



hyperMILL[®]

5Axis Machining

**Milling of impellers
and blisks made easy**

IMPELLER / BLISK

 **OPEN MIND**
THE CAM FORCE



The *hyperMILL*® multiblade kit – as simple as a standard application

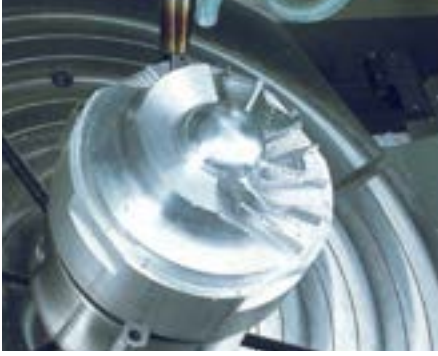
With the multiblade kit, the machining of impellers and blisks has never been simpler. Integrated automated functions reduce the number of parameters needing to be entered to a minimum. The straightforward, graphics-based user interface is easy to learn. Moreover, dependable collision checking and collision avoidance guarantee the highest possible process safety at each stage of machining.



Complete: With this kit, all strategies required for machining multi-bladed parts are easily defined. In addition to general applications such as roughing, hub finishing and blade finishing, the machining strategies also include more specialised applications.

Straightforward: Automated functions keep the number of parameters that need to be defined to a minimum. The graphics-based user interface illustrates the functions of the parameters very clearly. This means that programming is no longer the exclusive domain of experienced specialists.

Multi-faceted: There are no CAD data restrictions. CAD integration in a full-scale CAM product means that general machining strategies can be also be applied



without the need of any second CAM product. Furthermore, multiblade cycles permit the use of conical tools, barrel, bullnose etc.

Fast: The advantages of *hyperMILL*[®] feature technology apply throughout when machining multi-bladed parts. Complete machining sequences that have already been run successfully for similar jobs with the same material can be imported via drag-and-drop. Subsequent changes in design or programming of similar



versions require only a few clicks of the mouse.

Process-safety: The use of robust tools allows machining with high infeed parameters and feedrates. Proven *hyperMILL*[®] collision checking guarantees a high level of process safety. The operator has a choice between two strategies: Collision avoidance around the Z-axis or perpendicular to the camberline, a curve between two blades. The optimum tool orientation provides room for utilizing thicker tools.

Multiblade roughing: In the roughing strategie, the blades are machined in a continual process starting from pre-machined stock or a semi-finished part. No time-consuming simulation of the removal of material is required.

Multiblade plunge roughing: If long, slender tools that use low cutting feedrates are required to fit in the available pocket, plunge roughing may be a suitable alternative. This always allows the most rigid tool to be employed to finish the surface partially in accordance with the geometry. This allows very efficient machining.

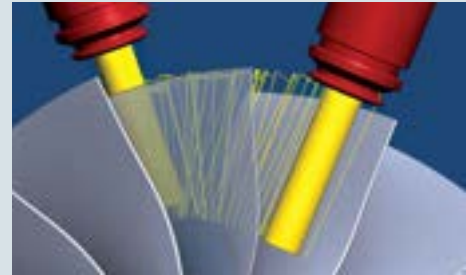
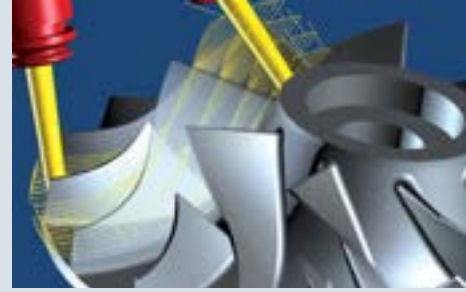
Multiblade hub finishing: The tool path profile can specify the hub's aerodynamic behaviour and visual result to suit individual customer requirements. This machining strategy can also be used for rest material machining close to the blade

Multiblade point milling: The strategie „Point Milling“ is an HSC strategy which enables superb milling of all curved blades. The blades are machined in a continual spiralling movement with point contact from the tool.

Multiblade flank milling: Where the blade surfaces allow for precise swarf cut machining, the strategie „Flank Milling“ can be used. This reduces machining time, as *hyperMILL*[®] will automatically calculate the optimal tool orientation.

Multiblade edge milling: This machining strategy is used whenever leading and trailing edges cannot be generated together with the blade surfaces.

Multiblade fillet milling: Fillet milling is the ideal strategy when the radii between the hub and the blade surfaces vary. This strategie also facilitates rest material machining – the basic requirement for choosing a suitable blade and hub machining tool.



- 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 Park
Telford Road • Bicester • Oxfordshire OX26 4LN • 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
- Brazil** OPEN MIND Tecnologia Brasil LTDA
Av. Andromeda, 885 SL2021
06473-000 • Alphaville Empresarial
Barueri • Sao Paulo • Brasil
Phone: +55 11 2424 8580
E-mail: Info.Brazil@openmind-tech.com
- Asia Pacific** OPEN MIND Technologies Asia Pacific Pte. Ltd.
33 Ubi Avenue 3 #06-32 • Vertex (Tower B)
Singapore 408868 • Singapore
Phone: +65 6742 95-56
E-mail: Info.Asia@openmind-tech.com
- 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.
#369/4, 1st Floor • 2nd Cross • 1st 'B' Main Road
7th Block, Jayanagar (W) Bangalore – 560070
Karnataka • India
Phone: +91 80 2676 6999
E-mail: Info.India@openmind-tech.com
- 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
- Taiwan** OPEN MIND Technologies Taiwan Inc.
Rm. F, 4F., No.1, Yuandong Rd., Banqiao Dist.
New Taipei City 22063 • Taiwan
Phone: +886 2 2957-6898
E-mail: Info.Taiwan@openmind-tech.com

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