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RAMPF ADVANCED POLYMERS

# Tooling & Modeling

Solutions for state-of-the-art model, mold, and tool engineering

# RAMPF

## #DiscoverTheFuture



### Chemical and Engineering Solutions



Advanced Polymers



Composite Solutions



Machine Systems



Production Systems

RAMPF Advanced Polymers is a company of the international RAMPF Group. Find out more on page 20.

# RAMPF Advanced Polymers

## High-performance. Customized. Eco-friendly.

**We have been developing and manufacturing reactive resin systems based on polyurethane, epoxy, silicone, and silane-modified polymers – for more than four decades.**

Our portfolio includes

- > Sealing systems, electro and engineering casting resins, edge and filter casting resins, and adhesives
- > Board and liquid materials for model and mold engineering
- > Chemical solutions for the manufacture of customized recycled polyols based on polyurethane, PET, and PIR residues

Our products and solutions are used globally and in a wide range of industries – from automotive and electromobility, electrics/

electronics, and white goods to aerospace, foundry, furniture, and mattresses.

We conserve resources and protect our environment, both in the development of our chemical products and in their manufacture and recycling.

Together with our customers and partners, we are working towards a successful and sustainable future.







## Products and services

High-performance, customized, and resource-saving technologies for a sustainable future



### INNOVATIVE MATERIALS & BRAND DIVERSITY

Plastic systems for sealing, design, insulating, bonding, protecting, and casting

<b>RAKU® POX</b> Epoxy	<b>RAKU® PUR</b> Polyurethane	<b>RAKU® SEAL</b> Sealants	<b>RAKU® SIL</b> Silicone
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Plastic systems and solutions for state-of-the-art model, mold, and tool engineering

<b>RAKU® TOOL</b> Polyurethane and Epoxy
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Customized, high-quality recycling polyols

<b>RECYPOL®</b> Ether and Ester Polyols	<b>PETOL®</b> Ester Polyols	<b>Polyols based on renewable raw materials</b>
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### HIGH-PERFORMANCE & SUSTAINABLE

**Ambition. Reality. Tradition.**

Every day, we strive to make our products and solutions even more eco-friendly, from the selection of raw materials to the manufacturing process and delivery.

As a pioneer in the chemical recycling of polyurethane, we have been setting standards for over three decades. The raw materials obtained with our groundbreaking technologies are used in both our customers' products and our own.

It goes without saying that we procure energy sustainably – and use it intelligently. At our locations in Grafenberg and Pirmasens, we use only green electricity from renewable energy sources. An proactive environmental management system ensures that we never stand still but continuously improve our energy and environmental performance.

### SERVICE TODAY & IN THE FUTURE

**Customer-oriented, competent, committed**

We provide our customers with comprehensive support – from product development to market launch and sales. And we do this around the globe: With production facilities on three continents and a worldwide network of distribution partners, we are always there for our customers, wherever they are.

In all this, people are always at the center. Trusting and successful collaboration with our customers is our top priority. Together, we develop the solutions of tomorrow – and have been doing so for more than forty years.

# Your industry | Your application

Quality, performance, and progress for all industries



## AEROSPACE

- Cutting jigs
- Drilling fixtures & jigs
- Galvanobath models
- Interior fittings
- Lay-up tools
- Stretch forming tools/shaping dies

## AUTOMOTIVE CONSTRUCTION AND MANUFACTURING

- Cutting jigs
- Data control models
- Fixtures & jigs
- Functional cubing
- Galvanobath models
- Hammer forms
- Lay-up tools
- Metal forming tools
- Pilot production
- Prototypes (parts)
- Show Cars
- Styling & design models

## CERAMICS

- General mold engineering and negatives
- Membranes (pressing)
- Models for pressure casting molds (microporous acrylic resin molds)
- Models for plaster working molds

