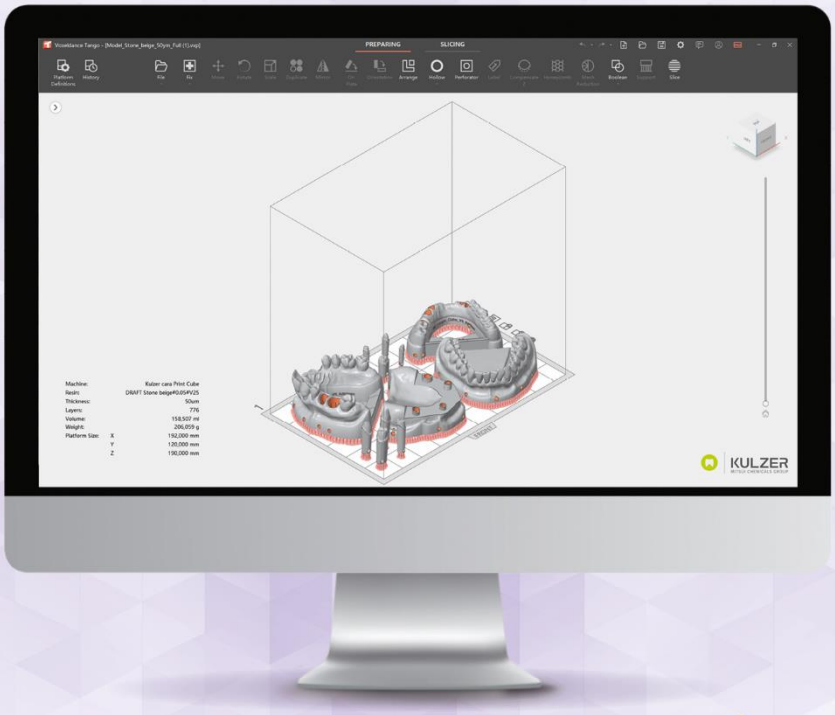
CARA PRINT COCKPIT

USER GUIDE



Version: 01
Date: 01.11.2024

www.kulzer.com/
mycube-support

KULZER
MITSUI CHEMICALS GROUP

Content

Use the hyperlinks in the table of content for navigation

Content 1
Overview 2
Installation Requirements 3
  Hardware 3
  Operation System 3
Installation 4
Configuration 11
  Print parameters manager 11
  Printers 14
  XY-Compensation for print parameters 15
  Updates 17
    Software Update for cara Print Cockpit/CAM: 17
    Update Print Parameters 19
  Support 21
Voxeldance Tango 22
  Slicing and Printing 22
  Special functions & Tricks in Tango 34
    Shortcuts 34
    Labeling of parts 36
    Add or delete supports manually 37
    No Support Area 40
    Tools 41
    Reinforcement bars 43
Technical Support 46

Overview

cara Print Cockpit

cara Print Cockpit is a data preparation software for Additive Manufacturing with cara Print Cube printers. To prepare CAD files for printing, the software enables users to:

- launch the slicer “Voxeldance Tango” and convert the Tango slices into printable cara Print Cube files (.capc)
- send the print job to cara Print Cube printers via network or USB drive
- perform software and print parameter updates via internet connection
- manage the visible print parameters incl. xy-compensation of Voxeldance Tango

Voxeldance Tango

Voxeldance Tango is a slicing software which prepares CAD files for the printing process. The latest Voxeldance Tango version is always included in the cara Print Cockpit installer. Voxeldance Tango includes a wide range of functions. The following functions are useful in most cases:

- Load CAD files (.STL-file recommended)
- Choose print parameter and layer thickness
- Arrange all objects
- Adjust the orientation
- Adjustment by compensating z
- Create supports depending on indication
- Labelling
- Slice to 2D Layers /Check layers

Installation Requirements

Hardware

1. CPU
   - Intel Core i5/i7/i9
   - AMD Phenom II X4/X6 at 3.0GHZ or higher with SSE2
2. Memory
   - 16GB RAM or higher
3. Free Disk Space
   - 2GB of free disk space
4. Display
   - 1920 x 1080 is recommended
   - Video Card
   - NVIDIA Geforce GTX 1060 or AMD Radeon RX 480 or better
   - At least 1GB of memory
   - At least a memory interface width of 192-bit (256-bit is recommended)
   - Any Intel GPU chipsets are not recommended

Operation System

cara Print Cockpit (Voxeldance Tango) is only supported by:

- Windows 10/11 (64-bit) (recommended)
- Windows 8 / 8.1 (64 bit)
- Windows 7 (64 bit)

cara Print Cockpit is recommended for:

- Windows Professional edition
- Windows Enterprise edition

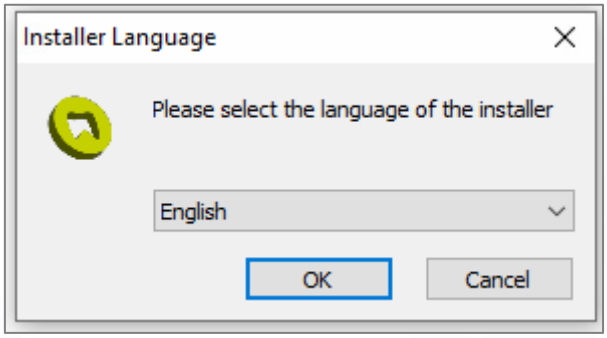
cara Print Cockpit is not supported by the following systems:

- Windows Server edition
- Virtualization system such as VMWare

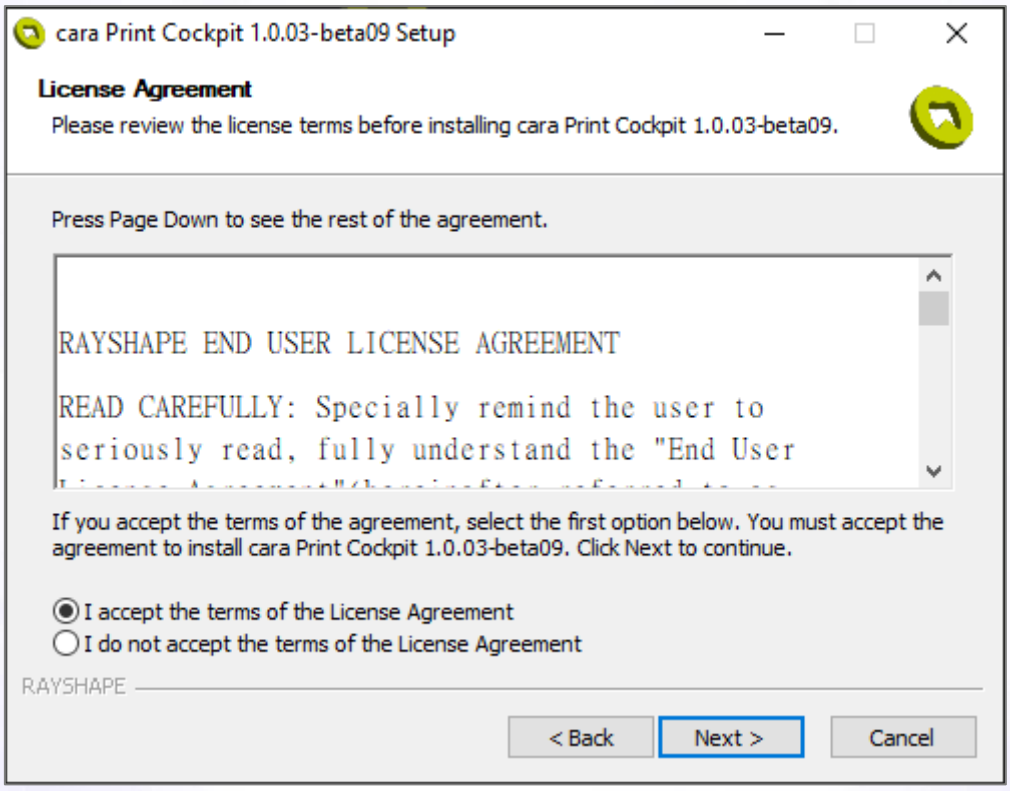
Installation

1. Double-click on the cara Print Cockpit setup file (start as admin)

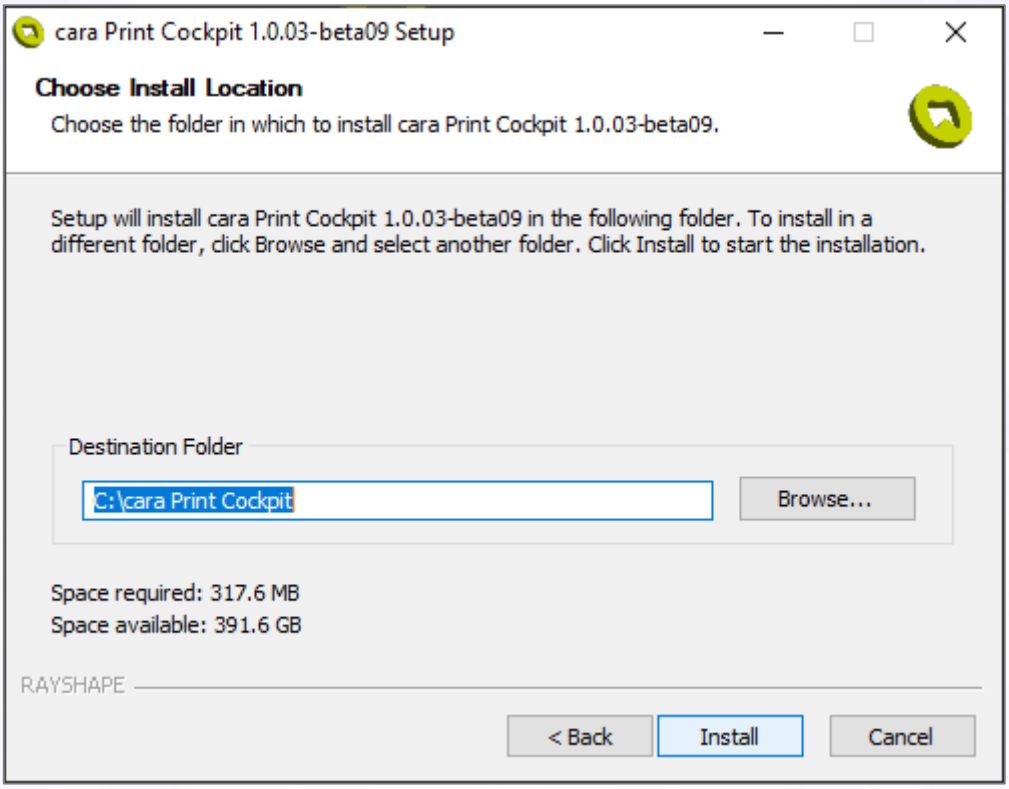
2. Select a language

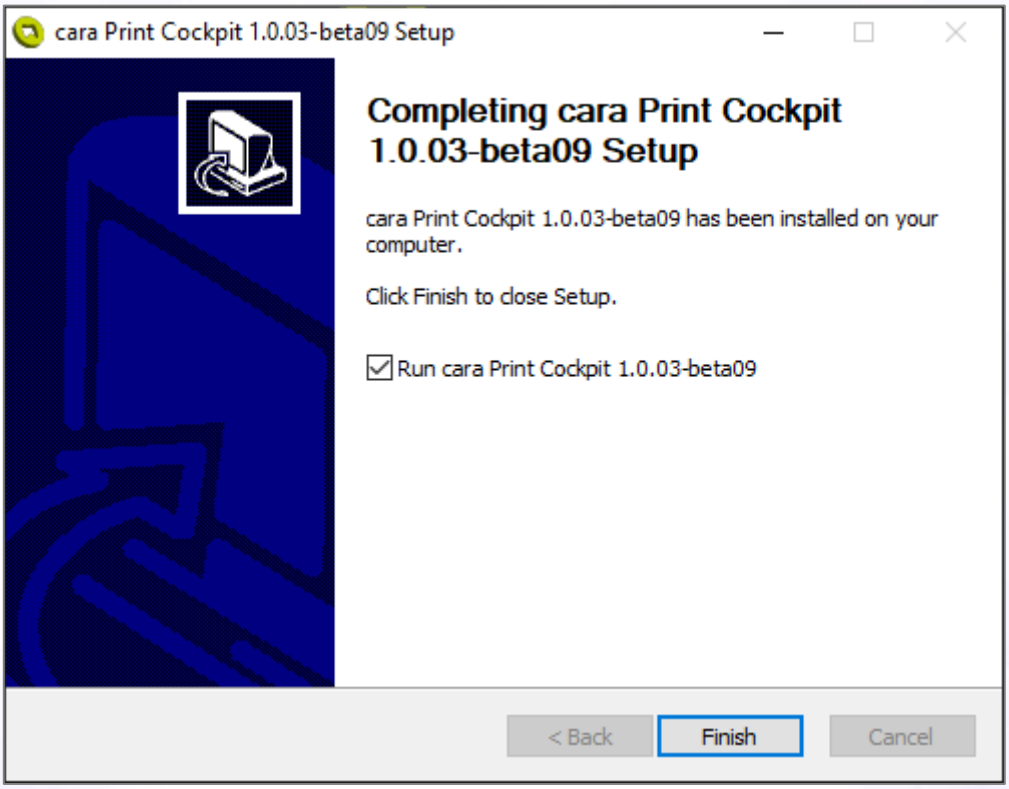


3. Check and accept the License Agreement of cara Print Cockpit and follow the wizard to complete the installation of cara Print Cockpit

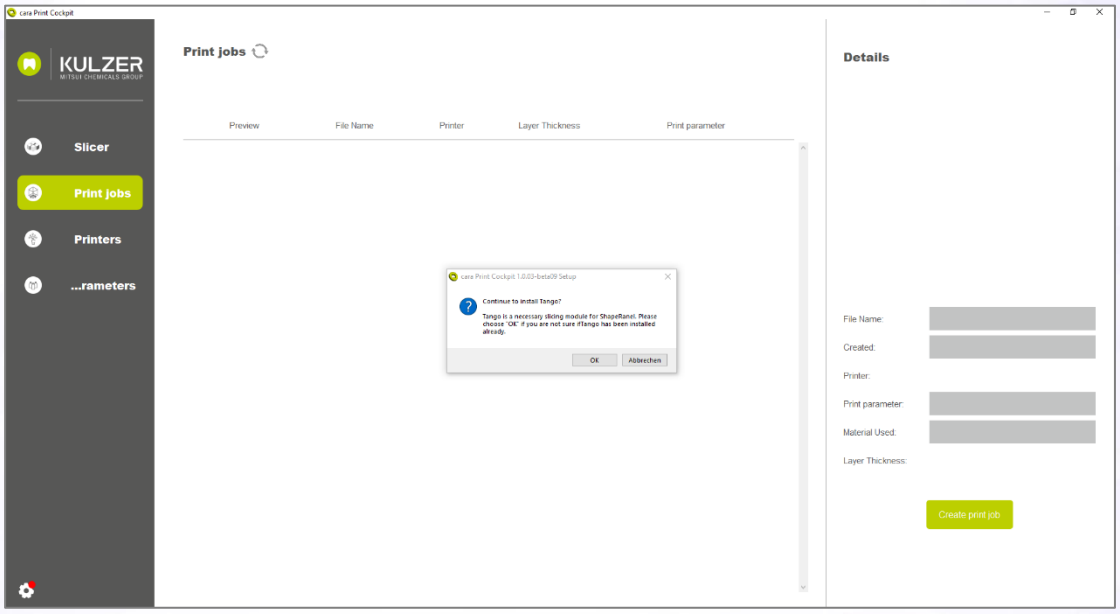


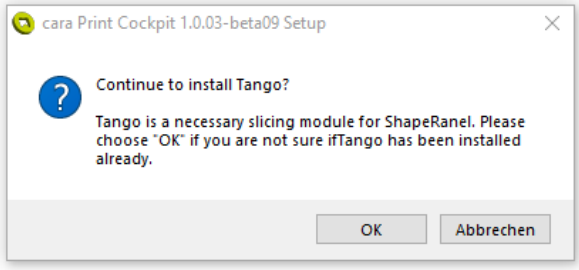
Follow the wizard to complete the installation of cara Print Cockpit. It is recommended not to change the installation path.

