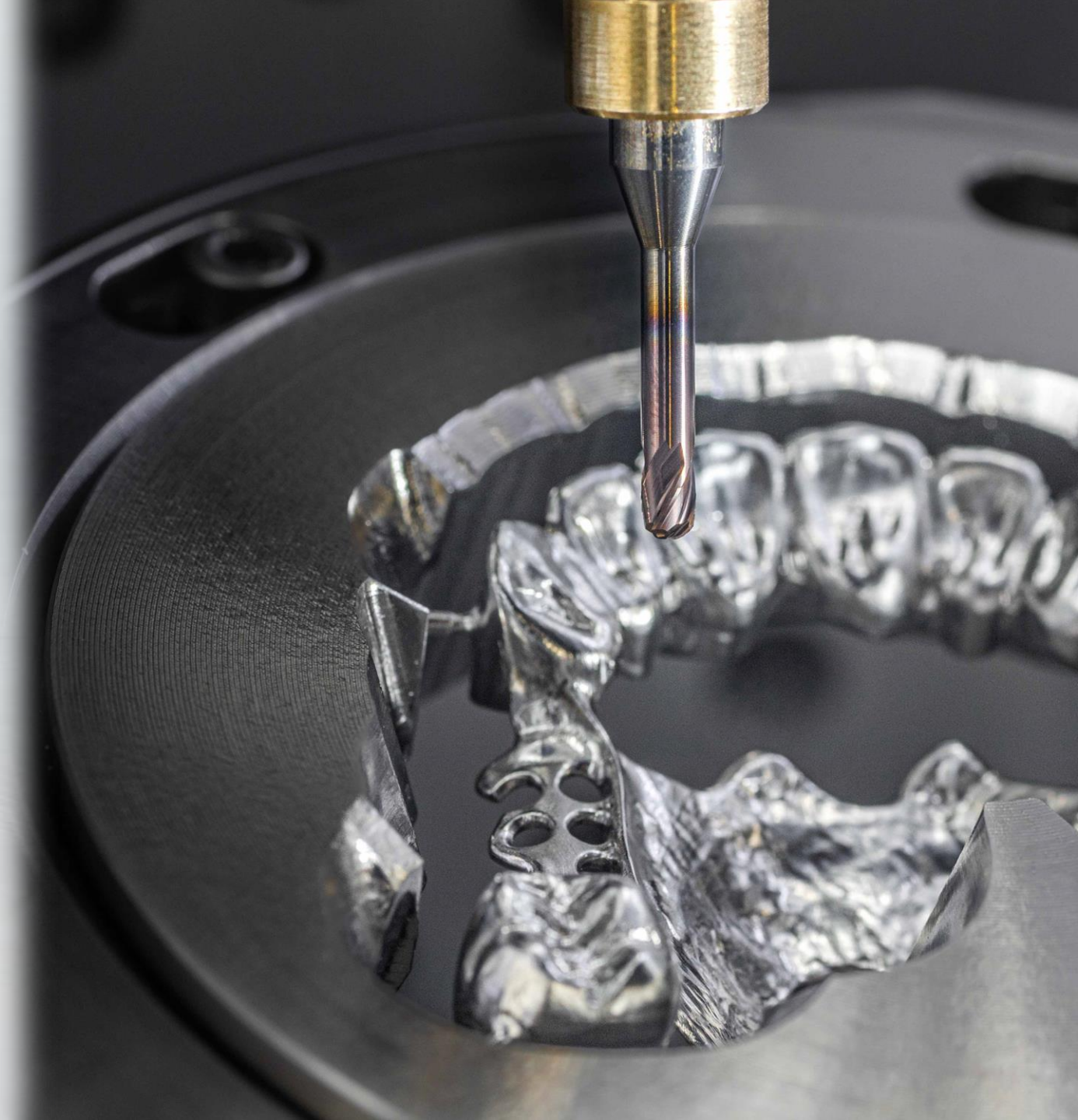


**GÜHRING**

DENTAL Endmills



# DENTAL Endmills

**GÜHRING**

Latest micro-tool technology Produced in Germany.

