QUALITY „MADE IN GERMANY“
POWER SEMICONDUCTORS

SMT THERMAL DISCOVERIES

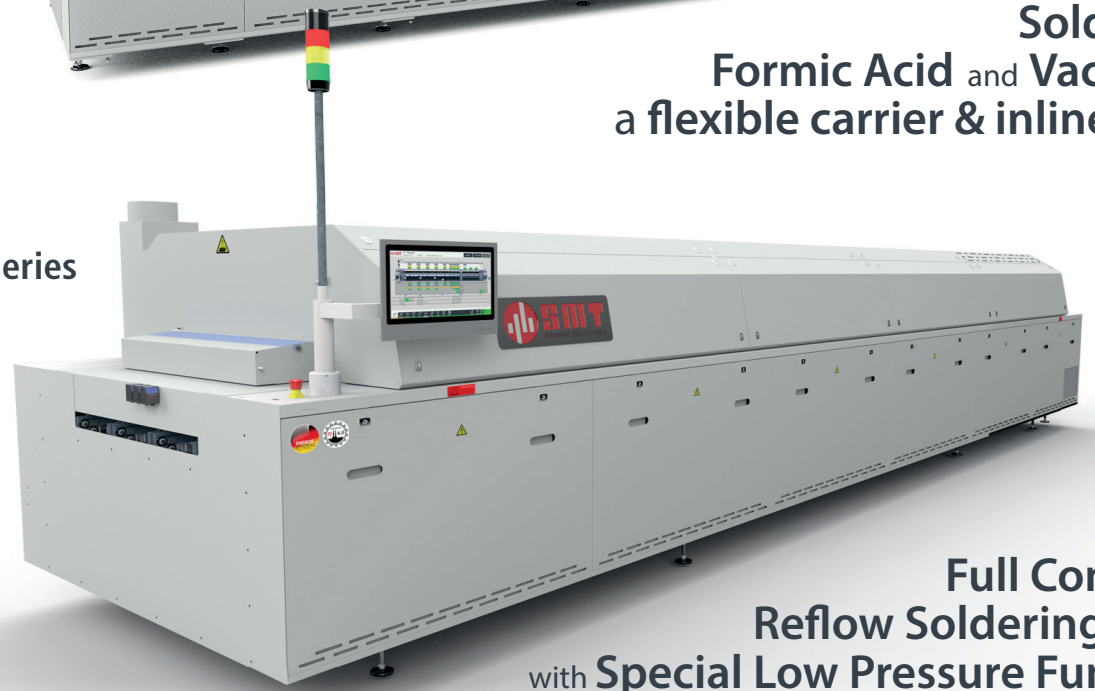
POWER SEMICONDUCTORS

F-Series



Soldering with
Formic Acid and **Vacuum** within
a **flexible carrier & inline solution**

B-Series



Full Convection
Reflow Soldering System
with **Special Low Pressure Function** for
ultra thin products and with
adjustable triple-lane transport

Solutions for the Production of Power Electronics

smt-wertheim.com

F-SERIES

A Full Convection Reflow Soldering System with Formic Acid and Vacuum within a flexible Carrier & Inline Solution for

- Power Electronics
- The Semiconductor Industry
- IGBT
- DBC
- Die Attach
- Opto Laser
- Heatsink
- Heat Spreader Attach
- Double-sided cooling packaging
- In general copper or similar surfaces
- Flux free soldering with preforms
- Vapor phase substitution
- Cleaning process

ATMOSPHERE

- Formic Acid (CH_2O_2)
- Nitrogen (N2)

ALLOY

- High temperature solder
- SAC 305 or SA
- Tin-antimony

PROCESS

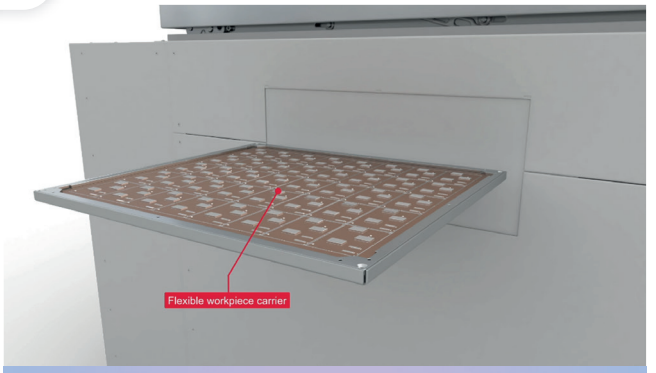
- Vacuum
- Solder Paste withou/with Flux
- Preforms without/with Flux
- Selective Convection

