

Best performance for cutting inserts every day

New high-performance materials, the transition from combustion engines to alternative drive concepts, high innovation and cost pressure – in order to master these and future challenges, machining companies and tool manufacturers must identify and exploit optimization potential. HiPIMS coatings enable better performance, faster machining, longer tool life and greater process reliability. Cutting inserts with CemeCon coatings achieve such top performance reliably and reproducibly every day. Testing is welcome!

If you want to succeed in promising markets such as e-mobility, heavy-duty machining, aerospace and tool and mold making, you have to reliably deliver the best results every day. With CemeCon, tool manufacturers have the right partner by their side.

Performance, quality, reliability, reproducibility

Excellent chip flow and better surface quality with longer tool life and often higher cutting parameters – HiPIMS coating materials guarantee the best performance. To ensure that the coated cutting inserts deliver such top performance, the parameters and work steps such as coating material, coating thickness, pre-treatment and finishing are precisely adapted both to the tool and the application.

The quality of the coating is outstanding. Regular checks of the working materials and process steps as well as experienced and well-trained employees reliably guarantee consistently high quality. Inka Harrand, Product Manager Cutting Inserts: “We have also developed processes specifically for cutting inserts that are precisely tailored to the requirements of this tool group. The coating materials are also always adapted to the special requirements.”

The excellent quality is reliably reproducible – with short delivery times. Strictly separated batches, individual production processes and precise documentation ensure that the successful formula is always available worldwide in all CemeCon coating centers with equally perfect results. On top of this, individual support and advice from a contact person who is familiar with all the details of a customer is a matter of course for the coating experts. This combination of performance, quality, reliability and reproducibility opens the way to new markets.

Tool and mold making: Thick layers for milling steel

In order to maintain a leading global position in tool and mold making, the economical production of molds, punches and dies to the highest quality standards is an absolute must.

One of the most important technologies in tool making is milling. It enables high-quality results to be achieved with high productivity and flexibility. Innovative tool solutions for tool and mold makers are in demand. FerroCon® with 6 µm coating thickness and FerroCon®Quadro with an impressive 12 µm coating thickness are perfect for roughing operations on steel molds. Thanks to the high coating thickness, the cutting inserts achieve a very good metal removal rate, which automatically increases productivity.

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Heavy-duty machining: High layer thicknesses for high cutting volume

FerroCon® with a coating thickness of 6 µm and FerroCon®Quadro with a coating thickness of 12 µm are the first choice for achieving the required maximum wear volume, particularly in the heavy-duty machining of rails, switches, pipes and crankshafts as well as in the rotary skiving of cast iron and ferrous materials. This is because every micrometer is decisive for the economic efficiency of the process in such roughing operations. Inka Harrand: "Higher coating thicknesses significantly extend the service life of cutting inserts – the key to economic efficiency. The correlation in such applications is almost linear – and this is where FerroCon® with a coating thickness of 6 µm and FerroCon®Quadro with a coating thickness of 12 µm come into play."

Aerospace: Machining Titanium alloys economically

In aircraft construction, processes are now being put to the test in many areas in order to reduce costs and produce more economically. This is an opportunity for tool manufacturers to gain a foothold in the industry with high-performance solutions. A good example is titanium machining. Many aircraft components are made of different titanium alloys. However, machining this lightweight material is anything but simple and requires coordinated cutting inserts. With the HiPIMS coating materials InoxaCon® and AluCon®, significant leaps in performance are possible.

E-mobility: New paths in aluminum machining

There are far fewer machining tasks for e-mobility than in traditional automotive engineering. In addition, mainly aluminum alloys are machined. "Tools tailored to the requirements are the solution to securing market share here. AluCon®-coated cutting inserts can be a good alternative to uncoated carbide," Inka Harrand is convinced. Practical examples show that when milling aluminum with AluCon®, the tendency for built-up edges is significantly reduced and, as a result, the service life of the cutting inserts is extended.

New for cutting inserts: SteelCon®

The silicon-doped HiPIMS coating material SteelCon® is ideal for machining stainless and hardened steels above 50 HRC. The high silicon content enables economical machining under extreme conditions. SteelCon® is very wear-resistant and has a high thermal stability. The homogeneous wear behavior guarantee maximum process reliability. In practice, SteelCon® proves its impressive wear resistance in a comparative test when machining X2CrNiMo17-12-2 (1.4404) with a Ø 40 mm milling tool with 3 RPMT1204 inserts.

