

Metal Cutting

New milling cutters reduce machining times

02.12.2021 | From Alexander Stark

Trochoidal machining requires both dynamics and stability because the tool moves with very high feed rates within the material and then at the maximum feed rate outside the material. Inovatools offers a range of TSC tool solutions that, depending on the application and for deep cavities, achieve shorter machining times than conventional slot milling methods.

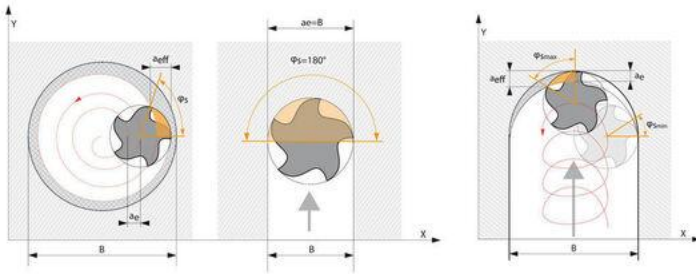


*Examples of powerful TSC milling cutters from Inovatools.
(Source: Inovatools)*

When complex and/or deep contours at high feed rates and low cutting forces have to be created, trochoidal speed cutting (TSC) is the perfect machining strategy. All that is needed to get started is a state-of-the-art programming system like Solid CAM iMachining or Hypermill with Maxx Machining. In addition, the machine kinematics and drives should be capable of withstanding high speeds and dynamic load changes. After all, the special TSC tools need to move along their overlapping, elliptically circling paths across the entire length of the cutting edges through the material to be removed with absolutely perfect timing. So under

high-speed conditions and with drastically reduced vibrations, users can achieve faster machining times and much less wear than with conventional full-slot milling – especially under critical usage conditions or with materials that are difficult to cut.

“Trochoidal speed cutting” (TSC), a dynamic milling method that combines the ideal cutting speed with continuous, elliptical/circular paths calculated on the basis of the average chip thickness, is also known as trochoidal milling or slot milling. Compared with conventional full slot milling, machining with the smallest possible tools is the most efficient and economical strategy thanks to the near-constant cutting force.



TSC milling (right) is a combination of circular milling (left) and full-slot milling (center).

(Source: Inovatools)

plastic.

Examples include the four-edge SC hybrid milling cutters featuring the ultra-smooth Varocon high-performance coating (595...), the steel and Inox HPC and TSC milling cutters and the SC dynamic milling cutters (591...; 597...; 598..., 592...), which come in a variety of designs and dimensions for TSC applications in steel, Inox and GGG.

Due to unique tool designs featuring special, ultra-fine-grain carbide with a balanced mixing ratio, optimised geometries and chip grooves as well as high-performance, application-focused coatings, Inovatools' range of TSC milling solutions ensures high performance, quality and integrity. One benefit of the design of these milling cutters is the optimum chip-breaking characteristics, which result in short, quick-to-break chips. The milling cutter removes all the chips quickly from the contact zone, which also helps to reduce the heat generated during cutting. This protects both the tool and the workpiece. In this way, many Inovatools tools can be operated with high cutting depths, speeds and feeds and with the even distribution of machining forces across the entire length of the cutting edge — and, if necessary, also in dry machining processes.

Inovatools' range of TSC tools also helps to boost performance in the cutting of aluminium, plastic and composite materials like GFK and CFK. The three-edge TSC-SC dynamic milling cutters (2.414...; 2.410...), which are available in diameters of 6 mm to 20 mm, are optimally designed to meet these specialized cutting requirements.

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COMMENTS

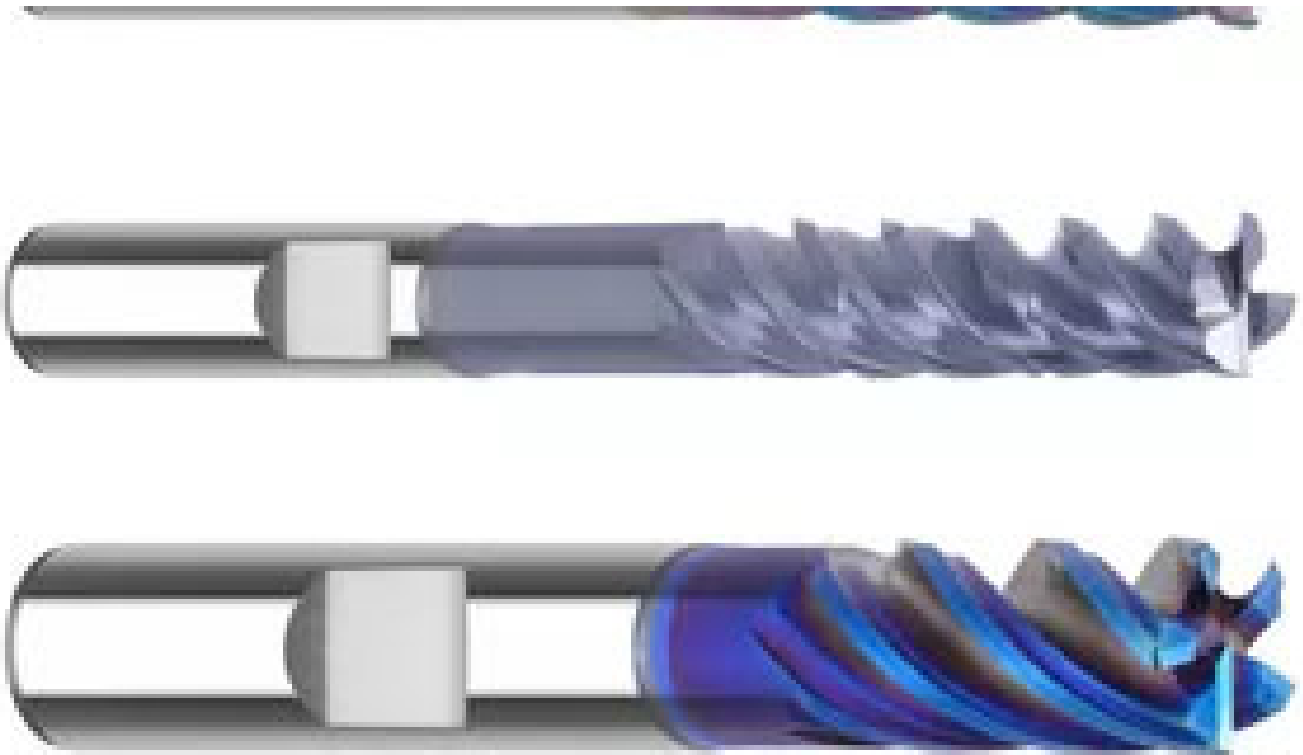
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Monitoring System

Husky includes Advantage+Elite as a standard system feature

Canada — Husky Injection Molding Systems is now including its Advantage+Elite proactive, predictive, transparent monitoring solution as a standard feature on all PET and Closure systems.

CUTTING TOOLS



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