

Engineering Projects

Roberto Appiani
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About myself...

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Definition of a Customized Project

<https://sandvik.sharepoint.com/sites/scplaybook/en-gb/this-is-how-we-sell>

Sandvik Coromant has the ambition to be the leading company in machining solutions

This is how we sell

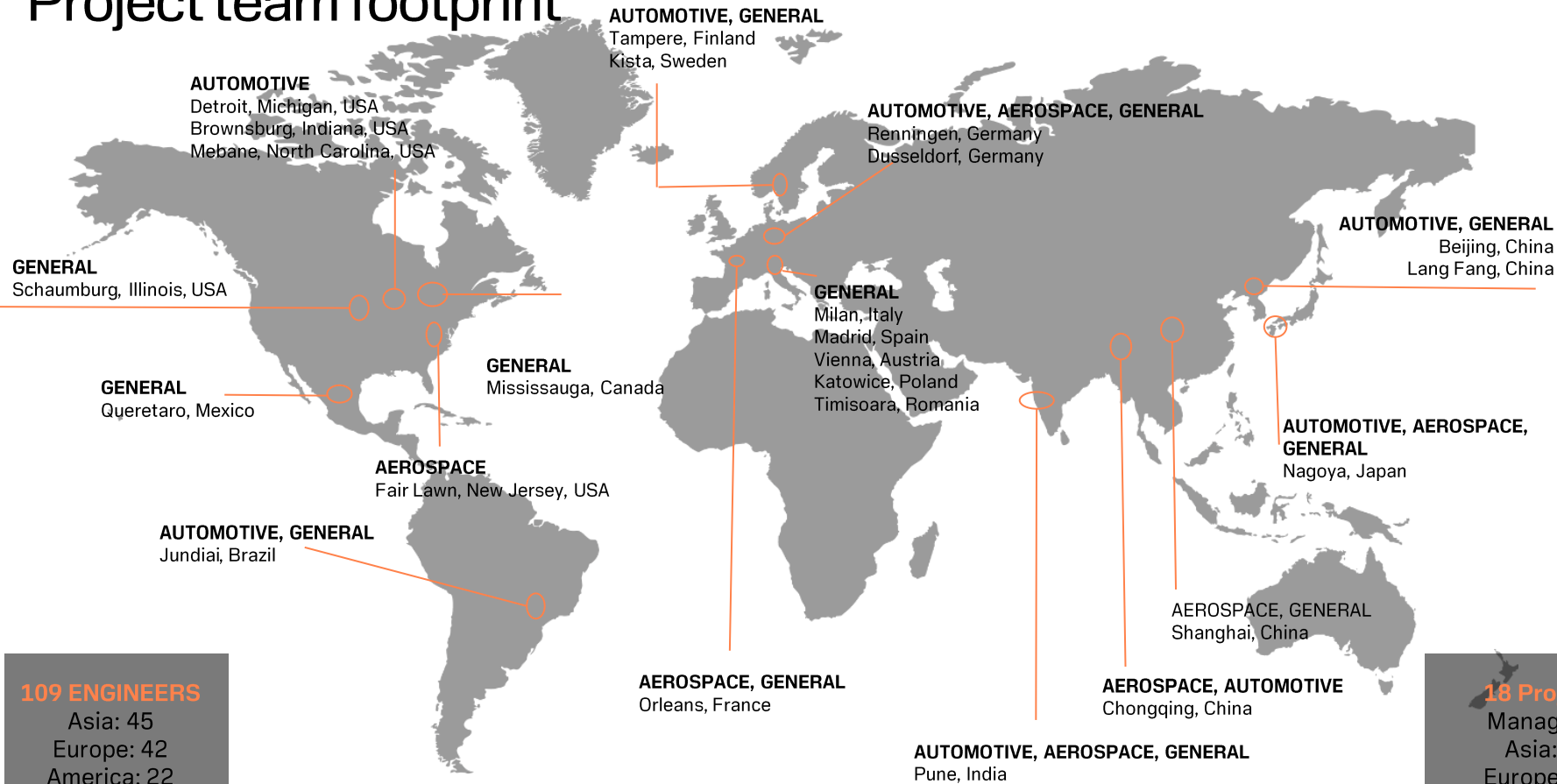
What is a Customized Project?

A customer offer that is unique to a specific customer requirement, and that includes more than a single product. It can include anything from component processing, CAM programming, tooling layouts and tooling assemblies, to cross border turnkey handling and many other aspects required for the total manufacturing process.

Our Organization



Project team footprint



109 ENGINEERS

Asia: 45
Europe: 42
America: 22

18 Project Managers

Asia: 4
Europe: 11
America: 3




Automotive Competence Teams

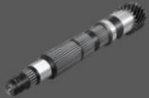
Globally dedicated resources supporting strategic Automotive projects

Expertise and competence in Automotive Component Solutions

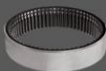
Automotive components




Transmission




Shafts & axles




Transmission internal Gear & Spline



Transmission external gears

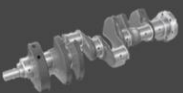


CV-joints




Transmission housings
ISO N/K
(Including E-mobility)


Engine




Crankshaft
ISO K (25%)
ISO P (75%)




E-mobility housings
ISO N




Cylinder head
ISO N/K




Cylinder block
ISO N/K



Connecting rod

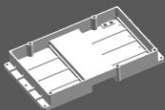


Camshaft
ISO P/K




E-motor shaft
ISO P


Components




Battery Rack
ISO N




Housings
ISO-K/N




Car Body / Frame
ISO N




Diff case
ISO-K/N



Brake caliper
ISO K/N



Turbo charger
(hot side)
ISO K/M



Knuckle & Arms
ISO K/N

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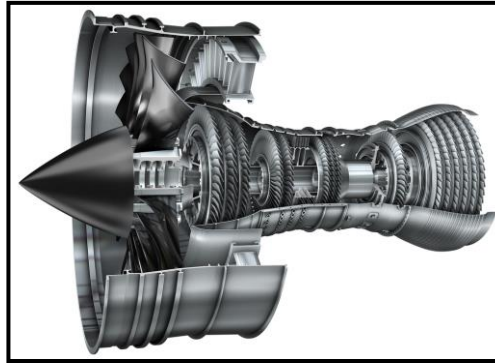
Engineers globally

