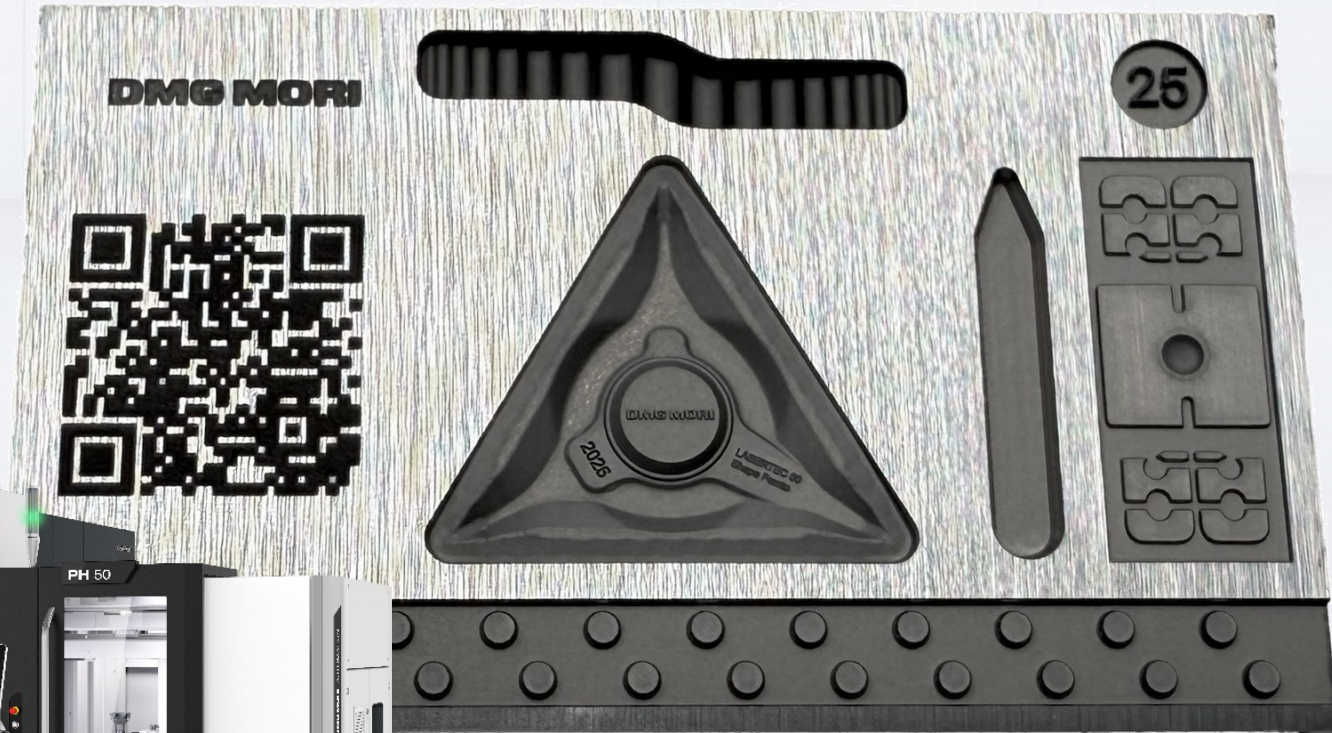
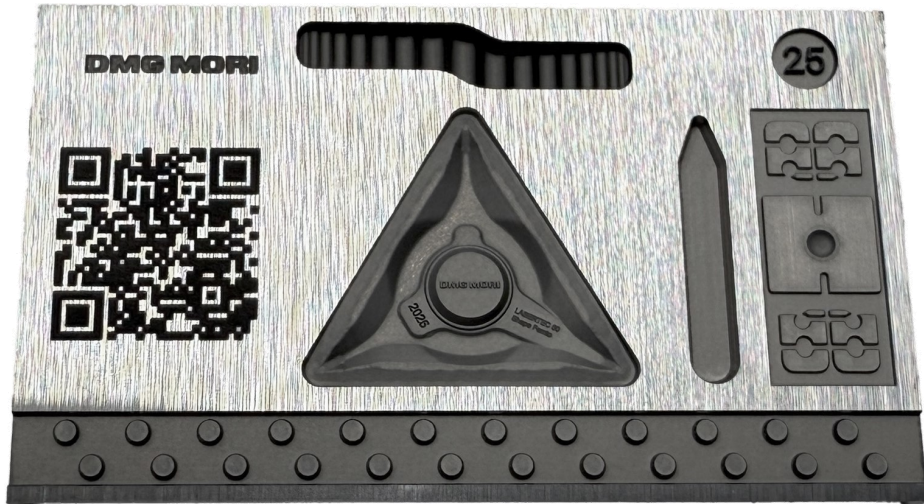


