SMIC
SENJU METAL INDUSTRY CO., LTD.

SMIC
FA MACHINES
CATALOG

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Important Notice Regarding Counterfeit Products:
We have confirmed that various counterfeit soldering products that are imitations of our company's products are being sold primarily outside Japan. Please purchase only from our group companies or authorized dealers.

983E-2603-2000

Soldering Value for the Future.

Senju Metal Industry is about making connections – beyond substrates and components.

Connecting challenge with achievement.
Connecting innovation with peace of mind.
Connecting functions with the environment.
Connecting Japan with the world.

Since our founding in 1938, starting with creating "joints" we have supported the birth of new technologies across all fields — electronic and electrical equipment, semiconductors, automobiles, and more — contributing to the development of industry and society. We continue to challenge ourselves to connect wisdom and technology to create new values.

One such example is our pioneering development of lead-free solder. We initiated research and development early into soldering materials demanded by the needs of the times, providing solutions that provided value to create a better society. These include enhancing reliability, meeting ultra-precision requirements, and offering environmentally conscious products aligned with our carbon neutrality goals.

Moving forward, Senju Metal Industry pledges to continue creating new value essential for next-generation manufacturing — from groundbreaking new bonding materials to high-performance heat dissipation materials — expanding beyond soldering materials alone. We are committed to connecting a comfortable present with a prosperous future.

SMIC FA MACHINES CATALOG

Soldering systems for diverse assembly needs

REFLOW OVEN

For component assembly

A state-of-the-art, energy-saving reflow oven that enables reduced N_2 usage and power consumption
SNR-GTⅡ Series N_2 ········ ▶P05

Dual-lane design for diverse production configurations
SNR-GTⅡ-D Series N_2 ········ ▶P07

Air reflow oven backed by years of accumulated expertise
SAR-825GT Air ········ ▶P08

Standard model with enhanced basic functions
SNR-GT Series N_2 ········ ▶P09

Independent chambers enable flexible production conditions
SNR-GT-W Series N_2 ········ ▶P10

For high-temperature soldering

Industry-leading 420°C ultra-high temperature capability
SNR-GT-H Series N_2 ········ ▶P11

For semiconductors

Precision airflow control for micro-bump formation
SNR-GT-B Series N_2 ········ ▶P12

Vacuum control reduces voids and spatter
SVR-625GT-C N_2 ········ ▶P13

Hybrid model with switchable vacuum and reflow modes
SVR-1040GT-PC N_2 ········ ▶P14

FLOW SOLDERING MACHINE

Wave soldering

Laminar flow wave technology for superior soldering quality
ECOPASCAL SPF2 Series Air ········ ▶P21

High quality ensured in N_2 atmosphere
ECOPASCAL SPF2-N Series N_2 ········ ▶P22

Spray fluxer

Superior operability and long-term application stability
SSF2 Series ········ ▶P25

Solder recycling machine

Efficiently recovers solder from dross
SDS2-5N ········ ▶P26

Dip soldering

Maintains stable flow wave even with multiple nozzles
SOLZEUS MPF-2077ST Air ········ ▶P27

Supports inline production with a space-saving design
SOLZEUS MPF-2003ST Air ········ ▶P28

Internal heat circulation ensures superior quality
SOLZEUS LPD Series Air ········ ▶P29

Supports large boards and long-lead components
SOLZEUS LPF Series Air ········ ▶P30

MILATERA

Wave soldering

Contributes to reduced CO_2 emissions
BITHUS-Wave MTF Series Air ········ ▶P33

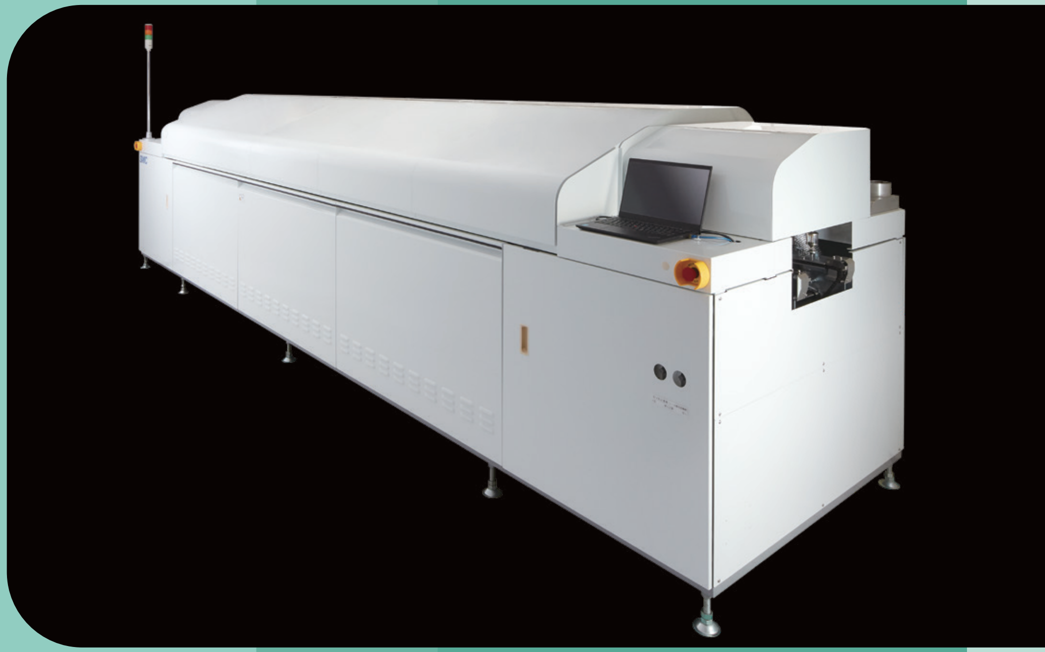
Flux dissolution unit

Solves the challenges of liquid flux
Flux mixing machine
MTM-4L・TABLUX ········ ▶P34

Ensures reliable fine-component soldering with advanced temperature control

REFLOW OVEN

This equipment bonds electronic components onto PCBs printed with solder paste by heating and cooling them according to a controlled thermal profile. As a core system in Surface Mount Technology (SMT), it achieves stable soldering quality through high-precision temperature control that accommodates miniaturization and high-density packaging.



N_2 Reflow Oven

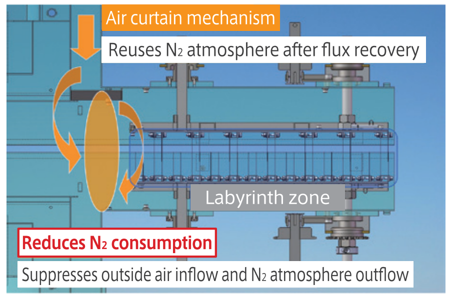
SNR-GTⅡ Series

- ■ Reduces N_2 consumption by approximately 50%.*
- ■ Unique flux recovery mechanism with superior maintainability.
- ■ Reduces power consumption by approximately 10%.*

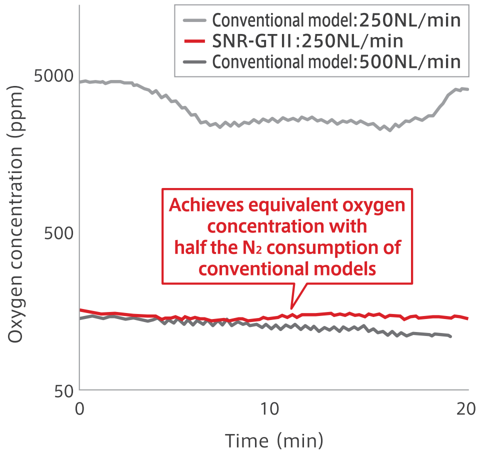
*Compared to our conventional models

Reduces N_2 consumption by approximately 50%

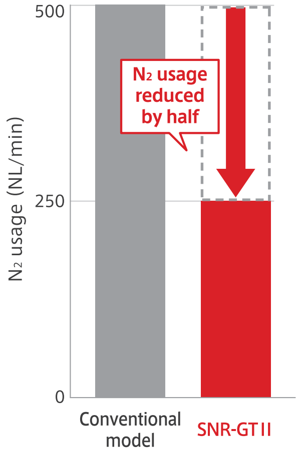
The labyrinth zone at the device inlet/outlet suppresses outside air inflow, effectively maintaining the oven atmosphere. Furthermore, by efficiently circulating and reusing the oven atmosphere, N_2 usage is reduced by approximately 50% (compared to our conventional models).



■ Atmosphere stability

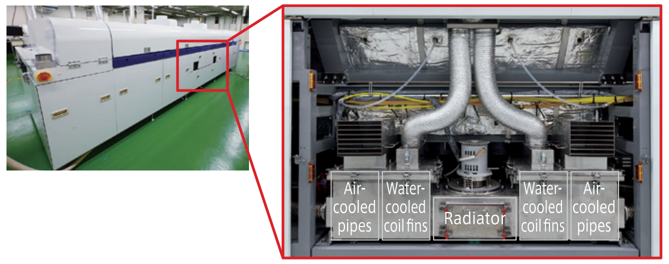


■ N_2 usage



Unique flux recovery mechanism with superior maintainability

The rear of the machine is equipped with a detachable flux recovery system. Our unique system, developed with our expert knowledge of the characteristics of soldering materials, achieves superior flux recovery efficiency. Furthermore, tool-free disassembly and cleaning are possible in a short time, which significantly reduces maintenance time.



Chiller unit

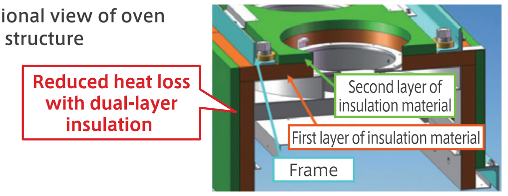
■ Paste usage/month

	Radiator	Water-cooled coil fins	Air-cooled pipes	Chiller unit
Under 60 kg			●	
60 to 80 kg		●	●	●
Over 80 kg	●	●	●	●

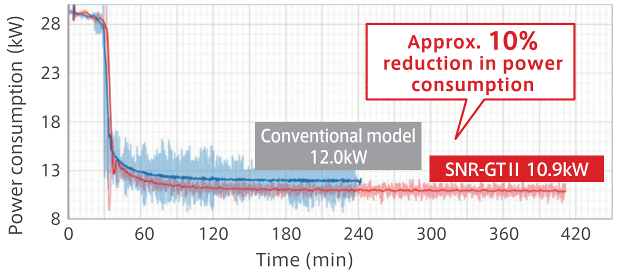
Reduces power consumption by approximately 10%*

Enhanced thermal insulation via a dual-layer structure minimizes heat loss. Combined with a redesigned internal flow path for smoother atmosphere circulation, this system cuts power consumption by approximately 10%.

■ Cross-sectional view of oven insulation structure



■ Power consumption comparison (as of December 16, 2020)

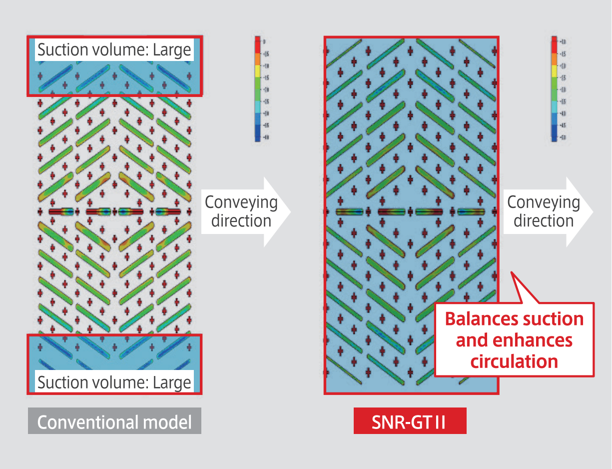


*Compared to our conventional models

Uniform suction and enhanced circulation efficiency

Strategic suction duct placement and optimized apertures ensure balanced flow and superior circulation efficiency.

■ Suction volume simulation results



		SNR-825GT II	SNR-840GT II	SNR-850GT II
Oven dimensions (L×W×H)		5,300 × 1,300 × 1,420 mm	5,700 × 1,550 × 1,420 mm	5,700 × 1,550 × 1,420 mm
Conveyor height from floor		900±20 mm	900±20 mm	900±20 mm
Conveying speed		0.3 - 2.0 m/min	0.3 - 2.0 m/min	0.3 - 2.0 m/min
Target board dimensions		W: 50 - 250, L: 100 - 400, T: 0.8 - 3.0 mm	W: 50 - 400, L: 100 - 500, T: 0.8 - 3.0 mm	W: 50 - 500, L: 100 - 500, T: 0.8 - 3.0 mm
Component height		≦30mm [OP: 35mm], ≧25mm	≦30mm [OP: 35mm], ≧25mm	≦30mm [OP: 35mm], ≧25mm
Heating section		8	8	8
Cooling section		2	2	2
Side edge clearance (Selectable)		3 or 4 or 5 mm	3 or 4 or 5 mm	3 or 4 or 5 mm
N_2 gas supply		≧99.999%, ≧0.4MPaG, max. 400NL/min	≧99.999%, ≧0.4MPaG, max. 600NL/min	≧99.999%, ≧0.4MPaG, max. 600NL/min
N_2 gas actual flow rate guideline	Component height/STD:≦30mm, ≧25mm	250 NL/min	400 NL/min	450 NL/min
	Component height/OP :≦15mm, ≧10mm	150 NL/min	210 NL/min	250 NL/min
Power supply		200V, max. 38kW, 110A, 3-phase	200V, max. 47kW, 135A, 3-phase	200V, max. 47kW, 135A, 3-phase

		SNR-1025GT II	SNR-1040GT II	SNR-1050GT II
Oven dimensions (L×W×H)		6,000 × 1,300 × 1,420 mm	6,400 × 1,550 × 1,420 mm	6,400 × 1,550 × 1,420 mm
Conveyor height from floor		900±20 mm	900±20 mm	900±20 mm
Conveying speed		0.3 - 2.0 m/min	0.3 - 2.0 m/min	0.3 - 2.0 m/min
Target board dimensions		W: 50 - 250, L: 100 - 400, T: 0.8 - 3.0 mm	W: 50 - 400, L: 100 - 500, T: 0.8 - 3.0 mm	W: 50 - 500, L: 100 - 500, T: 0.8 - 3.0 mm
Component height		≦30mm [OP: 35mm], ≧25mm	≦30mm [OP: 35mm], ≧25mm	≦30mm [OP: 35mm], ≧25mm
Heating section		10	10	10
Cooling section		2	2	2
Side edge clearance (Selectable)		3 or 4 or 5 mm	3 or 4 or 5 mm	3 or 4 or 5 mm
N_2 gas supply		≧99.999%, ≧0.4MPaG, max. 400NL/min	≧99.999%, ≧0.4MPaG, max. 600NL/min	≧99.999%, ≧0.4MPaG, max. 600NL/min
N_2 gas actual flow rate guideline	Component height/STD:≦30mm, ≧25mm	280 NL/min	430 NL/min	480 NL/min
	Component height/OP :≦15mm, ≧10mm	180 NL/min	280 NL/min	280 NL/min
Power supply		200V, max. 47kW, 135A, 3-phase	200V, max. 62kW, 200A, 3-phase	200V, max. 62kW, 200A, 3-phase

