



THERMAL SYSTEMS

review

The customer magazine, issue 01, 2022

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Dear Readers,

If you were at SMTconnect in Nuremberg, you may have wondered why Rehm was not among the exhibitors this year. Back in January, we decided against participating in this year's SMTconnect in Nuremberg, taking into account the coronavirus infection rates known at the time. In further discussions with customers and industry partners, it became clear that under the circumstances prevailing at the time of the trade fair, a large-scale event without any protection nor hygiene concept for exhibitors and visitors was fraught with certain risks for all concerned, so we stood by this decision.

In the meantime, the pandemic situation has fortunately eased further, enabling us to attend smaller events again. Thus, the Amper in Brno was the first European trade fair we attended in person, followed by the 12th Berlin Technology Day, the EPP Innovation Forum in Leinfelden-Echterdingen and further events in the coming autumn. To keep you up to date with what's happening in and around Rehm Thermal Systems,



we've put together an overview in our latest review. In addition to the further development of our product portfolio and the process technologies, there are also some major changes taking place internally.

For example, we have optimised our own manufacturing processes in the field of CNC production and developed a gripper that is now also offered to other operators of CNC machines. We have also made a change to the management of Rehm BlechTec and have now appointed Thomas Hack, who has been plant manager for many years, as managing director. We are particularly pleased to have gained a new, competent partner in Switzerland, the Hilpert company, which has been distributing the product portfolio in the Alpine region since the beginning of the year. In 2022, we are again looking forward to a dialogue with you and a lively exchange on projects, trends in electronics manufacturing and new technologies – whether live on site, in webinars or simply in a personal phone call.

A stylized, handwritten signature in black ink that reads "Rehm J.".

Johannes Rehm
Managing Director

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Closed-loop principle and active Galden® filtering for sustainable condensation soldering

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Transparent processes for efficient management are the focus at Turck Beierfeld

Imprint

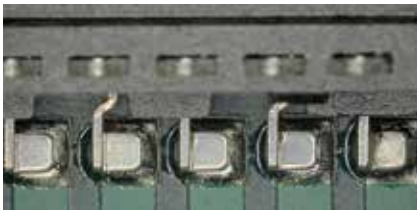
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For better readability, the masculine form is used when referring to persons.
However, in the interest of equal treatment, these terms expressly apply to all genders.

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SUSTAINABLE USE OF MATERIALS IN VAPOUR PHASE SOLDERING

Rehm ensures sustainable condensation soldering with the closed-loop principle and active Galden® filtering – entirely in the spirit of the circular economy

In the social and political debate of recent years, the question of how to reduce the consumption of resources and how to recycle waste more sensibly has become much more relevant. One solution that has emerged from this is the concept of the circular economy, which can now be found

in numerous national, regional and international strategies. The aim of the circular economy is to transform the previous linear economic system – which functions according to the take-make-waste flow principle – into a system focused on resource conservation, recycling and waste prevention.



SUSTAINABLE USE OF MATERIALS IN VAPOUR PHASE SOLDERING

CONDENSATION SOLDERING SYSTEMS
FROM REHM





Condenso series

With the closed-loop system for the injected medium Galden® integrated in the vapour phase soldering systems of the Condenso series, Rehms has utilised a future-proof, sustainable solution right from the start.

The principle is equally efficient and resource-saving. After soldering, the vacuum and / or cooling process starts. At the same time, the process gas is extracted and purified. A vacuum is created during extraction – this guaranteeing rapid drying of the solder and process chamber and hence also minimising losses when the products are discharged.

The extracted Galden® is filtered and cleared of impurities using granules. Thus, about 99.9% of the medium can be recovered. The purified liquid is stored in a container at room temperature and made available for further processes. That means there are no evaporation losses and no energy losses. Due to the hermetic sealing of the process chamber (doubling as vacuum chamber), "evaporation loss" during soldering is also prevented. In addition to the minimum maintenance effort, the operating costs are also reduced by the lower medium consumption.

Greater reliability in the solder joint for durable products

The systems of the Condenso series can also be equipped with a vacuum process. This vacuum technology is used in a wide variety of processes. Oxidation is reduced in drying and bonding processes and the reliability of solder joints is increased in reflow soldering by reducing voids. Rejects are reduced, the life cycle of the end products is extended and ultimately a further contribution is made to the implementation of a sustainable circular economy in electronics manufacturing.



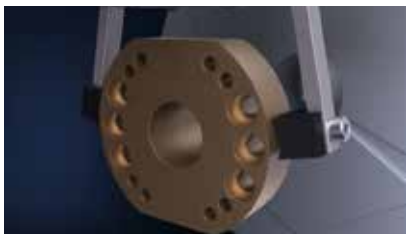
Galden tank

EVERYTHING IN HAND WITH THE UCP-GRIPPER

Picking up, gripping, depositing – the gripper newly developed by Rehm guarantees efficient CNC production with low operating costs



Precise gripping movement hydraulically via cooling lubricant. Interchangeable pick-up jaws ensure flexible pick-up.



Grips in different ways

Precise pick-up of small, delicate parts with an optimally usable clamping width ensures a smooth manufacturing process for a wide variety of production parts.

See for yourself!



Watch the product film here.

Since 2014, Rehm has had its own CNC production and has thus further expanded its already high vertical range of manufacture. This high vertical range of manufacture has the advantage that material availability can be better planned and delivery dates can be met promptly for our customers.

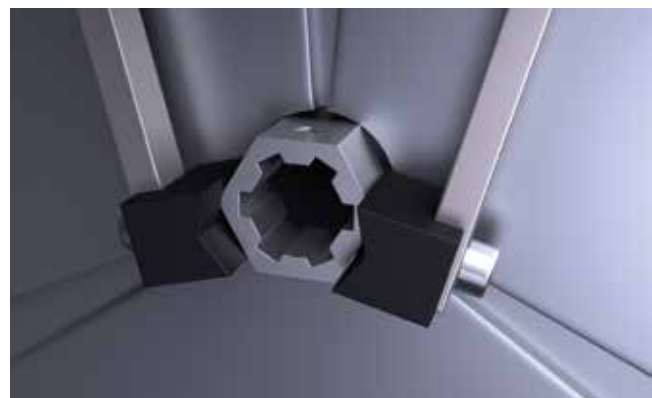
In order to make CNC production even more efficient, the experts in our specialist department have developed a new gripper that reliably picks up and deposits small, delicate parts for automated production. Manual intervention by the operator is no longer necessary. The result: efficient production processes and freeing up machine-operator resources for other tasks.

