



What's New in ESPRIT 2014

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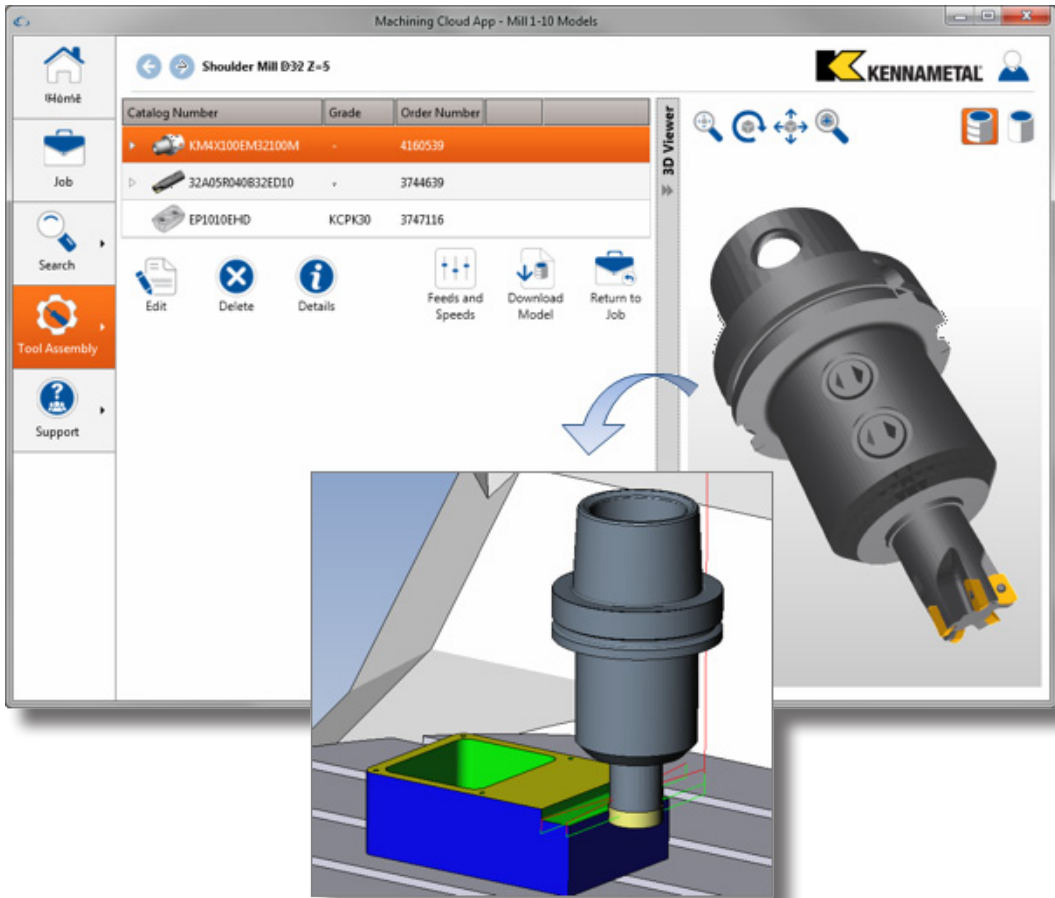
Printed in the United States of America

MachiningCloud Connection	4
Turning Feature Recognition	10
Excel Report Generator	13
eMerge	16
Measure Plus	20
Solid Properties	22
Post Test Automation	24
Advanced Operation Sorting	27
Renumber Tools by Operation	28
Tool Editor.....	29
Steady Rest Editor.....	30
Tombstone Manager	31
Jaw Spinner.....	32
Station Solid Simulation	33
Part Configuration Manager	34
Turning Work Coordinates	35
Custom Setting Caption Manager	36

MachiningCloud Connection

Connect to the Machining Cloud with MachiningCloud Connection. Select, define, and assemble virtual cutting tools in the Machining Cloud App, export your tools using the ESPRIT option and then import your Machining Cloud job in ESPRIT 2014.

Features created inside ESPRIT can also be exported to the Machining Cloud App to generate a list of recommended cutting tools.

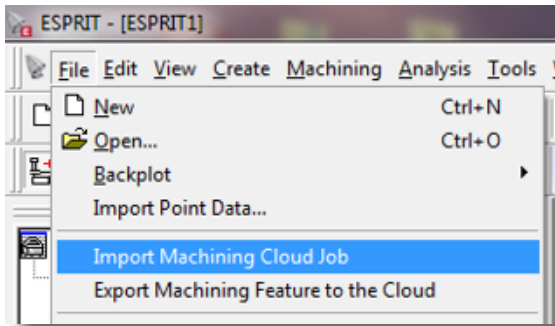


The Value of MachiningCloud Connection

- Simplify the selection of cutting tools
- Get a list of recommended cutting tools based on machining features and machining sequences
- Simulate with accurate 3D models of tool components and assemblies

How it works

Import and export commands are available on the File menu.



Download the Machining Cloud App to your tablet or desktop computer. Then select, define, and assemble your tools in the Machining Cloud App.

Figure 1: Tool Assembly in the Machining Cloud

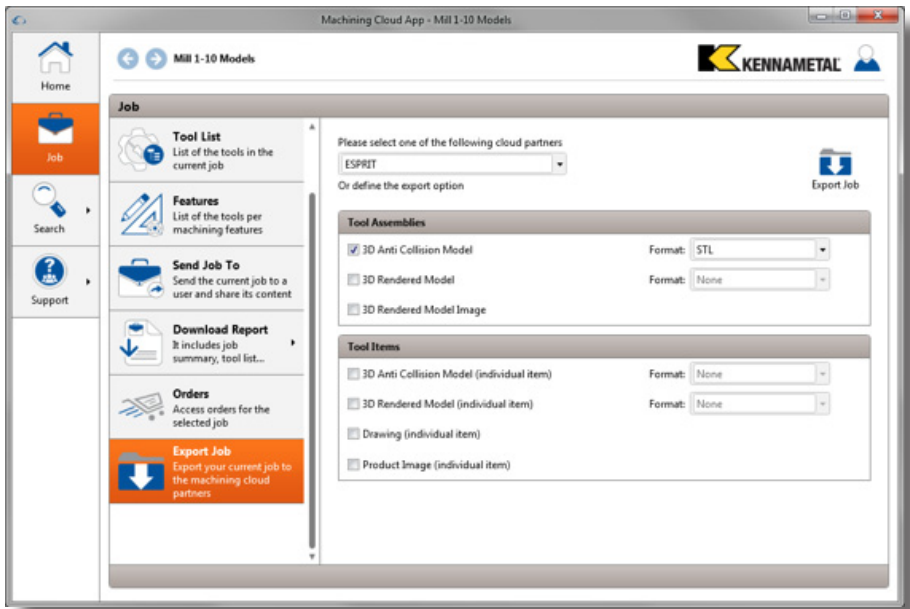


Supported tools:

- Milling tools (solid and indexable)
- Hole making tools (reamer, standard drills, threading, reamers)
- Rotating holders

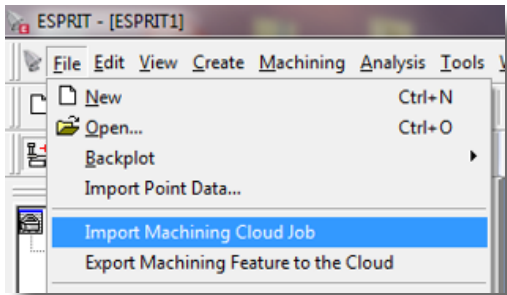
Export your Machining Cloud Job using the ESPRIT option. Export requires the desktop version of the Machining Cloud App.

Figure 2: Export Job to ESPRIT



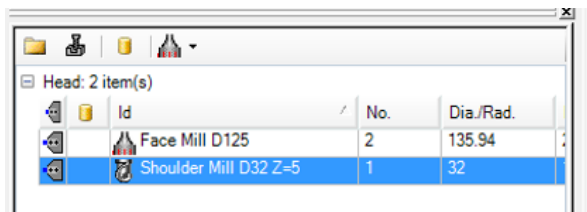
Import your Machining Cloud Job in ESPRIT 2014.

Figure 3: Import Machining Cloud Job



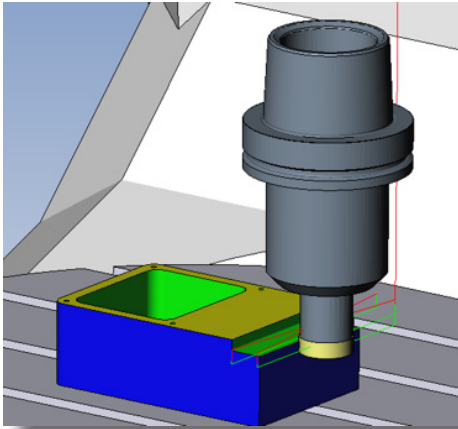
The tools are imported and created in ESPRIT.

Figure 4: Tool data in ESPRIT



Simulation will use accurate simulation models from the Machining Cloud for collision detection.

Figure 5: Simulation in ESPRIT



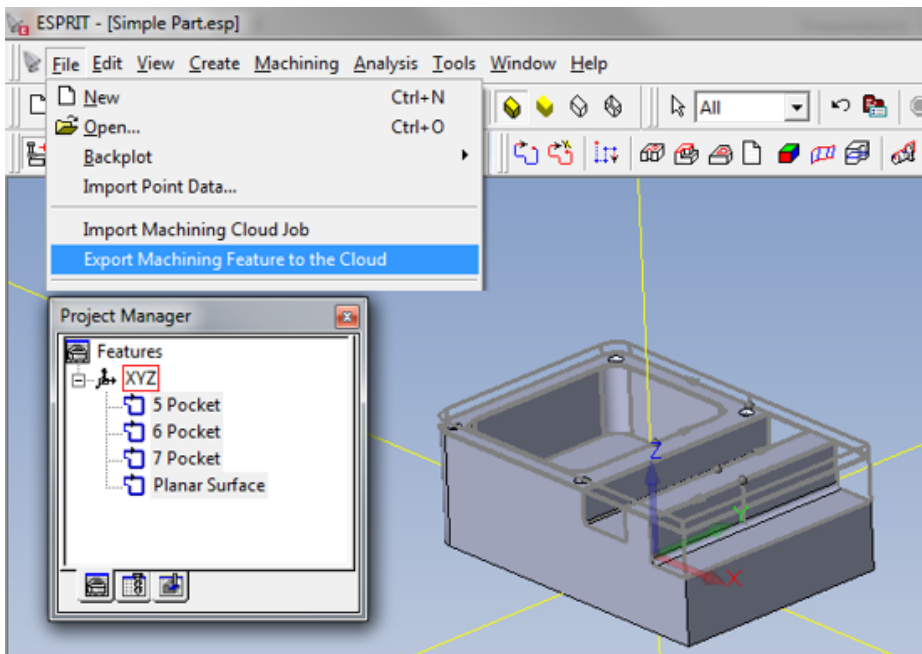
Save time looking for the right tool

In ESPRIT, select the features you want to machine and export them to the Machining Cloud App.