Aerospace Engineering Projects Team

- Global Cross Border Organization
- Dedicated team working with direct customers and/or MTMs
- Value added Project and (Re)Process development including run off
- ITAR compliant and non disclosure WOW

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Engineers and
CAM programmers
globally



Process: Full
turnkeys, time
studies

Machine
requirements

CAM
programming
and simulation

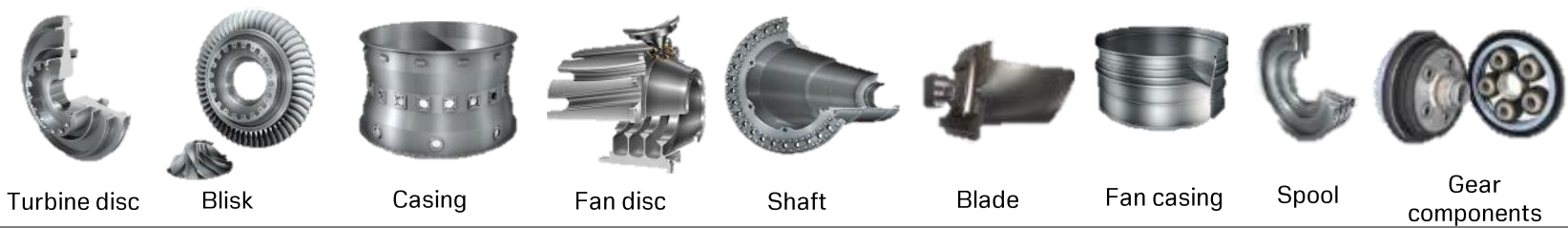
Support at Run-
off (MTM and
end-user)

Project
Management of
local or cross
border project



Aerospace typical components

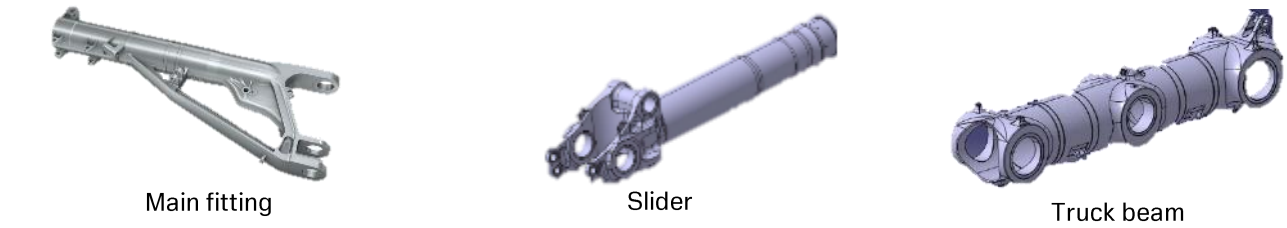
Engine



Frame



L-G



General Machining

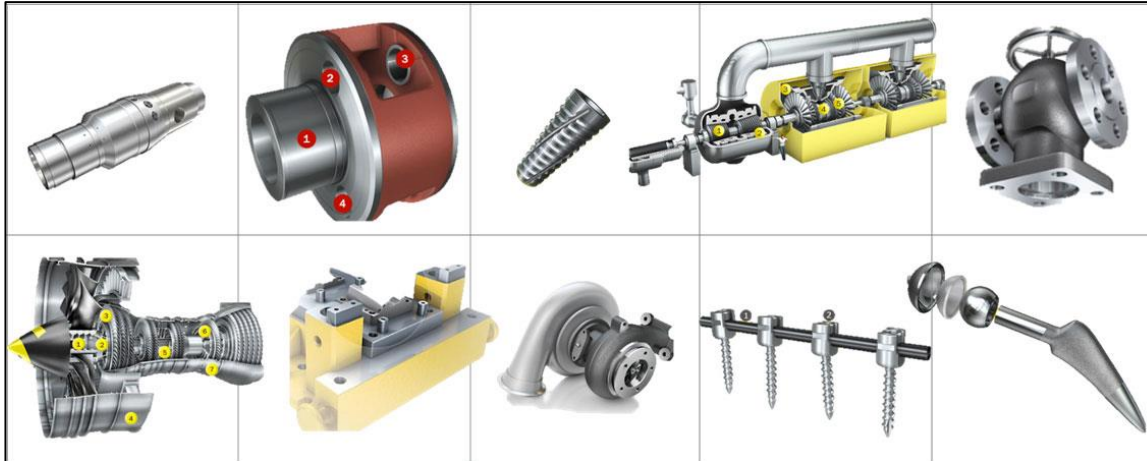
Dedicated resources strategically positioned for global reach