## ELECTRICAL INDUSTRY

- Components
- Fixtures & jigs

## FOUNDRY

- Cores
- Core boxes
- Master models
- Models, pattern plates
- Negatives

## FURNITURE & BOOTH CONSTRUCTION

- Decorative panels
- Interior fittings
- Paneling / wall cladding

## MARINE INDUSTRY

- Interior fittings
- Lay-up tools
- Master models
- Molds for laminating parts

## MECHANICAL ENGINEERING

- Assembly jigs
- Fixtures & jigs
- Molds
- Machine parts
- Models
- Support casting

## MEDICAL TECHNOLOGY

- Cutting jigs
- Fixtures & jigs
- Molds
- Models

## PLASTICS PROCESSING

- Cutting jigs
- Fixtures & jigs
- Foam molding tools
- Prototypes (parts)
- UP forming tools
- Vacuum forming molds

## SPORT AND LEISURE

- Cutting jigs
- Fixtures & jigs
- Lay-up tools for small-series
- Models
- Theme parks

## WIND ENERGY

- Lay-up tools (RTM/resin infusion)
- Master models
- Models for laminating parts



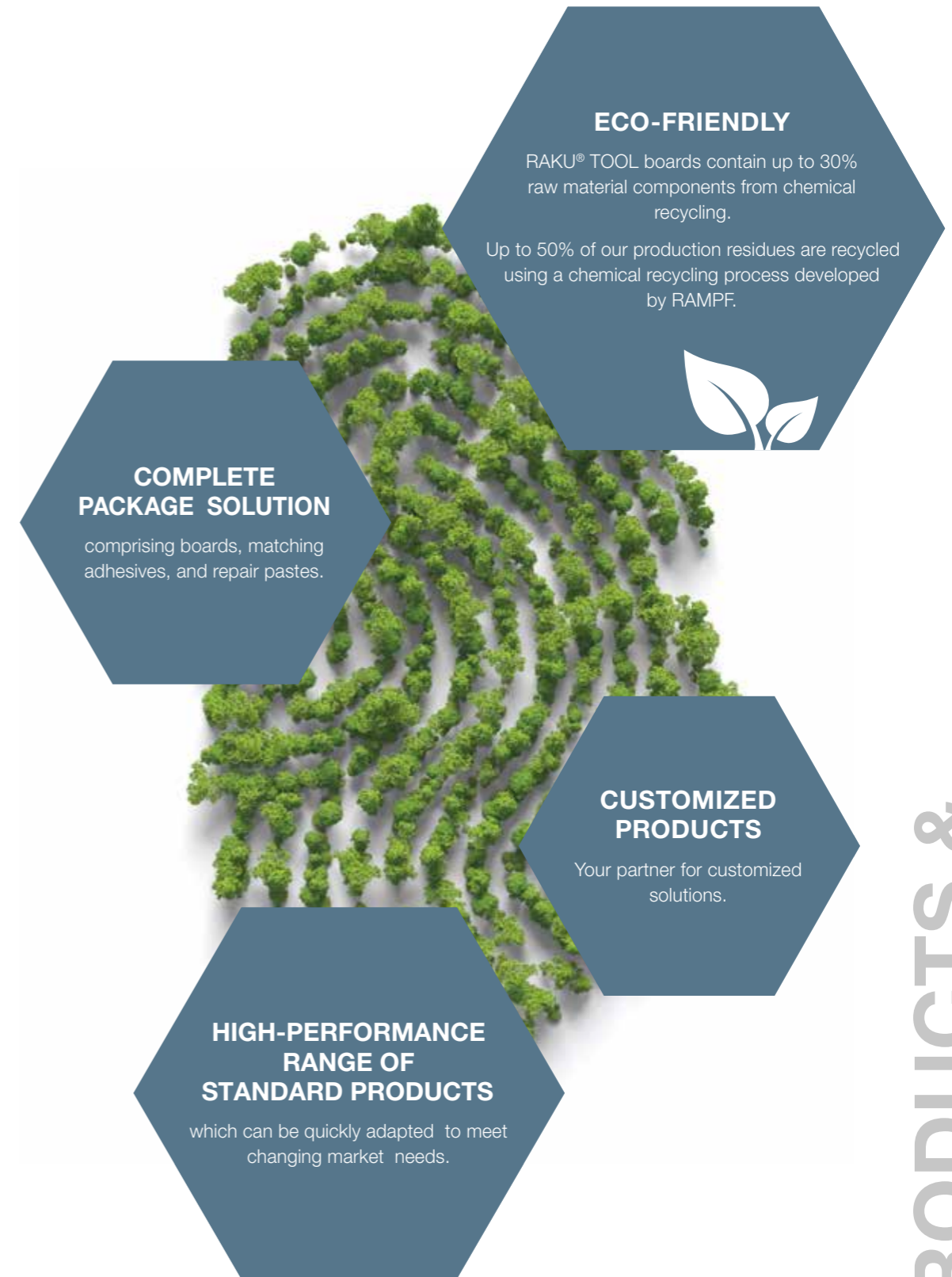


**+ YOUR BENEFITS**

- > World's largest producer of styling, modeling, and working boards
- > Extensive, eco-friendly product range
- > Comprehensive technical support
- > Made in Germany
- > High quality and stringent quality control

# RAKU® TOOL Board Materials

## Mill it. Finished.



**PRODUCTS & SERVICES**

# RAKU® TOOL Board Materials

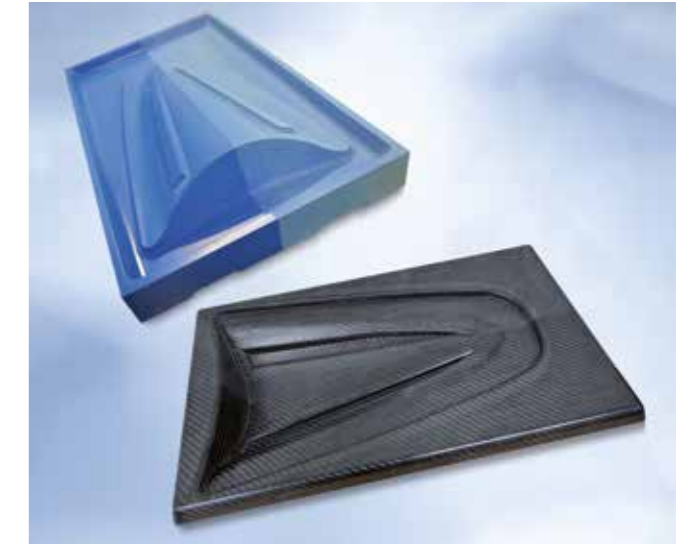
## At a glance

RAMPF has been developing and manufacturing board materials for over four decades. We are the market leader with the world's largest production of styling, modeling, and working boards.

### High-performance RAKU® TOOL Boards

AREA	KEY APPLICATIONS	KEY PROPERTIES	DENSITY G/CM <sup>3</sup>		
			0.08-0.47	0.5-1.0	1.1-1.7
