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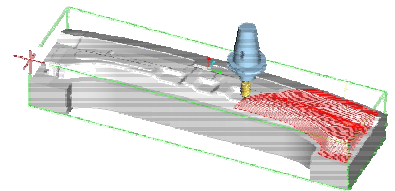
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PTC Product Focus

Prismatic and Multi-Surface Milling

Product Description: Pro/ENGINEER Prismatic and Multi-surface Milling expands upon the module formerly known as Expert Machinist to provide NC process planners and programmers with all the tools necessary to streamline the creation of 2½-3 axis milling programs for milling both prismatic and multi-surface features. It is the ideal solution for milling needs from prototyping to production milling to tool and die machining. Not only does it provide a CAD/CAM tool for the price of many CAM-only tools, but it also lets you seamlessly use your Pro/ENGINEER product data – a true art to part solution.



Capabilities: Prismatic and Multi-surface Milling provides the ability to create feature-based milling sequences for prismatic (2½ axis) features and full 3-axis multi-surface milling tool paths for roughing, re-roughing, local milling, surface milling, and pencil tracing, including 4- and 5-axis positioning. The entire machining process can be defined, including fixture setup, tool path definition, computation, and verification (both cutter path and material removal simulation), NC code generation, and NC process documentation. Machining practices can be captured and re-used to streamline and standardize best-practice methodologies. Custom tool path editing is available to give unmatched fine-tuning capability when desired. With powerful combinations of macros, user-defined features, and custom defaults, the NC programming environment can be customized to suit your needs.

Benefits: The many time and money saving benefits are not limited to:

- A single programming interface for all machining processes means a shorter learning curve
- The integrated CAD/CAM environment eliminates errors and wasted time from data translation
- NC tool paths adapt seamlessly to design changes resulting in reduced time to market
- Reduced cutter wear due to efficient tool path strategies – especially when using the built-in high-speed machining strategies
- Programming directly on the solid model means high-quality, consistent, accurate tool paths, minimizing gouging, hand-finishing, and expensive rework
- Bi-directional associativity means full confidence that the upstream design and downstream programming are always consistent

Tips of the Week

Setting up a Cutting Tools Feeds & Speeds Database

Summary: A cutting tools database can be used in Pro/NC to automatically load feed, speed, and depth of cut information for a given milling cutter in a given material and cutting condition. Not only does this save time by loading the parameters automatically, but it also helps reduce errors and ensure consistent practice throughout the shop, especially for new or inexperienced programmers. This technique describes how to set up and use such a database. It should be noted that this is not the same as the machinability database, which uses a table-based approach to the cutting condition. This technique works in both the Pro/E 2001 and Pro/E Wildfire releases.

First Step: Create the folder structure

- 1) In a Windows Explorer window, create a new folder (with any name (no spaces!) – in this example we will call it “toolcrib”) where you wish to store your tools.
- 2) In that folder, create a folder named “materials” (without quotes) – this name is a requirement.
- 3) In the materials folder, create a folder for each material (bronze, copper, Play-Doh, etc.). See Figure 1.
- 4) Start Pro/E
- 5) Pick Utilities\Options [Tools\Options in Pro/E Wildfire] and add pro_mf_tprm_dir to your config.pro, supplying the full path to the toolcrib folder as its value. Save the config.pro.

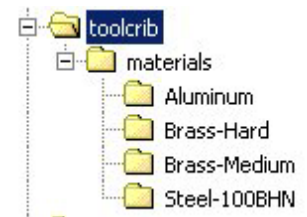


Figure 1: Folders

Second Step: Create the cutting tools

- 1) Make sure that pro_mf_tprm_dir points to the toolcrib folder.
- 2) Create a new temporary manufacturing model with a mill workcell so that you can access the Tools Setup dialog box.
- 3) Begin creating a new cutting tool; give it a name, dimensions, number of teeth, comment, etc.
- 4) In the Feeds_Speeds tab of the dialog:
 - a) Select a stock material (the materials you defined as folders will be available in the pulldown list)
 - b) Select an Application (i.e., general cutting condition; Roughing or Finishing)
 - c) Supply speed, feed, axial depth, and radial depth data. See Figure 2.
 - d) Repeat step c for the other application
 - e) Save the tool
- 5) Repeat steps a-e for each material

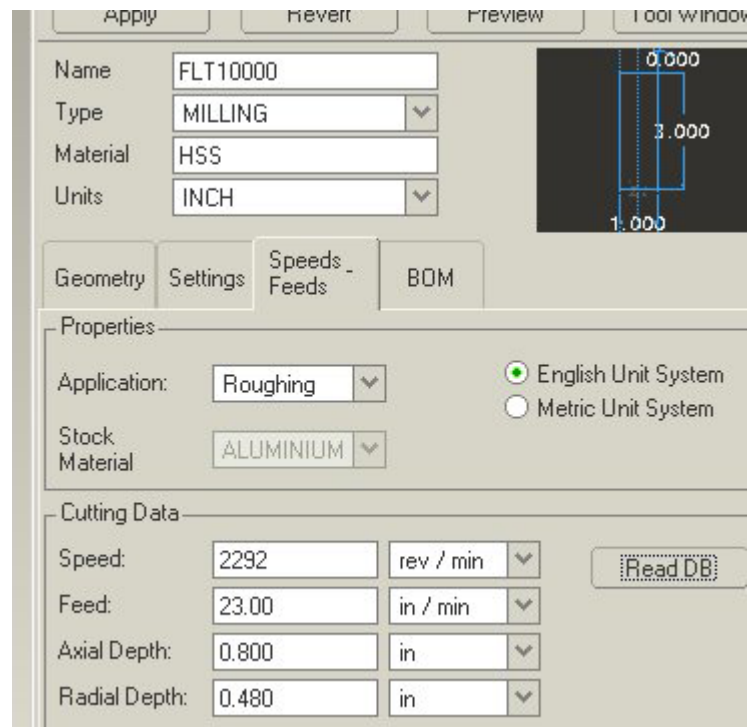


Figure 2: The Tools Setup dialog

- 6) Perform steps 3-5 for each new tool (note: new tools can be added at any time during any Pro/NC session where pro_mf_tprm_dir points to your toolcrib folder).

