

IBL Technologies' Vapor Phase Soldering Systems Solve Production Challenges



Leading in Vapor Phase Technology



Why Choose IBL Vapor Phase Soldering Systems?

- The vapor phase process is ideal for lead-free and leaded reflow soldering
- Lowest possible maximum temperature
- Maximum temperature equals the boiling point of the liquid
- No overheating of components
- Low delta T's throughout the assembly
- Inert (oxygen free) atmosphere
- No use of nitrogen

Solve Common Production Challenges

Products are getting smaller, yet customers want the same power and features. The combination of heavy mass and smaller components in an ever smaller footprint is challenging for conventional convection reflow soldering. Add the higher temperatures required for lead-free reflow, the challenges of profiling in a high mix environment and the operating costs associated with conventional convection reflow and you have quality, resource and cost pressure. IBL Technologies' vapor phase reflow soldering equipment addresses these challenges.

An Optimum Solution for RoHS Products

Lead-free soldering requirements combined with higher density PCBA designs continue to challenge manufacturers. IBL Technologies' vapor phase soldering equipment offers a lower temperature solution.

In convection reflow, PCBA temperatures can easily reach 260°C or higher. In those temperatures, steam pressure in plastics and laminates can cause the PCB surface to delaminate or popcorn. With lead-free soldering a PCBA temperature of at least 250°C is likely. Comparatively, the recommended maximum temperature for vapor phase reflow of SnAgCu solder is 230°C, as the melting point of that solder is 221°C.

Improve Solder Joint Quality

Vapor phase technology helps minimize voids and tombstoning by using temperatures in the 217-227°C range even for RoHS-compliant assemblies. There is equal heat distribution because the PCBA is

immersed in a vapor blanket with perfect wetting properties due to the inert environment.

IBL's patented Soft Vapor Temperature Control (SVTC) mode supports creation of customized profiles that reduce the ramp rate down to 0.7/sec., after the assembly reaches 200°C. The assembly is driven by temperature set points and will not exceed the maximum programmed temperature or the boiling point of the fluid. This ability to control the speed of immersion and position in the vapor blanket limits tombstoning.

The combination of SVTC soldering with a vacuum process creates a thermal soaking zone which produces void-free, high quality solder joints. IBL's vacuum vapor phase soldering systems operate in an inert atmosphere throughout the entire reflow and vacuum process.

Reduce Cost

- Nitrogen is unnecessary because the vapor blanket creates an inert environment
- Power consumption is less because 98 percent

of the machine's heat is focused on heating the PCBA rather than the factory

- IBL machines have a very good vapor recovery system so loss of Galden® fluid is minimal
- Machine footprints are often smaller than conventional convection soldering machines freeing up factory floor space
- Preventative maintenance is only required once or twice a year for IBL machines, which reduces technician workload and increases capacity
- The ability to avoid tombstoning and solder joint voids is enhanced, resulting in less time and money spent on inspection and rework
- The profile window is broader and IBL's software enables rapid new product profiling, providing a fast changeover option for high mix production
- SVTC temperature-driven profiles reduce the number of profiles required, enabling new products to be run with existing profiles which reduces production start-up time dramatically
- There is no changeover time for leaded to lead-free products

Lab, Batch and High Volume

Batch Soldering Machines

- The MiniLab table top machine is ideal for laboratory use and prototyping operations
- The SV260 and SV360 economy series is perfect for small to medium production requirements
- The premium SLC/BLC systems satisfy the highest demands for process stability and flexibility in the smallest footprint and incorporate IBL's Soft Vapor Temperature Control (SVTC)



Inline Soldering Machines

The CX600 and CX800 machines offer the highest quality for medium to high throughput and incorporate IBL's Soft Vapor Temperature Control (SVTC).