<b>Styling Design</b>	<ul style="list-style-type: none"> <li>• Program proving</li> <li>• Supporting structures</li> <li>• Design studies</li> <li>• Negative molds</li> </ul>	<ul style="list-style-type: none"> <li>• Fine surface</li> <li>• Easy to process</li> <li>• Dimensionally stable</li> </ul>	•		
<b>Modeling</b>	<ul style="list-style-type: none"> <li>• Cubing</li> <li>• Show cars</li> <li>• Data control models</li> <li>• Functional cubing</li> <li>• Lay-up tools</li> <li>• Jigs &amp; fixtures</li> </ul>	<ul style="list-style-type: none"> <li>• Very fine surface</li> <li>• Easy to machine</li> <li>• Dimensionally stable</li> </ul>		•	
<b>Prototyping/ Small series</b>	<ul style="list-style-type: none"> <li>• Hammer forms</li> <li>• Lay-up tool</li> <li>• Rapid Prototyping casting molds</li> <li>• Flanging tools</li> <li>• Welding fixtures</li> </ul>	<ul style="list-style-type: none"> <li>• Good mechanical properties</li> <li>• Easy to machine</li> <li>• Impact and edge strength</li> </ul>			•
<b>Foundry</b>	<ul style="list-style-type: none"> <li>• Pattern plates</li> <li>• Core boxes</li> <li>• Models</li> <li>• Negatives</li> <li>• Auxiliary tools</li> </ul>	<ul style="list-style-type: none"> <li>• Excellent abrasion resistance</li> <li>• Good temperature resistance</li> <li>• Low thermal expansion</li> <li>• Eco-friendly and sustainable</li> </ul>		•	•
<b>Ceramics</b>	<ul style="list-style-type: none"> <li>• Models</li> <li>• Appliance and working models</li> <li>• Negatives</li> <li>• Auxiliary tools</li> </ul>	<ul style="list-style-type: none"> <li>• Excellent surface</li> <li>• Good styrene resistance</li> </ul>		•	•
<b>Composites</b>	<ul style="list-style-type: none"> <li>• Models</li> <li>• Lay-up molds</li> <li>• Prepreg lay-up tools</li> </ul>	<ul style="list-style-type: none"> <li>• Good impact strength</li> <li>• Chemical resistant</li> <li>• Can be polished to a high gloss</li> </ul>	•	•	•