PROCESS & TRANSPORT

One System for different Products, Processes and Needs

- **Product mix possible**
- **One general work piece carrier**
  fexible inlay can be used for different product types and can be modified/created by customer (laser cut inlay / flexible grid)
- **Fast Cycle Times possible**

F-Series F3: 1 preheating zone, 2 x vacuum heating zones
F-Series F4: 1 preheating zone, 3 x vacuum heating zones



no toolings needed
(for soldering)

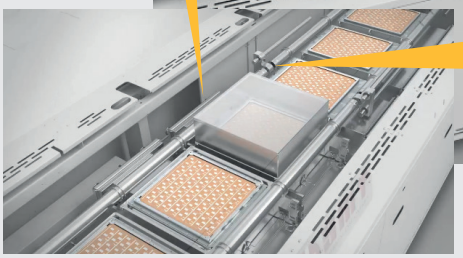
★ **Vaporizing process**

- products colder than vacuum chamber
- formic acid acts preferentially on product and can creep under components

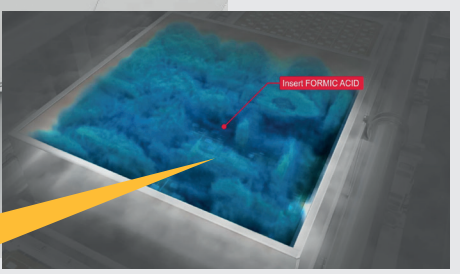
★ **ABS cleaning in heating zone**

★ **Condensation trap in cooling zone**





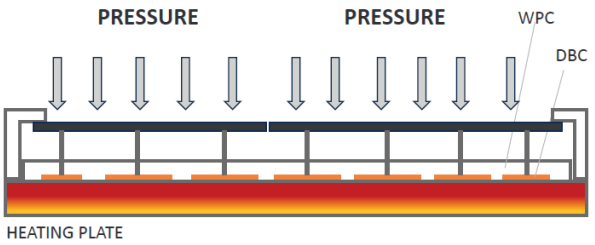
- intelligent safety concept
- Formic acid only in vacuum
- N_2 Environment
- Gas detection Systems



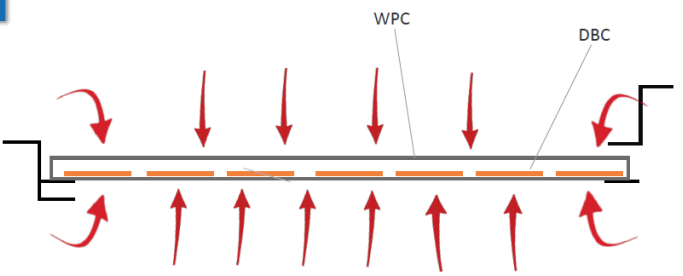
PROCESS

In general, Formic Acid Soldering is used within heating plate soldering.
SMT Thermal Discoveries has chosen the Forced Convection Reflow Process.

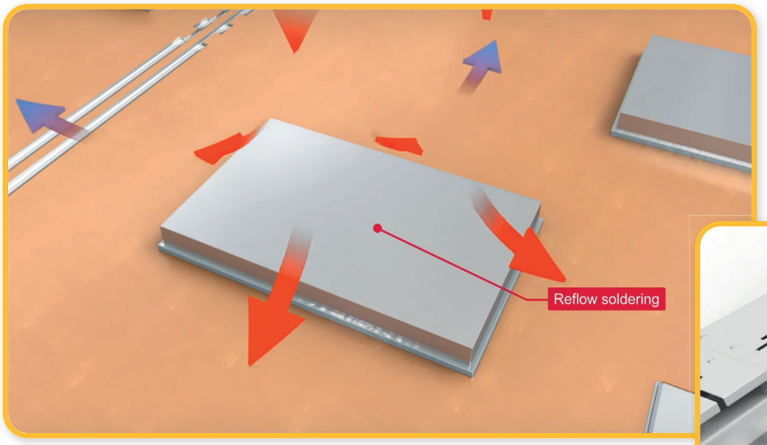
HEATING PLATE CONCEPT
as done by competitors
(complex & individual tooling required)