Global Customer support

Collaborates and operates in all Industry Segments

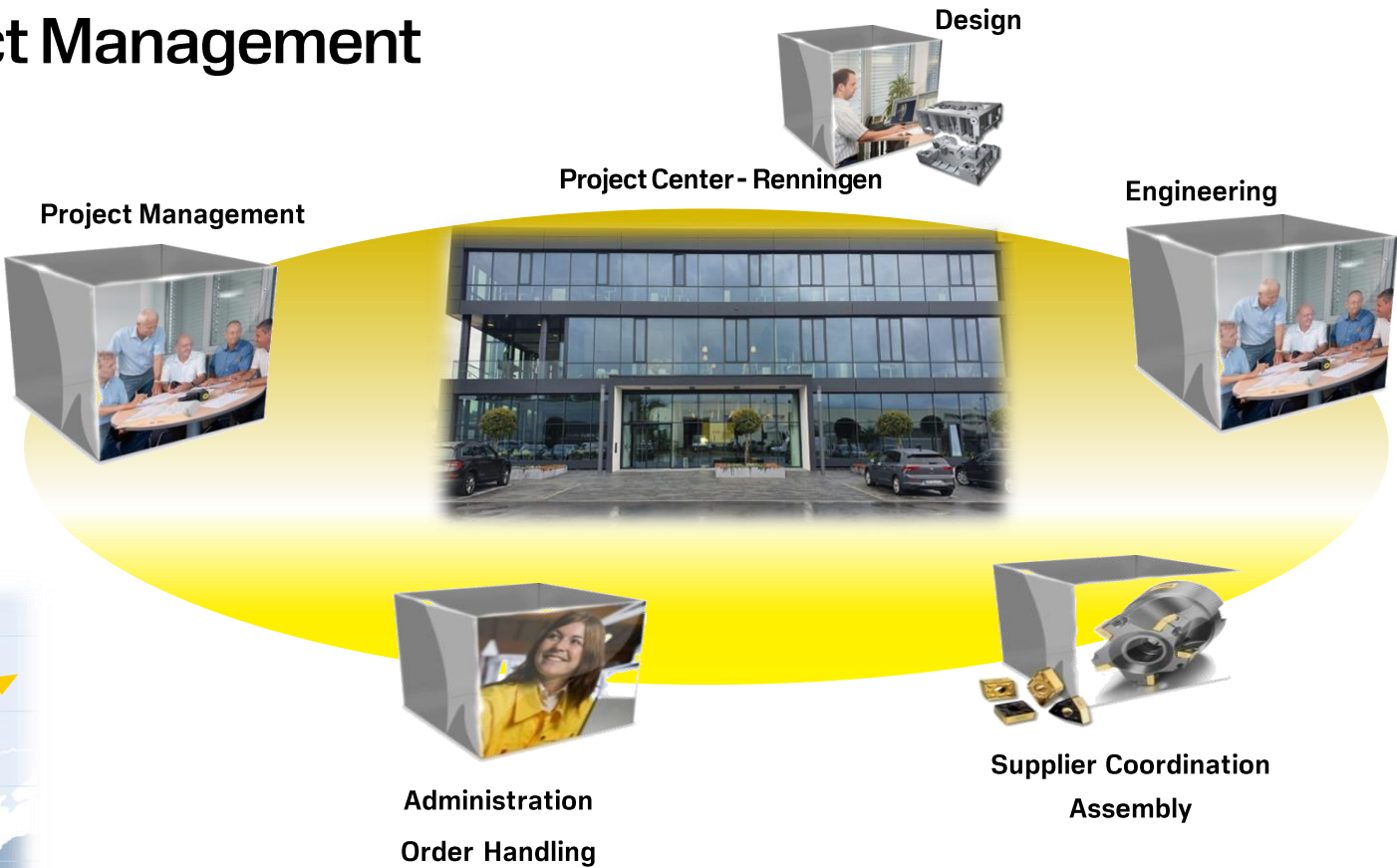
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Engineers
globally





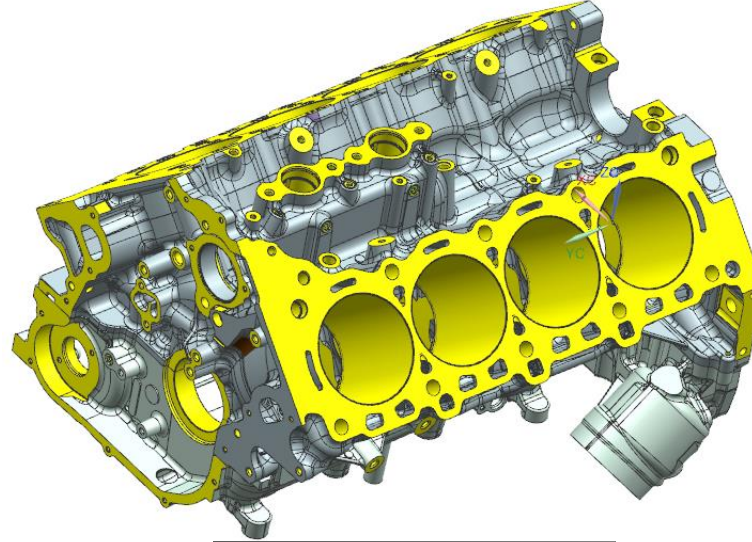
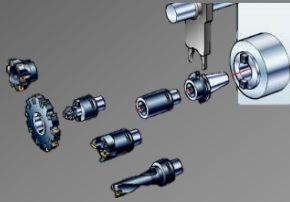
Global Project Management



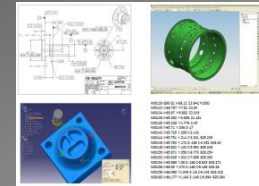
What we can offer

Our challenges

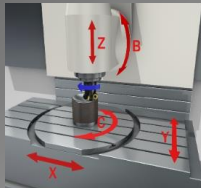
Which cutting tools?



Which process is cost efficient?



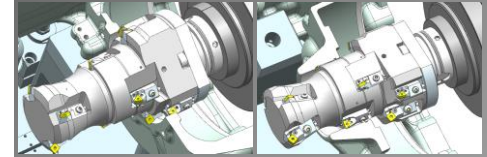
Which machine tool meets my demand?

