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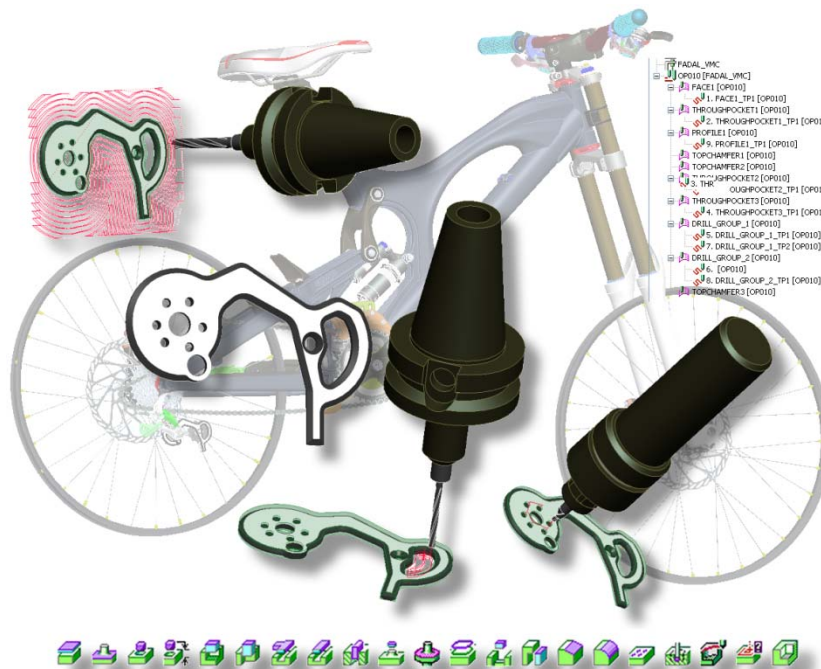
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PTC Product Focus

CAM Lite – Machining in Pro/ENGINEER Foundation

Did you know that feature-based milling is now included as part of every seat of Pro/ENGINEER Foundation? As of Wildfire 4.0 Build M070, you now have the ability to create complex milling toolpaths without any additional options.

