THERMAL SYSTEMS

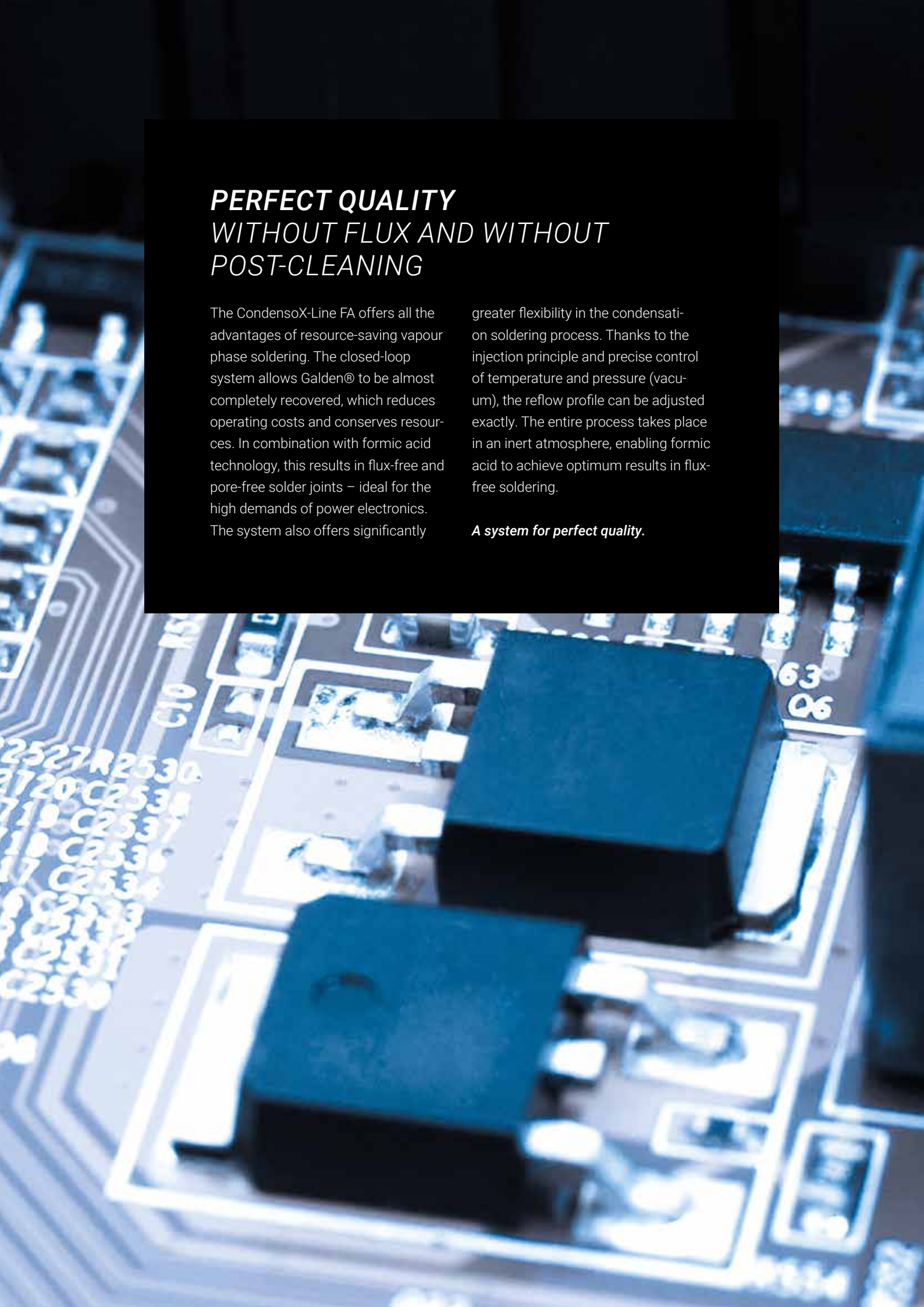
Condensation soldering

Performance. Precision. Reliability.

CondensoX-Line FA

Create your Connections.

www.rehm-group.com



PERFECT QUALITY
WITHOUT FLUX AND WITHOUT POST-CLEANING

The CondensoX-Line FA offers all the advantages of resource-saving vapour phase soldering. The closed-loop system allows Galden® to be almost completely recovered, which reduces operating costs and conserves resources. In combination with formic acid technology, this results in flux-free and pore-free solder joints – ideal for the high demands of power electronics. The system also offers significantly greater flexibility in the condensation soldering process. Thanks to the injection principle and precise control of temperature and pressure (vacuum), the reflow profile can be adjusted exactly. The entire process takes place in an inert atmosphere, enabling formic acid to achieve optimum results in flux-free soldering.

A system for perfect quality.

