



## Inline Vacuum Reflow Soldering Systems since 2009



### SMT Highlights:

- Tool-free maintenance of all SMT Systems
- **NEW !** CATalysis - process gas cleaning
- Sustainable energy and nitrogen saving concept
- Prooven Vacuum Reflow Technology (since 2009)
- **NEW !** Independent fan control in all zones



Vacuum Soldering



# Inline Vakuum Reflow Soldering System since 2009



**Void-free soldering** is a basic requirement in the high-performance electronics. Life-sustaining devices, control systems on the plane and driving assistance systems in the automotive sector all have one thing in common: They have to function completely safe and faultlessly over an extended period of time. Base requirement for accomplishing this is a high-strength almost **void-free solder joint**. Voids in a solder joint have to be reduced to an acceptable minimum.

SMT offers with its vacuum reflow soldering system a unique solution on the market. The vacuum process starts after the melting process in the peak area. The assembly is driven with the molten solder through an **in-line transport system** in the vacuum chamber. By using vacuum the voids of the solder joint are drawn. Subsequently, the assembly is moved to the cooling zone where the solder solidifies.

SMD-Reflow Soldering



In vacuum reflow soldering systems all proven and field-tested systems properties were adopted from our reflow soldering systems, which are especially characterized by **long life time** and **high process reliability**.



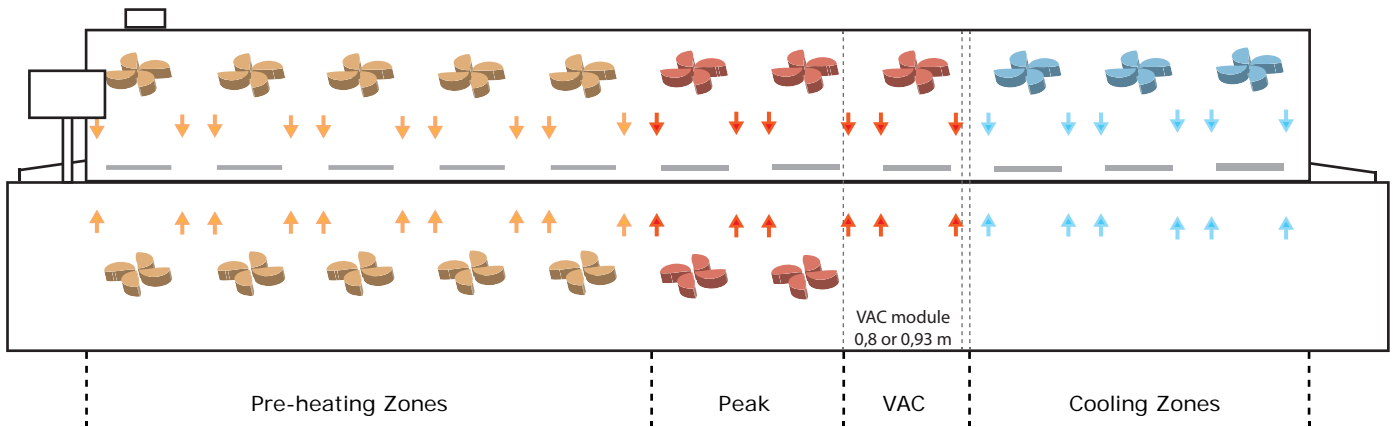
2009, the first SMT Vacuum Reflow Soldering System was introduced. Already in the following year SMT has received numerous awards for its vacuum reflow soldering technology.