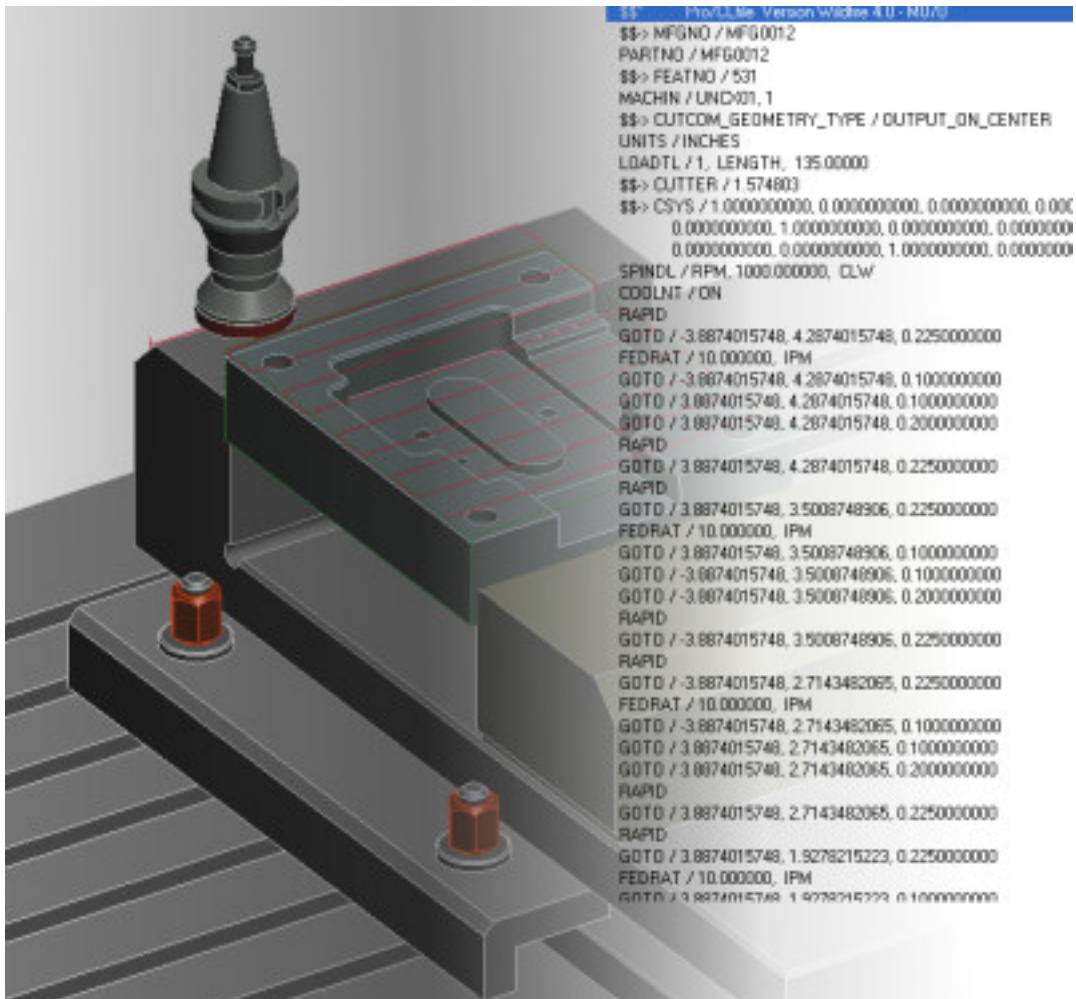


CAM Lite is based on Expert Machinist, a Pro/ENGINEER feature based NC programming system for 2^{1/2} axis production milling of discrete machined parts. 4 and 5 axis positioning is also supported, although each individual tool path is limited to 2^{1/2} axis motions.

CAM Lite is structured to emulate the natural thought process of an NC programmer:

- Create NC model to determine what part is to be machined and what material it will be machined from.
- Set-up the complete operation including selection of the CNC machine (Workcell) and establishment of the program zero.
- Create machining features based on the NC model and the operation setup.
- Create toolpaths for these features, gather information from previous steps, and capture your machining preferences for each feature-type. Tool path creation requires little interaction and is virtually automatic.
- Create CL data that can be used by a post-processor to generate the NC codes required to drive the CNC machine.

CAM Lite is based on shop floor machining and leverage processes, which is the information contained in the 3D Model to automate programming process for parts. The users maintain complete control over the machining process.



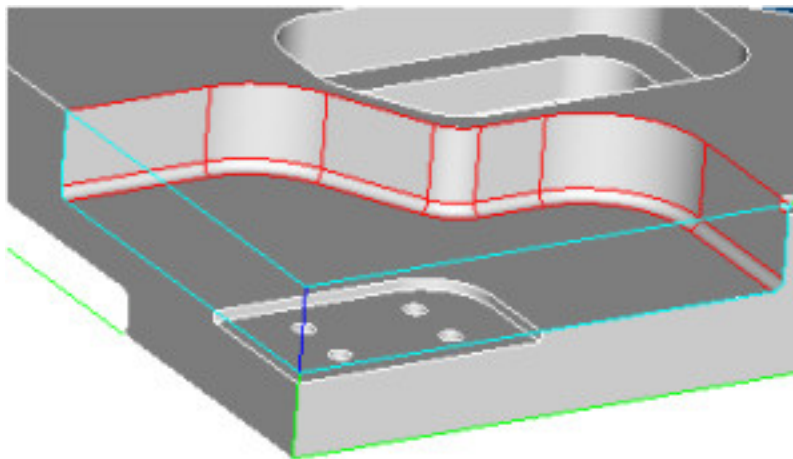
Machining Features

A machining feature defines a closed volume that represents the material that must be removed to produce the finished feature of the part. It consists of faces derived from the design model (Hard Walls), and work piece model (Soft Walls), with respect to the machine orientation and any adjacent features.



It is important to note that tool path information is NOT automatically assigned to a feature. Tool paths are defined independently, providing full control over the machining of the features. You may be able to machine some features with a single tool path. Others might require 2 or more tool paths. Only you can make these decisions.

The order of feature definition and the types of features used, will establish the sequence of material removal. Doing this correctly, is the most important step in determining the overall efficiency of the part program. The way each individual feature is actually machined is determined at the tool path level.