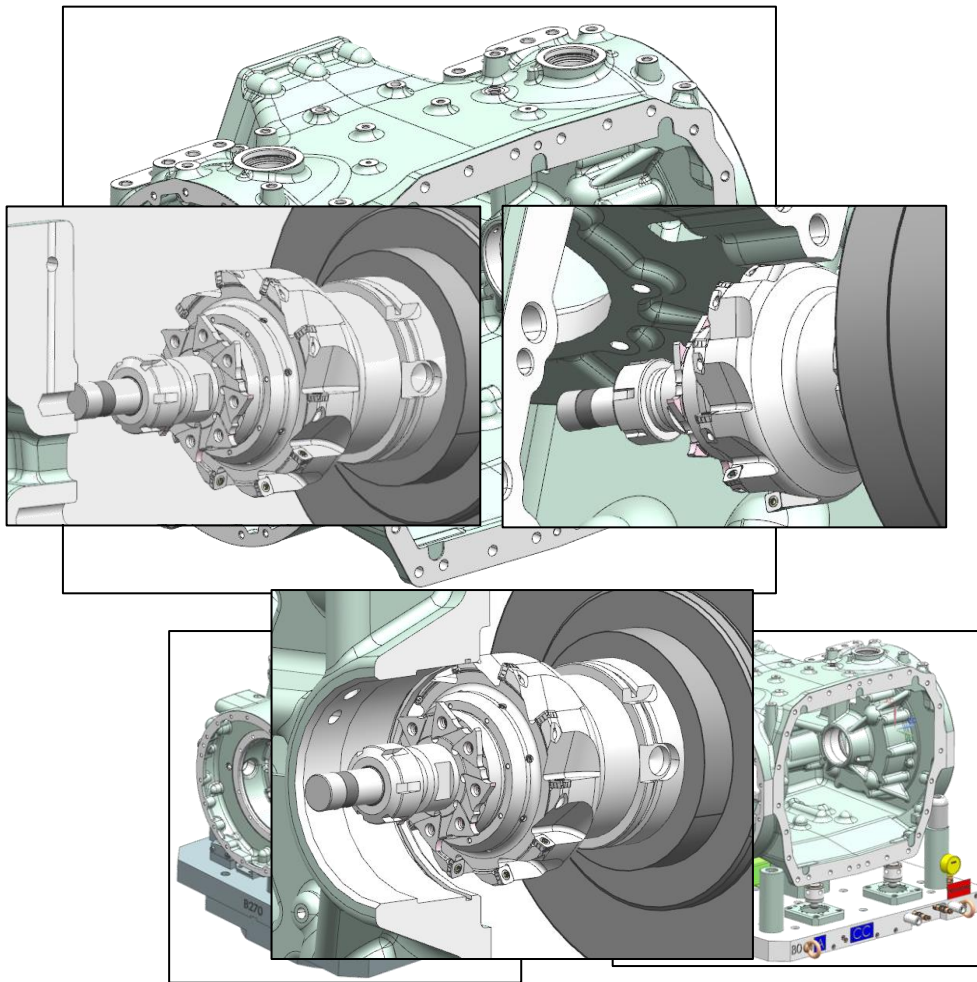


What cutting data are suitable?



Which method ensures quality?





Our project offer

- Concept and process development
- Solution development
- Cross-border way of working
- Project management experience
- Project documentation
- Machine tool builder cooperation
- Quotations and orders
- Buy-in products in Turn-Key projects
- Run-off and optimization service
- Shipment and logistics
- Assemblies and presetting of tools

Machine investment

- A machine is a major investment, so you want to make sure you get the most out of it when you fit it into your production. Missing out on the best choice of methods and tools will prolong your payback time.
- Our experts will help you analyze specific machining requirements and recommend optimized process. From planning till runoff, we will work closely with you to ensure all phases simple and smooth.



Right from the start

COOPERATION WITHIN

CUSTOMER



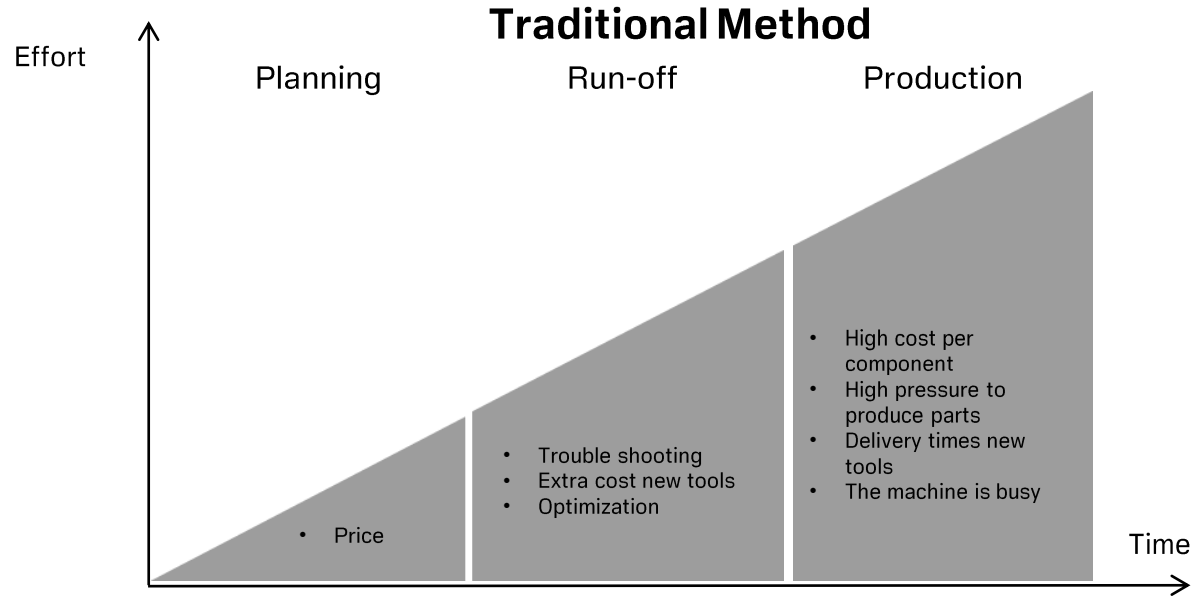
**Machine
tool maker**



**Tool
Supplier**



Right from the start Concept

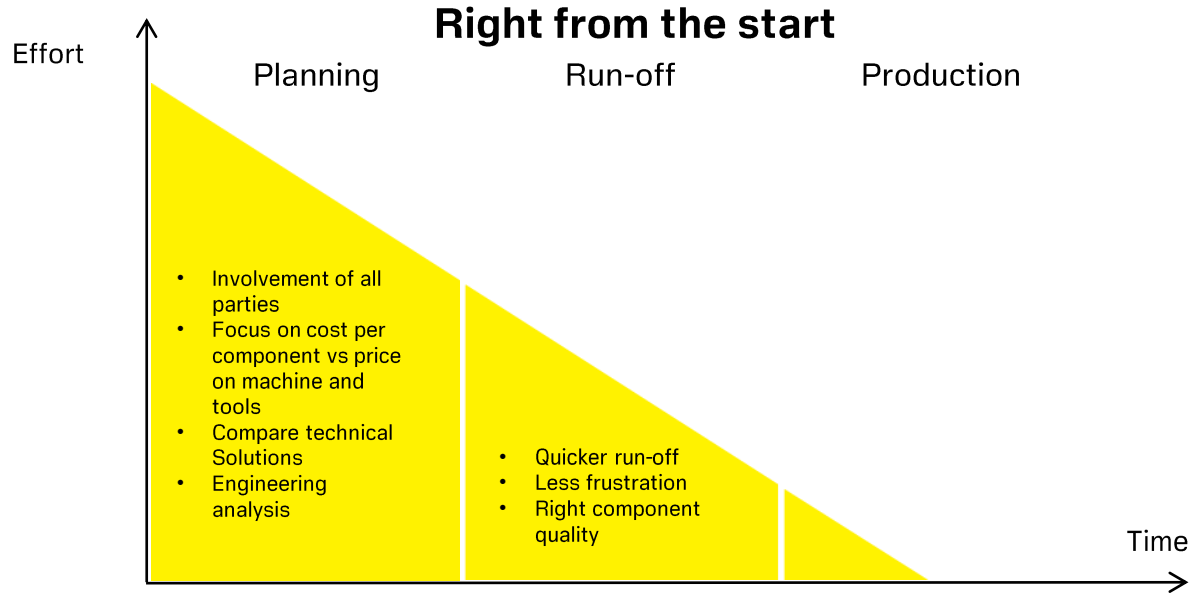


It is a common thinking that reducing the costs of machines and tool brings to a reduction of the total investment.

