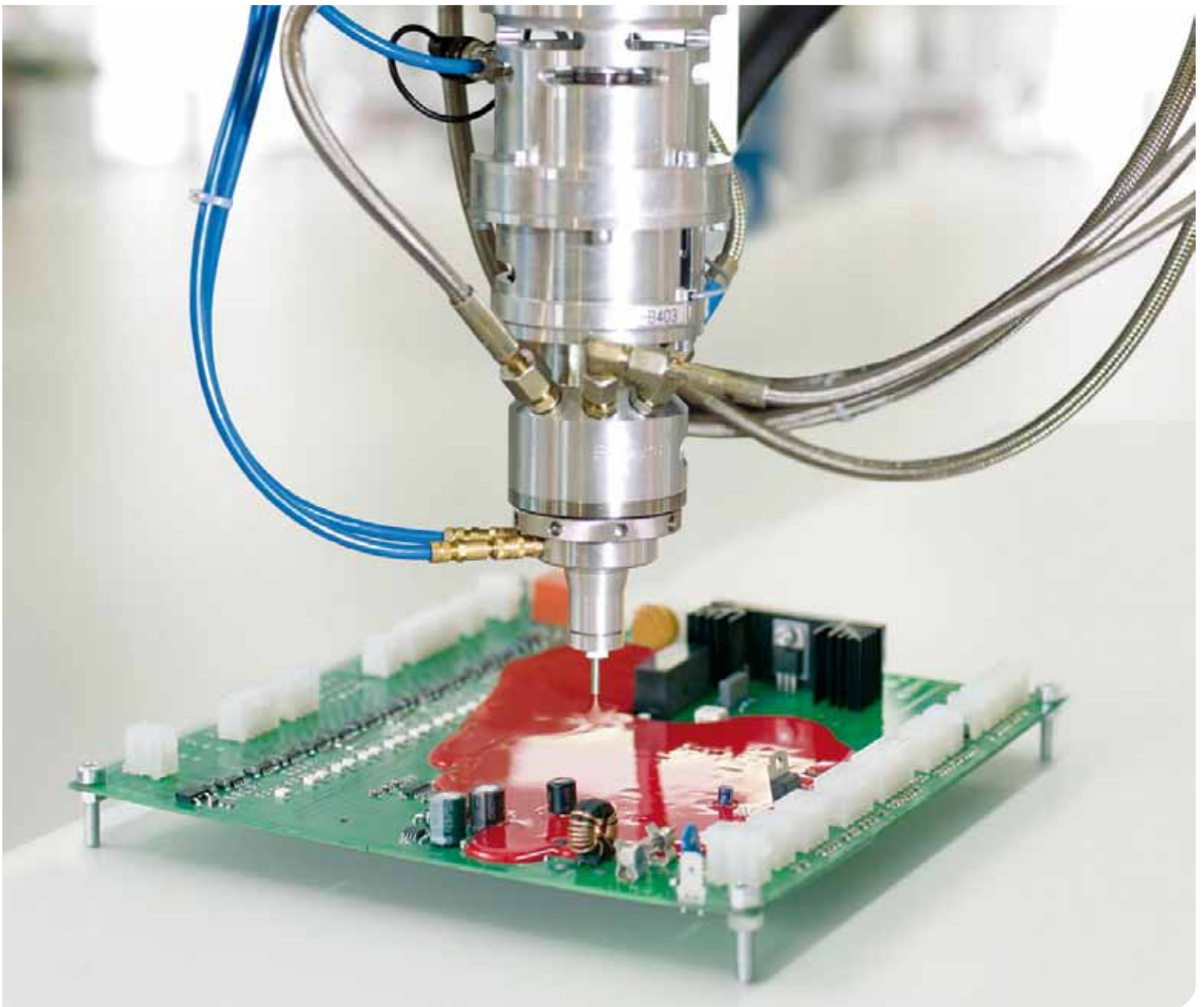


RAMPF Electro Casting Resins

Innovative systems for encapsulation and insulation of electronic and electrical components.



