

July 2015

FOLLOW-ME! Technology Systems GmbH, Munich, Germany

Readme *hyperDENT* V7.3

English

Version history *hyperDENT* V7.0

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Bugfixing

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Information/functional enhancements

Changes/enhancements for jobs

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Information/functional enhancements

Changes/enhancements for jobs

Bugfixing/improvements

4.1.1.288 Release (V7.0)

Manual supplement

Information/functional enhancements

Changes/enhancements for jobs

hyperDENT version7

4.4.1.376 (V7.3)

Information/functional enhancements

- Microsoft Visual C++:

For proper operation of *hyperDENT* must from now on the version vcredist VC ++ 2013 (X86) be installed. With the update to *hyperDENT* V7.3 these will be installed automatically.

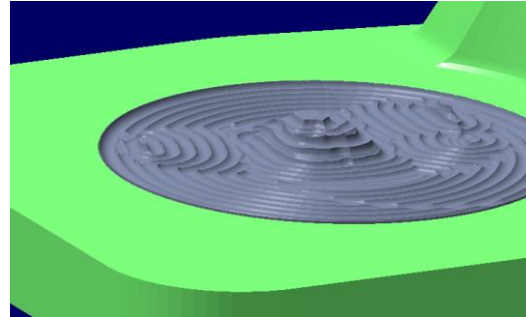
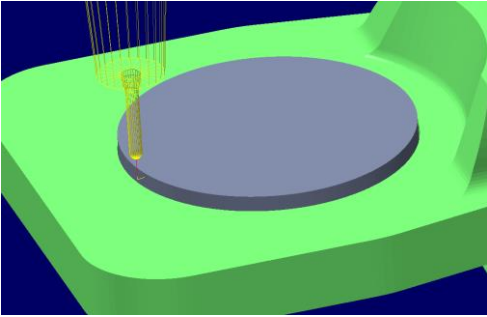
- Full Dentures: separate manual

Changes/enhancements for jobs

- New cycle for profile finishing
- New selections for parameter „minimum depth“ in „roughing“ and „reduce stock“.
 - Min. depth
 - Top of part
 - Mid of part
 - Bottom of part
 - Top of blank
 - Mid of blank
 - Bottom of blank
 - Offset min. depth (< 0 deeper machining)

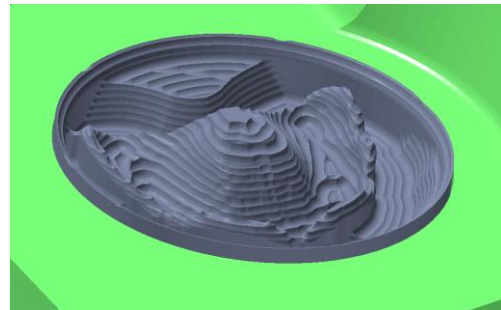
If a minimum machining depth for roughing is needed, for example, for the model or denture processing.

Excess material is milled away to the holder in order to provide more space for the following operations.



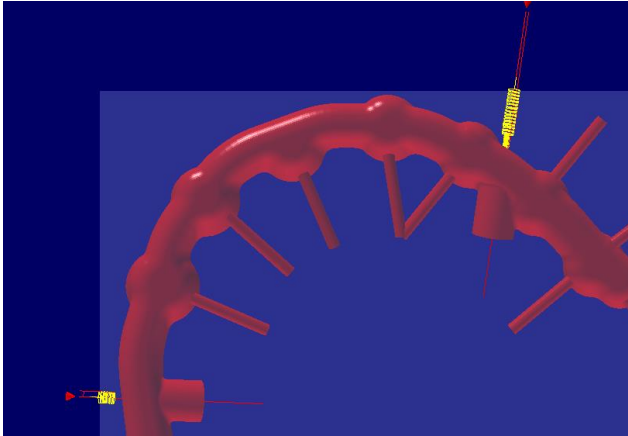
- Changed strategy of tool angulation for "Overall finishing occlusal side (abutments)" for improved machine dynamics.
- Fixture allowance for more safety. Rohteilhalter-Aufmaß für mehr Sicherheit bei der Bearbeitung. Editabel in general template settings. Useable for all kinds of fixtures. Acts as a global allowance on the fixture to guard against collision.

Margin line thickness	0
Bounding strategy	Fixture
Min. distance Part - Fixture	2
Outer machining ortho to blank	<input checked="" type="checkbox"/> No
Coolant	Off
Tool reference	Tip
Clearance above stock	4
Clearance distance	1
Check fixture against collisions in 3X Jobs	<input checked="" type="checkbox"/> Yes
Check fixture against collisions in 5X Jobs	<input checked="" type="checkbox"/> Yes
Fixture allowance	3
Reduce factor	0,9

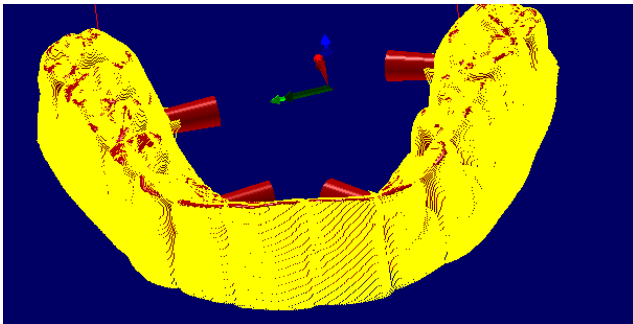


Bugfixing/improvements

- Undercut properties in the context menu are now only available for coping preparation lines. Not anymore for all preparation lines.
- Bugfix in generating NC-file names. If there was a point in the model name the rest would be cutted. Now the model name is shown complete, but without the point.
- Bugfix of calculation errors in the rest machining.
- Improved stock tracking.
- Bugfix in „Close Caps“ on roughing jobs.
- Improved calculation when drilling with high angles of attack.