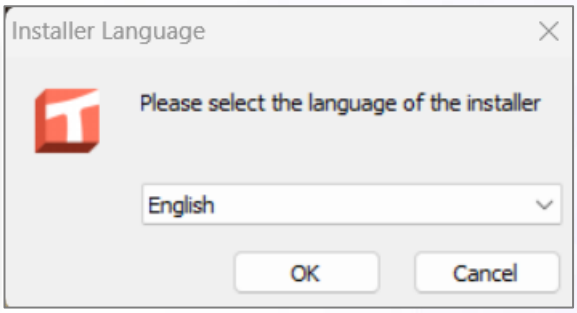




4. After the installation of cara Print Cockpit, continue to install the slicer following the automatic pop-up window.







5. Follow the wizard to complete the installation of the slicer software

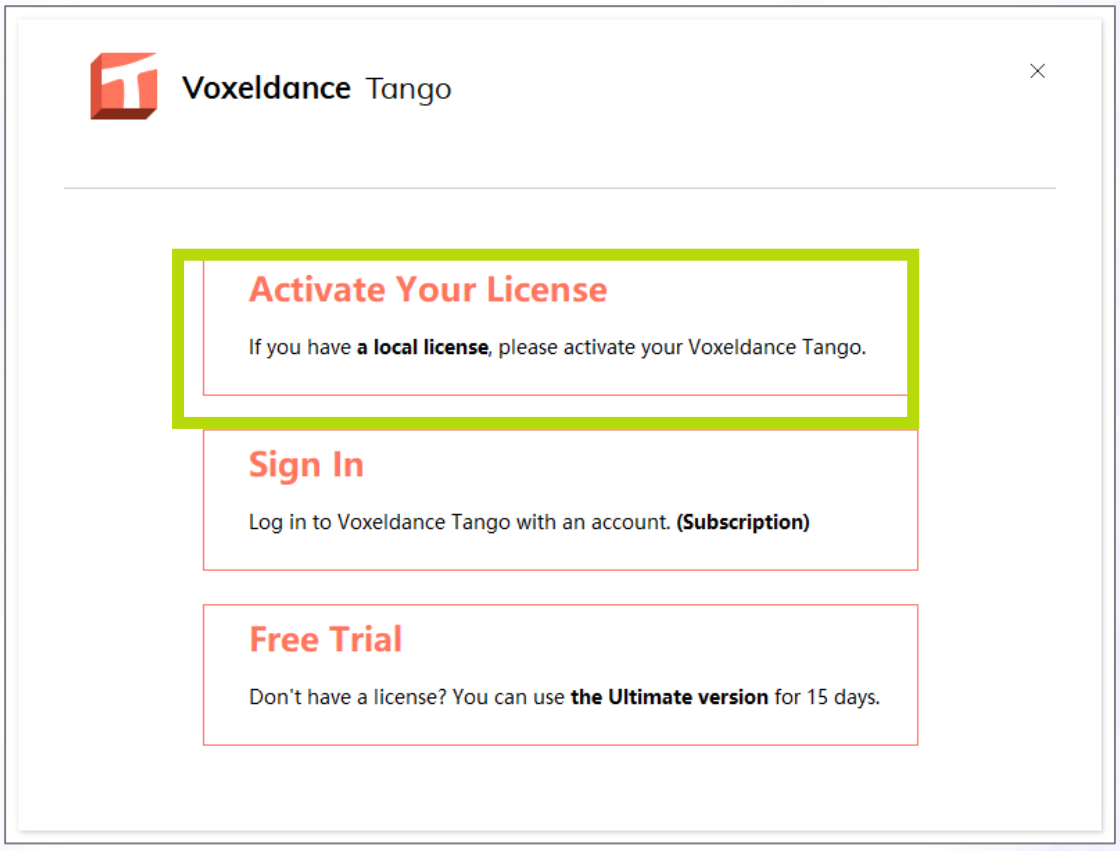
6. Activate the slicer software with a license code.

   a. Register your cara Print Cube printer, if not done before, here or by following the QR code (on the printer or below):

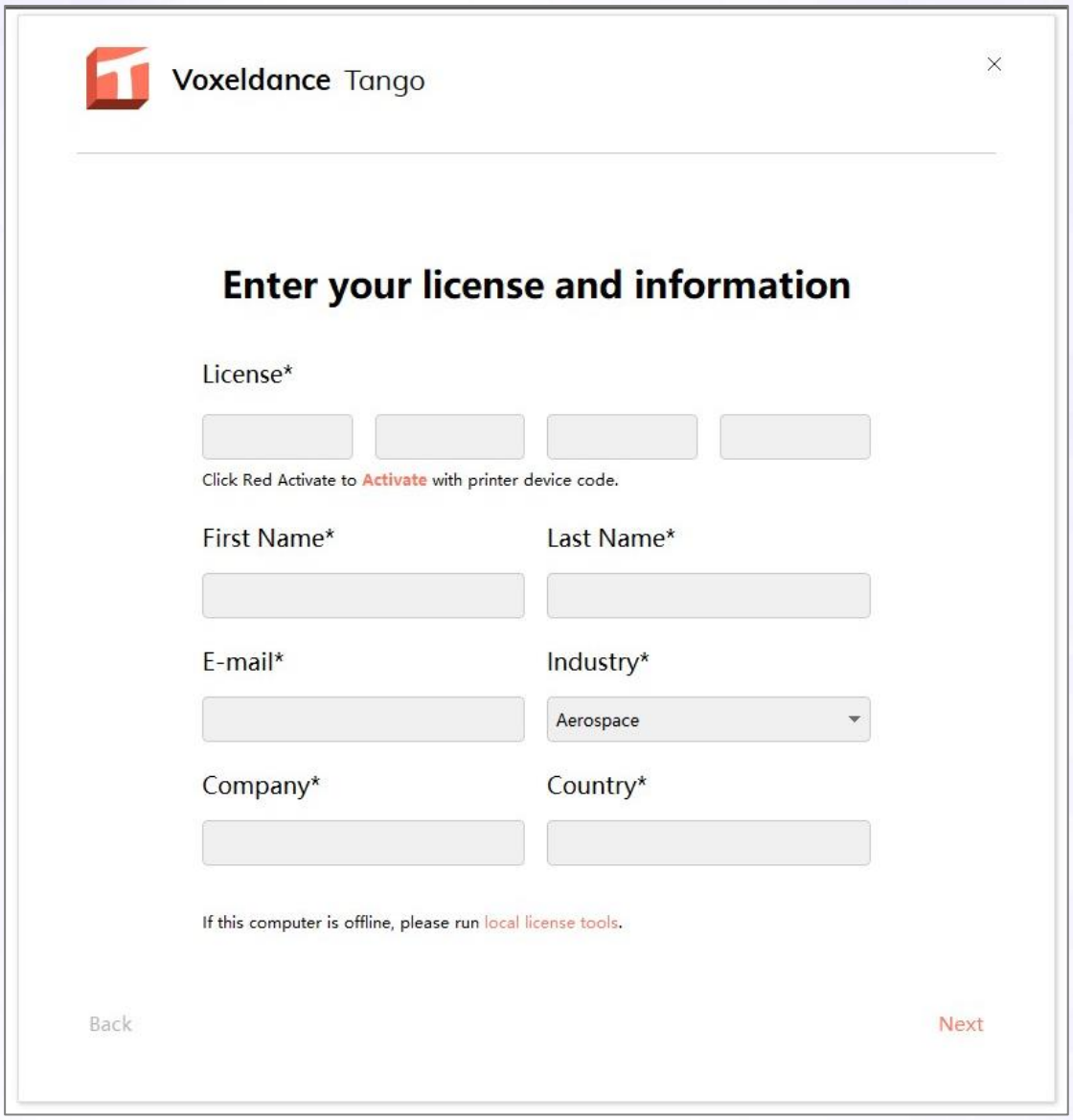
      www.kulzer.com/mycube-registration
      Until you have received your personal license code via email after successful printer registration, you may use the trial version of the software. However, this will not allow to create printable files.

b. Online license activation

Choose “Activate Your License”

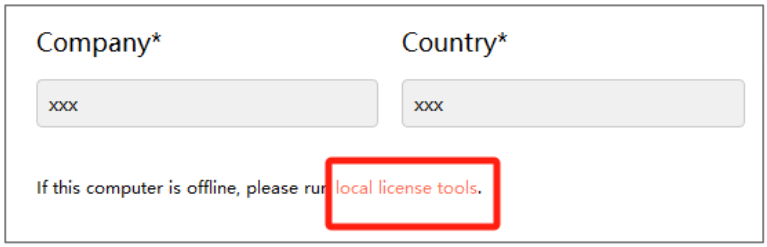


Input license and information, then click on “Next”.



c. Offline license activation

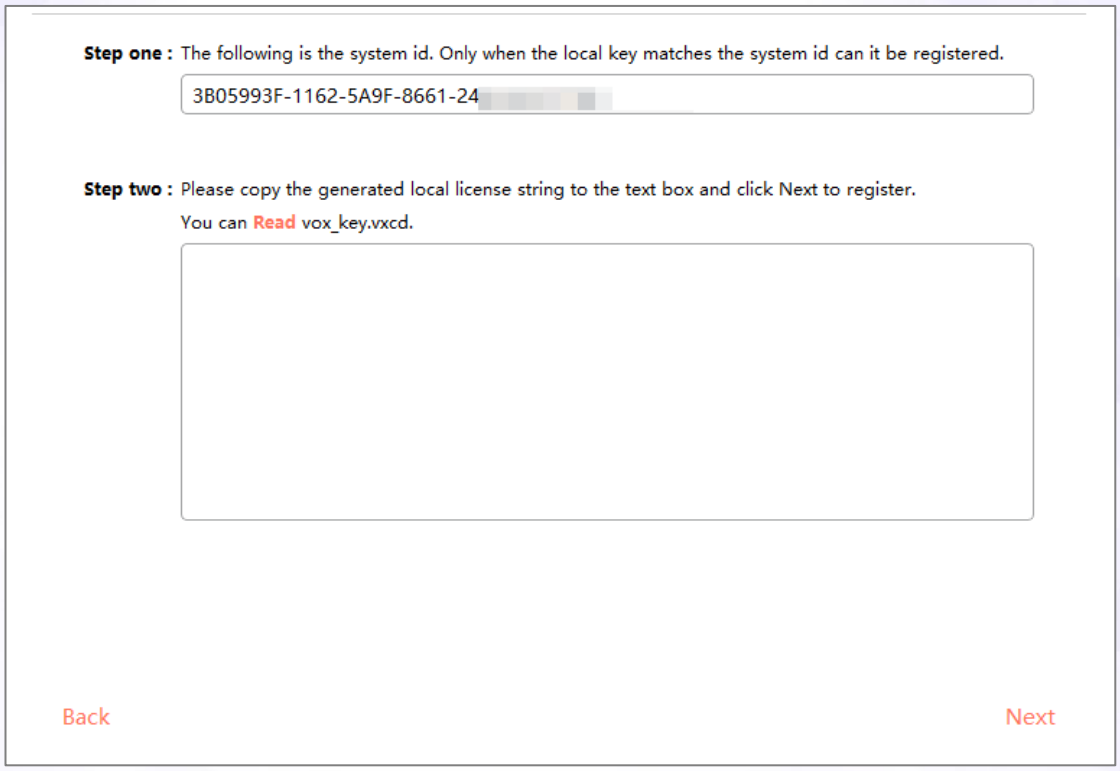
Input license and information, then click on “local license tools”.



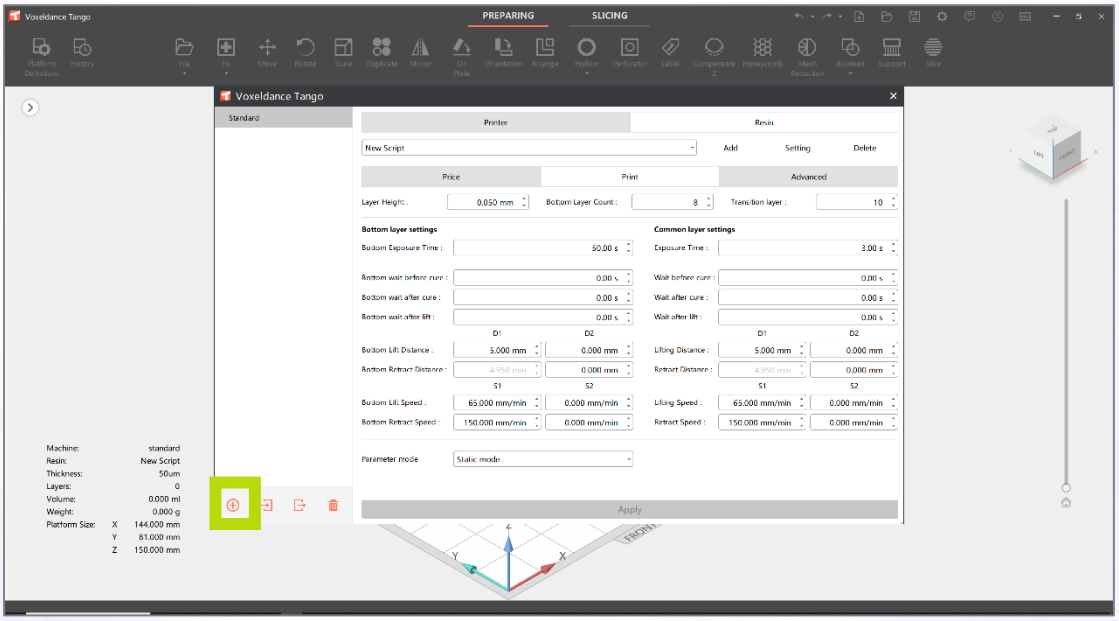
A QR code will be shown. Use a smartphone to scan the QR code and receive the local key string in an email sent to the email address entered in the previous window.