RAMPF[®]
discover the future



Customized casting resins: RAMPF Giessharze

Our products increase safety, control, cost-effectiveness and convenience. For more than 30 years, RAMPF Giessharze has been developing and manufacturing innovative casting resins based on **polyurethane, epoxy and silicone** – and has been doing so with great success. We are now one of the leading companies specializing in reactive casting resins for safe and efficient casting, sealing, designing and bonding.

Your advantages

High performance products

- > **An efficient standard range** which we adjust to your specific needs or **innovative customized product developments** according to your specification
- > Production facilities in Germany, the United States and China
- > Broad spectrum of properties that can be tailored to your precise requirements
- > High quality and strict quality controls ensure excellent reproducibility in all production steps
- > Certified to ISO/TS 16949



RAMPF – Your reliable partner

- > We specialize in customized products: We make the necessary adjustments to your needs quickly and reliably
- > The **broad-based expertise** and **experience** of our qualified team is used to create future-proof solutions for wide-ranging applications and a variety of different markets
- > **Application technology** provides in-depth advice and produces sample parts so you can test the quality of our products yourself
- > Our **contract manufacturing** facilities deliver your product series reliably, to the highest quality standards and on time
- > We supply the **material and application technology** from a single source where required
- > We attach great importance to customer proximity: We are at your service – **worldwide**
- > **Renowned clients** have placed their trust in us for over 30 years.

You can benefit from our experience too!



Perfect interaction: chemistry & system engineering

With chemical processes, reliable processing determines the quality of the final product. That's why chemists and system engineers work hand in hand at RAMPF. The result: a product formulated to meet your specific needs which is perfectly adjusted to the processing technology you use.

Laboratory & product management

- > Initial consulting on the selection of a suitable casting material
- > In-depth technical consulting on a protective material for your components
- > Customized development of your material or adjustment of a suitable product out of our comprehensive portfolio

Application engineering & contract manufacturing

- > Professional advice in the selection of a suitable processing method
- > Application engineering consulting and production of sample parts
- > Expert contact for the production of prototypes
- > State-of-the-art plant technology for foaming, casting and spraying





Day by day, we achieve technical excellence on the highest level. That's why many leading companies from a wide range of industries put their trust in us. Our products can be found everywhere where a high level of quality and innovation is needed.

Test standards & listings

Leading institutes and well-known customers have tested our materials and confirmed the quality of our products:

- > High temperature resistance:
temperature classes B, F, H
- > Flame retardant to UL94 V0, HB, FMVSS302
- > IP67, IP69 (water depth of 10m)
- > UL 746 B (RTI)

Listed with leading manufacturers, e.g. in the automotive and electronics industries.

Broad range of material properties

Our expert development team works continuously to create new, customized electro casting resins with extraordinary properties

- > High thermal resistance
- > High thermal conductivity
- > High mechanical strength
- > Flame-retardant systems (UL listing)
- > High dimensional stability
- > Excellent dielectric properties
- > Low water consumption
- > Good hydrolytic resistance
- > Good chemical resistance

Optimum flexibility – adjustable to your individual needs

- > Precisely adapted flow properties
(from low viscosity to highly thixotropic)
- > Settings precisely matched to process conditions
(processing time from 60 sec. to 3 hours)
- > Variable final hardness (from 10 Shore A to 90 Shore D)





Reliable processing technology –

material, plant and process engineering from a single source for reliable and economical production.

Contract manufacturing

- > Sample manufacturing
- > Series startups
- > Series production

Efficient overall process

- > Inspection of incoming components
- > Inspection of tool holding fixtures and tools
- > Possible pretreatment
- > Final inspection based on requirements
- > Packaging and delivery

Low-pressure mixing and dispensing systems

- > RAMPF dispensing systems are designed using tried-and-tested standard components for your particular application
- > Various types of systems
 - > Basic dispensing system
 - > Compact dispensing cell
 - > Dispensing system with robots
- > Customized automation concepts
 - > Manual systems
 - > Semi-automated solutions
 - > Fully-automated systems with integrated handling robots, assembly workstations, conveyor systems and curing ovens

Renewable raw materials –

RAMPF Ecosystems, a polyurethane and PET recycling specialist, has been part of the RAMPF Group since 2003.