Developed & tested under real conditions & with customers from the dental industry

- Tools for open & closed systems
- For table machines with direct tool clamping
- For machining centres with tool holders



# CoCr & Titan

**GÜHRING**

*High-performance tools with innovative geometries  
High coatings and application-specific carbide substrates*

- Up to 150% longer tool life*
- Up to 80% less roughing time*
- Improved surfaces and fit quality*

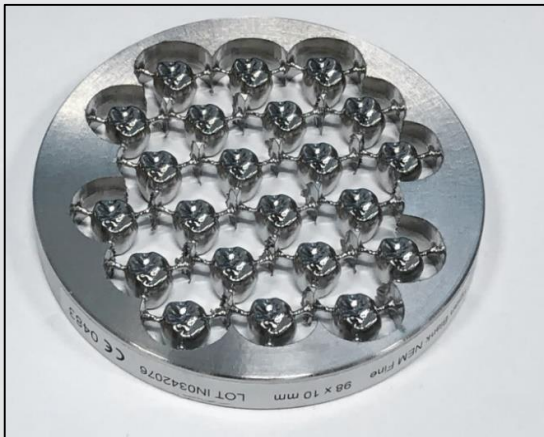


# Success story T61 Standard

## HSC end mills / HSC-Fräser

<b>Industry</b>	<i>Branche</i>	<b>Medical Technology / Medizintechnik</b>	
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<b>Workpiece</b>	<i>Werkstück</i>	Dental prosthesis	<i>Zahnprothese</i>
<b>Material</b>	<i>Material</i>	Chrome Cobalt / CoCr	
<b>Application</b>	<i>Anwendung</i>	3D milling	<i>3D Fräsen</i>
<b>Cooling</b>	<i>Kühlung</i>	dry	
		EC	<i>EK</i>
<b>Tool holder</b>	<i>Aufnahme</i>	Collet Chuck	<i>Spannzange</i>



Workpiece picture / Werkstückbild



Tool picture / Werkzeugbild

T61  
Sobo based on #303916284  
HPC

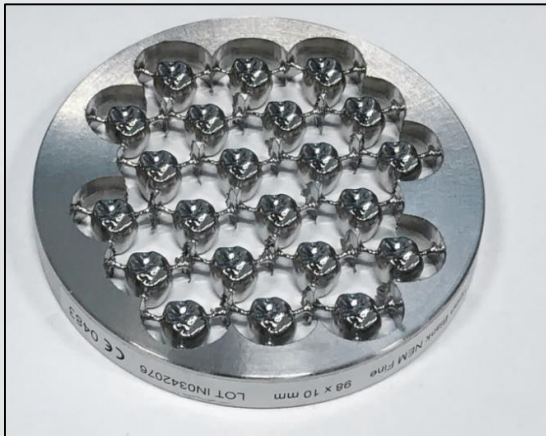
Article	<i>Artikel</i>	Unit	Gühing	Competitor
			HPC	Ball nose
			Sobo	-
<b>Ø</b>			3,00	
<b>Z</b>			4	4
<b>Vc</b>		m/min	103	103
<b>N</b>		rpm	11000	11000
<b>Fz</b>		mm	0,048	0,048
<b>Vf</b>		mm/min	2100	2100
<b>Ap</b>		mm	0,15	0,15
<b>Ae</b>		mm	1,35	1,35
<b>Machining time</b>	<i>Bearbeitungszeit</i>	sec.	650,00	650,00
Backenkronen mit Fissur				
<b>Q/min</b>		mm <sup>3</sup>	0,43	0,43
<b>Advantage</b>	<i>Vorteil</i>		0%	
<b>Tool life (m)</b>	<i>Standweg</i>	<i>h</i>	<b>20</b>	10
<b>Advantage</b>	<i>Vorteil</i>		<b>100%</b>	