Supported features:

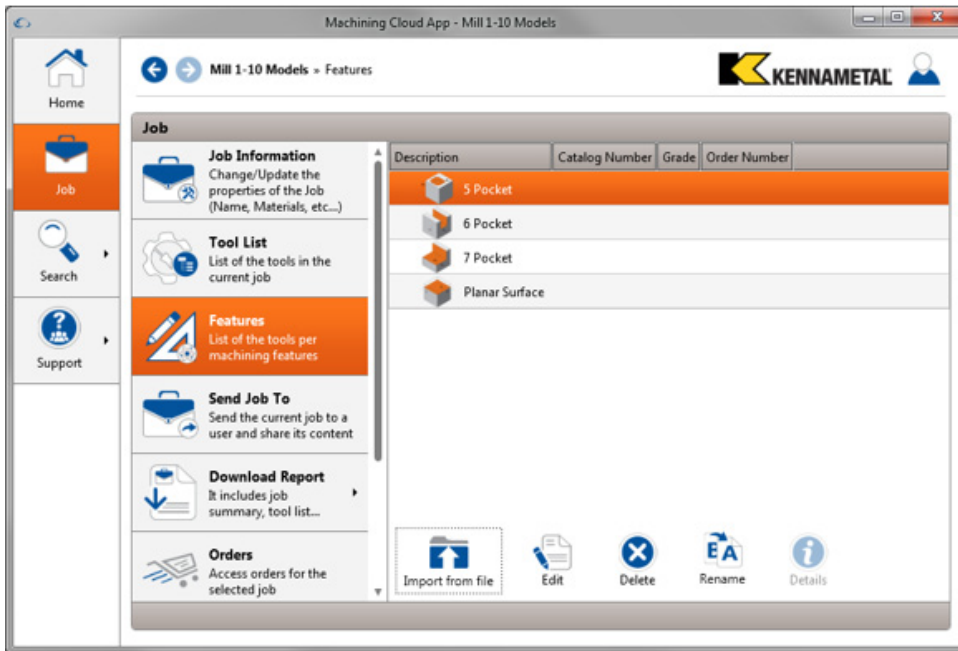
- Milling (Pocket, Shoulder, Slot, Surface, 2D Profile, chamfer)
- Hole (simple, counterbore, countersink)

Figure 6: Export Machining Feature to the Cloud



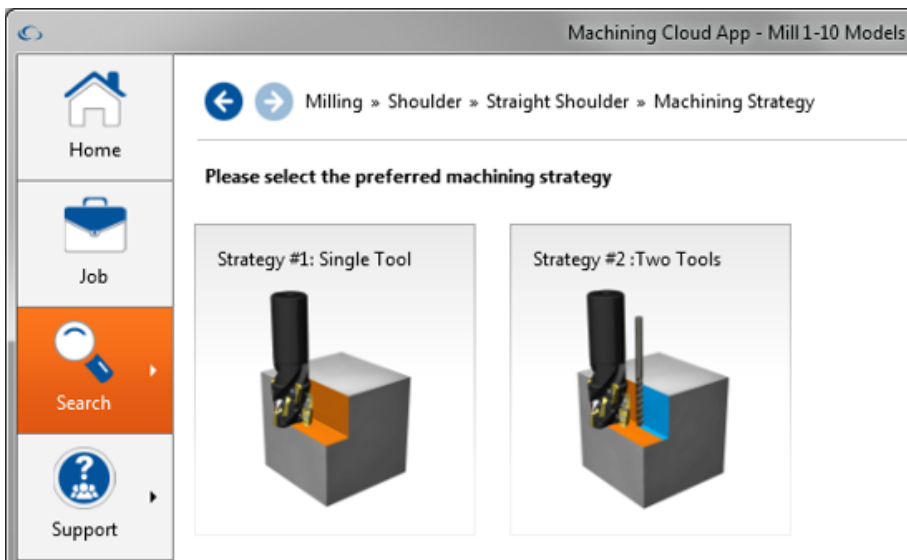
Import the machining features in the Machining Cloud App (desktop or windows tablets only). If necessary, update or modify the feature properties that were imported automatically.

Figure 7: Import Features



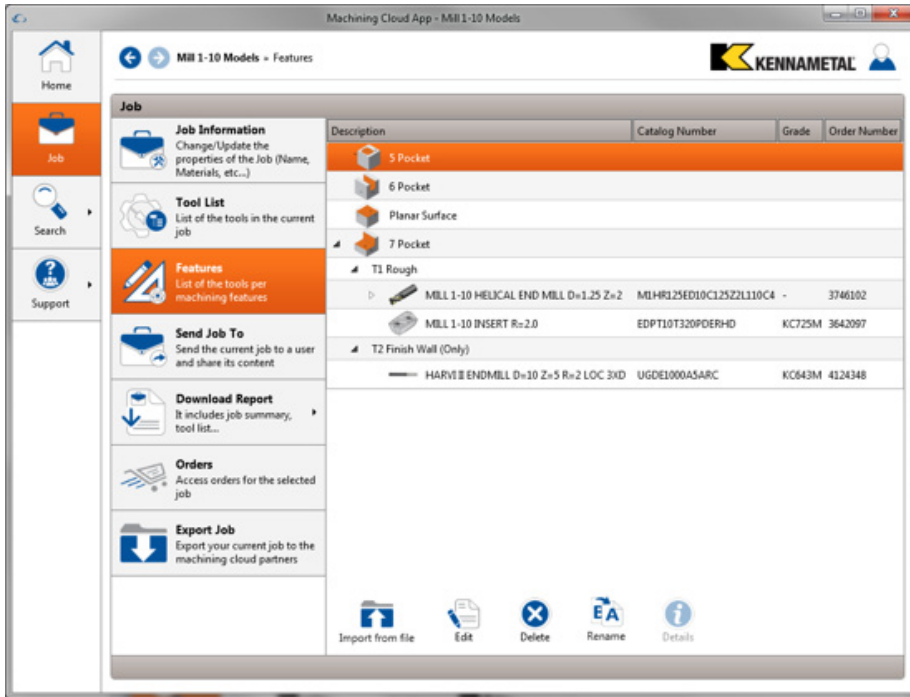
Choose your preferred machining strategy.

Figure 8: Machining strategy



Select either the recommended tool or one of the other alternative choices and add them to the job.

Figure 9: List of recommended tools

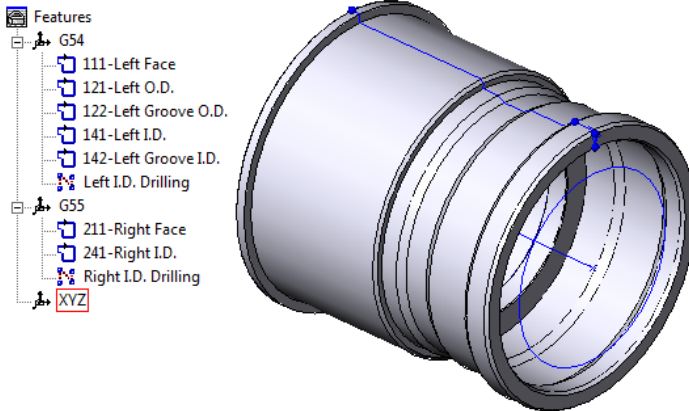


Repeat the previous steps to add holders and then export the job to ESPRIT.

Turning Feature Recognition

Generate features for turning operations automatically on both the left and right ends of a selected solid model or part profile. Features are assigned to one of two work coordinates that are created automatically.

Chains are created along the OD, ID, grooves, and faces. Ptops are created for drilling on the ID. Features are named according to their location and type to make selection easy for turning operations.

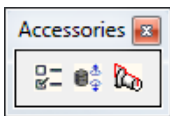


The Value of Feature Recognition for Lathe Parts

- Start programming faster with features that are created automatically
- Create turning features and work coordinates with just two clicks of the mouse
- Rely on descriptive naming conventions to select the correct feature the first time

How it works

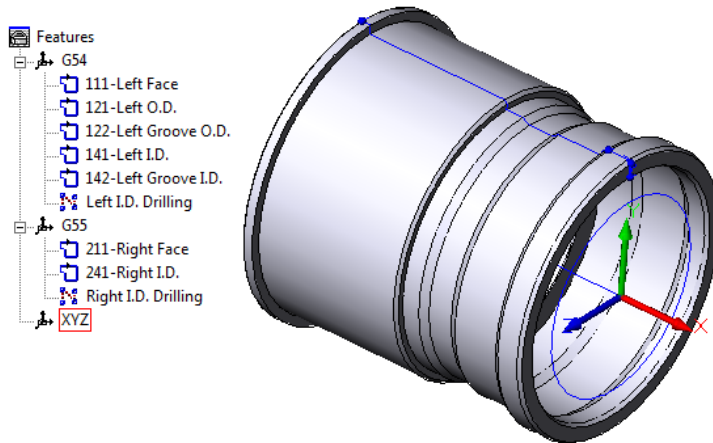
The Turning Feature Recognition  command is located on the Accessories toolbar.





1. Make sure you are in SolidTurn mode.
2. Click Turning Feature Recognition.
3. Select a solid model or a closed chain feature that represents the full profile of a turned part.

