

WinTool Interface for Mastercam

Version 2.6 for Mastercam X5 / X6

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Content

Summary	3
Job	3
Requirements	3
Supported Tool Types	3
Licensing	3
Copyright	3
Limitations	3
Installation.....	4
Installing the Software	4
Licensing	6
Configuration	7
Mastercam Settings.....	7
WinTool Settings	7
Interface Settings.....	8
Getting Started.....	11
Sample Database	11
Import Tools	12
Tool Numbers	16
Export Tool List to <i>WinTool</i>	17
Preparing Tool Data in WinTool.....	20
User Classification.....	20
Machine Configuration.....	20
Tool ID and Name	21
Regular Tools	22
Special Tool Holders.....	23
Special Cutters	24
Cycle Type / Usage (C7)	24
Software Structure.....	25
Software-Modules and Data-Exchange	25
<i>WinTool</i> -Mastercam Data Integration	26
Known Issues.....	27
Uninstall Error-Message in Mastercam	27
Annex	28
Configuration File Parameters	28
Windows Registry values.....	29
Windows System Variables	29
Supported Mastercam Tool Types	30
Not Supported Mastercam Tool Types	36
History	37

Summary

Job

The WT-Mastercam-Interface enables the user to select and transfer tool assemblies from the *WinTool* database to Mastercam. 3D Graphic representation for tools is supported as well as cutting conditions for work materials. After creating a NC program the list of the tools used in the Mastercam Operations Manager will be stored back to *WinTool* for further processing in production.

Requirements

This WT-Mastercam-Interface requires *WinTool Professional 2009* or newer and Mastercam X5 or X6.

Supported Tool Types

All rotating tool components such as holders, extensions, drills, taps, and mills are supported.

The WT-Shape module is a software component of the WT-Mastercam-Interface and creates assembly contours (for more information see WT-Shape-Manual.pdf supplied with the *WinTool* software or section 4.19 in the *WinTool* 2010 help).

Licensing

The WT-Mastercam-Interface software is protected by a license code which is tied to the Mastercam HASP key number. Please request the license code from DATOS Computer AG in Switzerland or from your local *WinTool* supplier.

Copyright

This documentation as well as the software is copyright of

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Limitations

Turning and grooving tools are currently only available as a Beta Version upon request.

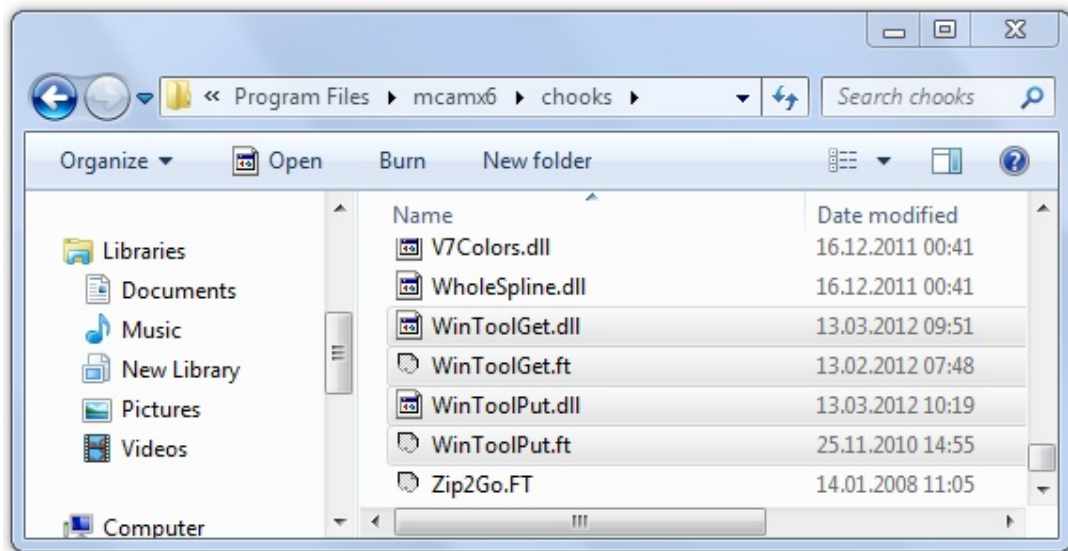
Installation

Installing the Software

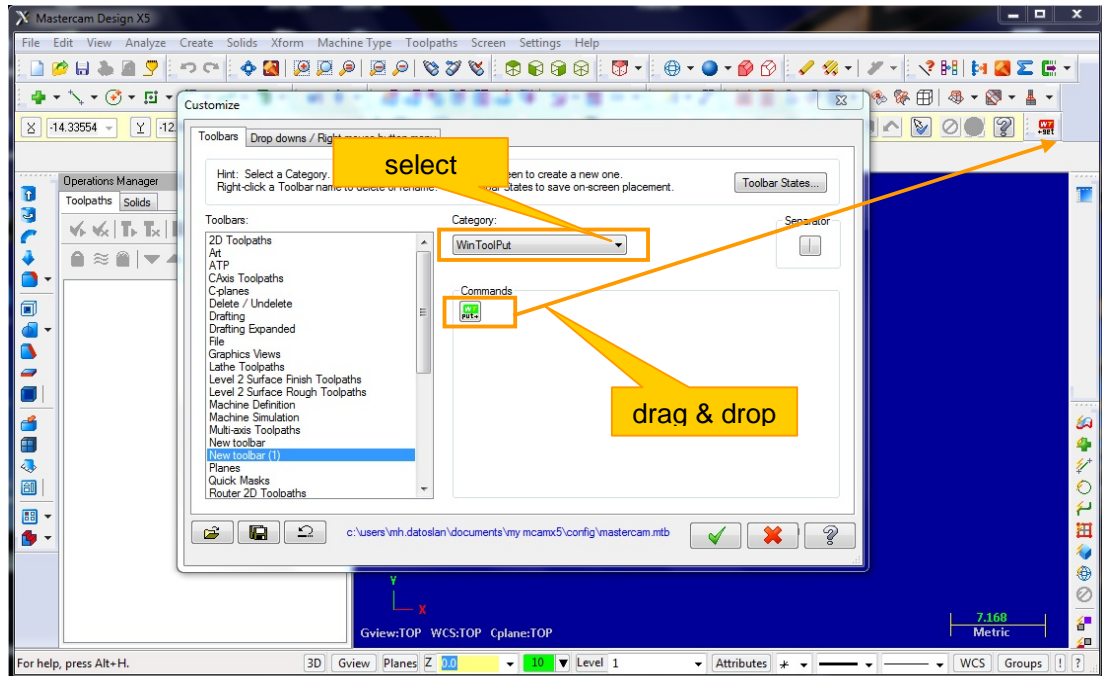
- Make sure you are logged on with administrator rights to install the software on your PC.
- Install *WinTool Professional* first before installing the WT-Mastercam-Interface.
- If you update a previously installed WT-Mastercam-Interface version, backup all .cfg files (configuration settings) which are in the WT-Mastercam Interface installation directory first and uninstall the previous WT-Mastercam-Interface version second, before installing the new software version.
- Execute setup.exe from your WT-Mastercam-Interface CD or download the installer. The default installation directory is:

`C:\Program Files\DATOS\WT-Mastercam-Interface`

Note: During the installation some of WT-Mastercam-Interface software components will be stored in your Mastercam **chooks** directory:



- Setup the new WT-Mastercam Interface toolbar as follows: start up Mastercam, then activate the functions *WinTool/GET* and *WinTool/PUT* by creating a new toolbar using Settings > Customize. Thereafter, drag the GET and PUT icons to the ribbon bar:

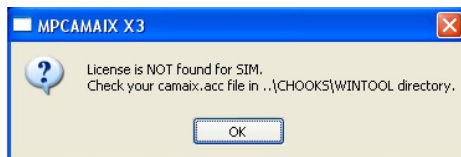


The WT-Mastercam-Interface software is now installed with default settings.

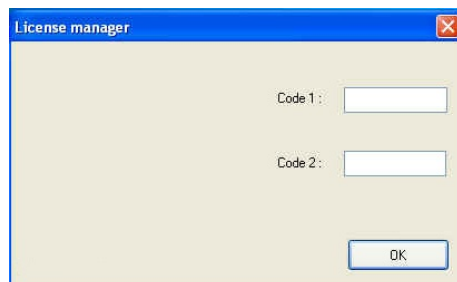
Licensing

- To use the WT-Mastercam-Interface you need a *WinTool* Professional license.
- If you use a licensed Mastercam version, you need to license the WT-Mastercam Interface: Send your Mastercam HASP key serial number to your *WinTool* supplier and request a license code for your WT-Mastercam-Interface.
- WT-Mastercam-Interface demo versions:
If you use a Mastercam demo version, you do not need a WT-Mastercam-Interface license.
A 30 days trial code is available for the WT-Mastercam-Interface at DATOS Computer AG. However, the trial version does also require a *WinTool* Professional license.
- When you receive the interface license codes, start up *WinTool* Professional and Mastercam. Then select a Mastercam machine type in order to have a machine group selected in the Mastercam Operations Manager.

Then select the function *WinTool* GET, select any *WinTool* tool, and click on <OK>. The following message will appear:



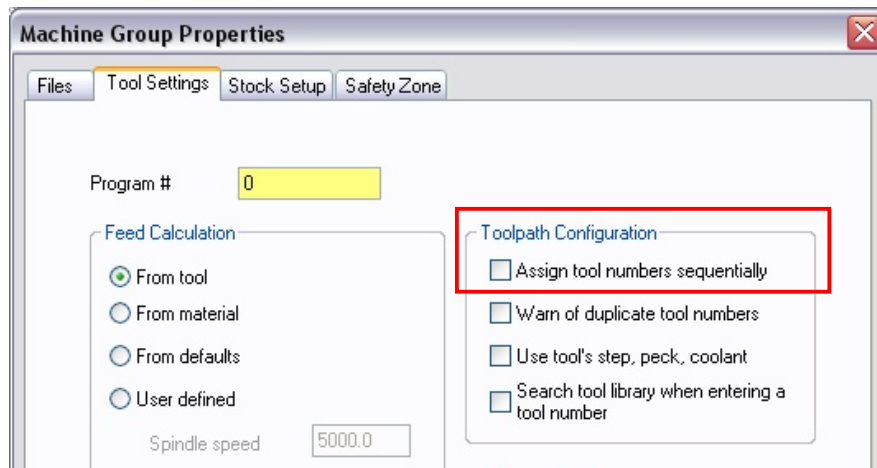
Ignore the message and click OK to open the licensing window. Enter the license codes you received:



Configuration

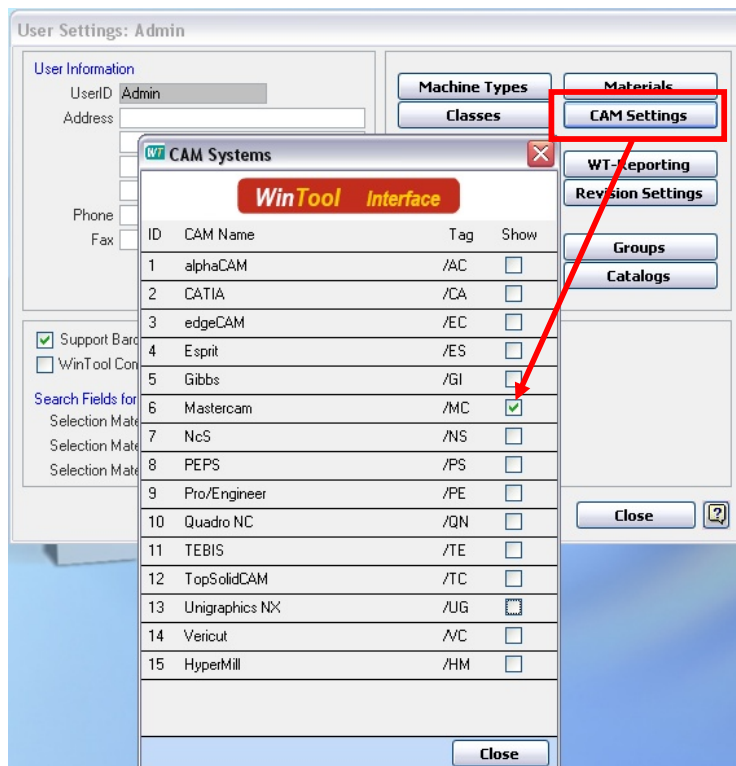
Mastercam Settings

The flag "Assign tool numbers sequentially" in the Mastercam Machine Group Properties must NOT be set.

