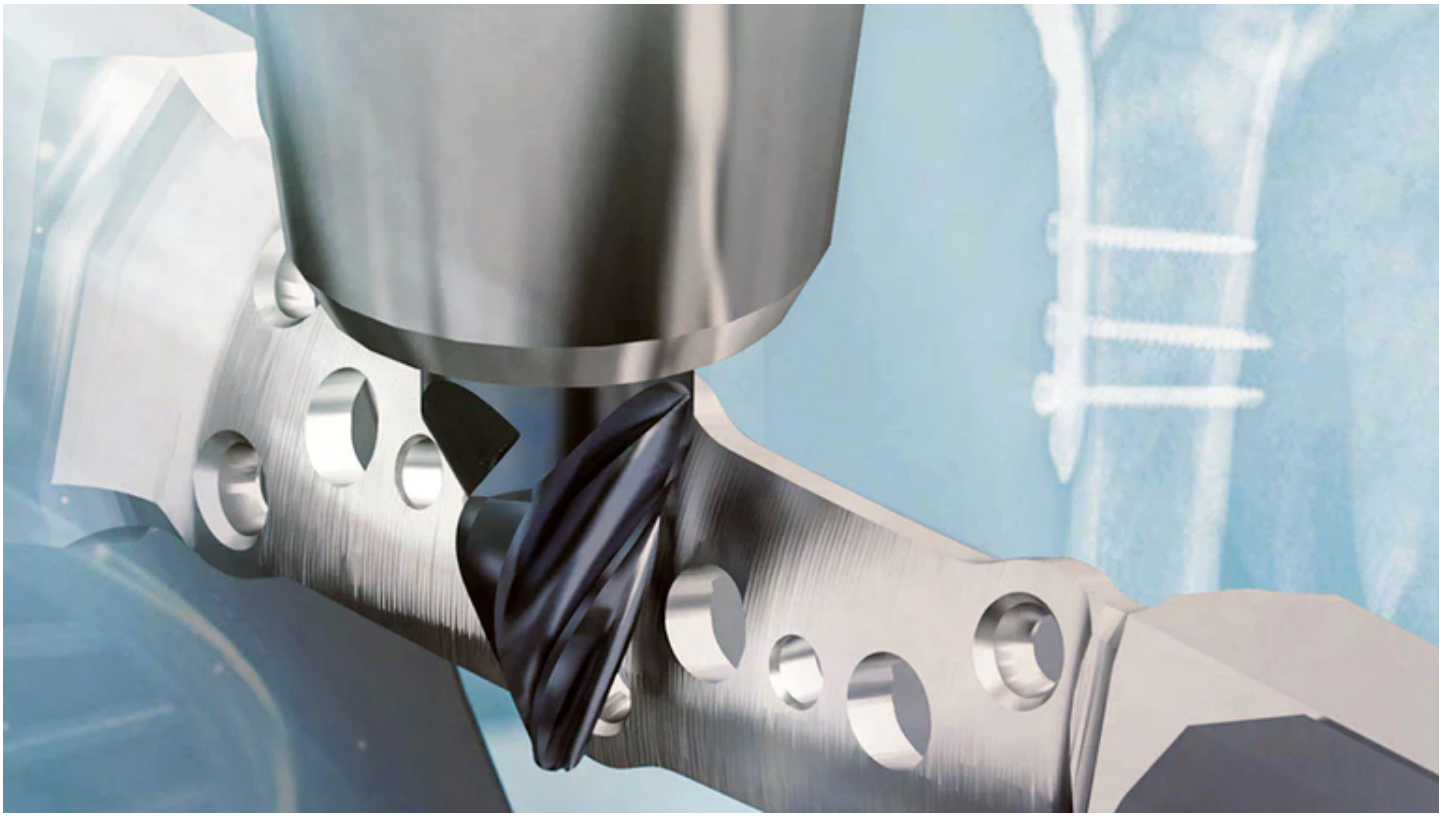
NEW PRODUCTS

Tools for Precision Machining of Implants

Inovatools develops solid-carbide and customized special tools — including high-precision mills, drills, engravers, deburrers, and special tools — for micro-chamfering and deburring difficult materials, such as titanium and stainless steel, as well as mac

APR 09, 2020



Machining medical components from titanium, chromium cobalt, and Inox can be challenging for implant manufacturers, as well as the cutting tools. The high elasticity and low thermal-conductivity of titanium and stainless steel, for example, cause strain hardening and edge chipping on the tool. This is why developing cutting-edge geometries requires a keen awareness of these factors, and the ability to identify the right combination of coatings and surface and edge preparation.