## Applications Board Materials





# RAKU® TOOL

## Close Contour Products



### + YOUR BENEFITS

- > Close Contour shape
- > Rapid milling
- > Less waste
- > Seamless, fine surface

# Seamless modeling pastes. Ready to mill castings.

Close Contour pastes, Close Contour blocks, and Close Contour castings are high-performance products and the result of targeted development work and years of practical experience. We tailor our Close Contour products to your specific requirements quickly and effectively.

### CLOSE CONTOUR CASTINGS

**Encompassing advice and consulting**  
Our experienced team supports you during project planning and implementation.

**Ordering, easy and quick**  
Simply provide us with the CAD data of the part / mold in igs file or stp file format, including machining allowance.

**Mold construction, casting, and post-cure – no work for you!**  
We produce the casting mold based on your CAD data. The ensuing casting process involves specific heat treatment and quality control. The high mechanical properties of the final product are achieved through the post-cure process.

**Delivery**  
We supply a ready-to-mill casting and you can concentrate on your key strength – milling.

### CLOSE CONTOUR PASTES

The paste is applied to a close-contour-shape supporting structure, cured, and then machined according to CAD data.

### CLOSE CONTOUR BLOCKS

Special blocks are produced in renowned board quality according to customer specifications (L x W x H) and supplied as customized, rectangular, unmachined blocks.

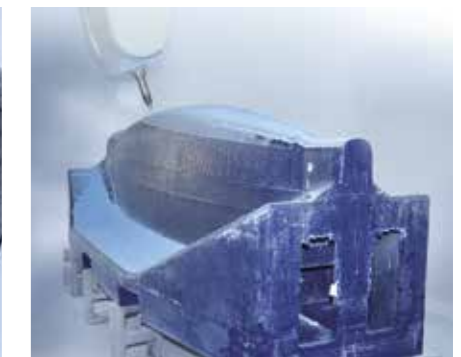
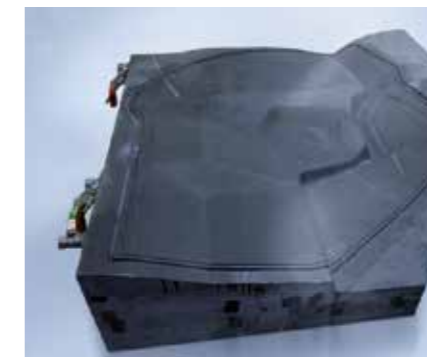
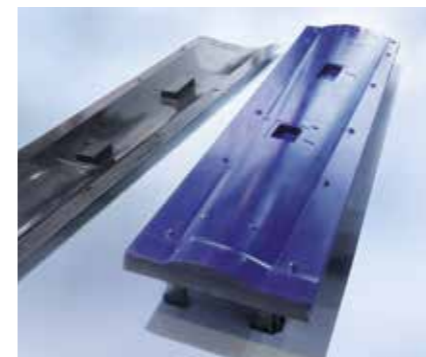
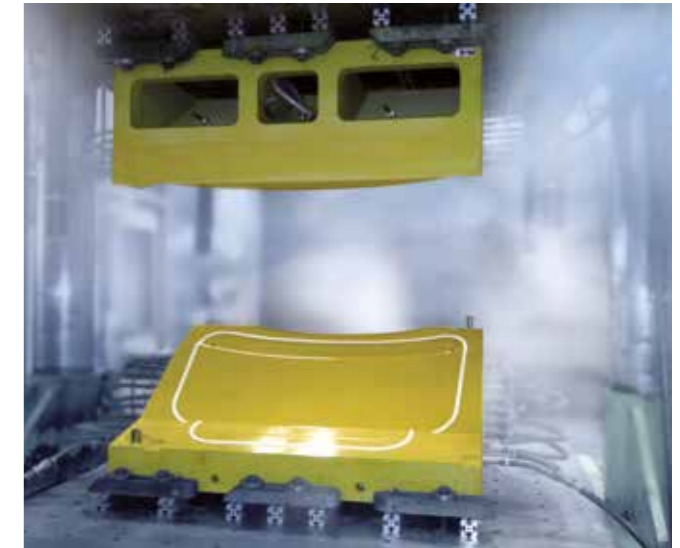