PRODUCT OVERVIEW

CondensoX-Line FA at a glance

Rehm has been working on the use of formic acid as a reducing agent in reflow soldering since 1993. Today, Rehm is the only manufacturer worldwide to offer HCOOH technology in all three industrial reflow processes: convection, condensation soldering and contact soldering.

Reliable soldered joints. Create your Connections.

CondensoX-Line FA

The CondensoX-Line FA achieves the perfect symbiosis of vapour phase soldering and formic acid activation – for reproducible, clean, high-quality solder joints. The combination of the vacuum option and formic acid process specifically removes oxides from the solder joints for void-free, higher-quality connections, even with flux-free soldering.

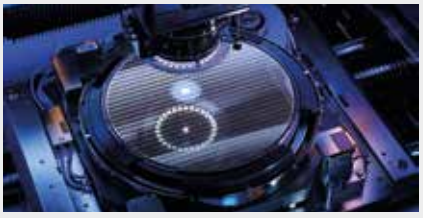
Areas of application

Demanding assemblies

The CondensoX line with formic acid is particularly impressive where quality, cleanliness and heat dissipation of the solder joint are crucial:

- **Power electronics (IGBT, MOSFET modules, inverters)**
- **LED and optoelectronics**
- **High-frequency assemblies (radar, satellite and communication systems)**
- **Wafer bumping/BGA reflow**

Even with massive assemblies with large soldering surfaces, virtually void-free solder joints are created – for optimum heat transfer and a significantly longer service life for the components.



TECHNOLOGY WITH ADDED VALUE
PURITY, EFFICIENCY & SUSTAINABILITY

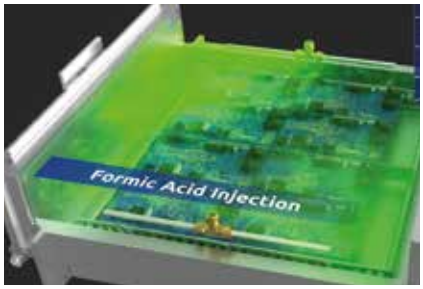
The CondensoX-Line FA sets new standards in vapour phase soldering. The integration of formic acid creates a flux-free, pore-free soldering process that guarantees maximum reliability – and at the same time eliminates the need for cleaning.

The integrated closed-loop system for the Galden® medium offers an efficient and sustainable solution. After soldering, the assembly is transferred to the cooling process. At the same time, the extracted process gas is cleaned. This means that a large proportion of the Galden® can be reused – a particularly material- and environmentally-friendly solution! The extraction process creates a vacuum, which also guarantees rapid drying of the soldered material.

A real step forward for energy efficiency, sustainability and cost-effectiveness in electronics manufacturing.

HIGHLIGHTS

Closed loop oil filtration



Formic acid injection for flux-free soldering

Hermetically sealed process chamber

Create your Connections – sustainable and efficient.

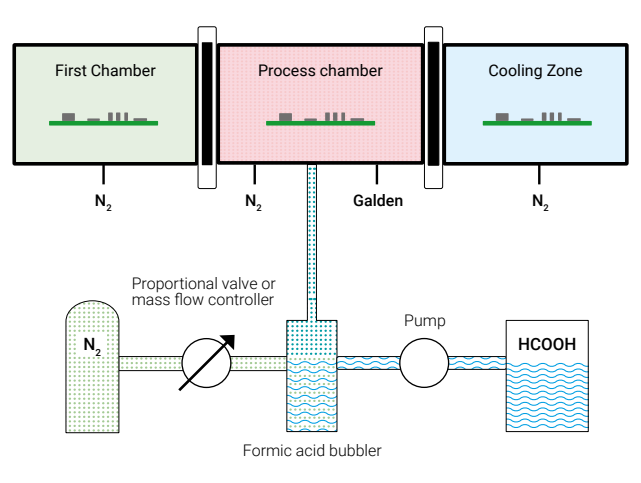
THE PRINCIPLE
FLUX-FREE PROCESS

For process-stable, flux-free soldering, the carrier gas (N_2) is enriched with formic acid (HCOOH) and fed into the process chamber. To keep the gas 'saturation' constant, the N_2 volume flow, temperature and fill level of the formic acid container (bubbler) must be kept stable.