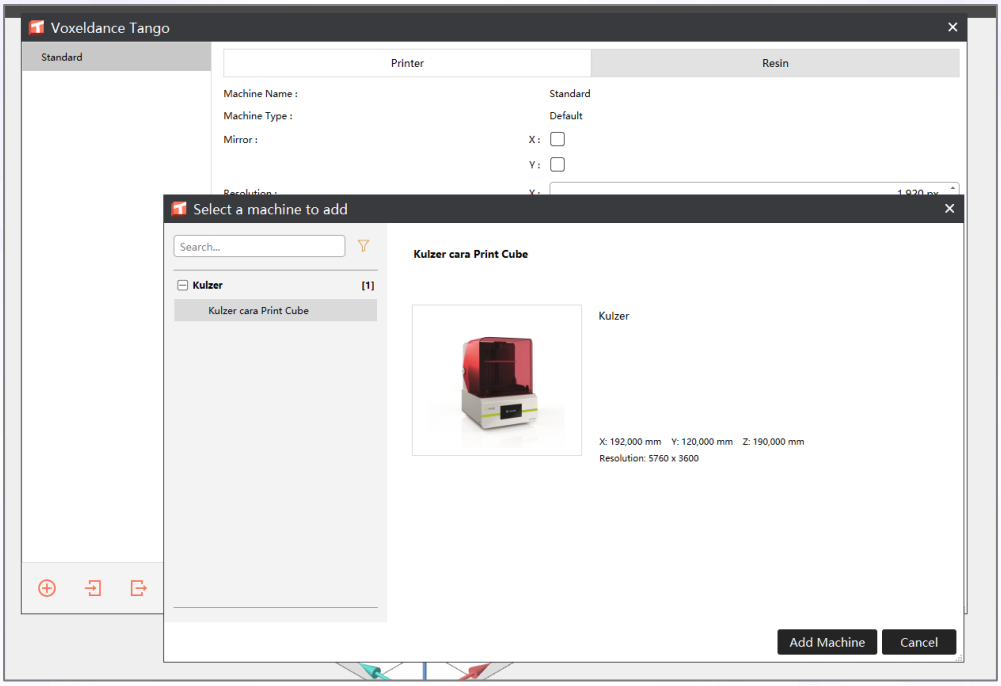
Copy the local key string from the email to the box in step two (see picture below), then click on “Next”.

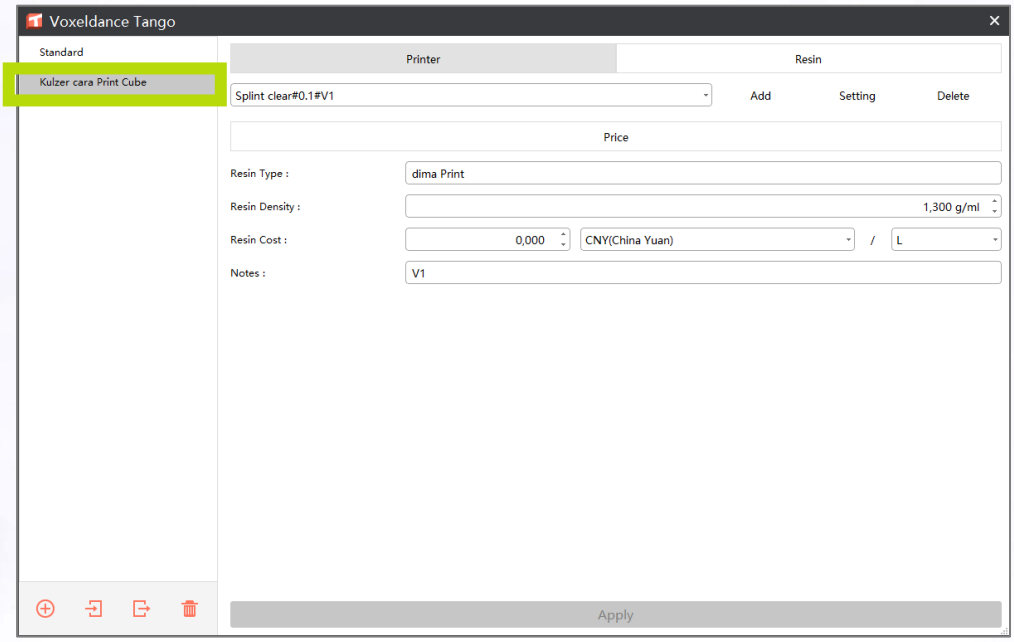
Caution: If a license is activated offline by the “local license tools” it is not possible to deactivate the license at a later stage to switch the PC.



7. Platform Definitions:
Add cara Print Cube by clicking the “+” icon and selecting the correct printer → cara Print Cube







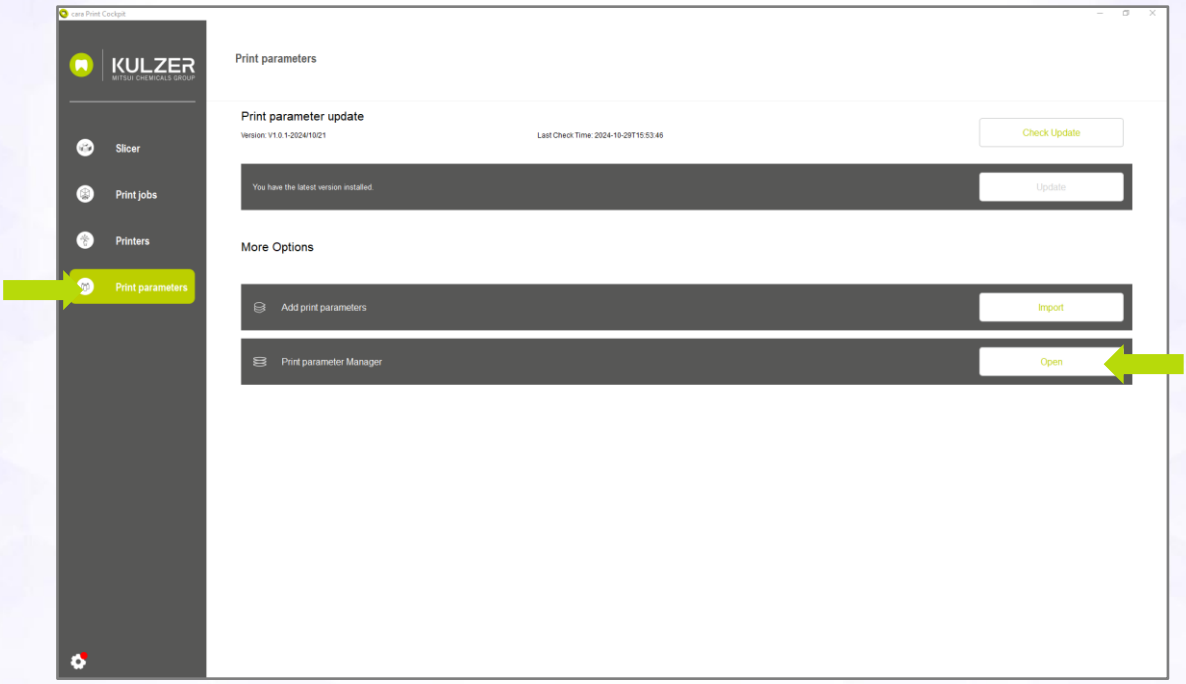
If the “Apply”-button is gray the selected print parameter is likely already selected.

The “Apply”-button switches to orange if the currently selected material is not applied already.

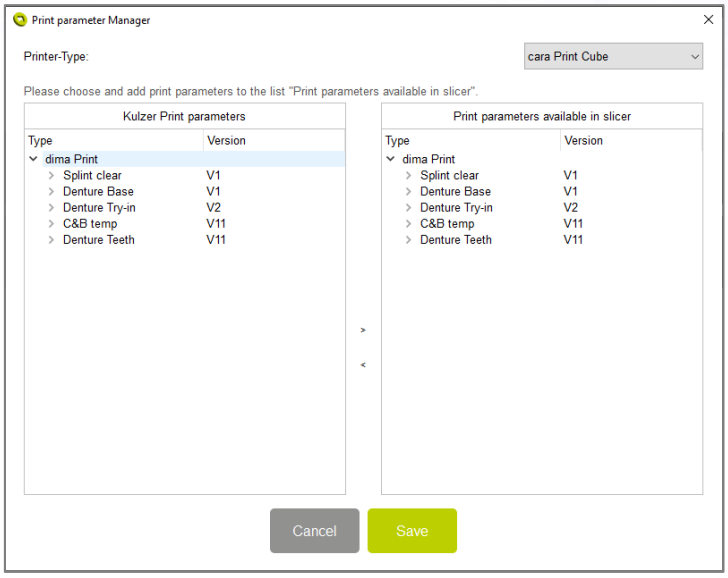
Configuration

Print parameters manager

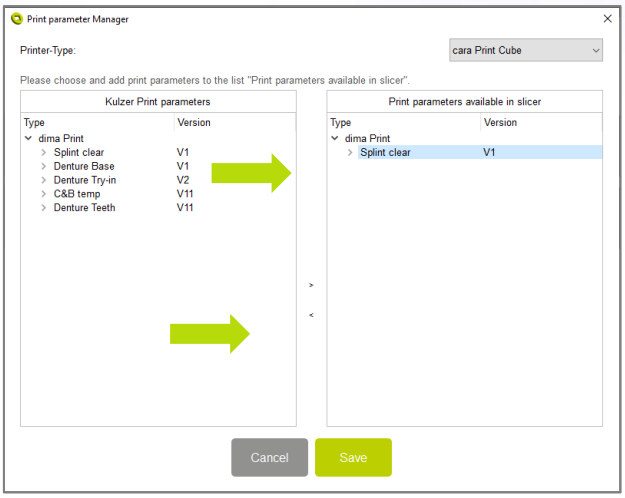
1. Open the Print parameters manager



2. On the left side the available “Kulzer Print parameters” are displayed. The right side “Print parameters available in Slicer” includes all parameters after installation.

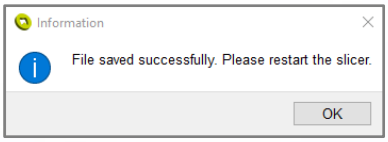


3. To manage the “Print parameters available in Slicer” mark the parameter or a specific layer thickness and click the “<” or “>” button to manage lists.

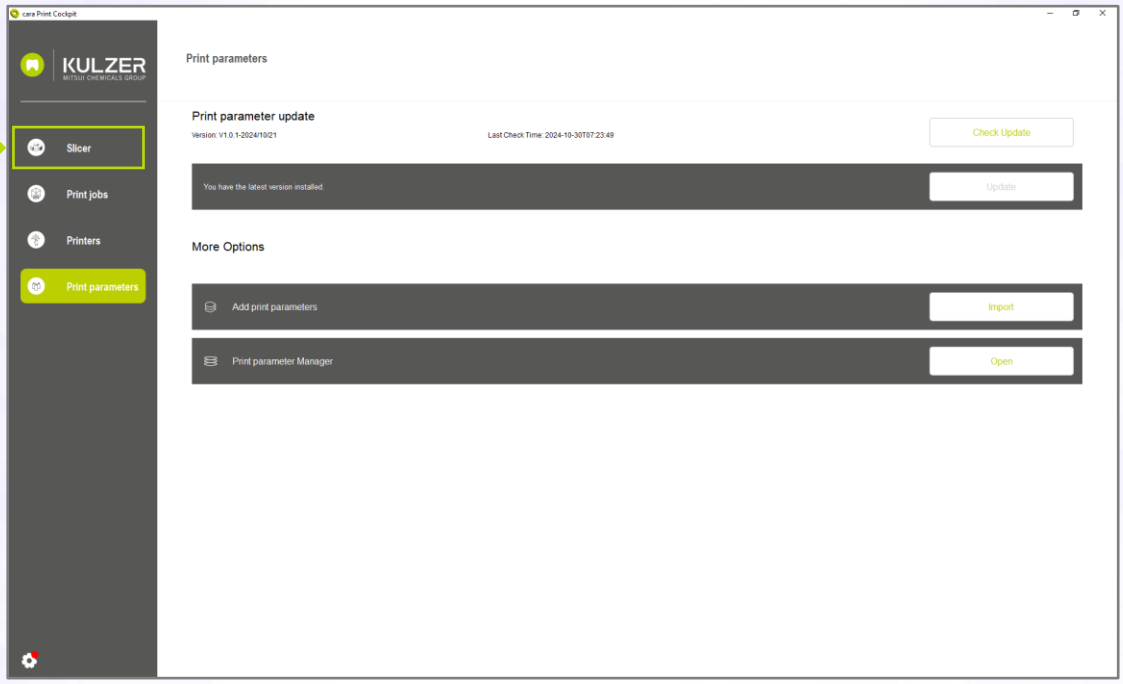


It can be helpful to fill the list “Print parameters available in Slicer” only with the print parameters you use in your daily business to reduce the size of the drop-down list in Voxeldance Tango.

4. Click on “Save” after editing the “Print parameters available in Slicer” list



5. Open/Restart the Slicer



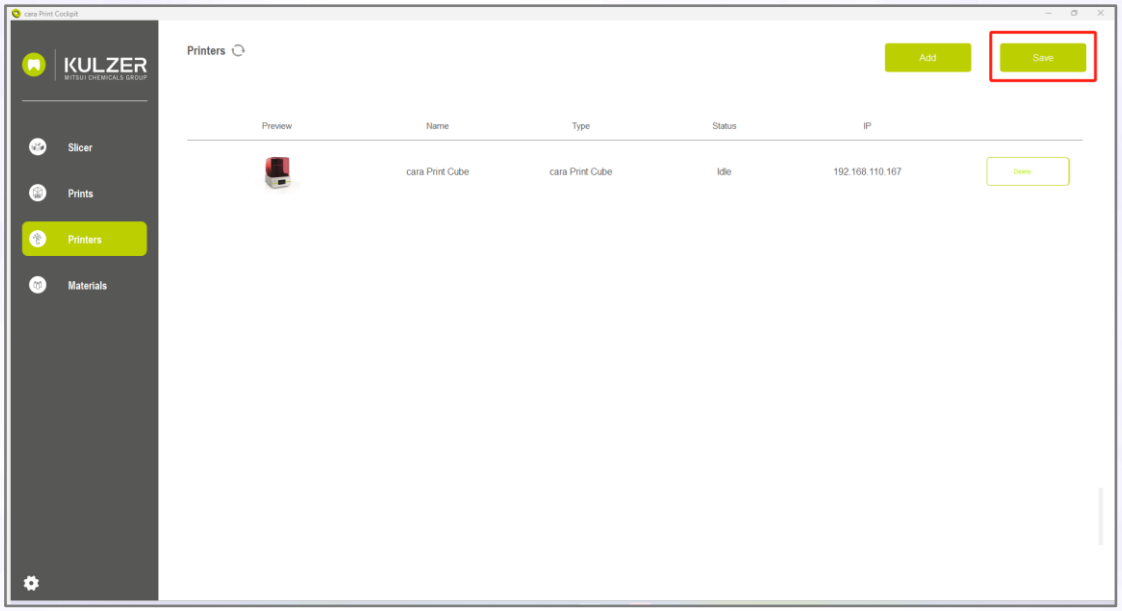
Printers

cara Print Cockpit can send print jobs to a cara Print Cube printer via network. To use this function, the PC and printer should be on the same network (connected to the same router). cara Print Cockpit can find the printer with the IP address or automatically, depending on the network settings.