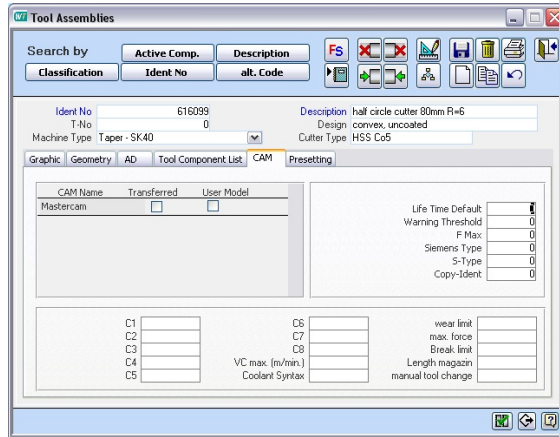


WinTool Settings

- After Installation of the WT-Mastercam-Interface start up *WinTool* and set the flag for the Mastercam interface in Tools>Settings>Cam settings:



- This enables in *WinTool* tool assemblies the *custom tools manager* in folder tab CAM:



Note: The settings of the activated CAM interfaces will be stored in the *WinTool* database (WTData). If you switch your *WinTool* Professional installation to another database you must activate the Mastercam interface in the new database as well (see chapter Getting Started: Sample Database below).

Interface Settings

The following information is relevant for your understanding of the WT-Mastercam Interface data transfer and the configuration.

If you have installed the interface with default path settings no configuration changes are required to operate the interface locally.

Application Path

- In order for Mastercam to start up the WT-Mastercam-Interface, the path to the interface software folder must be stored in the Windows Registry (For details on how to change the default settings see Annex of this manual).

Output Path

- Tool data that gets transferred from WinTool to Mastercam will be temporary stored in the exchange file "WT-Mastercam-Interface.csv". This exchange file will be saved in a dedicated Output Path that has been registered in cfg-file for each user. (For details on how to change the default setting see chapter "Configuration Window" on page 10).

Tool Geometry Path

- The WT-Mastercam-Interfaces processes user models (tool contour DXF files to produce 3D tool representations in Mastercam). The exchange path for DXF files is stored in a cfg-file for each user. (For details on how to change the default setting see chapter "Configuration Window" on page 10).

Note: User models must be stored in a network directory on a server so that all Mastercam users can access them. The directory with the user models must be included in the backups!

Selection of cutting conditions

- The interface imports cutting conditions for work materials if this function is activated (`SelectCutData=True`). By default it is activated.

For tool assemblies and tool lists, the import uses a different cutting condition selection procedure:

Import	Selection procedure
tool assembly data	The cutting condition window opens and all available cutting conditions can be selected.
tool list data	<p>For a tool list the interface imports all cutting conditions available for <i>one material only</i>.</p> <p>If the work material has been assigned to a tool list in <i>WinTool</i> (see folder tab "General Data") then the interface imports the tools with the cutting condition for this material automatically.</p> <p>If the work material has <i>not</i> been assigned to a tool list in <i>WinTool</i>, then the cutting conditions selection window appears for the first tool of the list and a value must be selected manually. The interface memorizes the work material of the previous tool and will suggest the same material for the next one.</p> <p>If a tool has more than one cutting condition for the same material or if no cutting condition exists for the material, the interface requests to select one manually.</p>

Note: The cutting condition window appears only if there is at least one cutting condition.

- If this function is deactivated (`SelectCutData=False`) the cutting condition at the top of the list of the cutting condition table for the tool assembly is selected and imported automatically.
- For details on how to change the default setting see chapter "Configuration Window" on page 10

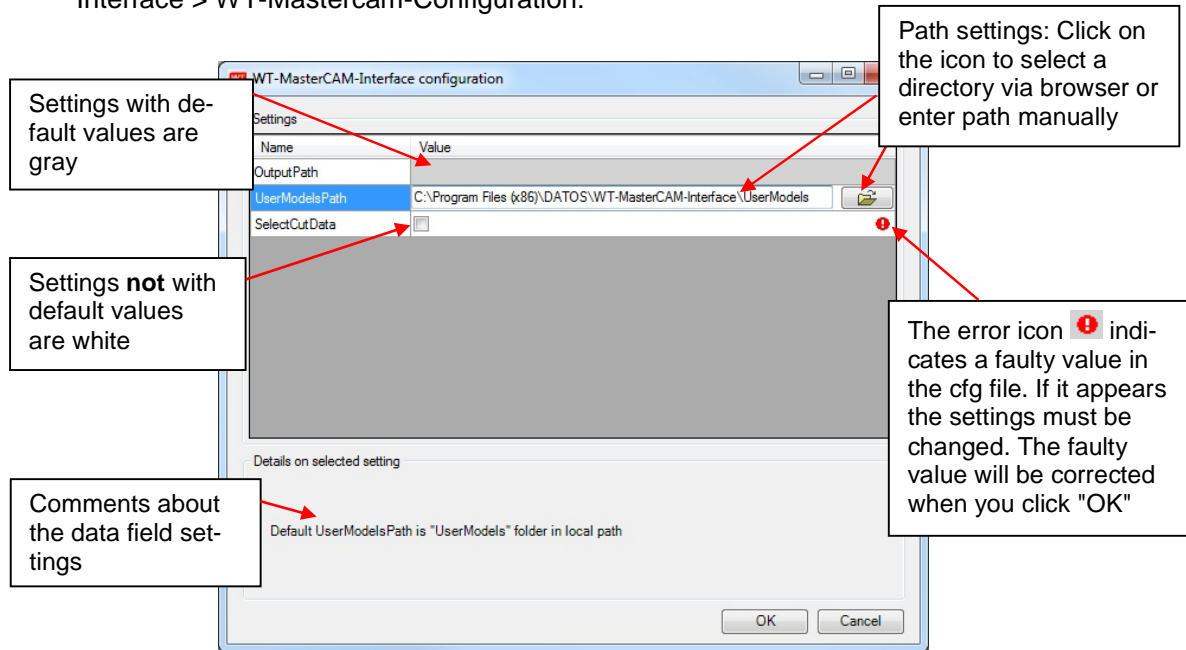
Tool List Exchange Path

- A list of tools used in a Mastercam toolpath group can automatically be transferred back to *WinTool* tool lists with the interface function PUT which activates the software module "WT-MakeList". This software is installed in the interface installation directory. (See Annex of this manual for details on how to change the WT-MakeList default settings).
- The path for the exchange file is the same as the "Output Path" (see above).

Note: Use a different WTMakeListPath for each user (e.g. use the local exchange directory path which is configured in the default settings).

Configuration Window

- The configuration window allows you to check and change the settings of the WT-Mastercam-Interface
- Open the configuration window in START > All Programs > DATOS > WT-Mastercam-Interface > WT-Mastercam-Configuration:



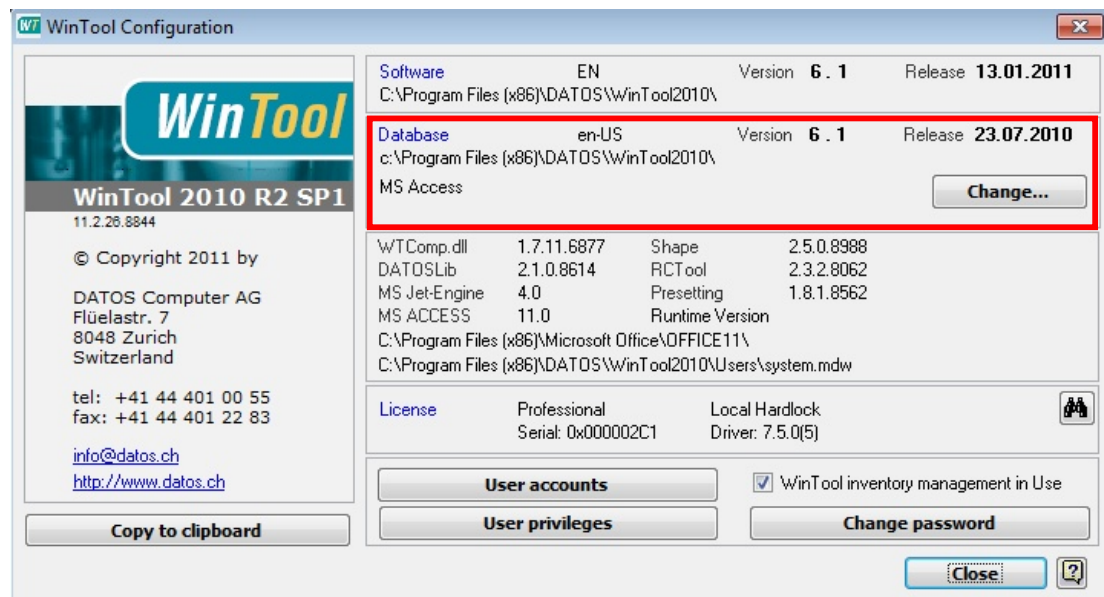
- <OK> stores all settings. <Cancel> exits the configuration window without saving.
- The configuration window reads and stores settings in the file "WT-Mastercam-Interface.cfg" in the interface installation directory.
- The chapter "Configuration File Parameters" in the Annex describes details about the file "WT-Mastercam-Interface.cfg".

Getting Started

Sample Database

- The WT-Mastercam-Interface interfaces with the *WinTool* database that is currently linked to your *WinTool* Professional installation.

To test the interface installation and get yourself familiar with the functionality of the WT-Mastercam-Interface, please relink your *WinTool* Professional with the database supplied with the *WinTool* installer.

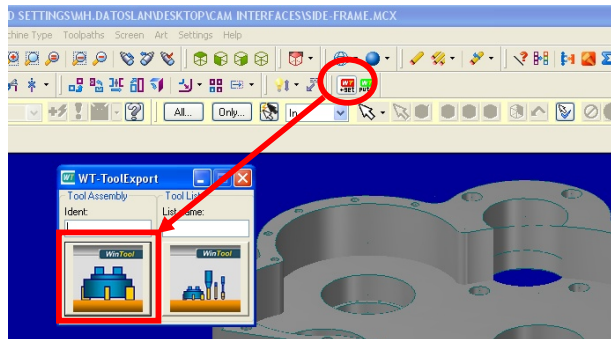


For instructions on how to link a different database refer to the documentation about the *WinTool* DB-Manager.

