

# Brand new from RAMPF – Microwave Curing Technology for Ultra-Fast Curing and Processing Times

Patented process for the thermal activation of sealing systems, adhesives, and casting resins via microwave radiation

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Page 1 of 3

**Grafenberg, Germany, December 4, 2019.** RAMPF's new modular microwave technology RAKU<sup>®</sup> Microwave Curing achieves ultra-fast curing and processing times when mixing and dispensing sealing systems, adhesives, and casting resins. The groundbreaking innovation is based on the thermal activation of 1- and 2-component polymer systems using microwave radiation.



The curing time of sealing systems, adhesives, and casting resins is crucial for cycle and lead times. RAMPF's new patented\* microwave technology RAKU<sup>®</sup> Microwave Curing increases the reactivity of 1- and 2-component polymer systems based on polyurethane, epoxy, and silicone by up to fourfold.

The material is thermally activated directly after the discharge nozzle via electromagnetic waves and then applied to the component. Radiation is transmitted by waveguide to the activation zone only for a fraction of a second. Viscosity and reactivity are thus continuously adjustable and can be regulated quickly, flexibly, and directly in the production process.

Shorter curing and processing times significantly reduce Work In Process and thus improve production efficiency. Manufacturers also benefit from time and cost savings as well as a reduction in process steps and negative environmental influences. Handling stability is achieved at a much earlier stage, so the component can be fed more quickly to the next processing step. In many cases, the annealing cycle can be significantly reduced by microwave heating. Ideally, a curing oven is no longer needed.



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In the case of two-component reactive resins, the interaction of material and microwave radiation is further improved by adapting the formulation of the material. This guarantees the optimum combination of resin and dispensing system for each individual customer application.

Moreover, reduced operator maintenance improves productivity as well as operating costs. In a two-component low-pressure machine, material mixing and activation usually take place in one step. RAKU<sup>®</sup> Microwave Curing now separates the mixing and activation process. As a result, contamination in the mixing head is significantly reduced, which in turn reduces the frequency of mixer cleaning.

\* Pending

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The RAMPF Group stands for **engineering and chemical solutions** and caters to the economic and ecological needs of industry.

The range of competencies includes:

- > production and recycling of **materials** for modeling, lightweight construction, bonding, and protection;
- > technical **production systems** for precise, dynamic positioning and automation, as well as technologies for complex composite parts production;
- > comprehensive range of **solutions and services**, particularly for innovative customer-specific requirements.

With this know-how, RAMPF helps its customers to achieve profitable and sustainable growth.

The Group secures its presence on the international markets with more than 900 employees and six core competencies:

- > **RAMPF Machine Systems** based in Wangen (Göppingen), Germany, develops and produces multi-axis positioning and moving systems, trunk machines, and basic machines based on high-precision machine beds and machine bed components made from alternative materials.
- > **RAMPF Production Systems** based in Zimmern o. R., Germany, develops and produces mixing and dispensing systems for bonding, sealing, foaming, and casting a wide variety of materials. The company also offers a wide range of automation skills relating to all aspects of process engineering.
- > **RAMPF Composite Solutions** based in Burlington, Ontario, Canada, is a holistic composites supplier to companies in the aerospace and medical industries. The company offers a complete suite of services including composite part design and engineering, metal-to-composite conversion engineering, and composite manufacturing to very tight tolerances.
- > **RAMPF Eco Solutions** based in Pirmasens, Germany, develops chemical solutions for the manufacture of high-quality alternative polyols from PU and PET waste materials. This expertise is also put to use in the planning and construction of customer-specific facilities for manufacturing polyols.
- > **RAMPF Polymer Solutions** based in Grafenberg, Germany, develops and produces reactive resin systems based on polyurethane, epoxy, and silicone. Its product portfolio includes liquid and thixotropic sealing systems, electro and engineering casting resins, edge and filter casting resins, and adhesives.
- > **RAMPF Tooling Solutions** based in Grafenberg, Germany, develops and produces board and liquid materials for cutting-edge modeling and mold engineering. The range of skills includes made-to-measure services and products such as pastes, large-volume and full-size castings for Close Contour models, and prototyping systems.

RAMPF has subsidiaries in Germany, the U.S., Canada, Japan, and China.

All RAMPF companies are united under a holding company – RAMPF Holding GmbH & Co. KG – based in Grafenberg, Germany.

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