1) Connect the printer to a network
2) Find the printer IP address via “Setting-Network-Wireless Config”
3) Open the Printer Management tab in cara Print Cockpit

4) Click on “Edit” and “Add”, insert the printer IP address in the pop-up window and click “Connect”

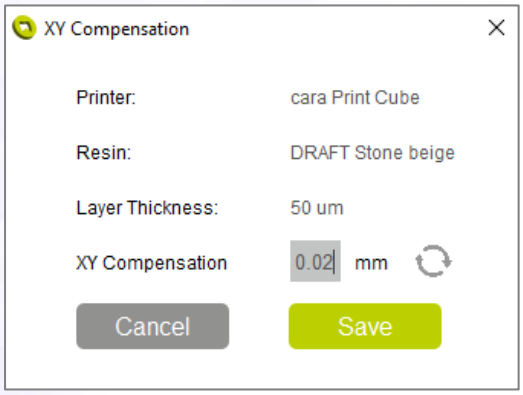
5) The printer is now connected to cara Print Cockpit. Click “Save” before exiting the cara Print Cockpit software.



XY-Compensation for print parameters

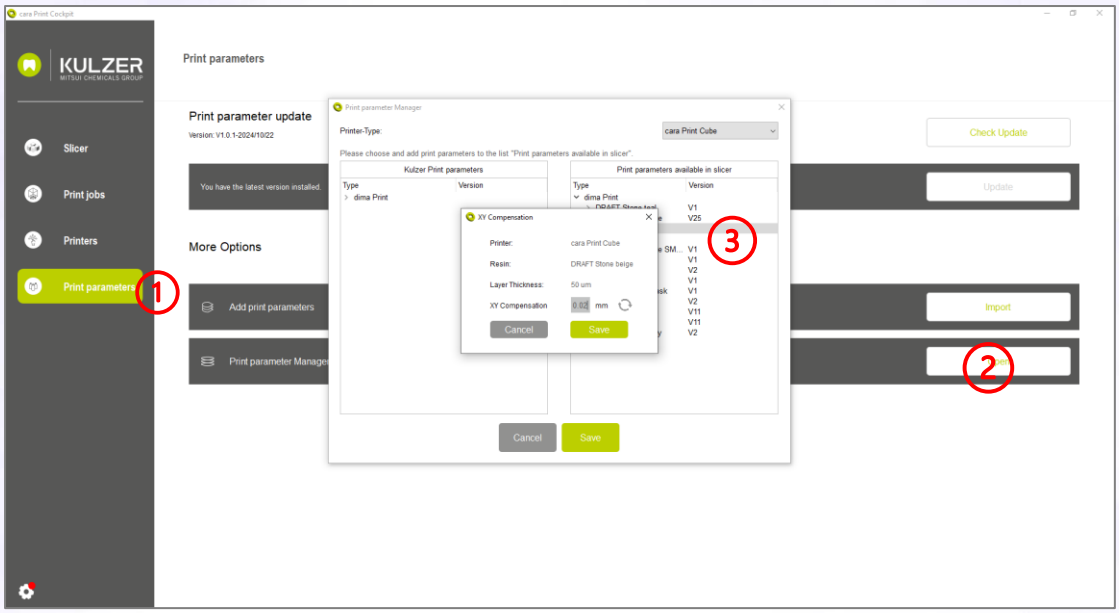
The XY - Compensation is pre-defined for every layer thickness of the print parameters. Kulzer recommends always using the pre-settings.

To reset to the pre-setting, click on the arrow cycle icon.



To change the settings:

1. Open the Print parameter menu
2. Open the Print parameter Manager
3. Choose the Print parameter and layer thickness in the “Print parameters available in slicer”→ Right-click to open the editing window
4. Input the XY-Compensation value (on the right side of the panel)
5. Click “Save”
6. Open/Restart the Slicer.

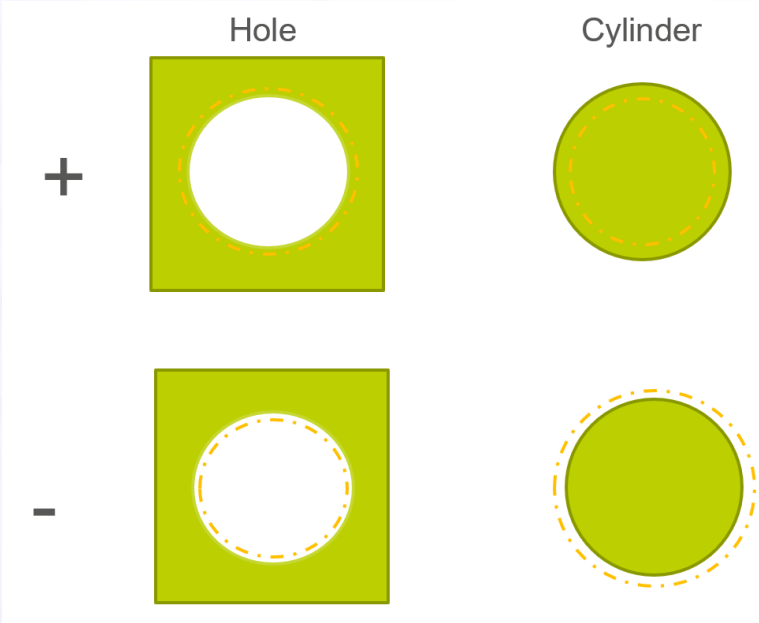


Explanation of XY-Compensation:

If the green geometry below is the result at zero XY compensation, then a change in plus/minus direction tailors the geometry to the dashed line

+ “looser”

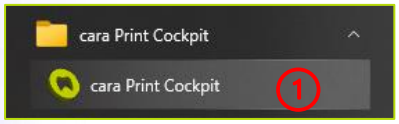
- “tighter”

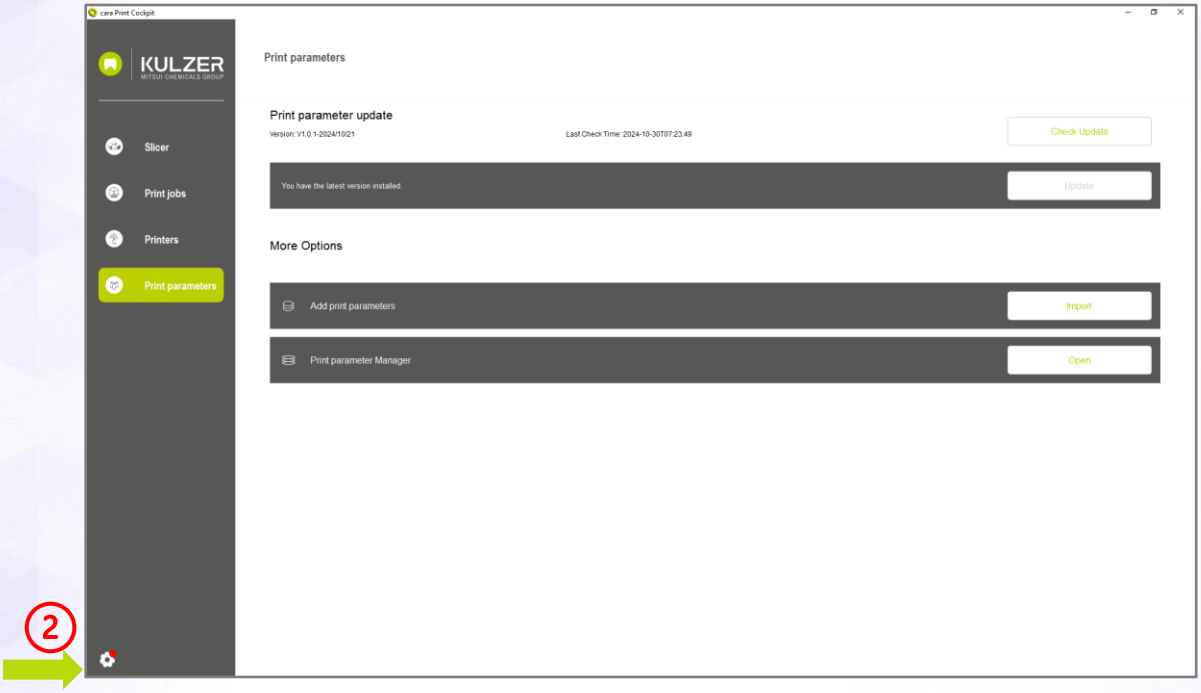


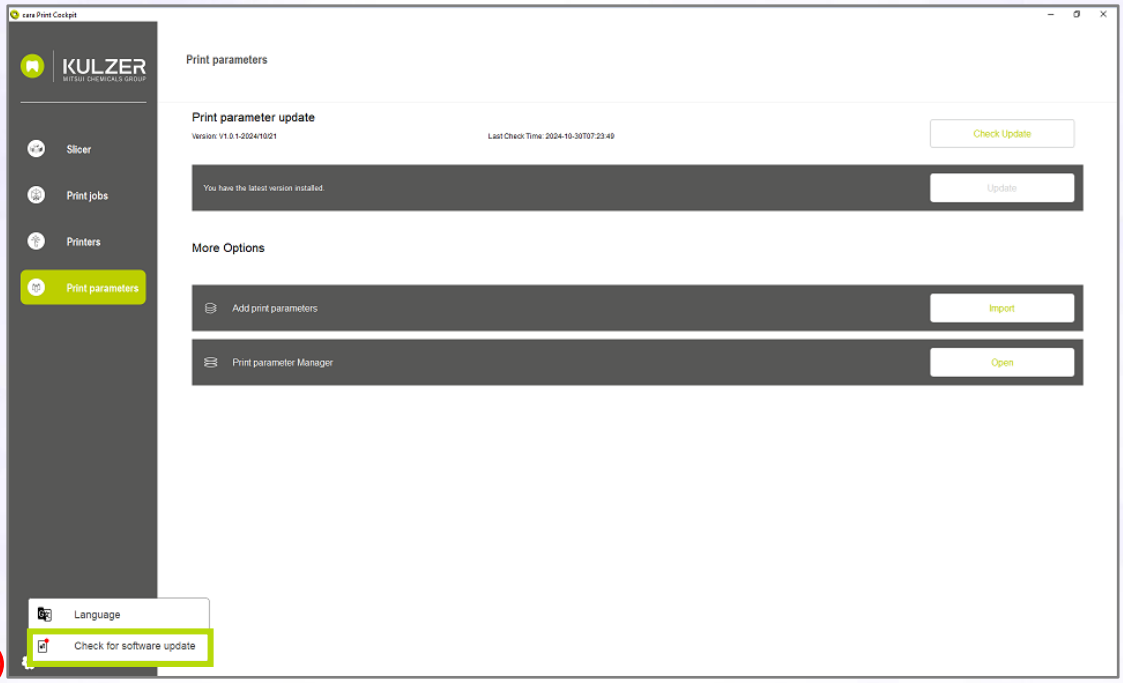
Updates

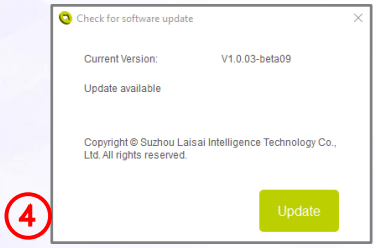
Software Update for cara Print Cockpit/CAM:

1. Start cara Print Cockpit
2. Bottom left corner → Setting symbol
3. Check for updates
4. Click on Update → Finish



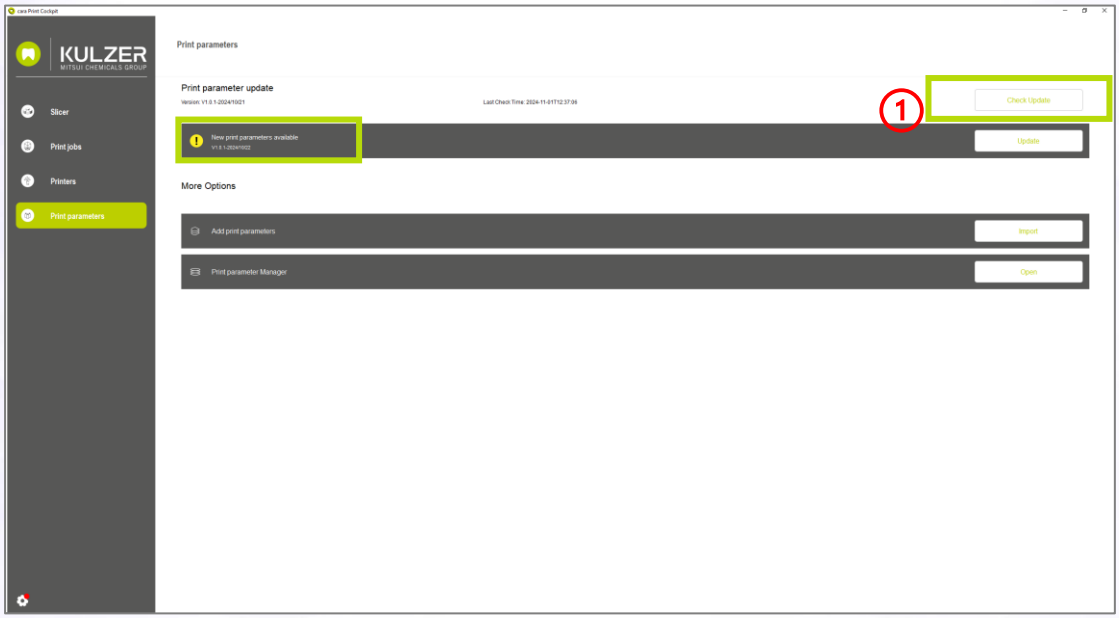


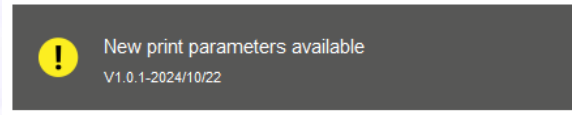

cara Print Cockpit
KULZER
MITSUI CHEMICALS GROUP
Slicer
Print jobs
Printers
Print parameters
Print parameters
Print parameter update
Version: V1.0.1-2024/10/21
Last Check Time: 2024-10-30T07:23:49
Check Update
You have the latest version installed.
Update
More Options
Add print parameters
Import
Print parameter Manager
Open
Language
Check for software update
3

