



THERMAL SYSTEMS

# Medical Technology Solutions for Your Success

REHM THERMAL SYSTEMS | Product Overview

[www.rehm-group.com](http://www.rehm-group.com)

## Imprint

### **Rehm Thermal Systems GmbH**

Leinenstraße 7

89143 Blaubeuren, Germany

T +49 7344 9606-0

[info@rehm-group.com](mailto:info@rehm-group.com)

[www.rehm-group.com](http://www.rehm-group.com)

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# Do You Want to Make a Difference?

The demand for medical technology is set to increase significantly in the coming years. On one hand, the global ageing population is driving a growing need for medical care. On the other hand, technological advancements in fields such as Artificial Intelligence (AI), robotics and telemedicine are enabling more precise diagnostics and more efficient treatment options. Another factor fuelling the demand for medical technology is the increasing public awareness of health and prevention.

Globally, many companies have recognised the potential of this sector and are investing heavily in the development of medical devices. As competition intensifies, so does the need to stand out – for example, by delivering precise, reliable and high-quality products. This is especially critical in medical technology, where flawless products are essential for patient safety and wellbeing.

Rehm Thermal Systems's manufacturing equipment stands out with exceptional quality, durability and process reliability for coating, bonding, sealing, curing and soldering – all tailored with the highest degree of individuality. Leverage this competitive edge and find the system that perfectly matches the unique challenges of your production or manufacturing processes.



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## Void-Reducing Soldering for Miniaturised PCBs

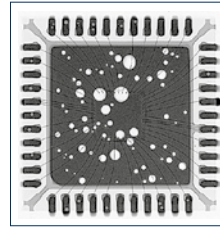
Hearing aids, pacemakers or cochlear implants – miniaturised electronics with higher power densities are integral to many high-risk medical devices. To ensure their flawless functionality over time, a reliable connection between electronic components and the substrate through high-quality soldering is crucial. Vacuum soldering processes have proven particularly effective in meeting these demands.

Rehm Thermal Systems offers the VisionXP+ Vac for convection soldering under vacuum, featuring three distinct zones (preheating/peak zones, vacuum unit and cooling zones). For flexible profiling and a stable production process, all heating zones and the vacuum unit are individually adjustable. Additionally, the vacuum chamber is precision-milled from a solid aluminium block, ensuring maximum airtightness and process reliability.

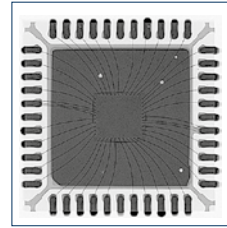
# VisionXP+ Vac

## Convection Soldering

Vacuum soldering is particularly well-suited for connecting electronic components on miniaturised PCBs with higher power densities used in medical devices. The vacuum significantly reduces voids in solder joints, enhancing the stability and longevity of the connections. Ultimately, this has a direct impact on the functionality of these critical, life-saving products.



Without vacuum

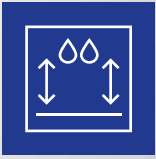


With vacuum



### AT A GLANCE

- › **Reliable electronics for high-risk medical devices**
- › **Virtually void-free soldering under vacuum**
- › **Modular and flexible system design**
- › **Maximum process stability**
- › **User-friendly software tools for process monitoring**



## Reliable Soldering of Large and Heavy PCBs

Imaging technologies such as MRI devices play a crucial role in modern medical technology by providing non-invasive information about the structure and function of organs, for example. Since large and heavy PCBs used in such devices are not suitable for conventional convection soldering systems, they are soldered using hot vapour (condensation soldering).

For condensation soldering, Rehm Thermal Systems offers the Condenso Series: using the heat-conductive medium Galden<sup>®</sup>, a liquid film forms around the assembly and evaporates. The vapour continues to condense until the required soldering temperature is reached. By controlling the temperature, pressure, injection quantity and the number of injections (injection principle), more precise and versatile profiling is possible, which ultimately enhances process stability.