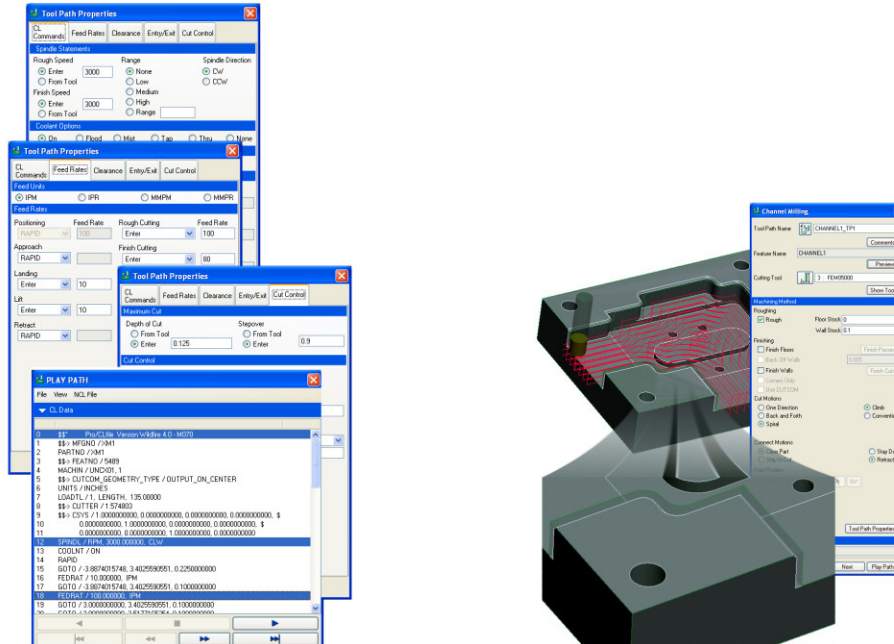


The concept of a machining feature is a simple. If you subtract the design model from the workpiece model, the difference is the total volume of material that must be machined away. But that volume in and of itself is very unwieldy. In all but simple cases, any attempt to machine that volume directly will result in disorder.

Machining features provide the NC programmer an easy, efficient, intuitive method of breaking down the volume into smaller, more manageable volumes that have machining relevance. By defining features such as faces, pocket, slots, channels, etc., the NC programmer re-classifies the material into smaller volumes. Since these features are all based on shop-floor machining methodologies, they are very recognizable and therefore more easily and efficiently machined. There are 18 features, each with its own unique characteristic and purpose based on a combination of hard walls, soft walls and floor parts.

Creating and Outputting Toolpaths

Once machining features are created, any number of toolpaths can be created using each feature. Toolpaths are created using industry standard techniques and have considerable options for creating exactly the toolpaths needed.



CAM-Lite does not include post-processing and provides only an APT based CL data output. This standard format can be used with commercial post-processor or with GPOST included in full Pro/ENGINEER NC Licenses. The file extension for CL data is *.ncl*

More Information on CAM Lite

To find out more about Pro/ENGINEER's CAM Lite visit our Website.

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PTC Product Focus

NetRegulus Quality for Nonconformances, Complaints, and CAPA's

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Tips of the Month

Manufacturing Tutorials Available for Download

- Ever wished you could download a presentation showing what is new for manufacturing in Wildfire 4.0?
- Ever wished you had a tutorial to help you learn NC/Sheetmetal?
- Ever wished you had a tutorial showing various options for multi-axis machining?

All these and more are available on the Advanced Manufacturing Training Project. This public project is used to store tutorials, tips and techniques presentations, and update information about the complete suite of manufacturing products inside of Pro/ENGINEER.

The screenshot displays the Windchill web interface. At the top, the 'Windchill' logo is visible on the left, and navigation links for 'Event Manager', 'Clipboard', 'Help', and 'E-mail' are on the right. Below the logo, a breadcrumb trail shows 'Home > Program > Product > Project > Change > Library'. A secondary menu contains 'Projects', 'Details', 'Folders', 'Workspaces', 'Network', 'Plan', 'Packages', 'Team', 'Resources', 'Meetings', 'Assignments', 'Discussions', 'Reports', and 'Templates'. The current page title is 'Project: Advanced Manufacturing Training | Folder: Miscellaneous tutorials'. The main content area is titled 'Miscellaneous tutorials' and shows a list of folders on the left and a 'Folder Contents' table on the right. The folder list includes 'Holemaking with prnc', 'Machine Simulation with Pro/E', 'Miscellaneous', 'Miscellaneous tutorials' (selected), 'Mold & Cast', 'Multi-axis milling', 'Multi-axis milling v2', 'NC Sheetmetal', 'Old tutorials', 'PDX', 'protoollmaker', 'PTC_education_program', 'Utilities', 'Wildfire', 'Wildfire 2.0', and 'Wildfire 3.0'. The 'Folder Contents' table lists five objects:

	Name	Number			
<input type="checkbox"/>	using_solid_tool_with_prnc	0000133458			
<input type="checkbox"/>	mfg_with_start_part	0000133456			
<input type="checkbox"/>	machining_mold_core	0000133453			
<input checked="" type="checkbox"/>	creating_turning_seq	0000133451			
<input type="checkbox"/>	CAM Lite Tutorial	0001651599			

The project content is supported by PTC Product Management and access to the project is open to any and all Pro/ENGINEER manufacturing users. Once you have been invited, access is done through your normal ptc.com support login ID and password.

If you would like to join this project and access any of the information, simply drop an email request to dgoodwin@ptc.com and you will receive an invitation and the URL to access the site.

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Tips of the Month

Access to Product Development Data is Only a Click Away

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Announcements

PTC Tips & Techniques Newsletter Archives

Did you miss an issue? Can't find that awesome technique you read about? Fear not, you can click on the link below and go through our Customer PTC E-Newsletter archives.

[Customer Care Zone](#)

PTC Tips & Techniques Webcasts: Work Smarter. Not Harder.

Click below to see regularly scheduled Tips & Techniques technical Webcasts that are designed to provide you with the most popular time-saving tricks that Pro/ENGINEER users of all skill levels will find useful. Get more out of your maintenance dollars!

[Tips & Techniques: Work Smarter Not Harder!](#)

Special Hardware offers for PTC Customers

- <http://www.hp.com/go/ptc>
- <http://www.hp.com/go/ptcworkstation>

PTC Sponsored Events

- <http://www.ptc.com/company/news/events/index.htm>

Explore what is new with the Pro/ENGINEER Wildfire family!

<http://www.ptc.com/go/showcase>

Connect with PTC using the latest Social Networking resources:

[facebook](#)



[Linked in](#)

[You Tube](#)

Also visit <http://social-product-development.blogspot.com/>

E-PROFILES IS HERE!!

We have been eagerly anticipating the debut of the new electronic version of Profiles Magazine and now it is here! This new web site will supplement the print edition of the magazine and will provide new useful features not feasible with paper media. e-Profiles will provide you with 24x7, worldwide access to key information previously available exclusively in the print version. "Tips & Tricks," a popular feature pioneered by Pro/USER, has also moved to the web and will be expanded as the site matures.

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, 2009 Your local Pro/Engineer User Groups
<http://www.ptcuser.org/rugs/>

June 7 – 10, 2009 Orlando, FL USA
PTC/USER World Event
<http://www.ptcuser.org/>

Events

Our seminars and conferences seek to provide you with relevant information regarding product development trends in your industry as well as innovative software learning experiences. Think of them as a constructive day off where you can share experiences and swap ideas with your peers.

If you can't manage to get away, we'll bring it to you. Check back often for regularly scheduled live webcast events.

[You're Invited to Attend...](#)

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/ENGINEER Wildfire Student Edition!

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

Live Instructor-Lead Virtual PTC Training Courses

Virtual Classrooms provide interactive learning with a trained PTC instructor in convenient and manageable sessions that last approximately 4 hours over a series of days. It's easy to join a class right from your desk using a phone or voice-over IP technology.

Sessions are performed just like a traditional ILT (including interactive exercises where you and the instructor can work on lab exercises together) and feature some of our most popular ILT courses. These sessions cover the exact same material as the traditional ILT in-center courses. Also look for some of our most frequently requested mini-topics delivered in the same format that are only an hour - two hours in duration.

If you have any questions about these sessions or would like to see getting other courses, not on this list, on the schedule please feel free to contact me for more details. They are a great way to bring training to you without you having to worry about location or being out from work for long stretches.

You can register for these sessions just as you would for any normal ILT class either by:

1. calling order admin at <http://www.ptc.com/services/edserv/training/registra.htm> or
2. you can go to PTC University directly at <http://www.ptc.com/learning> and submit a registration request directly. All you have to do is search the catalog by typing in “virtual” in the search field and you will see a listing.

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 solutions 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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