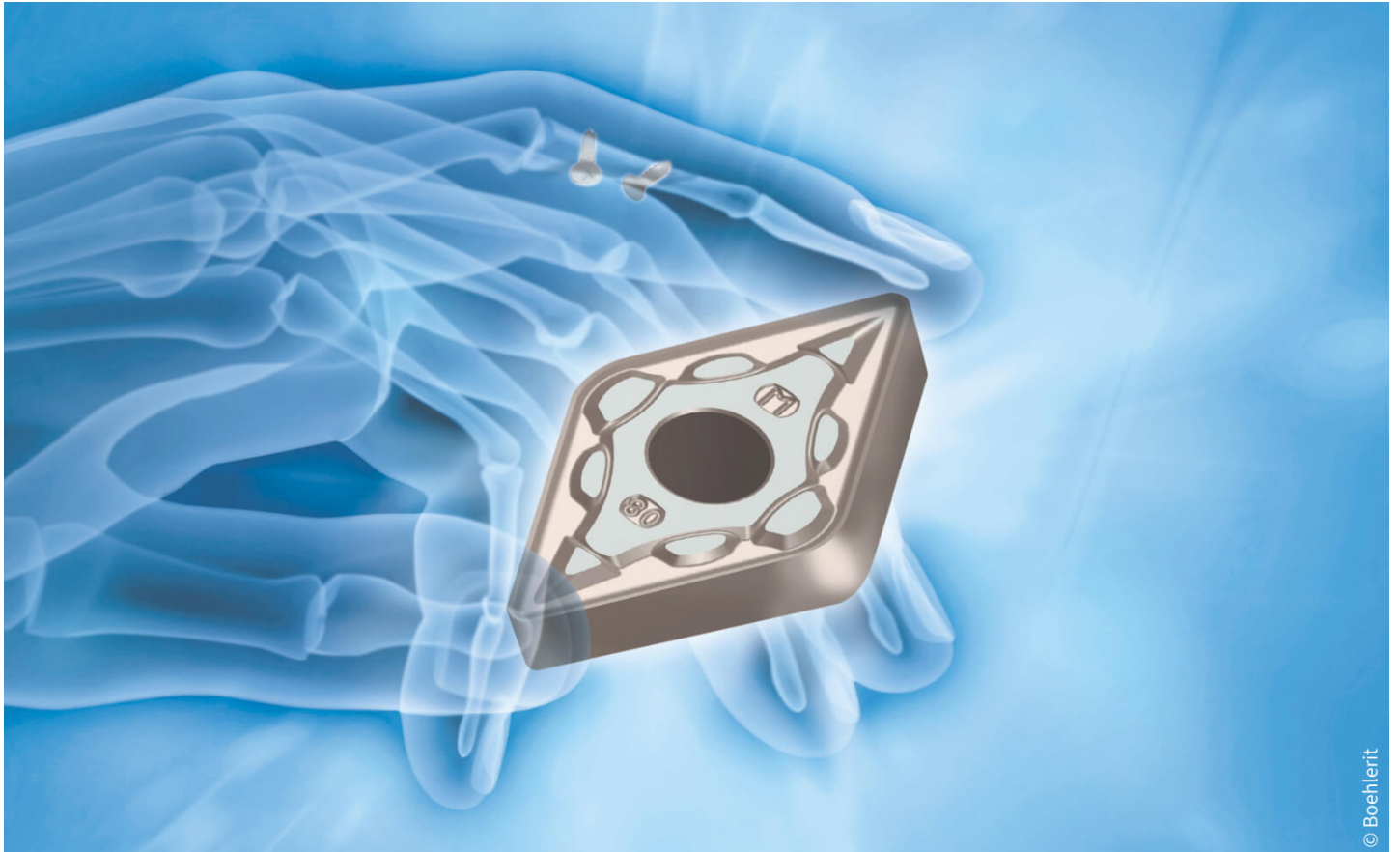


Cutting-edge solutions for titanium and stainless steel



The combination of selected carbide, special chip former geometry and high-performance HiPIMS coating ensures the best results when turning titanium