Precise gripping movement hydraulically via cooling lubricant

The process gripper operates hydraulically via cooling lubricant. This serves both as a cleaning agent and as a hydraulic agent. A precise gripping movement can be ensured via the continuously adjustable operating pressure of 0 – 12 bar. This only takes place when the coolant pressure is switched on at the CNC machine tool. After switching off the cooling lubricant supply, the opening of the gripper arms is spring-returned and the manufactured part is deposited in the corresponding fixture.

Flexible pick-up through exchangeable pick-up jaws

safe and precise pick-up and placement of the various production parts, the standard pick-up jaws can be replaced by additional models. This allows the gripper's span of 5 – 70 mm to be used optimally. The exchange is easy to carry out and the pick-up jaws are automatically aligned by lateral guides.

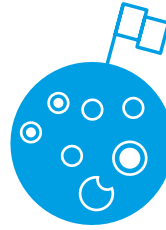


TECHNISCHE DATEN

of the UCP Gripper

GEOMETRY	WITHOUT ADAPTER
Max. height	130 mm
Length/width	90 mm
FORCES	
Clamping force	50 N – 150 N
Weight	< 1500 g
Adjustable operating pressure via pressure adjustment screw	Hydraulically via coolant pressure (2 – 12 bar) depending on machine type
Gripper jaw clamping width	Diameter from: 5 mm – 70 mm
Max. pressure	12 bar
Min. pressure	2 bar

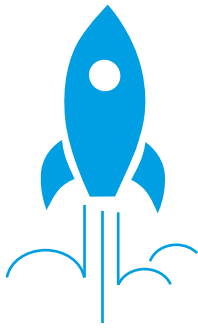
ON TO MARS AND MUCH FURTHER



Let's go to Mars – electronics production with an interplanetary approach

Turck in Beierfeld is moving in higher spheres and has set itself high goals for the future. Uranus, Jupiter, Saturn, Mercury and Venus have already found their way into Turck's electronics production. We're talking about five SMT production lines bearing the names of the planets from our universe, on which Turck manufactures innovative products. The sixth line, i.e. Mars, is currently being planned and will be installed soon.





Turck is a global partner and provider of digitally networkable solutions for efficient automation systems and is one of the pioneers of Industry 4.0 and IoT solutions. The company focuses on flexible plants, scalable systems and transparent processes for more efficient management. As a specialist for smart sensors and decentralised automation, the control and logic is transferred from the control cabinet directly to the machine and reliably integrated with robust sensors and I/O solutions in IP67 as well as with user-friendly software. From the acquisition, processing and transmission of relevant production data – from the sensor to the cloud, Turck presents itself as the specialist for factory, process and logistics automation.

Around 4,700 employees of the Turck Group ensure an efficient supply chain in modern production facilities around the globe – with short delivery routes and quick availability.

One of the Turck Group's production sites is located in Beierfeld and was founded in 1990 with just five employees. A year later, the number had already increased to 100, and today more than 500 employees work at the 23,500 m² site. The Turck Group also has a production site located in Halver, Germany. It focuses on the production of industrial electronics and factory automation, with a further mainstay being the production service of electronic components. Turck offers complete vertical integration here, from placement, THT soldering, SMT production, coating and potting, COB (Chip-on-Board Technology) to various test systems for checking the assembly quality. Jörg Seidel, Head of Manufacturing Preparation, sums up: "We are a fully equipped electronics manufacturer with a very high degree of vertical integration. The products reflect everyday life in a production environment and we deliver this at the highest quality. Our industrial electronics are durable, robust, reliable and are sent all over the world."





Image: Alf Schadel, Sales Manager Rehm Thermal System, Jörg Seidel, Head of Manufacturing Preparation, Uwe Nestler, Expert Manufacturing Technician – SMT

Reflow soldering – flexible, fast and sustainable

About 3000 active components for industrial automation will soon be manufactured in a three shift operation on six SMT production lines. The downstream protective coating and casting production area maintains the very high quality required in automation and rounds off the portfolio. Rehm's first reflow system was installed in Turck's production halls as early as 2003. Since then, development has continued at a rapid pace and increasing productivity in production has always been the top priority. Turck relies on the introduction of a production management system (MES) to increase the degree of automation accordingly. Traceability provides the necessary transparency for materials and process. Jörg Seidel notes: "With process locking, we are able to trace the process, from the component down to the individual assemblies, depending on the customer's wishes." The rising shortage of skilled workers, which is also causing problems in the Erzgebirgskreis, is another reason for the increase in automation at the Beierfeld site.

Energy management and sustainable production using REHM Coolflow

Turck has been certified according to ISO 5000 energy management for many years and the question of how energy can best be saved has, of course, arisen. An energy-intensive production step, such as reflow soldering, was of course the first to be targeted. Rehm CoolFlow technology is an innovative method for significantly reducing the energy requirement for convection reflow soldering, which Rehm has developed together with its partner Air Liquide. The core of the idea is to feed the cryogenic liquid nitrogen

(to -196°C) via a vacuum-insulated line from the tank directly into the system. The nitrogen releases its cooling energy during the phase change inside the cooling section, evaporates and is then fed back into the system for inerting (dual use of the nitrogen). Particularly noteworthy is the fact that the amount of nitrogen needed for inerting is also sufficient to achieve optimum cooling of the system. Since the nitrogen is fed to the system by the tank's own pressure and no refrigeration has to be generated mechanically, all energy costs for the operation of a cooling unit as well as internal and external cooling water circulation are eliminated. That makes a convection reflow soldering system from Rehm equipped with CoolFlow especially innovative and energy efficient – with up to 26% energy saved. Nor is there any need to provide cooling water. At the same time, the electricity saved results in a reduction in the CO₂ footprint from the production, which can typically be used for certifications according to ISO 14001 and ISO 50001.

In terms of process technology, there is a further advantage: more cold can be introduced as required via the cooling with liquid nitrogen, so that the outlet temperatures of the assemblies can be lowered by as much as 20 K overall without exceeding the permissible cooling gradients. Due to the lower outlet temperature, additional belts or buffers can be saved. The low outlet temperature is also advantageous for downstream processes, e.g. AOI.

