THERMAL SYSTEMS

CondensoX

Reflow Condensation Soldering System

As a co-founder of modern Reflow-Convection-Soldering Systems the company Rehm has been established successfully since 1990 in the national market as well as worldwide. The know-how and experience in reflow technology of many years is now integrated in the **CondensoX**-series. Optimized for customer requirements the **CondensoX** stands for productivity and flexibility.

CondensoX

Reflow Condensation Soldering System

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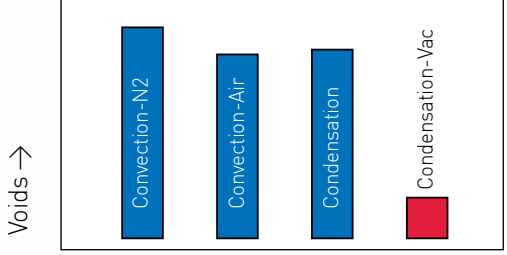
Systemadvantages

- Low operating costs
- Profile longitudinal / lateral ±2 K
- Ideal for PCBs with large thermal mass
- Void-free thanks to vacuum option
- Simple, accurate temperature profiling
- Horizontal conveyor
- Constant temperature
- Inert gas soldering

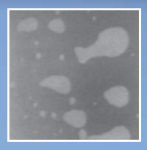
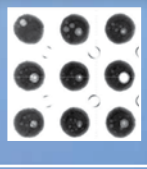
Why condensation soldering?

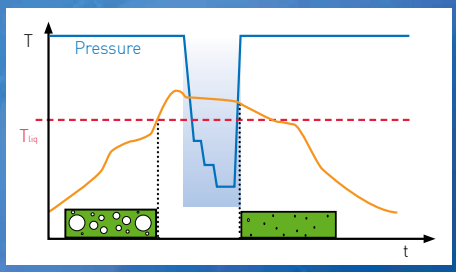
Condensation soldering (also known as vapour-phase soldering) is reliable, warranty for high quality, heat uniformly, preserves the materials, economic, environmental-friendly ... shortly, the best for the assemblies.

Why Vacuum?



Comparison: Voids/Soldering method

without vacuum		with vacuum
	Surface contacts up to 99%	
	Improved filling of micro vias and THD-solder joints	
	Minimum of voids (particularly important on power electronics)	
	Improved wetting	



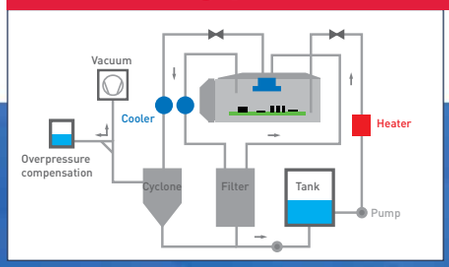
Void-free soldering with lead-free solders is an important prerequisite for the production of power electronics. However, minimal void rates are only possible with soldering processes which subject the molten solder to a vacuum, making it easier for any remaining residues to escape from the solder joints. For this reason, the Condenso can be equipped with a vacuum pump upon request. This results in solder joints with surface contact ratios of greater than 99% in many cases.

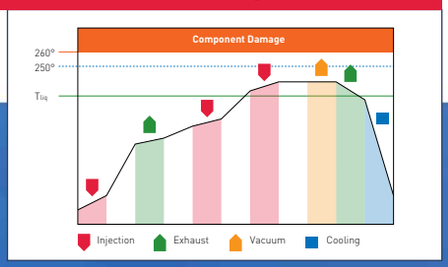
In addition to the vacuum process during the melting phase, vacuum can also be applied before starting with the soldering process itself. This allows not only an uniformly injection of the Galden but the evaporation of the solvents of the paste. Furthermore, through the pre-vacuum, the oxygen of the chamber is replaced with nitrogen, eliminating oxidation.

Vacuum up to

2 mbar!

Soldering process and exact profiling





A defined quantity of an inert fluid (usually perfluorpolyether) is vaporized during reflow soldering in the process chamber, which is hermetically sealed by means of a bulkhead. The vapor allows for extremely effective heat transfer to the PCBs due to the release of heat during condensation, and the temperature of the medium remains constant. In addition to this, the medium's boiling point limits the maximum soldering temperature so that the PCBs cannot be damaged due to overheating. This, as well as the ability to control the volume of injected liquid and intermediate exhaust of the vapor, also makes it possible to precisely adjust the temperature/reflow profile of the PCB. Flawlessly reproducible soldering results are thus guaranteed, which minimizes scrap rates.