Boehlerit relies on HiPIMS coating technology

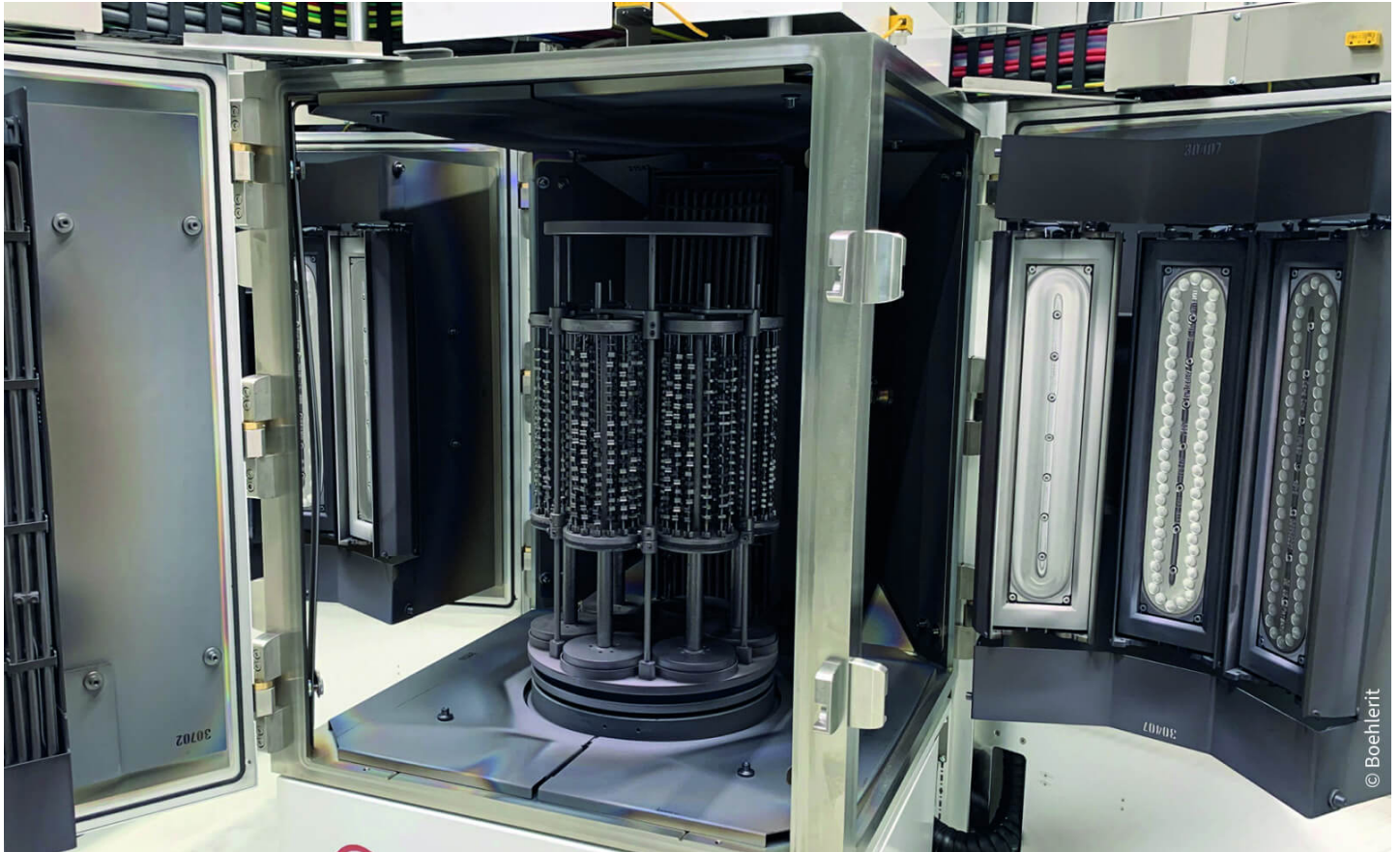
High-performance precision tools for turning and milling are essential for the economical machining of difficult-to-cut high-performance materials such as titanium and stainless steels. Boehlerit has been a competent partner for customized cutting inserts for many years – especially for machining materials that are difficult to cut. The HiPIMS coating technology from CemeCon is an important component for cutting inserts that adapt perfectly to these demanding applications. The ability to develop its own coatings and adapt them specifically to different applications gives Boehlerit the decisive edge – especially for demanding machining tasks.