Of course, the cost of investments is important, but there are also other factors that can lead to an increase in spending

Without proper planning, it may be necessary to spend more time and resources solving problems or repeating a job, rather than going into production.

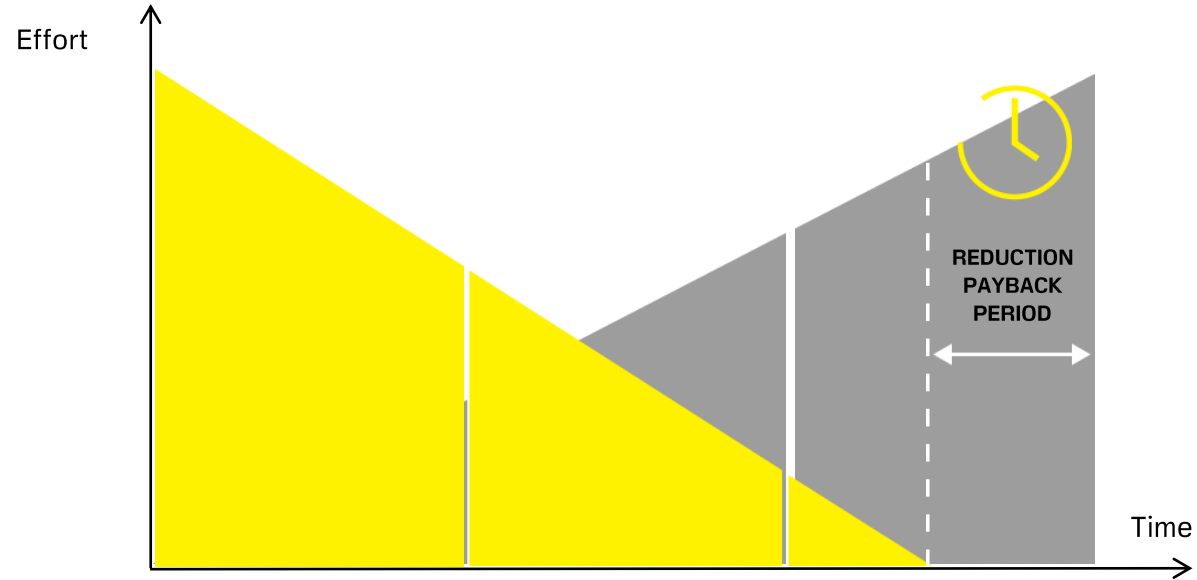
Right from the start Concept



The end user, machine tool builder and tool supplier should work together from the start to achieve optimal results. Comparison of various solutions based on the cost of the finished component.

With proper planning, run-off is easier and faster.

Right from the start Concept



Tool list

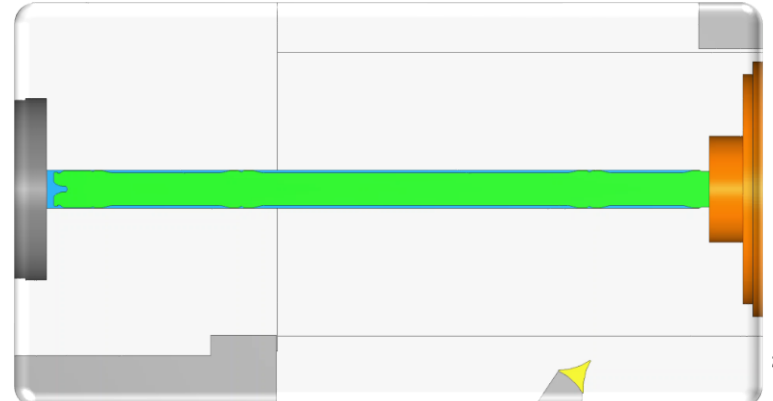
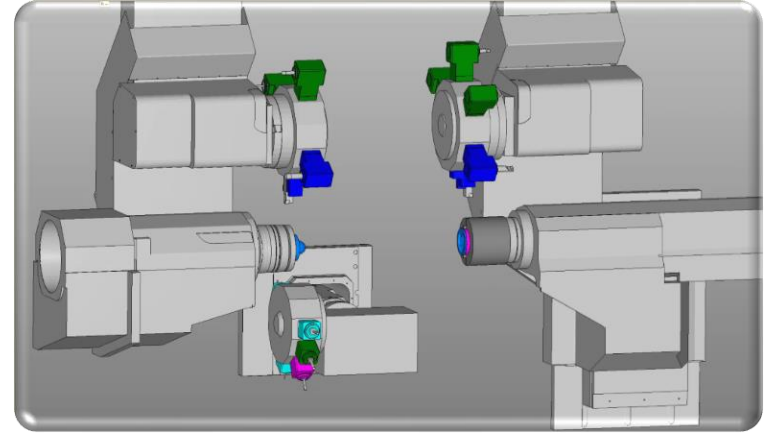
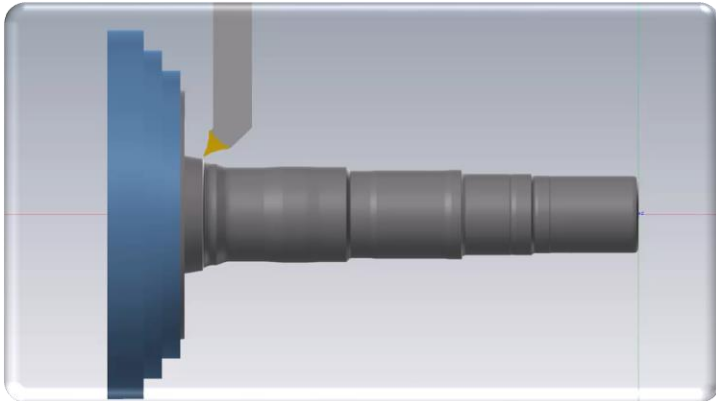
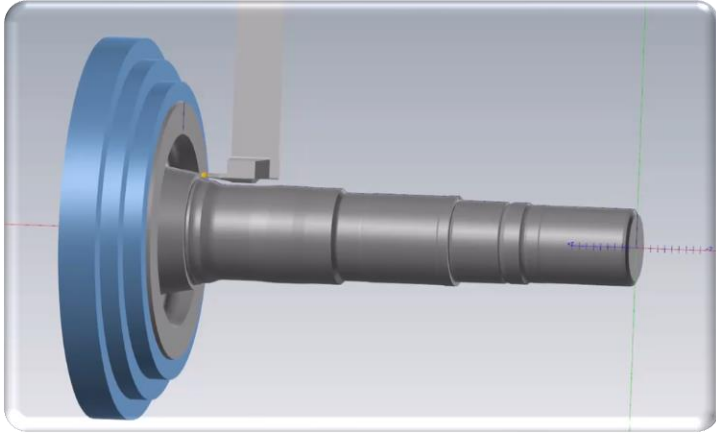
Tool No.	Description	Item code	Q.ty	Operation description	Vc (M/min)	fz (mm)	fn (mm/g)	ap (mm)
T46	Testina di sfacciatura x sgrossatura esterna							
	Unità di taglio	C8-DSRNL-45080-25	1	Sgrossatura piano 1	120	1,2	1,2	15
	Inserto	SNMM 25 07 24-MR 4025	1					
T47	Testina di tornitura x sgrossatura interna							
	Unità di taglio	C8-DSKNL-45080-25	1	Sgrossatura diam. 499,5	120	1,2	1,2	15
	Inserto	SNMM 25 07 24-MR 4025	1					
T01	Testina di sfacciatura x finitura esterna							
	Unità di taglio	C8-DCLNL-55080-16	1	Finitura piano 1	160	0,32	0,32	1
	Inserto	CNMG 16 06 12-WM 4015	1					