		SNR-1225GT II	SNR-1240GT II	SNR-1250GT II
Oven dimensions (L×W×H)		6,730 × 1,300 × 1,420 mm	7,130 × 1,550 × 1,420 mm	7,130×1,550×1,420 mm
Conveyor height from floor		900±20 mm	900±20 mm	900±20 mm
Conveying speed		0.3 - 2.0 m/min	0.3 - 2.0 m/min	0.3 - 2.0 m/min
Target board dimensions		W: 50 - 250, L: 100 - 400, T: 0.8 - 3.0 mm	W: 50 - 400, L: 100 - 500, T: 0.8 - 3.0 mm	W: 50 - 500, L: 100 - 500, T: 0.8 - 3.0 mm
Component height		≦30mm [OP: 35mm], ≧25mm	≦30mm [OP: 35mm], ≧25mm	≦30mm [OP: 35mm], ≧25mm
Heating section		12	12	12
Cooling section		2	2	2
Side edge clearance (Selectable)		3 or 4 or 5 mm	3 or 4 or 5 mm	3 or 4 or 5 mm
N_2 gas supply		≧99.999%, ≧0.4MPaG, max. 400NL/min	≧99.999%, ≧0.4MPaG, max. 600NL/min	≧99.999%, ≧0.4MPaG, max. 600NL/min
N_2 gas actual flow rate guideline	Component height/STD:≦30mm, ≧25mm	300 NL/min	450 NL/min	500 NL/min
	Component height/OP :≦15mm, ≧10mm	200 NL/min	260 NL/min	300 NL/min
Power supply		200V, max. 47kW, 135A, 3-phase	200V, max. 62kW, 200A, 3-phase	200V, max. 62kW, 200A, 3-phase

*N_2 gas supply volume and electrical consumption are reference values for standard specifications. For details, please contact our sales representative.

N_2 Reflow Oven, Dual-Lane Type

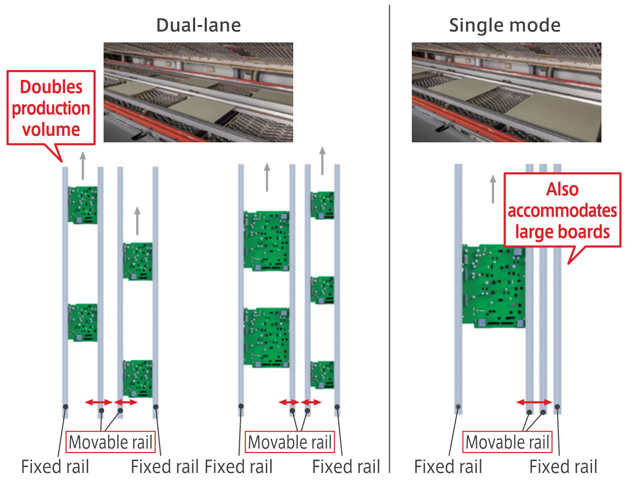
SNR-GTⅡ-D Series

- Independent dual-lane conveyer control accommodates diverse production configurations.
- New dual-side opening mechanism enhances maintenance efficiency.
- Effectively reduces installation footprint.

Dual-lane independent control conveying adapts to diverse production configurations

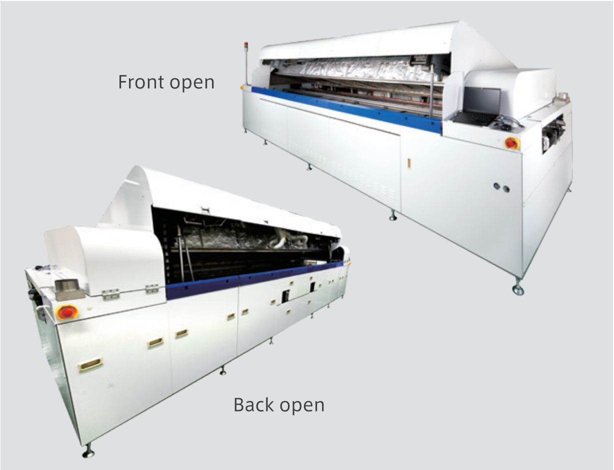
Utilizes an independent lane control mechanism capable of handling everything from large PCBs to dual-lane processing of different sizes. By allowing individual adjustment of rail widths and conveyor speeds for each lane, the system offers the ultimate flexibility for high-mix, variable-volume production.

■ SNR-GT II -D conveyor example image



New dual-side opening mechanism enhances maintenance efficiency

Newly developed mechanism allows separate opening of the front and rear panels. This significantly improves accessibility for maintenance of the rear area, which was previously difficult to work on.



		SNR-830GT II -D
Oven dimensions (L×W×H)		6,000 × 1,830 × 1,460 mm
Conveyor height from floor		900±20 mm
Conveying speed		0.3 - 2.0 m/min
Target board dimensions	Dual ∗Dual 300 mm width	W: 50 - 300 × 2 lanes, L: 100 - 400, T: 0.8 - 3.0 mm
	Single	W: 300.1 - 590 × 1 lane, L: 100 - 400, T: 0.8 - 3.0 mm
Component height		≦30mm[OP:35mm], ≧25mm
Heating section		8
Cooling section		2
Side edge clearance		5 mm
N_2 gas supply		≧99.999%, ≧0.4MPaG, max. 700NL/min
N_2 gas actual flow rate guideline	Component height/STD:≦30mm, ≧25mm	600 NL/min
Power supply		200V, max. 62kW, 180A, 3-phase

		SNR-1030GT II -D	SNR-1230GT II -D
Oven dimensions (L×W×H)		6,700 × 1,830 × 1,460 mm	7,460 × 1,830 × 1,460 mm
Conveyor height from floor		900±20 mm	900±20 mm
Conveying speed		0.3 - 2.0 m/min	0.3 - 2.0 m/min
Target board dimensions	Dual ∗Dual 300 mm width	W: 50 - 300 × 2 lanes, L: 100 - 400, T: 0.8 - 3.0 mm	W: 50 - 300 × 2 lanes, L: 100 - 400, T: 0.8 - 3.0 mm
	Single	W: 300.1 - 590 × 1 lane, L: 100 - 400, T: 0.8 - 3.0 mm	W: 300.1 - 590 × 1 lane, L: 100 - 400, T: 0.8 - 3.0 mm
Component height		≦30mm[OP:35mm], ≧25mm	≦30mm[OP:35mm], ≧25mm
Heating section		10	12
Cooling section		2	2
Side edge clearance		5 mm	5 mm
N_2 gas supply		≧99.999%, ≧0.4MPaG, max. 700NL/min	≧99.999%, ≧0.4MPaG, max. 700NL/min
N_2 gas actual flow rate guideline	Component height/STD:≦30mm, ≧25mm	630 NL/min	650 NL/min
Power supply		200V, max. 62kW, 180A, 3-phase	200V, max. 62kW, 225A, 3-phase

∗N_2 gas supply volume and electrical consumption are reference values for standard specifications. For details, please contact our sales representative.

Air Reflow Oven

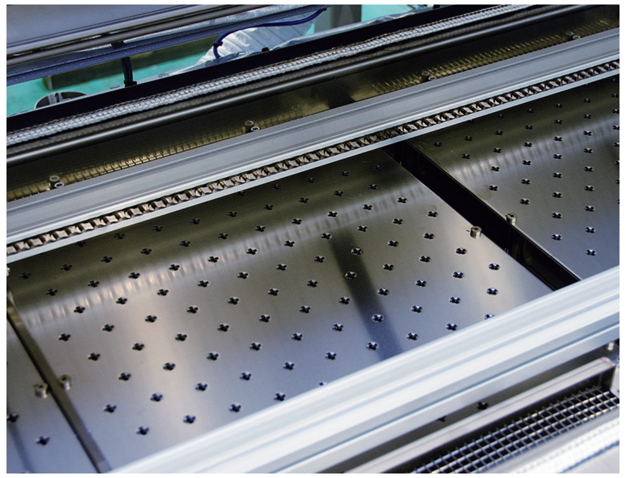
SAR-825GT

- Provides superior heating performance using our proprietary technology.
- Features a unique flux recovery mechanism for air ovens.
- Can also be used as an adhesive curing oven.

Provides superior heating performance using our proprietary technology

Our uniquely developed cross nozzle design improves the linearity of the hot air flow and provides stable heating performance.

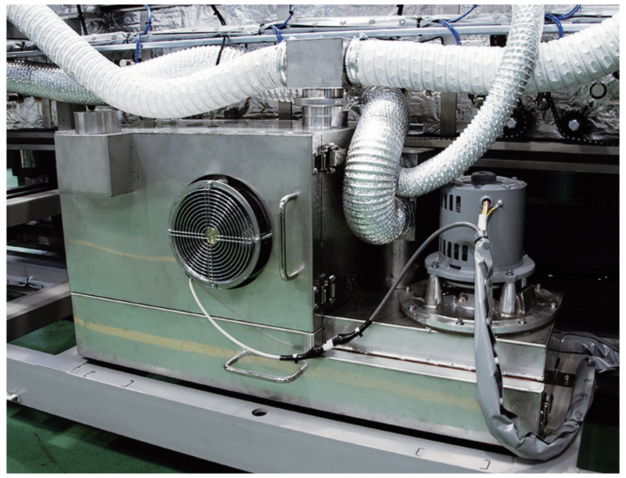
■ Cross nozzle heater



Features a unique flux recovery mechanism for air ovens

Equipped with a unique flux recovery mechanism for air ovens to effectively reduce oven contamination.

■ Heating section flux recovery mechanism



	SAR-825GT
Oven dimensions (L×W×H)	3,800 × 1,330 × 1,460 mm
Conveyor height from floor	900±20 mm
Conveying speed	0.3 - 2.0 m/min
Target board dimensions	W: 50 - 250, L: 100 - 400, T: 0.8 - 3.0 mm
Component height	≦35mm, ≧25mm
Heating section	8
Cooling section (Cross-flow fan system)	Top side: 2 fans, Bottom side: 1 fan
Side edge clearance (Selectable)	3 or 4 or 5 mm
Power supply	200V, max. 30kW, 90A, 3-phase

∗Electrical consumption is reference value for standard specifications. For details, please contact our sales representative.

N_2 Reflow Oven

SNR-GT Series

- Development of a cross nozzle design that provides superior heating performance.
- Achieves stable low oxygen concentration throughout all oven zones.
- Standard model with comprehensive basic functions.

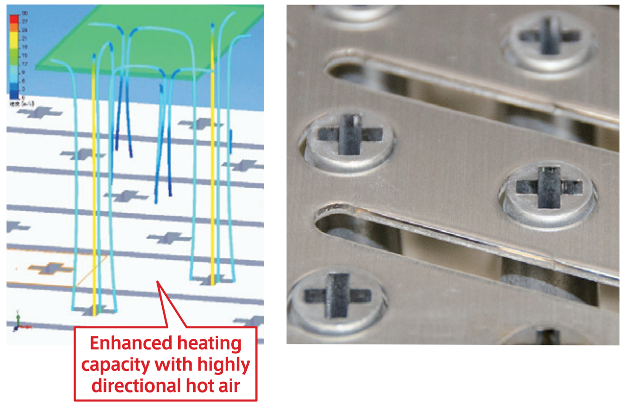
Development of a cross nozzle design that provides superior heating performance

A proprietary cross nozzle design provides superior hot-air linearity and high heating capacity, ensuring exceptionally stable thermal performance.

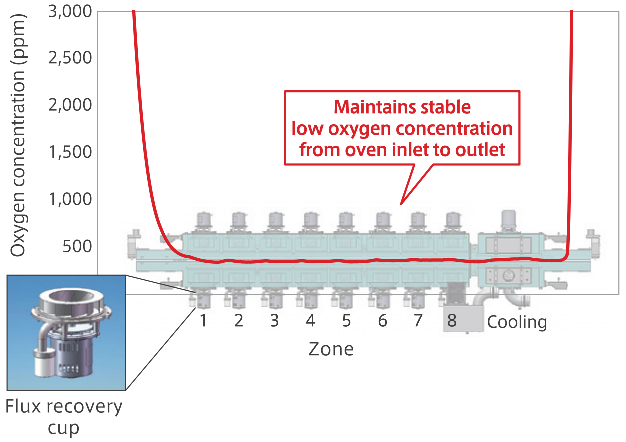
Achieves stable low oxygen concentration throughout all oven zones

Backed by extensive industry know-how, this established technology utilizes an optimized N_2 flow path to maintain a stable, low-oxygen atmosphere.