# Success story T61 Performance

## HSC end mills / HSC-Fräser

<b>Industry</b>	<i>Branche</i>	<b>Medical Technology / Medizintechnik</b>	
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<b>Workpiece</b>	<i>Werkstück</i>	Dental prosthesis	<i>Zahnprothese</i>
<b>Material</b>	<i>Material</i>	Chrome Cobalt / CoCr	
<b>Application</b>	<i>Anwendung</i>	3D milling	<i>3D Fräsen</i>
<b>Cooling</b>	<i>Kühlung</i>	dry	
		EC	<i>EK</i>
<b>Tool holder</b>	<i>Aufnahme</i>	Collet Chuck	<i>Spannzange</i>



Workpiece picture / Werkstückbild



Tool picture / Werkzeugbild

T61  
Sobo based on #303916284  
HPC

			<b>Gühing</b>	<b>Competitor</b>
			<b>HPC</b>	<b>Ball nose</b>
<b>Article</b>	<i>Artikel</i>	<b>Unit</b>	Sobo	-
<b>Ø</b>			3,00	
<b>Z</b>			4	4
<b>Vc</b>		m/min	97	103
<b>N</b>		rpm	10400	11000
<b>Fz</b>		mm	0,05	0,048
<b>Vf</b>		mm/min	2100	2100
<b>Ap</b>		mm	0,25	0,15
<b>Ae</b>		mm	1,65	1,35
<b>Machining time</b>	<i>Bearbeitungszeit</i>	sec.	410,00	650,00
Backenkrone mit Fissur				
<b>Q/min</b>		mm <sup>3</sup>	<b>0,87</b>	0,43
<b>Advantage</b>	<i>Vorteil</i>		<b>104%</b>	
<b>Tool life (h)</b>	<i>Standweg</i>	<i>h</i>	<b>12</b>	10
<b>Advantage</b>	<i>Vorteil</i>		<b>20%</b>	

# Plastics

**GÜHRING**

*Innovative new double cutter geometries with improved surfaces and cutting edge qualities*

*-Up to 40% longer tool life*

*-Up to 50% shorter machining time*

*-Improved surface quality and transparency*



# Success storie T11

## HSC end mills / HSC-Fräser

<b>Industry</b>	<i>Branche</i>	<b>Medical Technology / Medizintechnik</b>	
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<b>Workpiece</b>	<i>Werkstück</i>	Dental prosthesis	<i>Zahnprothese</i>
<b>Material</b>	<i>Material</i>	PEEK / PMMA	
<b>Application</b>	<i>Anwendung</i>	3D milling	<i>3D Fräsen</i>
<b>Cooling</b>	<i>Kühlung</i>	emulsion	
		EC	<i>EK</i>
<b>Tool holder</b>	<i>Aufnahme</i>	Collet Chuck	<i>Spannzange</i>



Workpiece picture / Werkstückbild



Tool picture / Werkzeugbild

T11  
Sobo based on #303968498  
HPC

			<b>Gühing</b>	<b>Competitor</b>
			HPC	Ball nose
<b>Article</b>	<i>Artikel</i>	Unit	Sobo	-
<b>Ø</b>			2,50	
<b>Z</b>			2	2
<b>Vc</b>		m/min	133,52	133,52
<b>N</b>		rpm	17000	17000
<b>Fz</b>		mm	0,06	0,06
<b>Vf</b>		mm/min	2100	2100
<b>Ap</b>		mm	1	1
<b>Ae</b>		mm	1,3	1,3
<b>Machining time</b>	<i>Bearbeitungszeit</i>	sec.		
<b>Q/min</b>			mm <sup>3</sup>	
			2,63	2,63
<b>Advantage</b>	<i>Vorteil</i>		0%	
<b>Tool life (m)</b>	<i>Standweg</i>	<i>h</i>	<b>15</b>	10
<b>Advantage</b>	<i>Vorteil</i>		<b>50%</b>	