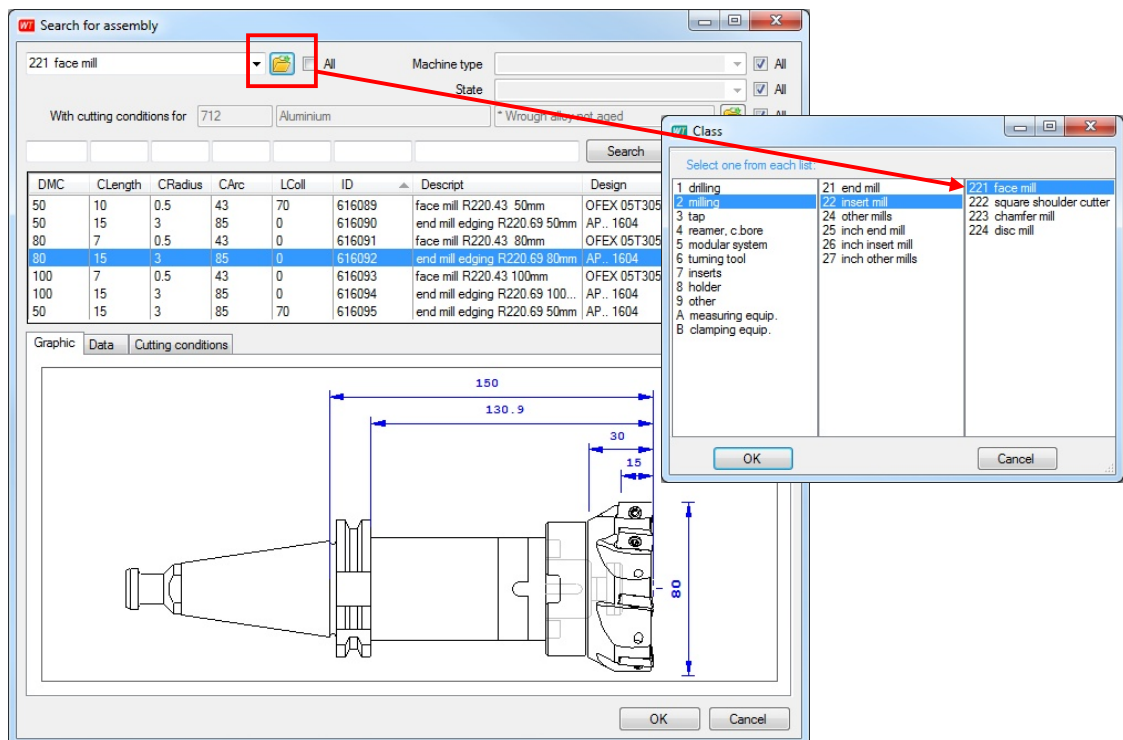
- The following chapters refer to the sample data in this database.

Import Tools

- Start *WinTool* Professional first
- Then start Mastercam and open the sample part "Side Frame" located in the WT-Mastercam-Interface sample folder and select a Machine Group.
- Click on the function *WinTool* GET to open the WT-ToolExport window and select *Tool Assembly*:



- Click on to open the tool classification screen. Select the classification "221 face mill" and highlight tool 616092.



- If the cutting conditions import is turned on ([SelectCutData](#) is enabled) select the value you want to transfer and click "OK".

DMC	StNr	ap	ae	Dia	z	Vc	fz	S	R	Type	Coolant Type	P	T	Comm
122	1.0570 *	5	40	80	7	226.2	0.08	900	504	Roughing	2 On	5	0	recomm
311	1.1545 *	5	40	80	7	158	0.168	629	740	Roughing	2 On	0	0	
712	3.0506 *	5	40	80	7	702	0.203	2793	3969	Roughing	2 On	0	0	

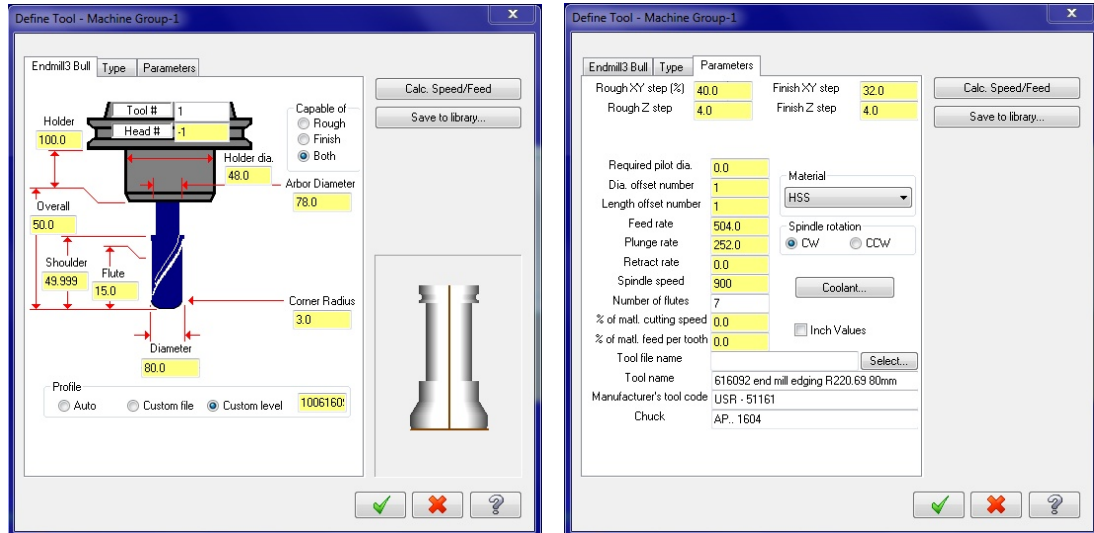
If you click on "Cancel" it will not transfer any cutting conditions with the tool. "Abort" will stop the entire tool data transaction to Mastercam.

- If no Mastercam tool type has been assigned to a WinTool classification, yet, you must do it now. This will map the WinTool classification to the Mastercam tool type. Select the correct Mastercam tool type from the selection list.

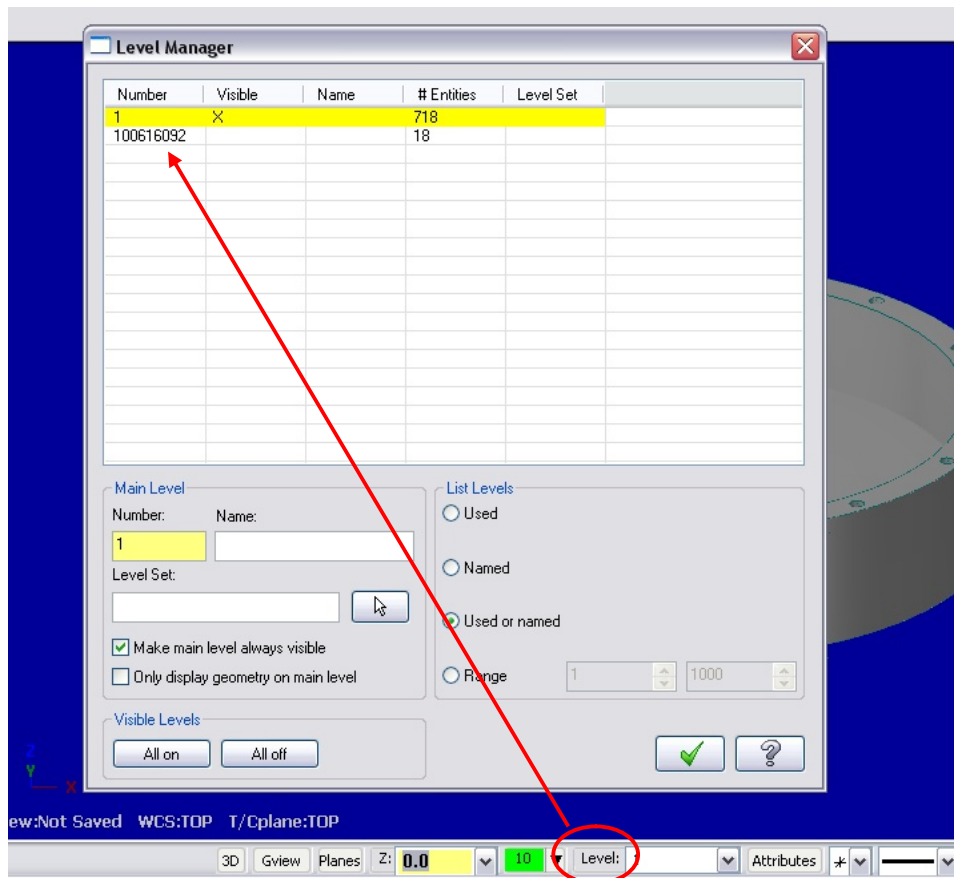
If you select "Ignore" to assign to a tool classification, the tool assemblies in this classification will not be transferred at all. This is useful for data that must not be transferred to Mastercam, e.g. measuring equipment.

In most cases it makes sense to assign the mapping permanently to a tool classification. Then you must also check the box "Store in assigned Tool Class" (recommended).

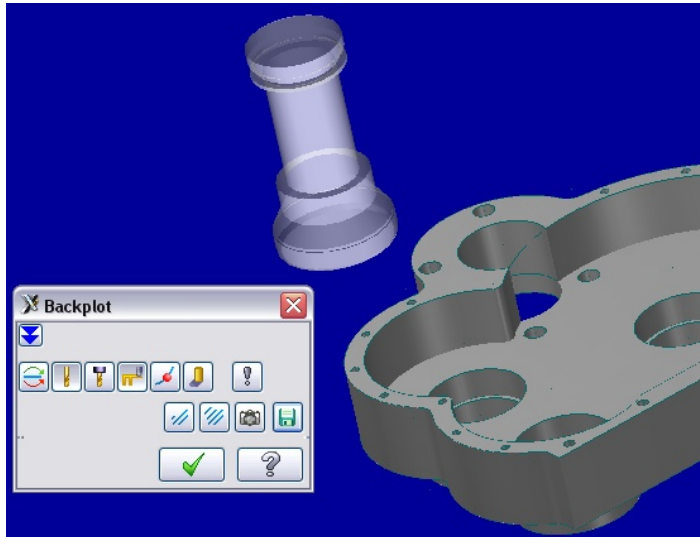
- Select "OK" to transfer the tool to the Mastercam. Review the tool data:



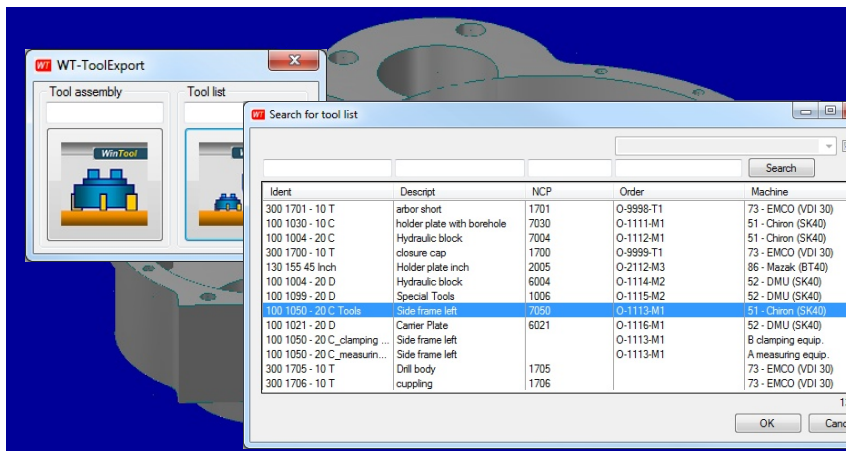
- WinTool 3D tool representation used in Mastercam is being created from the contour DXF which can be reviewed in the Level Manager. The contour gets the layer number 100'000'000 + unique WinTool tool assembly ID number.