How to use the database:

When you create an operation in Pro/NC, be sure to select the Stock Material from the pull-down in the Operation Setup dialog. There are a couple ways to access the parameters:

Method 1: In the parameter tree in an NC sequence, select Edit, Copy From Tool and either All, Spindle, Feed, or Depth, and either Roughing or Finishing. The speed/feed/cut depth parameters will be read from the database for the workpiece material and current tool. See Figure 3.

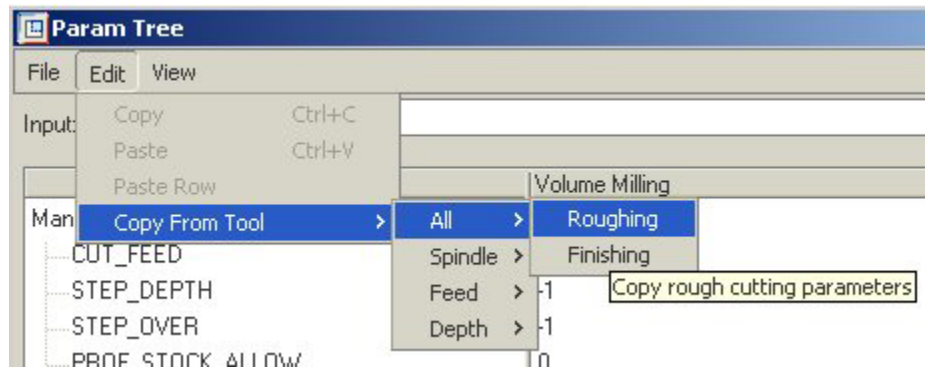


Figure 3: Parameter settings

Method 2: Picking Edit, Copy From Tool can get tedious, so you can use relations to automate it. In the NC sequence parameters or in the site, enter the symbolic value rather than a number for each applicable parameter. The parameters and the symbolic names to use are given in the following table:

Cutting Data	Parameter value for Roughing	Parameter value for Finishing
SPINDLE_SPEED in revs per minute	TOOL_ROUGH_SPINDLE_RPM	TOOL_FINISH_SPINDLE_RPM
SPINDLE_SPEED in length units per minute	TOOL_ROUGH_SURFACE_SPEED	TOOL_FINISH_SURFACE_SPEED
CUT_FEED per minute, e.g. IPM	TOOL_ROUGH_FEED_RATE	TOOL_FINISH_FEED_RATE
CUT_FEED per tooth, e.g. IPR	TOOL_ROUGH_FEED_PER_UNIT	TOOL_FINISH_FEED_PER_UNIT
Axial depth (STEP_DEPTH)	TOOL_ROUGH_AXIAL_DEPTH	TOOL_FINISH_AXIAL_DEPTH
Radial depth (STEP_OVER)	TOOL_ROUGH_RADIAL_DEPTH	TOOL_FINISH_RADIAL_DEPTH

For example, if “TOOL_ROUGH_FEED_RATE” (no quotes) is entered as the value of the NC sequence parameter CUT_FEED, (and if CUT_UNITS is set to a length per minute value such as IPR) then Pro/NC will read the value for “Feed” from the cutting tool in use, based upon the workpiece material defined in the operation. This can be done in sequence parameter files and in site files.

Announcements

Timeout Issue

[Timeout Issue](#)

Click on the above link to visit a page that will be updated regularly with new information about the "time-out" issue.

Also feel free to review an [industry Analyst Commentary](#) on the timeout issue and see a [copy of the communication](#) that was sent to our customers.

Hands-On Workshops

[Hands-On Workshops](#)

Experience and receive the next generation of CAD - Pro/ENGINEER Wildfire. During these workshops you can try it yourself to experience this breakthrough in simple, powerful, and connected in CAD software.

Tips & Techniques Webcasts

[Tips & Techniques Webcasts](#)

These regularly scheduled 60-minute technical programs are designed and facilitated by PTC experts to provide you, with a step-by-step process to help you optimize your knowledge and skills of PTC Solutions

Special Hardware offers for customers updating to Pro/ENGINEER Wildfire

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E-PROFILES IS HERE!!

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Please take a few minutes to check out this new web site. We don't think you will be disappointed.

<http://profilesmagazine.com/>

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Upcoming Events & Training Class Schedules

Upcoming, 2003 Your local Pro/Engineer User Groups
<http://www.prouser.org/rugs/>

June 13 - 16, 2004 Nashville, TN
Pro/USER International Conference
<http://www.prouser.org/>

Please visit the [PTC Education Services](#) website for the latest training information including course descriptions, schedules, locations, and pricing.

- Attend a course at any PTC Center and receive a **free** copy of Pro/E 2001 Student Edition!

<http://www.ptc.com/services/edserv/index.htm>

PTC

Note: This PTC E-Newsletter will continue to be used for the following:

- 1) Inform you on events related to PTC products (user groups, conferences, training schedules, etc.)
- 2) Educate you on products that are available at PTC
- 3) Tips & Techniques using PTC Products

Note: These messages are compiled in the local PTC office and will be distributed via e-mail.

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