LASERTEC 50 Shape Femto - THE NEXT GENERATION OF 3D-LASER ABLATION



DMG MORI



HIGHLIGHT APPLICATION OH 2025

TECHNOLOGY: LASERTEC Shape Femto

Industry: Die & Mold

Material: CF-H40s (Tungsten Carbide)

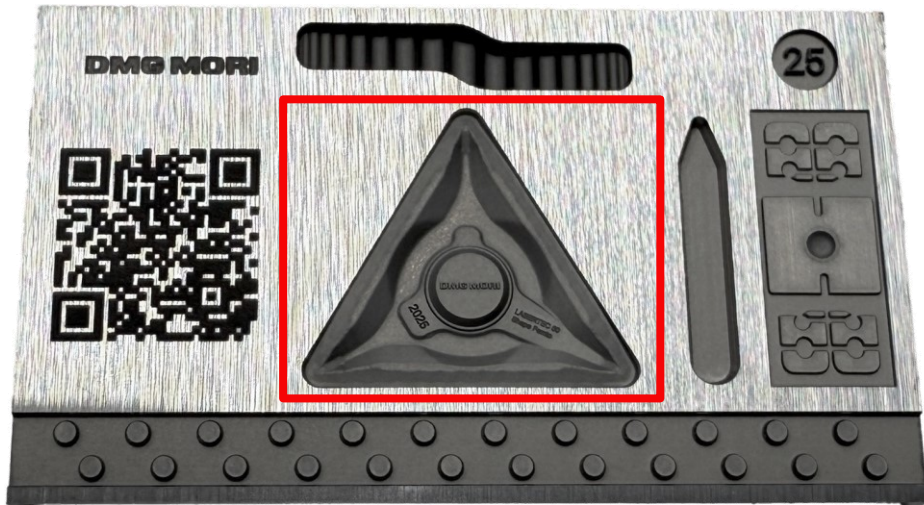
Dimension: 15 x 25 x 2 mm

Cycle Time: 1h 12 min



BENEFITS:

