

Hard part turning with new generation CBN grades



An innovation in hard part turning

For everybody working with transmission and hard part turning, there is a reason to choose our new CB7105 and CB7115 grades.

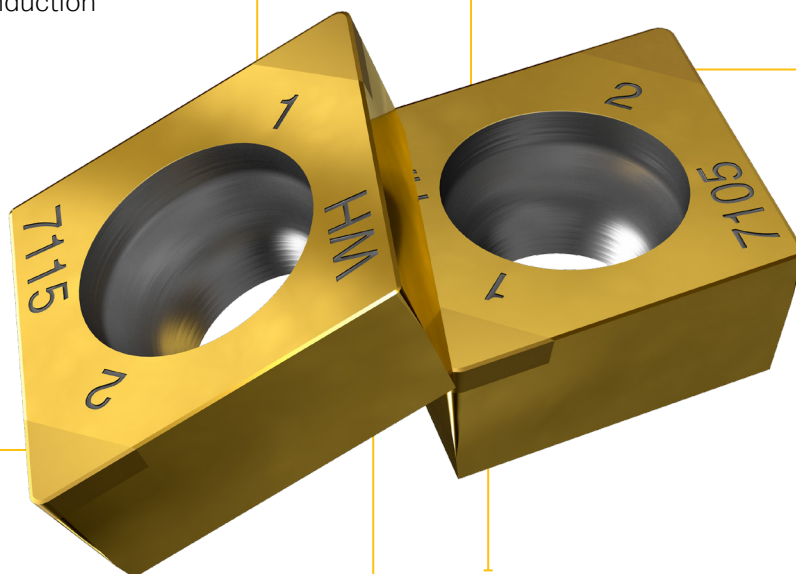
Adding value in both speed capabilities and more secure edge line and consistent tool life meaning lower cost per component.

Designed to break new ground in hard part turning, the grades achieve efficient and secure machining with excellent surface finish.

New generation Cubic Boron Nitride materials enhance crater wear resistance and fracture resistance at high cutting speed in case hardened and induction hardened materials.

TiN-PVD coating for excellent surface finish that also is a help to identify used cutting edges.

Optimized edge preparation for best balance between long tool life and reliable machining.



CB7115 – One-cut strategy, a single cut with larger chip thickness, can produce leading levels of surface quality and dimensional tolerance.

CB7105 – When utilize high speed machining or longer tool life at lower speed.

Cubic Boron Nitride material for best dimensional accuracy and tight tolerance of the machined component.

Benefits

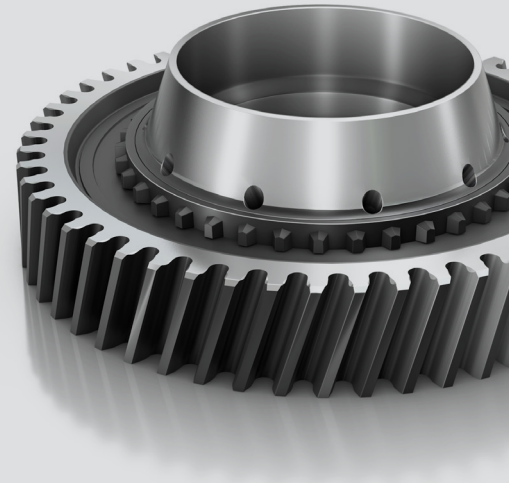
- Lower cost per part through high speed machining or longer tool life at lower speed (CB7105)
- Lower cost per part when aiming for one cut strategy at high speed (CB7115)
- Reliable and predictable machining

Application

Hard part turning is usually a finishing or semi-finishing process with high dimensional accuracy and surface quality requirements.

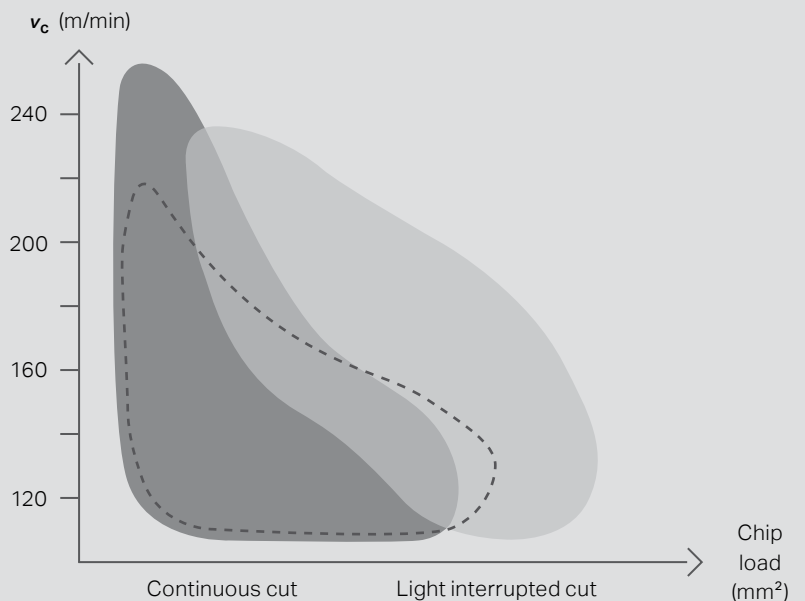
Component materials are case hardened steel or induction hardened steel.