# Condenso Series

## Condensation Soldering

After the soldering process, the Galden® is completely extracted. During extraction, a vacuum is created, which also ensures rapid drying of the soldered components and the process chamber, while minimising losses during the unloading of the products. The extracted Galden® is filtered and purified using a granulate to remove impurities. As a result, approximately 99.9% of the medium can be recovered. The cleaned liquid is then stored in a container for use in subsequent processes.



Galden® storage tank



Filter granulate



### AT A GLANCE

- › Soldering of large and heavy PCBs
- › Limited maximum temperature due to the Galden® medium
- › Maximum production uptime with minimal maintenance (Galden® filtration)
- › System variants for a wide range of manufacturing environments
- › User-friendly software tools for process monitoring



## Versatile Solutions for Coating & Dispensing

Medical devices are continuously evolving, becoming increasingly advanced, smarter, more powerful and more compact. To ensure the quality and functionality of the electronics inside, reliable protection against bodily fluids such as sweat and environmental factors like rain is essential. This protection is achieved through appropriate coatings or potting.

For automatic inline coating and potting tasks, Rehm Thermal Systems offers the Protecto Series. The dispensing of the medium is controlled by software. An automatic needle calibration checks the target position of the applicators. Additionally, a camera is available that determines the product's position based on fiducials – ensuring the highest quality and accuracy.

# Protecto Series

## Coating & Dispensing



For absolute process reliability, an automatic needle calibration checks the target position of the applicators at freely definable intervals and, if necessary, automatically corrects the program.



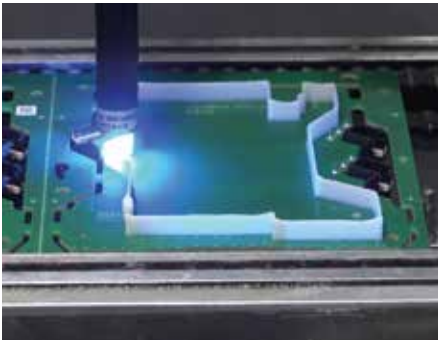
Optionally, the Protecto systems are equipped with a camera. This allows the coating and dispensing program to correct any inaccuracies when a product is incorrectly placed in the carrier by detecting the fiducials and ensuring proper alignment during production.