The cutting data:

$v_c = 270 \text{ m/min}$

$n = 2,200 \text{ rpm}$

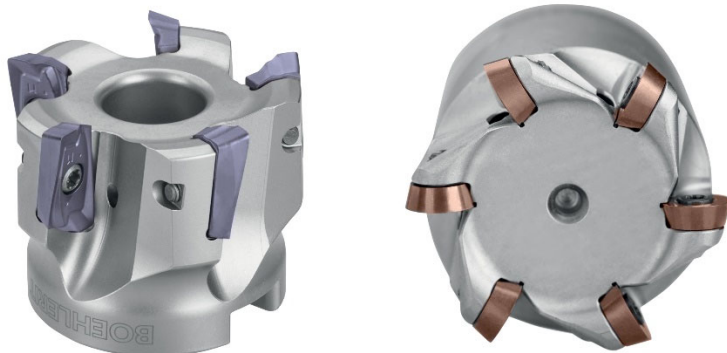
$f_z = 0.45 \text{ mm}$

$a_p = 1\text{-}2 \text{ mm}$

$a_e = 5\text{-}15 \text{ mm}$

Tool life: 30 min

In terms of maximum wear, the tool coated with SteelCon® has a maximum wear mark width of $VB_{\max} = 0.01 \text{ mm}$ at the end of its service life compared to comparable tools on the market with $VB_{\max} = 0.22 \text{ mm}$ or $VB_{\max} = 0.32 \text{ mm}$.



HiPIMS coatings from CemeCon enable better performance, faster machining, longer tool life and greater process reliability.



Personal contacts ensure high service quality.

HiPIMS coating materials for cutting inserts (CI)

FerroCon® for unalloyed and alloyed steels and cast iron	InoxaCon® for stainless, high-alloy steels, titanium, nickel-based alloys and difficult to machine materials (CrCo)	AluCon® for aluminum, titanium, copper and other non-ferrous metals	SteelCon® for hard machining, stainless steels, titanium and titanium alloys
Composition: AlTiN-based	Composition: TiAlSiN-based	Composition: TiB₂-based	Composition: TiAlSiN-based, high silicon content
Max. operating temperature: 1,100 °C	Max. operating temperature: 1,100 °C	Max. operating temperature: 1,000 °C	Max. operating temperature: 1,100 °C
Color: Anthracite	Color: Red gold	Color: Silver	Color: Red gold
Coating thickness for CI: 3 µm, 6 µm and 12 µm	Coating thickness for CI: 3 µm and 6 µm	Coating thickness for CI: 2 µm	Coating thickness for CI: 3 µm
			

Photos: CemeCon AG

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CemeCon HiPIMS coating solutions give indexable inserts impressive performance.

Meta-Description

In many applications in key industries, CemeCon HiPIMS coatings FerroCon®, InoxaCon®, AluCon®, SteelCon® set new standards in machining, even with difficult-to-machine materials.

Tags / Keywords

CemeCon, indexable inserts, inserts, heavy machining, toolmaking, milling, FerroCon, InoxaCon, AluCon, SteelCon, coatings, HiPIMS, precision tools, coating solutions, wear resistance, process reliability, performance, tool life, precision

About CemeCon AG

CemeCon is the world market leader in diamond coating and technology leader in PVD coating of precision tools for machining. The coating materials required for premium coatings are produced within the coating systems developed by CemeCon.

Customers make use of the company's expertise in both coating services and plant engineering. Renowned tool manufacturers worldwide use the technology and expert knowledge of CemeCon for their own competitive advantage and to open up new business areas.

CemeCon has brought the future technology HiPIMS to market maturity. It combines the advantages of all common PVD coating processes – and that with high economic efficiency. With HiPIMS, maximum performance and a significantly longer tool life are possible even when machining materials that are extremely difficult to machine. Maximum productivity in the machining of innovative materials – such as fibre-reinforced plastics, ceramics or graphite – is guaranteed by the patented multilayer technology in diamond coating developed by CemeCon.

Founded in 1986 by Dr. Toni Leyendecker, CemeCon AG has expanded continuously over three decades. At its headquarters in Würselen, the company operates the world's largest coating center. All important international markets are served from there and from the centers in the USA, China and Japan as well as by our sales partners in the Czech Republic, Denmark, Taiwan, Korea, India and Russia.

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