# Applications Close Contour Products

## RAKU® TOOL Close Contour products at a glance

	CLOSE CONTOUR PASTES	CLOSE CONTOUR BLOCKS	CLOSE CONTOUR CASTINGS
<b>KEY APPLICATIONS</b>			
Design and styling	•		
Master models, cubing models	•	•	•
Molds	•	•	•
Jigs and fixtures	•	•	•
Tools	•	•	•
Foundry patterns		•	•
<b>QUALITATIVE SELECTION CRITERIA</b>			
Size of the models / tools	Medium to very large*	Small to medium	Medium to large*
Mechanical properties / depending on product	See data sheet	See data sheet	See data sheet
<b>ECONOMIC SELECTION CRITERIA</b>			
Minimal waste	•	•	•
Quick machining due to close contour shape	•	•	•
Light, cost-effective supporting structures	•		
No handling of liquid products		•	•
Delivery time	Immediate	Approx. 5 days	Approx. 10 days
Equipment costs	•	None	None
Work hygiene / exposure	Marginal	None	None
Special features	Seamless surface	Seamless surface	Seamless surface

\*With large models/ molds build-up in segments possible





# RAKU® TOOL

## Liquid Materials

### Gelcoats, Laminating, Casting, and Multipurpose Systems.

RAKU® TOOL liquid products offer a large selection of innovative and efficient gelcoat, laminating, casting, and multipurpose systems for various manufacturing techniques, build-up methods, and applications.

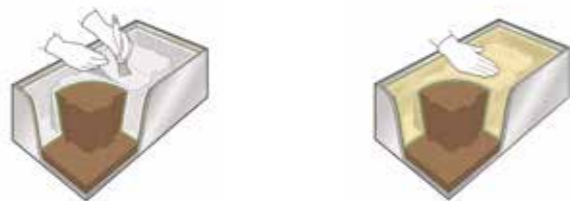
#### LAY-UP



Gelcoats

Backing / Full casting

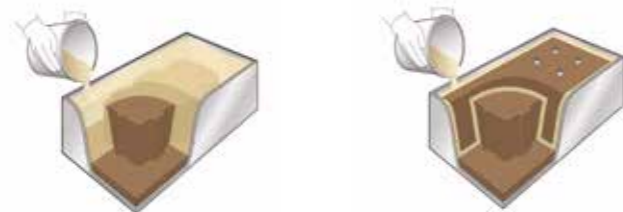
Backing / Tamping



Laminating with fibers

Laminating with pastes

#### CASTING



Full casting

Face casting

#### At a glance

<b>GELCOATS</b> Epoxy, Polyurea	<b>RAPID PROTOTYPING SYSTEMS</b> Polyurethane
<b>LAMINATING AND MULTIPURPOSE SYSTEMS</b> Epoxy	<b>FAST CAST</b> Polyurethane
<b>LAMINATING PASTES</b> Epoxy	<b>REPAIR PASTES</b> Epoxy
<b>INFUSION SYSTEMS</b> Epoxy	<b>ADHESIVES</b> Epoxy, Polyurethane
<b>CASTING SYSTEMS</b> Epoxy, Polyurethane, Polyurea	<b>AUXILIARIES</b> Release agents, Fillers