"It is a manageable, exciting process already used in the food industry. Why should we use energy to re-cool the energy in the cooling area that we put into the heating area? The bottom line was that it all worked out for us," emphasises

Jörg Seidel on the use of Rehm CoolFlow. Currently, two SMT production lines are equipped with CoolFlow technology.

Uwe Nestler, Expert Manufacturing Technician – SMT, still notes: "Without CoolFlow, the waste heat, cold and nitrogen would escape into the environment. Our current Rehm systems are a great overall solution for us as they can compensate really well for this. Another major technological advantage is that we can adjust our cooling gradients more directly and efficiently. The same nitrogen that we feed into the process chamber for inertisation is then also used in cooling."

Trends in electronics manufacturing

The requirements are becoming more and more complex, especially in assembly, i.e. the assemblies are being equipped with more and more power electronics and smaller components, which leads to higher requirements in profiling. Applications in the IoT area (Internet of Things), i.e. intelligent electronics, are in high demand and have found their way into manufacturing. According to Jörg Seidel, there is no getting around it, because all the assemblies to be manufactured will be smaller and more powerful. "Components that used to be available as THT components are now being installed as SMD components and must therefore also survive a reflow soldering process," notes Uwe Nestler. Another trend regarding components is that more screw terminals and threaded bolts are being used, i.e. housings are no longer drilled on the printed circuit board afterwards, but instead are plugged directly into the soldered screw terminals. The thermal mass of the additional parts makes higher demands on the profiling, but the automation of this production process also further reduces manual labour.

Cooperation with REHM

Turck and Rehm have had a very long partnership, i.e. Turck has been soldering on Rehm systems since about 2000. "There's nothing like German mechanical engineering," says Jörg Seidel, pointing out another advantage of Rehm. Accessibility, support, cooperation in solving problems are also extremely important to him. Another point in Rehm's favour for mastering the challenge in production is the training offered, especially in the area of profiling. The Technology Centre and thus the access to competent employees stands for professionalism. "I would like to train our employees at the site where the plant is being built. In practical terms, open questions can thus be solved directly and at eye level," notes Seidel.

Uwe Nestler received positive feedback from his colleagues regarding the ViCON software, which has replaced the VISU II software in the newer generation of systems. Its simple usability, clarity, simple interface (which at first seemed

somewhat sparse) makes the daily work of the machine operators much easier. "For me, software quality and system operability have become important criteria in the decision-making process when procuring machines. ViCON does not overwhelm the operator with too much information and the colour displays showing the status of the machine are also easy to grasp and are helpful in everyday work," says Nestler. Good service availability and fast spare parts supply round off Rehm's approach. Rehm thus fulfils Turck's expectations as a strong partner. As a technology leader, Rehm is a trend setter, leading the way both technologically and in other areas, and thus brings innovative products to the market.



Refrigerators for paste storage (top), IM18-CCM records and analyses condition data (bottom)

What does the future look like for the Turck world

We have come through the coronavirus pandemic very well and the situation concerning orders is very good. Turck is looking positively into the future, despite the challenges of material procurement. A new construction phase is being planned.

OCCURRENCE AND AVOIDANCE OF WICKING DEFECTS

when Soldering Plug Connectors

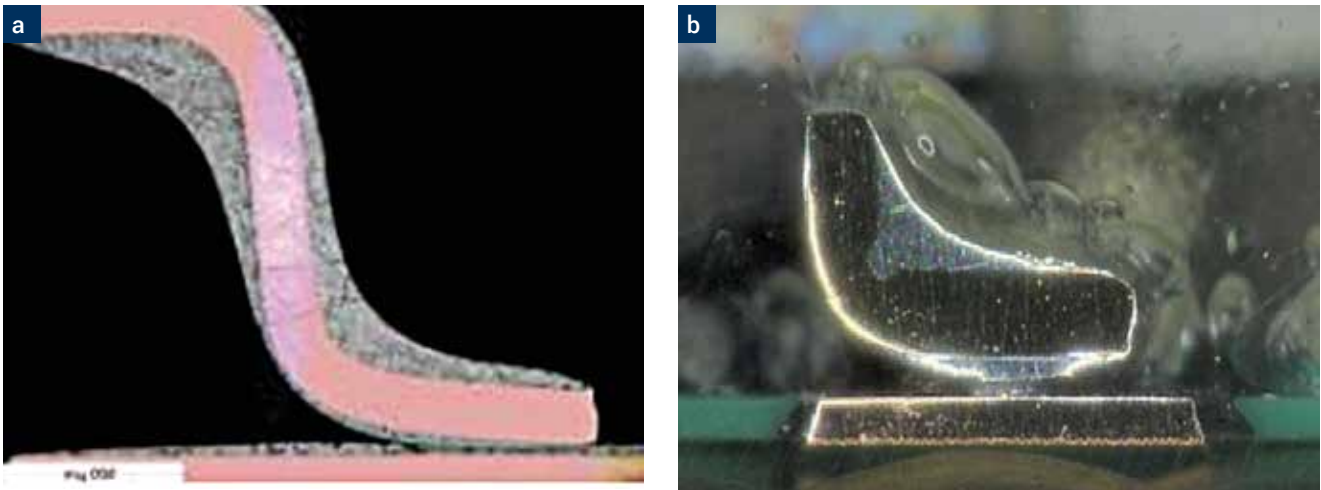


Figure 1: Examples of Wicking on a Gull Wing (a) and on a Plug Connector Contact (b)

Upward migration of molten solder at a component connector, such as a gull wing or a plug connector contact (see figure 1), is generally referred to as wicking, during which the solder is withdrawn from the connection partner, i.e. the PCB pad. Solder is thus depleted at the actual solder joint, which as a rule no longer conforms to the specified quality standards. If the solder at the plug connectors rises too far up into the contact area, the connector's contact resistance is adversely affected.

The cause of upward migration of the solder is interfacial tension (surface tension) at the component connector, as well as the wetting forces of all components involved in the solder joint.

Wicking due to Thermodynamic Causes

- › The component connector reaches the solder's liquidus temperature before the PCB pad, and thus the solder is "drawn up" entirely.
- › The hotter surface of the component connector provides the solder with better interfacial conditions.
- › If the surface finish on the component connector melts before the finish on the PCB pad, it serves as a solvent

that accelerates liquefaction of the solder and draws it towards the component connector.