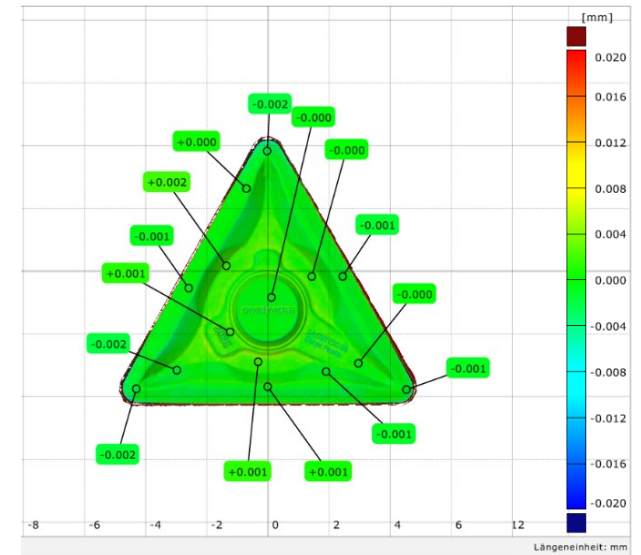
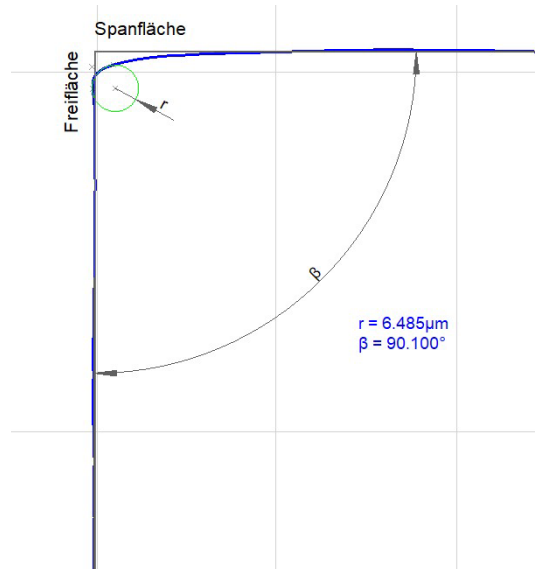
- + Contact-free laser machining without tool wear
- + Femtosecond laser for “cold” and slag free ablation with surface finishes of $Ra \leq 0.1 \mu m$
- + Machinability of Advanced Materials (tungsten carbide, ceramics, PCD ...)
- + 24/7 automation with PH 50

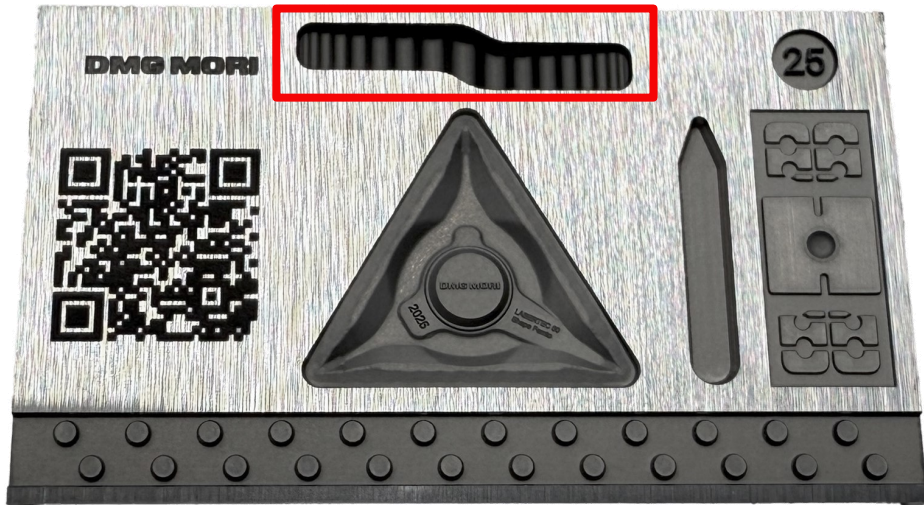


PRESS TOOL SEGMENT

Machining time:	16 min 12 sek
Depth:	425 μm
Flatness:	<5 μm
Edge radius:	<10 μm
Ra surface finish:	0,166 μm^*
Rz surface finish:	1,525 μm

