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RAMPF MACHINE SYSTEMS

# EPUDUR


Ultra-high performance concrete for machine beds

# RAMPF


## #DiscoverTheFuture




Chemical and Engineering Solutions




Advanced Polymers



Composite Solutions



Machine Systems



Production Systems

RAMPF Machine Systems is a company of the international RAMPF Group.  
Find out more on page 12.

# RAMPF Machine Systems

## Innovative solutions for highly dynamic production technology

We are the market-leading development partner and system supplier of complete machine beds and machine systems.

Our product portfolio encompasses

- > System solutions, trunk and base machines, as well as multi-axis positioning and motion systems built on machine beds and frame components made from high-performance materials such as mineral casting, hard stone, and ultra-high-performance concrete
- > Contract grinding of high-precision machine components

With this holistic approach, RAMPF Machine Systems serves as the ideal partner for the development and manufacture of pioneering machinery and production technology in a wide range of industries, including electronics, semiconductor, and solar module production, laser, woodworking and textile machines, measuring, testing, and inspection technology, as well as machine tool manufacturing.





# Your industry | Your application

Customized, sustainable and used worldwide in a variety of applications.



## MACHINE TOOLS

EPUDUR ultra-high performance concrete (UHPC) for machine beds and machine bed components for highly dynamic machine tools used in applications such as milling, turning, grinding, and eroding.



## ENERGY

EPUDUR ultra-high performance concrete (UHPC) for bases for power machines subject to high dynamic loads, such as motors, generators, turbines, and centrifuges.



## PRODUCTION

EPUDUR ultra-high performance concrete (UHPC) for load-bearing machine bed components in high-performance production technology in the print, graphics, timber, textile, electronics, optics, and packaging sectors



Machine tools



Woodworking machines



Laser applications



Textile machinery



Solar module production



Energy generation machinery



Microproduction



Optics production



Measuring, testing, and inspection technology



Graphics machines



Packaging machines



Pick & place applications







+ YOUR BENEFITS

- > Machine beds made of UHPC exhibit strength, modulus of elasticity, damping, and thermal behavior similar to that of mineral casting and hard stone.
- > Components made of high-performance concrete are non-flammable and age-resistant at low and high temperatures.
- > UHPC components can be recycled in the form of building materials.

# EPUDUR

## Properties and parameters

of a high-performance concrete material for highly dynamic mechanical engineering

EPUDUR is an ultra-high performance concrete (UHPC) based on the latest generation of premium cements. It has been further developed from Mikrodur technology using nano-structured synthetic silica. Other elements include grit, sand, and stone dust. A little water is also needed to produce the requisite chemical reaction.

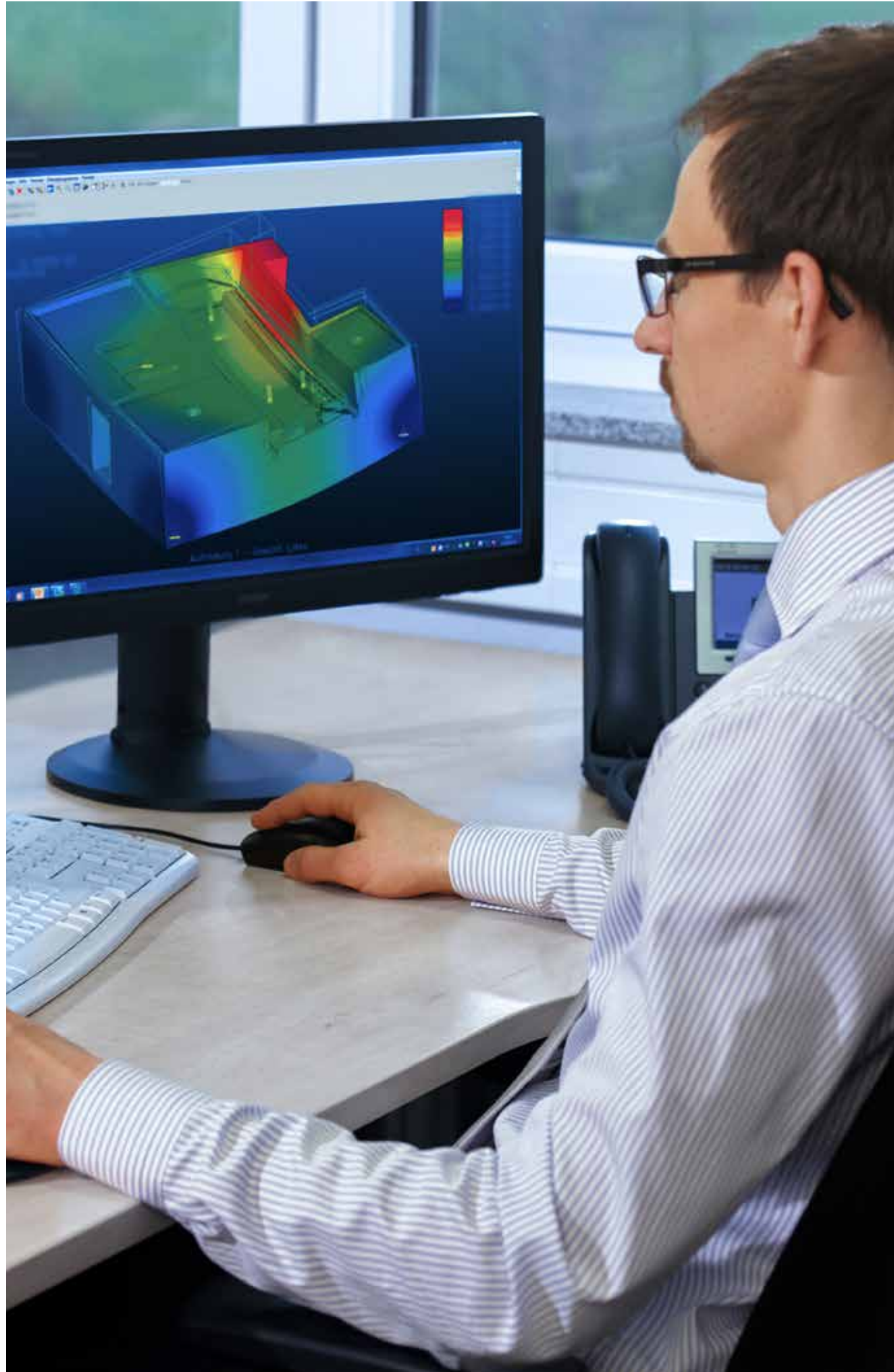
The result is a material whose pore volume is ten times lower than that of standard construction concrete, thus equipping it with the strength, modulus of elasticity, and chemical resistance which is an interesting proposition for machine bed applications in the mechanical engineering industry.