Wicking due to Inadequate Wetting

- › Poor wetting of a solder partner or failure to wet it at all can cause wicking. Reasons include excessively thin surface finishes (e.g. NiSn < 0.3 µm), oxidized surfaces or contamination on the pads.
- › The growth of intermetallic compounds (IMCs) on the pads impedes wetting.

Emphasis is often placed on thermodynamic aspects when discussing wicking, as is the case with Scheel [1] for example, who views temperature differences during thermal energy input at the component as a causal factor. Klein Wassink [2] additionally discusses the correlation between inhomogeneous heating of the solder partners and non-plane-parallel gull wings (see figure 2). If the gull wings are bent by more than 100 µm and if they reach liquidus temperature before the pad, a portion of the molten solder is drawn up. Due to gull wing differentiation of greater than 100 µm, the solder joint can no longer be closed when the component is floated in, because sufficient sphere height is no longer reached by the residual solder on the pad

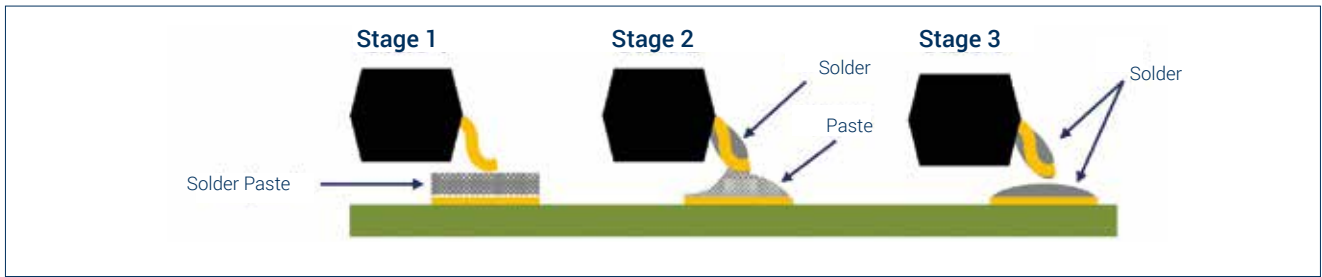


Figure 2: Wicking due to Non-Plane-Parallel Gull Wings [2]

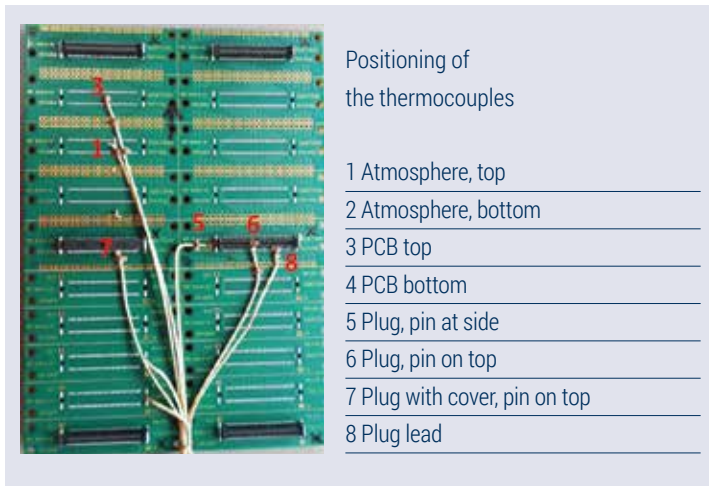


Figure 3: Plug Connector Test Board with Thermocouples

No.	Reflow Profile Variation
1	Long preheating
2	Short preheating
3	Linear profile
4	Standard profile/reference
5	Frequency: 35 Hz on top/50 Hz at bottom
6	Frequency: 30 Hz on top/55 Hz at bottom
7	-10 K on top/+10 ...15 K on bottom rel.to standard profile
H	Frequency: 20 Hz on top/60 Hz at bottom
I	Frequency: 20 Hz on top and -10K/60 Hz at bottom
K	20 Hz on top/60 Hz at bottom and +15 K

Table 1: Temperature-Time-Profiles

Test Setup

In order to investigate the influence of heat transfer on the wicking effect, a plug connector test board was fitted with thermocouples (see figure 3).

The temperature-time profiles were varied in a convection reflow soldering system which was equipped with 11 heat zones at the top and bottom, and whose blower circulation rates could be varied by changing blower frequencies. Table 1 summarizes the different reflow profile variations.

The purpose of the reflow profile variations was to find settings for the reflow soldering system at which significant temperature differences between the top and bottom of the test board could be detected.

Influence of Temperature-Time Reflow Profiling

It was possible to demonstrate that significant temperature differences between the two sides of the test board could be achieved with the reflow soldering system.

Plug connectors were soldered with reflow profiles 4, 6, 7 and H, and were then examined for evidence of the wicking effect. Selection was based on the following considerations (see table 2). Where T_{max} is greater than 0, temperature on

top of the PCB is higher than at the bottom. Where time difference t is greater than 0, the pin more quickly reaches the phase transformation temperature of approximately 220° C.

No significant differences with regard to wicking could be detected on the examined soldering samples of previously inconspicuous plug connectors on the basis of solder distribution at the plug connector contacts.

However, previously encountered wicking problems occurring in actual customer processing operations could be completely eliminated by adjusting temperature profiling in accordance with profile number 7 as shown in figure 4.

Metallography Influences

During reflow soldering of another plug connector type, only the contacts of batch A displayed a pronounced wicking effect, which in this case could not be significantly reduced by optimizing the temperature profile. The fact that only the contacts of batch A exhibit distinct brown coloration after temperature aging is conspicuous, whereas simultaneously temperature aged, unaffected batches demonstrate bluish to purplish tarnishing without exception. Various contact batches were aged for 2 minutes at 250° C for the metallurgical examinations. After simultaneous thermal aging without the