#### + YOUR BENEFITS

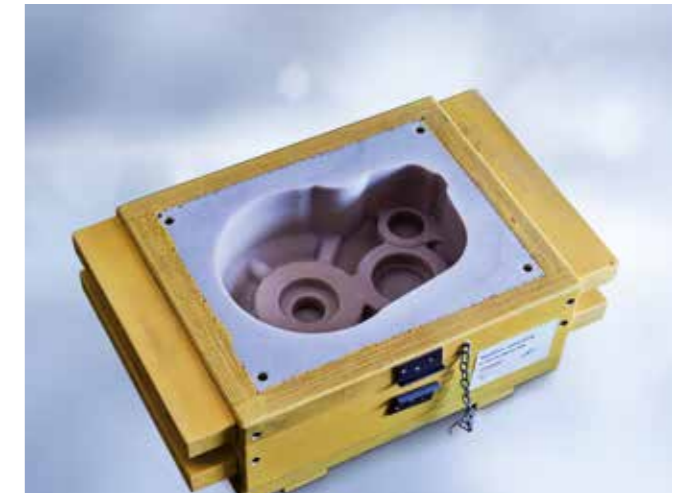
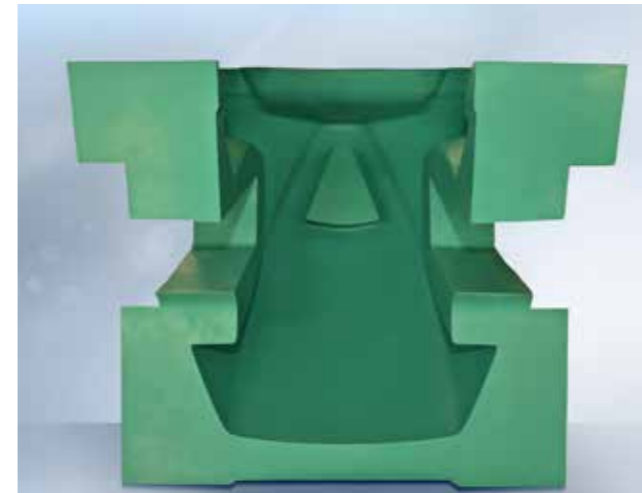
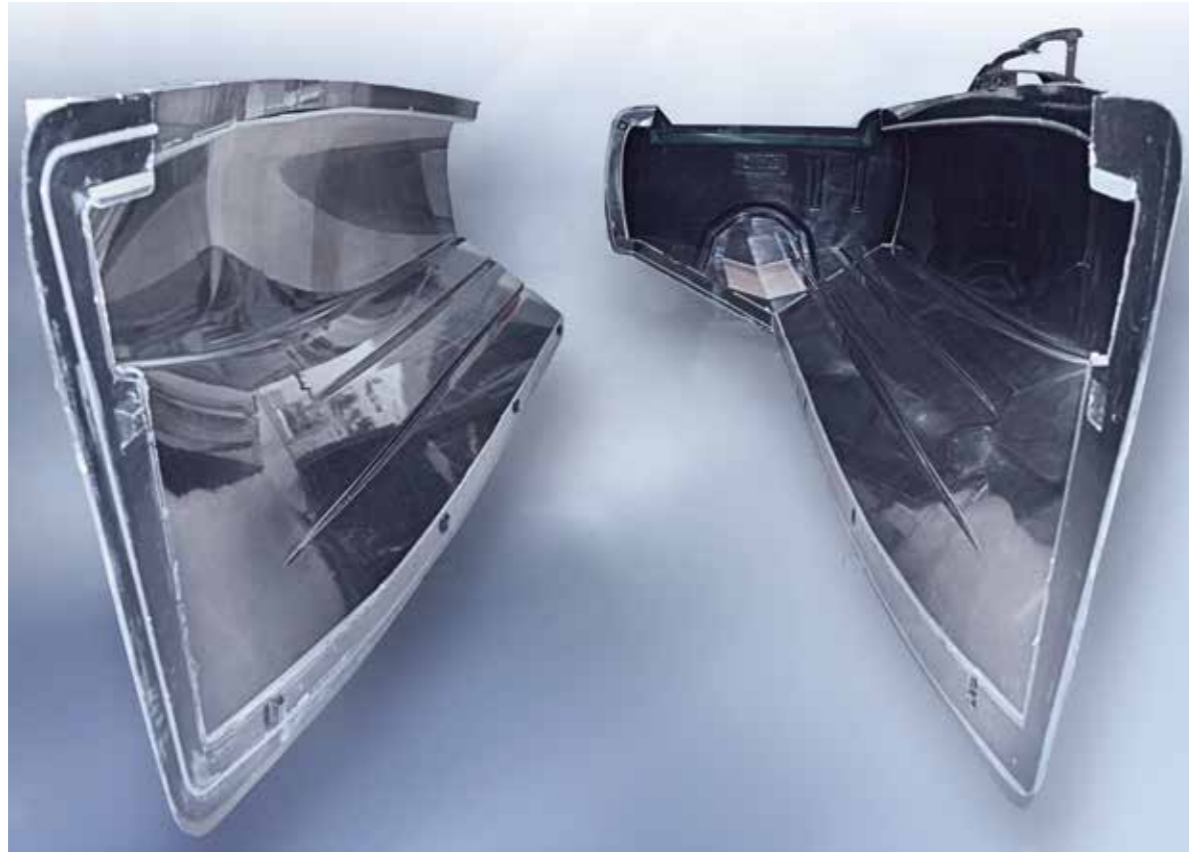
- > Comprehensive product portfolio
- > Systems with varying temperature resistances (RT – 190 °C)
- > Rapid availability