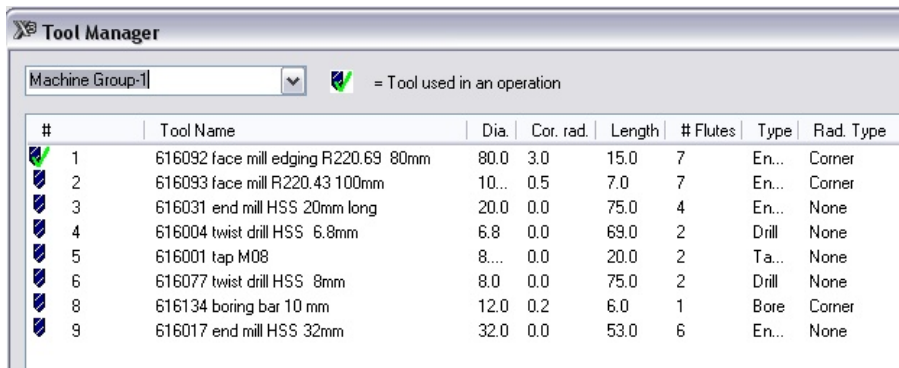
- Create a tool path and run the verification to see the *WinTool* tool representation.



- Select "GET" again to transfer the Tool List "Side frame left" to Mastercam:



- Review all imported tools in Toolpaths > Tool Manager:



Comment: in the *WinTool* sample database only the tools in list " Side frame left" have cutting conditions assigned .

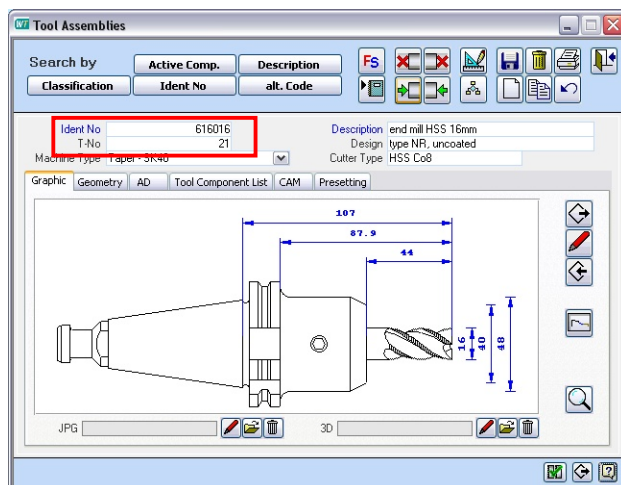
Tool Numbers

T-Number Assignment

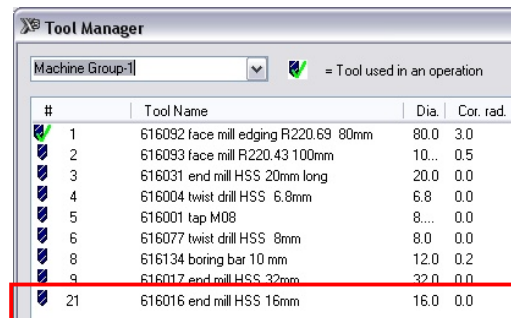
If you import a *WinTool* tools to Mastercam, the interface software will assign automatically a Mastercam "Tool#". The number is assigned sequentially starting at 1.

WinTool Tool Assembly T-No

In case you work with specific tool numbers on a machine, you can assign the number to the tool assembly in *WinTool Professional*. In the following example the tool assembly with ID 616016 has T-No = 21 assigned:



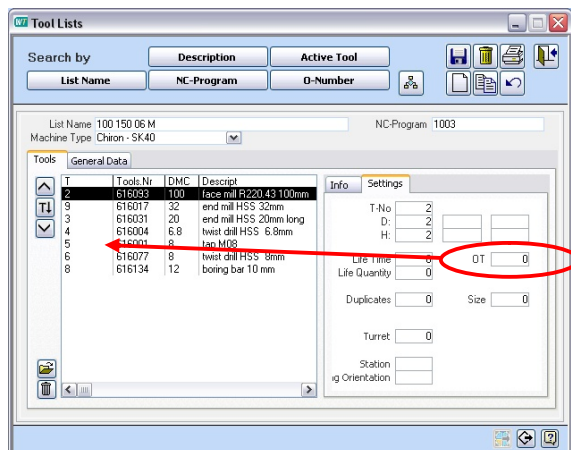
If you import this tool to Mastercam the interface will assign Tool# 21 in Mastercam:



Note: This is only recommended if the same tool keeps always the same T-Number on all machines using this tool (e.g. Probe has T#999, Spot Drill has T#1, etc.)

WinTool Tool List T-No

In *WinTool Professional* you can also assign T-Numbers in tool lists. If you import a list to Mastercam, the interface software assigns the Mastercam Tool# used in the *WinTool* list.



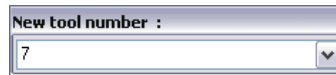
Note: This is recommended if you work with resident tools on machines. Create a "Resident Tool List" for each machine and dedicate T-numbers to each resident tool in this list. If you import this list in Mastercam the tools will be loaded with the dedicated T-numbers.

Duplicate T-Numbers

If a tool number is already used in the Mastercam tool manager, you can not import the tool with the same Mastercam T#. Then the following dialog message appears:



Select **YES** to import the tool with a different Mastercam Tool#:



Select **NO** if you want to overwrite the existing tool with the same Tool# in Mastercam.

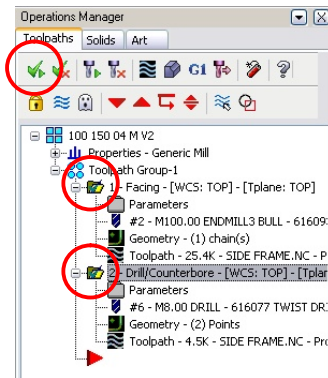
Export Tool List to WinTool

When you have finished the NC program, the list of all the tools used in the Mastercam Tool-path Group must be stored back to *WinTool*. This will allow the next person in the production process to continue with the job.

Step-by-Step

To create a *WinTool* tool list from within Mastercam proceed as follows:

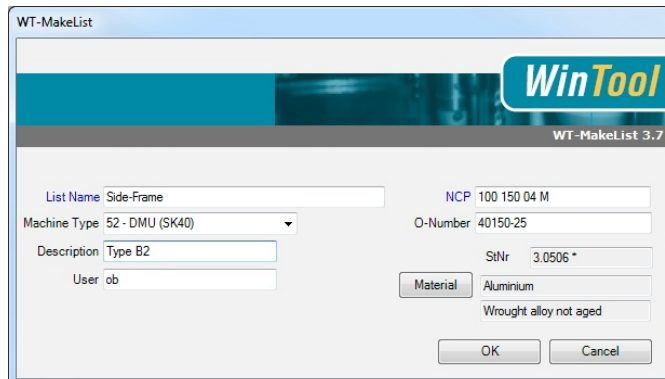
- Select in your Operations Manager all the tools that are used in the NC-Program and need to be transferred to the *WinTool* tool list:



- Select the *WinTool* menu PUT to store the tool list in the *WinTool* database:

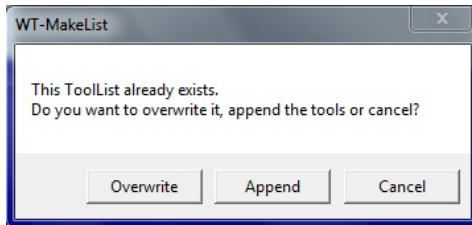


- Edit the tool list header information:



- Select "OK" to store the information in the *WinTool* database.

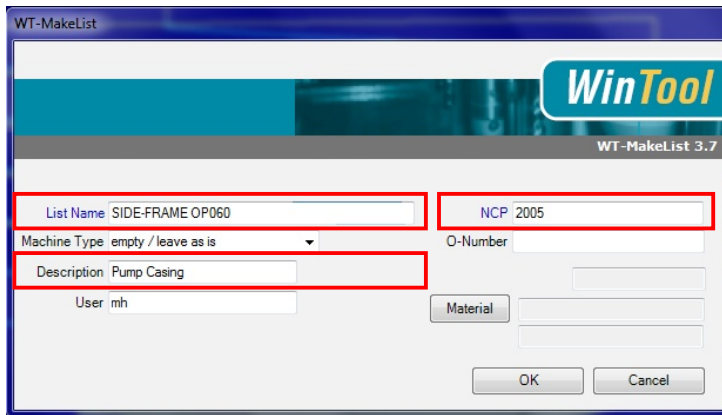
If a tool list with the same List Name exists already in *WinTool* the following dialog box appears:



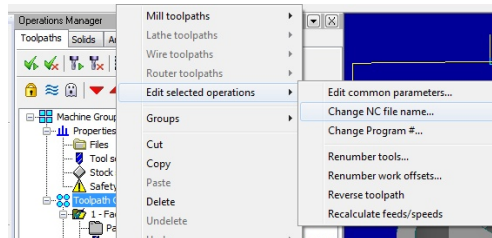
Note: In the new *WinTool* tool list, the T-Numbers and the sorting will be the same as in the Mastercam Toolpath Group.

Mastercam data fields transfer

- Some of the WT-MakeList window data entry fields will be filled in automatically with values used in your Mastercam session:

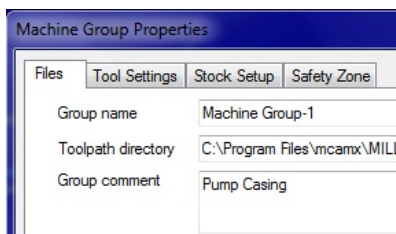


- **List Name**



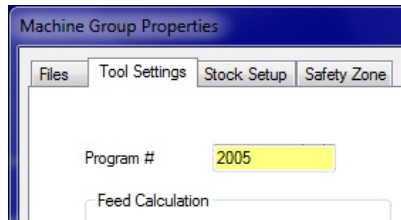
The data field List Name pulls data from the NC file name. You can change the name as follows: r-click Toolpath > Edit selected operations > Change NC file name ...

- **Description**



The data field Description pulls the data from Machine Group Properties > Files > Group Comment.

- **NCP**



The data field NCP pulls the data from: Mastercam > Machine Group Properties > Tool Settings > Program #.

Preparing Tool Data in WinTool

The WT-Mastercam-Interface works only if the data has been entered correctly in *WinTool*.