## Reflow-Highlights

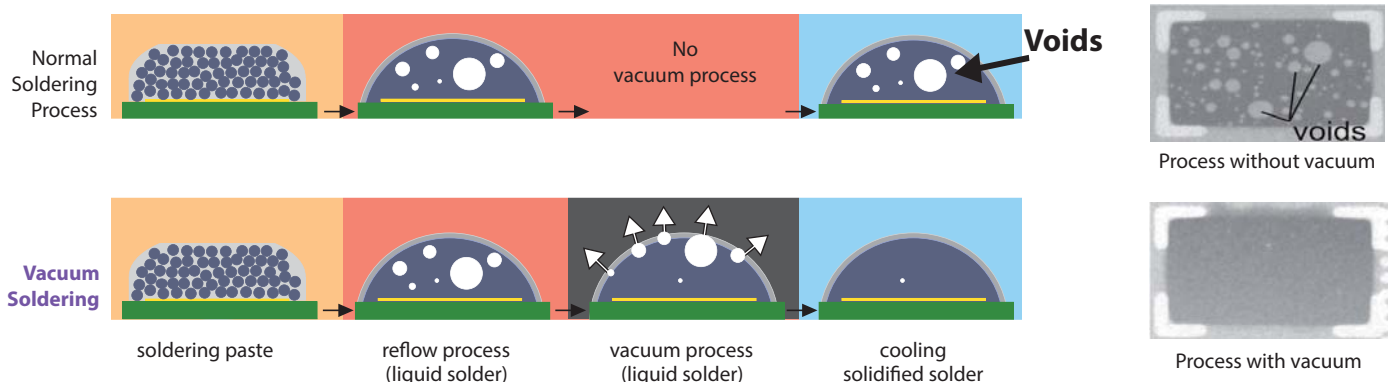
- - CATalysis: Cleaning process can take place due to the catalyst at lower temperatures  
→ **better cleaning performance**
- **Granulate with precious metal coating** provide a splitting of long-chain hydro-carbons and the organic material is ideally split completely to water and carbon dioxide
- **Precise nitrogen control** by integrated lambda sensor technology and real-time continuous measurements of residual oxygen value  
→ **less nitrogen consumption**  
→ easy calibration (exchange possible by customer)
- Gas-tight fan units
  - Constant process gas, adjustable via frequency converter
  - Encapsulated, **maintenance-free** fan motor, no slight leakiness  
→ Energy and nitrogen savings
- **Lowest operating costs**
  - Lowest energy and media consumption
  - Lowest consumption of spare and wear parts (e.g. rails, chain, fan motors, heating elements)

Subject to change without notice, 10/08/2016

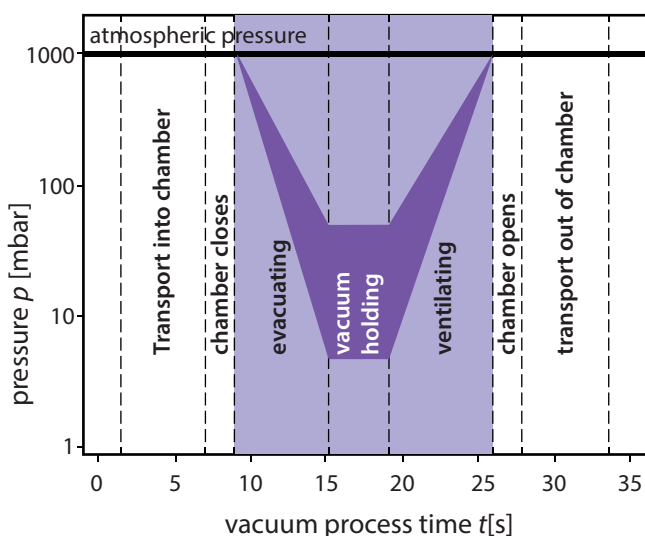


- Vacuum module between peak and cooling zone
- Stainless steel Vacuum chamber heatedly from the outside
- Inline System
- Nitrogen capable
- With and without vacuum process
- All parameter are individually adjustable

### Soldering process with and without vacuum



### Process parameter



### Your Benefit

- Voids will be **reduced up to 99%**, solder joints quality optimized
- 2- and 3-lane conveyor possible
- **Reliable transport transfer** in the system
- Large vacuum pump (305 m<sup>3</sup>/h)  
→ fast and reliable vacuum process
- Suitable for PCBs, DCB, stamping grid and carrier
- Parameter individually adjustable: Evacuation time; vacuum hold time; ventilation time; vacuum pressure

**Sold Systems**  
**> 110 pcs. since end of 2009**



**SMT**  
THERMAL DISCOVERIES

## Technical Data

	VAC S	VAC M	VAC L	VAC L Plus
<b>External dimensions</b>				
Length incl. small VAC module (800 mm length):	5472 mm	5922 mm	7027 mm	7514 mm
Width:	1435 mm	1435 mm	1435 mm	1435 mm
Height (in delivery condition / with warning light) <sup>1.)</sup>	1767/2353 mm	1767/2353 mm	1767/2353 mm	1767/2353 mm
Inlet height, adjustable by customer: <sup>1.)</sup>	950 mm +/- 20 mm	950 mm +/- 20 mm	950 mm +/- 20 mm	950 mm +/- 20 mm
<b>Weight</b>	approx. 3100 kg	approx. 3300 kg	approx. 3700 kg	approx. 4600 kg
Number / rollers / diameter feet:	14/8/80 mm	15/8/80 mm	15/8/80 mm	16/8/80 mm
<b>Process chamber</b>				
Pre-heat- / peak zones / peak zones VAC module:	3/2/2	3/2/2	4/2/2	5/3/2
Active Convection length:	2861 mm	3311 mm	3943 mm	4430 mm
Cooling zones <sup>2.)</sup> :	dual = 1752 mm	dual = 1752 mm	triple = 2226 mm	triple = 2226 mm
<b>Power</b>				
Power consumption steady state condition system / VAC module: <sup>3.)</sup>	approx. 10/7 kW h	approx. 10/7 kW h	approx. 11/7 kW h	approx. 12/7 kW h