Two work coordinates are created automatically in the Feature Manager and turning features are assigned to the appropriate work coordinate as they are created. The turning features are created on the XY plane of the global coordinate system regardless of the active work plane.

Figure 4: Turning work coordinates and features



Two other commands are also available on the Accessories toolbar:

-  Accessories Add-In Option
-  Reverse Hole Direction

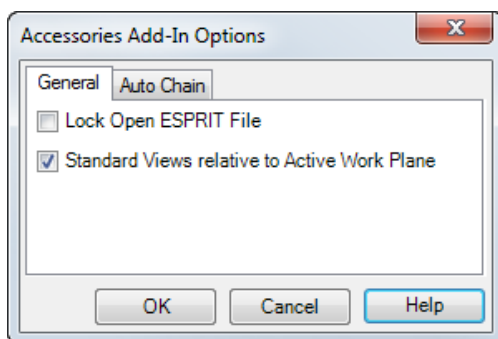
Accessories Options

The Accessories Add-In Options dialog lets you set options to protect your work and control the behavior when Drilling chains are created automatically.

On the General tab, you can:

- Turn on or off the ESPRIT File Locking function. When a file is locked, only the current user can save changes until the file is closed. An ESPRIT file will be locked as soon as the user opens the file or when a new file is saved. If another user tries to open a locked file, a warning message displays that the file is already opened and locked by another user. The name of the user and machine that own the lock is also displayed.
- Turn on or off the Standard Views relative to Active Work Plane function.

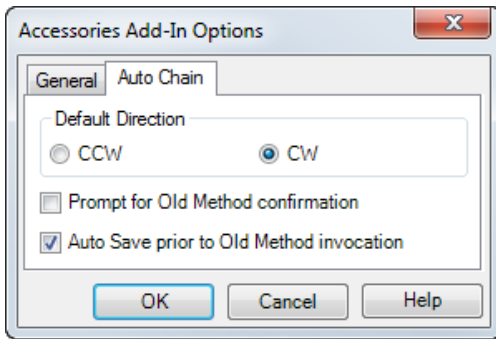
Figure 5: General options of the Accessories Add-In



On the Auto Chain tab, you can:

- Set the default direction for closed auto chain features to either counterclockwise (CCW) or clockwise (CW, the default).
- Turn on a warning message that will display whenever the Auto Chain command is clicked but nothing is grouped in the graphics area. This encourages the use of the newer, more robust and stable Auto Chain method where elements are grouped before Auto Chain is clicked. This option is off by default after installation.
- Automatically save the document when the old Auto Chain method is invoked, prior to the user being asked to select the start point. In case there is an MFC crash with the old Auto Chain method, the user will be able to reopen the file where they left off without losing any work. This option is on by default after installation.

Figure 6: Auto Chain options of the Accessories Add-In



Reverse Hole Direction

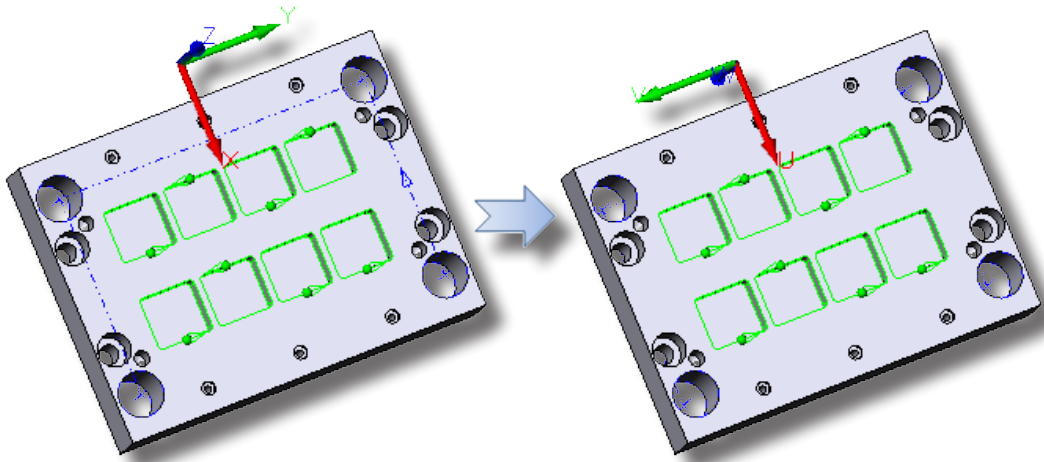
Reverse Hole Direction reverses the direction of a through hole that can be drilled from either direction.

When hole features are created from simple cylindrical openings in a solid model or from wireframe geometry, the direction of the hole can be ambiguous because machining methods and strategy can vary. You can use this command to fix the direction of the feature so that through holes start from the other end.

You can group the Hole features you want to modify and then click the Reverse Hole Direction command to reverse several features at once, or click the command first to be prompted for the feature to reverse.

The start point is flipped and the work plane associated with the feature is rotated 180 degrees about the X axis. If a work plane with this W direction does not exist, a new one is created.

Figure 7: Hole directions reversed



Excel Report Generator

Export machining data from an ESPRIT document into an organized, ready-to-print report in the form of a Microsoft Excel workbook (.xlsx).

In addition to graphical lists of tools, operations, and work coordinates, the report can include custom setup instructions and time charts. A variety of time charts are available showing operation time per tool, per process group, per work coordinate, and many more.

HQR SPOOL			
ProcessPlanning_HQR_Complete			
Machine Name	Mazak HyperQuadrex 100MSY		
Material			
Unit (in / mm)	Inch		
Stock Type	Bar		
Bar OD	1.5		
Bar / Part Length:	7.874 / 2.9586		
Sp1 / Sp2 Stickout	3.53 / 1.2086		
Parts/Setup	1		
Setup Quantity	1		
Part Quantity	1		
Cycle Time (min)	-		
			
<div style="display: flex; justify-content: space-between; align-items: center;"> Header Operation List Tool List Work Coordinates Setup Instructions ... + ⏪ ⏩ </div>			


The Value of Customized Shop Floor Reports

- Minimize setup time with custom instructions and a list of all tools required for the job
- Eliminate operator error by providing clear and accurate information about the current job
- Improve productivity with graphical time charts for a variety of scenarios
- Ensure that processes are followed consistently with printed instructions for every job
- Compare the current job with past jobs for continuous improvement of machining processes

How it works

To generate a report, click "Create Excel Report" on the File menu.

The user defines options for the report and then clicks the OK button to generate the report as an Excel spreadsheet.

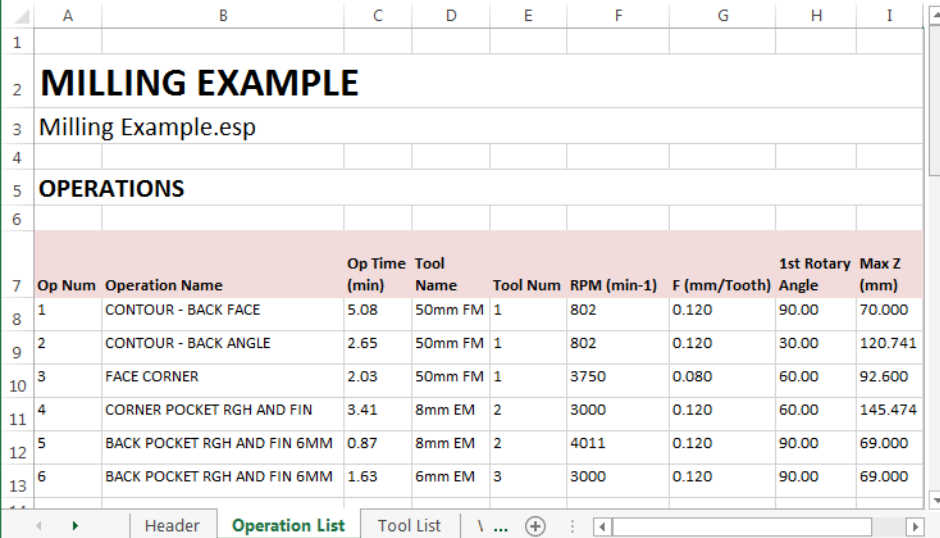
 The Excel Report Generator requires Microsoft Excel 2010 or later. Microsoft Excel 2007 and earlier are not supported.

Many options are available that let the user customize:

- The information printed at the top of each page, such as the report title, part, machine, and material. This information can also be output as a separate cover sheet.
- The pages to include in the report, such as setup instructions, operation list, tool list, and time charts
- The information to display on each page, such as operation number and name in the operation list or the tool type and nose radius in the tool list
- The formatting of the report, such as image sizes, text color, and colors in the time charts
- The location where the report will be saved

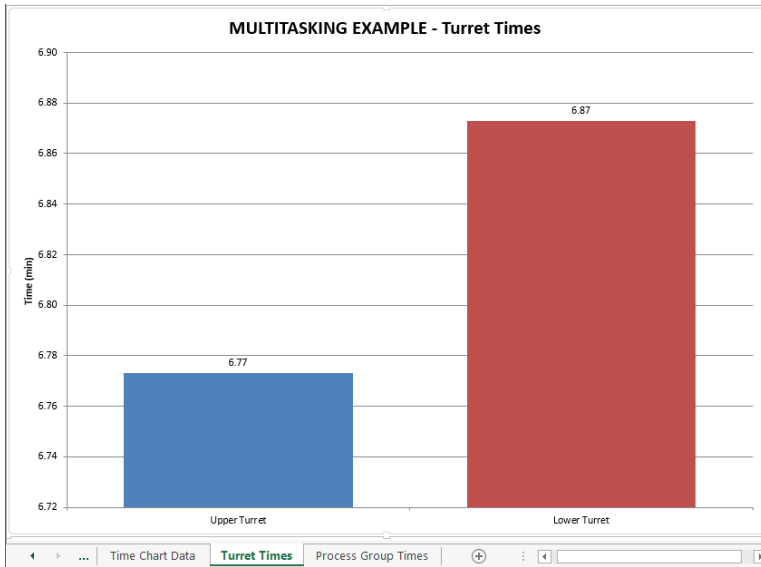
For detailed information about all the options, click the Help button.