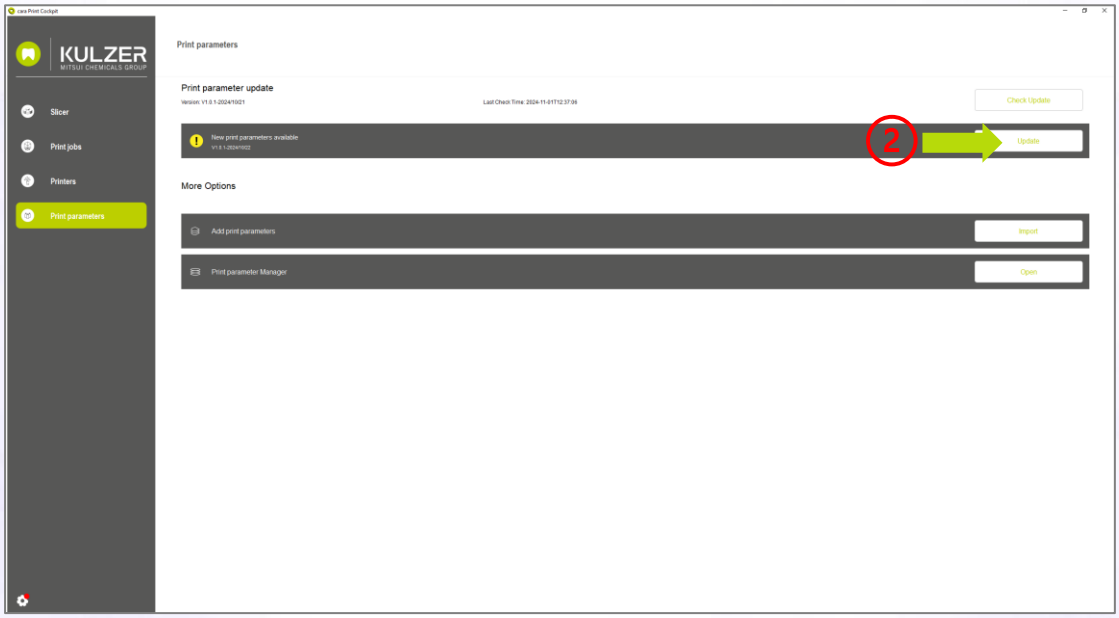

Check for software update
Current Version:
V1.0.03-beta09
Update available
Copyright © Suzhou Laisai Intelligence Technology Co., Ltd. All rights reserved.
Update
4

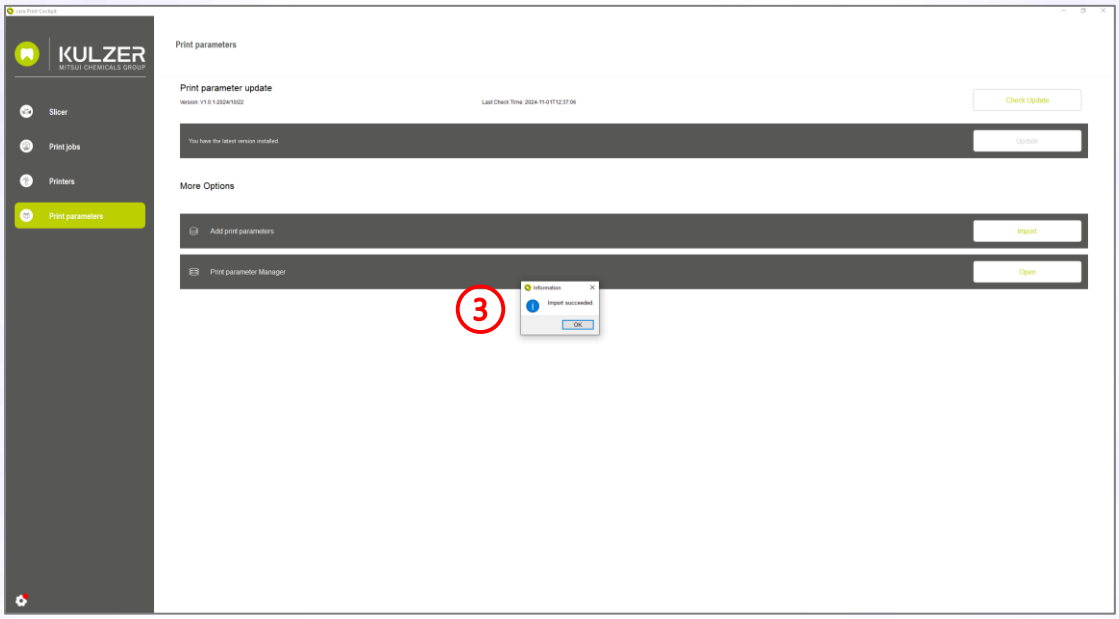
Update Print Parameters

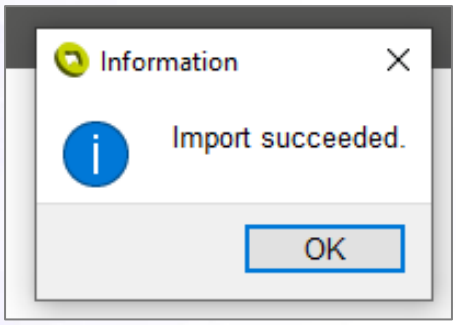
1. Click on “Check Update” button (If update available, this will be indicated with a yellow exclamation mark)
2. Click on Update – to update print parameters.
3. Finish








KULZER
MITSUI CHEMICALS GROUP
Slicer
Print jobs
Printers
Print parameters
Print parameters
Print parameter update
Check Update
Update
More Options
Add print parameters
Import
Print parameter Manager
Open
3
Information
Import succeeded.
OK


Information
Import succeeded.
OK

Support

If you need support while working, you can click on the Kulzer button in the left upper corner of the cara Print Cockpit interface. This will directly lead you to Kulzer's Support Hub.

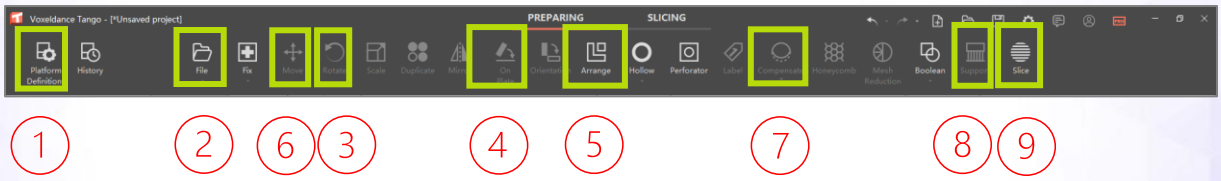
Voxeldance Tango

Slicing and Printing

1. Open the Slicer

The slicing software offers you a wide range of options. Those marked in green are the frequently used ones for dental work.

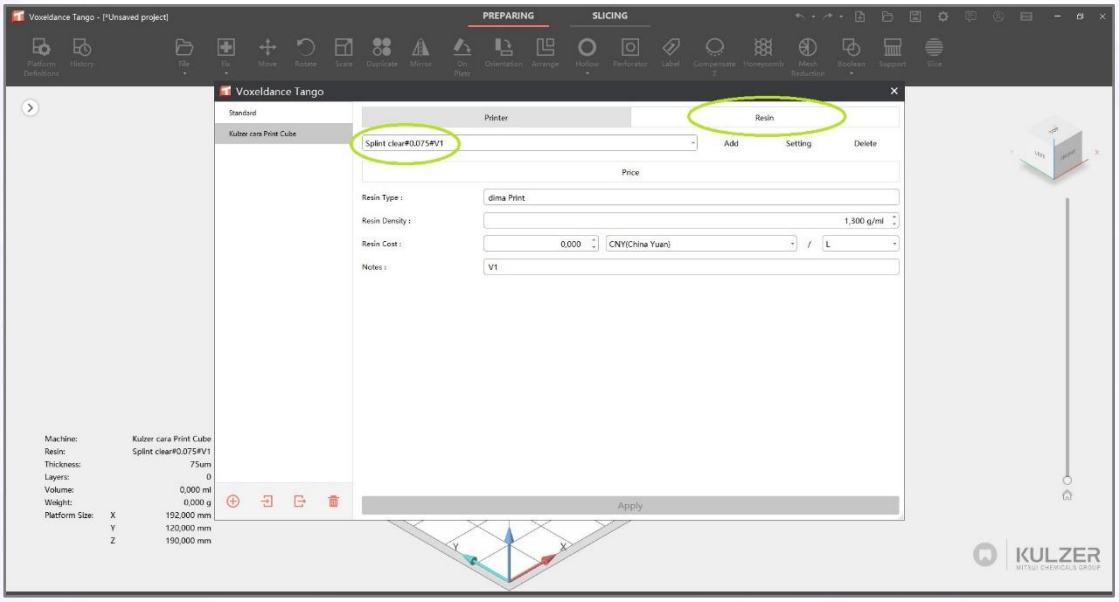
Options frequently used for dental workflow.



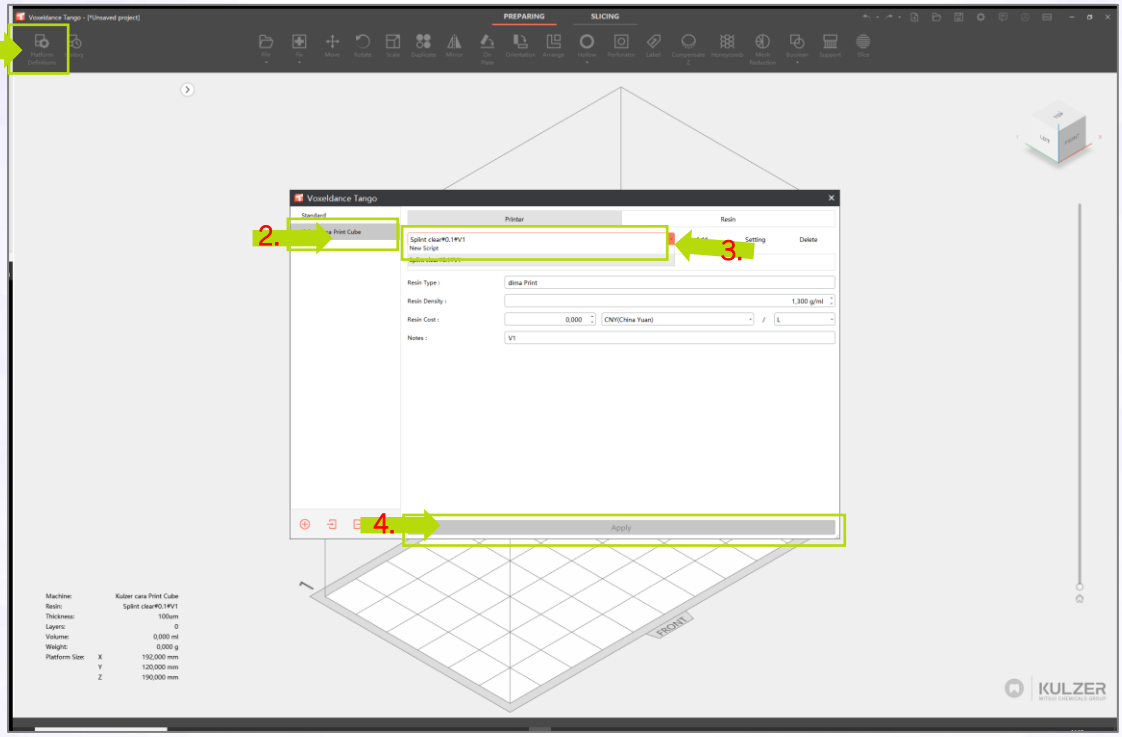
1. Platform Definitions	Choose print parameter and layer thickness
2. File → Open File	Choose the stl files
3. Rotate	According to the *dima Print Parameter Matrix* → depending on indication
4. Put on plate	Orientates area parallel to build table (if needed)
5. Arrange (“nest”)	Automatically nest parts on platform

6. Move — Move selected parts by inputting the desired values
7. Compensate Z — According to the *dima Print Parameter Matrix* ➔ depending on material
8. Support — According to the *dima Print Parameter Matrix* ➔ depending on material and indication
9. Slice — Slice parts on current platform

2. The process of creating the print job starts with “Platform Definitions”, here you select printer, material and layer thickness.



3. Select printer “Kulzer cara Print Cube”, resin type and layer thickness to be used, confirm by “Apply” (4.) After confirming, close the window.