Ecosystems views polyurethane production residues and post-consumer PET from packaging not as waste but as valuable sources of raw materials.

Special chemical methods are used to process these materials into polyols. Known as Recypols or Petols, these materials flow back into the polyurethane production chain.

Ecosystems customers include companies within the RAMPF Group and other system houses throughout Europe. Another main focus is the research of polyols made of renewable raw materials, such as rapeseed oil.

Our scope of services includes

- > Provision of customized polyols/support for the development of polyurethane systems
- > Manufacture of moulded parts (rigid foam/semi-rigid integral skin foam) for prototypes, zero series and small batches, weight per moulded part: < 10g to 5kg, experience in in-mould and IMC coatings
- > Flexible unit quantities:
 - between 1 and 200,000 units/year
- > Quality assurance by testing physical values in the in-house laboratory
- > Engineering for closed cycles

RAMPF also takes over plant engineering activities at the customer's site to define the complete process between the use of polyurethane, waste recycling and re-use of the obtained polyols.



Efficiency, safety and convenience.

Electro casting resins for automotive applications

These resins have to meet a huge variety of requirements, including different densities and viscosities, extreme temperature differences, protection against overheating, shocks and chemicals. Especially in the automotive industry an increasing number of electrical and electronic components are improving efficiency, safety and convenience.

There is a big variety of applications, including door closing modules, brake light sensors, engine temperature control units, side mirror blinkers, DC/DC transformers, battery disconnect solenoid, tire pressure sensors, axle bearing sensors and valve blocks.

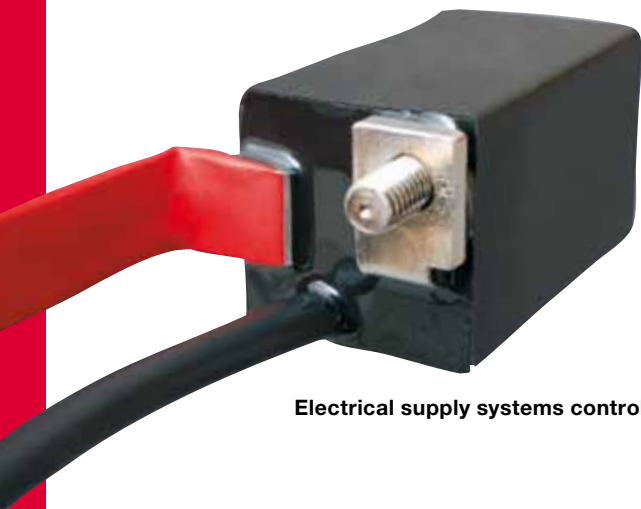
Numerous automobile manufacturers and suppliers place their trust in our electro casting resins.



Door closing/locking unit



Brake light sensor



Electrical supply systems control



Charging connector for electric vehicles



Engine temperature control unit



Valve block



DC/DC transformer



Battery disconnect solenoid



Axle bearing sensor



Automotive sensor



Side mirror blinker



Tyre pressure sensor



Safety, control and cost-efficiency.

Protection against moisture and dust is crucial for electronic components. Our products therefore meet the highest requirements for quality and reliability. We offer top-quality products with UL approval, high temperature resistance (B, F, H) and good chemical resistance.

No matter what kind of application you have – sensors, transformers, capacitors, connectors, switches or any other electronic component – we have a solution!

Components

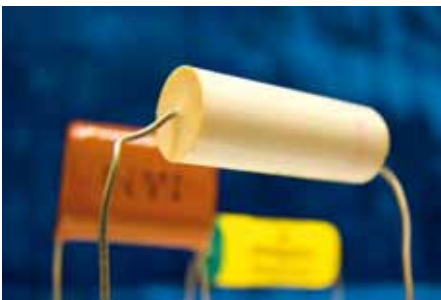
e.g. LEDs, capacitors...

Electronic protection

e.g. sensors, actuators...

Assemblies

e.g. relays, PCBs, batteries, cables...



