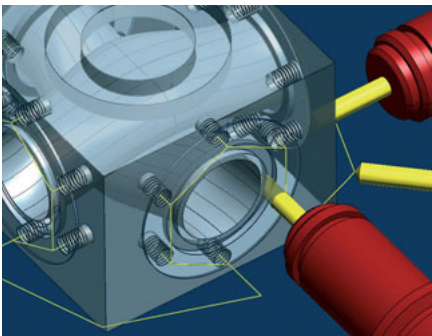
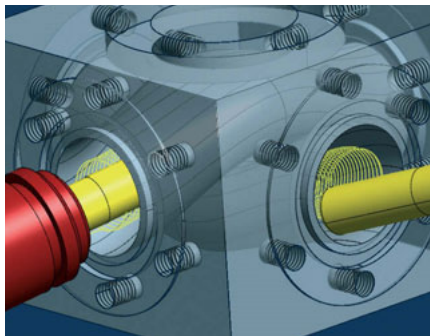


Machine component: milled on a Hermle C30 U

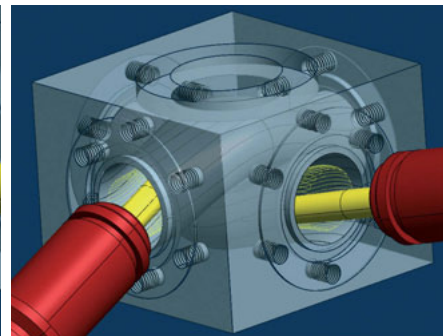
Programming with *hyperMILL*® is flexible, fast and cost-effective as a result of the wide range of 2.5D, 3D and 5-axis strategies and the high-performance feature technology. The optimised programs fully utilise the high-performance capability of modern tools and machines, therefore helping to significantly shorten production times.



5-axis Drilling The identical holes are programmed with various tool angles in just one operation. Thanks to automatic collision avoidance, tool orientation changes are executed close to the part. Unnecessary motion is avoided.



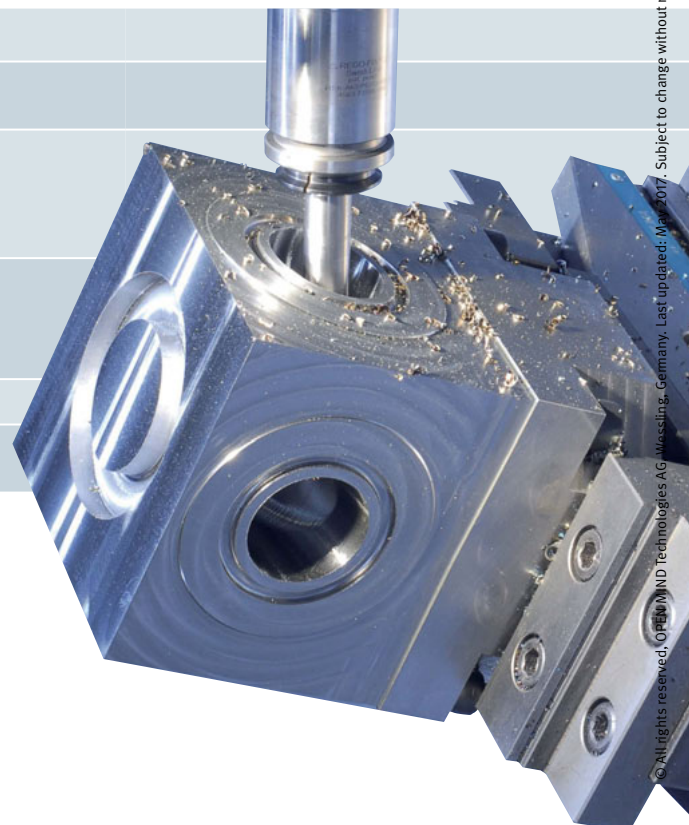
5-axis Tube Pre-machining The tube is pre-machined in a spiral motion with a bullnose endmill. The continuous tool motion ensures fast, low chatter and therefore reliable and precise machining of this undercut geometry.



5-axis Tube Finishing Finishing in the flow direction permits a higher degree of roughness, which in turn, reduces the milling time. If fixed tool orientation is possible for individual paths, then this is automatically calculated.

Machine: C 30 U

Main drive (motor spindle)	RPM range	18.000 min⁻¹ / 15 kW
Machining area	Rapid traverse X/Y/Z Traverse path X/Y/Z	bis 60 m/min 650/600/500 mm
NC swivelling rotary table	Worktable area Swivel range Speed A/C axis Table load	Ø 630 mm +30°/-115° 25/65 min⁻¹ max. 1000 kg
Tool changer	Tools Tool magazine Chip-to-chip time	EMUGE high-speed tools Franken milling tools 32 units approx. 4,5 s
Automation	Controller	HEIDENHAIN iTNC 530
Workpiece	Dimensions Material	118 x 118 * 90 Stainless steel 1.2312





Bullnose endmills, ballmills and Time-S-Cut millers from Frankén and thread cutting tools from EMUGE were also used when machining the workpiece. Thanks to the modified gantry design and tool orientation in three axes, the dynamic Hermle C 30 U facilitates high-performance 5-axis machining.

Process parameters

Job description	Tool	Diameter [mm]	Corner radius [mm]	Number of teeth	Spindle speed [min ⁻¹]	Feedrate [mm/min]	step-over width [mm]	Infeed depth [mm]
		D	R	z	n	v _f	a _e	a _p
Upper side								
Ring groove top	Shank mill	12	1	4	6.000	1.800	12	3
Thread milling	ZBGF M10*1.5	8,75	-	4	5.000	1.000*	-	-
Core hole	NC-VHM drill	8,5	-	2	3.000	660	-	-
Thread milling	GSF M10 1.5xD	M10	-	3	4.660	1.100	-	-
Lateral surfaces								
Flange	Shank mill	12	1	4	6.000	1.800	8	1
Ring groove	Torus cutter	5	1,25	4	16.000	2.500	5	0,15
Core hole	VHM drill	8,5	-	2	3.000	660	-	-
Thread tapping	Tap	M10	-	3	477	50	-	-
Chamfer	90° Chamfer cutter	10	-	4	1.900	3.800	1	1
3D Channel roughing	Time-S-Cut	20	1,5	2	5.000	5.000	-	0,25
5X Channel preliminary finishing	Trace-Cut	16	1,5	2	6.000	5.000	max. 7.0	0,15
5X Channel finishing	ballmill	12	6	2	6.000	2.500	0,3	0,15
Machining time (total)								2'00"

*centre path



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