“We optimize, program, and develop well-thought-out machining processes and cutting tools to meet the highest standards," explained Nilüfer Cebic, head of product management and marketing at Inovatools. "For instance, our special tools are designed for complex drilling and milling tasks with extreme precision and accuracy in the µ range.”

Inovatools combines experience in various industrial markets with the expertise of qualified employees and state-of-the-art technology. “These are essential factors in enabling us to develop premium tools that allow users to manufacture implants of the very highest quality, cost-effectively, and at a considerable profit,” Cebic said.

The Inovatools Inomed range includes a selection of special tool concepts for medical engineering. The range of milling tools thus sets high standards for performance, quality and integrity. It makes tool selection quick and easy, and allows high-precision milling for diameters between 0.1 mm and 20.0 mm.

The solid-carbide engraving and deburring mills offer top performance for micro-chamfering and deburring difficult materials, such as titanium and stainless steel, as well as machining areas that are hard to reach.

Solid-carbide drills are high-precision, high-performance, and cost-effective tools for drilling titanium and other non-corrosive, hard-to-machine materials.

provided by the customer to meet very specific requirements," Cebic said

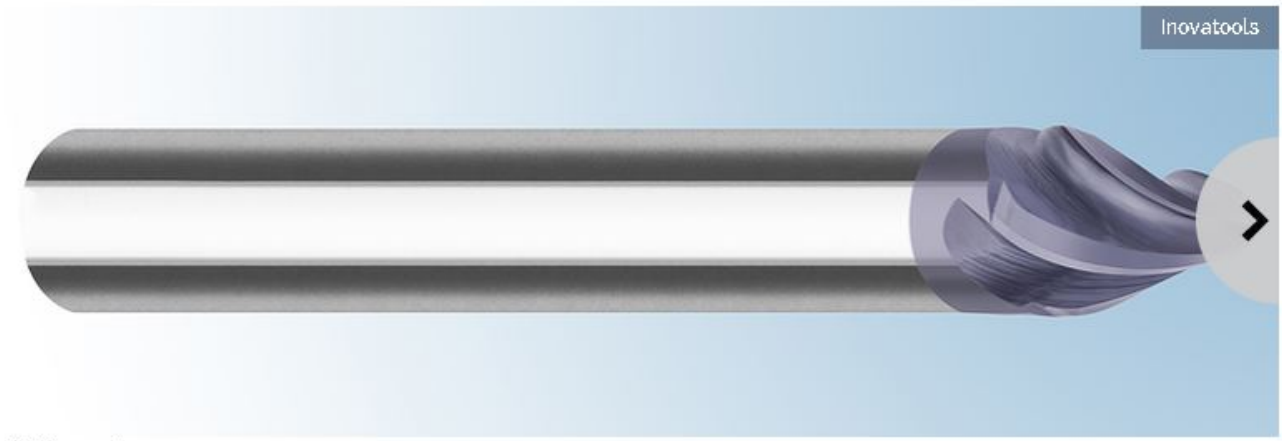
One example of Inovatools' performance is machining of titanium bone plates: Due to difficult-to-access geometries of these implants, machining tools often are very narrow and usually designed with a long reach. To avoid vibrations caused by long projection lengths and ensure cost-effective production, the helix angle and cutter pitch must be matched perfectly.

In addition to a range of high-performance tools used to manufacture bone plates, such as solid-carbide Inox high-performance mills, mini mills, reamers and high-performance drills, the Inovatools Curvemax also enables extremely short production times because this new curve segment mill features special geometries to permit larger path distances and line jumps during pre-finishing and finishing. Although the working radius is larger than that of a traditional full-radius mill, the tool still has the same diameter. This leads to a significant reduction in process times. Thanks to the bigger engagement width, the cutting edge does not suffer from wear at any point. Combined with the extremely smooth, high-performance coating Varocon, this helps to increase the tool's service life. The larger and flatter overlap reduces roughness and ensures surface finishes even better than those created by traditional full-radius mills.