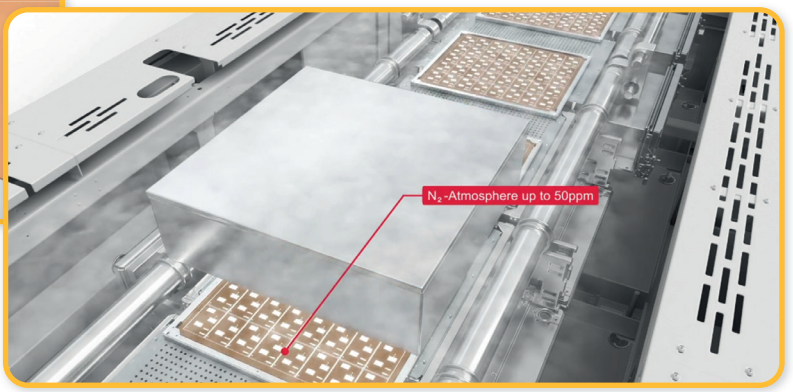
CONVECTION CONCEPT by SMT



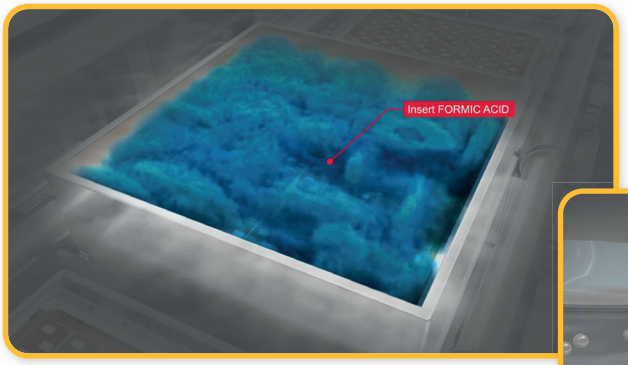
✓ No pressure related tooling on work piece carrier



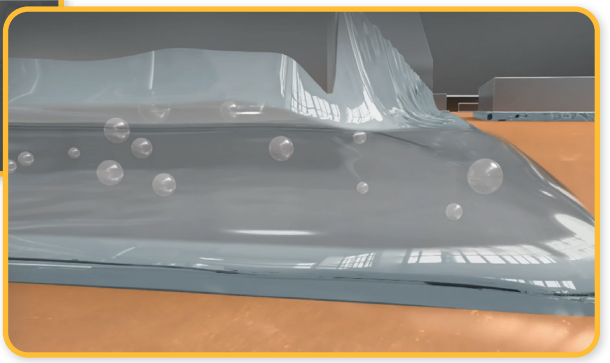
Reflow Convection - for a homogeneous temperature distribution - ideal for complex heat sinks.



N_2 Atmosphere ≈50 ppm



Insert Formic Acid - only in Vacuum



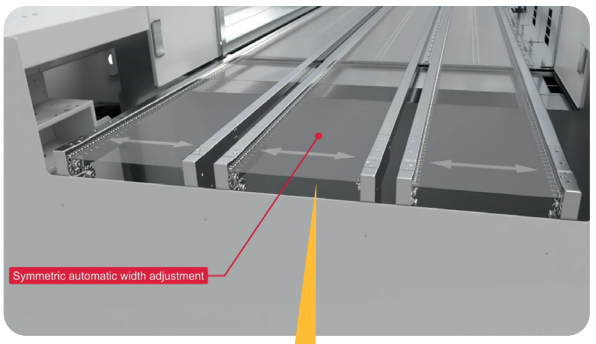
Pull Vacuum -
to ensure Void-free
Soldering

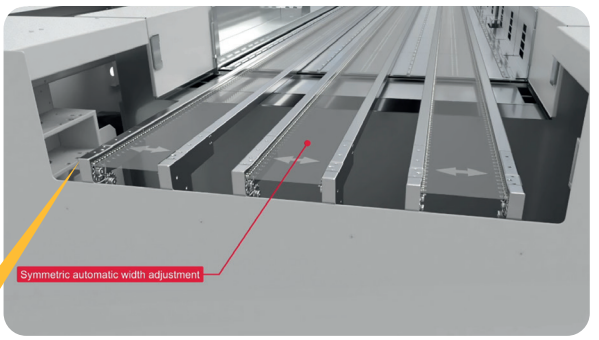
B-SERIES

A State-of-the-Art Reflow Soldering System with plane flat guarantee function for extremly thin products of 0,2 – 0,5mm (no warpage) - eliminating tilting of the components.