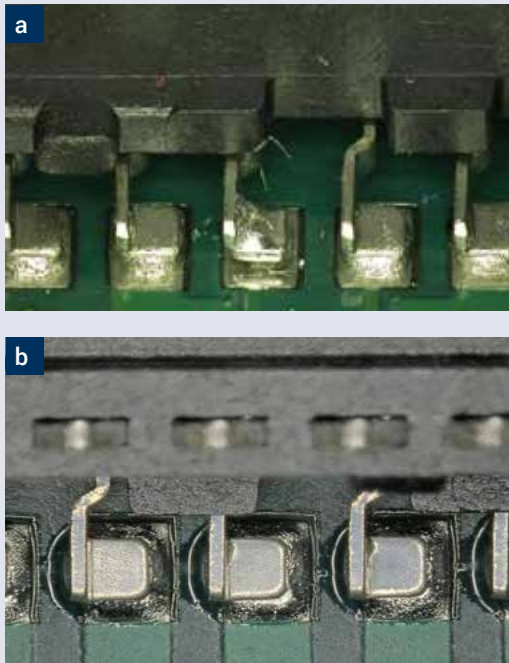


Figure 4: Component Connector with Upwardly Migrated Solder (Wicking) Before (a) and After (b) Profile Adjustment

Profil-Nr.	Consideration
4	Reference
6	$\Delta T \sim 0, \Delta t < 0$, question: Is Δt the dominant influencing variable?
7	$\Delta T, \Delta t < 0$, wicking should be avoided to a great extent.
H	$\Delta T < 0, \Delta t$ indifferent, question: Is T the dominant influencing variable?

Table 2: Selected Reflow Soldering Profiles

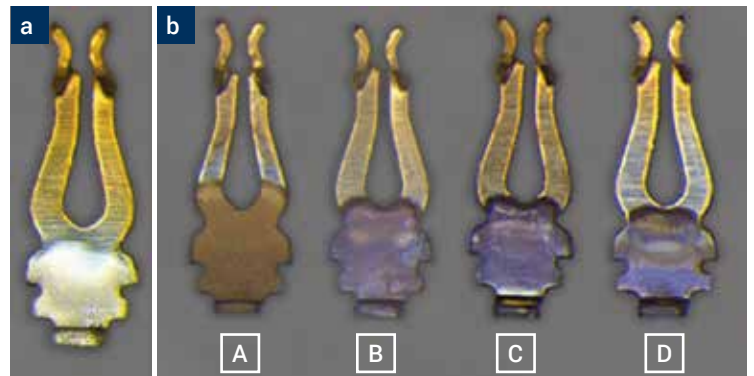


Figure 5: Contacts in New Condition (a), Batches A to D after Thermal Aging (b)

introduction of solder or flux, samples from the different contact batches exhibited significantly different tarnish colors (see figure 5).

EDX examinations of the different batches reveal significant variations in the position and run-out areas of the galvanic layers in the different spectra. Due to the very small contact geometry, spreading of these galvanic surfaces cannot be controlled more accurately during the galvanic process. The variations affect all contact batches in the same way and thus cannot be held accountable as the cause of wicking. Furthermore, the EDX spectra did not reveal the presence of any impurities.

Due to the fact that different tarnish colors can be caused by variations in the amount of nickel atoms diffused into the tin surface, as well as by the topography of the surface, further investigation of the nickel/tin intermetallic phases were conducted. The pure tin layer was removed by a nitrophenol stripper to this end. The subsequent SEM examination revealed significant surface structure differences between the contact batches affected by wicking and the unaffected batches (see figure 6).

Focused ion beam sections (FIB sections) through the surface coatings made it possible to study the microstructure of the various batches in detail. The metastable Ni_3Sn_3 phases with a plate-like structure are particularly striking, which grew through the tin layer in the batches unaffected by wicking and reached a vertical spread of $3 \mu\text{m}$ in this case. In contrast, stable Ni_3Sn_4 phases were found in the batches affected by wicking, which grew over the nickel layer in an essentially planar fashion (see figure 7).

Nearly identical images were also obtained during examinations conducted by Zhang [3] in the presence of the metastable Ni_3Sn_3 phase. The Ni_3Sn_3 phases measured by Zhang reached a vertical extent of about $4 \mu\text{m}$ in the Sn layer. The Ni_3Sn_3 phase ($T_s = 977^\circ \text{C}$) is unstable and is transformed into the more stable Ni_3Sn_2 ($T_s = 1264^\circ \text{C}$) or Ni_3Sn_4 ($T_s = 795^\circ \text{C}$) phase at temperatures of greater than 238°C . After soldering, an Ni_3Sn_4 phase is usually formed which initially does not occur as a compact layer, but rather in the form of individual crystalline grains. A closed Ni_3Sn_4 layer is not formed until the solder joints have been thermally aged (150°C) (cf. Nieland [4]). Cruza [5] and Belyakov [6] make reference to metastable Ni_3Sn_4 eutectic phases, which also have a plate-like appearance and sizes of up to $4 \mu\text{m}$.

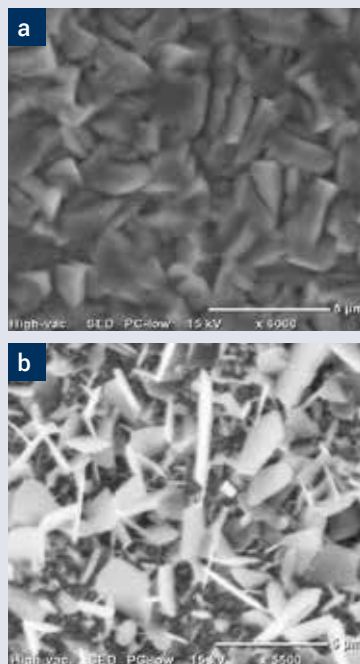


Figure 6: Surface Structures of Ni/Sn Phases of an Affected (a) and an Unaffected Batch (b)

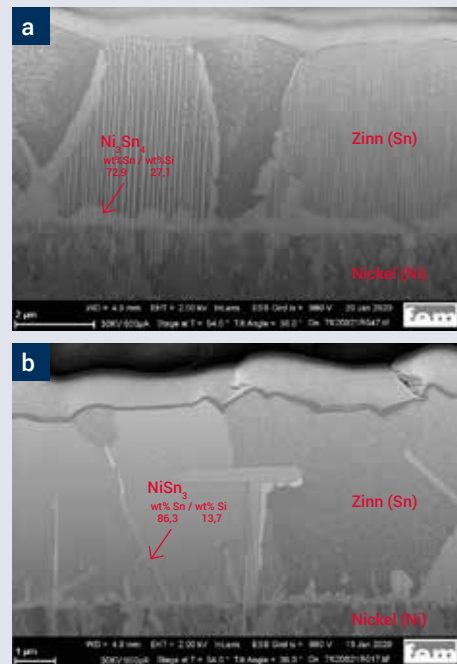


Figure 7: Tin Layer Structure of an Affected (a) and an Unaffected Batch (b)