Hard metals and precision tools from Boehlerit solve demanding machining tasks worldwide and set standards in the machining of metal, wood, plastic and composite materials. The Austrian experts' recipe for success undoubtedly includes a high level of vertical integration with state-of-the-art technologies and extensive know-how in all facets of tool manufacturing – from design to coating technology. With the CC800® HiPIMS coating system as one of the key components, Boehlerit is setting new standards in the processing of high-performance materials.

HiPIMS technology brings competitive advantages

HiPIMS technology significantly increases the quality and performance of the coatings even further: HiPIMS coatings are very smooth, hard and tough at the same time. They have excellent adhesion and ensure optimum wear protection for the tool thanks to the uniform coating thickness distribution.

Boehlerit benefits from both the exceptional performance of HiPIMS coatings and the flexibility of the coating systems. The ability to customize coatings to the requirements of specific applications makes all the difference – especially for demanding applications. For example, the technology makes it possible to produce coatings with adapted residual stresses – a decisive advantage for processing difficult materials.

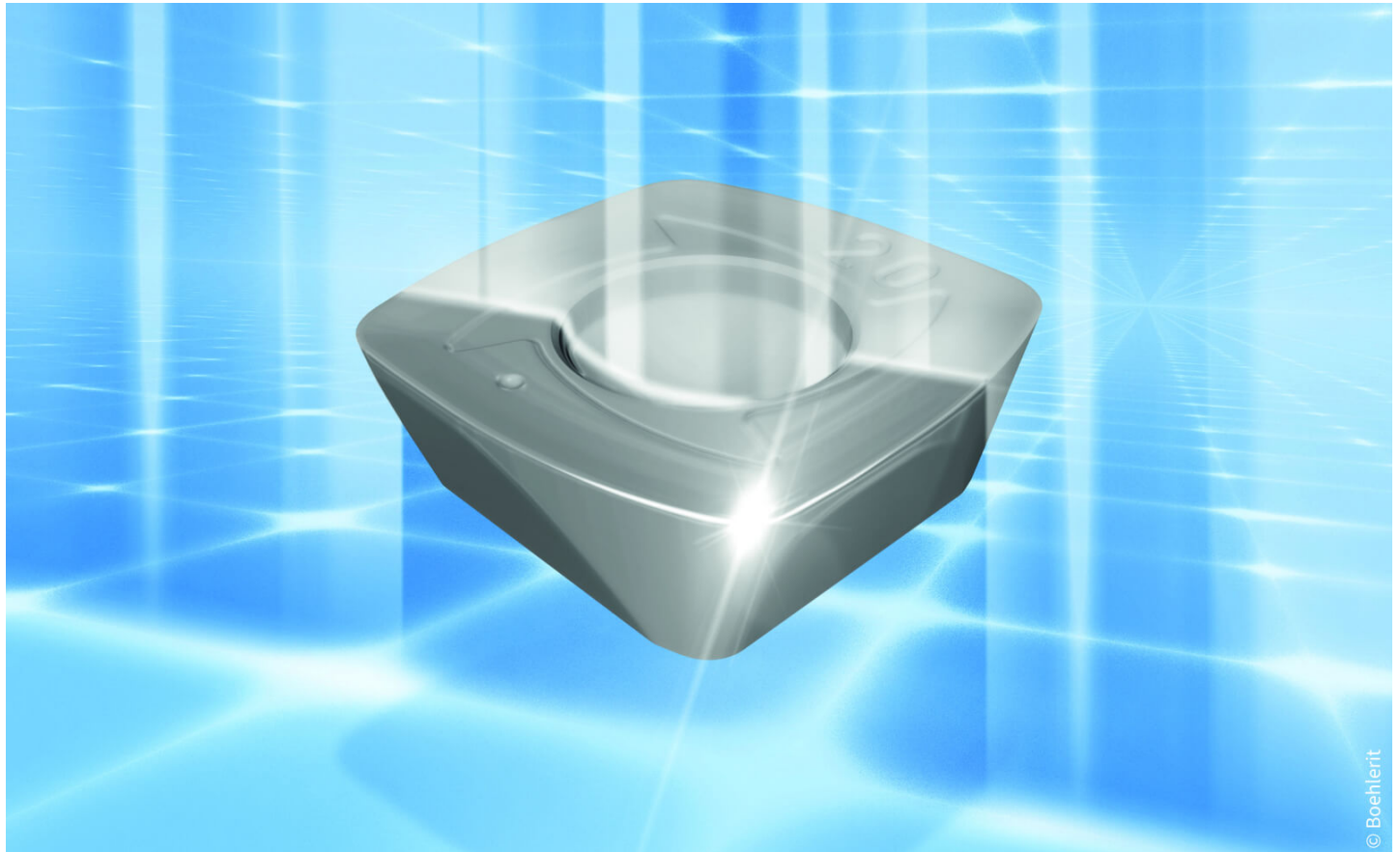


The CC800[®] HiPIMS coating system in use at Boehlerit

Processing Titanium at the highest level

Boehlerit has developed new cutting inserts to machine unalloyed titanium grades such as Ti (ASTM1-11), α alloys or $\alpha+\beta$ alloys (e.g. Ti-6Al-4V) with a high degree of reliability. In practice, these achieve up to 40 percent longer tool lives than conventional solutions. “We owe these great results to the coordinated combination of selected carbide, special chip former geometry and high-performance HiPIMS coating,” says André Feil, Segment Manager Machining at Boehlerit. “The carbide base is a K10 ultra-fine grain substrate. It is particularly temperature-stable and has a low tendency to plastic deformation. The specially developed MT (medium titanium) chip former with its sharp cutting edges ensures reliable chip breaking during medium and light roughing. And the icing on the cake is the 3 μm thick HiPIMS coating based on AluCon[®] (TiB₂).“

The low affinity to non-ferrous metals and the high hardness make the TiB₂ coating so successful when machining titanium with sharp cutting edges. The HiPIMS coating material provides optimum protection against built-up edges. The extremely smooth coating surface ensures efficient chip removal. Thanks to the reduced friction, the temperature in the cutting process is reduced. The result: significantly longer tool life. The very good adhesion, coupled with the high hardness of up to 5,000 HV0.05, enables top performance in wet and dry machining – often with increased cutting data.