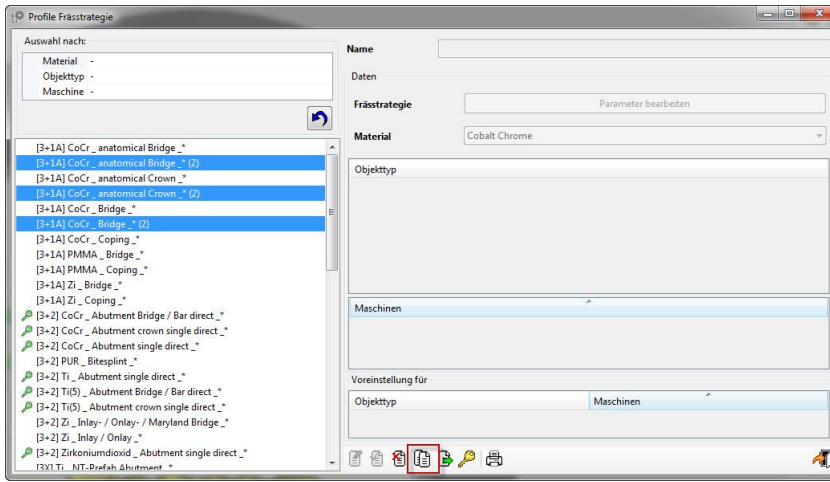
- Bugfix in screw channel detection.
- Improved automatic preparation lines detection.
- Bugfixes in the user interface layout.
- Bugfix in automatic nesting.
- Improved tool path calculation on undercuts for „5X Profile finishing normal to centercurve“ on „Overall finishing occlusal side (bridge)“



4.1.1.338 (V7.2)

Information/functional enhancements

- Multiple selection of templates and copying is now possible

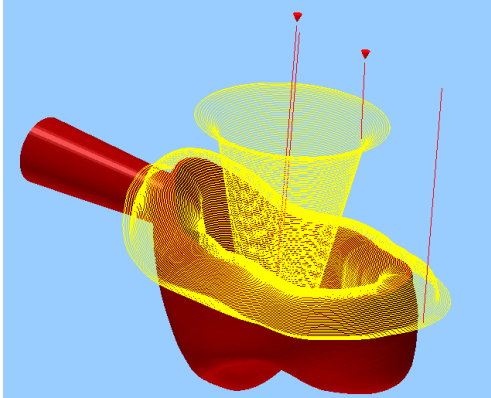


- Change type of preparation line in „user defined area“ and „tooth pocket“ in
 - context menu in the graphics window
 - Menu -> Edit -> Preparation line -> Change type of margin line possible.
- New cycle for 3D roughing integrated.

Changes/enhancements for jobs

- In roughing jobs it is now possible to select the planar mode.
 - Planar mode
 - Inside out (milling from inside to outside)
 - Optimized in (milling from outside to inside)
- Job „Overall finishing occlusal side (bridge)“ incl. milling strategy „5X Profile finishing normal to centercurve“ is now also available for models.
- „Calculate if...“ to use one template for one- and two-piece abutments.
 - Off
 - Screw fit area exists
 - Screw fit area does not exist
- 3D – Equidistant finishing for „finishing user defined areas“ unlocked.
- Working in the opposite insertion direction similar to „Finishing user defined areas“ now also in „Restmachining user defined areas“.
- Job: Predrill with 5X bossfinishing (for grinding)

- New parameter
 - Hole diameter
 - Crater angle



- Synchronizing with the predrill job of the delivery point in the middle of the job "finishing over all cavity side (cap) - 3D Equidistant Finishing flow"
 - Requirement:
 - Predrilling Job => Side => Bottom
 - General settings in Job => Outer machining ortho to blank => Yes

- „Offset prep safe mesh“ now adjustable, before 0,05mm as default value.
 - Requirement: Protect margin line => Yes
 - Available for:
 - Job: Finishing outer areas cavity side (cap)
 - Job: Overall finishing cavity side (cap)
 - Job: Finishing outer areas cavity side (bridge)
 - Job: Overall finishing cavity side (bridge)

- Slope dependent machining in „3D and 5X automatic restmachining“ in parallel strategies in restmachining jobs. Target is to get better toolpaths for grinding.
 - Slope dependent machining => Yes => Behavior as before
 - Slope dependent machining => No => Restmachining in parallel strategies
 - Job: Restmachining inside abutment bases
 - Job: Restmachining inside copings
 - Job: Restmachining outer areas cavity side
 - Job: Overall restmachining cavity side
 - Job: Restmachining userdefined areas
 - Job: Restmachining occlusal side

- Multi axis machining in restmachining inside copings. Machining in several axis positions (2 or 4), dependant on machine axis.
 - Requirement:
 - Undercut property of coping => Coping has undercuts
 - Multi axis machining => Yes

- Available for:
 - 3D Arbitrary stock roughing
 - 3D automatic restmachining
 - 5X automatic restmachining
- „Offset prep safe mesh“ for job „finishing outer areas cavity side (bridge)“ now for all milling strategies available.
- Job: Finishing any side => “Radial 5X Z-Level finishing” and “Radial 5X Profile finishing”
 - New parameter: Center at connector position
 - Effect: The pivot point for the tool paths is the center of the connector, not of the part. Results are smooth tool paths around the connector.

Bugfixing/improvements

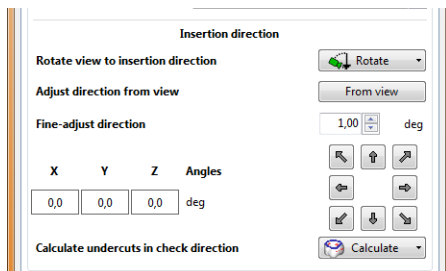
- Milling strategy in roughing jobs was adapted to settings in version 2012. Now again from inside to outside. Now also selectable. See changes/enhancements for jobs.
- Bugfix in depth limit in 3X Peeling jobs.
- Bugfix in Templateeditor.
- Various translations.
- Various minor bug fixes.
- Bugfix in polyline identification.
- Bugfix in deleting user defined areas in the editor.
- Bugfix on „exit hyperDENT on successful finish“, now it also works with a minimized window.
- Bugfix in tool path calculation in 3X Peeling Mode ascending + descending.
- Bugfix in general settings, select language. Again visible after change language.
- Bugfix in editing mode, after quitting editing mode the previous data are available.
- Script-Error while load project fixed.
- Bugfix in calculating user defined areas.
- Revision of display and projection of user defined areas.

- Troubleshooting in roughing through implementation of new cycles.
- Display of machine and fixture after merging calculations in the calculation merge.
- Bugfix on sinter frames when using the support plate.
- Bugfix on sinter frames after deleting the margin lines.
- Project sketch is now even after changing the text size in Windows on a scale of 1:1 .
- Incorrect display of the tool type in the project printing fixed.
- Troubleshooting the stock tracking.
- Missing calculating in roughing of screws channels in "calculate in NC coordinates" has been fixed.
- Space Mouse is supported again.

4.1.1.308 (V7.1)

Information/functional enhancements

- New undercut control functionalities



Possibility to rotate the view to insertion direction an opposite insertion direction to calculate undercuts also in opposite insertion direction. Useful for user defined areas.

Rotate



Opposite insertion direction (View of insertion direction) (Also in the



context menu available)

Insertion direction (View of insertion direction)

Calculate



Include opposite direction (Both directions will be calculated)



Exclude opposite direction (Calculating only in insertion direction)

- Print project settings

When you change the part name in the part browser you can display the original part file name separately in the print preview.

- Display part information
 - Display part file name

- Nesting – Position of 1st part

Use automatic nesting	<input checked="" type="checkbox"/> Yes
Choose nesting direction	From inside to outside
Position of 1st part	Centre
Angle step [°]	10

- With this function the position of the first object can be selected depending on the nesting direction. Particularly interesting for rectangular blanks.