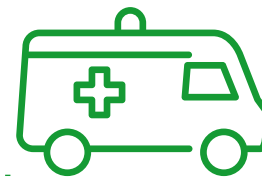
Summary

Extensive research has been conducted on the influence of heat distribution on wicking at connector components. Despite significant differences, no wicking could be induced in the profiling tests which was attributed to heat distribution. However, clear correlations have been verified by means of successfully implemented profile adjustments in actual SMT processing operations. Metallographic studies substantiate a correlation between the type of finish applied to a contact and its susceptibility to wicking. Based on FIB findings, it can be assumed that the vertically aligned (NiSn_3) NiSn_4 phases in the surface finish with their plate-like structures impede wetting during the soldering process. Their general spreading and their high melting point contribute to this on the one hand and, on the other hand, reflow soldering time is not sufficient for a phase transformation.

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MORE SAFETY IN MEDICAL TECHNOLOGY



Automated, reliable and traceable bonding and casting with Protecto

Increasing cost pressure in medical technology is causing a change from manual small series production to a fully automated process. Thanks to the dispensing and coating systems of the Protecto series from Rehm Thermal Systems, the industry benefits from reduced cycle times combined with increased process reliability, which is particularly important for the medical electronics sector, because the potentially error-prone manual process is eliminated. Secure traceability of all process-relevant parameters and extensive monitoring of manufactured assemblies ensure additional safety.

The innovative Protecto dosing system from the extensive portfolio of Rehm Thermal Systems can be flexibly adapted to individual customer requirements. Various applicators are available for this purpose, depending on the application.

The right applicator for reliable material application

Because UV and cyanoacrylate adhesives are used increasingly in the medical industry, it is important to note a few special features in applicator technology. For example, diaphragm valves are beneficial, especially using appropriate configurations, because they prevent adhesives having to come into harmful contact with metallic contact surfaces. They are also beneficial because they are very low-maintenance and cost-effective.

In medical technology, diaphragm valves are mainly used for applying cyanoacrylates. Here, it is advisable to use dosing needles with an internal PTFE guide. Bonding of material residues and better thread breakage can be achieved, thanks to the low surface tension.



Protecto XP and Protecto XC



In the field of medical technology, diaphragm valves are mainly used for the application of cyanoacrylates.

Other widely used applicator types in the medical industry are volumetric dosing valves, such as eccentric screw valves. These provide the huge benefit of working very evenly, pulsation-free and very reproducibly irrespective of any pressure or viscosity fluctuations.

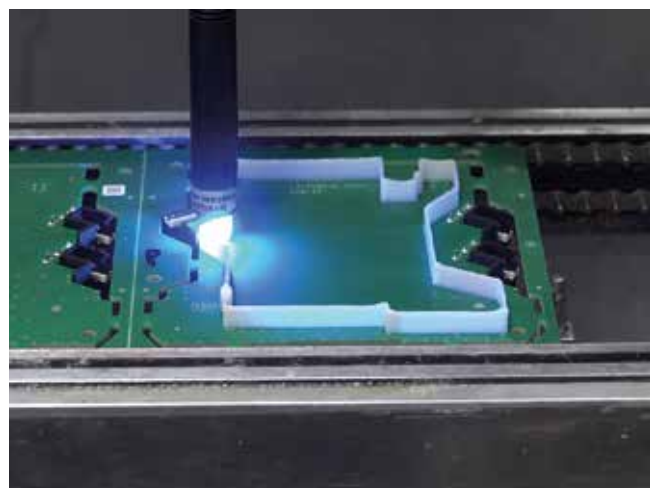
Dispensing and hardening in one operation

The ever-increasing acceptance of UV adhesives on the market means that there is now a huge number of different curing systems for UV adhesives. For this purpose, Rehm Thermal Systems provides, among other things, the opportunity of implementing the UV source directly into the dosing cell. As a result, the dosing and hardening process can be achieved within one system and, accordingly, footprint can be saved. Furthermore, a UV source with different wavelengths must be used, because each adhesive contains a specific photoinitiator, which must be addressed with the correct wavelength to activate the crosslinking and thus the curing of the adhesive.

Ensuring permanent process control

A large number of options for process control are available, ensuring that production is carried out within the defined tolerances both during the dosing process and for the traceability of each product. This includes, for example, the optionally available load cell which helps define the right variable test cycle for checking the dosing volume. A possible

offset of the nozzle needle in X, Y or Z orientation can be detected and corrected fully automatically by using a needle measuring cross. The camera system makes it possible to detect the position of the component to be applied by using automated tracking of the corresponding dosing process. The camera can also be used to detect unoccupied spaces in a product carrier and leave out a corresponding dosing process. In addition, a data matrix or serial number can be read via the camera system and the process parameters can thus be assigned to a defined module.

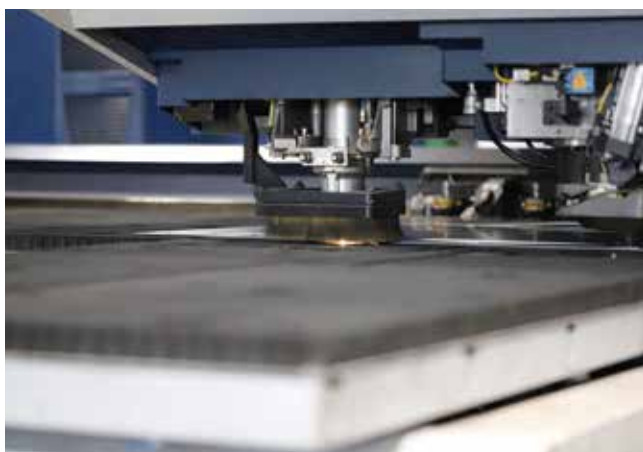


Increasingly widespread acceptance of UV adhesives on the market has led to a variety of different curing systems for UV adhesives.