* Filter Lc = 800 μm





STAMPING TOOL – PROGRESSIVE DIE

Machining time: 15 min 02 sek

Total contour depth: 750 µm

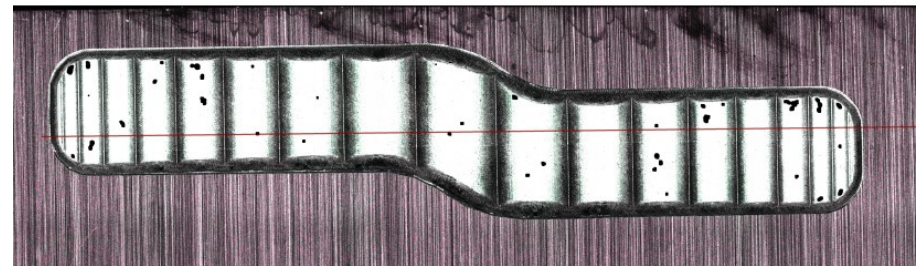
Achievable wall angle: 8°

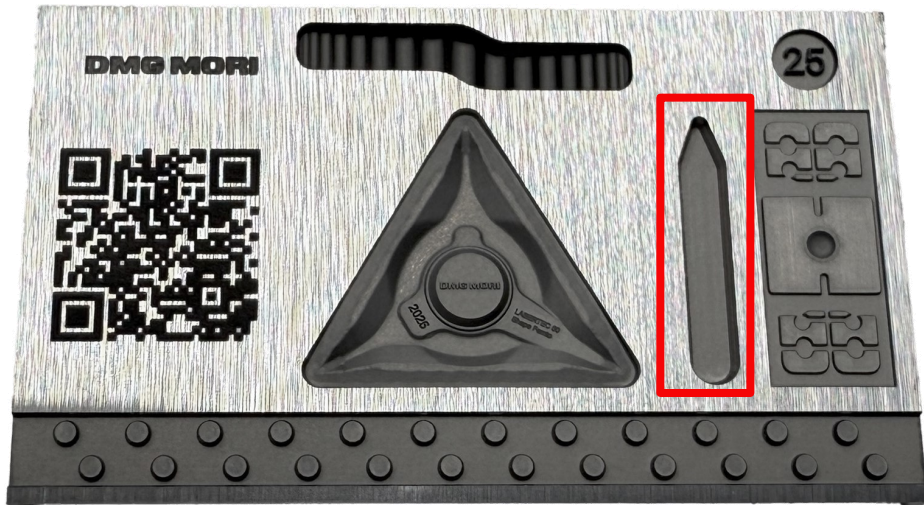
Ra surface finish: 0,166 µm*

Rz surface finish: 1,525 µm

* Filter Lc = 800 µm

Element	Target value	Measurement value
Kreis 1	100 µm	104,502 µm
Kreis 2	150 µm	145,247 µm
Kreis 3	200 µm	198,361 µm
Kreis 4	250 µm	247,275 µm
Kreis 5	300 µm	295,404 µm
Kreis 6	350 µm	348,123 µm
Kreis 7	400 µm	393,011 µm
Kreis 8	450 µm	446,227 µm
Kreis 9	500 µm	493,383 µm