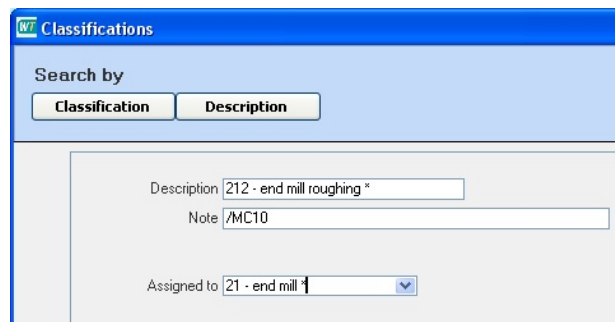
Before you import *WinTool* data to Mastercam, read this chapter carefully. The following points must be considered:

- Each *WinTool* classification must be assigned to a Mastercam tool type.
- Each tool assembly must be linked to a *WinTool* Machine Type.
- Each tool assembly must have a "Namegiving", "Cutter", and a "Has Taper to Machine" component.
- The tool geometry of all components of an assembly must be recorded correctly according to the Tool Type-Outline.

User Classification

- Each tool classification in *WinTool* must be mapped to the corresponding Mastercam tool type. If the mapping is missing the WT-Mastercam-Interface will ask to assign then classification during import (see chapter "Import Tools" above)
- You can also map the *WinTool* classification with the Mastercam tool types manually. In *WinTool* select Settings > Class, then select a classification. In the data field "Note" you can assign the corresponding Mastercam tool type.

For the classification "212 - end mill roughing" assign the Mastercam tool type code [/MC10](#) (see Annex for Mastercam tool type codes).



Machine Configuration

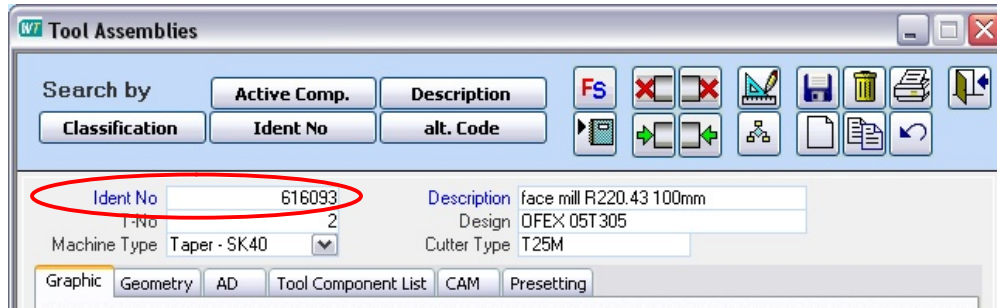
- In order to create tool assemblies in *WinTool* you must record the Machine Types in *WinTool*. This is required for a number of reasons:
 - Tools can be filtered by machine adapter type during tool import in Mastercam
 - *WinTool* can automatically create an accurate 3D milling tool model
 - Tool lists can be filtered by machines

WinTool tool assemblies that are not assigned to a *WinTool* Machine Type can not be imported to Mastercam.

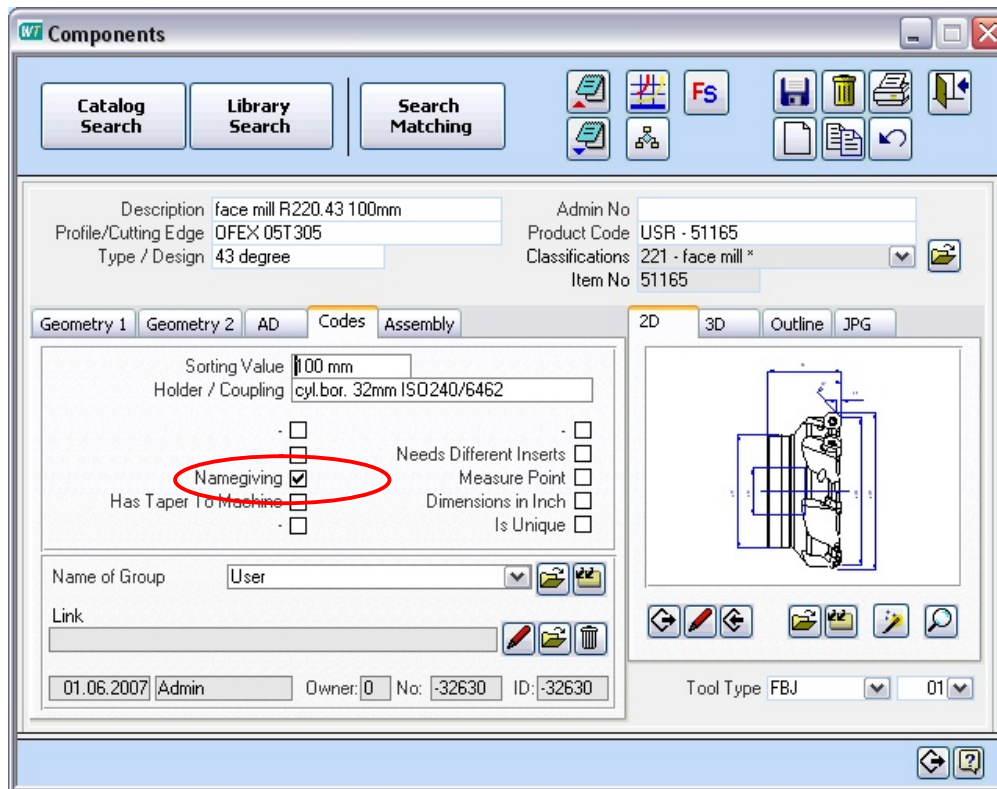
Note: Review *WinTool* documentation for details on how to setup the machine types.

Tool ID and Name

- Each tool assembly record in *WinTool* gets a unique numeric Ident No.



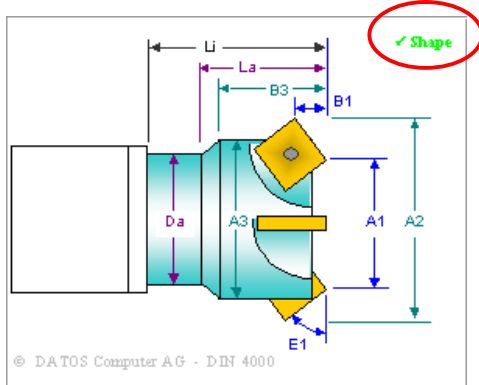
- Each *WinTool* tool in Mastercam will get a unique Tool# (see chapter Getting Started above) and a unique tool name. The name is a combination of the *WinTool* Ident No and the Description. Example: 616093 face mill R220.43 100mm
- A *WinTool* tool assembly is generated from the data of its components. One of the components must be marked as the "Namegiving".



Note: If none of the components are marked as "Namegiving" or more than one component is marked as such, the WT-Mastercam-Interface will fail to import the tool.

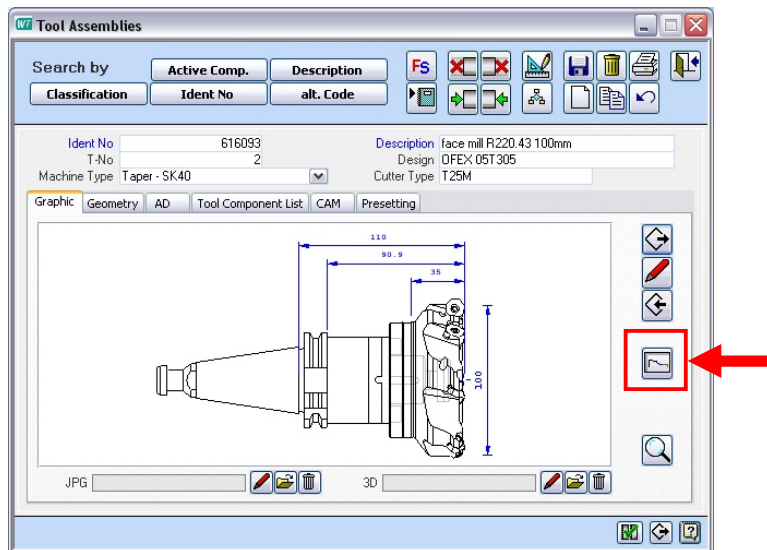
Regular Tools

WinTool considers “regular tools” (as opposed to “special tools”) all tools that can be recorded with the Outlines provided in WinTool and that are supported by the WinTool Shape-Generator (which marked with the light green symbol).



WinTool can generate for all regular tools 3D representations as long as they are axially symmetric.

- The tool geometry of all components must be recorded fully and correctly according to the WinTool Outlines. You can verify the tool contour directly in WinTool starting the Shape-Generator

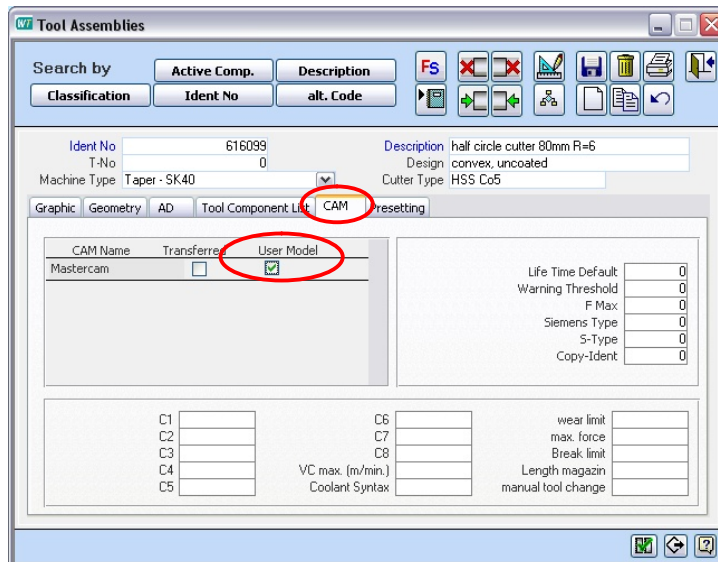


Special Tool Holders

If a contour of a tool holder can not be created automatically with the Shape-Generator it is considered a special tool holder.

Managing Special Tool Holders

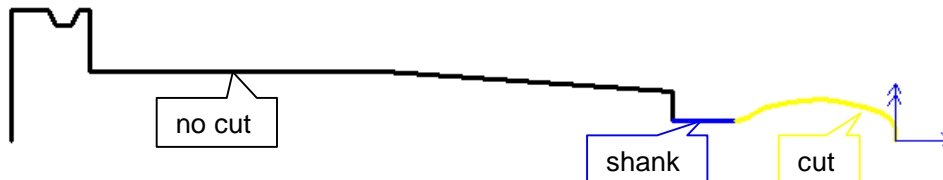
- For Special tool holders you can edit the holder contour in *WinVector* (or any other CAD system) and store it in the [UserModelsPath](#) of the WT-Mastercam-Interface. Save the DXF contour as a DXF and assign the name of the tool assembly Ident No (eg. [616099.dxf](#)). Then flag the *WinTool* tool assembly in the folder tab CAM:



If the User Model flag is active, the WT-Mastercam-Interface ignores the Shape-Generator and takes the customized DXF (e.g. 616099.dxf) from the directory for User Model (see path settings in Annex).

Create a Special Tool Holder Contour DXF

- Use the WinTool Shape-Generator to create a contour "close enough" to your special tool. Customize the contour with *WinVector* or Mastercam. You must use the layers CUT, NO-CUT, and SHANK:



Special Cutters

The WT-Mastercam-Interface supports also special cutting tools that are axially symmetric. This is useful if no suited Mastercam tool type for the cutter geometry is available.