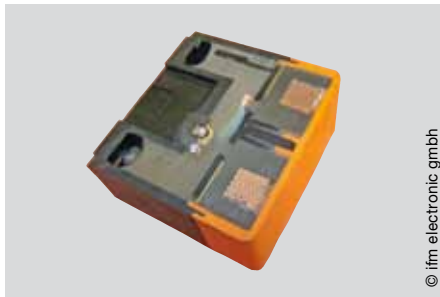
Sensors



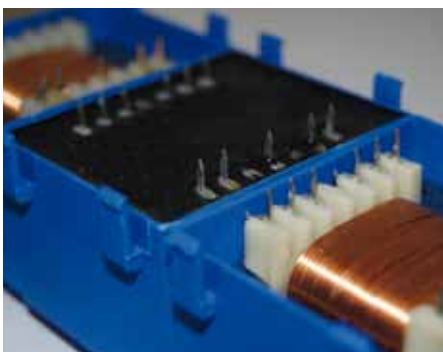


Inductive components

e.g. transformers,
electromagnetic equipment ...



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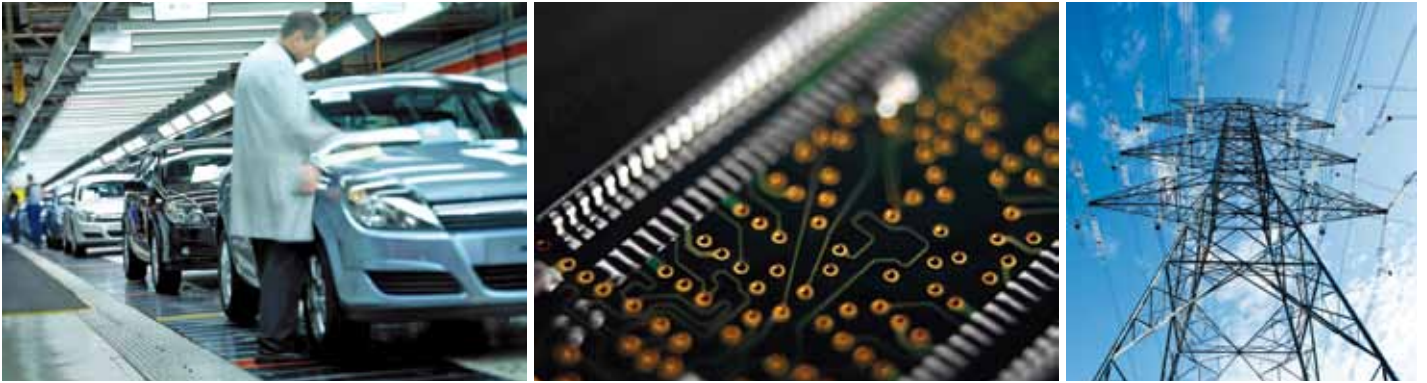
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Ignition coils and motors



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Your industry – your applications.



We have been designing and manufacturing customized electrical casting systems for over 30 years. Our access to a broad product range (polyurethane, epoxy and silicone) enables us to provide the material best suited to your particular application and industry.

Mobility

In the face of growing scarcity of resources, rising energy demands, increasing urbanisation and mobility – coupled with a rise in environmental awareness worldwide, RAMPF is playing its part in meeting these challenges successfully and sustainably.

- > We cast parts from a broad spectrum of materials to meet the highest requirements, and offer a wide-ranging portfolio of solutions for road, rail, water and air.

Electronics, measurement and sensor technology

As a result of the rapid pace of technological improvements, this industry is developing quickly, with new and innovative products being created on a daily basis.

- > We cast electric and electronic components and accompany you along the entire value added chain.
- > We operate in a wide range of areas, including the electric, electronic and semiconductor industries, energy generation and transmission, medical technology and the domestic appliance industry.

Renewable energies

The growing importance of these almost unlimited energy sources and their safe and cost-effective utilisation leads to a rapid growth of this industry. Innovative technologies are used to generate power ecologically and economically.