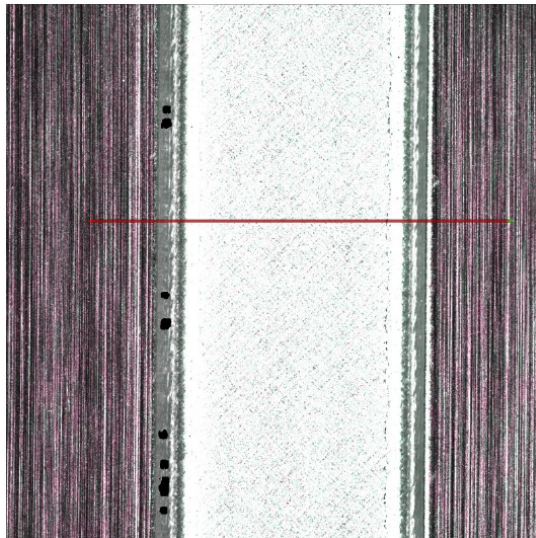




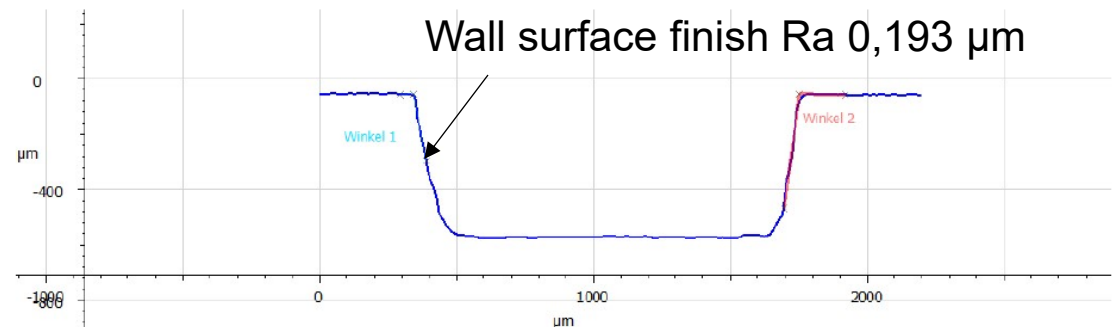
STAMPING TOOL – PROGRESSIVE DIE

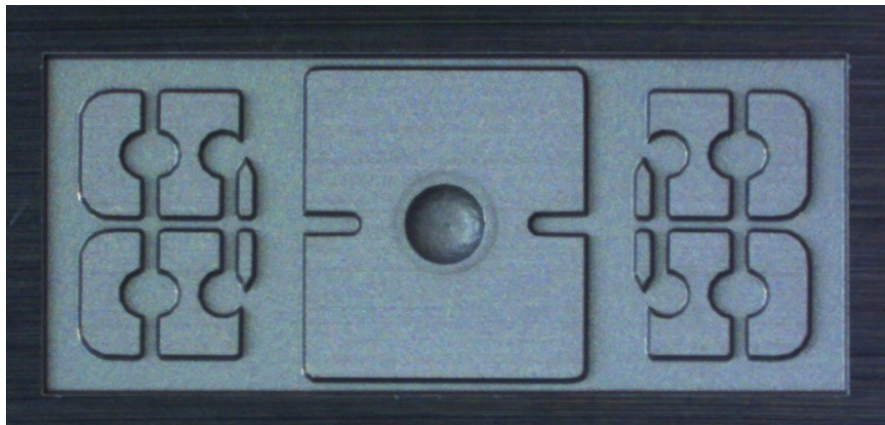
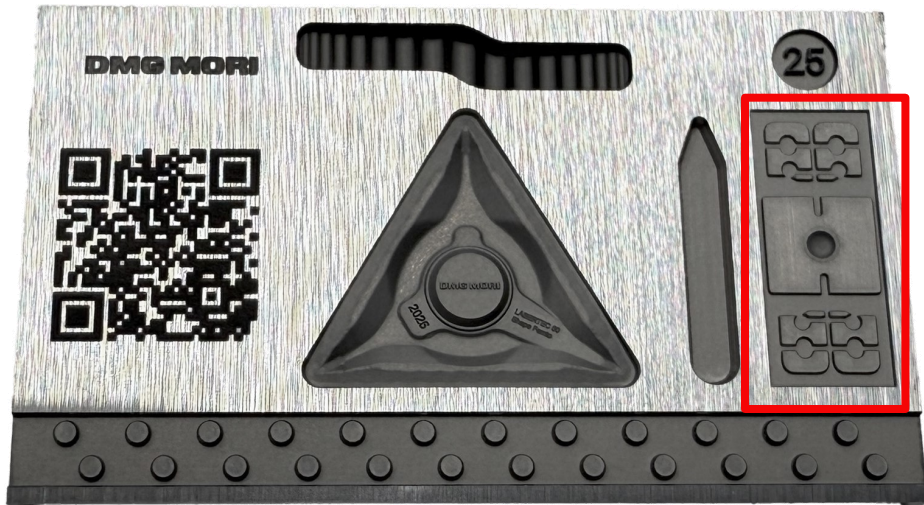
Machining time: 8 min 22 sek
 Depth: 500 μm
 Achievable wall angle: 7 – 9 $^\circ$
 Ra surface finish: 0,166 μm^*
 Rz surface finish: 1,525 μm