Managing Special Cutters

- Draw the special cutter contour manually and save it in `...\UserModels\Parts` with the name of the *WinTool* tool component Item No (eg. `51271.dxf`).
- If you import in Mastercam a *WinTool* tool assembly that is using a component with a special cutter, the WT-Mastercam-Interface will automatically find the special cutter DXF in the `UserModels\Parts\` -path and attach it to the tool holder contour generated by the Shape-Generator.

Create a Custom Cutter Contour:

- Create a DXF-file with your custom cutter contour. The contour must be in the Layer CUT. The tip of the cutting contour must end at the origin (zero point) and must have the same cutting length as entered in the components field (CLength).



Cycle Type / Usage (C7)

The default usage of a tool can be set in the folder tab CAM of a *WinTool* tool assembly. Default Usage (milling) respectively Cycle Type (drilling) is preset for each assembly in the custom field C7. The following values are used (bold = default):

Drilling:

- 0=Simple Drill**
- 1=Boring
- 2= Peck Drilling
- 3=Thread
- 4= Drill 1
- 5= Drill 2
- 6=Special 1
- 7=Special 2

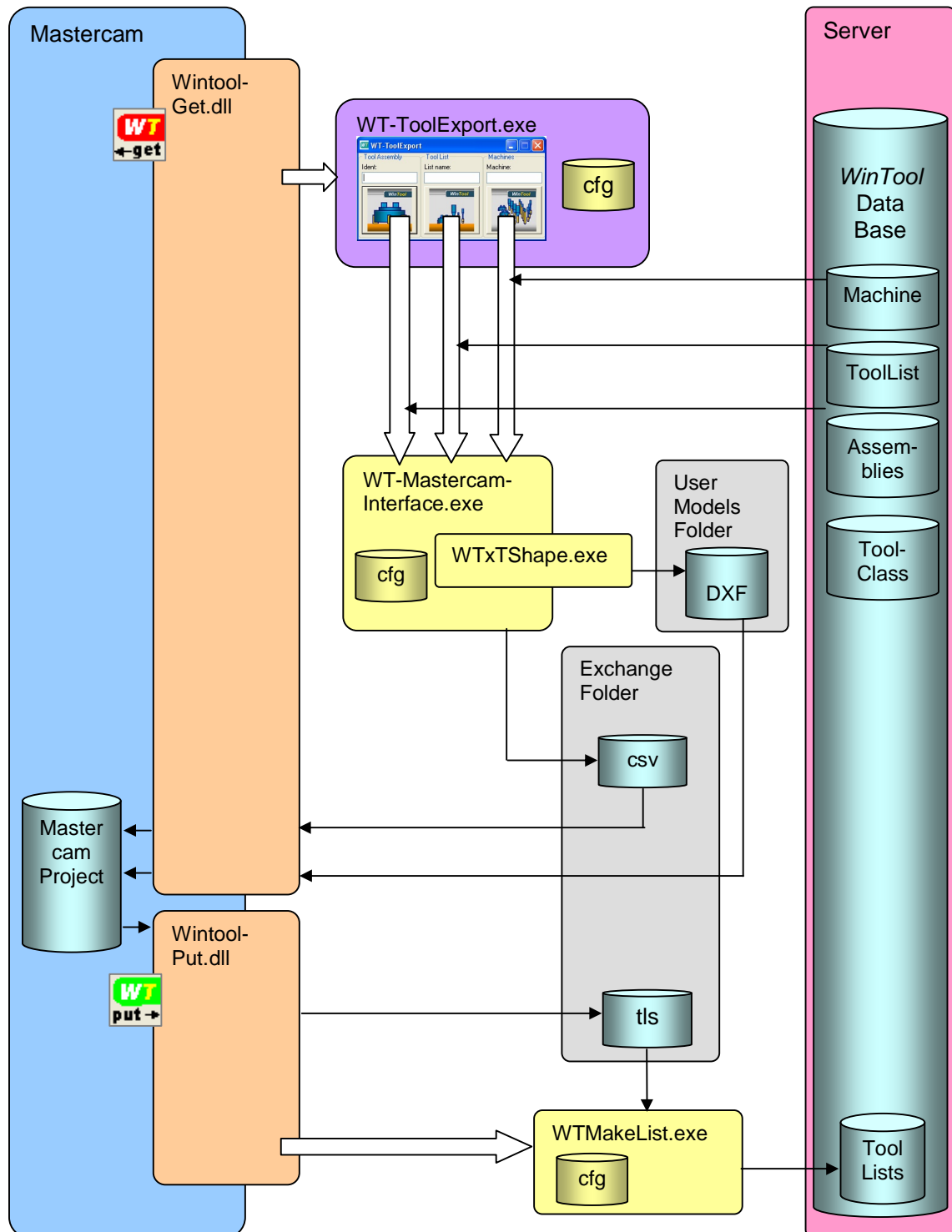
Milling:

- 0=Rough and finish**
- 1 rough
- 2 finish

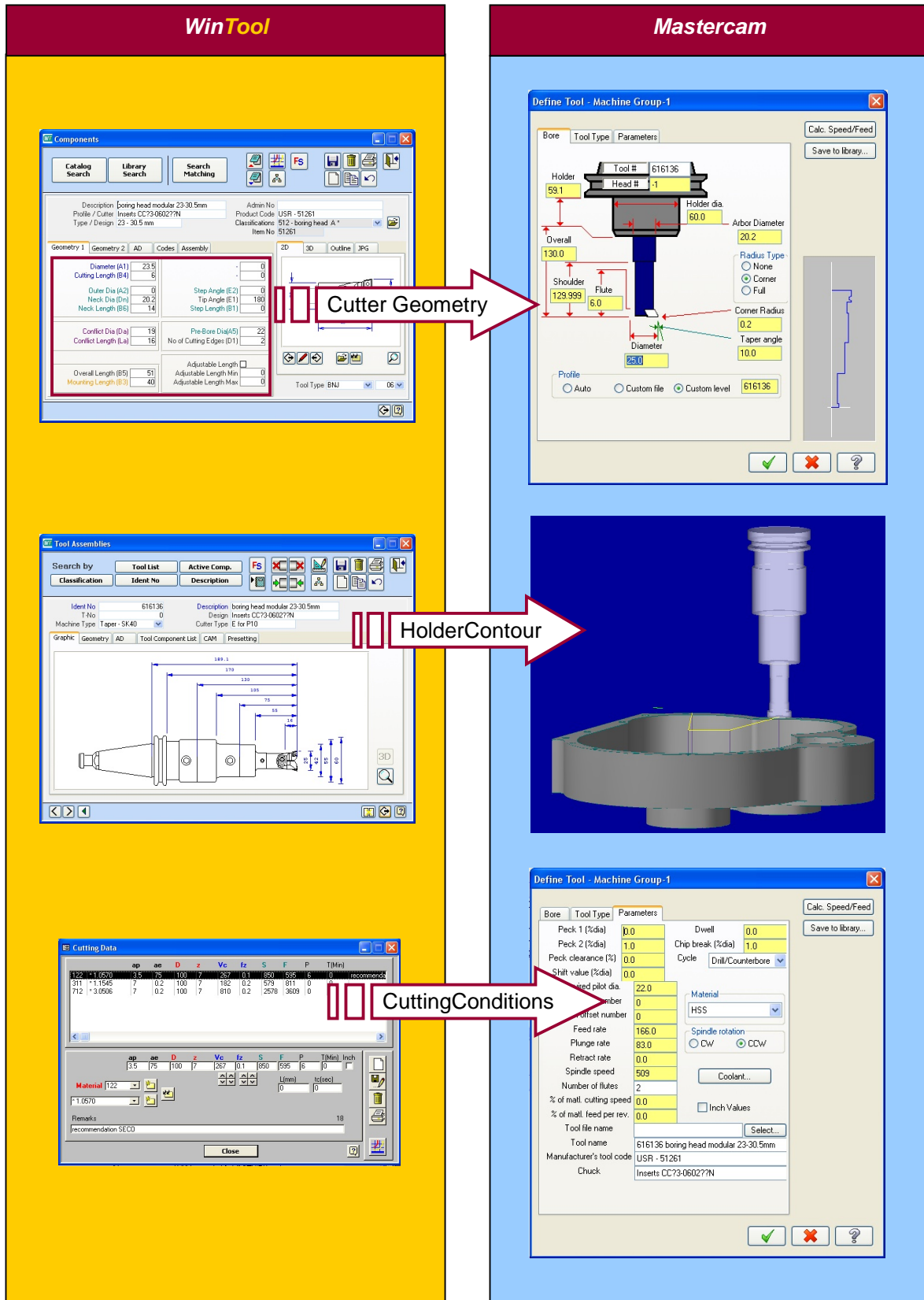
Note: You can label the customer fields in the *WinTool* software for each Machine Type individually (Settings > Machine Type, then select machine end edit the labelling of customer fields)

Software Structure

Software-Modules and Data-Exchange



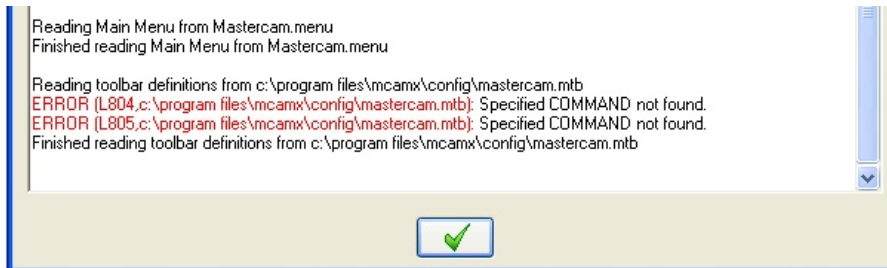
WinTool-Mastercam Data Integration



Known Issues

Uninstall Error-Message in Mastercam

After uninstalling the WT-Mastercam-Interface the following message might appear during start-up of Mastercam:



The message is caused from an emptied out *WinTool* toolbar (GET and PUT have been removed) in Mastercam. However, the uninstall program (Windows Add/Remove Program) does not delete the empty toolbar in Mastercam.

- If you install a new WT-Mastercam-Interface version just add the new toolbar (Get, Put) in Mastercam and the message will disappear.
- If you want to remove the WT-Mastercam-Interface completely, remove the empty toolbar manually in Mastercam in: \Customize \Toolbars, then select the toolbar and delete it.

Annex

Configuration File Parameters

General Information

All configurable parameters will be installed with default values unless they are changed in the cfg files. A cfg file can be edited with a text editor: In the cfg file the lines starting with a “#” symbol will be ignored (the symbol “#” defines a “comment line”). If you remove the # symbol the line will be activated.

Some parameters have a default value stored as a system variable. As soon as Mastercam is started up the default values will be overwritten with the values configured in the cfg file.