Typical machining challenges with these materials are surface and dimensional tolerance demand with competitive tool life.



Application area

- **CB7105**
CB7105 for continuous cut, smaller depth of cut and smaller chip loads at high speed.
- **CB7115**
Continuous to light interrupted cut or larger chip loads at medium to high speed.
- **CB7015**



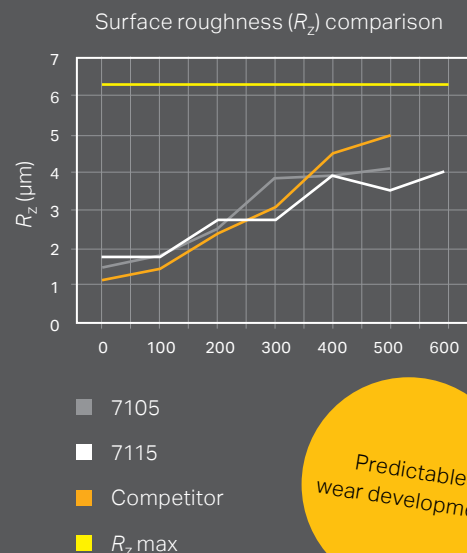
Edge preparation CB7105 and CB7115

Available geometries are standard radius, wiper and Xcel.

Product family	T-Max P		CoroTurn® 107	
	CB7105	CB7115	CB7105	CB7115
Type	CB7105	CB7115	CB7105	CB7115
Standard	S01525	S01525	S01020	S01020
Wiper	S01520	S01520	S01520	S01520
Xcel	S01515	S01515	S01515	S01515
Standard light	S01020	-	-	-
Standard strong	-	S02030	-	S02030

The customer has today a stable production of 250 components per shift or 500 components per day. Rising demand allows the customer to increase production by at least 15% per shift. Sandvik Coromant's new CBN grades CB7105 and CB7115 were tested against a competitor in actual application. The result showed that both grades were not only able to match the competitor in terms of number of components, CB7115 surpasses (600 components) with predictable surface generation.

Customer case	
Industry segment	Automotive
Operation	Continuous cut
Time in cut (min/component)	0.15
Component	HDP- Antriebsrad
Workpiece material	16MnCrS5, case hardened, HRc 57-62
Emulsion	Dry
Cutting data	
v_c m/min (ft/min)	170 (557)
f_n mm/r (inch/rev)	0.22 (.009)
a_p mm (inch)	0.15 (.006)
Reference	Competitor
Variant 1:	CNGA 120412S01520HWG 7115
Variant 2:	CNGA 120412S01520HWG 7105



Predictable wear development

Result:

- Competitor (Predetermined), 500 parts
- CB7105 (Predetermined), 500 parts
- CB7115 (Predetermined), 500 & 600 parts

For more information please contact your local Sandvik Coromant representative.