RBT WITH EXPANDED MANAGEMENT

The management of sheet metal processing specialist Rehm BlechTec from Blaubeuren-Seissen has been expanded

Rehm BlechTec GmbH from Blaubeuren-Seissen has clearly demonstrated in recent years that quality and growth are feasible even in the highly competitive field of sheet metal processing. As early as 2016, the company headquarters was almost doubled in size and the machinery has been continuously expanded over the years. Despite the coronavirus pandemic and difficulties in the supplier sector, the persistently good order volume demonstrates that the investments at the Blaubeuren location were a correct and important step. In order to continue this positive upswing and to take it into account in the area of organisation and administration, Thomas Hack was appointed managing director of Rehm Blechtec GmbH with effect from 10 February 2022.



Optimised process flows through investments in additional equipment.

In 2003, the metalwork department of Rehm Thermal Systems GmbH was spun off as an independent company of the Rehm Group and has been working independently on the market ever since. Thanks to the solid work of the past few years, almost 70 % of the total turnover is now generated outside the Rehm Group. Since January 2014, Thomas Hack has been managing the modernly equipped company as plant manager and has pushed ahead with and implemented many an expansion in the machinery. "The high demands of the market constantly require us to optimise our processes and invest in additional equipment," says Johannes Rehm, managing partner of Rehm BlechTec and managing director and owner of the entire Rehm Group. "Thomas Hack has already successfully managed the business of Rehm BlechTec in the past as plant manager. By taking over the management, we are now taking another step in our partnership," adds Johannes Rehm.

It is not only due to the expanded machine park that RBT works together with large renowned companies in a trusting manner. Customers appreciate the competence and quality of the manufacturing service provider. "Our customers benefit from our modern machine park and the very high vertical range of manufacture that results from it," says Thomas Hack. "From sheet metal processing with a high degree of



Johannes Rehm (left) and Thomas Hack (right) jointly run the company Rehm BlechTec GmbH.

automation to surface treatment with an in-house powder coating system, we cover almost everything in the field of metal processing," adds Hack. But it is not only the machinery that is important when it comes to ensuring frictionless process flows. Qualified staff is absolutely indispensable for compliance with the required quality standards. In this area,

Rehm BlechTec has not escaped the general problem of a shortage of skilled workers. So it is always looking for appropriate support for the existing teams. Candidate dating, radio advertising and the use of social media channels are new approaches in recruiting. This continues to secure the future of sheet metal processing.

Expanded machinery

- › **Pipe laser Adige LT722D** for processing pipes in the range of min. 15 x 15 mm/Ø 15 mm up to max. 140 x 140 mm/Ø 140 mm made of steel up to 8 mm and stainless steel up to 5 mm wall thickness, max. finished part length up to 4500 mm.
- › **OTC welding robot Easy-Arc** guarantees highest performance for welding steel, stainless steel and aluminium with a vertically articulated 6-axis robot arm and enables high-speed welding on thin stainless steel sheets.
- › **Amada press brake Astro 100 NT** – Bending cell for automatic bending of small complex components with a press brake HDS-1030NT which has a press force of 100 t for material thicknesses of max. 3 mm and blank sizes of max. 800 x 1000 mm/300 x 1800 mm.



INTERVIEW

In conversation with Thomas Mayer

From businessman to technician – an exciting path at Rehm during and after vocational training

Thomas Mayer's journey from industrial clerk to technical specialist began in September 2009 when he started his training as an industrial clerk. After passing the final exam, his interest gradually moved toward technical fields. After completing his further training as a Refa technician, he was able to complete a technical diploma as a specialist – at Rehm, the journey after training is still far from over.



When did you start your apprenticeship and how did you find Rehm Thermal Systems as a training company back then?

Thomas Mayer: My training lasted from September 2009 to July 2012... so it's already been over 10 years... it's amazing how time flies. Actually, it was clear to me that I would apply at Rehm. The proximity to home was one reason, and as a small child I used to drive past the company all the time, so I already "knew" the company. During my time at school, I also did my work placement at Rehm; after that, it was clear that I would definitely apply for a vocational training placement here as well. I was accepted quite quickly, even before the final exams. That was great because I could concentrate fully on the exams and the pressure of looking for a training spot was gone.

Starting a career is exciting and challenging for all school leavers. How was your start at Rehm?

T.M.: Of course, it was a quantum leap at the time – from a pupil who had virtually every afternoon free to a 40-hour week...if that was enough at all, because you still had to study after work. It was really hard for the first three months, but after that it was actually great. On the contrary, time just flew by once I had settled into the daily work routine.



Did you feel included and involved right from the start?

T.M.: The start of my apprenticeship was a bit difficult because the company had announced furloughing in 2009 due to the global economic crisis, and so not all departments were fully staffed. This meant that I was in the purchasing/warehouse department for a longer period of time to support my colleagues – so I was fully integrated into the company from the very beginning. But of course I got to know and see a lot of things and then, in the further course of the training, I usually knew immediately what was being talked about when certain terms were mentioned. In shipping, for example, I was then able to familiarise myself easily straight away. My colleagues have also always supported me, so I felt comfortable in all departments.

Did the training meet your expectations?

T.M.: Yes, completely. I had actually already imagined my training as it ultimately turned out to be. I was able to accompany many projects, constantly learn new things and, of course, also had to face various challenges. But I knew in advance that the training would be tough.

What was your career at Rehm like after graduation?

T.M.: In my last year of training, I was already working in the work preparation department from March onwards.

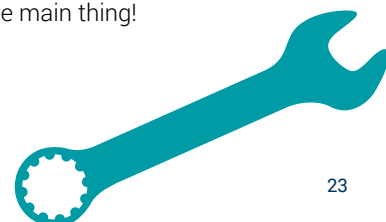
After the end of my training in July, I was also officially taken on in this department. In January 2013, I then moved to the subsidiary Rehm BlechTec in the AV Department. In 2016, a position became available in AV at Rehm Thermal Systems, so I was able to make another change here. The range of tasks at Rehm Thermal Systems simply corresponded more to my interests and here I was able to better use my further training as a REFA technician, which I did during my time at Rehm BlechTec.

You have optimally combined the classic industrial clerk with your interest in technology. What happened next?

T.M.: In addition to the REFA technician, I also did the technical specialist course for 3 years on the side, which I completed last year, and then supplemented it with a course to become a production manager.

Wow... It's great what you've done on the side. Have you now arrived at your "dream job"?

T.M.: ... laughs... Dream job, yes... professional footballer or astronaut wouldn't have been bad either ... but on the whole I'm satisfied. I like coming to work, I have a great team around me and the work is fun – that's the main thing!





What other goals do you have?