Figure 1: Operation List



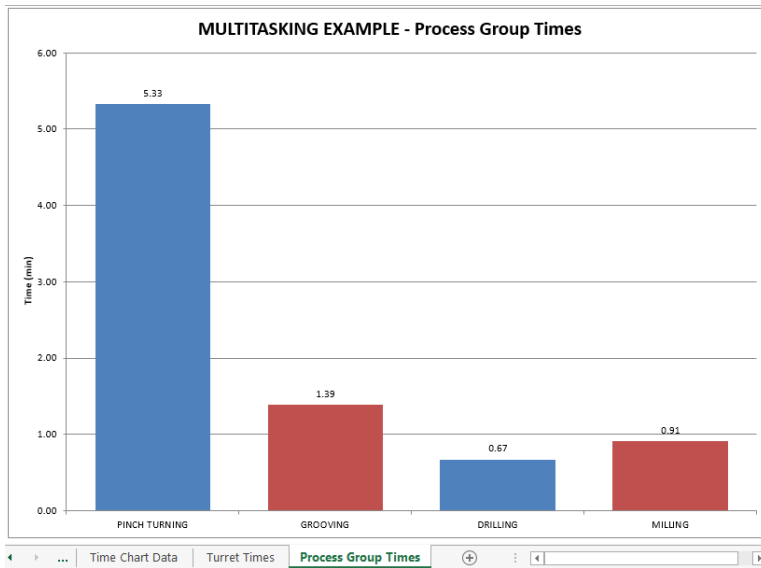
Op Num	Operation Name	Op Time (min)	Tool Name	Tool Num	RPM (min-1)	F (mm/Tooth)	1st Rotary Angle	Max Z (mm)
1	CONTOUR - BACK FACE	5.08	50mm FM	1	802	0.120	90.00	70.000
2	CONTOUR - BACK ANGLE	2.65	50mm FM	1	802	0.120	30.00	120.741
3	FACE CORNER	2.03	50mm FM	1	3750	0.080	60.00	92.600
4	CORNER POCKET RGH AND FIN	3.41	8mm EM	2	3000	0.120	60.00	145.474
5	BACK POCKET RGH AND FIN 6MM	0.87	8mm EM	2	4011	0.120	90.00	69.000
6	BACK POCKET RGH AND FIN 6MM	1.63	6mm EM	3	3000	0.120	90.00	69.000

Figure 2: Time Chart



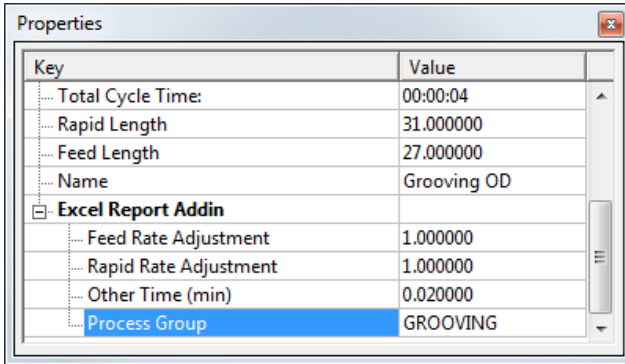
A time chart for user-defined Process Groups can also be output. Process Groups are labels that allow the user to group numerous operations together in a way that is meaningful to the user.

Figure 3: Process Groups



The user selects operations in the Operation Manager and then enters a label for the Process Group in the Property Browser as a custom property of the Excel Report Add-In.

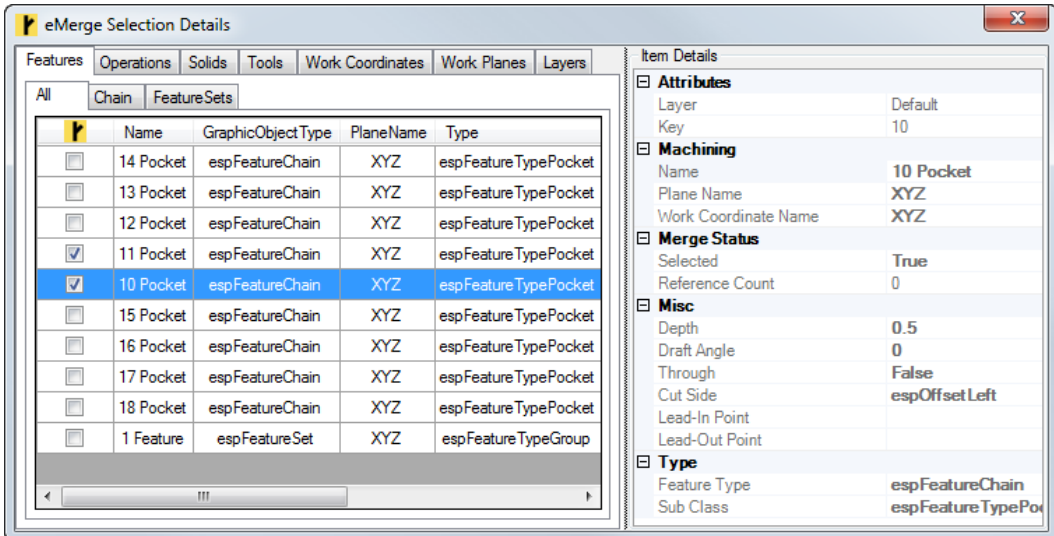
Figure 4: Process Group Property



eMerge

Export (create) and Import (merge) ESPRIT merge packages (*.emp) for merging selected supported elements from one ESPRIT .esp file to another. Supported elements include features, layers, solids, STL models, work planes, and work coordinates.



Export all supported items or choose to export only grouped items or items in a customized list. Likewise, import all items in a merge package or choose the items to import from a list. When a relationship exists between a selected element and another element, such as a feature that is related to a layer and work coordinate, the referenced elements are automatically selected for inclusion in the merge package.



The Value of ESPRIT Merge Packages

- Increase productivity by importing ESPRIT elements instead of recreating them
- Merge data into any existing ESPRIT document, not just a new document
- Share items more easily with other ESPRIT users
- Store a group of assorted items in one convenient package
- Improve consistency by creating a library of merge packages that contain commonly used elements

How it works

The commands Export Merge Package  and Import Merge Package  are located on the eMerge toolbar.




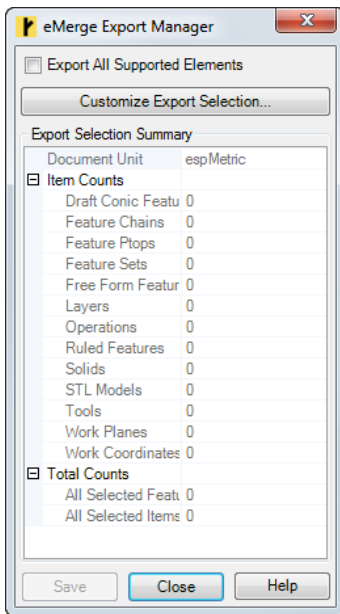
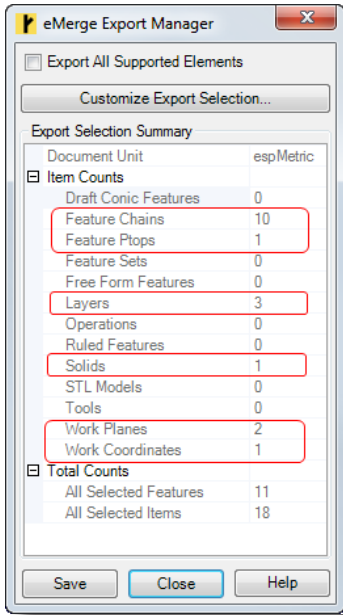
To select items in the ESPRIT document to export, click Export Merge Package .

Figure 1: eMerge Export Manager




If supported elements are grouped prior to launching the command, then those items will be reflected in the counts listed under the Export Selection Summary. Notice that any layers, work planes, and work coordinates associated with the grouped items are automatically added to the selection. If a FreeForm feature is grouped, the underlying solid model is also added to the selection.

Figure 2: Preselected items in the eMerge Export Manager



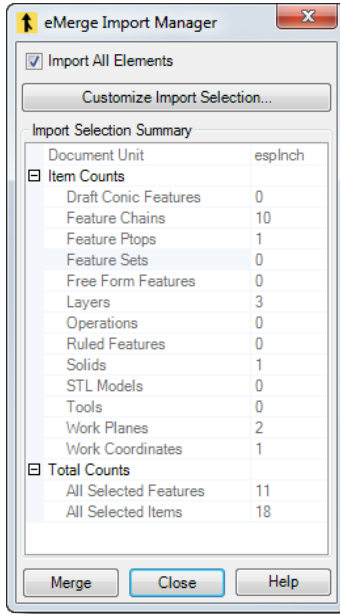
To create the merge package, click the Save button. You will be prompted for the name of the ESPRIT Merge Package (*.emp) file to create.

A confirmation message displays, along with a prompt asking if you want to save additional packages. Answer Yes if you want to modify the selection and Save again, or answer No to close the Export Manager.

To merge data from any .emp merge package into any ESPRIT document, open the document and then click Import Merge Package .

After selecting an .emp file, the eMerge Import Manager dialog will open with Import All Elements enabled by default and the Import Selection Summary showing the count of items in the .emp file.