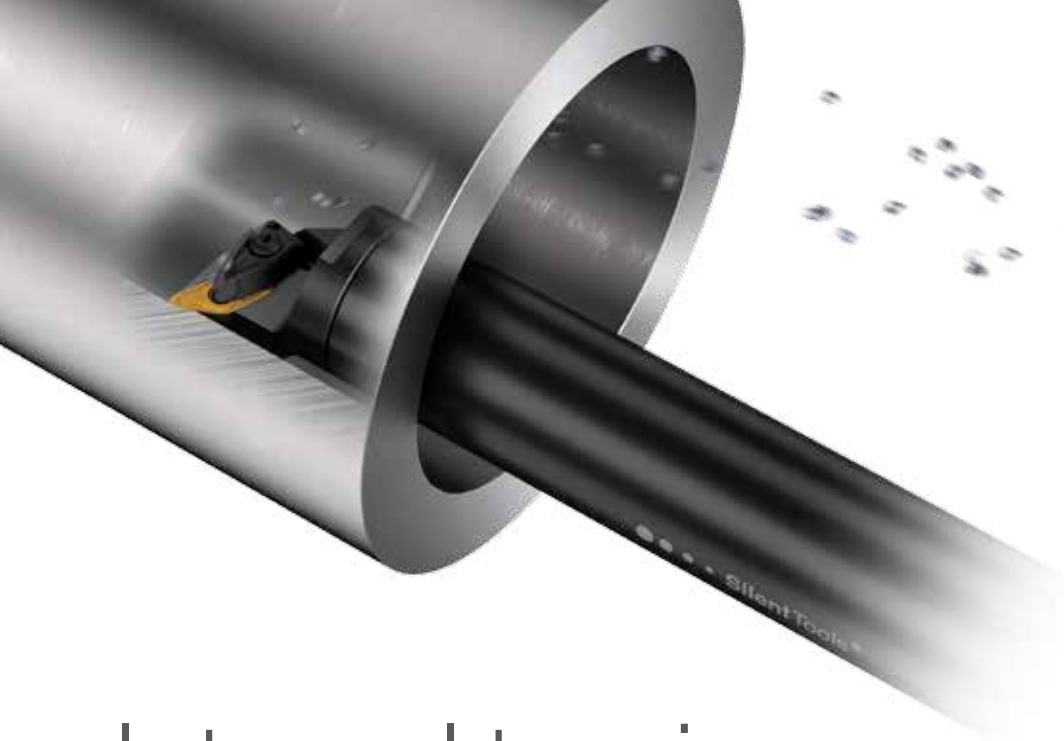
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CoroTurn® Prime SL head for internal turning



Extraordinary productivity
for internal turning applications



Internal turning with excellent chip evacuation

It is now possible to use our PrimeTurning™ methodology for internal turning applications. The inside-out machining capability allows for excellent chip evacuation and chip control.

In addition, this CoroTurn® Prime SL head solution produces an excellent surface finish and offers high productivity, longer tool life and high machine utilization.



Saves tool change and set-up time



Reduces inventory



Increases productivity



Flexible tooling

With CoroTurn® Prime SL heads you can create a wide range of tool combinations from a small inventory of adaptors and cutting heads.

SL heads are available in diameter 40 mm (1.575 inch). They fit with solid steel bars and carbide bars, as well as with Silent Tools™ damped boring bars for vibration-free internal machining.



A-type

- Designed for light roughing, finishing and profiling
- Inside-out direction



B-type

- Designed for roughing
- Inside-out direction



B-type

- Designed for roughing
- Outside-in direction

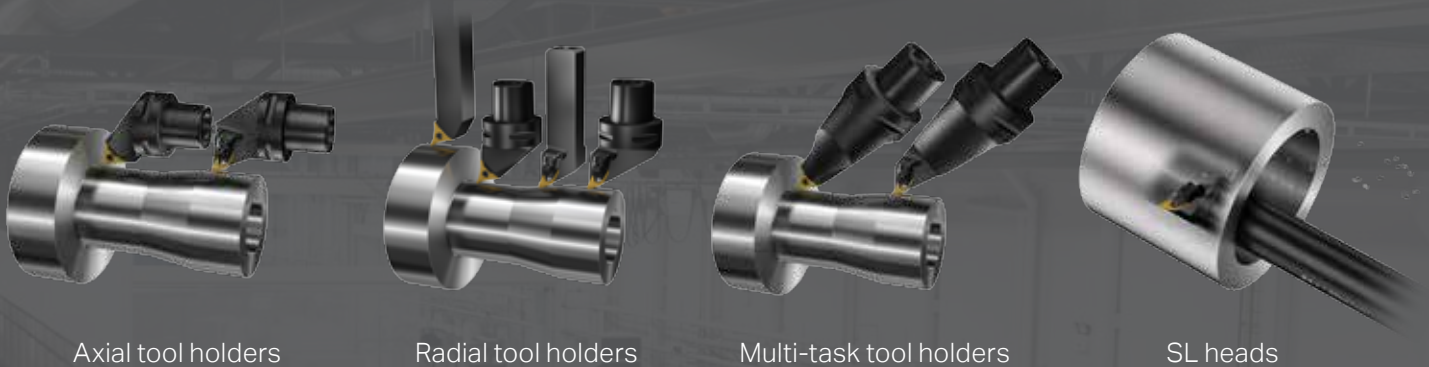
Application

- For internal turning of large diameters above 90 mm (3.5 inch) and overhangs up to 8–10×D
- For oil and gas, aerospace, and other industries where there is a need of internal machining of large diameter holes
- ISO P, M, K and S



CoroTurn® Prime tool holders

Our total offer for PrimeTurning™ now includes even more productive machining possibilities. Achieve increased productivity and profitability through fewer machine stoppages with new tool holders for turning centres, vertical lathes and multi-task machines.