Changes/enhancements for jobs

- “Finishing user defined areas” is now available in part type “Abutment crown bridge”
- “Cut / Reduce connectors” – new function for working with automation. If you set a NC text e.g. for part collector. Normally the job will create a tool path for each connector, this means e.g. the part collector appears for each connector. For this problem the NC text sequence was developed.
 - The following options are available:
 - NC text before tool change (sequence)
 - NC text after tool change (sequence)
 - NC text before first position (sequence)
 - NC text after first position (sequence)
 - NC text after last position (sequence)

Bugfixing/improvements

- Bugfix in the license center with the Russian language settings
- Use development view settings have been corrected. Use development view is now default. (Settings / General / Display)
- If you start hyperDENT before hyperVIEW installation now a hint will appear.
 - omHV.exe is not found
 - To open *hyperDENT*, *hyperVIEW* must be installed!
- Bug at the recognition of the insertion direction in the rest machining and user defined areas have been fixed.
- The milling direction in “Overall finishing occlusal side (cap)” for the milling strategy “3D Equidistant finishing flow” have been corrected.
- Error in calculating " Cut / Reduce connectors" in response to the “cut safety distance” have been fixed.
- Bugfix in undercut calculation
- If there is no postprocessor (PP) installed, DIN ISO is present automatically. If there is any other PP, DIN ISO it is no longer displayed.
- Bugfix in sinterframe support plate thickness.
- Bugfix in License Center.

4.1.1.288 (Release, V7.0)

Manual supplement

Supplement to 5.4.2

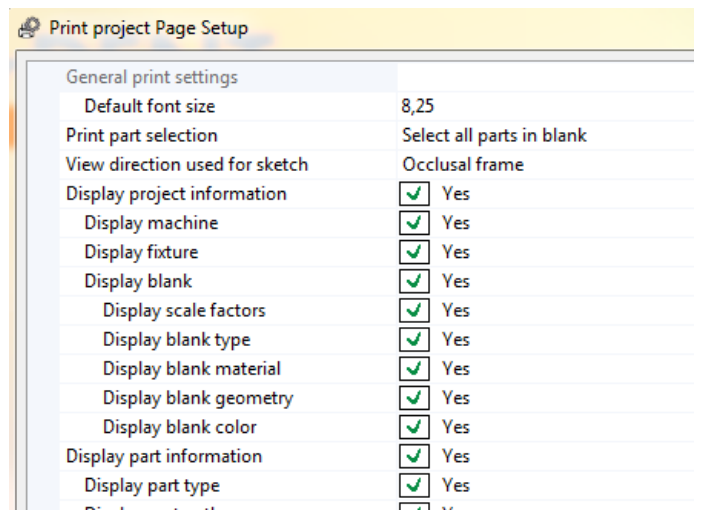
Project print setting selection

New: Display part template

Display part tool paths exist

Display part user information

Show hidden part user information



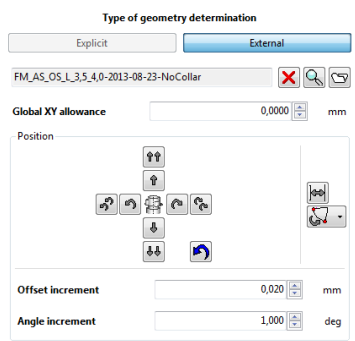
Display used tools for part

Display overall used tools

Use margin between part groups

Supplement to 10.5.1 Enter implant interface

New:



Fast translate up/down



Fast rotation counterclockwise/clockwise



Move part to reference surface

Move part along the screw channel axis until the reference surfaces match.



Rotate part to selected point

Rotate part around the screw channel axis until the selected points match.

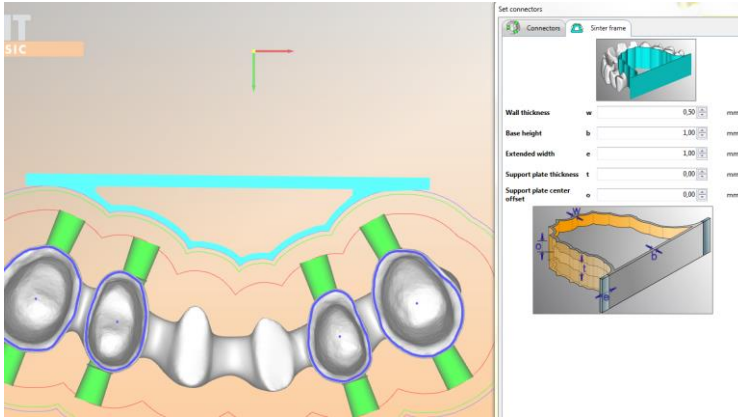


Rotate part to reference surface

Rotate part around the screw channel axis until the selected reference surfaces match.

For more info's see 8.3.2 – 8.3.5

Supplement to 13.7 Creating sintering frames



New:

Extended width

Base length will be extended

Support plate thickness

A support plate will be created in the plate center

Support plate center offset

Offset to the support plate from the center

Supplement to 17.1.3 Fixture

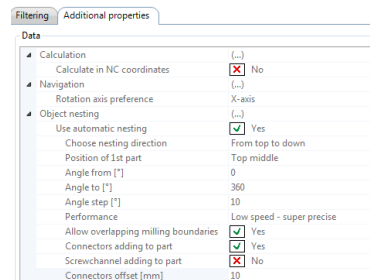
New:

Screwchannel adding to part

Yes Add screwchannel, place parts
with screwchannel

No Placing without screwchannels

Connectors offset [mm]

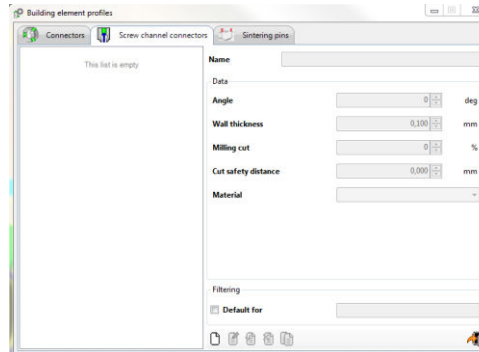


Supplement to 17.3 Building elements

New:

Screw channel connectors

For more info's see 13.6.1



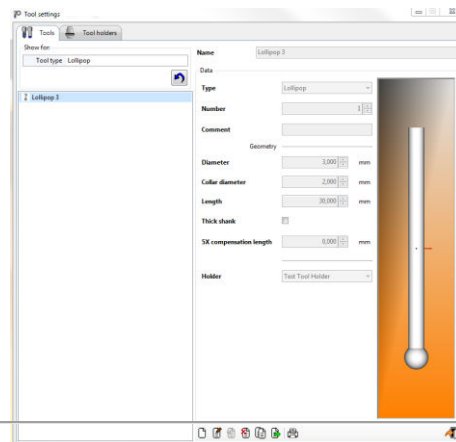
Supplement to 17.4.1 Entering tool data (optional)