"Thanks to their curve segment milling technology, the Curvemax mills can also be deployed for a range of production methods in medical engineering," Cebic explained. "For example, the tools can be used to reliably create undercuts, freeform surfaces and variable setting angles. In addition, complex contours can be pre-finished and finished, even on narrow inside radii."

The implant manufacturer achieved 85% faster machining times using the Curvemax compared with conventional ball-shaped mills, according to Inovatools. In other words, 13 rows with climb milling for a duration of 30 seconds compared with a ball-shaped mill with 120 rows — 60 with climb milling — for a duration of 193 seconds. "In addition to the significantly shorter production times, tool costs are lower and the surface quality is better," Cebic said.

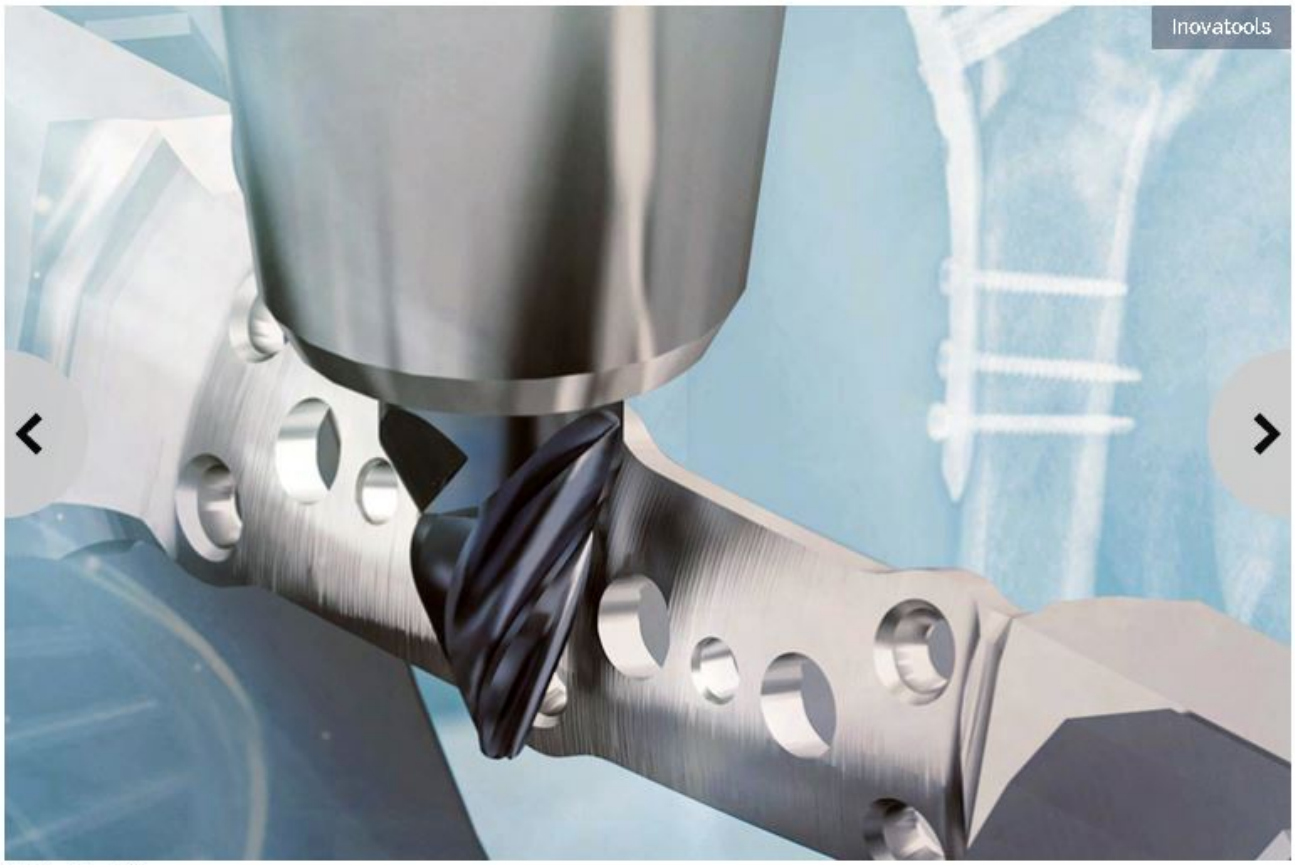
Learn more at www.inovatools.eu



Slide 1 of 4

High-speed hard machining

Inovatools Curvemax curve segment mills can machine a titanium bone plate up to 85% faster than conventional ball-shaped mills.