- >> Smallest ΔT
- >> Extremely efficient and uniform heat transfer over the complete assembly
- >> Maximal soldering temperature limited from the boiling temperature of the Galden
- >> Patented injection principle warrants repeatable solder results and allows optimal profiling
- >> Control of gradients
- >> Time efficient profiling

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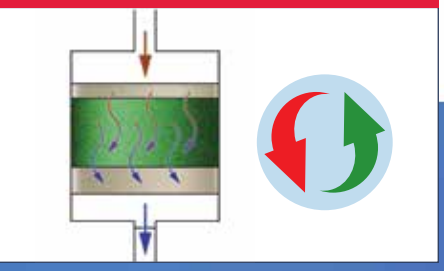
Reflow Condensation Soldering System

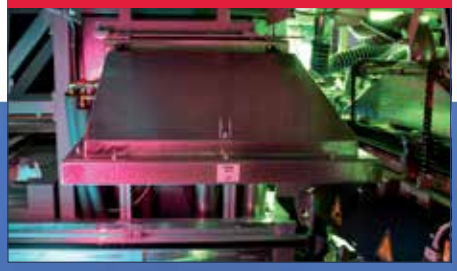
Medium recycling



A partial vacuum is generated when the vapour is drawn off, assuring quick drying of the PCBs. The vapour is cooled down after it has been drawn off. After it has condensed, it is filtered and impurities are removed. The fluid is then returned to the soldering process. Due to the fact that the process chamber is hermetically sealed, only minimal loss results from vaporization during the soldering process. Medium consumption, as well as costs, are thus significantly reduced.

- >> Hermitically sealed process chamber
- >> Fluid filtering and recycling
- >> Drastic reduction of fluid consumption
- >> Environmental friendly

Cooling



After the soldering process, the PCB can then be advanced out of the process chamber for cooling. Here you're provided with the option of reducing the standard air cooling temperature to a constant low level with the help of water. This makes it possible to cool the PCB absolutely uniformly, and above all more quickly. Furthermore, the machine's ambient temperature is not significantly increased

- >> Standard: Air cooling
- >> Option: water cooling for faster and uniform cooling down

Transport

The assemblies are transported strictly horizontally through the soldering system. Furthermore, the PCB is stationary during the soldering process. In this way, components cannot be shifted out of place while the solder is molten. It has thus been possible to eliminate a considerable disadvantage associated with conventional vapour phase soldering systems within which continuous vertical motion of the PCBs is required during soldering. Scrap rates are reduced as a result, as well as costs.

- >> Horizontal conveyor
- >> PCBs are still during the complete process
- >> Optional, high speed handling systems available

Special applications

Source: Harting

- Void-free soldering
- Photovoltaic
- Substrates on heat sinks
- Lead free soldering up to 240°C
- MIDs
  MIDs (molded interconnected devices) have due to their 3-D design flexibility an enormous potential for economization. Their spatial design makes soldering complicated. The Condenso, with its uniform heat transfer over the complete assembly solves this problem.

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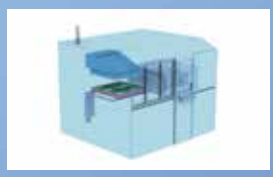
CONDENSO

Models with different Loading options

XS

Length: 2522 mm
Width: 1942 mm
Height: 1750 mm

Manuell
Front loading



XM

Length: 3426 mm
Width: 1982 mm
Height: 1750 mm

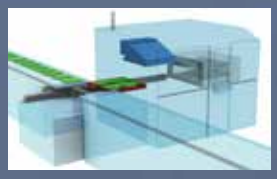
Basic
Standard Version
without vacuum-option

Manual
with standard axis system
or extended axis system

XP

Length: 4300 mm
Width: 2070 mm
Height: 1750 mm

Automatic
1 axis system*

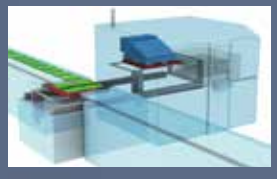


XPHS

Length: 4300 mm
Width: 2070 mm
Height: 1750 mm

Vacuum
Condenso with vacuum option

High speed
2 axis system



Dimension of WPC: 650 x 650 mm

*Figure with HS (High speed loading)

THERMAL SYSTEMS

Worldwide Service Network

- Fast reaction time
- Remote maintenance
- Support by phone
- Advisory service
- Spares service

Innovation for success!

www.rehm-group.com

Rehm Thermal Systems is an international supplier to the electronics and photovoltaic industries, specializing in convection, condensation and selective soldering, as well as curing and firing technologies. Rehm has manufacturing operations in Germany, China, and Russia, and technical support facilities throughout Europe, Asia and North America.

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