New:

Tool type – “Lollipop”

3D preview (also available for “tool holder”)

(Tools and tool holder will be shown in 3D,
changes in real time)



Supplement to 17.8.5 Consistency checks

New: Screwchannel outlet opening ends outside blank

Millboundary cuts other parts screwchannel outlet opening

General settings

Miscellaneous	Part outside blank	Warning
Load wizard	Parts overlap	Warning
Project management	Part outside fixture boundary	Warning
Part tracking	Security distance to part	0,1
Consistency checks	Security distance to fixture	0,1
Calculation	Millboundary outside blank	Warning
Postprocessing	Millboundary outside fixture boundary	Warning
Navigation	Connector ends outside blank	Warning
Display	Millboundary cuts other parts connector	Warning
Connector behaviour	Connectors exist	Error
	Screwchannel outlet opening ends outside blank	Error
	Millboundary cuts other parts screwchannel outlet opening	Error

Supplement to 17.8.7 Postprocessing

New:

Create screenshot before calculation

Image format

Print project automatically after calculation

General settings

Miscellaneous	Postprocessing strategy	Standard
Load wizard	Postprocessing mode	Start hyperVIEW only
Project management	Toolspecific output	<input type="checkbox"/> No
Part tracking	PP Output directory	hyperVIEW configuration
Consistency checks	Create subdirectory	<input type="checkbox"/> No
Calculation	PP Output file name	Fixed name
Postprocessing	NC file name	[STOCKNAME][TIMESTAMP]
Navigation	Create info file	<input type="checkbox"/> No
Display	Create screenshot before calculation	<input checked="" type="checkbox"/> Yes
Connector behaviour	Image view direction	Current view
	Show names of parts to be calculated	<input type="checkbox"/> No
	Image resolution width	800
	Image resolution height	800
	Image format	png
	Print project automatically after calculation	<input type="checkbox"/> No

Supplement to 17.8.9 Display

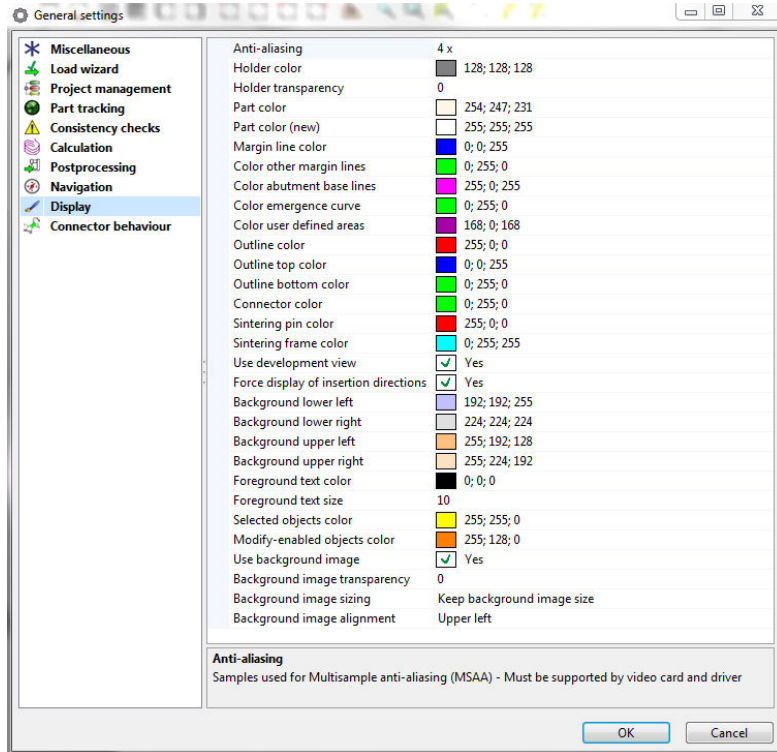
New: Anti-aliasing

Color user defined areas

Use development view (shows fixtures without specific view rotation)

Foreground text color

Foreground text size

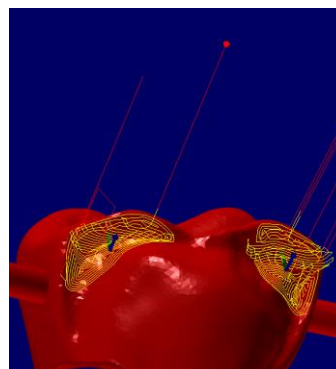


Supplement to 18.8.15

New: Machining categories for user defined areas

It is possible to handle more than one user defined area with only one Job. Every user defined area you want to process must be written in the machining categories in the job. Separation of categories with “ / ”. For example: 1/2

Job template	Finishing userdefined areas
Jobname	Finishing userdefined areas
Calculate	<input checked="" type="checkbox"/> Yes
Strategy	3D Complete finishing
Boundary check	Shank
Tool	Z1 Ballmill d1,0xL4
Spindlespeed	30000
Feedrate	1000
Reduced feedrate	500
Max. angle for red. feedrate	90
Coolant	From general settings
Machining categories	1/2
Machining direction	Insertion direction
Machining depth	Max. of bounding box
Depth offset	0



New: Machining direction in user defined areas

With this option it is possible to manufacture from the opposite direction of the user defined area.