* Filter Lc = 800 μm



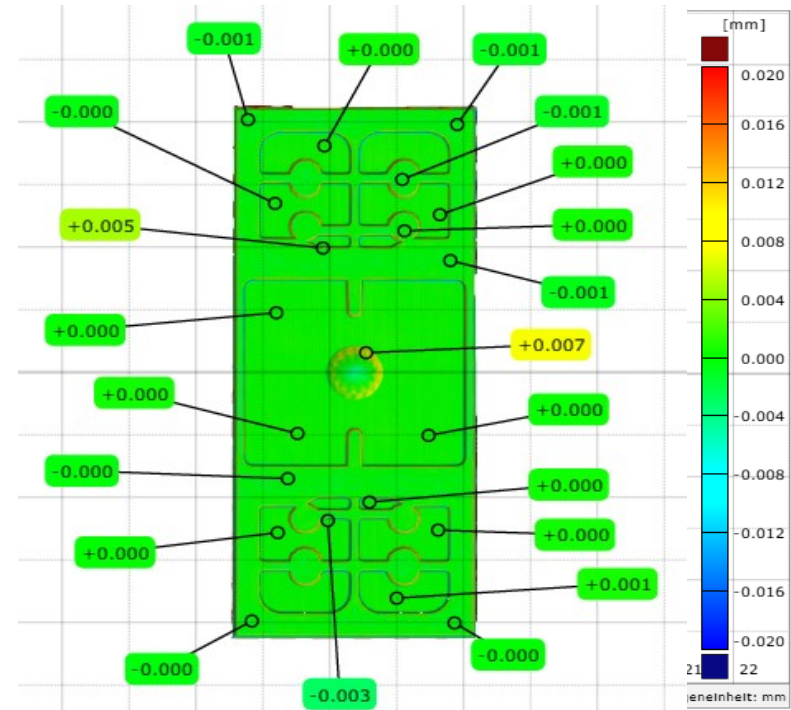
Element	Target value	Measurement value
Winkel 1	90 $^\circ$	98,69 $^\circ$
Winkel 2	90 $^\circ$	97,01 $^\circ$