Axial tool holders

Radial tool holders

Multi-task tool holders

SL heads

Customer case

Component: Ball bearing ring, internal diameter 300 mm (11.8 inch)

Material: CMC 02.2

Operation: Internal turning

Machine: EMAG vertical lathe



Increased chip control and superior surface finish

Roughing

Finishing

Tool	SL-CP-25BR-40C	SL-CP-30AR-11C
Insert	CP-B1108-M5 4325	CP-A1108-L5W 4325
a_p mm (inch)	2 (0.079)	1 (0.039)
f_r mm/rev (in/rev)	0.8 (0.031)	0.4 (0.016)
v_c m/min (ft/min)	250 (820)	250 (820)

Results:

The chips were easily evacuated from the hole resulting in increased chip control and better surface finish. Seeing the result, the customer directly decided to implement CoroTurn® Prime SL heads to the complete production line.

For more information, please contact your local Sandvik Coromant representative.

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Precision coolant tools for all turning applications

Lower cost per component and longer unmanned machining

With through-tool delivery of precision over and under coolant, the new holders increase tool life and productivity for ISO S, M and P workpiece materials. Precision coolant is especially efficient for difficult-to-machine materials that generate high heat, protecting the tool from excessive wear and prolonging green light machining. Integrated under coolant boosts tool life by 20% or more which significantly reduces tool cost per component.