WT-Mastercam-Interface.cfg

```
[WT-Mastercam-Interface]
# Exchange Path configuration
# -----
OutputPath=
#   Default OutputPath is "Exchange" folder in local path

UserModelsPath=
#   Default UserModelsPath is "UserModels" folder in local path

SelectCutData=True
```

OutputPath

Folder path in which the WT-Mastercam-Interface stores the data exchange files. The system automatically registers the WTMastercamExportPath system variable with this value (see below). Default OutputPath is the "Exchange" folder in the interface installation path.
Note: Use a different exchange path for each user

UserModelsPath

Folder path in which the WT-Mastercam-Interface stores the contour DXF files. The system automatically registers the system variable WTMastercam-UserModelPath with this value (see below). Default UserModelsPath is "UserModels" folder in the interface installation path.

SelectCutData

If "True", the interface imports cutting conditions for work materials. A selection window opens if there are multiple or no cutting conditions for the material, or if a single tool assembly is transferred.
If not set, the value is "False". This transfers the first cutting condition.

Windows Registry values

Local Machine

32-bit Windows:

HKEY_LOCAL_MACHINE\Software\DATOS\WT-Mastercam-Interface

64-bit Windows:

HKEY_LOCAL_MACHINE\Software\Wow6432Node\DATOS\WT-Mastercam-Interface

InstallPath = C:\Program Files\DATOS\WT-Mastercam-Interface

(Parameter is set during installation)

Current user

HKEY_CURRENT_USER\Software\DATOS\WT-Mastercam-Interface

OutputPath = C:\Program Files\DATOS\WT-Mastercam-Interface\Exchange

(You can change this path in the file WT-Mastercam-Interface.cfg:

HKEY_CURRENT_USER\Software\DATOS\WT-Mastercam-Interface

UserModelsPath = C:\Program Files\DATOS\WT-Mastercam-Interface\UserModels

(You can change this path in the file WT-Mastercam-Interface.cfg)

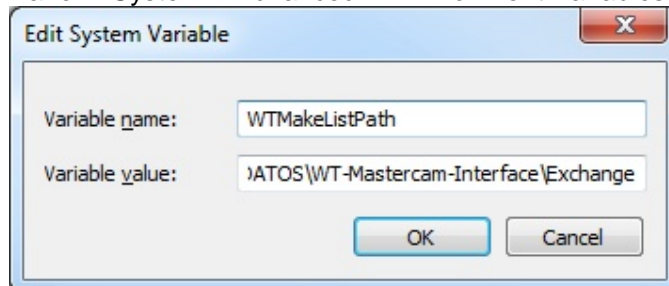
Windows System Variables

WTMakeListPath

The system variable WTMakeListPath is installed with default values:

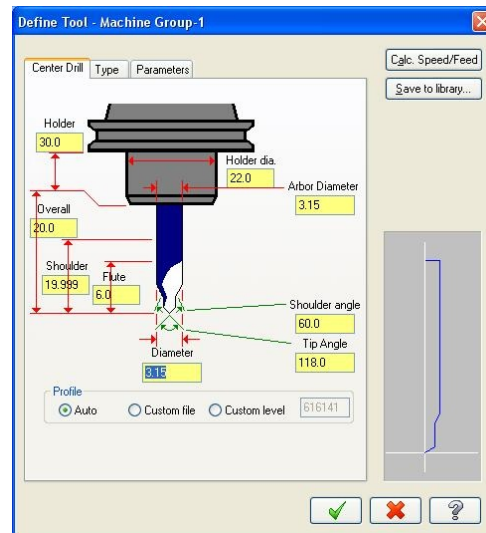
C:\Program Files\DATOS\WT-Mastercam-Interface\Exchange

The path configuration for the WT-MakeList software can be changed manually in the Control Panel > System > Advanced > Environment Variables > System Variable:

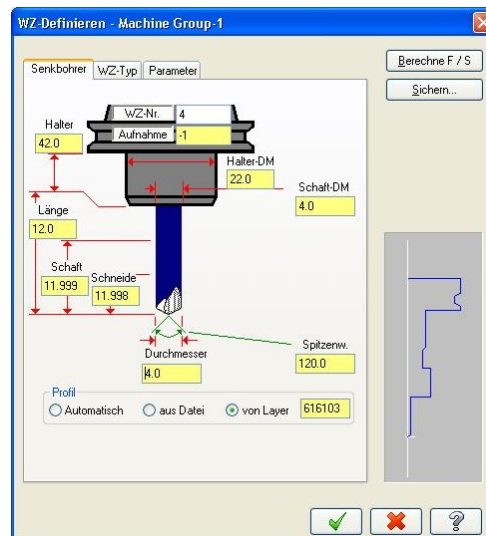


Supported Mastercam Tool Types

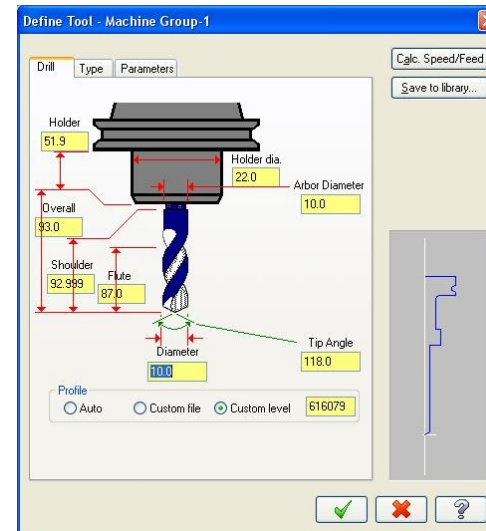
Center Drill (/MC1)



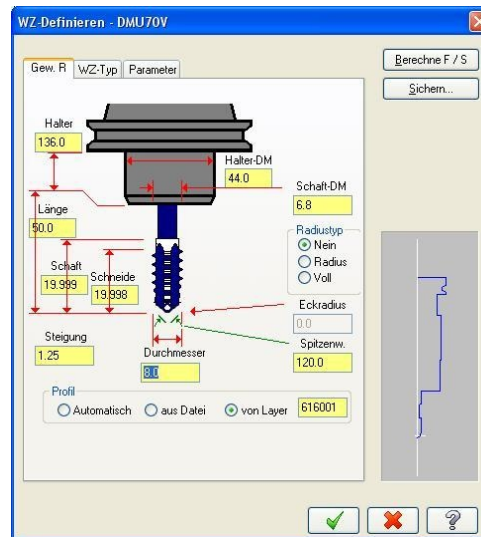
Spot Drill (/MC2)



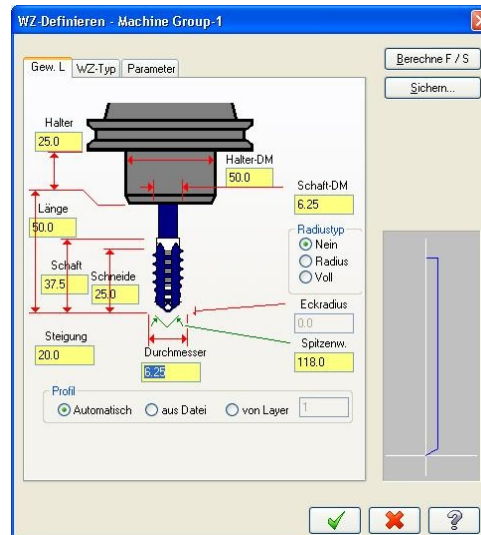
Drill (/MC3)



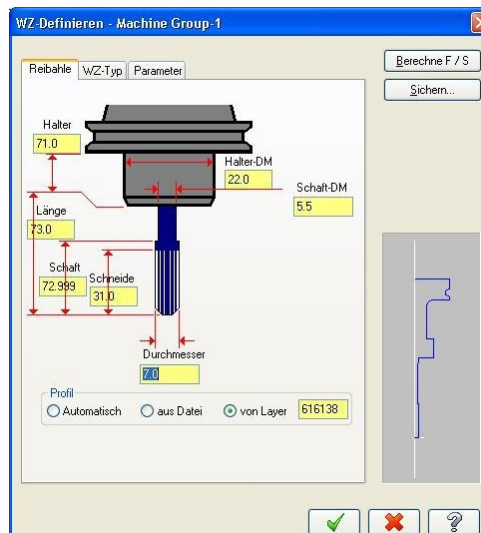
Tap RH (/MC4)



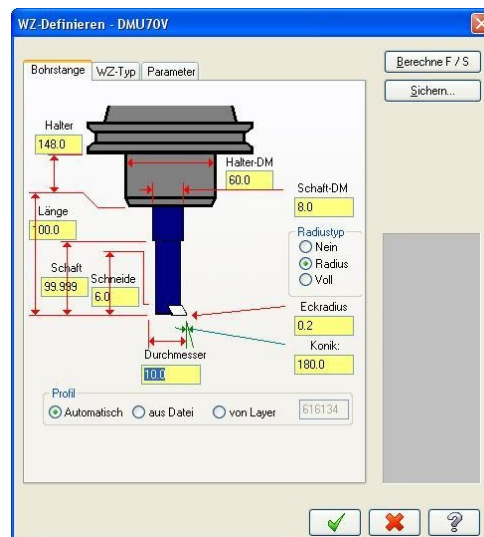
Tap LH (/MC5)



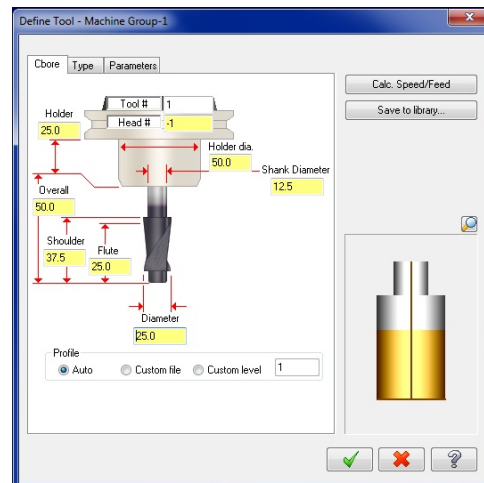
Reamer (/MC6)



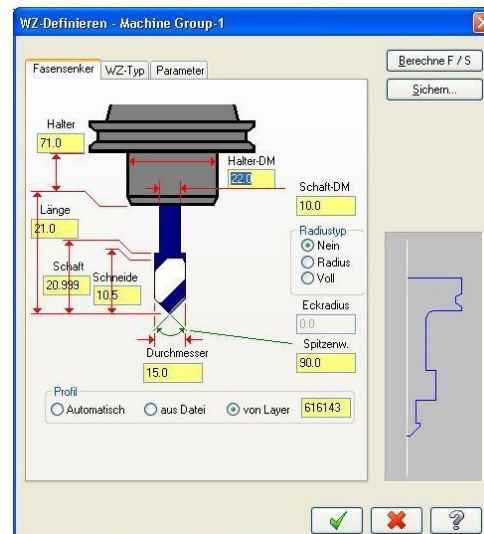
Bore Bar (/MC7)



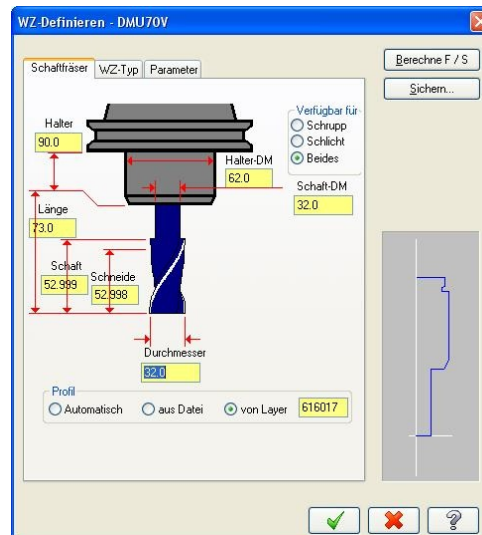
Counter Bore (/MC8)