T.M.: In the long term, I would like to do a technical business degree, but there is no concrete timetable at the moment. But for the next 2 – 3 years I'm taking a break. It is very exhausting to reconcile work, professional training, family, friends and free time. So I'll just wait and see when the time is right for me to tackle the next goal.

Looking back: What were your favourite tasks/actions during your vocational training?

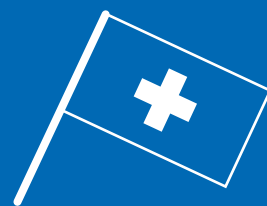
T.M.: In fact, the coolest thing was organising the 20th anniversary of the company in the marketing department. To be part of such a big event from the beginning and to experience the whole organisation and the effort behind it was simply a once in a lifetime experience. I always thought only Liebherr, Husquarna and so on were the type of huge companies to do such events. But the fact that a medium-sized company like Rehm can put on an event like this too was really fascinating and a lot of fun. The Production trade fair in Munich, which I was able to visit during my training, was also a highlight for me. I really enjoyed experiencing the whole industry and everything that belongs to SMT production alongside our systems live.



Note from the marketing department:

Thomas was deeply involved in the organisation of the anniversary event and was highly committed to working and cheering us along. He said something that still makes us smile today. During the preparations, we had yet another task for Thomas; amongst all of that stress, he replied to us in a tone of desperation: "Sure, that's fine, but then I'll need an assistant," – the assistant needs an assistant himself...that's what we call 'fully integrated into the department as an employee'!

REHM LAUNCHING NEW DISTRIBUTION IN SWITZERLAND



Hilpert electronics AG taking over distribution of the Rehm product portfolio for Switzerland

Rehm Thermal Systems GmbH started the new year with a new sales partner. As of January 1, 2022, Hilpert electronics AG took over the marketing of production equipment for the electronics industry in Switzerland. Since the beginning of the year, Rehm customers as well as interested parties have had new direct contact persons on site who are competent and solution-oriented for all questions relating to soldering, coating, drying and curing with Rehm systems.

Hilpert AG has decided to break new ground with Rehm's product portfolio and to distribute it on the Swiss electronics market in the future. "Besides new products for us in the field of conformal coating as well as drying and curing, we're exchanging the complete product range in the field of convection and vapour phase soldering," stated Raphael Burkart, Managing Director of Hilpert AG.

"Our Sales department needs to become familiar with the new products gradually. This takes a little time, because we'd like to provide our customers with excellent advice in the end," continued Hilpert. Michael Hanke, General Sales Manager of Rehm Thermal Systems GmbH, added that different points were decisive for Hilpert: "We were looking for a long-term partner with whom we could build something in Switzerland. This decision was influenced not only by the sales strength of Hilpert – but also by the market presence and communication in the market. What's more, the existing product and brand portfolio – which includes market leaders such as ASM, Viscom or Nutek – spoke for Raphael Burkart and his team."

In the new year, joint actions and activities are planned for the market launch of the new products. "Switzerland is an important market for us – as excellent electronic products are developed and produced here. In order to achieve high quality, machines of high quality are also required – which we're happy to make available to Swiss producers together with Hilpert," explained Hanke. "I'm sure the Hilpert/Rehm partnership will provide many added values for the Swiss manufacturers. In addition to the systems, customers can

draw on a wide range of know-how and a great deal of experience from both companies in the field of thermal processes in electronics production – which is of great benefit for Switzerland as a business location," added Burkart.



Michael Hanke, Rehm Thermal Systems (left) and Raphael Burkart, Hilpert (right).

About Hilpert electronics

Hilpert electronics AG, founded in 1972, is today one of the leading providers of products and services for microelectronics manufacturing. With its many years of experience and vast expertise in the areas of process technology and project management as well as with technical customer support, Hilpert realizes entire production lines, from the idea to commissioning. By dividing them into different competence areas, customers will find the right contact person with the necessary background knowledge and thus a high level of efficiency and flexibility. For more information, see: www.hilpert.ch

THE AHK GREATER CHINA VISITS RTS DONGGUAN

On 23 February 2022, the management of AHK Greater China visited Rehm Thermal Systems in Dongguan together with 16 chamber members and friends.

The German Chamber of Commerce in China (AHK Greater China) is the official association of German companies in China. With up-to-date market information and practical business tips, it helps its members to operate successfully in China. The Chamber is a platform for the German-Chinese business community and represents the interests of its members vis-à-vis stakeholders such as politicians or the general public.

After Martin Klose, Managing Director of the German Chamber of Commerce South & Southwest China, welcomed the participants, a presentation of the plant in Dongguan began, led by Ralf Wagenführ, Director of Operations at

Rehm Thermal Systems (Dongguan) Limited. The visitors learnt interesting facts about the foundation of the company headquarters with production facilities in Dongguan in 2007, milestones in the company's history and current developments since its move to new premises in 2020. During the subsequent tour of the company, the visitors were able to see for themselves the modern workplaces, the high-quality materials and the clearly structured production processes.

The enthusiastic participants finished off the successful day at Chef Alex's "German Table" at Holly's Restaurant & Bar, enjoying conversation and networking over traditional German food and a good beer!



The visit of the delegation of the German Chamber of Commerce South & Southwest China was a success all along the line

SAVE THE DATE

SHOWS & EVENTS 2022

Rehm will be present at the most important electronics and industry events

Whether it's a trade fair, technology event, seminar, training or workshop – take advantage of the opportunity to get to know our system technology and receive advice from Rehm experts. If you are interested, you can find more information about the events at www.rehm-group.com.

DATE	EVENT
06.– 07.07.2022	Technologietag Hilpert , Blaubeuren, Germany
27.– 29.09.2022	Wir gehen in die Tiefe , Dresden, Germany
04.– 07.10.2022	Bondexpo , Stuttgart, Germany
05.– 09.10.2022	EE-Kolleg , Colonia de Sant Jordi, Spain



Dates

Here you will find the current dates
fairs and events.

We look forward to welcoming you at one of our next events!



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Rehm Worldwide

As a leading manufacturer of innovative thermal system solutions we have customers on every continent. With our own locations in Europe, Americas and Asia as well as 27 agencies in 24 countries we are able to serve the international markets quickly and to offer outstanding on-site service – worldwide and round the clock!

- Location
- Production facility
- Representation



www.rehm-group.com