloy solder pot (With 5-year warranty on leakage)						
Heavy-duty fingers						
Solder level detection & alarm						
Automatic solder pot height adjustment						
Motorized solder pot in & out						
Automatic conveyor width adjustment						
Code reading function for automatic program switching						
Fixed type code reader						
Uninterrupted power supply (UPS)						
OPTIONAL FEATURES						
Upgrade to Sono-Tek selective ultrasonic spray fluxer (Z-Select-W)						
Automatic flux flowrate adjustment (Adjustable range becomes 5 - 100 mL/min)						
Real-time fluxer blockage detection & alarm (Not applicable if Z-Select-W is selected)						
Top preheater (Hot air convection [Blower fan])						
Upgrade to 4 bottom preheating zones						
Solder pot center board support (CBS)						
Spare solder pot						
Oxygen analyzer (For N_2 models)						
External air cooler						
External 3-phase transformer						
MES customization (i4.0)						
KIC multi-speed WPI - Essential						



CONTACT

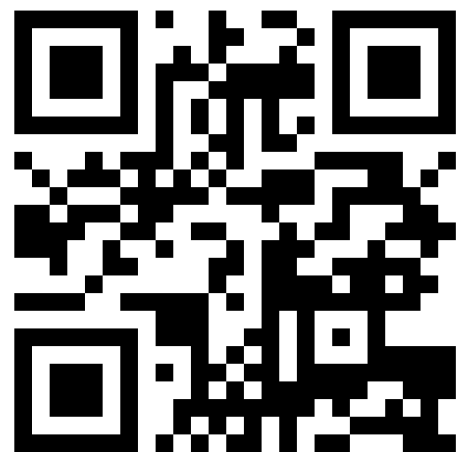


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