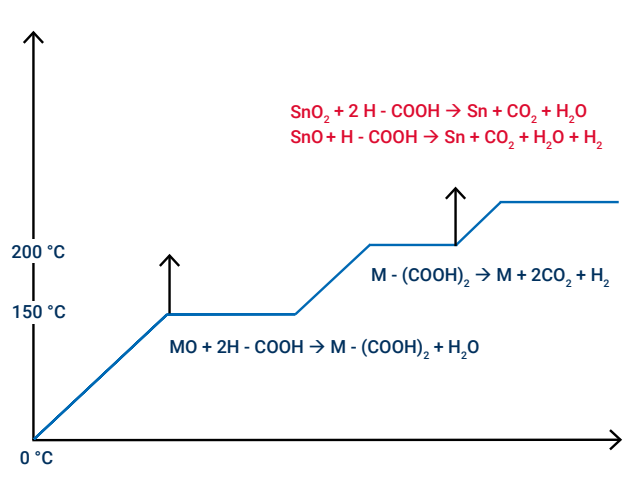
The removal of oxides on metals takes place in a two-stage process with formic acid. In the first stage, so-called formates of the metal are formed and, at temperatures above approx. 200 °C, the formates are decomposed (Cu) or evaporated (SnO, SnO_2). The H+ formed in the second stage supports oxide removal, as does the solder, which becomes liquid at the melting temperature in the reducing environment. This allows a well-wettable surface to be achieved on copper and other metals.

The result:

Clean, oxide-free and perfectly wetted surfaces on copper, tin and silver – without residues, without cleaning, without quality risks.



3-chamber principle with formic acid process



Two-stage process for removing oxides

Create your Connections – with innovative technology.

INNOVATIVE PLANT DESIGN
FOR EFFICIENT WORKING

The innovative system design combines maximum efficiency with optimum usability. Automated product carrier loading ensures smooth production processes, while the inert process guarantees consistently high soldering quality. Thanks to its ergonomic design and excellent accessibility of all components, the system impresses with its easy maintenance and maximum process reliability.

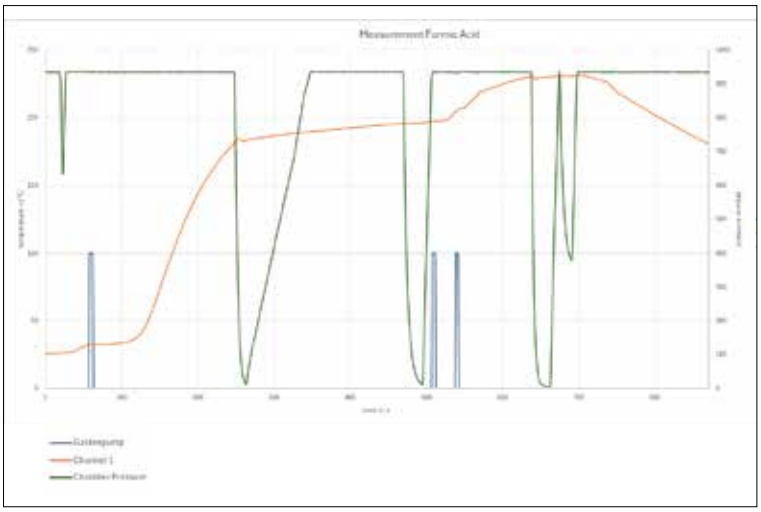
The modern bubbler of the CondensoX-Line FA automatically monitors and regulates the fill level. This keeps the process stable, as the original container can be refilled automatically without interrupting the process. For easy access and replacement of the reserve canister outside the process room, the bubbler unit can be removed from the system in just a few simple steps.

Extendable formic acid bubbler unit

Create your Connections – with smart solutions.

PRECISE PROFILING
RELIABLE SOLDERING RESULTS

The profiling process in vapour phase soldering describes the targeted control of temperature, pressure and process gases for optimum heating and activation of the assemblies. Rehm's patented injection principle ensures that the Galden® medium is injected into the process chamber in precisely measured doses, resulting in uniform heat transfer and a controlled heating phase. At the same time, formic acid is used to reduce oxidised surfaces. This combination enables defined temperature profiles, clean and void-free solder joints and maximum process reliability – even with heavy or complex assemblies.



DATA INTELLIGENCE
TRANSPARENCY FOR YOUR PROCESSES

Rehm uses the ROI interface (Rehm Open Interface) as a flexible solution for connecting its reflow soldering systems to various MES systems. All relevant machine data is collected and transferred to the MES, thus ensuring full traceability. Optionally, a process interlock provides additional safety and quality control.

- **Individual adaptation of data transfer to customer-specific MES systems**
- **ROI interface (Rehm Open Interface) as a central communication platform**
- **Recording and transfer of all machine-specific operating data for full traceability**
- **Unique identification of each assembly via barcode or routing slip**
- **Optional process interlocking prevents errors and increases process reliability**

READY FOR YOUR PRODUCTION.
CONNECTIONS FOR THE FUTURE.

Rehm Thermal Systems is a leading expert in connection technologies for electronics manufacturing. With innovative system solutions for soldering, drying and coating, we enable our customers to create reliable connections on electronic assemblies – individually, process-secure and future-oriented.

Since 1990, we have been developing and manufacturing energy-efficient production equipment at our headquarters in Germany and an additional production site in China – all in accordance with the highest quality standards. Our worldwide subsidiaries and distributors provide tailor-made solutions and competent service – wherever electronics are produced

Create your Connections – with Rehm, you shape the products of tomorrow.

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