# Zirkon

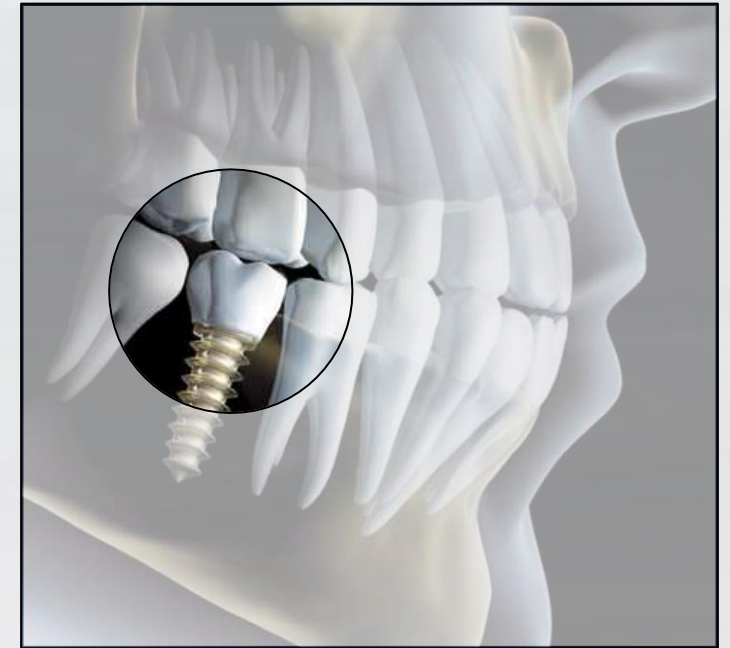
**GÜHRING**

*Diamond-coated carbide tools with perfect layered carbide bond*

*-Up to 40% longer tool life*

*-Reduced reworking*

*-Very good surface quality*



# Success story T13

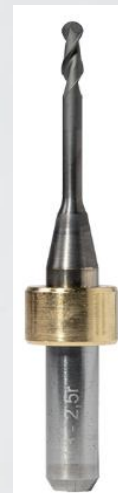
## HSC end mills / HSC-Fräser

<b>Industry</b>	<i>Branche</i>	<b>Medical Technology / Medizintechnik</b>	
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<b>Workpiece</b>	<i>Werkstück</i>	Dental prosthesis	<i>Zahnprothese</i>
<b>Material</b>	<i>Material</i>	Zirconium / Zirkonoxid	
<b>Application</b>	<i>Anwendung</i>	3D milling	<i>3D Fräsen</i>
<b>Cooling</b>	<i>Kühlung</i>	dry	
		EC	<i>EK</i>
<b>Tool holder</b>	<i>Aufnahme</i>	Collet Chuck	<i>Spannzange</i>



Workpiece picture / Werkstückbild



Tool picture / Werkzeugbild

T13  
Sobo based on #303805399  
HPC

Article	<i>Artikel</i>	Unit	Gühing	Competitor
			HPC	Ball nose
			Sobo	-
<b>Ø</b>			2,50	
<b>Z</b>			2	2
<b>Vc</b>		m/min	157	157
<b>N</b>		rpm	20000	20000
<b>Fz</b>		mm	0,005	0,005
<b>Vf</b>		mm/min	1800	1800
<b>Ap</b>		mm	0,5	0,5
<b>Ae</b>		mm	1,3	1,3
<b>Machining time</b>	<i>Bearbeitungszeit</i>	sec.	8,00	8,00
<b>Q/min</b>				
		mm <sup>3</sup>	1,13	1,13
<b>Advantage</b>	<i>Vorteil</i>		0%	
<b>Tool life (m)</b>	<i>Standweg</i>	<i>h</i>	<b>35</b>	25
<b>Advantage</b>	<i>Vorteil</i>		<b>40%</b>	