# Protecto Series

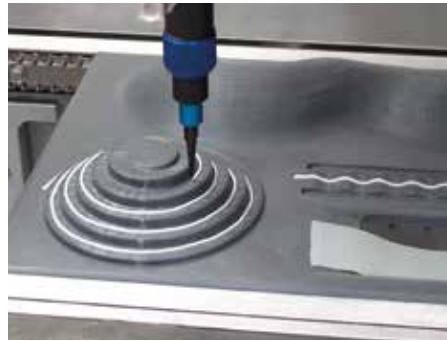
## Coating & Dispensing



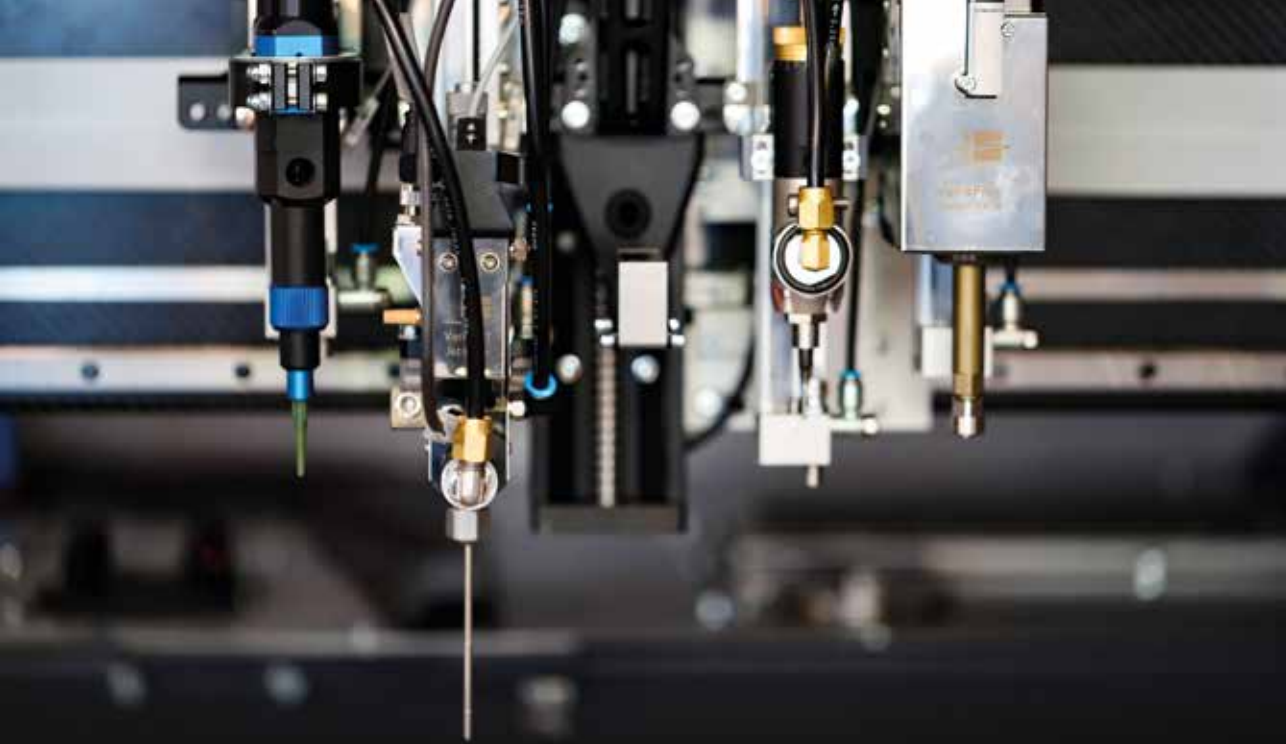
With the applicators for the Protecto systems, you can apply up to four different materials "on the fly" directly. The application methods include dispensing, spraying, jetting and curtain coating. Volumetric dispensing processes are particularly suitable for critical medical devices and are designed for a repeatability accuracy of over 99%.



Rehm Thermal Systems offers the option to integrate the UV or IR source directly into the dosing cell. This allows the dispensing and curing process to be carried out within a single system, saving valuable floor space. This is particularly beneficial for applying small quantities, such as in adhesive applications.



The 3D height sensor precisely measures the surface elevation. This allows materials to be applied at a defined relative distance from the surface, and any individual protrusions can be automatically compensated for.



## AT A GLANCE

- › **Increased productivity through automation**
- › **High process reliability** (e.g. automatic tool center point, fiducial camera, material quantity control, 3D height sensor)
- › **Versatile applications** through the wide range of applicators
- › **High flexibility** with the use of up to four applicators "on the fly" without setup time between processes
- › **Dispensing and curing in one step** through the UV/IR spot integration in the dosing cell
- › **Dispensing needles with internal PTFE guide** prevent harmful contact between dispensing materials and metallic contact surfaces
- › **Processing of biocompatible adhesives, potting and coating materials** is easily possible (optional colour change)
- › **Cleanroom compatibility** up to ISO 7

# Line Solutions

## Coating & Dispensing



## Automating Workstations

Some manufacturing processes are still performed manually, including in the medical technology sector. At such workstations, partial to full automation can be implemented to save labour, reduce time and costs and increase efficiency.

Would you like to automate your manufacturing processes in the areas of coating and dispensing? Together with our long-standing partners, we can offer you flexible line concepts from a single source with customised coating and dispensing, drying and handling systems. In this way, we create the perfect end result for each customer!