■ Cross nozzle design



■ Oxygen concentration profile



	SNR-725GT	SNR-745GT	SNR-1465GT-S
Oven dimensions (L×W×H)	3,000 × 1,326 × 1,430 mm	3,610 × 1,550 × 1,430mm	7,900 × 1,740 × 1,460mm
Conveyor height from floor	900±20 mm	900±20 mm	900±20 mm
Conveying speed	0.3 - 2.0 m/min	0.3 - 2.0 m/min	0.3 - 2.0 m/min
Target board dimensions	W: 50 - 250, L: 100 - 300, T: 0.8 - 3.0 mm	W: 50 - 450, L: 100 - 400, T: 0.8 - 3.0 mm	W: 50 - 650, L: 100 - 700, T: 0.8 - 3.0 mm
Component height	≦10mm [OP: 35mm], ≧5mm [OP: 25mm]	≦10mm [OP: 35mm], ≧5mm [OP: 25mm]	≦10mm [OP: 30mm], ≧5mm [OP: 25mm]
Heating section	7	7	14
Cooling section	1	1	2
Side edge clearance (Selectable)	3 or 4 or 5 mm	3 or 4 or 5 mm	3 or 4 or 5 mm
N_2 gas supply	≧99.999%, ≧0.4MPaG, max. 300NL/min	≧99.999%, ≧0.4MPaG, max. 600NL/min	≧99.999%, ≧0.4MPaG, max. 600NL/min
N_2 gas actual flow rate guideline — Component height/STD:≦10mm, ≧5mm	200 NL/min	250 NL/min	400 NL/min
Power supply	200V, max. 30kW, 90A, 3-phase	200V, max. 30kW, 90A, 3-phase	200V, max. 48kW, 200A, 3-phase

	SNR-720GT-D	SNR-830GT-D	SNR-1030GT-D
Oven dimensions (L×W×H)	3,610 × 1,590 × 1,430 mm	5,600 × 1,790 × 1,460 mm	6,800 × 1,790 × 1,460 mm
Conveyor height from floor	900±20 mm	900±20 mm	900±20 mm
Conveying speed	0.3 - 2.0 m/min	0.3 - 2.0 m/min	0.3 - 2.0 m/min
Target board dimensions — Dual	W: 50 - 200, L: 100 - 400, T: 0.8 - 3.0 mm × 2 lanes	W: 50 - 300, L: 100 - 400, T: 0.8 - 3.0 mm × 2 lanes	W: 50 - 300, L: 100 - 400, T: 0.8 - 3.0 mm × 2 lanes
Target board dimensions — Single	W: 200.1 - 350, L: 100 - 400, T: 0.8 - 3.0 mm × 1 lane	W: 300.1 - 590, L: 100 - 400, T: 0.8 - 3.0 mm × 1 lane	W: 300.1 - 590, L: 100 - 400, T: 0.8 - 3.0 mm × 1 lane
Component height	≦10mm [OP: 35mm], ≧5mm [OP: 25mm]	≦10mm [OP: 30mm], ≧5mm [OP: 25mm]	≦10mm [OP: 30mm], ≧5mm [OP: 25mm]
Heating section	7	8	10
Cooling section	1	1	2
Side edge clearance (Selectable)	3 or 4 or 5 mm	3 or 4 or 5 mm	3 or 4 or 5 mm
N_2 gas supply	≧99.999%, ≧0.4MPaG, max. 600NL/min	≧99.999%, ≧0.4MPaG, max. 600NL/min	≧99.999%, ≧0.4MPaG, max. 600NL/min
N_2 gas ac tual flow rate guideline — Component height/STD:≦10mm, ≧5mm	300 NL/min	500 NL/min	500 NL/min
Power supply	200V, max. 30kW, 90A, 3-phase	200V, max. 48kW, 140A, 3-phase	200V, max. 48kW, 140A, 3-phase

＊N_2 gas supply volume and electrical consumption are reference values for standard specifications. For details, please contact our sales representative.

N_2 Reflow Oven, Independent Double Chamber Type

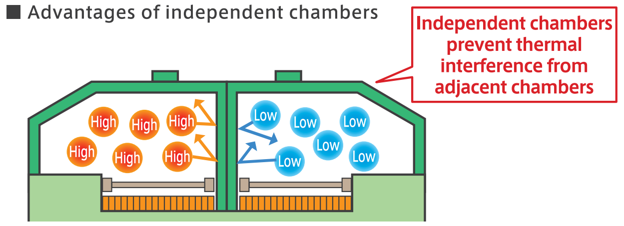
SNR-GT-W Series

- Independent chambers enable flexible condition settings.
- Enables maintenance on one lane at a time without halting production.
- Space-saving design for optimized floor utilization.

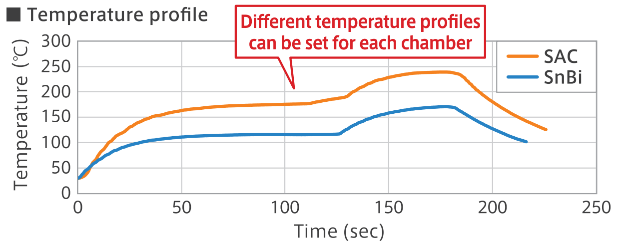
Independent chambers enable flexible condition settings

Independent dual-chamber design enables lane-specific condition settings. The system accommodates profiles with significant temperature differentials, such as the simultaneous processing of Sn-Ag-Cu and Sn-Bi low-temperature solder.

■ Advantages of independent chambers

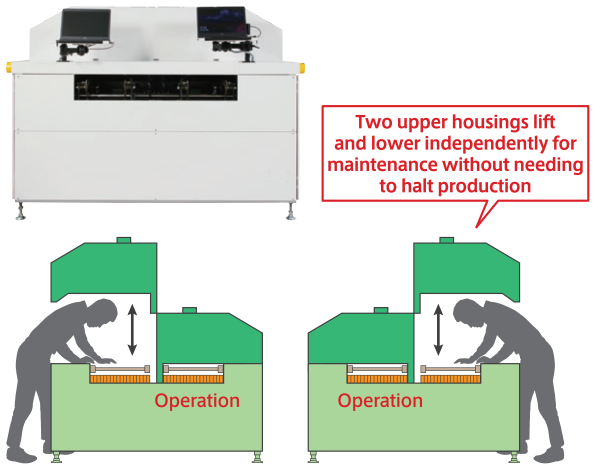


■ Temperature profile



Maintenance is possible on one side at a time without halting production

Maintenance on one chamber is possible while the other remains in production, which enables non-stop operation.



	SNR-830GT-W	SNR-1033GT-W
Oven dimensions (L×W×H)	6,000 × 1,930 × 1,474 mm	6,900 × 1,930 × 1,454 mm
Conveyor height from floor	900±20 mm	900±20 mm
Conveying speed	0.3 - 2.0 m/min	0.3 - 2.0 m/min
Target board dimensions	W: 50 - 300, L: 100 - 400, T: 0.8 - 3.0 mm × 2 lanes	W: 50 - 330, L: 100 - 400, T: 0.8 - 3.0 mm × 2 lanes
Component height	≦10mm [OP: 35mm], ≧5mm [OP: 25mm]	≦10mm [OP: 35mm], ≧5mm [OP: 25mm]
Heating section	8	10
Cooling section	1	1
Side edge clearance (Selectable)	3 or 4 or 5 mm	3 or 4 or 5 mm
N_2 gas supply	[≧99.999%, ≧0.4MPaG, max. 600NL/min] × 2	[≧99.999%, ≧0.4MPaG, max. 600NL/min] × 2
N_2 gas actual flow rate guideline — Component height/STD:≦10mm, ≧5mm	[250NL/min] × 2	[250NL/min] × 2
Power supply	[200V, max. 32kW, 90A, 3-phase] × 2	[200V, max. 48kW, 140A, 3-phase] × 2

＊N_2 gas supply volume and electrical consumption are reference values for standard specifications. For details, please contact our sales representative.

N_2 Reflow Oven, Ultra-High Temperature Type

SNR-GT-H Series

- Achieves industry-leading high-temperature profiles.
- Proven cross nozzle design provides outstanding heating performance.

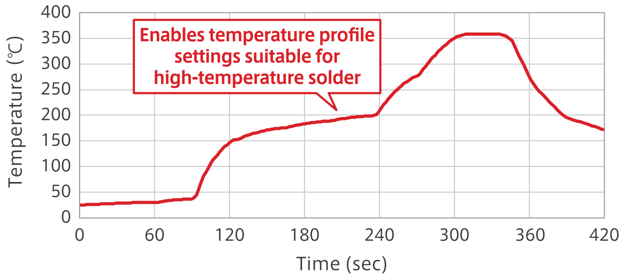
Achieves industry-leading high-temperature profiles

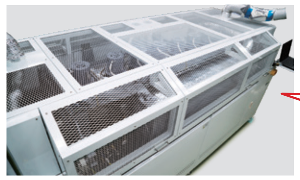
Unique heat-resistant construction enables high-temperature settings up to 420°C. Allows temperature profile settings suitable for products using high-temperature solder, such as power semiconductors.

Cross nozzle design provides outstanding heating performance

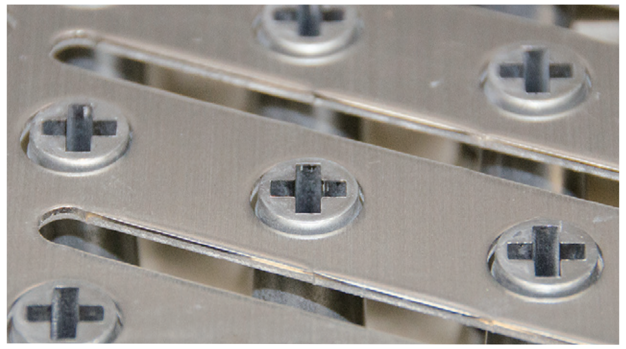
Features a proven cross nozzle design. Provides high heating capacity even during high-temperature profiles.

Temperature profile





Cross nozzle design



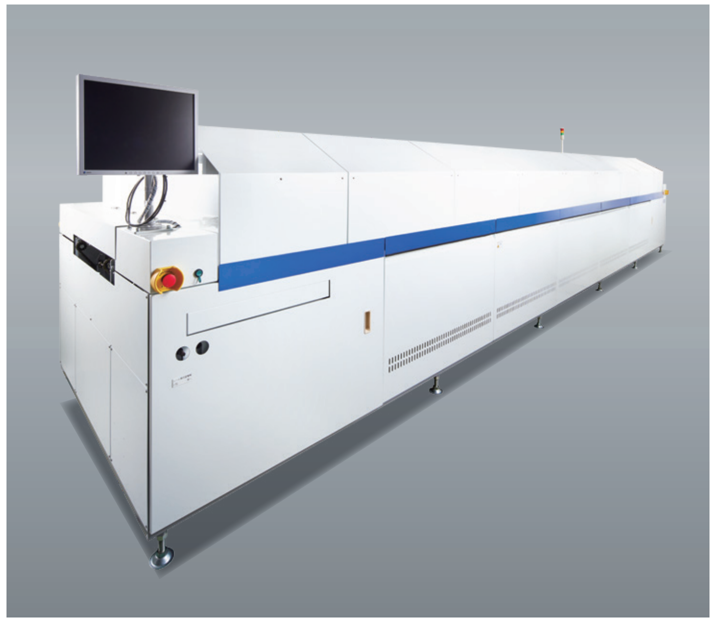
		SNR-725GT-H
Oven dimensions (L×W×H)		3,000 × 1,326 × 1,430 mm
Conveyor height from floor		900±20 mm
Conveying speed		0.3 - 2.0 m/min
Target board dimensions		W: 50 - 250, L: 100 - 300, T: 0.8 - 3.0 mm
Component height		≦10mm [OP: 35mm], ≧5mm [OP: 25mm]
Heating section		7
Cooling section		1
Side edge clearance (Selectable)		3 or 4 or 5 mm
N_2 gas supply		≧99.999%, ≧0.4MPaG, max. 300NL/min
N_2 gas actual flow rate guideline	Component height/STD:≦10mm, ≧5mm	200 NL/min
Power supply		200V, max. 30kW, 90A, 3-phase

∗N_2 gas supply volume and electrical consumption are reference values for standard specifications. For details, please contact our sales representative.

N_2 Reflow Oven, Bump Formation Type

SNR-GT-B Series

- Adapted for micro-bump formation using our proprietary hot air control technology.
- Achieves stable low oxygen concentration throughout all oven zones.



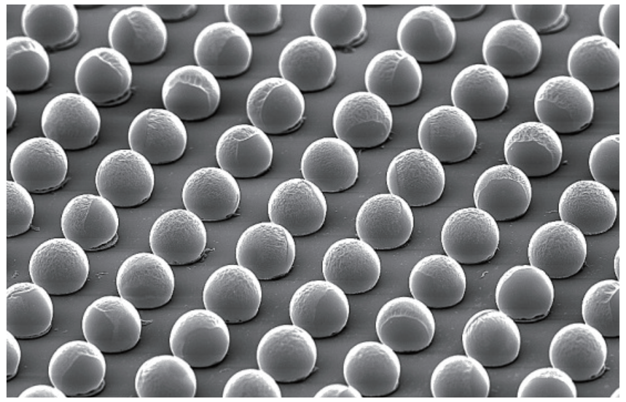
Adapted for micro-bump formation using our proprietary hot air control technology

With its optimized heating capacity, air velocity, and air volume, this oven reliably forms micro-bumps with a diameter of 100 µm or less.

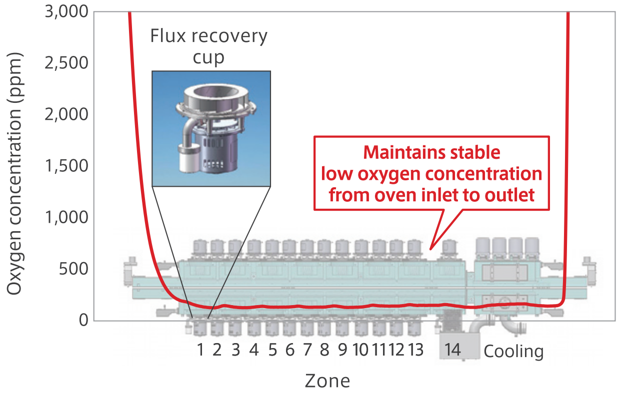
Achieves stable low oxygen concentration throughout all oven zones

Leveraging years of technical expertise, the integration of optimized N_2 flow paths ensures consistently low oxygen concentrations of 50 ppm or less throughout the oven.

Micro-bump formation example (electron microscope image)



Oxygen concentration profile



		SNR-1451GT-B
Oven dimensions (L×W×H)		7,550 × 1,560 × 1,450 mm
Conveyor height from floor		900±20 mm
Conveying speed		0.3 - 2.0 m/min
Target board dimensions		W: 50 - 510, L: 100 - 510, T: 0.8 - 3.0 mm
Component height		≦10mm [OP: 35mm], ≧5mm [OP: 25mm]
Heating section		14
Cooling section		4
Side edge clearance (Selectable)		3 or 4 or 5 mm
N_2 gas supply		≧99.999%, ≧0.4MPaG, max. 600NL/min
N_2 gas actual flow rate guideline	Component height/STD:≦10mm, ≧5mm	650 NL/min
Power supply		200V, max. 48kW, 200A, 3-phase

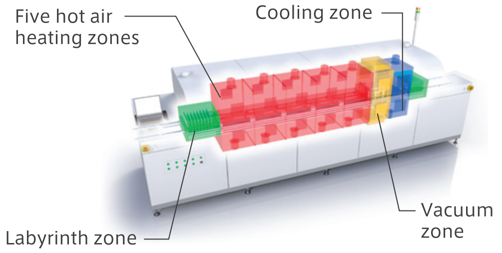
∗N_2 gas supply volume and electrical consumption are reference values for standard specifications. For details, please contact our sales representative.

Vacuum N_2 Reflow Oven

SVR-625GT-C

- Achieves void reduction and spatter suppression by means of our proprietary vacuum control technology.
- Features a unique conveyor mechanism adapted for inline production.
- Enables temperature settings up to 380°C, making it suitable for high-temperature profiles required for power semiconductors.