# Portfolio

**GÜHRING**

*Precise, reliable and highly efficient  
Ball nose, torus, high feed & flat milling cutters*

*-Cutting diameter  $\varnothing$ 0.50 -  $\varnothing$ 3.60*

*-All common press-on rings*

*-Various versions of shank  $\varnothing$  & ranges*



# PROCESS OPTIMISATION

**GÜHRING**

We offer process optimisations for your machine system that offer you unique added value and clearly differentiate you from the competition

*current situation:*



*Standard tools  
Without adaptation to  
Machine & application*



*Standard cutting values  
According to CAM specification*



*Processing results  
In line with the current  
market standard  
No time or quality advantage*



*Differentiation from the competition  
only by the price or a subjective  
evaluation of the tool's performance*

# PROCESS OPTIMISATION

**GÜHRING**

Especially for machine manufacturers, dealers and large laboratories, Gühring offers unique added value through process optimisation.

*Target  
Situation:*



*Tools specially  
for your machine type  
adapted to your machine type:*

- Dimensions*
- Carbide*
- Geometry*
- Coating*
- Tolerances*



*Every tool no. Perfectly  
matched to the the  
respective machine  
and application: Shorter  
machining times Longer tool  
life*



*Best possible processing results in  
terms of processing – times surface  
- finish tolerances*

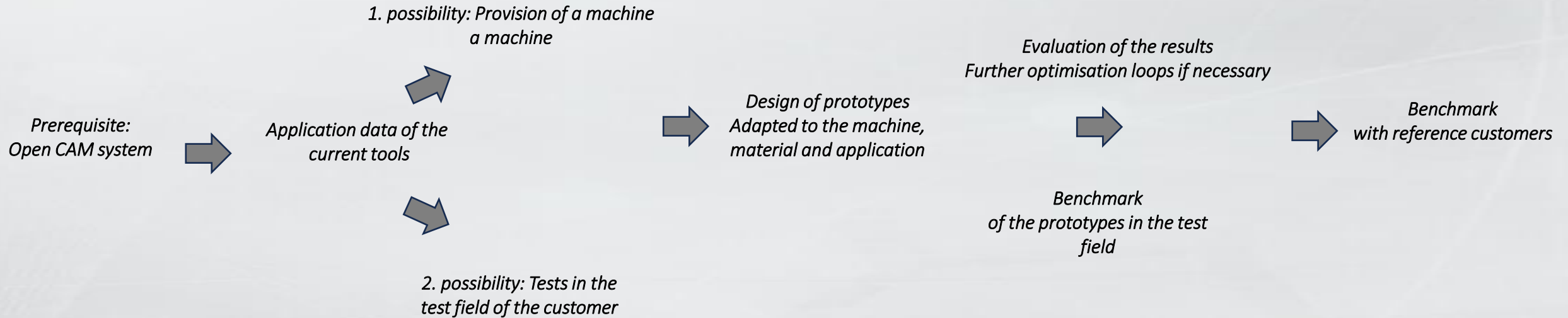


*With this unique machining  
strategy, we are jointly  
setting new standards in the  
dental industry. The high  
productivity and cost-  
effectiveness clearly set you  
apart from the competition.*

# PROCESS OPTIMISATION

**GÜHRING**

## Procedure:



# Machine manufacturer



Machine manufacturers open systems	Machine manufacturer Closed dental systems Process solution
GF Machining Solutions	Imes-icore
Kern	Ivoclar
DMG Mori	Dentsply Sirona
Röders Tec	Amann Girrbach
Primacon	Wieland
Willemin-Macodel	Arum
Fanuc	MB-Maschinen (Orangedental)
Tornos	Roland
Star	Zfx
Citizen	R&K Organical CAD/CAM
	Redon
	YenaDent
	Straumann Group Dental



**GÜHRING**

**The Tool Company**