Figure 3: eMerge Import Manager

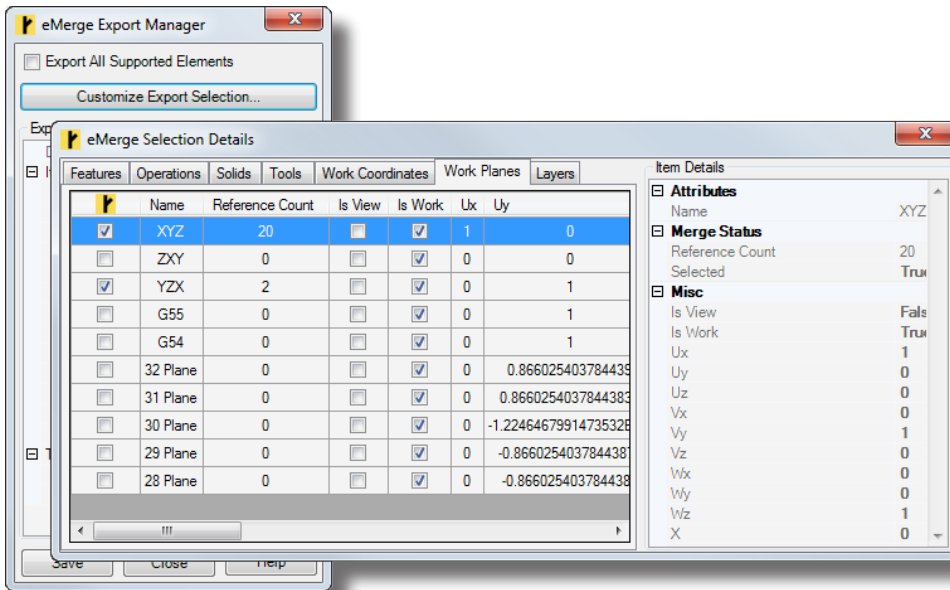


Click the Merge button to close the Import Manager and see those items recreated in ESPRIT.


Customizing the selection of items to export and import

The Export Manager and Import Manager have a button that opens the eMerge Selection Details dialog. Tabbed views group and display lists of supported elements in the document. You can click each tab and select the specific items you want to include in the merge package.

Figure 4: eMerge Selection Details



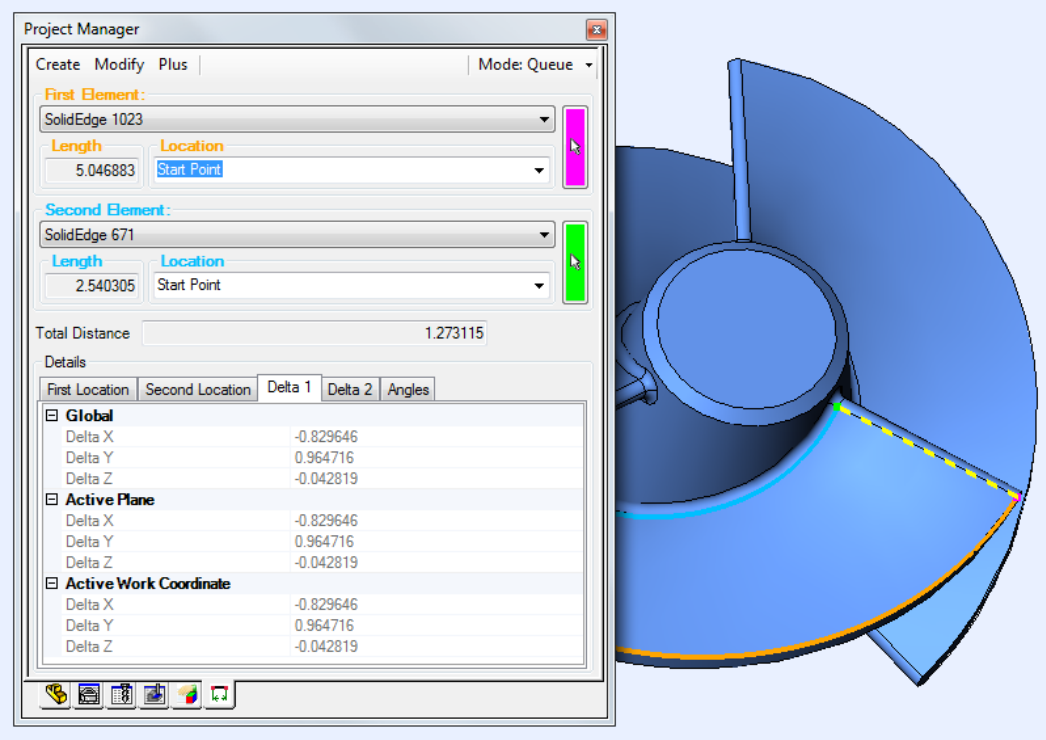
When you are finished selecting items, close the eMerge Selection Details dialog to return to the Export Manager or Import Manager.

 There is no Cancel or Reset for the Selection Details dialog, any changes to the selection are immediate and will be retained when it is exited.

Measure Plus

Measure the distance between two elements, plus much more. Measure from a fixed datum to any number of selections or between a continuous queue of selections.

Selected items are highlighted using a color palette to make it easy to visualize all elements being measured. In addition to distance measurements, find the total length and coordinate locations on each element, such as end points, center points, and UV locations on solid faces. Coordinates are displayed not only as global, but also with respect to the active plane and active work coordinate.



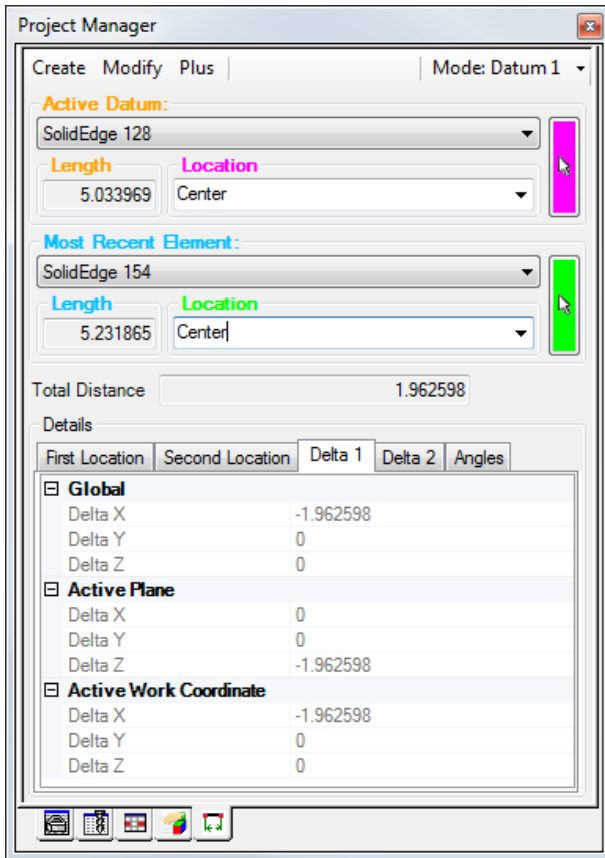
The Value of a Measurement Tool

- Save time by measuring distances quickly without having to smash solids or solid sub-elements to create geometry
- Work faster by easily finding relative local coordinates without manipulating the model
- Query the model to find information not provided on a drawing
- Check to see if available tools will fit inside pockets and channels

How it works

Measure Plus functions are available on a tab in the Project Manager.

Figure 1: Measure Plus Interface

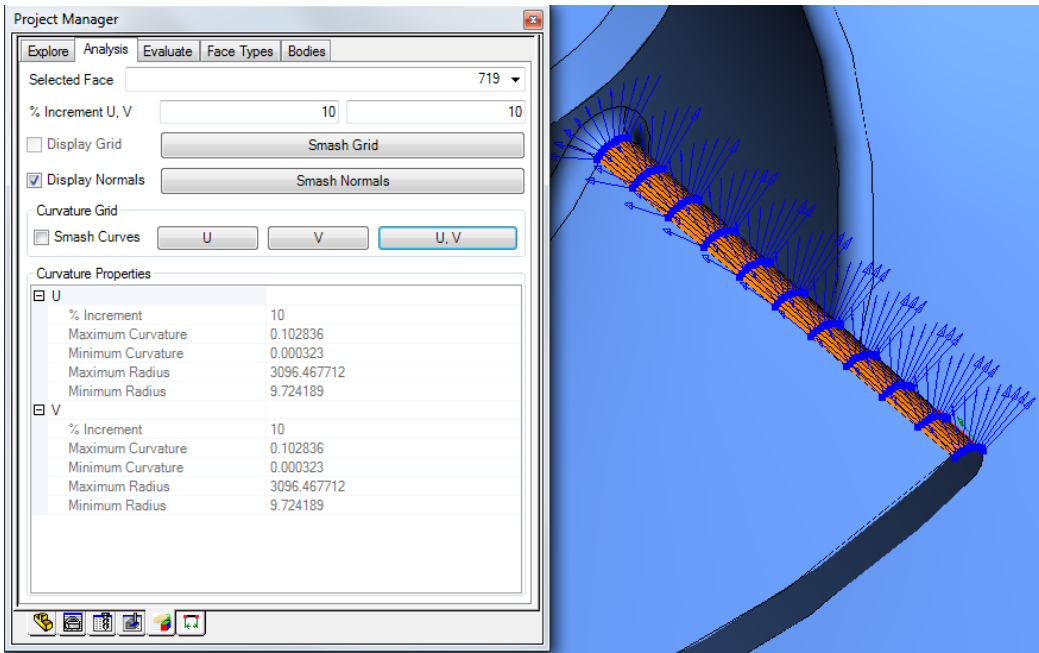


After two elements are selected, you can view the Length of each element and the Total Distance between those elements as well as a visualization of the selected items and the distance between them in the graphics area.

For detailed information about Measure Plus, click Help on the Plus menu.

Solid Properties

View the properties of solid models and solid sub-elements and perform additional analysis of solid faces.