Tool N	Description	Article code	Customer Material	Material ID	Qty	Unit price list €	Total price list €	Disc. %	Extra %	Unit net price €	Total net price €	Unit net price €
OP 10												
T01	ISO 7388-1 to ISO 9766 adaptor	A1B27-50 25 085		5721788	1	126,00	126,00	25,0		94,50	94,50	LINK DISEGNO
	T-Max® P cutting unit for turning	C6-DRSNR-45065-12		5729772	1	257,00	257,00	23,0		197,89	197,89	LINK DISEGNO
	CoroTurn® 107 insert for turning	TCMT 09 02 04-PF 4325		6433984	1	8,17	8,17	48,5		4,21	4,21	LINK DISEGNO
	Shim set for CoroBore® 820	R820D-AS05A		5709410	1							LINK DISEGNO
T02	T-Max® P shank tool for turning	DDJNR 2020K 15		5731109	1	87,20	87,20	23,0		67,14	67,14	LINK DISEGNO
	Screw	416.1-836	0801.106	5715640	10	4,08	40,80	13,0		3,55	35,50	LINK DISEGNO
OP 20												
T07	CoroMill® 390 square shoulder milling cutter	R390-040C4-11H		5745413	1	431,00	431,00	25,0		323,25	323,25	LINK DISEGNO
	T-Max® P cutting unit for turning	C6-DRSNR-45065-12		5729772	10	257,00	2.570,00	23,0		197,89	1.978,90	LINK DISEGNO

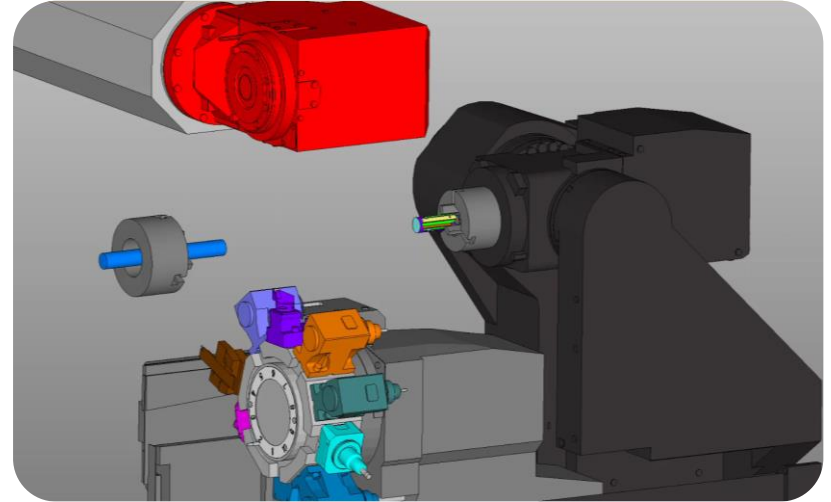
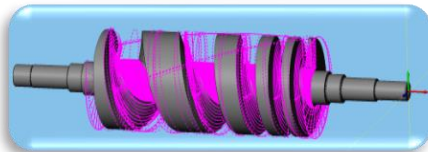
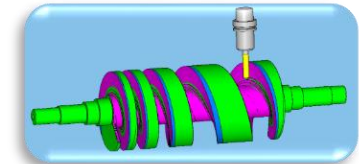
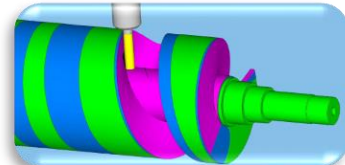
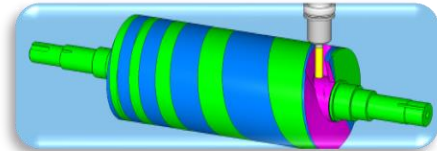
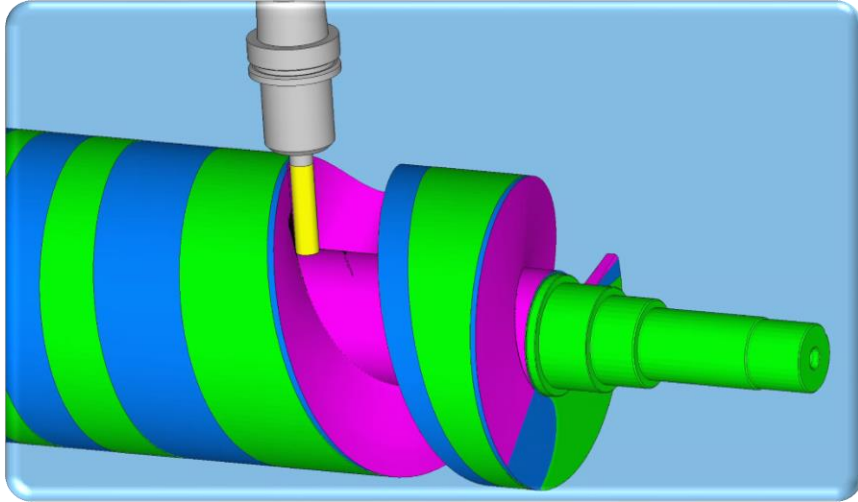
Cycle time