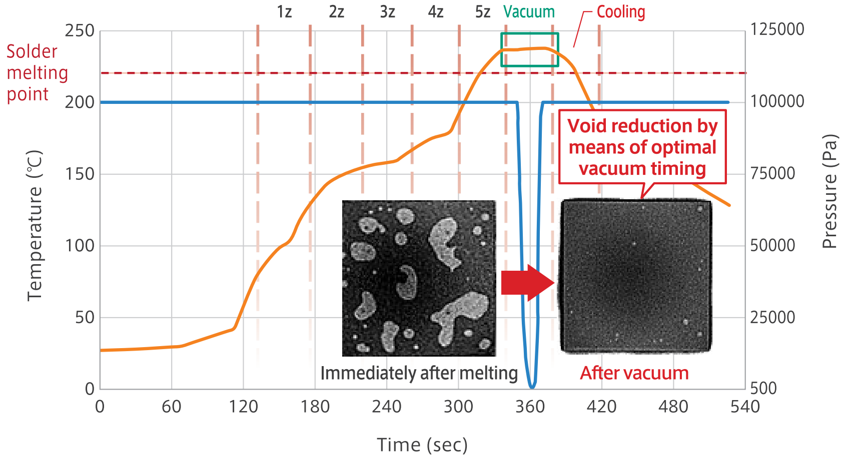
Oven configuration



Achieves void reduction and spatter suppression by means of our proprietary vacuum control technology

Optimized vacuum application during the molten solder phase achieves superior void reduction and effective splatter suppression.

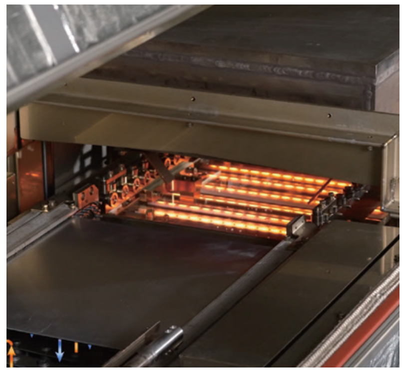
■ Temperature/Vacuum profile



Proprietary transport mechanism engineered for high-volume productivity

The combined use of pin chains and pushers ensures seamless integration into in-line production. This proprietary transport system delivers the high throughput required for mass production.

■ Ensures reliable transport into the vacuum zone



		SVR-625GT-C
Oven dimensions (L×W×H)		5,550 × 1,440 × 1,540 mm
Conveyor height from floor		900±20 mm
Conveying configuration		Pin chain
Target board dimensions		W: 100 - 250, L: 120 - 300, T: 1.0 - 3.0 mm
Component height		≦10mm [OP: 50mm], ≧5mm [OP: 25mm]
Heating section		5
Vacuum section		1
Cooling section		1
Side edge clearance		5 mm
N_2 gas supply	Oven supply/Main Vacuum break	≧99.999%, ≧0.4MPaG, max. 400NL/min ≧99.999%, ≧0.4MPaG, max. 200NL/min(Break time: 8 sec)
N_2 gas actual flow rate guideline	Component height/STD:≦10mm, ≧15mm	400 NL/min
Power supply		200V, max. 31kW, 90A, 3-phase

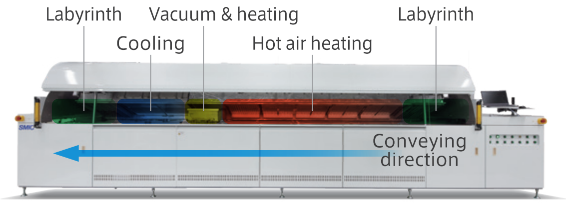
＊N_2 gas supply volume and electrical consumption are reference values for standard specifications. For details, please contact our sales representative.

Vacuum N_2 Reflow Oven

SVR-1040GT-PC

- Hybrid machine also usable as a standard reflow oven.
- Enhanced heating capacity in vacuum zone.
- Accommodates large boards up to 400 mm wide.

Oven configuration



Hybrid machine also usable as a standard reflow oven

Switchable vacuum functionality allows the system to operate as a standard reflow oven. This hybrid versatility adapts to diverse production requirements, from SMT to power semiconductors.

■ Control panel

Easily switch modes and set vacuum parameters

Enhanced heating capacity in vacuum zone

Enhanced heating capacity within the vacuum zone enables compatibility with high-thermal-mass workpieces, such as those equipped with heat sinks.

■ Heating in the vacuum zone enables diverse production configurations

		SVR-1040GT-PC
Oven dimensions (L×W×H)		6,900 × 1,760 × 1,475 mm
Conveyor height from floor		900±20 mm
Conveying configuration		Pin chain & pusher conveying compatible
Target board dimensions		W: 100 - 400, L: 120 - 400, T: 1.0 - 3.0 mm
Component height		≦10mm[OP: 50mm],≧15mm[OP: 25mm]
Heating section		9
Vacuum section		1
Cooling section		2
Side edge clearance		5 mm
N_2 gas supply	Oven supply/Main Vacuum break	≧99.999%, ≧0.4MPaG, max. 600NL/min ≧99.999%, ≧0.4MPaG, max. 1,000NL/min(Break time: 6.5 sec)
N_2 gas actual flow rate guideline	Component height/STD:≦10mm, ≧15mm	600 NL/min
Power supply		200V, max. 52kW, 135A, 3-phase

＊N_2 gas supply volume and electrical consumption are reference values for standard specifications. For details, please contact our sales representative.

Reflow Oven Standard Specifications

		 SNR-GTⅡ	 SNR-GTⅡ-D	 SAR-825GT	 SNR-GT	 SNR-GT-W	 SNR-GT-H	 SNR-GT-B	 SVR-625GT-C	 SVR-1040GT-PC
Laptop PC + PLC control		●	●	●	●	●	●	●	●	●
Heating section flux recovery mechanism		●	●	●	●	●	●	●	●	●
PCB drop/stagnation sensor		●	●	●	●	●	●	●	●	●
PCB piece counter		●	●	●	●	●	●	●	●	●
Oxygen concentration meter		●	●	–	●	●	●	●	●	●
Automatic oxygen control mechanism		●	●	–	●	●	●	●	●	●
i-Standby mode		●	●	–	●	●	●	●	–	–
Temperature profile measurement mode		●	●	●	●	●	●	●	–	–
Block fan control	3 blocks	8 / 10 zones	8 / 10 zones	●	7/8/10 zones	●	●	●	●	–
	5 blocks	12 zones	12 zones	–	–	–	–	14 zones	–	●
	6 blocks	–	–	–	14 zones	–	–	–	–	–
Conveyor system special surface treatment (chain, key material, sprocket)		＊1	＊1	●	●	●	●	●	●	●
Maintenance timer		●	●	●	●	●	●	●	●	●
Signal tower		●	●	●	●	●	●	●	●	●
Machine/production history recording system		●	●	●	●	●	●	●	●	●
Cooling cross-flow fan		–	–	●	–	–	–	–	–	–

＊1 Option

Reflow Oven Option List

		 SNR-GTⅡ	 SNR-GTⅡ-D	 SAR-825GT	 SNR-GT	 SNR-GT-W	 SNR-GT-H	 SNR-GT-B	 SVR-625GT-C	 SVR-1040GT-PC
Hardware	PCB warp prevention mechanism	●	●	●	●	●	●	●	–	–
	Central exhaust duct for oven body	●	●	●	●	●	●	●	●	●
	Transfer cycle roller	●	●	●	●	●	●	●	–	–
	UPS	●	●	●	●	Standard	●	●	Standard	Standard
	External chiller unit	●	●	–	●*1	●	●*1	Standard	Standard	Standard
	Safety light curtain	●	●	●	●	●	●	●	Standard	Standard
	Mesh conveyor *3	●	●	●	●	●	●	●	–	–
	Labyrinth vertical mechanism	–	–	–	●	●	●	●	●	●
	Paint color specification	●	●	●	●	●	●	●	●	●
	Muffle horizontal lift/lower opening	*2	*2	–	*2	Standard	–	*2	–	–
	Conveyor height modification (base/frame)	●	●	●	●	●	●	●	●	●
	Oxygen depletion monitor	●	●	–	●	●	●	●	●	●
Hardware + software	KIC system collaboration	●	●	●	●	●	●	●	–	–
	Automatic changeover by barcode	●	●	●	●	●	●	●	●	●
	8-block fan control	●	●	●	●	●	●	●	●	●
	All-block fan control	●	●	●	●	●	●	●	●	●
	B (gentle airflow) specification	–	–	–	●	–	–	Standard	–	–
	SMEMA signal line	●	●	●	●	●	●	●	●	●
	Automatic width adjustment mechanism *4 (conveyor rail)	●	●	●	●	●	●	●	Standard	Standard
	Automatic width adjustment mechanism *4 (warp prevention rail)	●	●	●	●	●	●	●	–	–
Software	Operator mode/Engineer mode	●	●	●	●	●	●	●	●	●
	English/Chinese display	●	●	●	●	●	●	●	●	●
	Oven door intermediate stop function	Standard	Standard	●	●	Standard	●	●	Standard	Standard

*1 Built-in type also available. *2 Please contact our sales representative. *3 and *4 may not be combinable.

Key Features of Major Soldering Equipment

REFLOW OVEN

N_2 Reflow Oven

Circulating inert N_2 gas throughout the oven chamber suppresses the adverse effects of oxygen and enables stable, high-quality soldering. This oven is widely adopted in the manufacturing of automotive electronics and industrial electronics where reliability is paramount.

Vacuum N_2 Reflow Oven

In addition to the benefits of the N_2 Reflow Oven, this oven incorporates a vacuum function (decompression) during soldering which enables a reduction of voids (air bubbles) in solder joints. This oven is widely adopted for manufacturing power semiconductors, where avoiding reduced heat dissipation due to voids is critical.

Air Reflow Oven

This oven employs a simple mechanism that circulates hot air for heating. It is used in production lines employing solder paste designed for atmospheric reflow. It is suitable for small-lot, high-mix production and simple lines.

FLOW SOLDERING MACHINE

Wave Soldering Machine

By directing a molten solder flow wave onto the board, this method reliably fills solder into the electrodes. It excels in mass production and is widely used for a variety of products ranging from general household appliances to industrial electronics.

Selective Dip Soldering Machine

Using jigs tailored to the soldering area enables selective soldering. Used for adding through-hole components to double-sided boards, this machine can solder multiple points simultaneously.

Surface Dip Soldering Machine

Holds molten solder in a flat pool, and immerses the board to suit large-area boards. This machine also accommodates deep immersion requirements, such as cutting leads after soldering.

Achieves both stable bonding and
high production efficiency

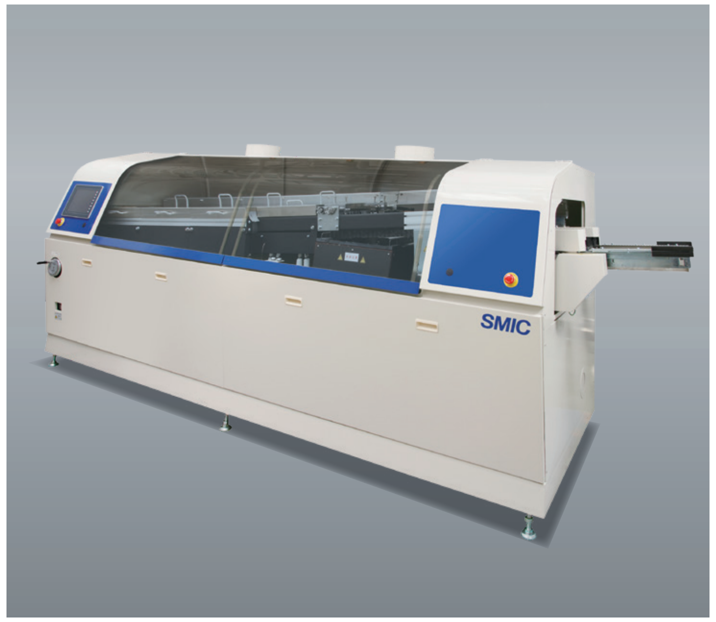
FLOW SOLDERING MACHINE

A system that performs bonding by contacting components with molten solder after flux application. Widely utilized for through-hole technology (THT), it accommodates large components and multi-layer boards. Continuous solder supply and reliable joint formation ensure high production efficiency and superior reliability.

Wave Soldering Machine

ECOPASCAL SPF2 Series

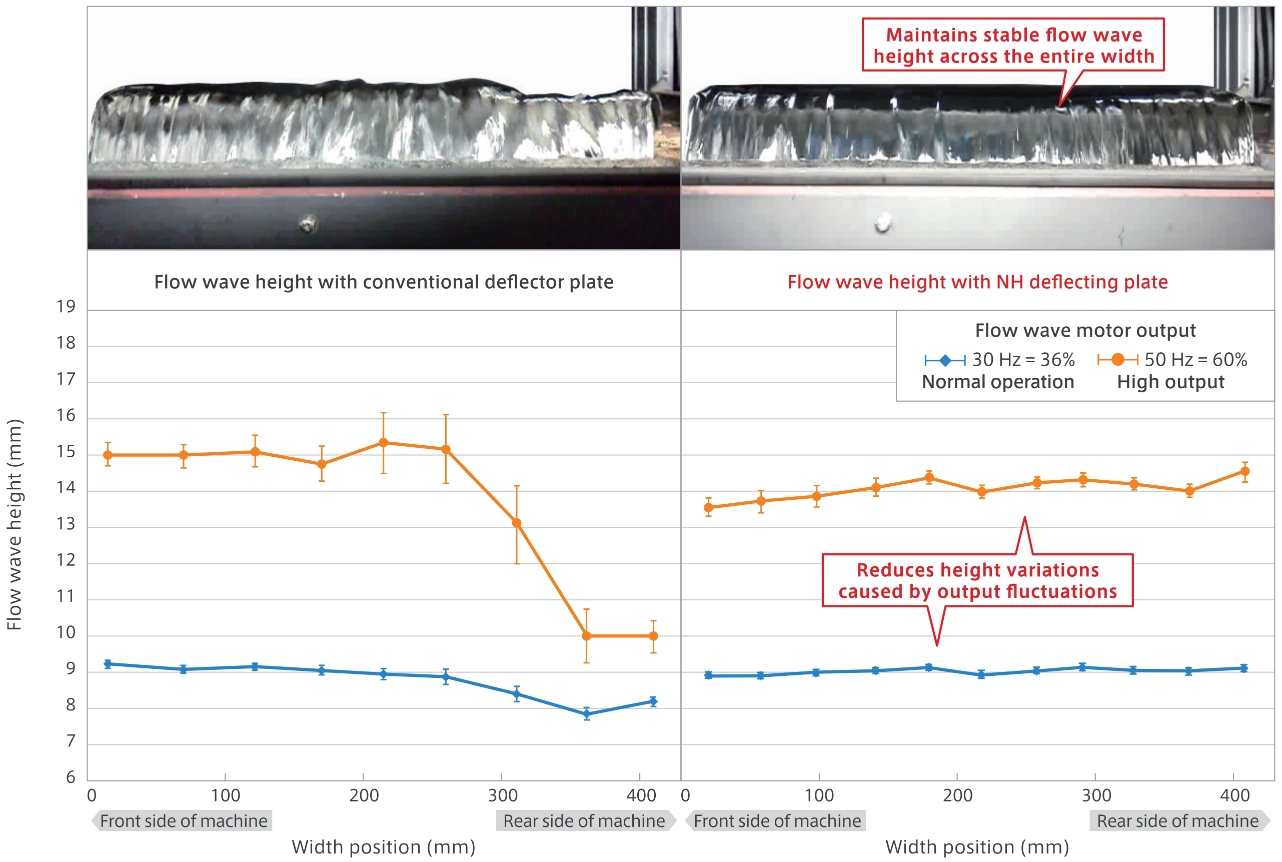
- NH deflecting plate achieves high, stable waves for superior quality.
- Unique pressure-stabilizing flow system maintains stable flow wave over extended periods.
- Primary nozzles can be selected to suit target workpieces.
- N_2 atmosphere wave soldering models are also available.
- Newly equipped with an intuitive panel computer as standard.