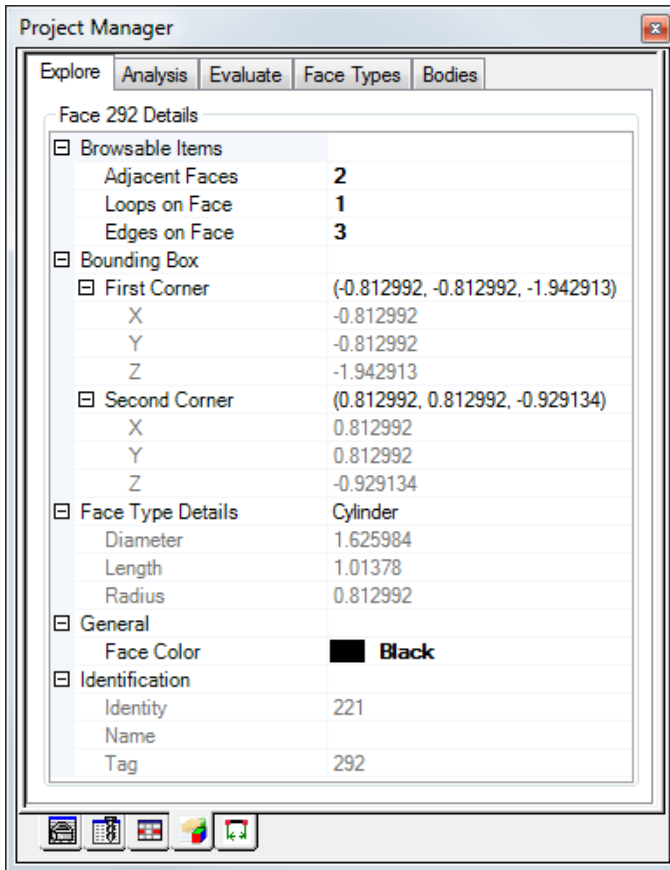


The Value of Analyzing the Properties of a Solid

- Explore a solid to view properties for every type of solid entity: a face, loop, edge, vertex, or an entire solid body
- View all solid bodies by type in an ESPRIT document or search for solid faces by type, such as swept or cylinder
- Analyze a single face to display a grid of points, normal vectors, or curvature along U and V directions
- Analyze a face to display tangent vectors and curvature at selected positions

How it works

When at least one solid model exists in an ESPRIT document, the Solid Properties tab displays in the Project Manager. Select a solid face, loop, edge, vertex, or an entire solid body to display its properties.



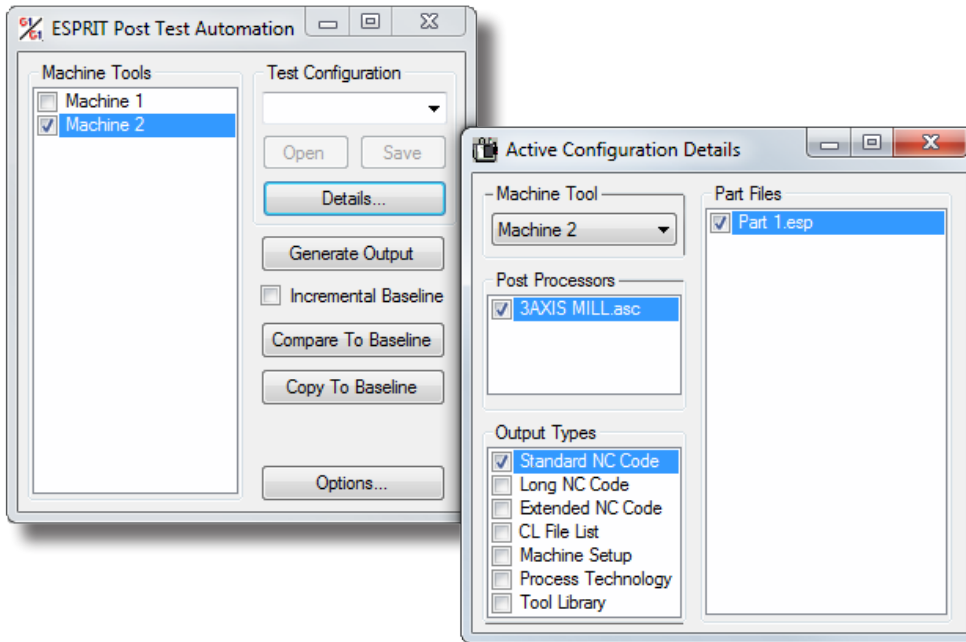
The Explore tab functions like a Property Browser for solids and solid sub-elements and lets you see additional properties for every type of solid entity: a Face, Loop, Edge, Vertex, or entire Body.

For detailed information about Solid Properties, right-click inside the interface and select Help.

Post Test Automation

Check and confirm that modifications made to post .asc files are correct and did not cause other undesirable changes in NC code output.

The user establishes a suite of ESPRIT part files and then runs Post Test Automation to compare the output against established baselines. Post Test Automation then generates a report showing all of the differences found. Developed initially as a post processor development tool, Post Test Automation can also be used by anyone to compare and validate changes in NC code output.



The Value of Test Automation for Post Processor Files

- Verify NC code output when upgrading to a new version of ESPRIT or a new version of a compiled .pst post file
- Validate changes when working with a new .ems machine setup file or new .est template file
- Generate and test NC output after modifying a post until satisfied with the results
- Create a new baseline after posts are fully tested

How it works

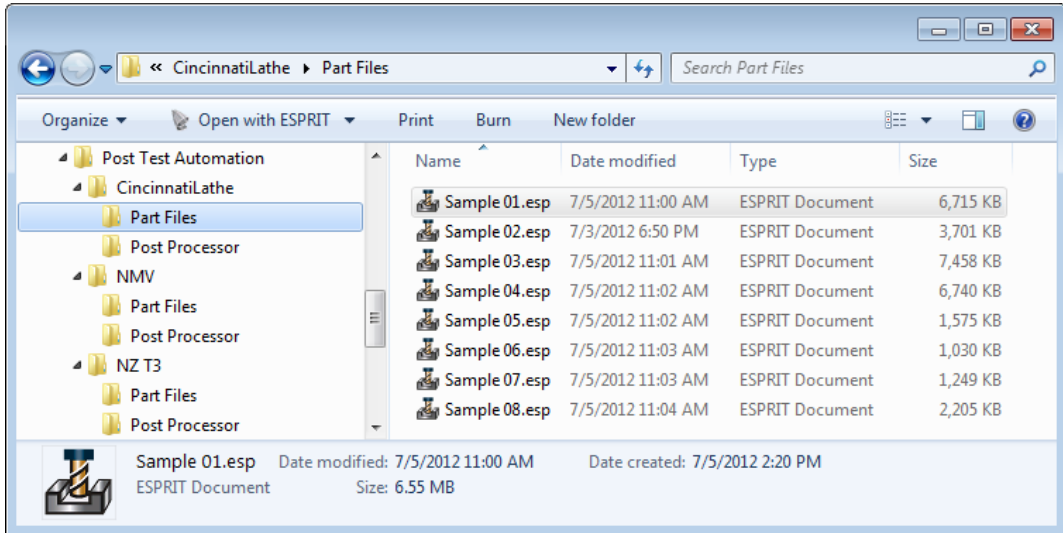
Before you can begin testing post processor files, the following folder hierarchy must be set up in the parent folder of the Post Test Automation application:

```
..\ProgramFiles\D.P.Technology\ESPRIT Post Test Automation
```


- Machine Name
 - Part Files: contains one or more ESPRIT files
 - Post Processor: contains one or more post processors (either machine format .asc files and/or compiled .pst files, or both)

The subfolders in each machine folder must be named “Part Files” and “Post Processor”; the subfolder names cannot currently be changed or configured.

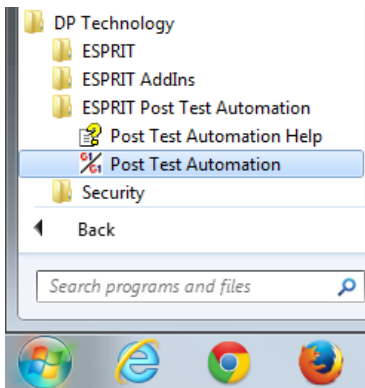
Figure 1: Post Test Automation Folder Structure



Post Test Automation also requires Microsoft Excel 2003 or higher, with Microsoft Excel 2010 or higher strongly recommended. Post Test Automation may not function fully with versions of Excel earlier than 2010.

With the above requirements satisfied, run the Post Test Automation program located on the Start menu under All Programs > DP Technology > ESPRIT Post Test Automation.

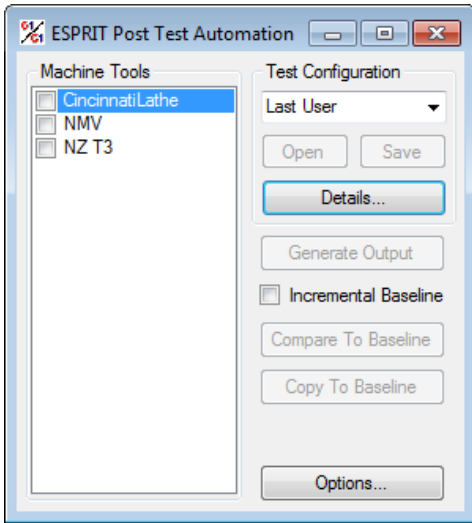
Figure 2: Launching the Post Test Automation application



Select the parent folder where all of your Machine subfolders are located. The program should find the correct folder and all of the Machine Tools in it even if you pick one of the Machine Tool folders itself (or even any subfolder).

After you select a valid folder, the main Post Test Automation interface will be shown listing the machine tools found.

Figure 3: Post Test Automation Interface



You can then perform three main tasks:

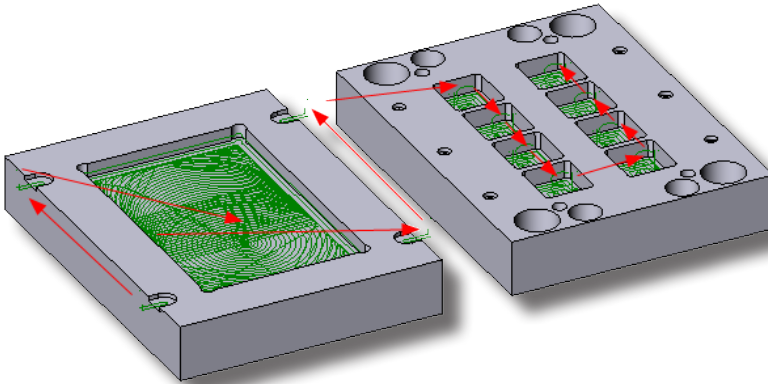
- Generate output
- Compare output
- Copy the output to the baseline folder

For detailed information about each of these tasks, click Post Test Automation Help from the program folder.

Advanced Operation Sorting

Sort milling and turning operations based on the start point coordinates of each operation and user-defined sorting criteria, similar to the advanced sorting capabilities built into ESPRIT for EDM operations.