The HiPIMS coating with multilayer structure completes Boehlerit's new solution for milling stainless steels

Unsurpassed for stainless steels

High abrasive wear, poor chip breaking, built-up edges – milling stainless steels is one of the most demanding tasks in machining technology. “Such high demands require a perfectly sophisticated tool concept. Our newly developed BCM35M and BCM40M grades for milling stainless steels provide users with the perfect solution to these challenges,” says André Feil.

Proprietary HiPIMS coating for maximum performance

Both milling grades are made of ultra-fine grain carbides with an optimized hardness-to-toughness ratio – i.e., abrasion resistance paired with fracture toughness. Boehlerit determined the chip formers and edge preparation after extensive simulations and application tests. The result: optimum cutting ability and perfect chip flow. André Feil: “We are breaking new ground with the coating and have developed a multilayer HiPIMS coating: It consists of alternating AlTiN and AlCrN individual layers. The multilayer structure results in excellent abrasion resistance, even at higher temperatures, combined with good fracture toughness. It also delays the formation of cracks. Extremely smooth layer surfaces minimize built-

up edges and ensure excellent machining results when milling stainless steels.”

Boehlerit

[Boehlerit](#), headquartered in Kapfenberg, Austria, has been part of the Brucklacher family group of companies (Bilz, Boehlerit and Leitz) since 1991. With 800 employees at twelve locations worldwide, the company develops and produces cutting materials, semi-finished products and precision tools as well as tool systems for milling, turning, drilling and forming for a wide variety of materials. These include highly specialized tools for crankshaft machining and for metallurgical technology for rotary skiving, tube and sheet metal processing and heavy machining. Carbides for construction parts and wear protection are also among the company’s strengths. The cutting and wear protection materials are continuously developed further using modern analysis methods and in close cooperation with universities and research institutes. Thanks to its many years of expertise in metallurgy, coating technology and state-of-the-art pressing technology, Boehlerit is also a competent and sought-after development partner for toolmakers.

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