# Applications

## Liquid Materials

### Examples of products and solutions

from the marine, foundry, wind energy, automotive, and motor sport industry.





# We are inventors. Team players. And a strong partner.

**RAMPF stands for pioneering chemical solutions and visionary engineering. Worldwide.**

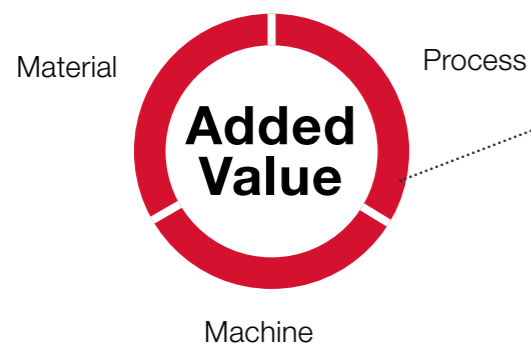
From a one-man operation to an international group with twelve sites spread across three continents – with our products and solutions centered around reactive resins, machine systems, and lightweight construction with composites, we rank among the market leaders in a whole host of industries.

Discover the future – this is both our corporate slogan and the foundation of our long-standing success story. In close cooperation with our customers and partners, we develop tomorrow's products and solutions today – for the decisive competitive advantage.

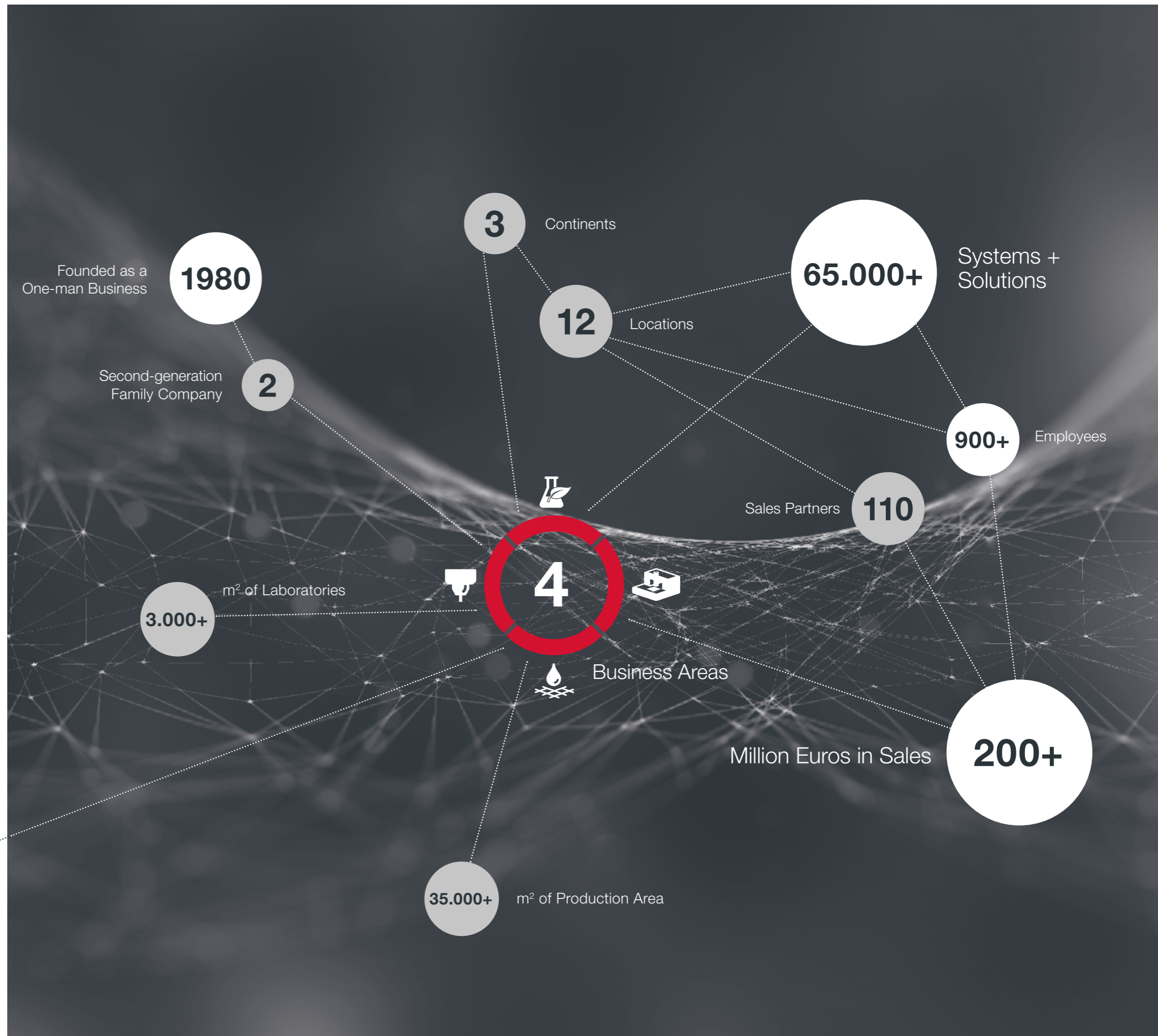
Sustainability has been a priority right from the outset. This is no mere buzzword but an integral part of our day-to-day activities. As pioneers of chemical recycling, we have been contributing to an effective circular economy for decades. The raw materials that we recycle are used both by our customers and within our Group.

We are also a sustainable employer. RAMPF grows with its employees – we invest in our staff and are keen for them to work with us in the long term. We achieve this by openly showing appreciation and offering extensive training and development opportunities.

A forward-looking, sustainable, and value-creating family-run business – as a partner to industry and as an employer, we attach the greatest of importance to trust and reliability. These qualities are an absolute must when it comes to establishing long-term, successful partnerships.



**RAMPF – Chemical and Engineering Solutions.**  
Utilize our wide-ranging innovative potential for Added.Value.





**RAMPF –**  
discover the future  
Developing the Solutions  
of Tomorrow – Today.

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**Mass production?**  
Not at RAMPF.

**We engineer  
made-to-order solutions.**