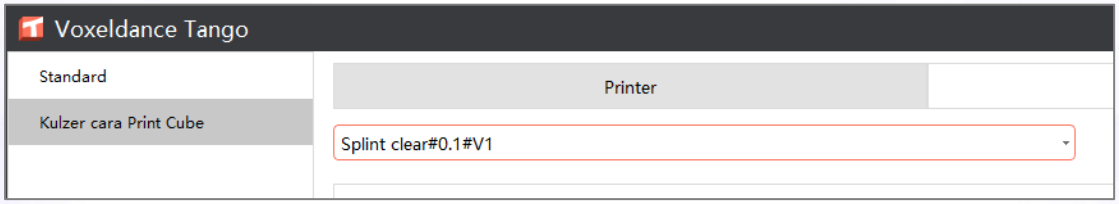


Syntax example: Splint clear#0.1#V1

Splint clear = Print parameter for dima Print Splint clear

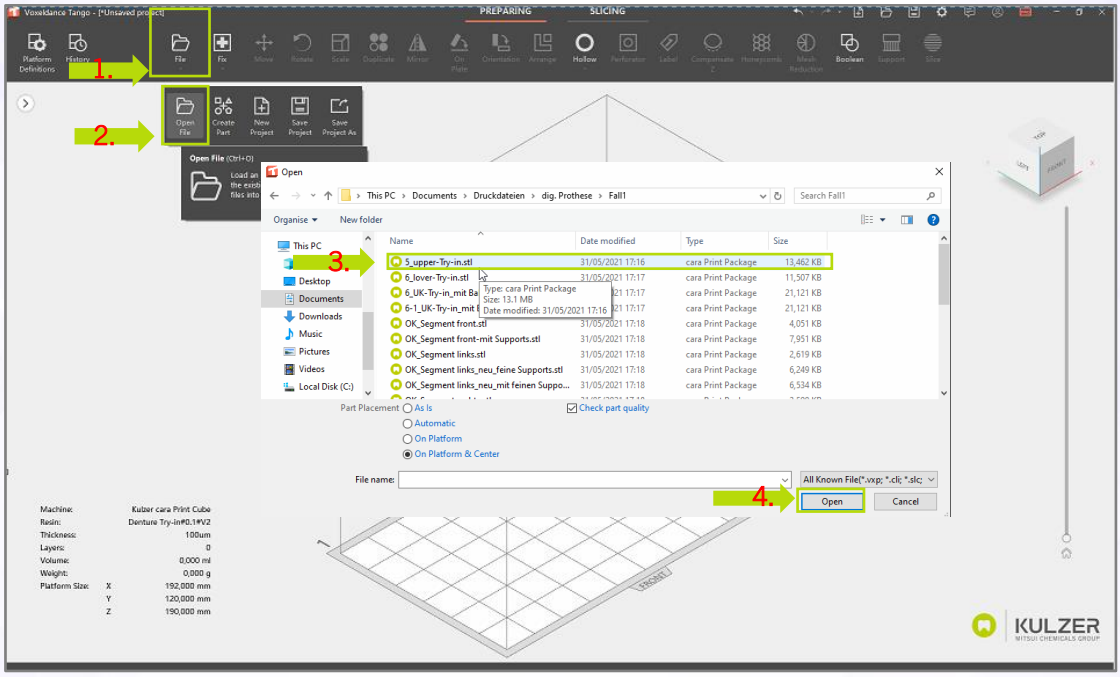
0.1 = Layer thickness 100µm

V1 = Print parameter version



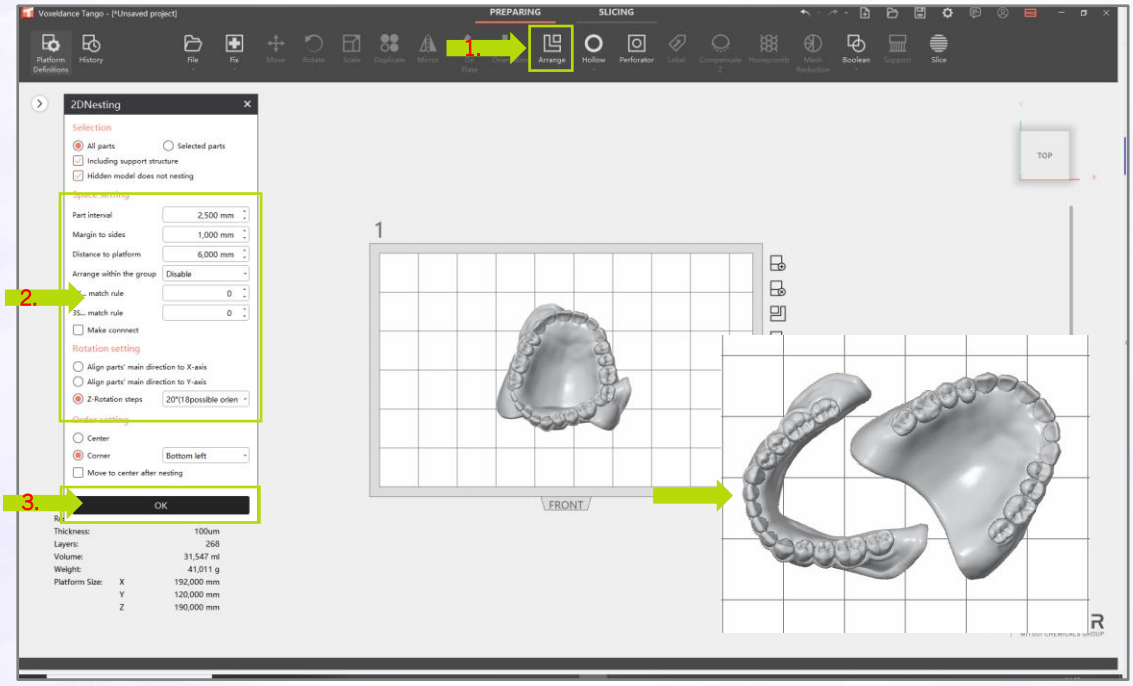
4. Import STL Files

Besides the standard process >File>Open File>Explorer the function “drag&drop” is also available.



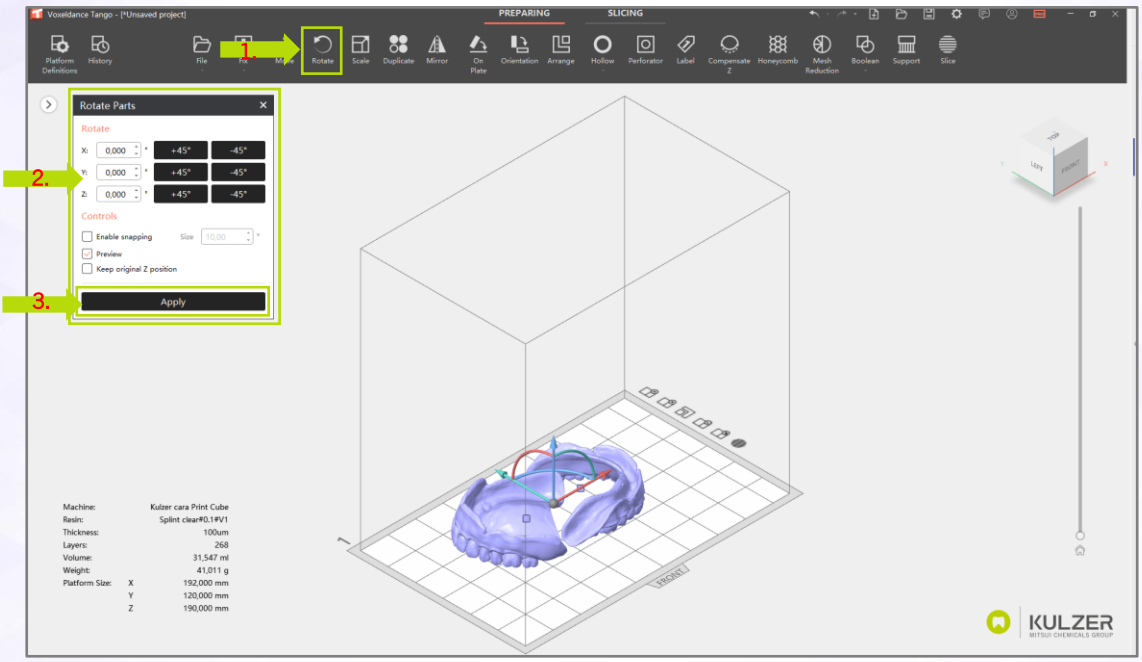
5. Arrange

After importing multiple objects, “Arrange” will arrange them automatically on the built platform. Click on the imported file to select it. The file will turn blue, indicating that it is ready to be moved.



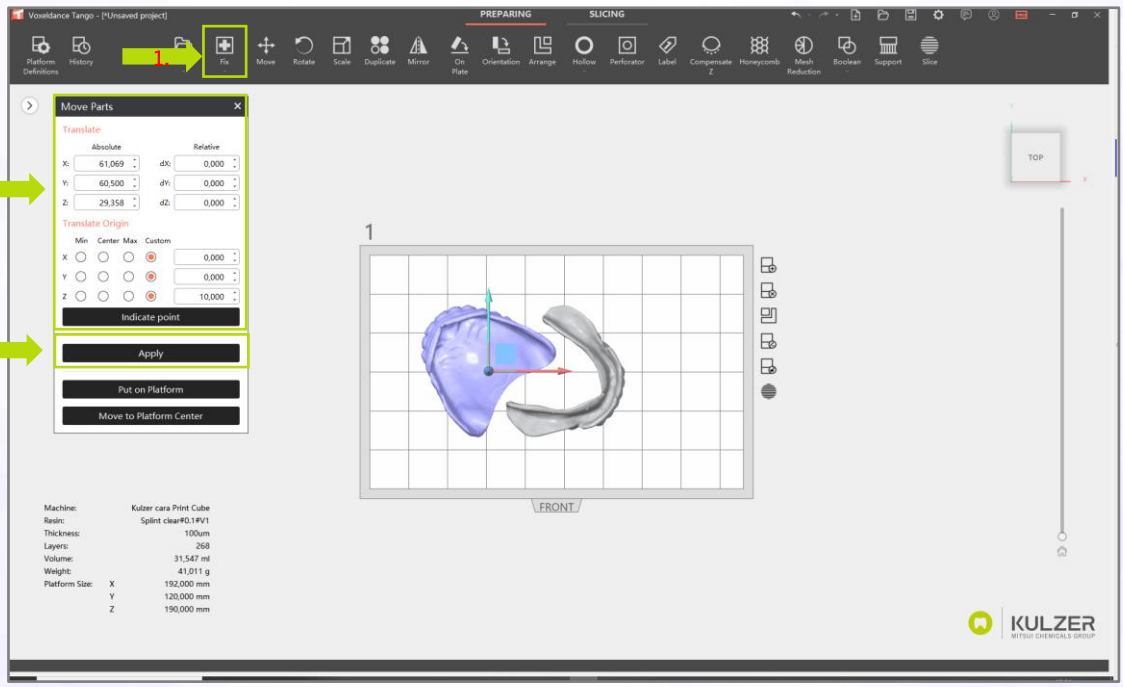
6. Rotation

Selected objects can be rotated directly by left-clicking on the circles attached to the coordinates or through insertion of numeric angles in the pop-up window.



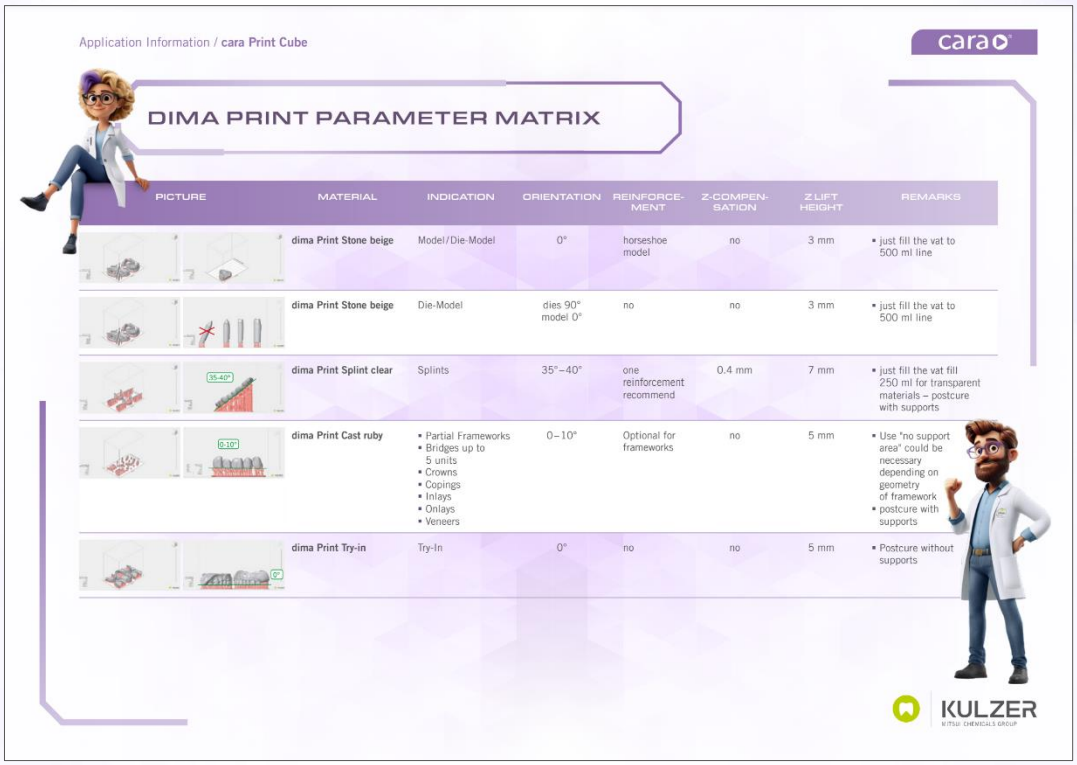
7. Move

Selected objects can be arranged by moving the mouse – holding left click – over the coordinate axes displayed in the corner of the built box or by inserting digits into the pop-up window



The dima Print parameter matrix supplied by Kulzer gives important recommendations on how to arrange different dental indications on the build platform and find correct settings.

Please visit the cara Print Support Hub for the most recent version:
www.kulzer.com/mycube-support



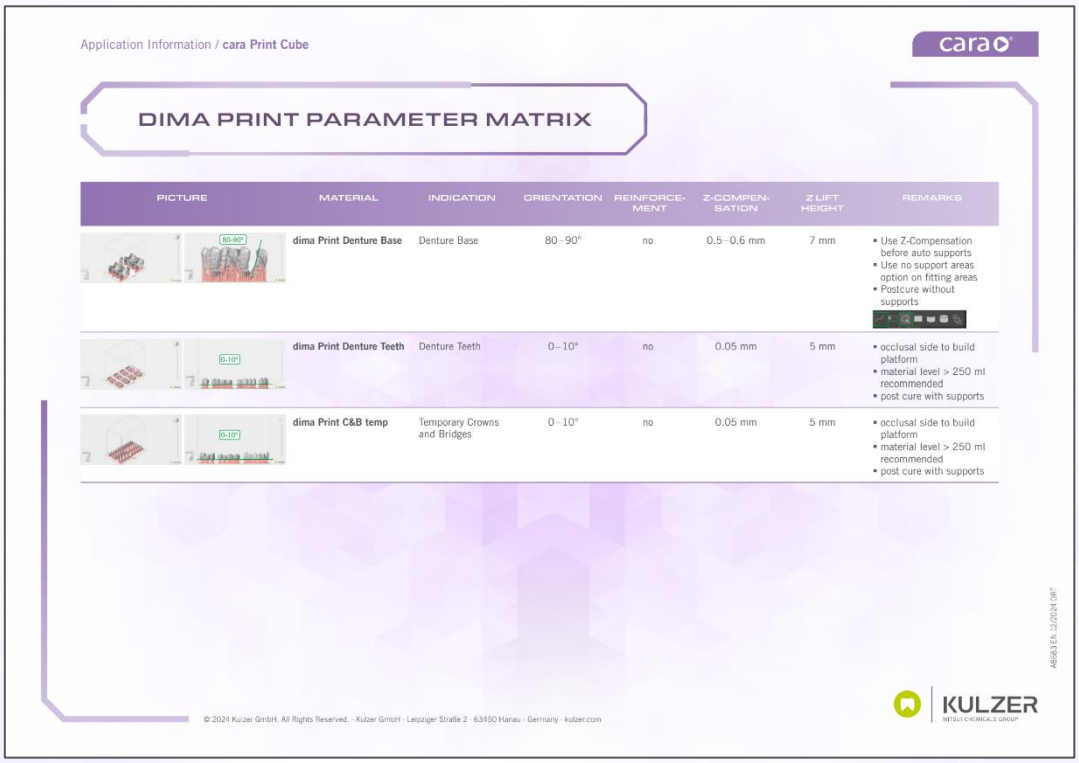
Application Information / **cara Print Cube**

cara

DIMA PRINT PARAMETER MATRIX

PICTURE	MATERIAL	INDICATION	ORIENTATION	REINFORCE-MENT	Z-COMPEN-SATION	Z LIFT HEIGHT	REMARKS
	dima Print Stone beige	Model/Die-Model	0°	horseshoe model	no	3 mm	• just fill the vat to 500 ml line
	dima Print Stone beige	Die-Model	dies 90° model 0°	no	no	3 mm	• just fill the vat to 500 ml line
35-40°	**dima Print Splint clear**	Splints	35°–40°	one reinforcement recommend	0.4 mm	7 mm	• just fill the vat fill 250 ml for transparent materials – postcure with supports
0-10°	**dima Print Cast ruby**	• Partial Frameworks • Bridges up to 5 units • Crowns • Copings • Inlays • Onlays • Veneers	0–10°	Optional for frameworks	no	5 mm	• Use "no support area" could be necessary depending on geometry of framework • postcure with supports
0°	**dima Print Try-in**	Try-In	0°	no	no	5 mm	• Postcure without supports