Op. Nr	Description	Lav.	Dia. min	Dia. max	Stroke mm.	Ap mm.	Ae mm.	Vc m/1'	Rpm	Fz mm.	z	f mm/r	Vf mm/1'	Axi. Pas. Nr	Rad. Pas. Nr	Tot. Pas. Nr	Cutt. Pos. Nr	Posit. dist. mm.	Nr of pcs	Pcs. dist. mm.	Tool and insert code	Tool Nr	Cutt. time min.	Rapid time min.	Tool Ch. min.	Add. Time min.	Total time min.
10	Internal Roughing from Ø 144 to Ø 158	T	144,0	158,0	600	2,40		90	190	0,20	1	0,20	38	3	1	3	1	1	1	570-3C 801240CR 570-DCLNR-80-16 CNMG 160612-PM 4325	T01	47,44	0,30	1,00	0,00	48,74	
20	Internal Roughing from Ø 123 to Ø 158	T	123,0	158,0	95	2,50		90	204	0,20	1	0,20	41	7	1	7	1	1	1	570-3C 801240CR 570-DCLNR-80-16 CNMG 160612-PM 4325	T01	16,31	0,26	0,00	0,00	16,57	
30	Internal Semifinishing Ø 159	T	158,0	159,0	600	0,50		90	181	0,25	1	0,25	45	1	1	1	1	1	1	570-3C 801240CR 570-DDUNR-80-15 DNMG 150612-PM 4325	T02	13,28	0,10	1,00	0,00	14,38	
40	Internal Finishing from Ø 123,8 to Ø 159	T	123,8	159,0	95	0,50		90	203	0,25	1	0,25	51	1	1	1	1	1	1	570-3C 801240CR 570-DDUNR-80-15 DNMG 150612-PM 4325	T02	1,88	0,04	0,00	0,00	1,91	
50	Internal Finishing Ø 160,3 with chamf. 2x45°	T	159,0	162,8	50	0,65		120	237	0,25	1	0,25	59	1	1	1	1	1	1	C5-PDUNR-35150-15M1 DNMX 150608-WF 5015	T03	0,84	0,03	1,00	0,00	1,87	
60	Internal Finishing Ø 159,5	T	159,0	159,5	550	0,25		120	240	0,25	1	0,25	60	1	1	1	1	1	1	570-3C 801240CR 570-DDUNR-80-15 DNMX 150608-WF 5015	T04	9,17	0,09	1,00	0,00	10,27	
																							Total time working [min]			93,73	
																							Total time working [hour]			1,56	

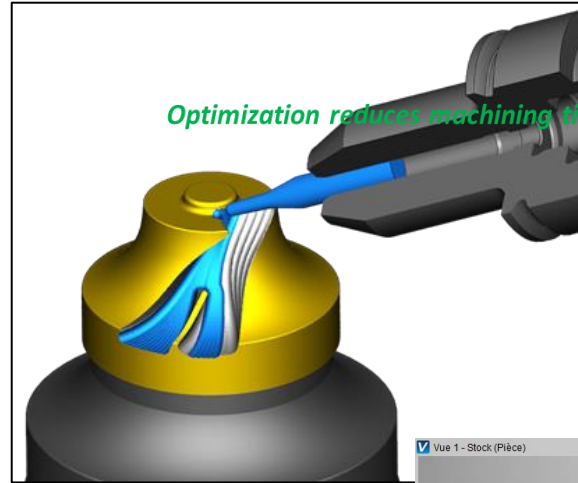
CAM Simulation



CAM Simulation



CAM - Vericut Force Optimization



Calculatrice de gains

Posage: 1

Programme CN: Tout

Outil: Tout

Gains au niveau de la pièce

Temps original: 22:23:37 h:mm:ss

Temps optimisé: 15:50:02 h:mm:ss

Gain de temps: 29,29 %

Nombre de pièces: 100

Taux horaire de la machine: 100 \$/heure

Gain de temps sur ces pièces: 655:58:10 h:mm:ss

Gain sur ces pièces: 65,597 \$

Calculer les gains pour ces pièces

Gains au niveau de l'atelier

Taux horaire de l'atelier: 100 \$/heure

Nombre de machines: 5

Heures d'usinage par équipe: 8 heures

Nombre d'équipes: 2

Nombre de jours travaillés par an: 220

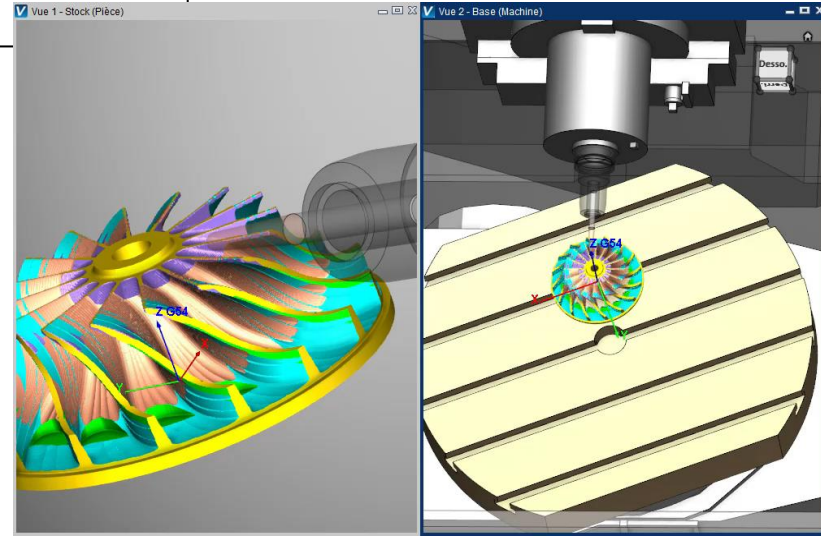
Gain total sur l'année: \$

Calculer les gains annuels dans l'atelier

RAZ de la simulation et remplacer les programmes CN courants par les programmes CN optimisés?