NH deflecting plate achieves high, stable waves for superior quality

Advanced design utilizing fluid simulation achieves exceptional wave uniformity. Consistent solder contact across the board ensures stable quality and accommodates the assembly of long-lead components.

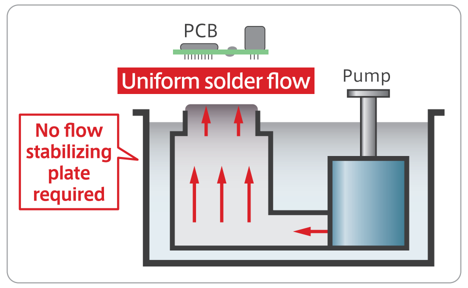
■ Solder flow wave state



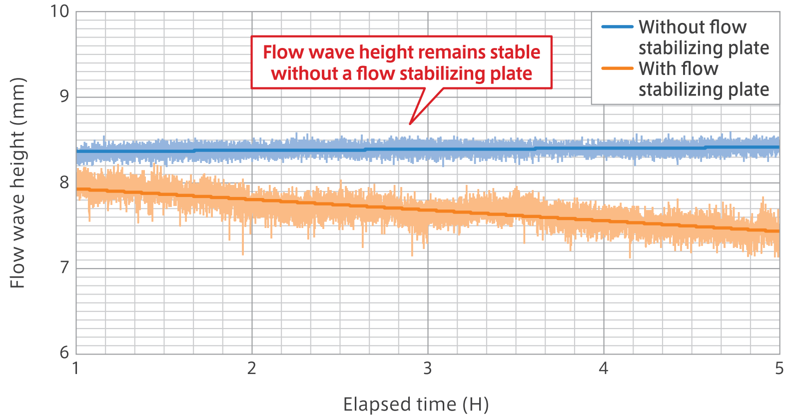
Unique pressure-stabilizing flow system maintains stable flow wave over extended periods

The pressure-stabilizing flow system eliminates the need for a flow stabilizing plate and removes clogging factors caused by dross. This maintains a stable flow wave for extended periods and significantly reduces maintenance frequency.

■ Pressure-stabilizing flow system



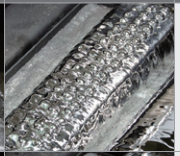
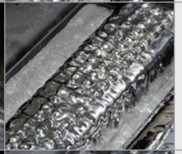
■ Stable solder flow wave without oxide clogging, and without a flow stabilizing plate



Primary nozzles can be selected to suit target workpieces

Three flow wave nozzle types — KB, SK, and Bumpy — are available for optimal selection based on workpiece shape and size.

■ Select the primary nozzle best suited to the workpiece

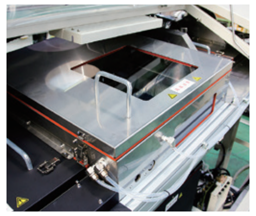
Primary nozzle		Flow wave shape		Features
		Side	Top	
Standard	KB			This latest nozzle design effectively reduces unsoldered areas by equalizing pressure on the solder side of the board by means of a flow wave shape aligned with the conveying angle.
Option	SK			Improves maintainability over the KB type's basic characteristics, and reduces on-site workload. ∗Cannot be installed on the N series.
	Bumpy			Simple structure with proven performance. Ideal for workpieces requiring short dip times.

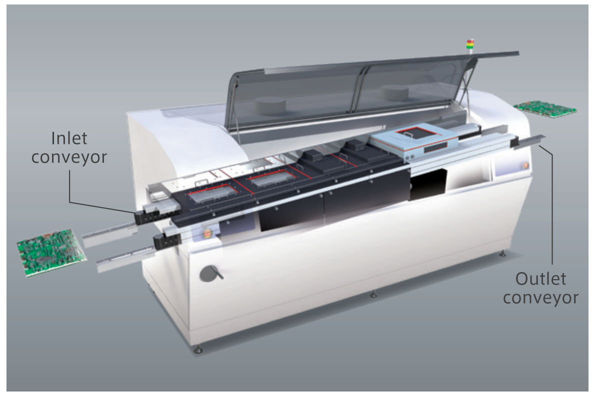
N_2 atmosphere wave soldering models are also available

N Series for N_2 atmosphere wave soldering

ECOPASCAL SPF2-N Series

- Full chamber system
- Equipped with N_2 circulating fan mechanism as standard
- Ensures high quality
- Reduces oxides





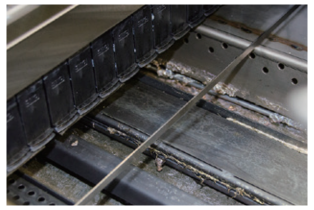
Our lineup includes N_2 atmosphere types that are highly effective in improving through-hole solderability and reducing dross.

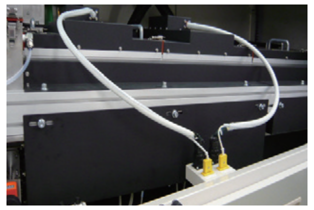
Standard Specifications and Options List

		 **SPF2**	 **SPF2-N**
Standard specifications	Panel computer + PLC control	●	●
	Preheater: 4 far-infrared panels	●	●
	Conveyor height: 780 ±20 mm	●	●
	Flux recovery mechanism	—	●
	External flow volume control	●	●
	Variable width indicator	●	●
	PCB underside cooling fan unit	●	—
	Signal tower	●	●
	Inlet/outlet flanged chain conveyor	●	●
	Conveyor rail height adjustment mechanism	●	●
	Conveyor resin claws	●	●
	Conveyor claw cleaning mechanism	●	●
	Solder bath automatic lift/extraction	●*1	●
	Solder spatter prevention cover	●*1	●
	All nitriding treatment	●	●
Options	PCB warp prevention mechanism	●	●
	Additional top preheater	●	●
	Spot cooler for cooling*2	●	—
	UPS	●	●
	Automatic solder bar feeder	●	●*3
	Automatic wire solder feeder	●	●
	PCB drop/stagnation sensor	●	●
	Solder bath height measuring caliper	●	●
	SK sensor	●	●
	SK nozzle	●	—
	Bumpy nozzle	●	●
	Automatic fire extinguisher	●	●
	Fire damper	●	●
	Smoke damper	●	●
	Solder bath connector specifications	●	●
	Conveyor height modification (base/frame)	●	●
	Intermittent flow wave	●	●
	Heat-resistant reinforced resin claws	●	●
	Wave height side guide	●	●
	Hot air preheater	●	●*3
	In-device lighting	●	●
	Foam fluxer	●	—
	Machine/production history recording system	●	●
	Pre-solder bath	●	●
	Paint color specification	●	●
	N_2 chiller	—	●
	Desktop PC specifications	●	●
	Oxygen deficiency monitor	—	●
	English/Chinese display	●	●

*1 Available as an option. *2 Condensation prevention/cold region specification also available. *3 Please contact our sales representative.

Options

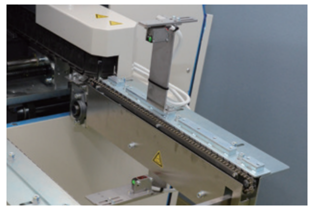

● PCB warp prevention mechanism
(Solder bath top only/Inlet to outlet)


● Additional top preheater


● Spot cooler for cooling
(Condensation prevention/cold region specification also available)


● UPS

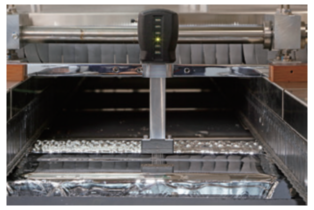

● Automatic wire solder feeder

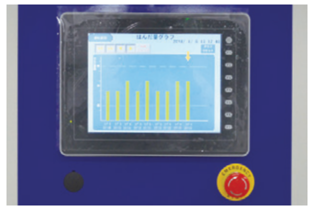

● PCB drop/stagnation sensor

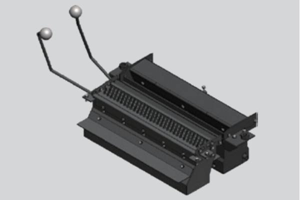

● Solder bath height measuring caliper


● In-device lighting


● Heat-resistant reinforced resin claws


● SK sensor


● SK sensor (Display screen)


● SK nozzle

	SPF2-300	SPF2-300N
Machine dimensions (L×W×H)	4,340 × 1,340 × 1,540 mm	4,340 × 1,340 × 1,540 mm
Conveyor height from floor	780 + 20 − 10 mm	780 + 20 − 10 mm
Conveying speed	0.5 - 2.0 m/min	0.5 - 2.0 m/min
Target board dimensions (W×L)	50 × 100 - 300 × 450 mm	50 × 100 - 300 × 450 mm
Component height	≦100mm, ≧5mm	≦50mm, ≧5mm
Preheater unit (Heating zone length)	1,600 (400/zone × 4) mm	1,600 (400/zone × 4) mm
Solder bath capacity (Approx.)	360kg (M705, Sn - 3.0Ag - 0.5Cu)	360kg (M705, Sn - 3.0Ag - 0.5Cu)
N_2 gas supply	—	≧99.999%, ≧0.3MPaG, max. 700NL/min
N_2 gas actual flow rate guideline | Component height/STD:≦100mm, ≧5mm *Outlet labyrinth height: Same as board transfer surface	—	300 NL/min
Air supply	—	≧0.5 MPaG
Power supply	200V, approx. 32.5kW, 100A, 3-phase	200V, approx. 32.9kW, 100A, 3-phase

	SPF2-400	SPF2-400N
Machine dimensions (L×W×H)	4,340 × 1,340 × 1,540 mm	4,340 × 1,340 × 1,540 mm
Conveyor height from floor	780 + 20 − 10 mm	780 + 20 − 10 mm
Conveying speed	0.5 - 2.0 m/min	0.5 - 2.0 m/min
Target board dimensions (W×L)	50 × 100 - 400 × 450 mm	50 × 100 - 400 × 450 mm
Component height	≦100mm, ≧5mm	≦50mm, ≧5mm
Preheater unit (Heating zone length)	1,600 (400/zone × 4) mm	1,600 (400/zone × 4) mm
Solder bath capacity (Approx.)	360kg (M705, Sn - 3.0Ag - 0.5Cu)	360kg (M705, Sn - 3.0Ag - 0.5Cu)
N_2 gas supply	—	≧99.999%, ≧0.3MPaG, max. 700NL/min
N_2 gas actual flow rate guideline | Component height/STD:≦100mm, ≧5mm *Outlet labyrinth height: Same as board transfer surface	—	300 NL/min
Air supply	—	≧0.5 MPaG
Power supply	200V, approx. 32.5kW, 100A, 3-phase	200V, approx. 32.9kW, 100A, 3-phase

	SPF2-500	SPF2-500N
Machine dimensions (L×W×H)	4,640 × 1,440 × 1,540 mm	4,640 × 1,440 × 1,540 mm
Conveyor height from floor	780 + 20 − 10 mm	780 + 20 − 10 mm
Conveying speed	0.5 - 2.0 m/min	0.5 - 2.0 m/min
Target board dimensions (W×L)	50 × 100 - 500 × 600 mm	50 × 100 - 500 × 600 mm
Component height	≦100mm, ≧5mm	≦50mm, ≧5mm
Preheater unit (Heating zone length)	1,600 (400/zone × 4) mm	1,600 (400/zone × 4) mm
Solder bath capacity (Approx.)	460kg (M705, Sn - 3.0Ag - 0.5Cu)	460kg (M705, Sn - 3.0Ag - 0.5Cu)
N_2 gas supply	—	≧99.999%, ≧0.3MPaG, max. 1000NL/min
N_2 gas actual flow rate guideline | Component height/STD:≦100mm, ≧5mm *Outlet labyrinth height: Same as board transfer surface	—	450 NL/min
Air supply	—	≧0.5 MPaG
Power supply	200V, approx. 32.5kW, 100A, 3-phase	200V, approx. 32.5kW, 100A, 3-phase

Spray Fluxer

SSF2 Series

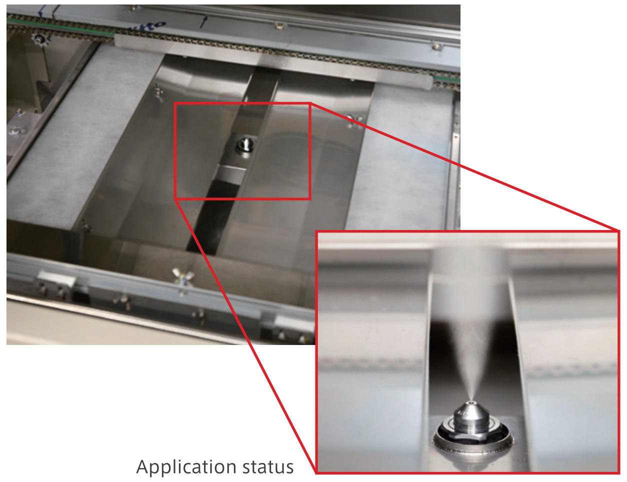
- Simple self-priming nozzle design ensures long-term stable flux application.
- Roll filter unit* enables extended maintenance cycles.
- Equipped with an application flowmeter for easy flux volume management.