	GG25 CAST IRON	EPUMENT® MINERAL CASTING	EPUDUR UHPC CONCRETE	EPUSTONE HARD STONE
Density kg/dm³	7.15	2.40	2.50	2.90
Compressive strength N/mm²	840	130	125	250
Flexural strength N/mm²	240	30	14	20
Modulus of elasticity kN/mm²	120	40	45	65
Thermal expansion 10 <sup>-6</sup> K <sup>-1</sup>	9	15	10	6.5
Damping (log. decrement)	0.0045	0.0340	0.0265	0.0150

Comparison of material properties







## EPUDUR | Engineering, design, modeling

### Services for material-specific design of UHPC machine bed components

As with all other materials, machine bed components made of EPUDUR (ultra-high performance concrete – UHPC) must be laid out to suit the materials in question, designed appropriately, and integrated into the machine to withstand all the necessary stresses and strains and meet all requirements. Supported by CAD and FEM, design measures compensate for weak points (e.g. low tensile strength), and strengths (e.g. high modulus of elasticity) can be utilized accordingly.

Molded-in parts (screw stays, load elements, pipes, tubes, etc.) can be integrated. Exceptional technical and cost-efficient options for the shell construction, casting, precision processing, and assembly process play a key role in this phase, too.



UHPC base of a vertical milling center (2860 kg; painted in two colors; assembly surfaces with blank precision)



UHPC machine bed of a hard turning and grinding center (2870 kg; precision-ground surfaces)



UHPC machine bed of a traveling-column milling machine (9140 kg; precision-ground surfaces)





# EPUDUR | Production, accuracy, precision assembly

Complete service offering with ready-to-use UHPC machine bed as a system solution

RAMPF Machine Systems is the system supplier for complete machine beds and machine bed components made of ultra-high performance concrete (UHPC).

Based on the latest technologies and a reliable quality assurance system to ISO 9001:2008, the company supplies complex structures and assemblies made of ultra-high performance concrete (UHPC) with excellent dimensional accuracy, top quality, and the best possible price/performance ratio.

State-of-the-art production equipment, climate-controlled replication halls, and an in-house precision grinding center underline the outstanding position of the world market leader.

## + YOUR BENEFITS

- 1 Optimal price/performance ratio achieved through material-specific design, functional integration, and reduced effort during assembly.
- 2 Greatest accuracy achieved through highly-precise flat grinding and hand lapping of EPUDUR machine beds in our internal grinding center.
- 3 RAMPF Machine Systems takes care of assembly and final completion as a part of the system solution and/or base machine.





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

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

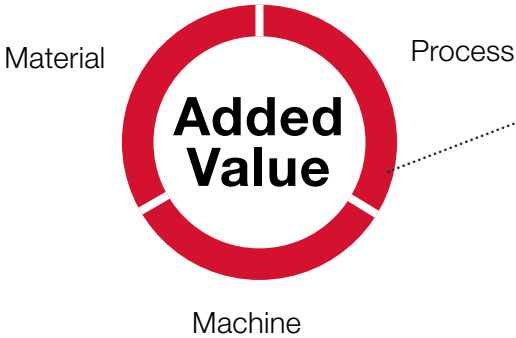
From a one-man operation to an international group with twelve sites spread across three continents – with our products and solutions centered around reactive resins, machine systems, and lightweight construction with composites, we rank among the market leaders in a whole host of industries.

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.**