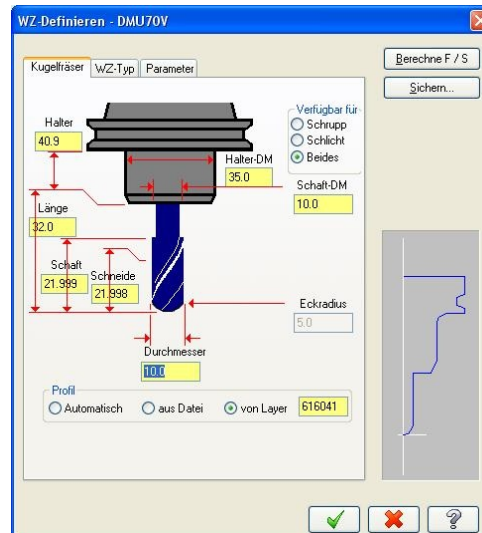
Counter Sink (/MC9)



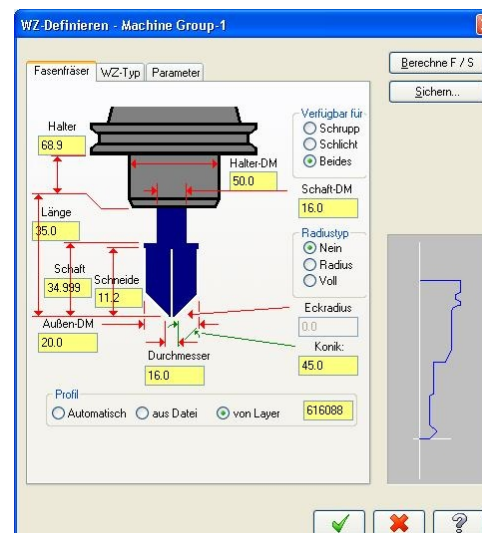
End Mill (/MC10)



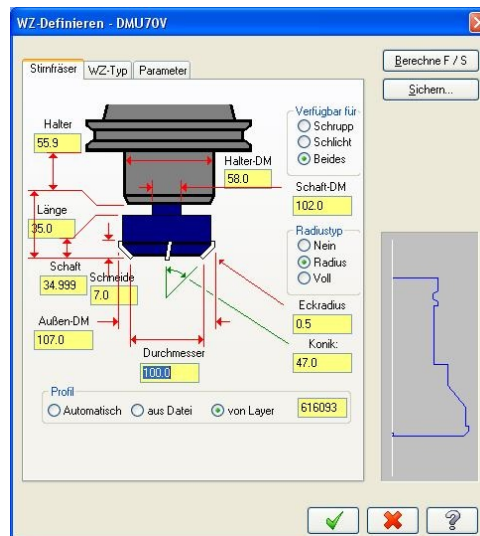
Sphere Mill (/MC11)



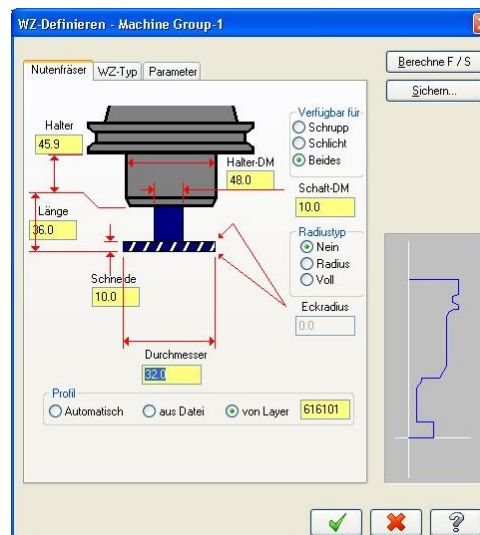
Chamfer Mill (/MC12)



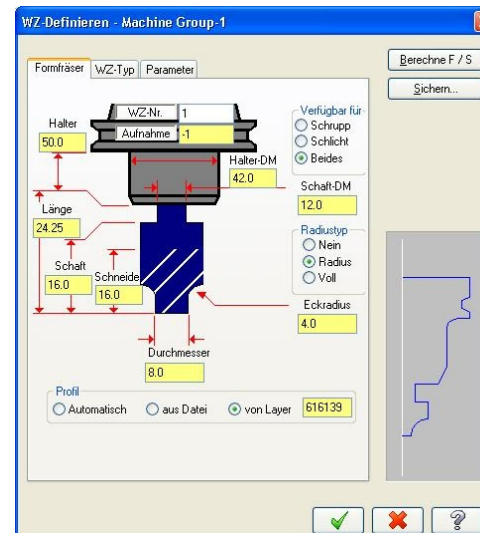
Face Mill (/MC13)



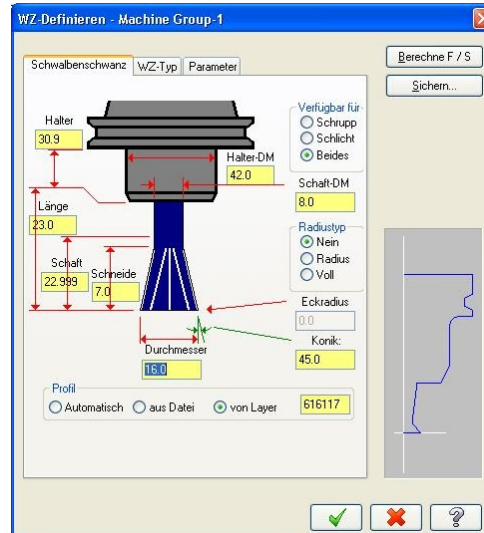
Slot Mill (/MC14)



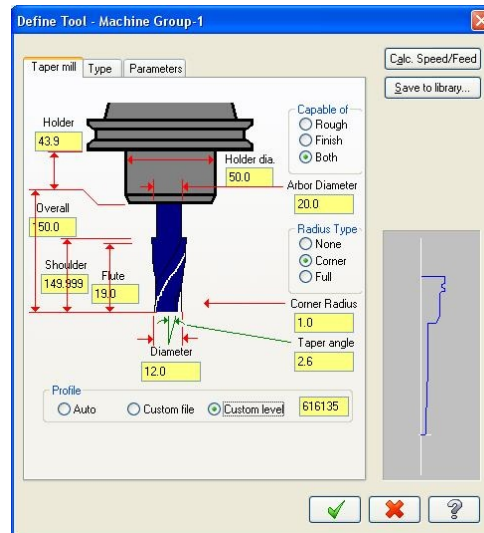
Radius Mill (/MC15)



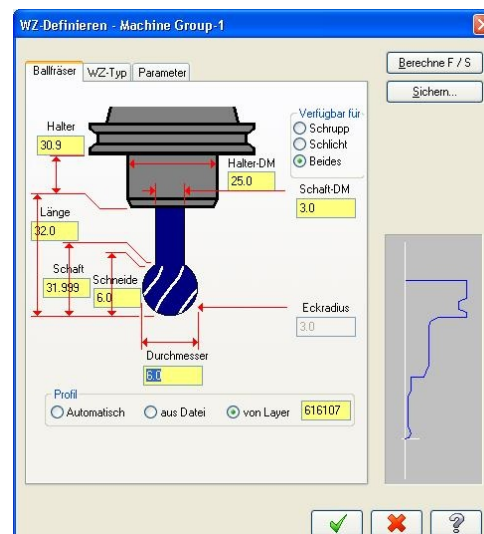
Dove Mill (/MC16)



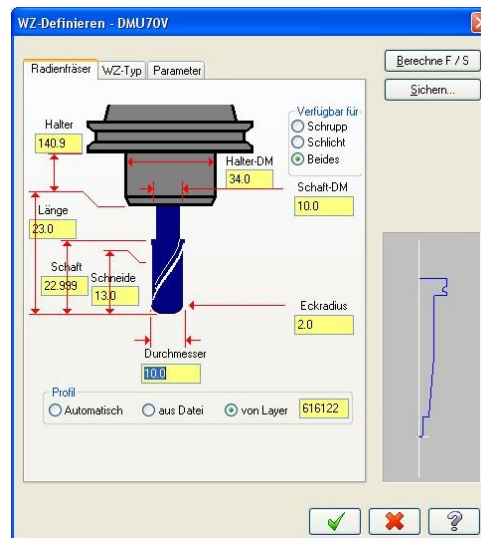
Taper Mill (/MC17)



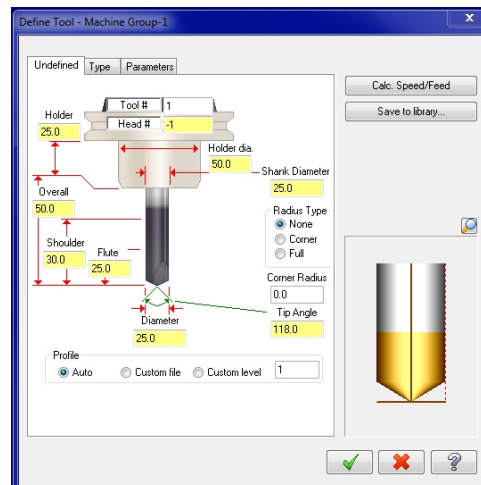
Lollipop Mill (/MC18)



Bull Mill (/MC19)



Custom Tool (/MC0)



Not Supported Mastercam Tool Types

- Engrave Tool
- Bradpt Drill
- Turning Tools

History

2.6

- Better process to update tools with same T-Nr. in Tool Manager and Operations Manager
- Support for *WinTool* 2011 and Mastercam X6 32/64 Bit
- Included newest versions of WT-ToolExport and WT-MakeList module
- WT-ToolExport: Start-up time with large databases is quicker
- Added tool type "Ignore" (/MC00) for tool assemblies that must be ignored on transfer
- Improved error handling

2.5

- Added new WT-ToolExport module
- Added WT-Mastercam-Interface configuration window
- Minor update of cutting condition selection window
- Fixed issue with installer

2.4

- Support of Mastercam X5 and X4 (updated)
- Cutting condition selection window during tool import
- Pre-selection of cutting conditions after import of first tool
- Mastercam tool type mapping can be done during transfer if missing
- Transferring tool holder description to field "chuck"
- Outer Dia for MC13 is transferred correctly
- WT-MakeList 3.7 with better selection method of Material and O-Number
- Improved error messages
- Updated transfer file
- Updated manual
- 30 day trial license options
- *WinTool* Professional must be started when using the WT-Mastercam-Interface

2.3 - 3rd Release

- Support for *WinTool* 2009 and *WinTool* 2010 (updated ToolExport and MakeList)

2.3 - 2nd Release

- Support for Mastercam X4

2.3

- Manual completely reworked
- Cutting conditions no longer negative, direction corrected
- ae, ap values supported
- Tool number management and messages optimized
- Level numbers for tool contours >100'000'000
- Update to WT-Mastercam-Interface 2.3.2.5721
- Mastercam contour display always correct now
- Better support of custom cutter DXF
- Mastercam values exported to WT-MakeList window
- Support for Mastercam X3

2.2

- Release for Mastercam X2