■ Simple setup using a touch panel

Self-priming nozzle achieves long-term stable application

Adopts a self-priming nozzle that utilizes carburetor principles. With no moving parts in the nozzle body, it maintains stable application performance for extended periods with virtually no maintenance required.

■ Self-priming nozzle unit



Roll filter unit* for easy maintenance

Equipping the roll filter unit (optional) reduces filter cleaning frequency and contributes to extended operating time.

■ Roll filter unit

＊ Optional equipment.

● Standard specifications

Touch panel + PLC control	Signal tower
Conveyor belt	Nozzle cleaning function
Conveyor chain cleaning mechanism	Coating flowmeter
Spray mist collection unit	
Primary air pressure switch	

● Options

Inlet insertion guide (manual feed, 300 mm length)	IPA tank liquid level management (for nozzle cleaning)
Inlet transfer conveyor (300 mm length)	Paint color specification
Outlet transfer conveyor (angle-adjustable, 300 mm length)	Conveyor height modification (base/frame)
Roll filter specification	Fire damper

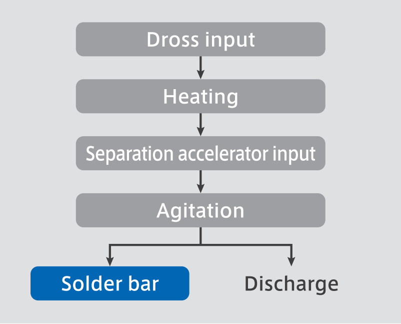
	SSF2-400	SSF2-500
Machine dimensions (L×W×H)	1,350 × 1,355 × 1,378 mm	1,350 × 1,413 × 1,378 mm
Conveyor height from floor	780±20 mm	780±20 mm
Conveying speed	0.5 - 2.0 m/min	0.5 - 2.0 m/min
Target board dimensions (W×L)	50 × 100 - 400 × 450 mm	50 × 100 - 500 × 550 mm
Component height	≦100mm, ≧15mm	≦100mm, ≧15mm
Air supply	≧0.5MPa	≧0.5MPa
Power supply	200V, approx. 0.4kW, 10A, 3-phase	200V, approx. 1.3kW, 10A, 3-phase

Recycling Machine

SDS2-5N

- Recovers solder from dross generated by flow soldering machines.
- Improves recovery rate by using a natural separation accelerator (sesame).

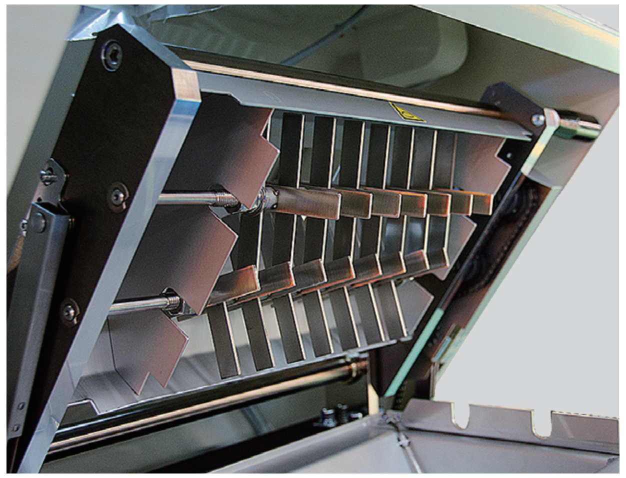
■ Solder recycling process



Recovers solder from dross generated by flow soldering machines

By adding dross to molten solder and heating/agitating it, reusable solder is efficiently separated. This achieves highly effective resource utilization.

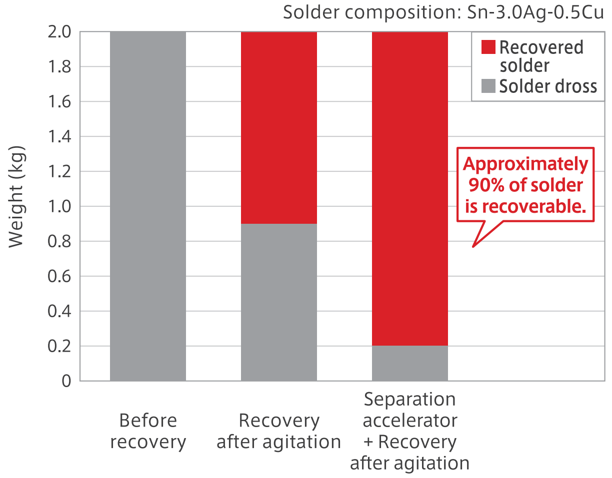
■ Compact recycling solution installable near the solder bath



Improved recovery rate by means of combined use of naturally derived separation accelerator (sesame)

Utilizing sesame oil promotes separation of dross and solder, and significantly contributes to higher recovery rates.

■ Solder recovery rate



● Standard specifications

100 V compatible	Simple mold unit
Exhaust duct: ϕ100	Oxide discharge port
Agitation unit	Touch panel + PLC control
Solder bath capacity: 12 kg	

● Options

Signal tower
Weekly timer
Fire damper

	SDS2-5N
Machine dimensions (L×W×H)	800 × 650 × 1,000 mm
Maximum dross processing capacity	5kg
Processing time (approx.)*	15 min (Adjustable from 1 to 30 min using the timer)
Power supply	100V, approx. 1.2kW, 15A, Single-phase

＊ Varies depending on dross condition, temperature, weight, and solder composition.

Selective Dip Soldering Machine

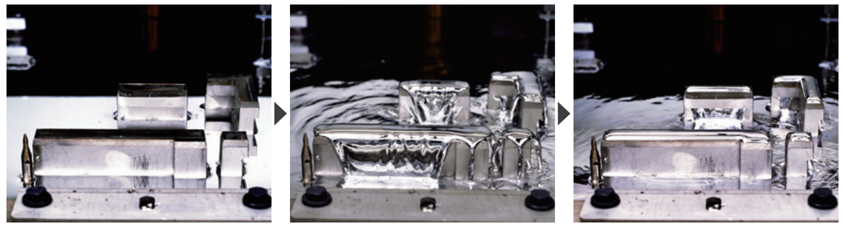
SOLZEUS MPF-2077ST

- Ensures a stable solder flow even when using mixed nozzles with varying aperture areas.
- Achieves superior through-hole wetting through our proprietary static pressure flow method.
- Extensive track record of successful implementations, including automotive electronics.

Ensures stable flow wave even with mixed nozzles of varying aperture areas

Our unique nozzle design technology and static pressure flow method ensure stable flow wave even with multiple nozzles of differing aperture areas. These features contribute to high-quality soldering.

Static pressure flow operation process



Standby state

Overflow
Surface dross removal and temperature stabilization

Static pressure flow soldering

Extensive implementation track record

Widely implemented in manufacturing of automotive electronics with stringent quality standards. Reliably contributes to automotive safety and security.

Automotive implementation examples

- EPS (Electric power steering)
- ECU (Electronic control unit)
- Junction box
- EV control system
- Power devices
- Air conditioner compressors
- ABS
- Power windows/wipers
- Headlights/Rear lights

Standard specifications

Touch panel + PLC control	Fluxer: X-Y servo control
Signal tower	Pressurized fluxer
Weekly timer	XYZ-axis RB soldering method
Preheater (Halogen)	

Options

Upper preheater (Halogen)	Dross suppression N_2 cover system
Cooling fan unit	Conveyor return structure
Solder inclination cutting mechanism	Point nozzle
Solder wave height control mechanism	

	MPF-2077ST (Round type)
Machine dimensions (L×W×H)	2,800 × 1,460 × 1,650 mm
Utility	3-phase, AC 200V, 44kVA, Air: ϕ10joint
Target board dimensions[*1] (Solderable area W × L)	Max W: 200, L: 280, H: 50 mm/H: 10 mm below board (230 × 310 mm [from board center])
Conveyor System	Conveyor carrier-circulating system
Fluxer unit	X-Y programmable system
Preheater unit	Halogen heater (1.2 kW × 8)
N_2 gas supply[*2]	5 NL/min (Flow shaft)
Workpiece cooling	External air cooling fan

*1 H: Height below board *2 OP: Separate N_2 cover required.

Selective Dip Soldering Machine

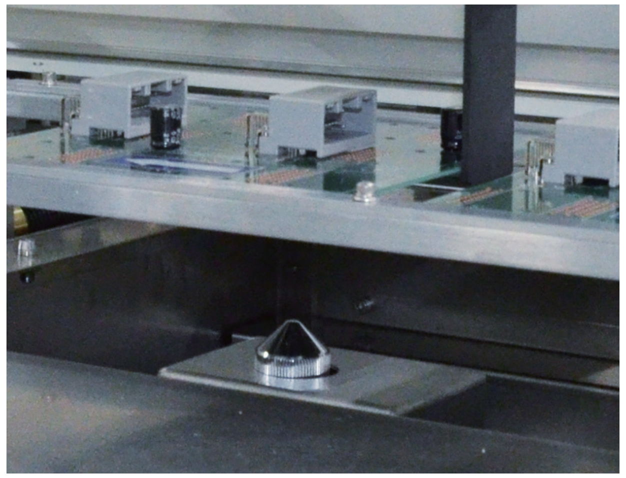
SOLZEUS MPF-2003ST

- Maintains core functionality while adapting to inline production.
- Space-saving design with integrated spray fluxer.
- Features halogen lamp preheater with superior heating performance.

Space-saving design with integrated spray fluxer

The integrated XY-axis driven spray fluxer enables flux application only where needed, and achieves space savings on production lines.

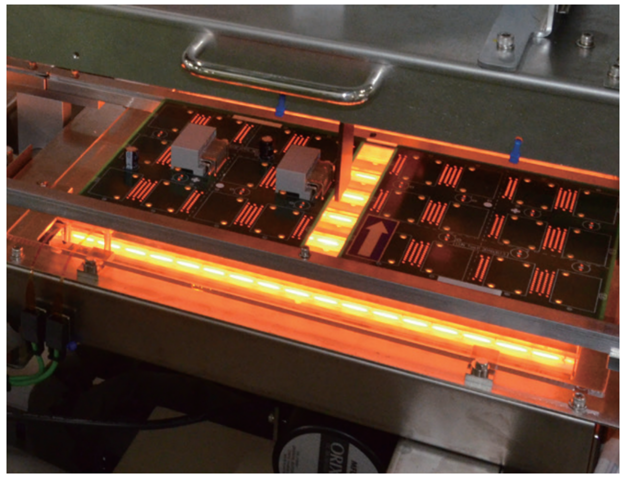
XY-driven spray fluxer



Halogen lamp preheater with superior heating performance

The halogen lamp preheater enables precise temperature control, and achieves temperature regulation tailored to the thermal mass of the workpiece.

Halogen lamp preheater



Standard specifications

Touch panel + PLC control	Fluxer: XY-axis servo control
Signal tower	Pressurized fluxer
Weekly timer	Z-axis elevated rail soldering method
Preheater (Hot air/Halogen)	

Options

Upper preheater (Halogen)	Solder level management mechanism
Cooling fan unit	Dross suppression N_2 cover system
Solder inclination cutting mechanism	

	MPF-2003ST (Inline type)
Machine dimensions (L×W×H)	3,070 × 1,206 × 1,650 mm
Utility	3-phase, AC 200V, 19kVA, Air: ϕ10joint
Target board dimensions[*1] (Solderable area W × L)	Max W: 200, L: 280, H: 50 mm/H: 10 mm below board (230 × 310 mm [from board center])
Conveyor System	Direct PCB conveying
Fluxer unit	X-Y programmable system
Preheater unit	Hot air type (6 kW) or Halogen heater (12 kW)
N_2 gas supply[*2]	5 NL/min (Flow shaft)
Workpiece cooling	External air cooling fan

*1 H: Height below board *2 OP: Separate N_2 cover required.

Internal Heat Circulation Dip Soldering Machine

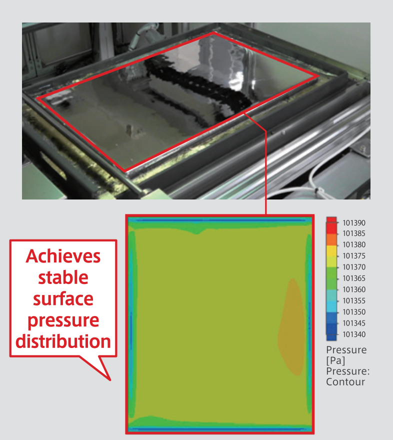
SOLZEUS LPD Series

- Proprietary internal heat circulation system enhances soldering quality.
- Multi-angle control mechanism enables diverse dip conditions.
- Tool-free setup for rapid changeovers.

Development of a proprietary internal heat circulation system to improve soldering quality

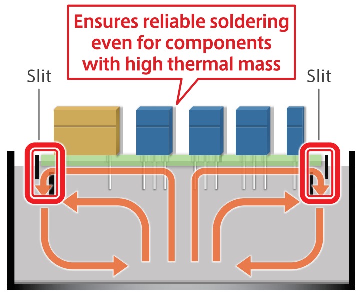
By circulating solder internally while maintaining a smooth surface, this system achieves temperature stabilization and superior contact pressure distribution. This evenly distributes the solder contact pressure and temperature on the board and contributes to improved quality.

Internal heat circulation system



Solder surface pressure distribution data

Internal heat circulation solder bath concept diagram



Achieves superior solderability and reduced dross by means of our unique internal heat circulation system.

Multi-angle control mechanism

Controls the pallet stage using a 4-axis robot, and enables adaptation to various dip conditions.