1.) Standard height: 950 mm; corresponding to a changed inlet height

2.) Up to 5 cooling zones possible. Each cooling zone: 474 mm

3.) Machine with chain conveyor, 220 mm transport width, fan speed reduction and no other options

VAC XL and VAC XL Plus on request.

## Technical Data from VAC S up to VAC XL Plus

### Product size:

Small vacuum module 800 mm <sup>1.)</sup> 320 x 510 mm

Large vacuum module 930 mm <sup>1.)</sup> 450 x 510 mm

### Process chamber

Bottom side heating in pre-heating zone: yes  
 Temperature measurement: NiCr-Ni sensors in hot gas flow  
 Heat-up time: approx. 60 min.  
 Heat-up time with economy switch: approx. 90 min.  
 Heat transfer: 100% forced convection  
 Heat transfer in VAC module: thermal radiation  
 Process temp. (pre-heat-/peak/VAC module): max. 300 °C / 350 °C / 300 °C

### Transport chain conveyor

Usable working width: 65 ... 510 mm  
 Usable working height with PCB support: Pin level -10 mm  
 Movement: left-right  
 Fixed Rail: front  
 Pass through height (top/bottom): 30/30 mm  
 Max. floor loading: 3 kg/m  
 Conveyor speed: 0.2 ... 3.0 m/min.

### Cooling water

Connection thread: 2 x 1/2"  
 Quantity of / pressure of cooling water: > 15 ltr./min / > 2,5 bar  
 Temperature of cooling water: < 15 °C

### Extraction <sup>2.)</sup>

Suction pipe: 1 x Ø 200 mm, 1 x Ø 153 mm  
 Required exhaust air at pipe inlet / VAC: approx. 600 ... 800 m<sup>3</sup>/h  
 Temperature of exhaust air at the pipe: < 50 °C  
 Internal exhaust air resistance of oven: 3 - 8 mbar

### Continuous sound pressure level

< 70 dB(A)

### Control unit

CDIAS with RT 7

### Nitrogen Connection<sup>3.)</sup>

Connection armature: R 3/8" internal thread

Working pressure (at connecting armature): 6 ... 8 bar

N<sub>2</sub>-consumption, steady state condition at transport width 220 mm: <sup>4.)</sup> approx. 9 m<sup>3</sup>/h

N<sub>2</sub>-consumption, full load at transport width 220 mm: <sup>5.)</sup> approx. 15 m<sup>3</sup>/h

Readiness for the system (1000 ppm, N<sub>2</sub> < 5 ppm O<sub>2</sub>): approx. 15 min.

**Connecting power supply:** 3~N, PE 230 / 400 V, 50 Hz

1.) Differing at dual or triple lane

2.) Connection of a flexible, heat resisting (at least up to 100 °C) hose (available by SMT) or tube. The waste air exhausting unit with adjustable throttle valve mounted after the suction sleeves has to be installed by the user.

3.) N<sub>2</sub>-supply with pressure reducer has to be mounted by the user, recommended supply of nitrogen with oxygen content < 5 ppm.

4.) 1000 ppm with proportional valves and sleeping mode (options);

if 500 ppm then approx. 10 m<sup>3</sup>/h

5.) With PCB (220 x 220 mm), one PCB length distance, 1000 ppm;

if 500 ppm then approx. 17 m<sup>3</sup>/h

The vacuum systems are individually configurable. Choose from a variety of lengths from heating zone length, vacuum module and the cooling zones and at transport system between a single, double or triple lane.

Ask us, we have the **perfect solution** for your application.

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SMT Maschinen- und Vertriebs  
 GmbH & Co. KG  
 Roter Sand 5-7  
 97877 Wertheim, Germany  
 ☎ +49-9342-970-0  
 info@smt-wertheim.de  
 www.smt-wertheim.com