Sort operations quickly with your choice of sorting criteria: by minimal travel distance, by horizontal or vertical vectors, by a custom vector, or in a spiral pattern. Advanced Operation Sorting does not sort by tool or by rotary angle, so is best used with multiple operations that use the same tool in the same orientation.

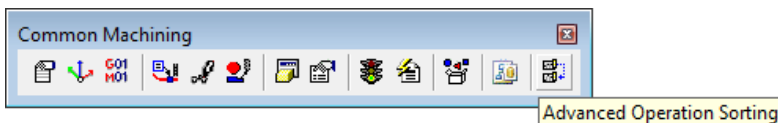


The Value of Automatic Sorting

- Optimize the travel distance between dozens or hundreds of pocketing or contouring operations
- Let the system calculate the sort order instead of manually reordering operations with drag-and-drop
- Apply and preview a sorting method before confirming the changes

How it works

The Advanced Operation Sorting command is available on the Machining > Common Machining menu and on the Common Machining toolbar.



Group the operations you want to sort and then click Advanced Operation Sorting.

The following choices are available for the sort algorithm:

- By Coordinate
- Minimal Distance
- Spiral
- Zigzag
- Zigzag Horizontal
- Zigzag Vertical

For detailed information about the sorting options, open the Help file in the ESPRIT program folder.

Renumber Tools by Operation

Change tool numbers based on the order of operations in the Operations Manager, rather than the order of the tools in the Tool Manager.

Tool numbers start with a user-defined number and increase sequentially by a specified increment, skipping certain numbers if specified.

The Value of Matching Tool Numbers to Operations

- Move the renumbered tool to the matching tool station
- Adjust the Length Comp Register values on the tool page, and the offset numbers within any operations, to match the new tool number
- Add the new tool number to a Custom Setting of the operation
- Restart numbering for each turret when the machine has multiple turrets/heads

How it works

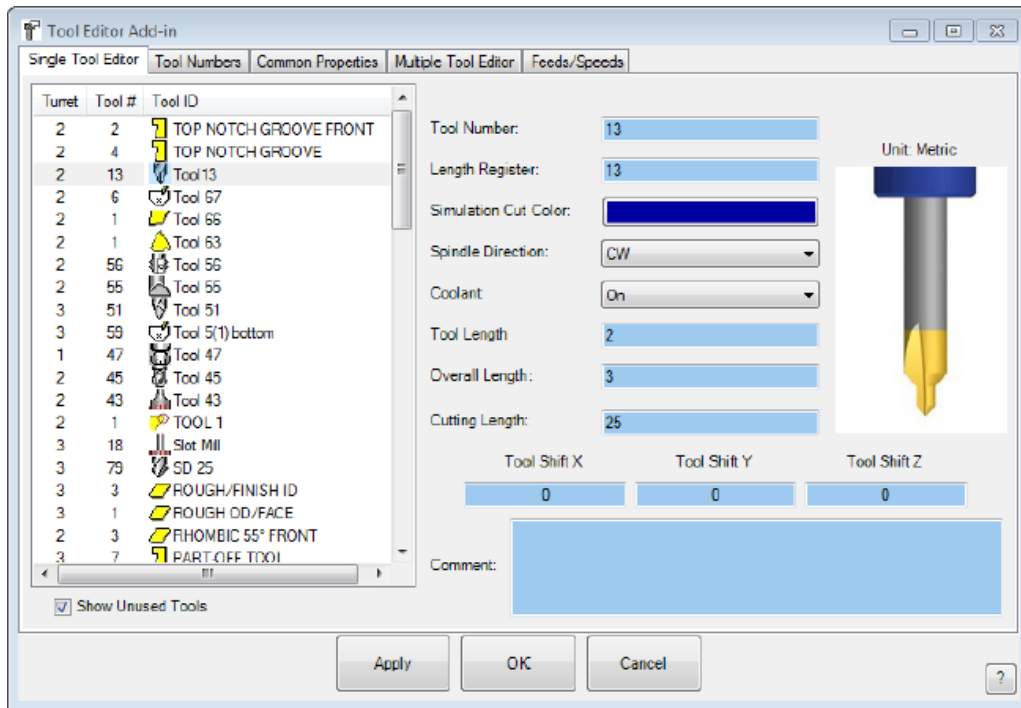
Renumber Tools by Operation is available on the Common Machining toolbar.



For detailed information about renumbering tools, open the Help file in the ESPRIT program folder for add-ins.

Tool Editor

Simplify the process of editing cutting tools and their parameters. All the cutting tools in an ESPRIT document can be compared at one time in a single interface.



Two editing modes are available: Single Tool and Multiple Tool. The Single Tool Editor lets you edit parameters on a per tool basis. The Multiple Tool Editor lets you select any number of tools and edit their common parameters. In addition, tabbed views let you compare and edit a single parameter, such as coolant type, for all tools in the document. You can even set feeds and speeds for all operations that use a particular tool.

The Value of a Tool Editor

- Save time with a single interface for editing the data of multiple cutting tools
- Reduce errors by comparing common parameters across multiple tools
- Improve consistency with a single interface for setting feeds and speeds for all operations/tools

How it works

The Tool Editor command is available on the Common Machining toolbar.

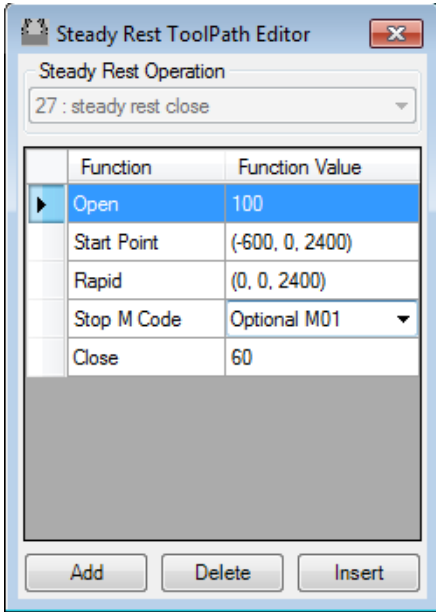


For detailed information about the Tool Editor, click the Help button.

Steady Rest Editor

Completely edit geometric information about steady rest toolpath, such as open and close diameters and feed and rapid position points. The Steady Rest Editor lets you modify existing steady rest operations as necessary instead of having to delete and recreate them.

The Steady Rest Editor is automatically activated when a single Steady Rest operation is edited inside ESPRIT. Any time a single Steady Rest operation is edited, the Steady Rest Editor dialog also displays.



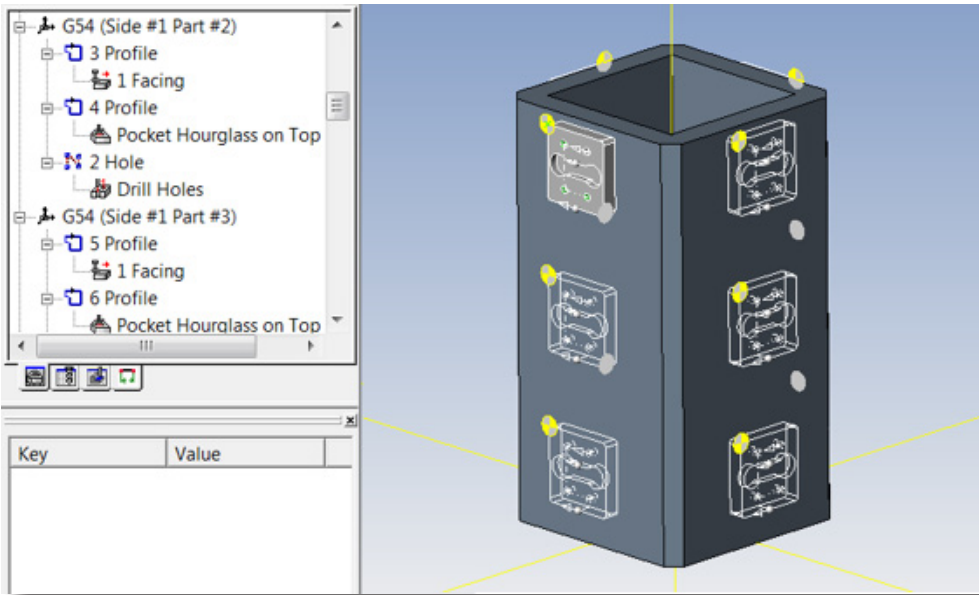
The Steady Rest Editor lets you:

- Edit the value of any function inside the toolpath (the function itself cannot be edited)
- Add new items onto the end, delete a selected item, or insert an item above a selected item (Add, Delete, and Insert commands are also available by right-clicking inside the editor)
- Edit the position of the start point

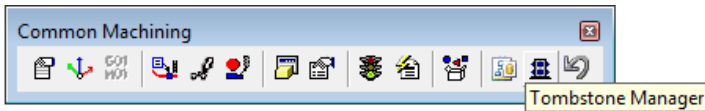
The Steady Rest Editor dialog is closed automatically when the OK or Cancel button is clicked on the operation tab.

Tombstone Manager

Define a tombstone by the number of sides and then quickly duplicate parts, work coordinates, and operations. The Tombstone Manager makes it easy to program a single part and then make copies on multiple faces with multiple work coordinates.



The Tombstone Manager is available on the Common Machining toolbar.



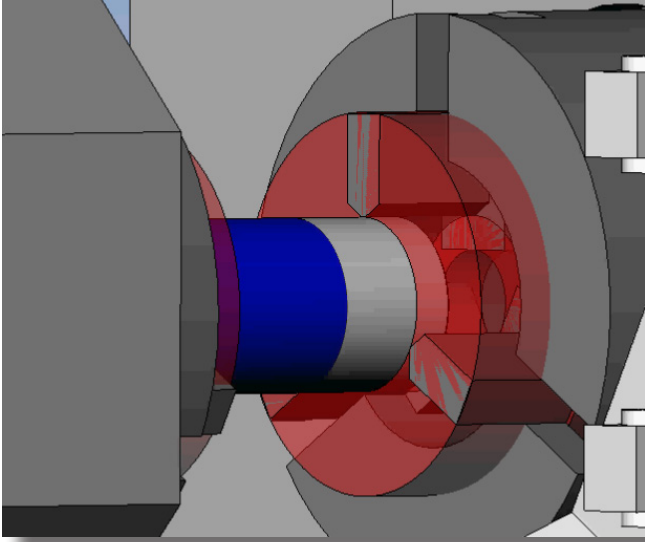
The Tombstone Manager lets you:


- Input the number of sides on the tombstone and the number of parts for each side
- Input offsets and work coordinate values
- Add fixtures
- Undo your previous actions, save your tombstone setup, and load a tombstone setup file

Jaw Spinner

Run simulations of turning operations with dynamic spinning jaws to avoid collisions that would not be detected with the jaws in a stationary position.