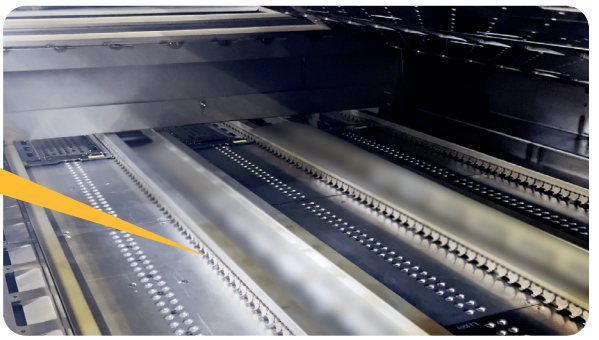
The System Provides

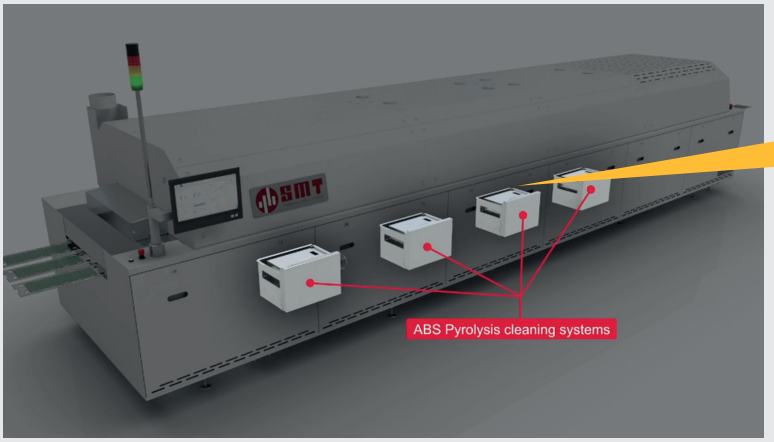
- full convection reflow heating concept with the energy saving „Profiling Plus" Application - flexible for different products with the same temperature settings
- heat transfer controllable via fan speed
- low exit temperature
- intelligent nitrogen control system
- improves yield





★ adjustable (coupled) tripple lane transport - up to 220mm width - enables paralell product throughput