Multi-angle control using a 4-axis robot

Standard specifications

Touch panel + PLC control	Fluxer: XY-axis servo control
Signal tower	Pressurized fluxer
Weekly timer	Z-4axis elevated rail soldering method
Preheater (Halogen)	

Options

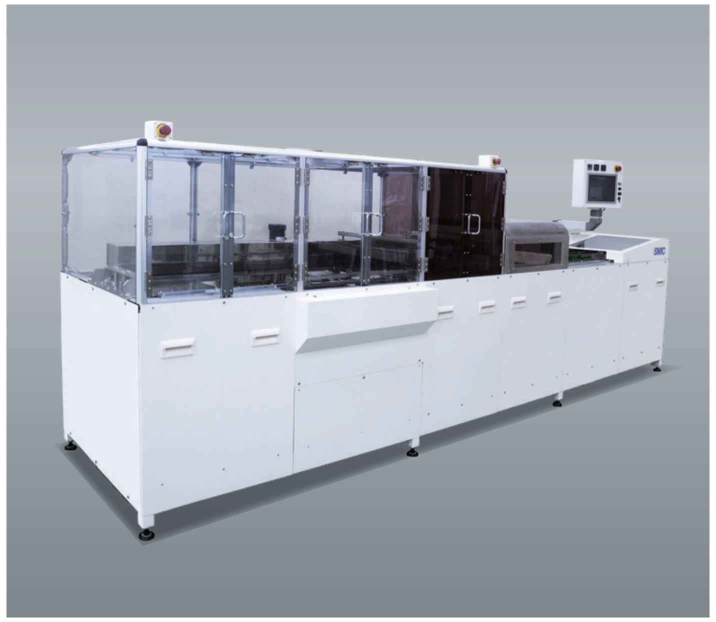
- Upper preheater (Halogen)
- Cooling fan unit
- Solder level management mechanism

	LPD-2019M
Machine dimensions (L×W×H)	3,310 × 1,550 × 1,650 mm
Utility	3-phase, AC 200V, 26kVA, AIR: ϕ10joint
Target board dimensions	W: 100 - 240, L: 100 - 280, H: 50 mm/H: 10 mm below board
Conveyor System	Direct PCB conveying, Robot chuck (Auto width adjustment)
Fluxer unit	Pressurized spray unit (X-Y drive)
Preheater unit	Halogen heaters (1 kW × 9 units × 2 ST), Heat-resistant glass
Soldering	Internal heat circulation system, Solder bath capacity: 500 kg, Motor-driven wave pump, Corrosion-resistant surface treatment
Workpiece cooling	External air cooling fan

Surface Dip Soldering Machine

SOLZEUS LPF Series

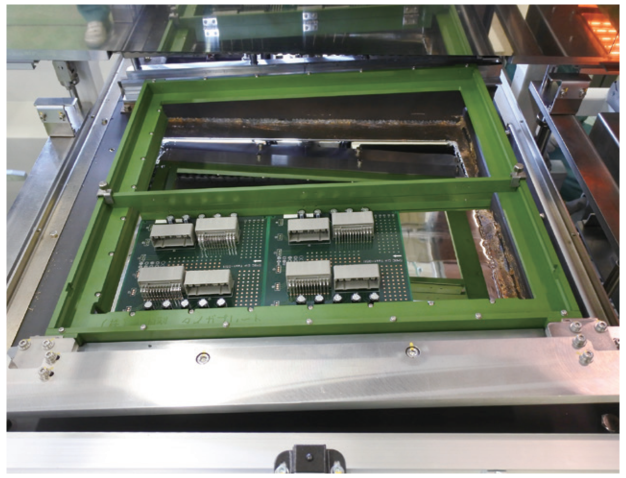
- Surface dip method suitable for large boards and long-lead components.
- Simple settings adaptable to diverse types of boards.



Easy settings enable production under consistent conditions

Flow wave motors maintain a constant liquid level, providing a highly reliable mounting environment with constant heat.

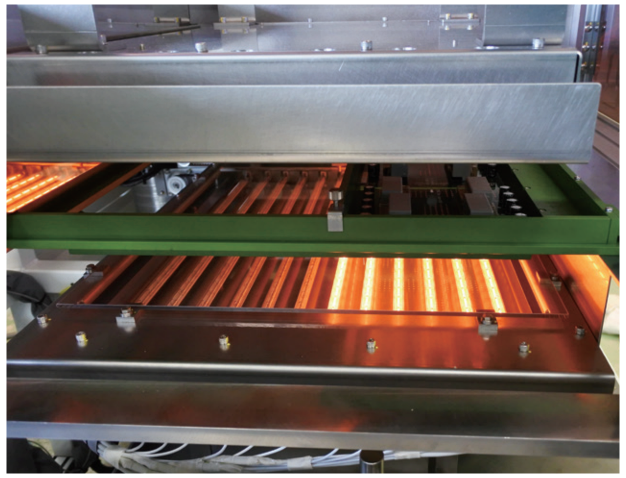
Solder bath



Suitable for large boards and long-lead components

Adopts a halogen lamp preheater with superior responsiveness that enables rapid preheating. Stable heating is possible even for large boards.

Preheater reliably preheats large boards



Standard specifications

Touch panel + PLC control	Fluxer: XY-axis servo control
Signal tower	Pressurized fluxer
Weekly timer	Z-2axis elevated rail soldering method
Preheater (Halogen)	

Options

- Upper preheater (Halogen)
- Cooling fan unit
- Solder level management mechanism

	LPF-2008L
Machine dimensions (L×W×H)	4,380 × 1,060 × 1,570 mm
Utility	3-phase, AC 200V, 24kVA, AIR: ϕ10joint
Target board dimensions	W: 50 - 360, L: 50 - 410, H: 90 mm /H: 50 mm below board
Conveyor System	Conveyor carrier vertical circulation system
Fluxer unit	Pressurized spray unit
Preheater unit	Halogen heaters (1 kW × 12 units), Heat-resistant glass
Soldering	Whole surface flow soldering, Solder bath capacity: 400 kg, Motor-driven wave pump, Corrosion-resistant surface treatment
Workpiece cooling	External air cooling fan

Low-temperature soldering solutions
for carbon neutrality

MILATERA

Low Temperature Soldering for Earth

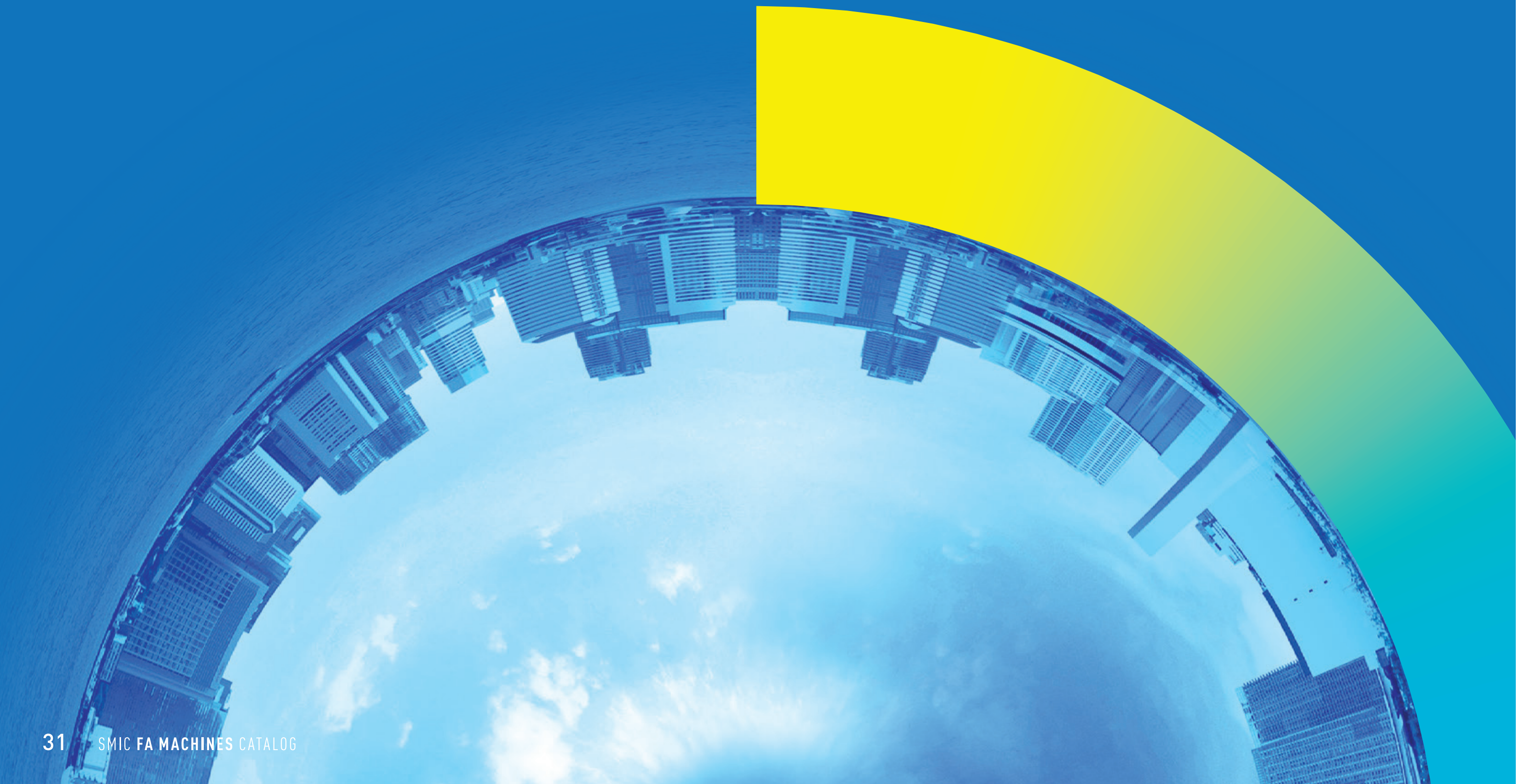
Δt 80°C connecting to a sustainable future

Efforts toward carbon neutrality in manufacturing are increasingly important not merely as environmental measures, but as a key component of corporate growth strategies.

To meet these demands from our era and society, SMIC developed MILATERA, a low-temperature soldering solution.

MILATERA, which is provided to customers by means of a three-part system of materials, equipment, and process methods, achieves low-temperature soldering with a melting point approx. 80℃ lower than conventional methods. It significantly contributes to carbon neutrality across the entire supply chain by reducing CO_2 emissions by means of reducing energy consumption, streamlining processes, and minimizing waste generation.

Guided by our commitment to creating a future that is kind to both people and the environment through manufacturing, SMIC has consistently recognized environmental challenges early on and developed and provided the required solutions.
Moving forward, we will continue to leverage our long-cultivated technology and innovation to overcome challenges, while working alongside our customers to realize manufacturing that we can be proud to pass on to the next generation.



Wave soldering

BITHUS-Wave MTF-300

Flux mixing machine MTM-4L

TABLUX

MILATERA BAR

Reflow soldering

MILATERA PASTE

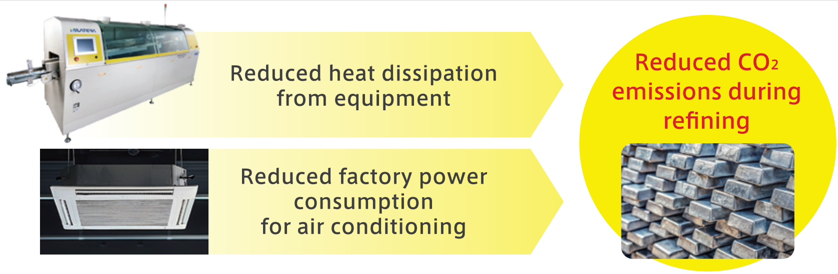
Manual soldering

MILATERA FLUX CORED

Benefits of implementing Sn-Bi based low-temperature soldering

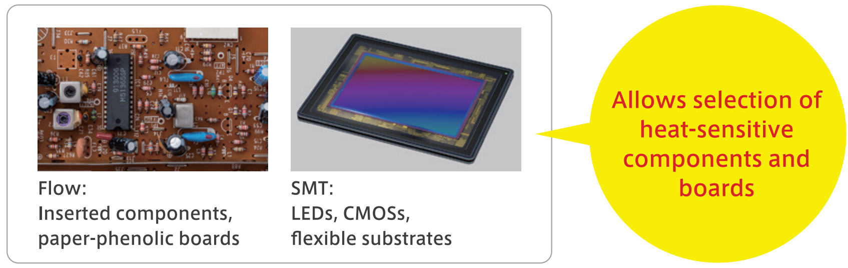
Reduced environmental impact

Lowering assembly temperatures reduces heat dissipation from equipment, easing factory air conditioning loads and cutting overall power consumption. Furthermore, Bi emits less CO_2 during the refining process compared to other common solder elements, such as Tin and Silver.



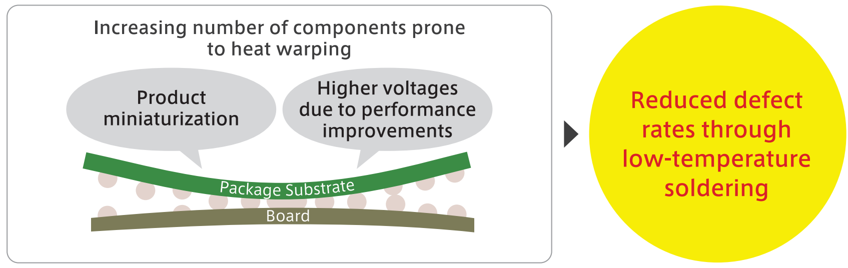
Increased freedom in selecting electronic and electrical components

MILATERA enables the use of components and substrates with lower heat resistance, expanding design flexibility and contributing to overall cost reduction through a wider range of material choices.



Improved assembly quality

As high-performance semiconductor packages become increasingly compact and thin, this technology mitigates defects caused by thermally induced warpage. Lowering the assembly temperature minimizes deformation and enhances overall assembly quality.



Low-Temperature Wave Soldering Machine

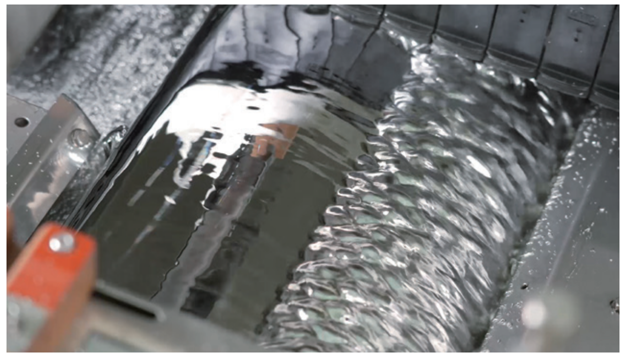
BITHUS-Wave MTF Series

- Newly developed RK nozzle achieves high-quality low-temperature soldering.
- Highly effective in reducing CO_2 emissions.

RK nozzle achieves high-quality low-temperature soldering

Our RK nozzle, which combines primary and secondary waves into a continuous solder flow, achieves both high-quality soldering and reduced dross.

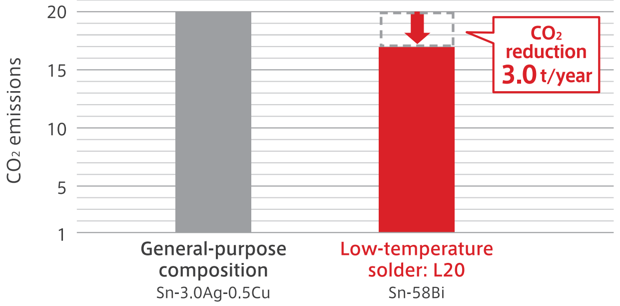
■ RK nozzle



Highly effective in reducing CO_2 emissions

Using Sn-Bi-based low-temperature solder, which has a melting point approximately 80°C lower than Sn-Ag-Cu-based solder, significantly reduces heating energy. This enables an annual CO_2 reduction of approximately 15%.