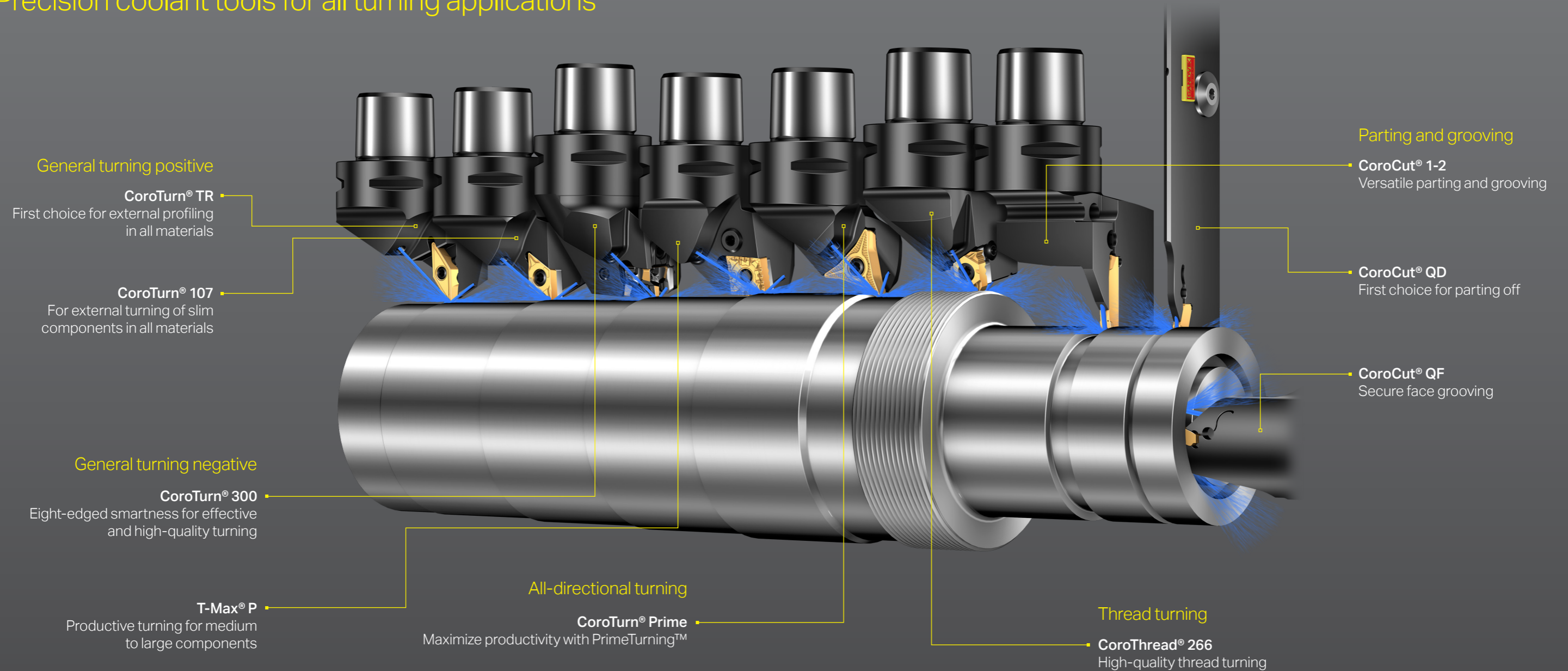
Why precision coolant is so important

Precision coolant from above controls chip breaking for secure machining, while the under coolant controls the temperature for a long and predictable tool life. The coolant technology also has positive effects on surface and component quality. Visit <https://www.sandvik.coromant.com/knowledge> for information and expert recommendations on when and how to use over and under coolant for steel turning.

Benefits

Need	Solution	Value
Unmanned machining	Pre-directed precision over coolant can improve chip formation and increase the process window where no operator is needed.	Cost savings in terms of operator costs and/or green light machining
Easy setup	Plug and play. Pre-directed precise over coolant for chip control and under coolant for reliable tool life.	Simplify setup
Improved component cost	Integrated under coolant improves tool life by 20% or more. The benefit of under coolant becomes even greater with increased heat generation.	Reduce tool cost per component

Precision coolant tools for all turning applications



Performance

Component:	Main landing gear
Material:	Steel, CMC 02.2 (MC P2.5.Z.HT)
Operation:	Roughing, Pocketing

29%
Cost reduction

+250%
Tool life

	Solution with flood coolant	New solution with precision coolant
Tool	C6-SRSCR(&L)-45065-16	C6-SRSCR(&L)-45065-16XC
Insert	RCMT 1606M0	RCMT 16 06 MP-H7 4425
v_c , m/min (ft/min)	85 (280)	85 (280)
f_r , mm (inch)	0.38 (0.015)	0.38 (0.015)
a_p , mm (inch)	5.08 (0.2)	5.08 (0.2)
Coolant type	Flood	Precision over and under
Coolant pressure	5 bar	5 bar
Tool life, components	0.8 components	2 components

Result

GC4425 in combination with over and under coolant led to much increased tool life and enabled the customer to run 2 full components before any risk of insert failure, gaining productivity and cycle time by removing the stop for insert change.

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S205

HRSA turning grade

S205 is a new CVD (chemical vapour deposition) grade developed for last stage machining applications in aerospace engine components within the area of HRSA turning.

The grade offers increased productivity through higher cutting speeds in semi-finishing and finishing applications without compromising on tolerances and surface conformity.

Features

- Second generation Inveio® coating for high wear resistance and long tool life
- Post-treatment technology strengthens the insert by modifying its mechanical properties

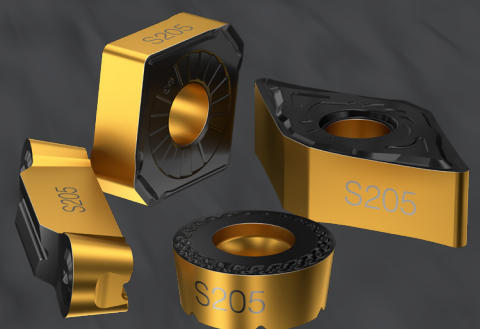
Benefits

- 30-50% higher cutting speeds than competition without compromising on tool life
- Higher cutting speed translates to improved productivity
- Excellent resistance to flank and adhesive wear resulting in longer tool life



Inveio®

Uni-directional crystal orientation



Application

- Last stage machining applications where $a_p \leq RE$ (nose radius)
- Aged Ni-based materials
- Pre-machined surfaces
- Aerospace engine components : turbine discs, rings, casings, shafts
- Applications requiring higher cutting speeds




S

ISO application area

Performance

Component: Test bar
Material: Aged Inconel 718, 43.2 HRC
Operation: External turning (finishing)

+110%
Tool life

	Competitor 1	Competitor 2	Sandvik Coromant S205
Insert	CNMG	CNMG	CNMG120408-SM
v_c , m/min	130	130	130
f_r , mm/rev	0.11	0.11	0.11
a_p , mm	0.2	0.2	0.2
Insert edge after 5 mins of machining			
Tool life, min	5	5	10.5
Result	Sandvik Coromant S205 shows 110% increase in tool life compared to competition.		

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