PRESS RELEASE

Date: 01.09.2018

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OptiMill-Uni-Wave

Larger cutting depths, better chip removal and a higher material removal rate – these were the goals that MAPAL experts set themselves in the development of the new OptiMill-Uni-Wave roughing milling cutter. The result: a universal milling cutter that is particularly cost-effective due to its innovative geometry and high cutting values.

A milling cutter for all occasions

Solid carbide milling cutters for groove milling, trochoidal milling or quick roughing are particularly in demand in the mould and die making as well as general mechanical engineering industries. In addition to process reliability, the main focus is on cost-effectiveness. In order to offer customers in this segment a milling cutter for universal use, which can be applied for the various milling operations and even for ramping up to 10°, MAPAL presented the OptiMill-Uni-Wave last year.
The OptiMill-UniWave can be used for many materials. “Above all, parts made of steel and stainless steel are machined with our milling cutter”, says Ulrich Krenzer, Managing Director of the MAPAL Centre of Competence for solid carbide tools.
The substrate used for the OptiMill-Uni-Wave is a carbide with particularly high ductility and high-temperature stability. A coating based on aluminium chromium nitride provides excellent
wear resistance and gives the tool extreme thermal shock stability.

New geometry for optimum chip formation

“We have developed a new knurl roughing geometry that is optimally matched to the cutting material,” explains Krenzer. This geometry ensures perfect chip formation. Short, tightly rolled chips are produced during machining, which are reliably removed. In addition, the new geometry distributes the cutting forces very favourably, which enables high feeds per tooth. The radial forces are reduced and higher axial forces are applied. The rounding of the cutting edges protects them against chipping and

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therefore are particularly resilient and stable. In addition, the groove profile has been further developed.

Imbalance for very smooth running

But that is not enough. "We took a close look at the entire geometry," Krenzer explains. Both the
unequal spacing of the cutting edges and the unequal pitch of the tool ensure significantly
improved smooth running. "During machining with the redesigned OptiMill-Uni-Wave, we significantly reduced vibrations compared to other roughing milling cutters," says the Managing Director.

The results of the developments can be quantified:

30 percent better tool life in steel*
37 percent higher feed rate at significantly higher cutting depths (up to 2xD)*
15 percent lower spindle drive power due to lower cutting forces**
40 percent lower pull-out forces**
* compared to the OptiMill-Uni-HPC-Rough roughing milling cutter (in 42CrMoS4)
** compared with a milling cutter with straight cutting edges

When machining steel (42CrMoS4), for example, a cutting depth of 24 mm (2xD) can be removed for a tool diameter of 12 mm with a cutting speed of 160 m/min and a feed rate per tooth of 0.045 mm. A material removal rate of 864 cm3 per minute is achieved. The use of the complete cutting edge length – together with the high cutting data and machining rates -guarantees the high cost-effectiveness.

Regrinding for maximum cost-effectiveness

The OptiMill-Uni-Wave can also be reground. "In order to make the best possible use of the

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cost-intensive carbide, we recommend that the milling cutter be reconditioned exclusively by the manufacturer," emphasises Krenzer. To exploit the full potential of the tools, re-grinding and
re-coating to original manufacturer quality are essential. Only then is it possible to guarantee reliable, consistent machining results and machining performance of up to 100 percent compared to a new tool. The risk of a tool fracture and the related risks of damage to the part or machine are minimised.

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Captions:

The new universal milling cutter OptiMill-Uni-Wave is particularly economical – especially due to its innovative geometry and the resulting high cutting data.

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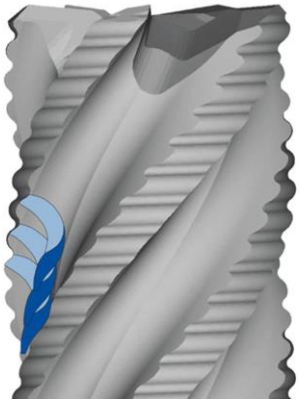
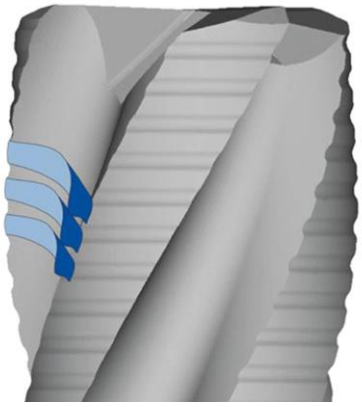


MAPAL has developed a new cord geometry for the OptiMill-Uni-Wave.



In comparison: the cord geometry of the roughing cutter OptiMill-Uni-HPC-Rough.

If published, please send a voucher copy
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