A Vapor Phase Solution for Every Need

Vacuum Vapor Phase Machines

- Vacuum soldering technology provides maximum solder quality for void-free soldering
- The VAC645/VAC665 machines are available as batch or inline vapor phase systems

Customized Solutions

- Customized vapor phase machines such as the SLC1204 can be made to support special customer requirements
- Galden® vapor phase fluids are recommended for all IBL systems



Economy Batch Equipment

MiniLab Features:

- Ideal for development, prototyping and mini series production
- Board size up to 300 x 275 x 80 mm
- Desktop unit
- Low energy and fluid consumption with integrated heat exchanger
- Easy operation due to soldering automatic and patented process
- 230 V operation
- Maintenance-free transport system



SV360 Economy Unit Features:

- Powerful unit for single and serial production
- For large board sizes up to 560 x 360 x 80 mm
- Low energy and fluid consumption with 2-chamber design and integrated heat exchanger
- Small footprint
- Touch panel and automated soldering process provide ease of operation
- Integrated fluid filter system
- Maintenance-free transport system

SV260 Economy Unit Features:

- Optimized for laboratory operation, prototyping and small series production
- Board size up to 300 x 260 x 80 mm
- Desktop unit with easy front loading
- Low energy and fluid consumption with 2-chamber design and integrated heat exchanger
- Professional operator panel automated soldering program storage
- Easy profile recording option
- 230 V operation
- Maintenance-free transport system



Premium Soft Vapor Phase Equipment

SLC/BLC Premium Units Features:

- Highest precision and process quality with patented Soft Vapor Temperature Control (SVTC)
- Built-in software profiling capability
- Production data can be stored for traceability
- Temperature-regulated profiles lead to a repeatable process
- Wide variety of adjustable solder profiles
- Lead-free and leaded soldering with one fluid only, with different maximum temperatures
- Optional inline-handling (upgrade possible)
- 11 machine types for board sizes from 300 x 340 x 80 mm up to 840 x 540 x 80 mm
- Special sizes available on request
- Low energy and fluid consumption with 2-chamber design and integrated heat exchanger
- Low maintenance due to cool handling (all moving parts outside process chamber)
- Small footprint
- Optional patented Rapid Cooling System (RCS) for reduced cycle time and heat reduction of sensitive parts
- Maintenance-free transport system
- Versatile automatic profile editing using the pilot mode (set-up and profiling in one step)



Inline Vapor Phase Reflow

IBL's CX600/CX800 models are fully automated inline vapor phase soldering solutions which provide precise, high quality results at medium to high volume throughput. The machines feature a standardized SMEMA interface for easy inline integration.

Features:

- Fully automatic inline operation
- Built-in software profiling capability
- Production data can be stored for traceability
- Temperature-regulated profiles lead to a repeatable process
- Three internal process chambers with automatic airlocks
- Easy programming of solder data via intuitive touch screen display
- Two independent stations for loading and unloading of carries via IBL's cool handling system (no moving parts in the process chamber)
- A cycle time of under 20 sec. per board is possible
- Energy management system includes standby mode for lowest energy consumption
- Optional uninterrupted power supply
- Maintenance-free transport system
- Carrier sizes from 680 x 650 x 80 mm up to 825 x 650 x 80 mm



Vacuum Vapor Phase Reflow

Vacuum soldering technology provides maximum solder quality for void-free soldering.

VAC645/VAC665 Features:

- Patented vacuum system in the vapor phase for void-free soldering
- Built-in software profiling capability
- Production data can be stored for traceability
- Temperature regulated profiles leads to repeatable process
- Low process temperatures and time optimized vacuum process
- Highest precision and process quality with patented Soft Vapor Temperature Control (SVTC)
- Optional inline-handling (upgrade possible)
- Board sizes from 635 x 440 x 70 mm up to 635 x 640 x 70 mm
- Small footprint
- Low energy and fluid consumption with 2-chamber design and integrated heat exchanger
- Low maintenance due to Cool Handling (all moving parts outside process chamber)
- Easy touch screen control
- Optional patented Rapid Cooling System (RCS) for reduced cycle time and heat reduction of sensitive parts
- Maintenance-free transport system
- Versatile automatic profile editing using the pilot mode (set-up and profiling in one step)



Optional ReSy Tool available for BGA Repair



Growing Installed User Base

Improvements in materials and machines have made vapor phase soldering a viable alternative to convection soldering systems. RoHS requirements and miniaturization have increased demand as manufacturers have seen the advantages it offers in terms of lower temperatures and more even heating. Today, there are more than 500 installed in North America, more than 1000 in Europe and 300-500 in Asia. Both original equipment manufacturers (OEMs) and electronics manufacturing services (EMS) companies are adding the technology.





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