



Roughing at top performance





The ideal material removal rate using *hyper*MAXX[®]...

*hyper*MAXX[®] (high-performance roughing) is a new optional roughing strategy for *hyper*MILL[®]. Milling at the maximum possible feedrate is possible when the milling path is ideally distributed, the milling process has optimal cutting conditions including constant radial load on the cutter and the feedrate is dynamically adjusted to the current cutting conditions.

Machining operations can be handled two to three times faster. And, depending on your requirements, you can decisively reduce machining times, increase tool life and/or reduce stress on machines. In this guide, we would like to provide you with some basic tips on defining the machining parameters. This will help you to exploit the benefits of this strategy as quickly as possible so as to further your company's success.

Optimal machining

Worst-case scenario

... can be specified as follows:

Step 1:

→ Determine the ideal values, for example, for a straight cut along the workpiece side.

Set the ideal values for infeed, feedrate, spindle RPM and cutting tool that you would use for a straight cut along the edge of a block, instead of assuming a worst-case scenario (tool engagement with an excessive amount of material in corners or full cutting) as was previously the case. The cutting depth, spindle RPM and feedrate would have had to be reduced in this situation.

Step 2:

→ Inspect the diameter, length and cut of the tool being used.

The smaller the tool compared to the machining area, the larger the movements making up the tool path are. This means that the machine can achieve the programmed feedrate values more often.
 Deep axial cuts are more efficient, meaning smaller tools can usually mill a pocket in one cut instead of two.

The overall machining time is reduced when the spindle RPM and feedrate for tools with a smaller diameter and more flutes are increased. We recommend using tools with five to seven flutes for harder materials. Tools with three flutes are sufficient for softer materials such as aluminium.



Step 3:

→ Start by using the tool manufacturer's specifica-tions!

• You should initially use the cutting speed specified by the tool manufacturer. You can then increase the cutting speed afterwards.

• Experience has shown that you can triple the feedrate per tooth.

Step 4:

→ Optimise the machining values.

Optimise the values
 depending on how well the
 machining operations are
 handled on the machine.
 Generally, you can increase
 the values.

Step 5:

→ Use the entire cutting length.

• Customers have discovered that the best results for harder materials and those that are more difficult to machine are achieved with a larger axial cutting length combined with a horizontal infeed of 10 to 20 per cent of the tool diameter.
Softer materials such as aluminium can be best machined using a horizontal infeed of approximately 45 per cent of the tool diameter.

Step 6:

 → Change the parameters depending on the type of optimisation you require.
 If your objective is to extend tool life, the machining speed can be reduced. This also applies to the machine load.

> *hyper*MAXX[®] automatically adjusts the feedrate to suit the cutting conditions.







*hyper*MAXX[®] is based on VoluMILL[™], a product licensed by OPEN MIND Technologies AG. VoluMILL[™] is a product of Celeritive Technologies, Inc. Values based on customer experience can be found at www.celeritive.com/feeds-speeds.htm.

Headquarters	OPEN MIND Technologies AG Argelsrieder Feld 5 • 82234 Wessling • Germany Phone: +49 8153 933-500 E-mail: Info.Europe@openmind-tech.com Support.Europe@openmind-tech.com	
UK	OPEN MIND Technologies UK Ltd. Units 1 and 2 • Bicester Business Centre Telford Road • Bicester • Oxfordshire OX26 4LD • UK Phone: +44 1869 290003 E-mail: Info.UK@openmind-tech.com	
USA	OPEN MIND Technologies USA, Inc. 1492 Highland Avenue, Unit 3 • Needham MA 02492 • USA Phone: +1 888 516-1232 E-mail: Info.Americas@openmind-tech.com	A
Asia Pacific	OPEN MIND Technologies Asia Pacific Pte. Ltd. 33 Ubi Avenue 3 • #o6-32 Vertex (Tower B) Singapore 408868 • Singapore Phone: +65 6742 95-56 E-mail: Info.Asia@openmind-tech.com	hyperMAXX
China	OPEN MIND Technologies China Co. Ltd. Suite 1608 • Zhong Rong International Plaza No. 1088 South Pudong Road Shanghai 200120 • China Phone: +86 21 588765-72 E-mail: Info.China@openmind-tech.com	
India	OPEN MIND CADCAM Technologies India Pvt. Ltd. 3C-201, 2 nd Floor • 2 nd Main Road • Kasturi Nagar Bangalore 560 043 • Karnataka • India Phone: +91 80 3232 4647 E-mail: Info.India@openmind-tech.com	Celeritive Technologies, Inc. 28248 N. Tatum Blvd. • B-1, Suite 148 Cave Creek, Arizona 85331 Phone: +1-888-253 6701 Fax: +1-805-222 3055
Japan	OPEN MIND Technologies Japan K.K. Misumi Bldg. 3F • 1-17-18, Kichijojihigashicho Musashino-shi • Tokyo 180-0002 • Japan Phone: +81 422 23-5305 E-mail: info.jp@openmind-tech.co.jp	www.openmind-tech.com
Taiwan	OPEN MIND Technologies Taiwan Inc. 3F, No. 153, Hwan-Pei Road • Chungli City 320 Taiwan, R.O.C. Phone: +886 3 46131-25 E-mail: Info.Taiwan@openmind-tech.com	OPEN MIND Technologies AG is represented worldwide with own subsidiaries and through competent partners and is a member of the Mensch und Maschine technology group, www.mum.de