Slide 2 of 4

Hard-to-machine materials

Thanks to state-of-the-art, high-performance tool technology it is possible to manufacture and machine medical components normally made of hard-to-machine materials.

Slide 3 of 4

Curved segment milling

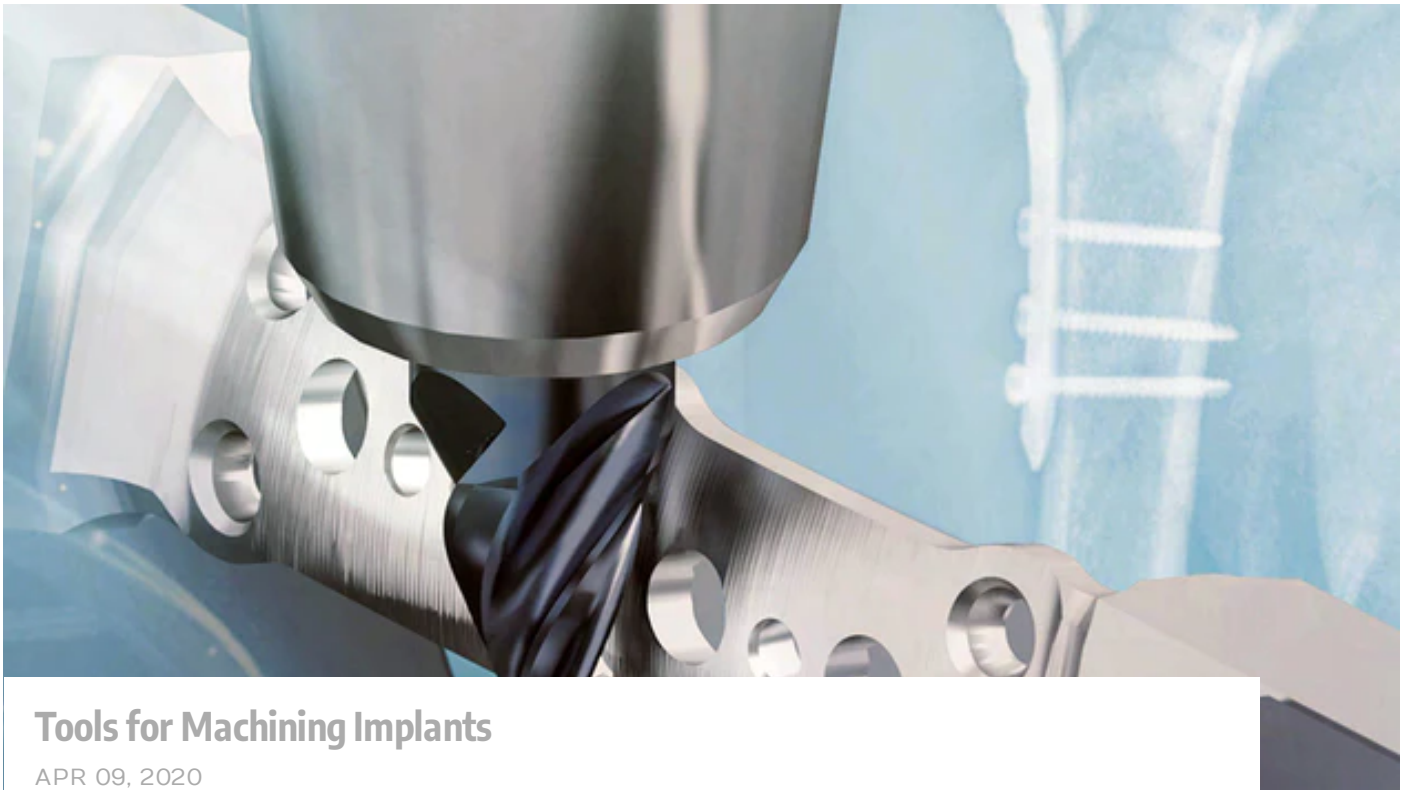
According to Inovatools, the Curvemax curve segment mills can machine a titanium bone plate up to 85% faster than conventional, ball-shaped mills.