During turning operations, simulation displays a semi-transparent solid representing the profile of the jaws as revolved a complete 360 degrees around the spindle axis. The spinning jaws are enabled for collision detection.



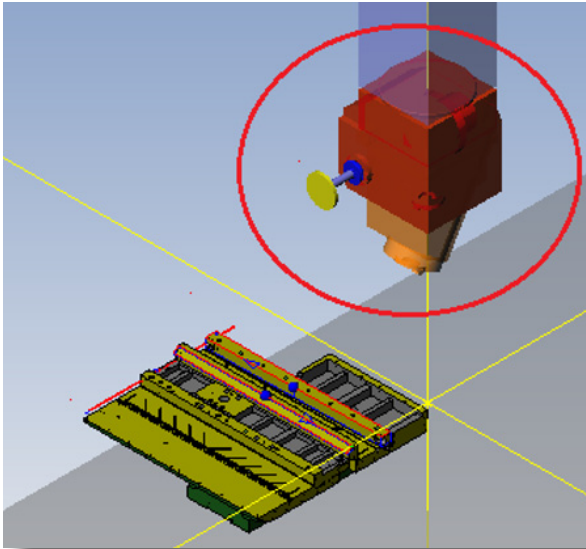
 For Jaw Spinner to function properly, please ensure that all solids in Machine Setup, especially the custom chuck and jaw solids, have unique names.

Without this function, only static jaws are shown in the simulation. Depending on the jaw configuration, a static display can result in the system not detecting collisions with turning tools.

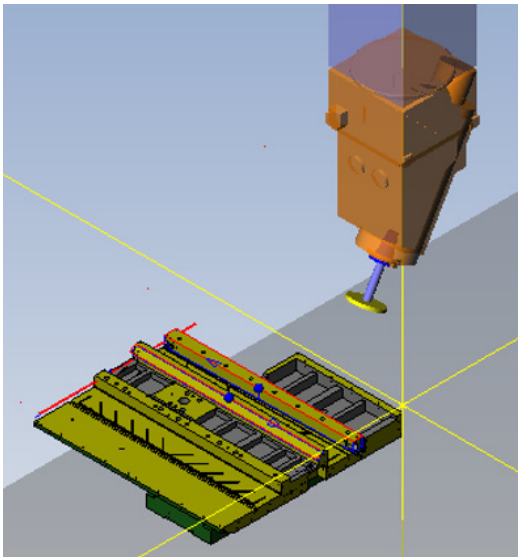
Station Solid Simulation

Run simulations that automatically hide and show solid models assigned to automatic tool changer stations in Machine Setup.

SolidMill Machine Setup and SolidTurn Machine Setup lets you assign a solid model to each tool station. When "Automatic Tool Changer" is enabled for stations that have different solids, simulation will display all the solids regardless of which tool is currently being simulated.



Station Solid Simulation will display the solid for a tool station only when a tool assigned to that station is active. All solids assigned to inactive stations are hidden.

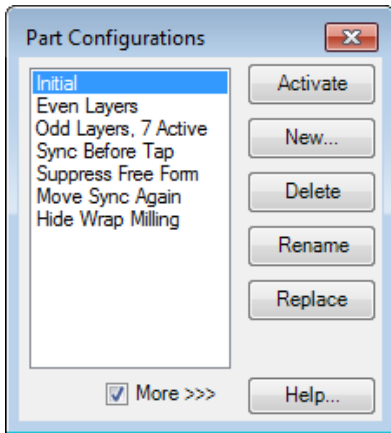


Part Configuration Manager

Create and manage different part configurations, including the automatic suppression and un-suppression of machining operations, all within a single ESPRIT .esp file. This gives users an alternative to saving such configurations out to separate .esp files, which can be difficult to maintain.

Part Configuration Manager is available on the Machining menu.

The manager lets you create and manage part configurations. To add a configuration, click New.



The following information will be saved within each part configuration:

- The visible status of all layers
- The suppress state of all operations
- The existing Syncs, if it is a SolidTurn file with Syncs

To activate a configuration, double-click it in the list or select it and click Activate.

If you want to display new layers or operations that were added after a configuration is created, activate the configuration, turn on the layer or unsuppress the operation, then click Replace.

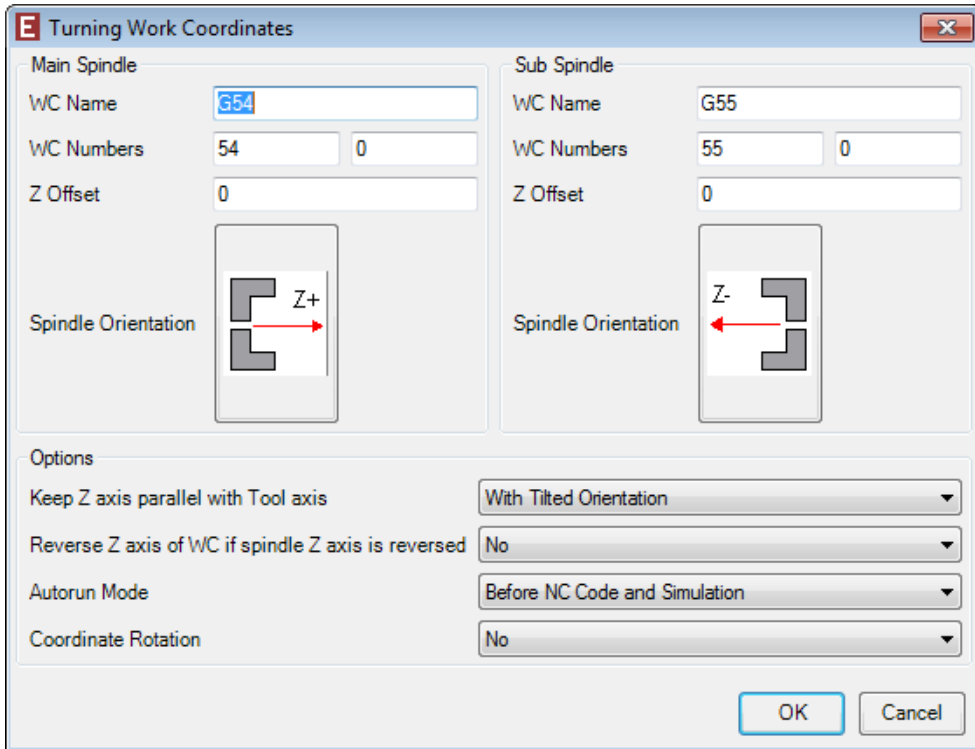
For detailed information about Part Configurations, click the Help button.

Turning Work Coordinates

Automate the process of setting up a turning project by automatically creating common work coordinates and having your existing features and operations moved to the appropriate work coordinates based on their orientations.

Turning Work Coordinates in ESPRIT 2014 improves on previous versions of the function by adding support for B-axis turrets, coordinate rotation, and other options.

Turning Work Coordinates is available on the Create menu.

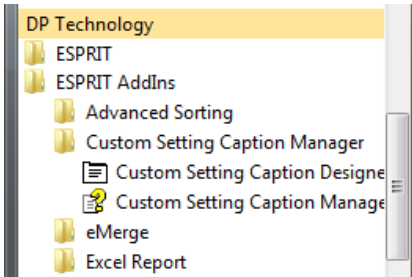


Custom Setting Caption Manager

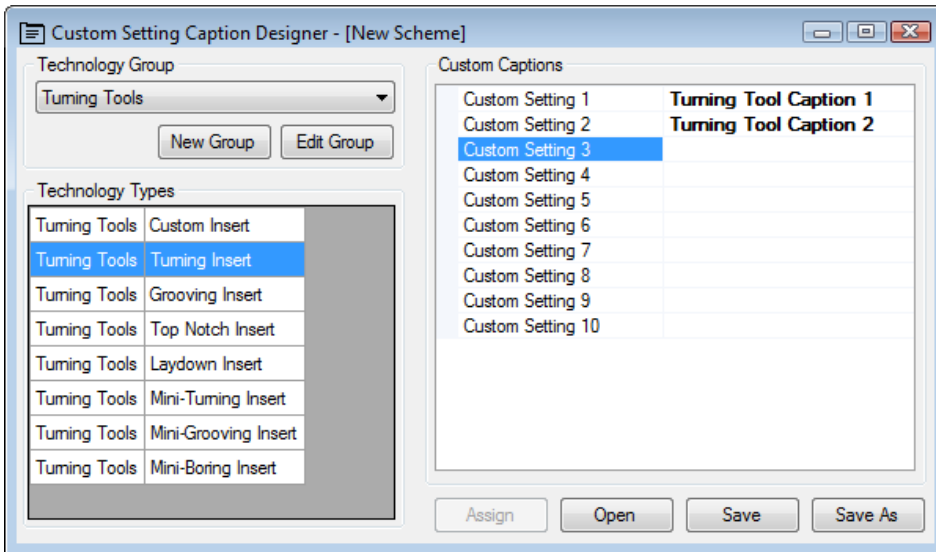
Assign meaningful caption names to the Custom Settings on tool and operation technology pages in ESPRIT.

Post developers will find this especially useful because entire Custom Setting Caption schemes can be developed and distributed alongside the post processors that output those custom setting values.

Custom Setting Caption Manager is available on the Start menu under DP Technology > ESPRIT AddIns.



Launch the Custom Setting Caption Designer to create a new caption scheme or modify an existing scheme.



For detailed information about the Custom Setting Caption Manager, open the help file from Start > DP Technology > ESPRIT AddIns.