KULZER



Application Information / **cara Print Cube**

cara

DIMA PRINT PARAMETER MATRIX

PICTURE	MATERIAL	INDICATION	ORIENTATION	REINFORCE-MENT	Z-COMPEN-SATION	Z LIFT HEIGHT	REMARKS
80-90°	**dima Print Denture Base**	Denture Base	80 - 90°	no	0.5 - 0.6 mm	7 mm	• Use Z-Compensation before auto supports • Use no support areas option on fitting areas • Postcure without supports
0-10°	**dima Print Denture Teeth**	Denture Teeth	0 – 10°	no	0.05 mm	5 mm	• occlusal side to build platform • material level > 250 ml recommended • post cure with supports
0-10°	**dima Print C&B temp**	Temporary Crowns and Bridges	0 - 10°	no	0.05 mm	5 mm	• occlusal side to build platform • material level > 250 ml recommended • post cure with supports

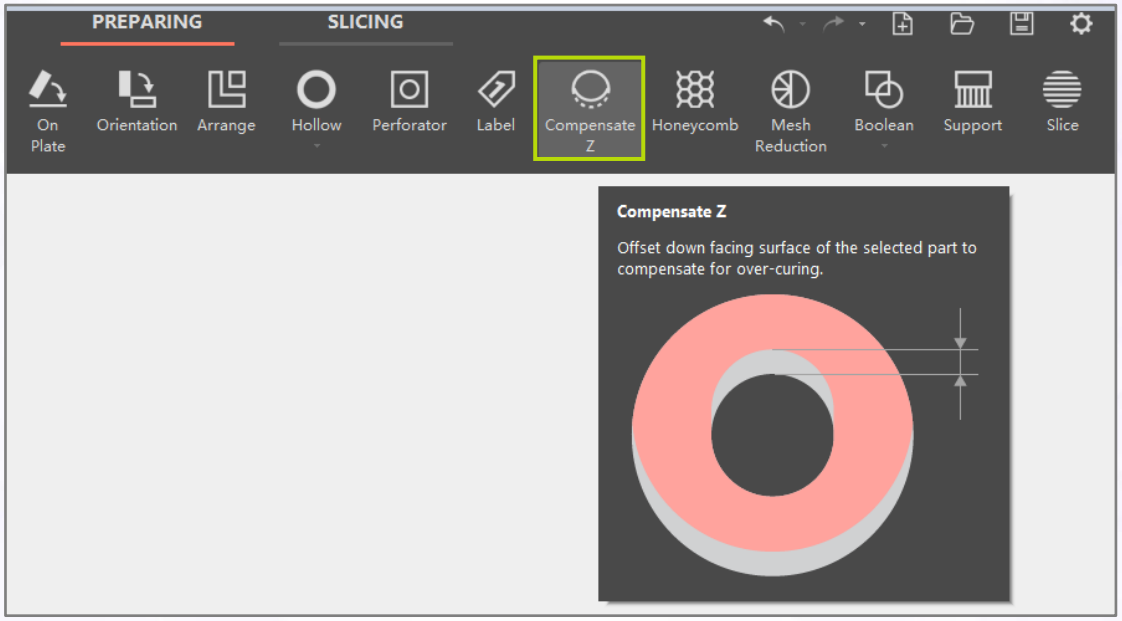
© 2024 Kulzer GmbH. All Rights Reserved. - Kulzer GmbH - Leipziger Straße 2 - 63450 Hanau - Germany - kulzer.com

KULZER

8. Z-compensation

When the object is in the desired final position, AFTER rotating but BEFORE creating supports, the necessary object and material related z-compensation MUST be checked in the dima Print parameter matrix and set in the pop-up window to avoid overbleed.

Not using the function may affect surface quality and/or accuracy.

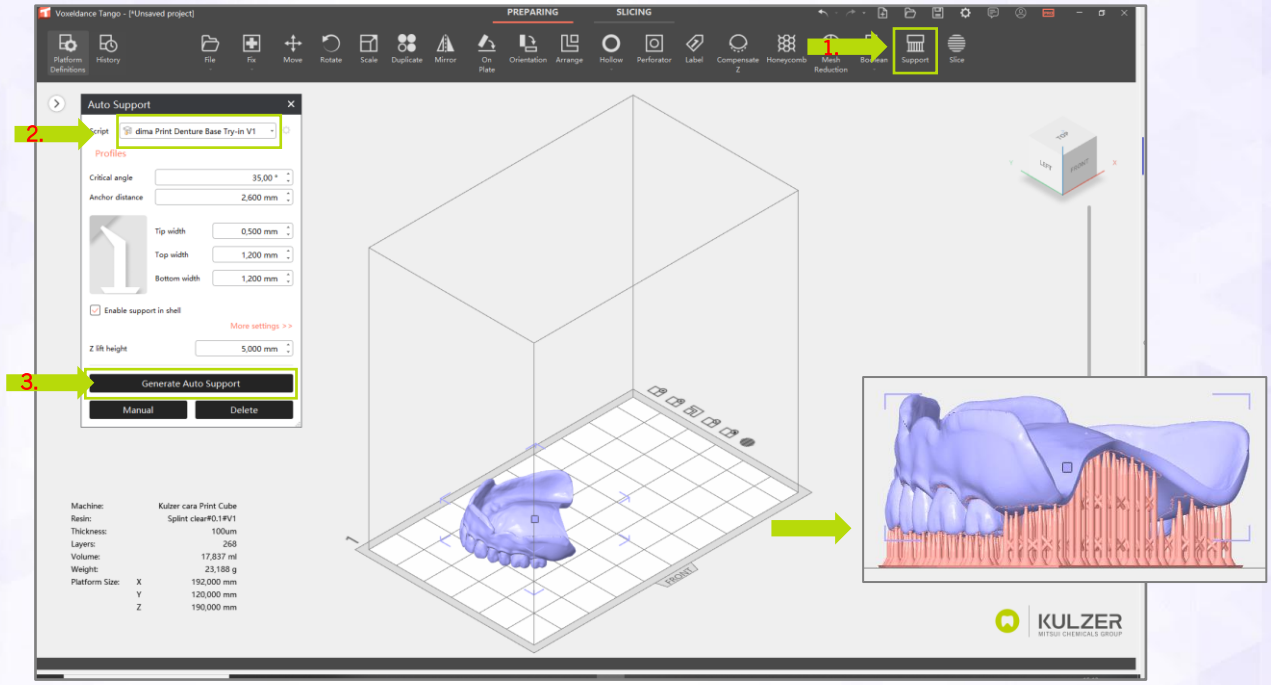


9. Auto Support

For each dima material you can choose a script with suitable supports.

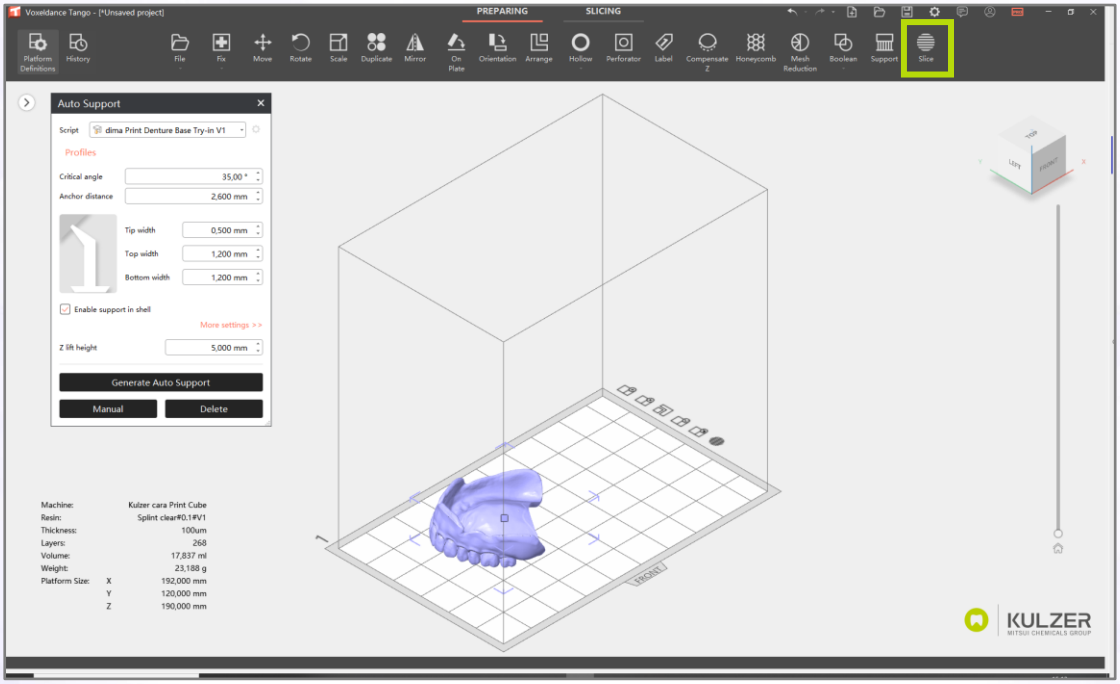
“Z-height” depends on the indication and needs to be set based on the dima Print parameter matrix.

Kulzer recommends putting each device on supports.

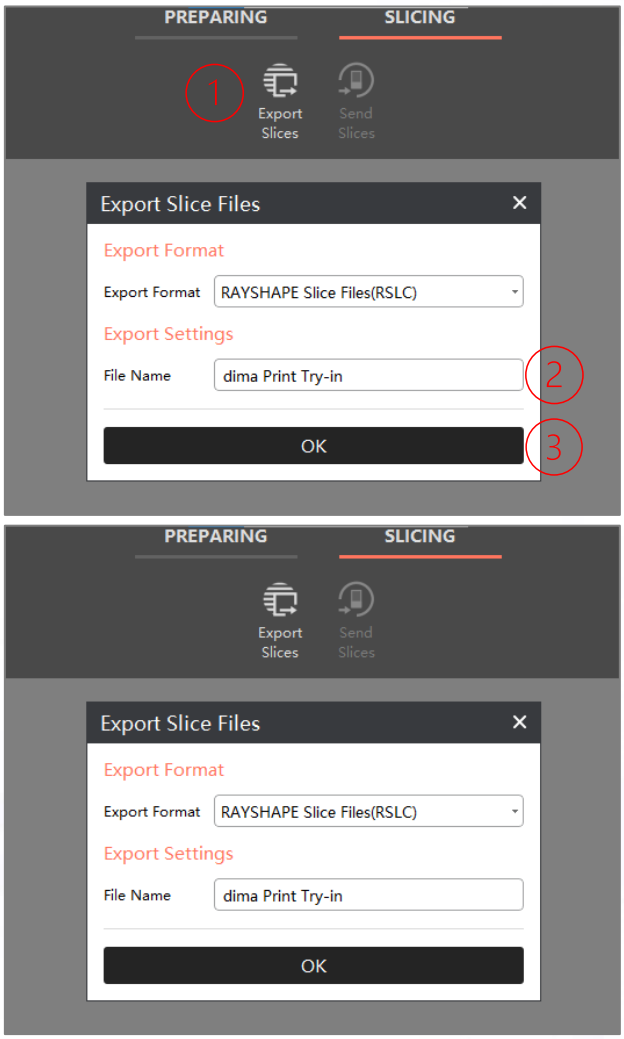


10. Slicing

After all parts are prepared, click “Slice”