Slide 4 of 4

Curve segment milling technology

Thanks to their curve segment milling technology, Curvemax mills can be deployed for a range of machining applications in medical engineering, including undercuts, freeform surfaces, and variable setting angles. Complex contours can be pre-finished and finished, even on narrow inside radii.

FEATURED MEDIA



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APR 16

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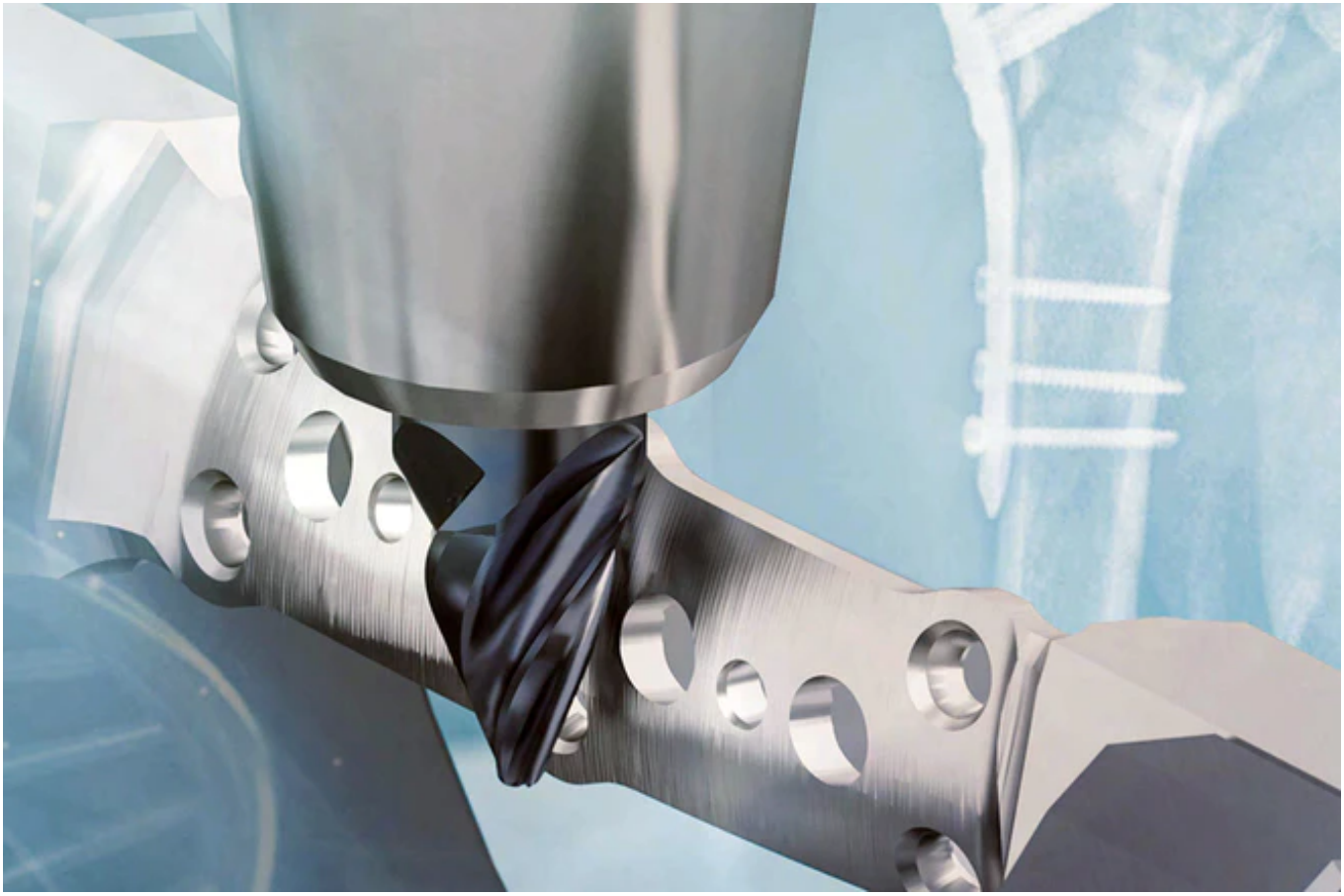
In The Spotlight



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