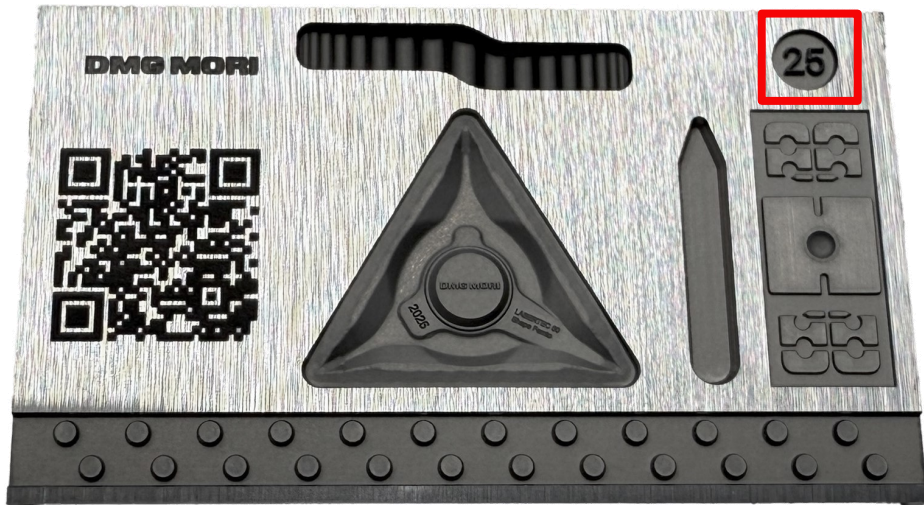




STAMPING TOOL – PROGRESSIVE DIE

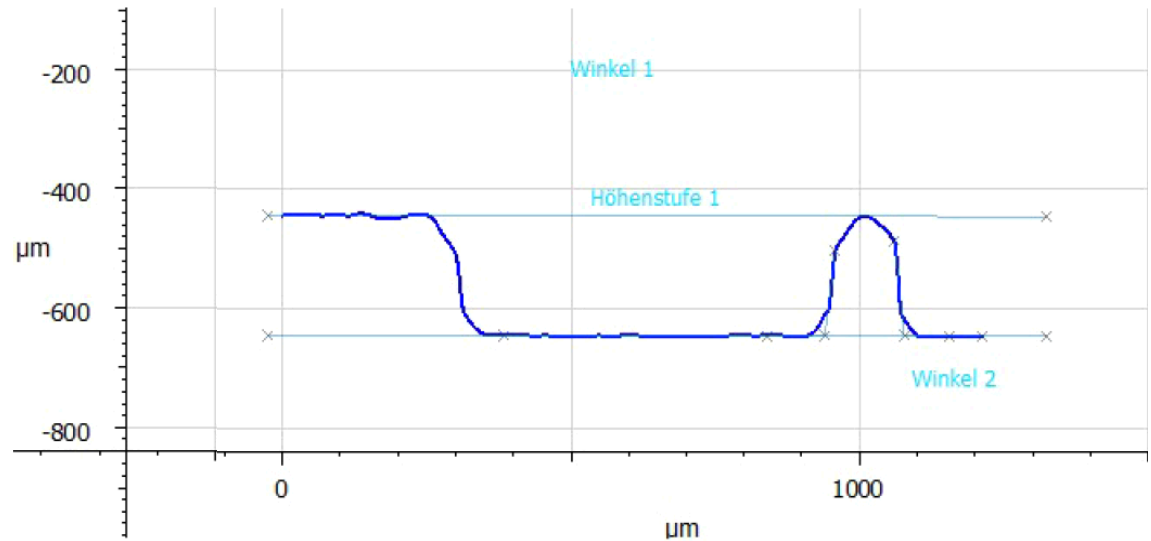
Machining time: 7 min 58 sek
 Total contour depth: 465 μm
 Achievable wall angle: 10°
 Ra surface finish: 0,166 μm^* * Filter Lc = 800 μm
 Rz surface finish: 1,525 μm