- > We offer electrical casting resins for use in all areas relating to energy and propulsion, such as solar power, wind energy and electric cars, and provide support for implementing innovative solutions.

We look forward to meet your challenges – as an experienced and innovative contact for all branches.





Innovation offensive at RAMPF

In 2008, RAMPF Giessharze launched a wide-ranging innovation offensive. Innovations are not a matter of size, relevance or speed – they demand due care and attention to processes that run in the background.

Discussion panels, such as the "Innovation stars on the red couch" at the RAMPF innovation centre, enable employees exchanges with interesting personalities from other disciplines. To learn from others, to think across generations and disciplines and to be courageous in breaking new ground – that is the motto of RAMPF Innovation, which includes also the RAMPF Academy.

RAMPF Academy

The training program focuses on networking of practical know-how and business expertise. The aim is to provide customers with a comprehensive, customized training program to help them broaden their horizons and look to the future. The training program is officially certified by the University of Bern and participants receive a training certificate.

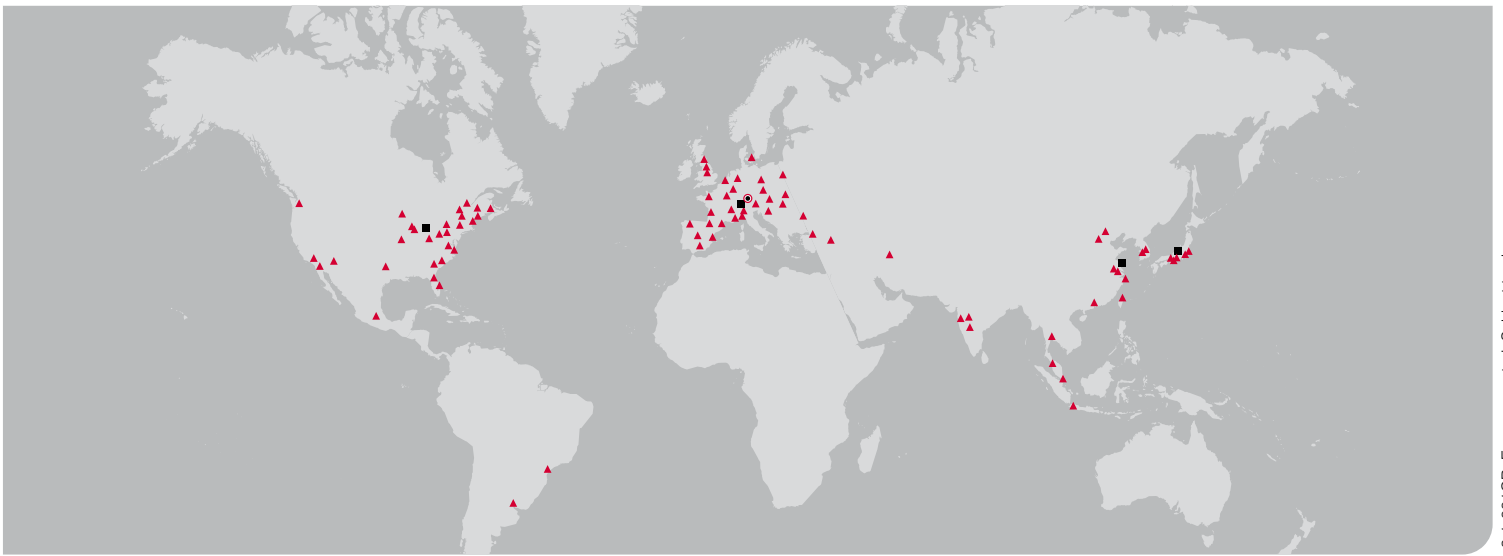
The training lasts two days and is adjusted to individual customer requirements. Topics are geared towards the participants, who work in small groups to explore silicones, polyurethanes and epoxy resins in great depth.

The University of Bern is responsible for this interdisciplinary qualification. The combination of theory and practice is designed to provide customers with fresh inspiration.

At the same time, this concept also enables participants to discuss specific issues and problems face-to-face with the experts.



RAMPF Group world-wide.



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