■ Estimated CO_2 reduction



Solder type	General-purpose composition Sn-3.0Ag-0.5Cu	Low-temperature solder: L20 Sn-58Bi	Reduction	Unit	Reduction rate
Power consumption	57,024	48,384	-8,640	kWh/year	-15.15%
CO_2 emissions	20.01	16.98	-3.0	t/year	-15.14%

Calculation Method: Assumes operation at 8,640 hours/year per unit of our wave soldering machine at the standard specified temperature for each solder.

	MTF-300	MTF-400
Machine dimensions (L×W×H)	4,340 × 1,340 × 1,540 mm	4,340 × 1,340 × 1,540 mm
Conveyor height from floor	780 + 20 - 10 mm	780 + 20 - 10 mm
Conveying speed	0.5 - 2.0 m/min	0.5 - 2.0 m/min
Target board dimensions (W×L)	150 × 100 - 300 × 450 mm	150 × 100 - 400 × 450 mm
Component height	≦100mm, ≧5mm	≦100mm, ≧5mm
Preheater unit (Heating zone length)	1,600 (400/zone×4) mm	1,600 (400/zone×4) mm
Solder bath capacity (approx.)	460kg (L20,Sn-58Bi)	460kg (L20,Sn-58Bi)
Power supply	200V, approx.32.5kW, 100A, 3-phase	200V, approx.32.5kW, 100A, 3-phase

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Flux Dissolution Unit

Flux mixing machine MTM-4L• TABLUX

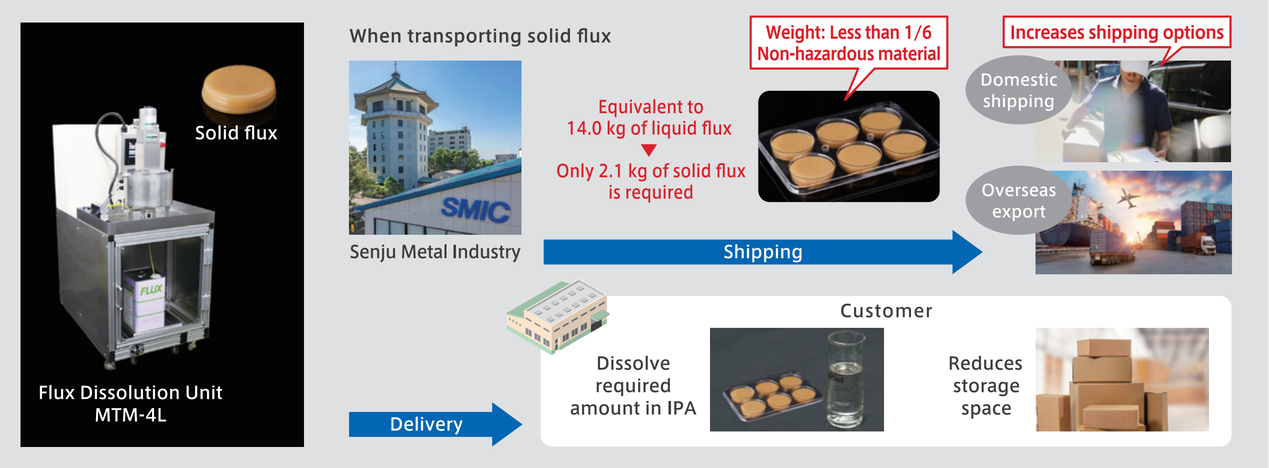
- Revolutionary system that solves the challenges of liquid flux.
- Simplified system design facilitates flexible operation.

Resin-based solid flux TABLUX

Revolutionary system that solves the challenges of liquid flux

Dissolves solid, solvent-free flux using locally procured solvents. This groundbreaking system eliminates the logistical challenges of transporting liquid flux and contributes to carbon neutrality.

■ Improvements achieved by adopting solid flux



	MTM-4L
Machine dimensions (L×W×H)	830 × 600 × 1,319mm
Flux production volume	4L
Settable solvent volume	18L
Agitation control	speed control motor
Power supply	3-phase, AC 200V, 1kVA

SUPPORT

In electronics manufacturing, every factor — from maintaining equipment performance and operator skill levels to ensuring reliable maintenance — directly impacts productivity and quality. We provide comprehensive support, from pre-installation evaluation to daily maintenance, training, and ongoing upkeep, so our customers can confidently introduce and operate their equipment. This is not merely a system for troubleshooting. It is support designed to help our customers fully leverage their equipment performance, maintain a stable supply of high-quality products without line stoppages, and achieve smooth startup by reducing implementation concerns. We include a framework for promptly and accurately addressing operational questions and challenges, training to continuously enhance employee knowledge and skills, and maintenance support to keep equipment interiors and circuit boards clean — all of which contribute to improved productivity.

01 Verification Testing
(Pre-implementation evaluation)

By seeing, touching, and operating our actual equipment, you can eliminate pre-implementation concerns and ensure a seamless start-up. At our multiple evaluation centers across Japan, we offer precise thermal profiling and performance testing tailored to your specific production requirements. Our experienced engineers and sales representatives provide you with end-to-end support — from initial preparation to the day of testing — enabling you to select the optimal system with full confidence in its performance benefits.

■ Verification testing of target equipment and installation site

	Tokyo	Saitama	Tochigi	Hyogo	Toyama
Reflow Oven 	●		●	●	
Wave Soldering Machine 		●		●	
Spray Fluxer 		●		●	
Recycling Machine 		●		●	
Dip Soldering Machine 					●
MILATERA BITHUS-Wave MTF-300		●		●	

02 Technical Training and Workshop Support

We provide training programs tailored to your on-site needs, ranging from basic soldering workshops to specialized instruction focused on equipment operation and maintenance. The content, duration, and frequency are fully customizable — whether you require half-day, full-day, or multi-session programs. Our expert instructors from R&D, engineering, and manufacturing provide comprehensive guidance, bridging the gap between classroom theory and hands-on practice. From training new hires and upskilling mid-level staff to hosting technical study sessions for the distributors, we are here to help you maximize your equipment's full potential.

03 Maintenance and Preventive Maintenance

To support the long-term stable operation of the equipment, we have specialized service engineers stationed at major domestic and international locations. Online support is available year-round to ensure smooth status sharing. We provide a prompt initial response based on your report and swiftly transition to on-site support as needed. We reliably back up operations with appropriate measures to prevent site downtime.

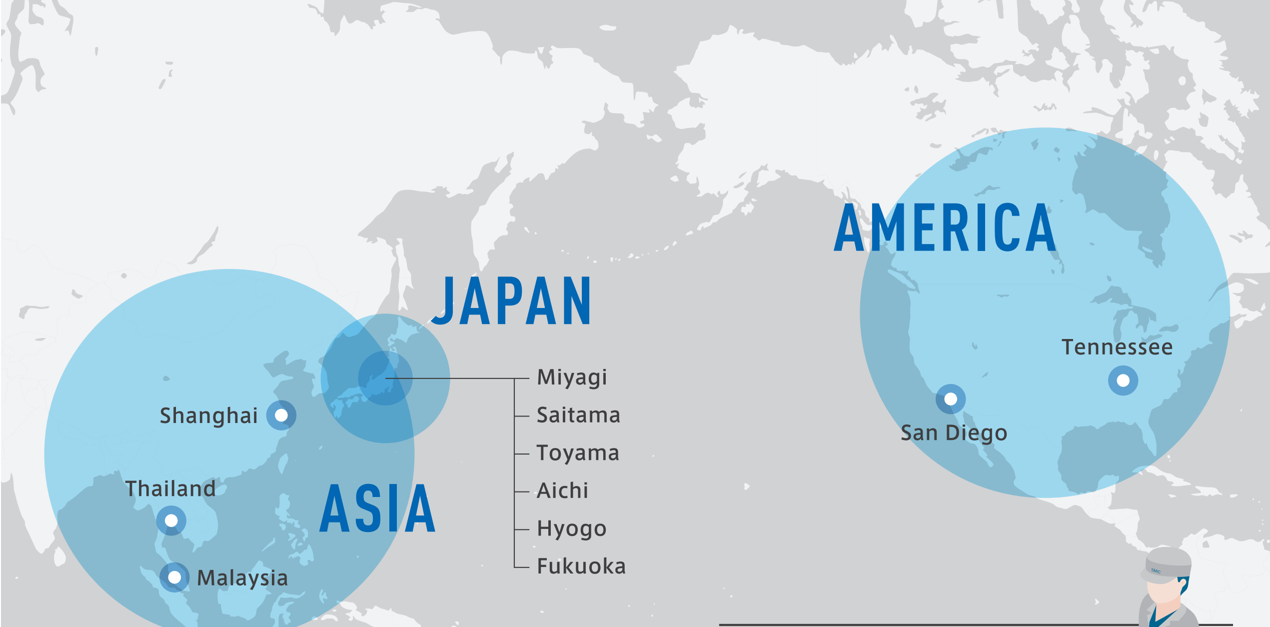
Fan motor inspection

Control panel inspection

Conveyor system inspection

Flux recovery unit cleaning

■ Service engineer locations

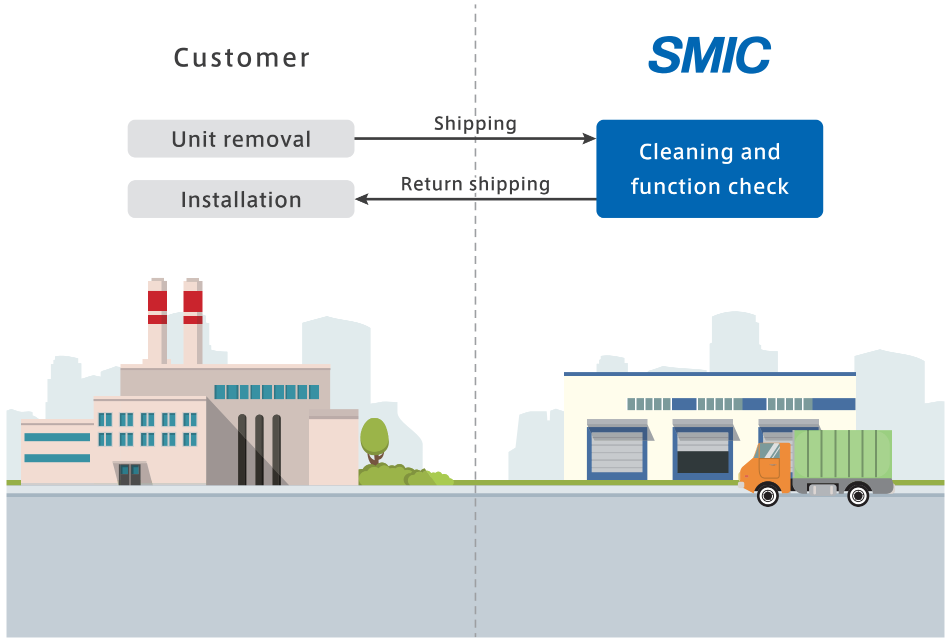


Region	Locations
Japan	Miyagi, Saitama, Toyama, Aichi, Hyogo, Fukuoka
Asia	Shanghai, Malaysia, Thailand
USA	Tennessee, San Diego

04 Flux Recovery Unit Cleaning Service

This service thoroughly cleans stubborn flux residue using our proprietary technology to restore recovery efficiency. It employs a non-flammable cleaning solution that complies with the Ordinance on Prevention of Organic Solvent Poisoning that is part of Japan's Industrial Safety and Health Act (ISHL), and prioritizes safety and environmental considerations. Using immersion, bubbling, and ultrasonic treatment, we remove even stubborn baked-on residues. Keeping the oven interior clean prevents residue adhesion to boards and stabilizes product quality and equipment performance. This cleaning service also contributes to reducing manufacturing losses and building a highly reliable production line.

■ Cleaning equipment used



∗ This service applies only to equipment purchased from our company. Used equipment and equipment from other manufacturers are excluded.
∗ Standard turnaround time (per unit) is five business days for return shipment after we receive the equipment.
∗ We also accept orders for cleaning machines and cleaning solutions.

Thoroughly cleans even baked-on flux residues

For safety and environmental considerations, we use a non-flammable cleaning solution that complies with the Ordinance on Prevention of Organic Solvent Poisoning. By immersing the unit in heated cleaning solution and applying bubbling and ultrasonic vibration, we thoroughly clean even stubborn, baked-on flux residues that are difficult to remove with routine maintenance.

■ Flux recovery unit cleaning process

Before cleaning During cleaning After cleaning

SMIC GROUP GLOBAL NETWORK

SENJU METAL INDUSTRY CO., LTD.
DUNS# 690663091

Established
April 15, 1938

Headquarters location
23 Senju Hashido-cho, Adachi-ku, Tokyo 120-8555 Japan

President
Ryoichi Suzuki

Major affiliated companies

■ Japan
Industrial Analysis Service, Ltd.
Senju Sprinkler Co., Ltd.
Senju Electronic Corp.
Senju System Technology Co., Ltd.
Senju Giken Co., Ltd.

■ United States
Senju America Inc.
Senju Comtek Corp.
Senju Fire Protection Corp.

■ Europe
Senju Metal Europe GmbH
Senju Manufacturing Europe s.r.o.

■ Asia
Senju (Malaysia) Sdn. Bhd.
Senju Trading (M) Sdn. Bhd.
Senju (Thailand) Co., Ltd.
Senju Solder (Phils.) Inc.
Tianjin Senju Fire Protection Equipment Co., Ltd.
Tianjin Senju Electronics Co., Ltd.
Shanghai Senju Business Management Consulting Co., Ltd.
Senju Metal (Shanghai) Co., Ltd.
Senju Metal (Huizhou) Co., Ltd.
Senju Metal (Hong Kong) Limited
Senju Electronic Materials (Hong Kong) Co., Ltd.
Senju Electronic (Taiwan) Co., Ltd.
Senju Semiconductors Taiwan Co., Ltd.
Senju Metal Korea Co., Ltd.

Domestic locations

Headquarters
Kitakami Office
Sendai Office
Koriyama Office
Tochigi Segment Matsuyama Factory
Tochigi Segment Kinugaoka Factory
Soka Segment
Toyama Segment
Matsumoto Office
Chubu Segment
Seto Segment
Kusatsu Office
Kansai Segment Nishiwaki Factory
Kansai Segment Naka Factory
Himeji Office
Fukuoka Office

Business locations as of August 2025