Machining direction

Insertion direction

Opposite direction

Machining depth

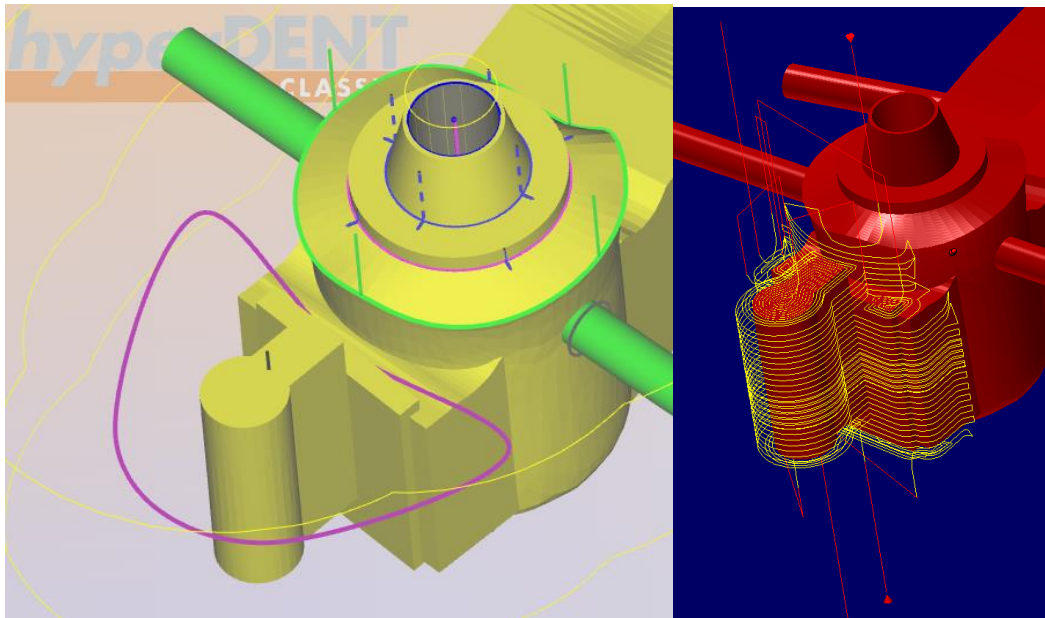
Max of bounding box

Min of bounding box

Mid of bounding box

Equator of part

Job template	Finishing userdefined areas
Jobname	Schichten benutzerdefinierte
Calculate	<input checked="" type="checkbox"/> Yes
Strategy	3D Complete finishing
Boundary check	Shank
Tool	Co Chr Endmill d1,0x10
Spindlespeed	30000
Feedrate	1000
Reduced feedrate	500
Max. angle for red. feedrate	90
Coolant	From general settings
Machining categories	5
Machining direction	Opposite direction
Machining depth	Mid of bounding box
Depth offset	0,5
Offset	0
Clin nathes on stock	<input checked="" type="checkbox"/> No



Supplement to 19.4.10 Machining method for finishing implant interface geometry

New: Step strategy

Pocket (Every pocket will be milled one by one)

Plane (Mill strategies in planes)

New: *hyperDENT Connect*

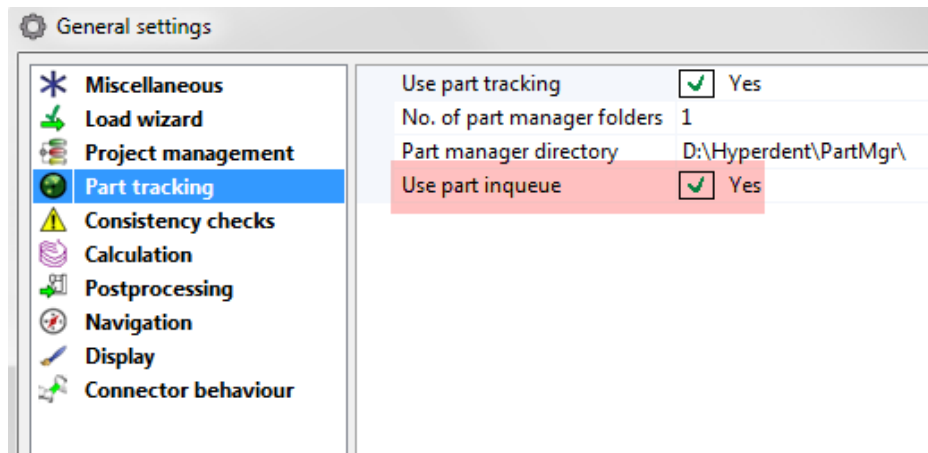
hyperDENT Connect

Target of this functionality is to transfer dental restorations modeled and managed in 3Shape-DentalSystem direct to *hyperDENT*.

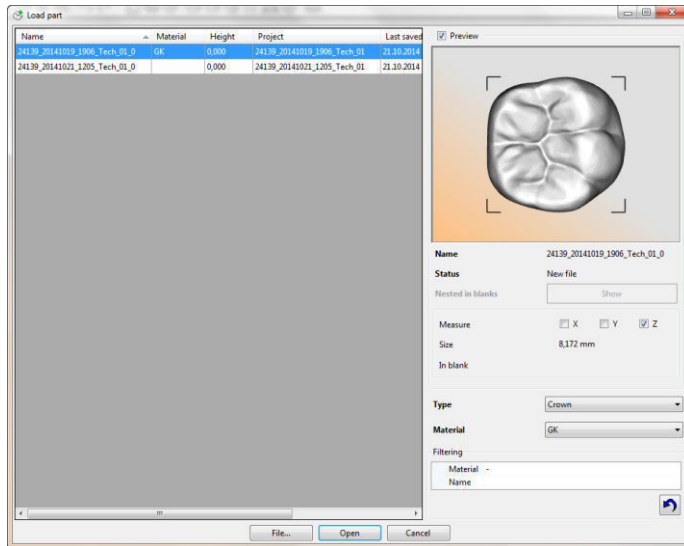
For this an application was developed which is callable, after configuration, direct from the user interface of the DentalManager and

- information's about parts to produce will be transferred to the *hyperDENT* Part-Management and
- optional *hyperDENT* will open with this parts

Attention: To see the parts in the inqueue it is necessary to activate this function in *hyperDENT*:



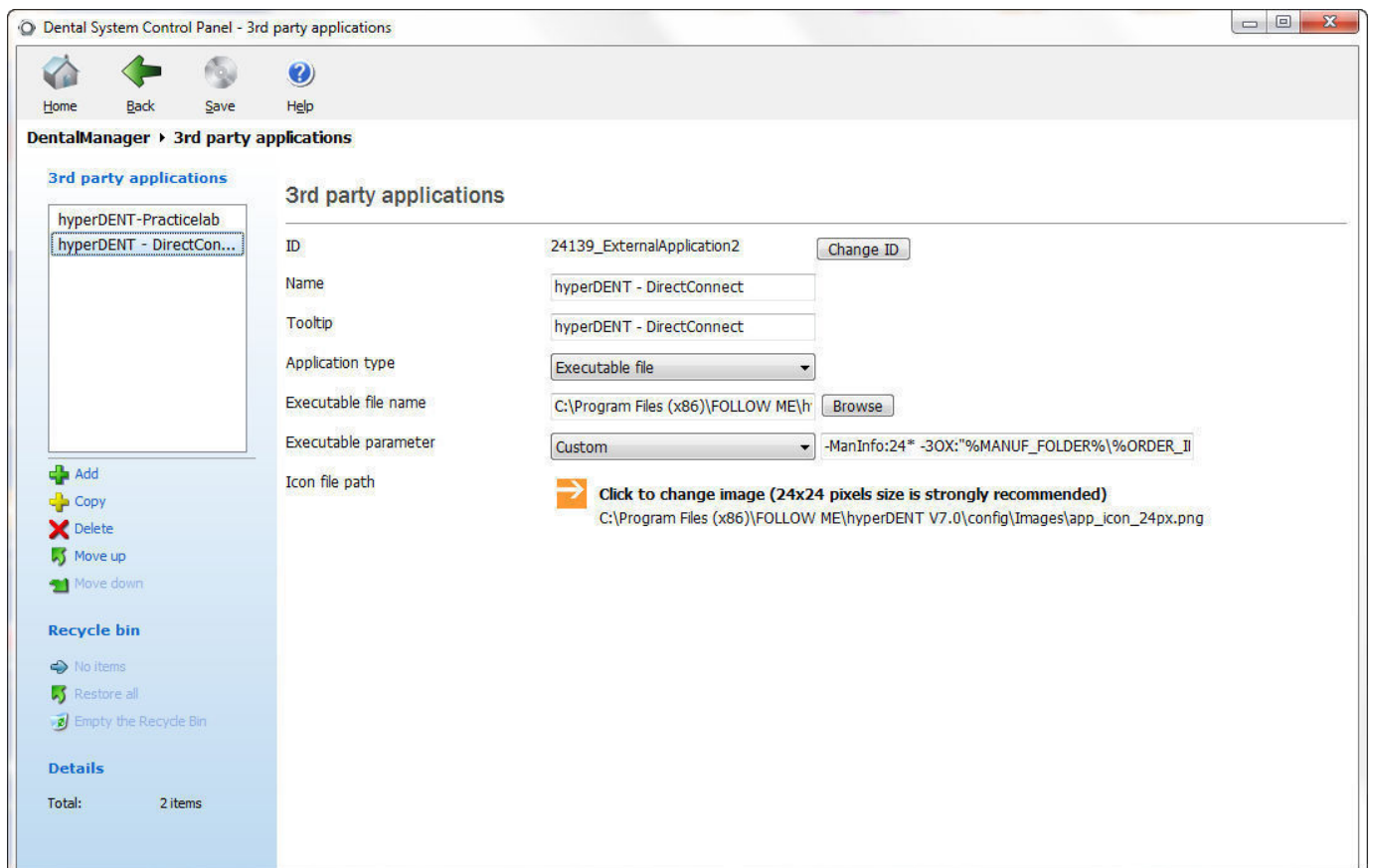
Effects in hyperDENT to the „Load Part“-Dialog:



Instead of the standard dialog the upper new list dialog appears.

To fill this list the following connection were developed.

Configuration in the dental system control panel ->3rd party applications:



For “Executable file name” please choose the „3sconnect.exe“ -file from the win-directory of the installation.

For “Executable parameter” choose “Custom” and specify:
-3ox:“%MANUF_FOLDER%%%ORDER_ID%%%ORDER_ID%.3ox”

Additional you can set a filter for the „ManufacturerID“

-ManInfo:<ManufacturerID>

The ManufacturerID you can see in the 3ox file:

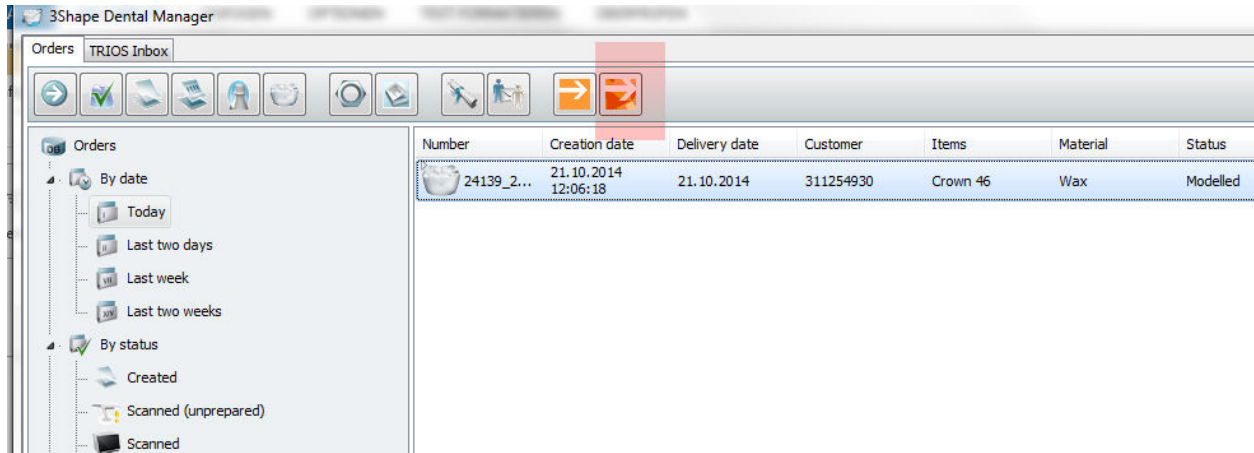
```
.....<AdditionalOrderInfo/>
.....<ModelElements>
.....<ModelElement displayName="Crown 46">
.....<TypeIDs>
.....<TypeID uNN="30" typeID="Configuration_01_IDCrownWax08" anatomical="false" ;
.....<InsertionDirUpper x="0" y="0" z="1"/>
.....<InsertionDirLower x="0" y="0" z="-1"/>
.....<ImplantPosition/>
.....</TypeID>
.....</TypeIDs>
.....<ModelElementIndex>0</ModelElementIndex>
.....<Color displayName="Red Wax">IDColorWax01</Color>
.....<Material displayName="Wax">Configuration_01_Material3</Material>
.....<NoOfUnits>1</NoOfUnits>
.....<OrderDate>2014-10-21T12:06:18.000</OrderDate>
.....<ShipmentDate>2014-10-21T00:00:00.000</ShipmentDate>
.....<DeliveryDate>2014-10-21T00:00:00.000</DeliveryDate>
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.....<ProcessStatusID>Modelled</ProcessStatusID>
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.....<ModelFileName>c:\3shape\24139_20141021_1205_Tech_01\CAD\24139_20141021_1205_
.....<AdditionalModelElementInfo>
.....<AdditionalInfoItem key="ElementId" value="ME9656482E167E4AE8B794E84625D5EA
.....<AdditionalInfoItem key="ShaderMaterial" value="Zirconium" datatype="string"
.....</AdditionalModelElementInfo>
```

Icon:

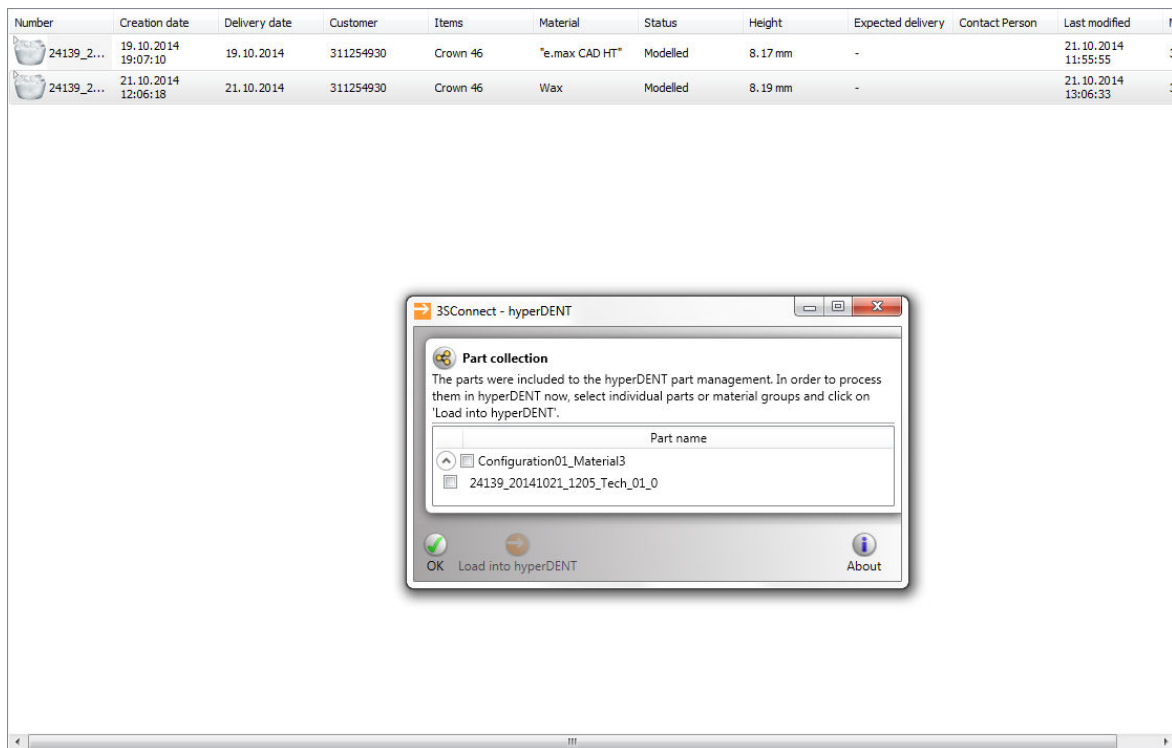
A 24x24-png (appConnect_24px.png) you can find in: \FOLLOW ME\hyperDENT V7.0\config\Images

Application:

In the dental manager an additional button appears.



When you click the button the following dialog will open, if there is minimum one part found.



This dialog can be closed immediately, *hyperDENT* InQueue is already filled.

Alternative you can choose any part from the list and click „Load into *hyperDENT*“, this part will be open in *hyperDENT*.

New: STL-Reducer

This application was developed to reduce the calculation time. Big stl-files can be optimized and compressed.

Input file

Enter file path and confirm

File related information

File name

Size

Patches

Parameters

Tolerance: The larger the tolerance, the greater the reduction.

Angle: Triangle angles smaller than "Angle" will be optimized.

Output file

Enter file path and confirm

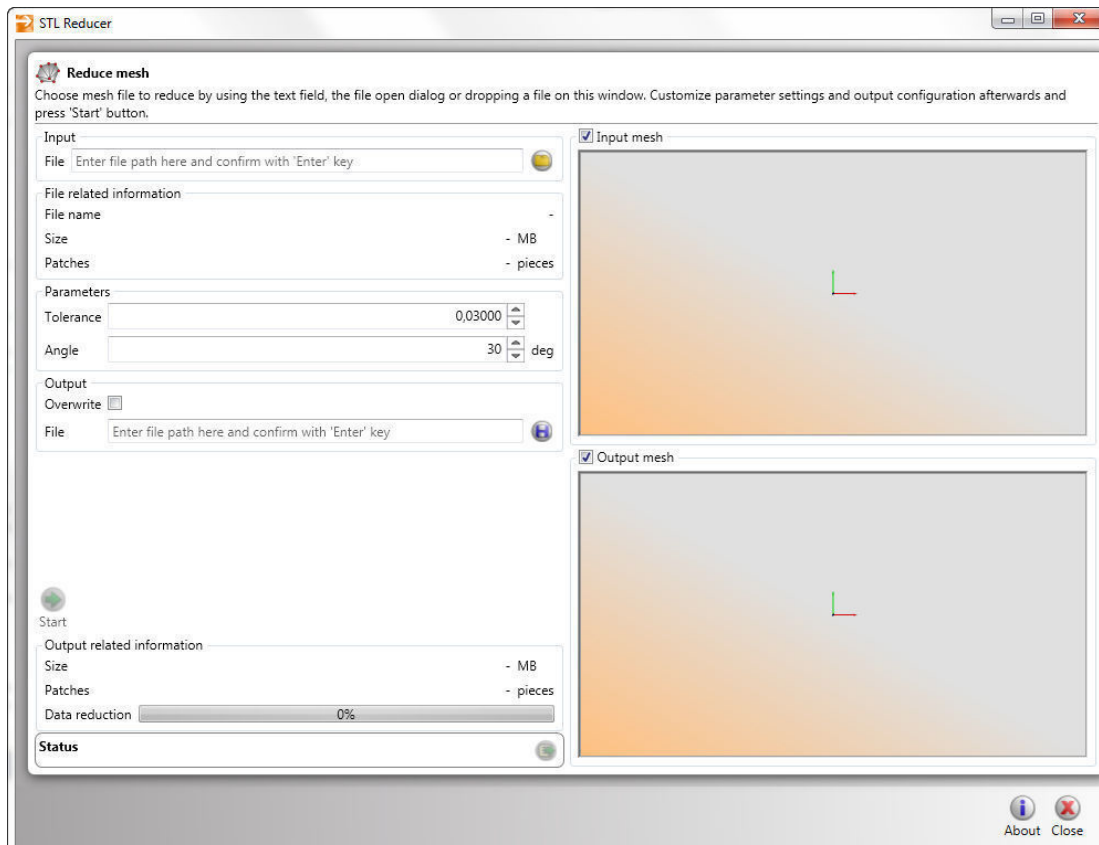
Overwrite

Output related information

Size

Patches

Data reduction



Information/functional enhancements

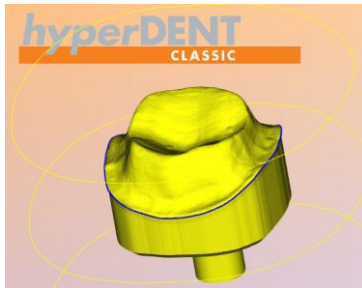
License Center: for more information's please see the installation manual

New Part types:

Model

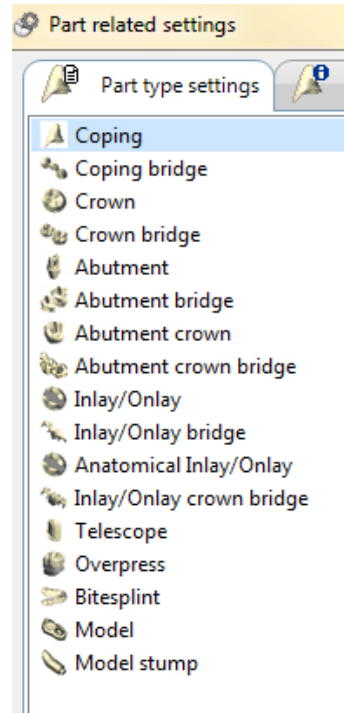
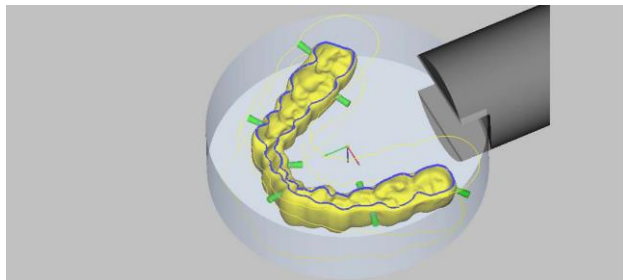


Modelstump



Bitesplint

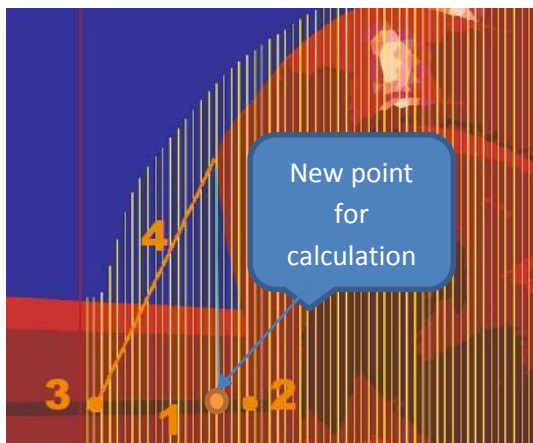
See more information's in V7.0 manual 18.8.13



Work on convex hull

The **definition of point 2 changed** from:

The distance (1) between the connector interface point on the part (2) and the end of the convex shell in the center of the connector (3) determines the path of the convex shell (4).



Work on convex hull	<input checked="" type="checkbox"/> Yes
Add. connectorpoint distance	0,4

1. Distance to connector interface point
2. Connector interface point on part
3. End point of convex shell
4. Convex shell (Konvexe Hülle)

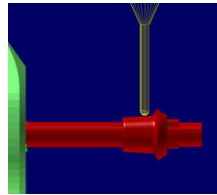
The point 2 is not anymore at the connection point on the part, now it is on the outer line of the part.

Changes/enhancements for jobs

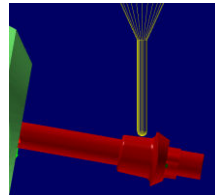
Overall finishing occlusal side (abutments)

- New Job parameter for “5X Equidistant finishing”:
 - “Clearance mode”
 - Plane => for axial working
 - Radial => for radial working

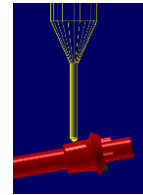
Use occlusal direction	X+Y rotation
Max. groove depth	Unlimited
Offset max. groove depth	0
Limit up to emergence profile	<input checked="" type="checkbox"/> Yes
Axial Emergence curve offset	0,5
Clearance mode	Radial
Allowance	0,1
Stepover	0,1
Desired tilt angle	90
Max. tilt angle	90
Collision check	Tool and Holder



90 degree tilt angle



100 degree tilt angle



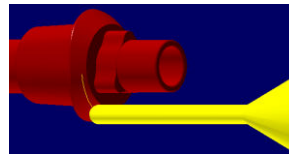
80 degree tilt angle

Different tilt angles are possible

Finishing emergence profile

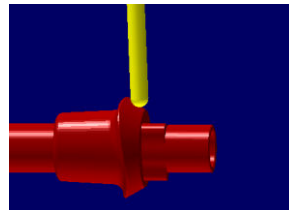
- New Job parameter for “5X Equidistant finishing”:
 - “Clearance mode”
 - Plane => for axial working

Protect geometry inside abutmentbase	<input checked="" type="checkbox"/> No
Clearance mode	Plane
Allowance	0
Stepover	0,1
Desired tilt angle	0
Tilt angle range	0
Max. tilt angle	0
Collision check	Tool and Holder



- Radial => for radial working

Protect geometry inside abutmentbase	<input checked="" type="checkbox"/> Yes
Offset abutmentbase protection mesh	0
Clearance mode	Radial
Allowance	0
Stepover	0,1
Desired tilt angle	90
Tilt angle range	5
Max. tilt angle	90
Collision check	Tool and Holder

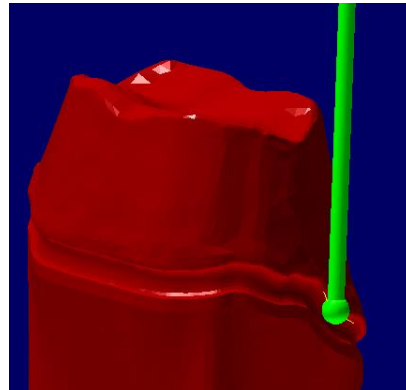


Concave moulding

This option realize the possibility to mill concave mouldings on model stumps

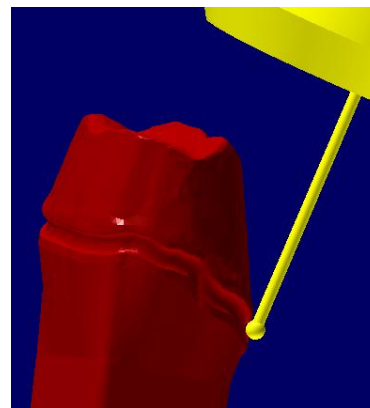
- 3D Freepath milling
 - Max. undercut depth

Job template	Concave moulding
Jobname	Concave moulding 3X
Calculate	<input checked="" type="checkbox"/> Yes
Calculate if	Off
Strategy	3D Freepath milling
Tool	Zi Lollipop d1x14
Spindlespeed	30000
Feedrate	1000
Coolant	From general settings
Use occlusal direction	No
Max. undercut depth	0,18
Collision check	Off



- 5X Freepath milling
 - Max. undercut depth
 - Desired tilt angle
 - Tilt angle range
 - Max. tilt angle

Job template	Concave moulding
Jobname	Concave moulding 5X
Calculate	<input checked="" type="checkbox"/> Yes
Calculate if	Off
Strategy	5X Freepath milling
Tool	Zi Lollipop d1x14
Spindlespeed	30000
Feedrate	1000
Coolant	From general settings
Use occlusal direction	X+Y rotation
Max. undercut depth	0,2
Desired tilt angle	15
Tilt angle range	5
Max. tilt angle	18
Collision check	Off



Attention!!!

In this Jobs is no Collision Check available!!!

Contact

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