Header potting

Primer



A 2K potting is used whenever a particularly high level of protection is required. With volumetric dispensing applicators, it can be ensured that the exact same amount of material is provided in the correct mixing ratio, regardless of temperature and pressure fluctuations. This ensures consistent and reliable application, offering optimal protection for sensitive components.



All models of the Protecto Series can be integrated into a line with various drying and curing systems. For optimal drying results, such as for pacemaker potting, we offer precise temperature profiling. This ensures consistent and effective drying, enhancing the quality and reliability of the final product.



## Automation Solutions from a Single Source

In addition, Rehm Thermal Systems, in collaboration with another partner, can implement customised turnkey solutions for bonding and thermal forming of flexible components, such as tubes, catheters, cables or films.

Would you like to automate your production in these or other areas? Rehm Thermal Systems offers you the opportunity to entrust the planning, construction and commissioning of the production line to experts. We are ready to take on new challenges and implement a production-ready process for you!



# Line Solutions

## Flexible Components

In medical technology, reliable curing of materials such as potting compounds or precise tempering of entire medical devices is crucial. Depending on the material, the drying process may involve convection, which uses moving warm air, or infrared radiation, often employed in combination heating processes for enhanced efficiency. These methods ensure that materials cure or temper correctly, maintaining the functionality and safety of the final product.



### AT A GLANCE

- › Increased productivity through automation
- › Repeatable assembly for complex and flexible components
- › Customised line concept
- › Consistent expert consultation
- › Integration of software interfaces and MES connectivity

# Process Documentation & Traceability

In the age of digitalisation, manufacturing companies are increasingly relying on process-oriented operating manufacturing execution systems (MES). These systems are positioned below ERP systems and above the production level in the software architecture. While the ERP system oversees the entire company and enables logistical optimisations across all sites, the MES system is focused on individual production lines within a company. It continuously collects all operational data along the material flow of these production lines and makes it available to the higher-level ERP system. This ensures complete traceability of products, components or batches, allowing potential for optimisation to be identified and utilised.

The variety of MES systems available on the market requires individual adaptation of the data transfer from the Rehm system to the customer's higher-level MES system. For this purpose, Rehm uses its own ROI interface (Rehm Open Interface), which processes the operational data and transfers it to the MES system in a bundled format.



Company level



Operational level



Production level

## Process locking

### Control

Comparison of the configured program with the assembly to be manufactured

## Enterprise Resource Planning (ERP)



## Manufacturing Execution System (MES)

### Production control at company level

Superordinate production management system for planning and monitoring production processes



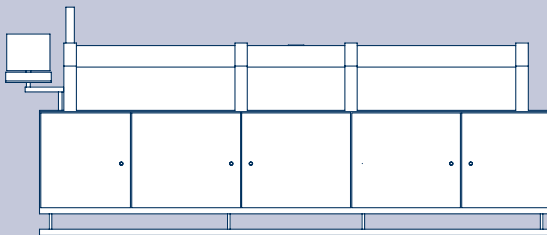
## Rehm Open Interface (ROI)

### Data transmission

Data is transmitted with the help of an interface with the superordinate manufacturing management system



Host computer  
OIC (Overall Inline  
Communication)



### Operational data acquisition

#### Production monitoring

Recording process-relevant data with the system software

### Traceability

#### Traceability

of all process-relevant data

  
**Stop**  
Entry will be blocked if there is no agreement

# YOUR CONTACT PERSON

Are you interested or do you have further questions?  
You are welcome to contact Ms. Jasmin Fuchs,  
Sales Manager New Markets, by phone or e-mail.

## CONTACT

**Jasmin Fuchs** | Leinenstr. 7 | 89143 Blaubeuren, Germany  
T +49 172 9140051 | [j.fuchs@rehm-group.com](mailto:j.fuchs@rehm-group.com)