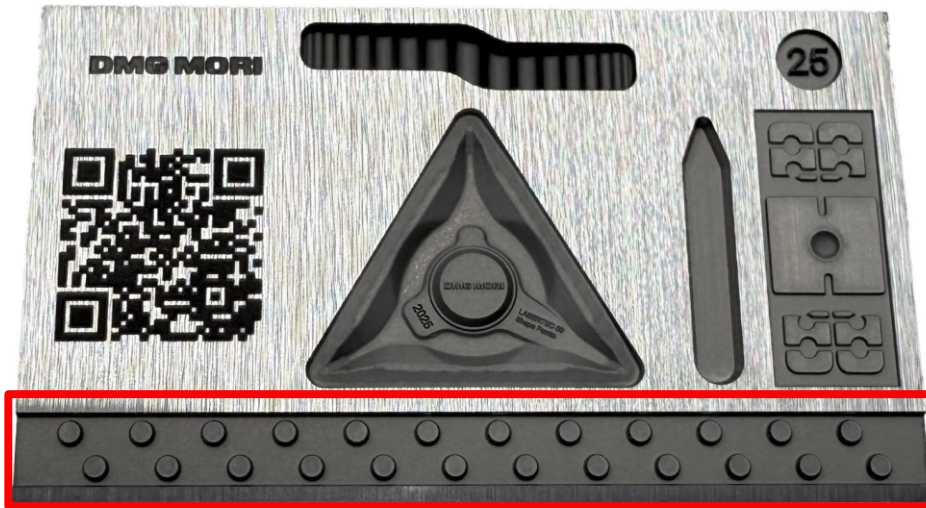




STAMPING TOOL – PROGRESSIVE DIE

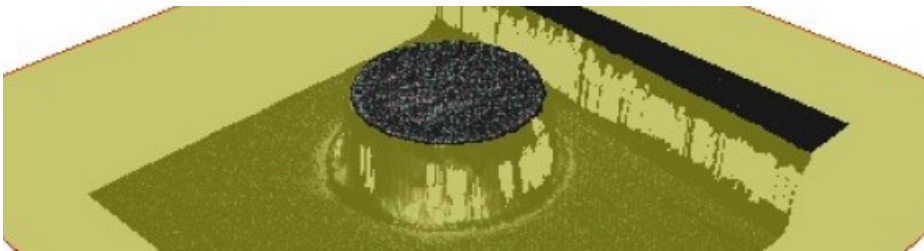
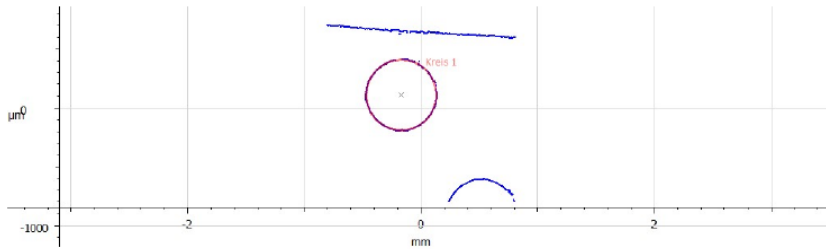
Machining time:	2 min 25 sek
Total contour depth:	200 μm
Achievable wall angle:	9,5°
Ra surface finish:	0,166 μm^* * Filter Lc = 800 μm
Rz surface finish:	1,525 μm



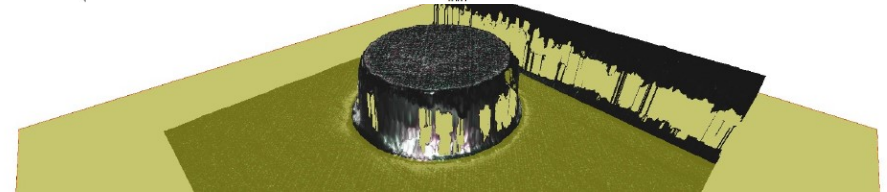
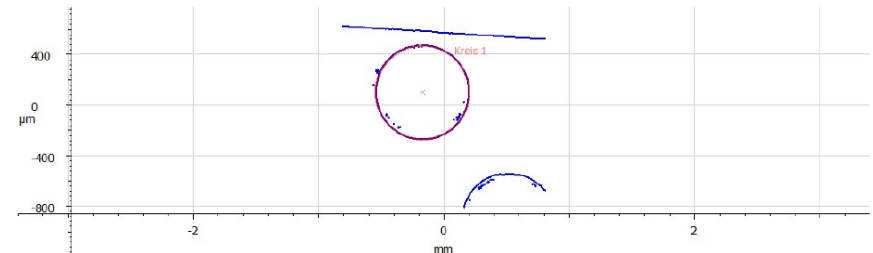


SEMICONDUCTOR WAFER CHUCK PINS

Machining time: 19 min 24 sek
 Depth: 250 μm
 Diameter: 300.6 μm (target 300 μm)
 Achievable wall angle: 10°
 Pin height: 252 μm (target 250 μm)
 Ra surface finish: 0,166 μm^* * Filter Lc = 800 μm
 Rz surface finish: 1,525 μm



	Radius / μm	C.x / μm	C.y / μm	mittlere Abweichung / μm	min. Abweichung / μm	max. Abweichung / μm	Umfang / mm	Fläche / μm^2
Kreis 1	300.581	-169.389	111.242	2.360	-4.363	24.540	1.889	283839.725



	Radius / μm	C.x / μm	C.y / μm	mittlere Abweichung / μm	min. Abweichung / μm	max. Abweichung / μm	Umfang / mm	Fläche / μm^2
Kreis 1	372.839	-170.869	102.710	4.482	-42.321	35.649	2.343	436710.224