☒ Afficher cette boîte de dialogue à la fin de l'optimisation

Fermer



2D – 3D Tool Assembly

Salva assieme

ID assieme:

Descrizione:

Classificazione assieme: Punta con estremità simmetrica - integrale

Tipo di operazione: Rotante

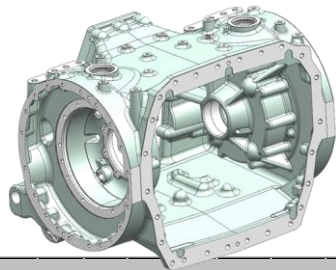
Articolo principale:

Parametri uniti

Diametro del corpo BD	-	8,5 mm
Codice tipo di uscita refrig... CXSC	-	Assiale concentrica su cerchio
Diametro di taglio DC	-	8,5 mm
Diametro di collegamento DCON _{MS}	-	mm
Qualità 4G— GC4125, GC... GRADE	-	4234
Senso HAND	-	Destra
Lunghezza del corpo LB	-	63 mm
Lunghezza funzionale LF	-	101,6 mm
Lunghezza di riferimento... LGTA	-	61,614 mm ⓘ
Lunghezza assieme utensile LTA	-	232,614 mm ⓘ
Lunghezza utilizzabile LU	-	43,9 mm
Lunghezza globale	-	103 mm

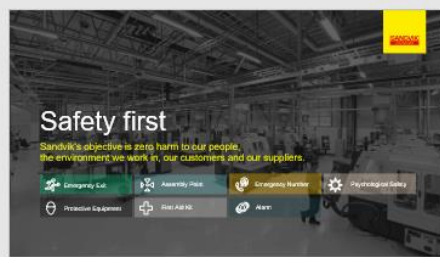


Cost per part analisys



SANDVIK Coromant				Customer	Part. Reference																	Material
Tool N°	Tool description	Article code	Q.ty	List price	Discount	Line net price	Op. Type (turning, milling, drilling)	Tool dia.	Z	Vc	Fz	S	F	Kr [°]	Stroke	Time [min]	N° of reconditioning or cutting edge change	Cost of the reconditioning	Cut life [min]-[m]	N° inserts changes	N° of pieces life	Cost for component
T01	Inserto	DNMG150608-PM 4215	10	€ 13,25	50%	€ 66,25	T	44	1	200	0,4	1.448	579	95	320	0,55	4		15		108	€ 0,6134
T02	Inserto	CNMG 120408-PM 4215	1	€ 9,65	50%	€ 4,83	T	44	1	190	0,35	1.375	481	93	15	0,03	4		15		1.925	€ 0,0025
T03	inserto	TNMG 110304-QM 4215	1	€ 5,17	50%	€ 2,59	T	28	1	240	0,25	2.730	682	91	20	0,03	6		15		3.070	€ 0,0008
T04	inserto	490R-08T308M-PL 1030	5	€ 13,10	45%	€ 36,03	M	44	5	160	0,18	1.158	1.042	90	630	0,60	4		15		99	€ 0,3639
T05	Inserto	490R-08T308M-PL 1030	4	€ 13,10	45%	€ 28,82	M	32	4	160	0,15	1.592	955	90	1120	1,17	4		15		51	€ 0,5651
T06	FR. M.D. SPECIALE Ø 16	SPECIALE a 32°	1	€ 150,00	0%	€ 150,00	M	16	4	120	0,08	2.389	764	90	150	0,20	4	€ 15	15		382	€ 0,5497
T08	Punta Speciale Ø 11+sm45°	Speciale	1	€ 220,00	30%	€ 154,00	D	11	1	80	0,25	2.316	579	90	220	0,38	4	€ 15	30		681	€ 0,3142
																		Total ccost for component		€ 2,410		

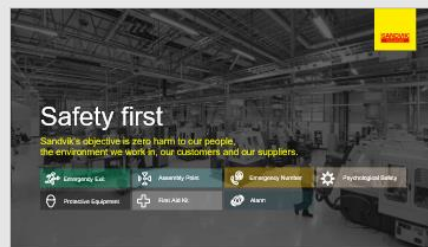
Ad hoc presentation



Ad hoc presentation



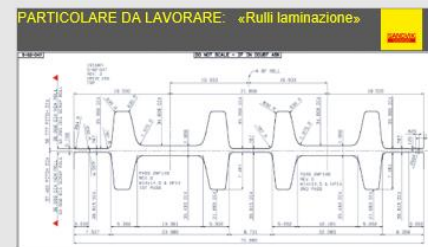
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2



3



4



5



6



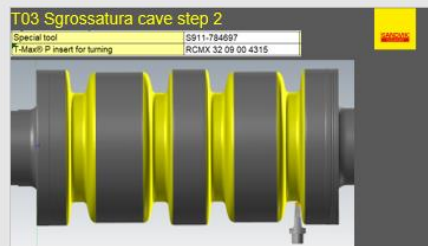
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8



9



10



11



12

Spindle ready solution

- Through proactive quotation, design, and order management techniques, we can offer full turnkey solutions including complex tooling assemblies, which minimizes the level of customer handling at time of product delivery
- Our Global Engineering Projects Assembly offer:
 - ❖ Full Tooling Assembly Offer with a combination of specials, standards, competitor, and/or alien products
 - ❖ Project Customization based on Business Partner requirements:
 - Simple and Advanced Tool Assemblies
 - ✓ Inserts set and loaded in cutter
 - ✓ Assembly Tool Balancing
 - ✓ Coolant Tube Installation
 - ✓ Balluff Chip Install
 - ✓ Special Packaging and Marking
 - ✓ Customer Documentation
 - ✓ One Tool Assembly Number
 - ✓ Other Unique Customer Requirements



Questions?



SANDVIK
Coromant