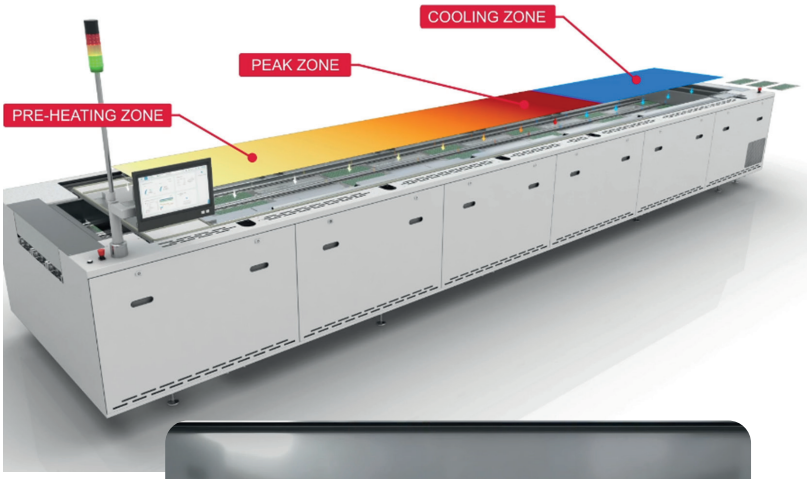


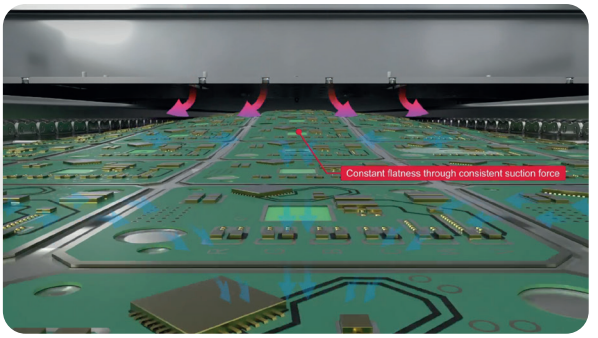


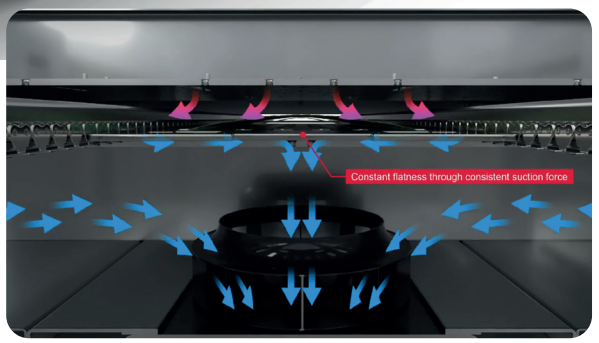
★ with established 4x ABS-cleaning system - optimized Flux-management-system -> low maintenance guaranteed

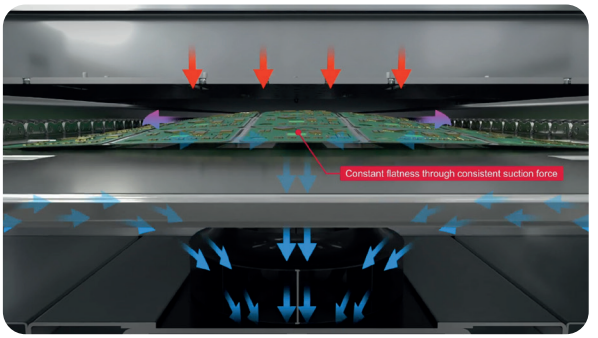
FUNCTION & PROCESS

Due to negative pressure and suction force the consistant flatness throughout the entire process can be ensured.

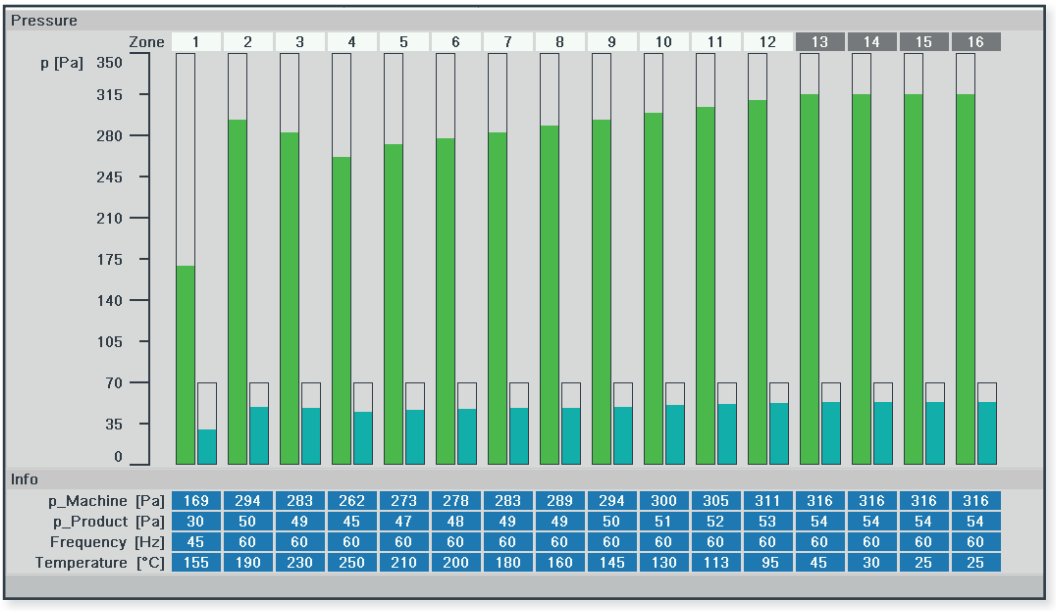








CONSTANT MONITORING AND PRESSURE CONTROL



pressure profile of machine interior AND underneath the product

POWER SEMICONDUCTOR HIGHLIGHTS

- **machine availabilty** → reliable transport is the heart of the System
- **lowest total cost of ownership** → low energy & spare parts consumption
- **tool free maintenance concept**
- **high quality process** → also for complex needs

ABOUT SMT

- a family-owned company in central Europe / Germany estd. in 1987
- innovation leader with global presence
- thermal processes experts in convection technology
- 100% „Made in Germany" production
- ISO 14001& ISO 9001 certified

Quality Made in GERMANY





Machines for Thermal Processes

Reflow Soldering | Vacuum Soldering | Temperature Treatment | Power Semiconductors

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