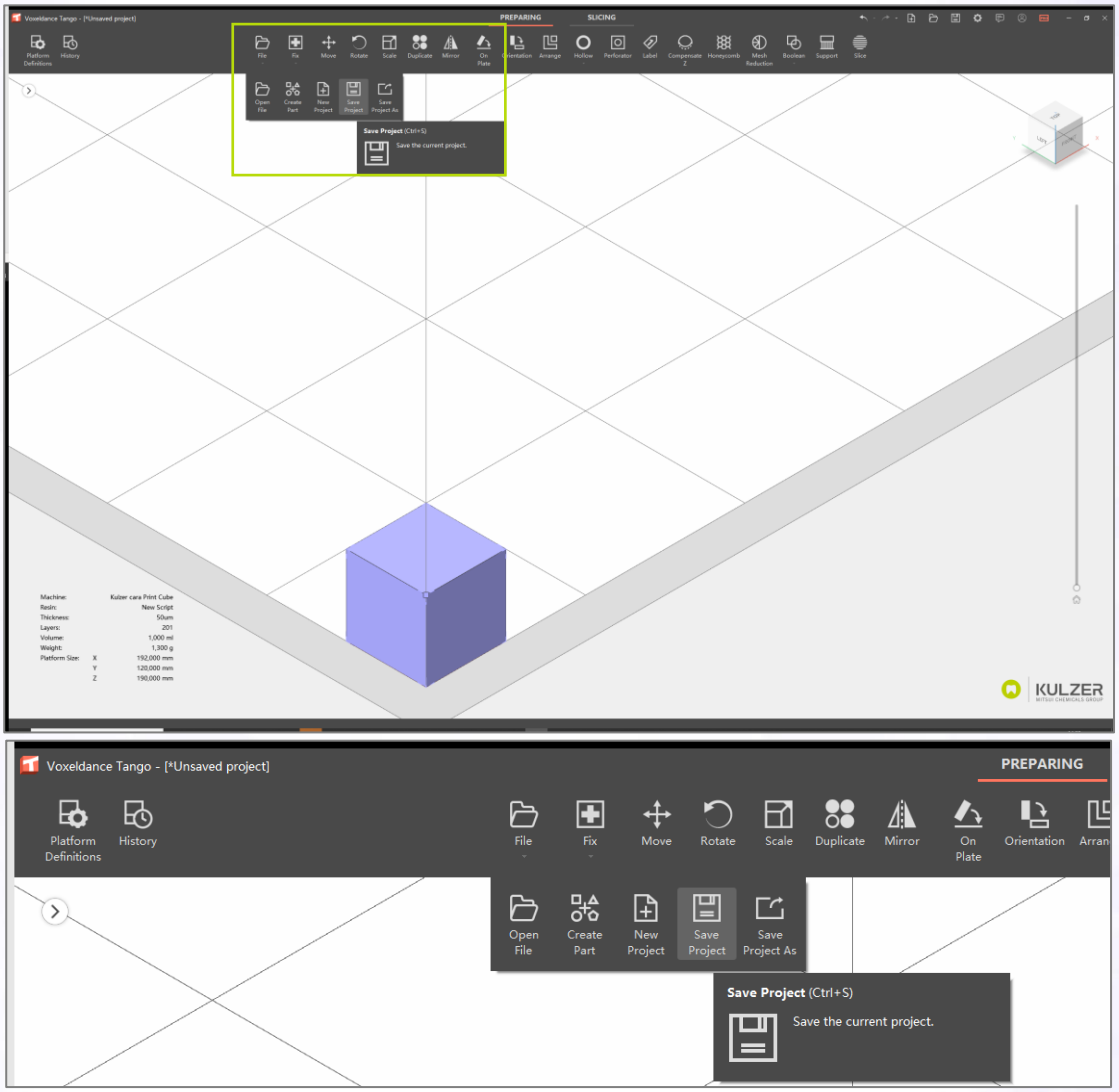


11. Export slicing file to cara Print Cockpit

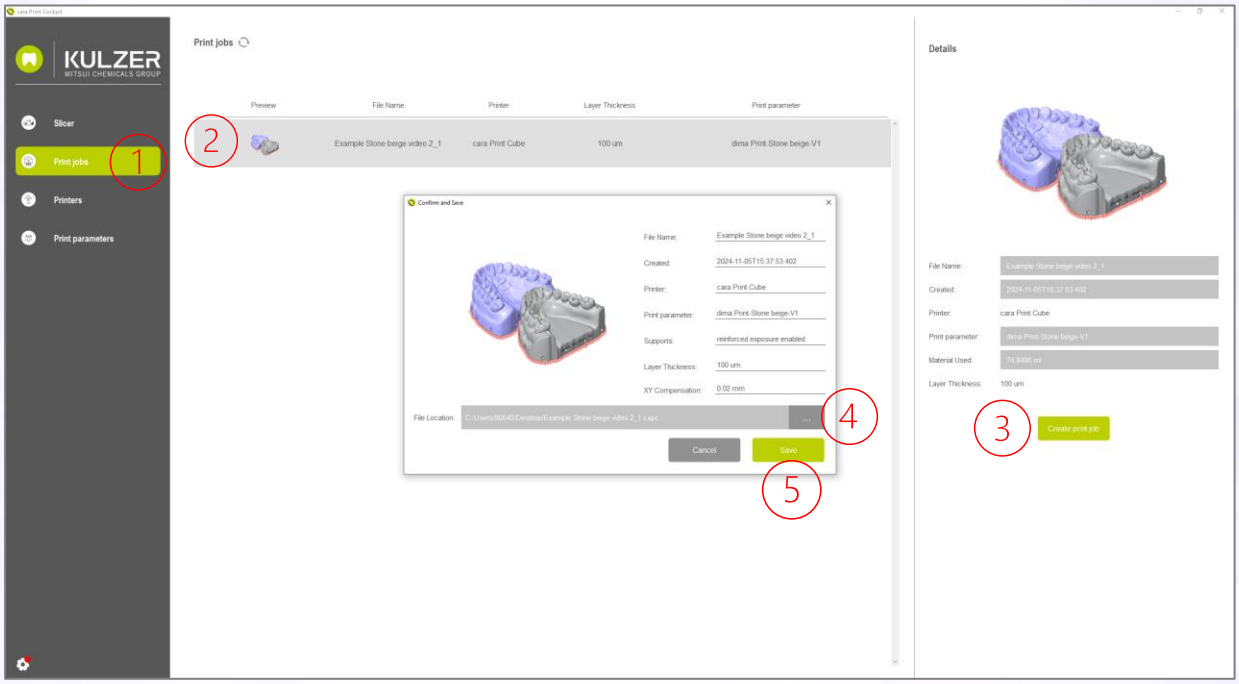


For more options how to use the Slicer software see Kulzer's online tutorials: http://www.kulzer.com/mycube-support

12. Save project



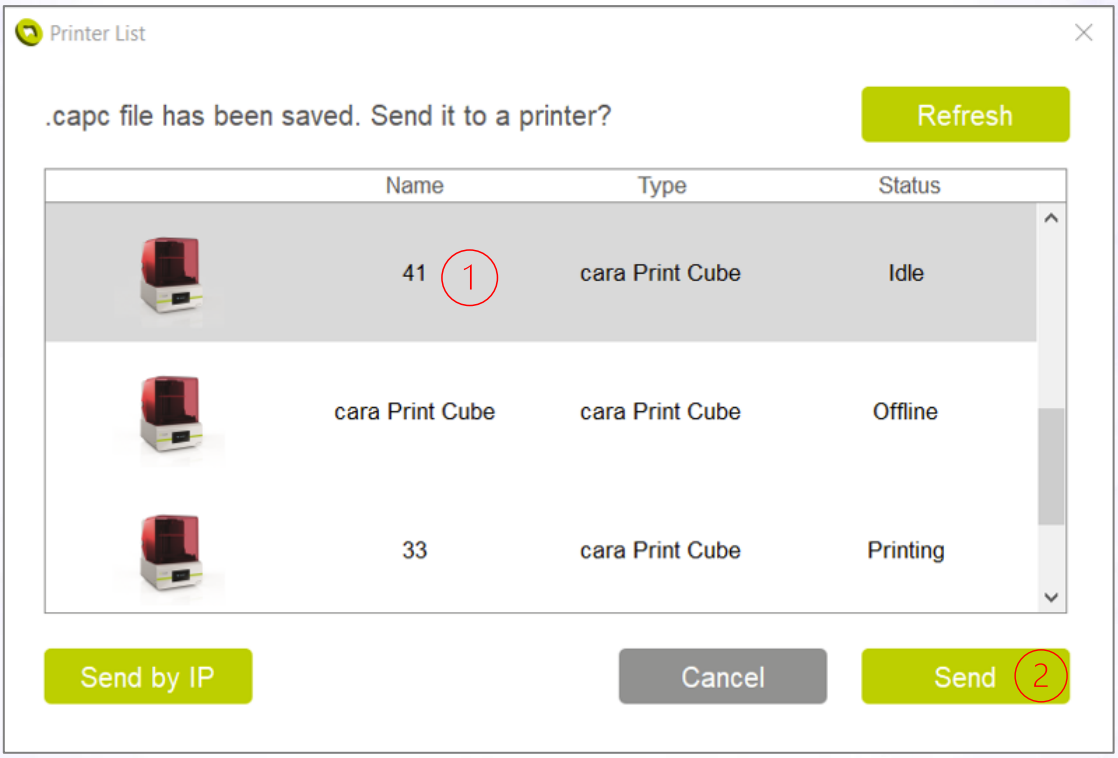
13. Create print job in cara Print Cockpit (Based on Voxeldance Tango Export)
    1. Click Print
    2. Choose Printjob
    3. Create Printjob
    4. Chose Location
    5. Save



14. Send the print job to a printer

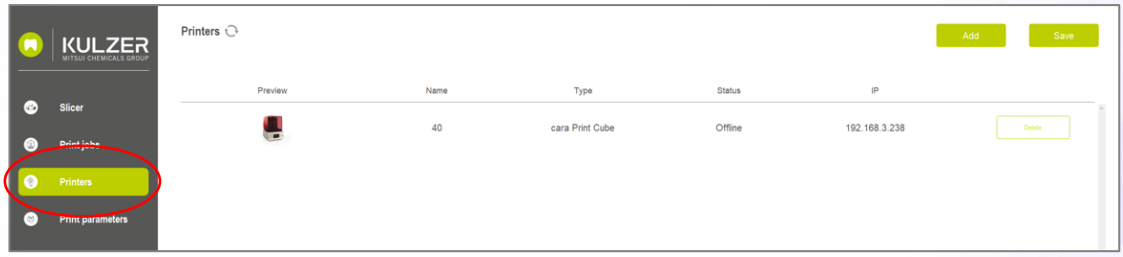
    1. Send the print job via Network

       Select the printer that should be used for printing in the pop-up window and click “Send”.



    2. Send an existing slicing file to a printer

       Select the printer that should be used for printing in Printers Tab and click “Send File”, choose the slicing file to be sent in the pop-up window.



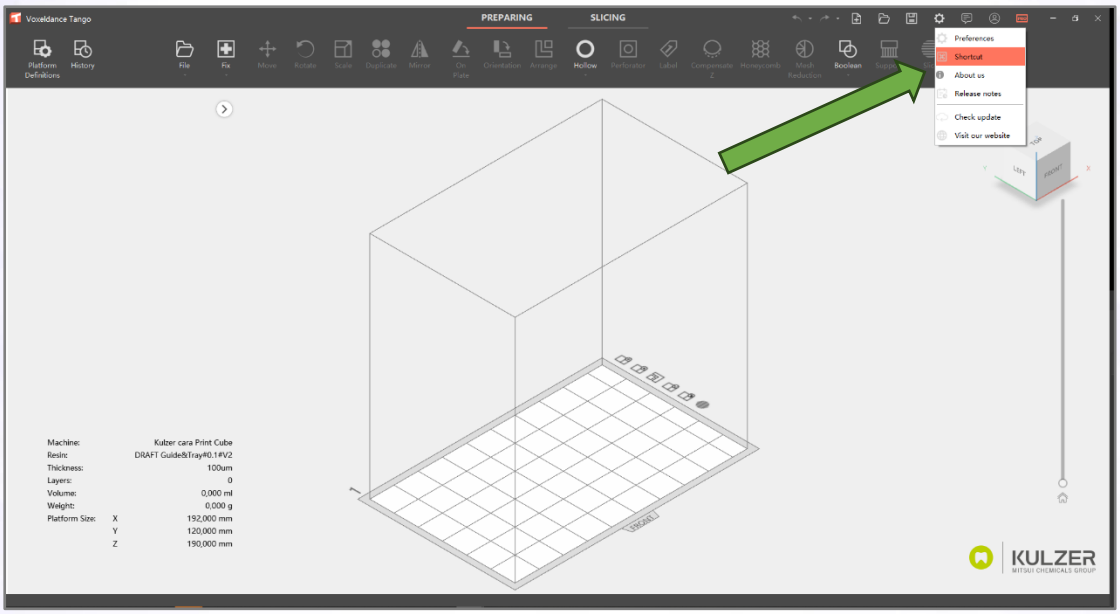
    3. Copy the slicing file with a USB drive

       Copy the slicing file saved in Step 6) to the root directory of a USB drive, plug the USB drive, plug the USB drive into the printer to upload the slicing file.

Special functions & Tricks in Tango

Shortcuts

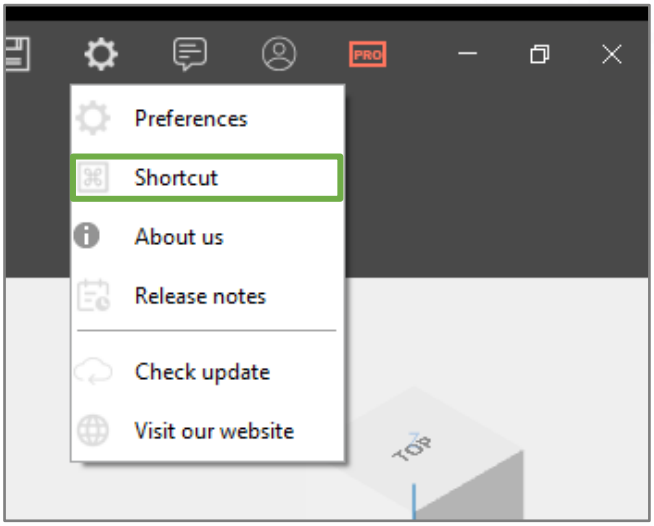
Shortcuts can be helpful to maximize workflow efficiency.

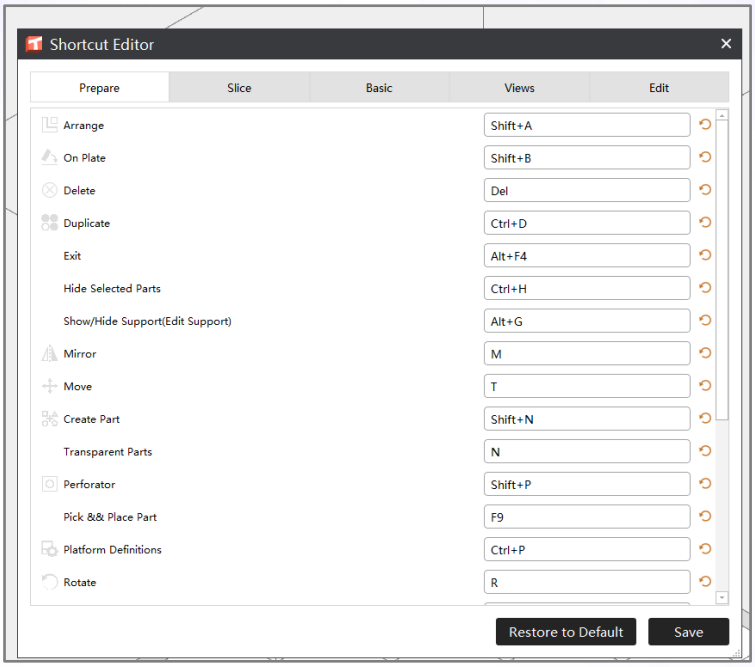


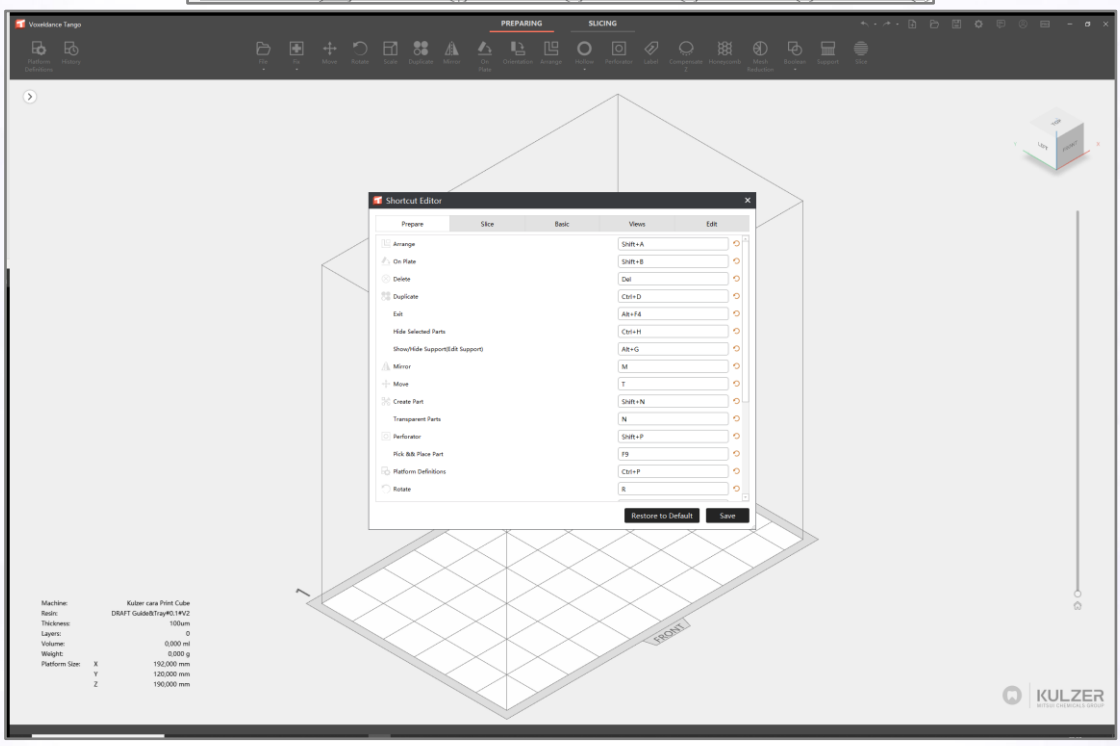
You can check and change the shortcuts by:

1. Left click on gear symbol
2. Left click on “Shortcut”
3. Check or change shortcuts

See following screenshots as visualization.

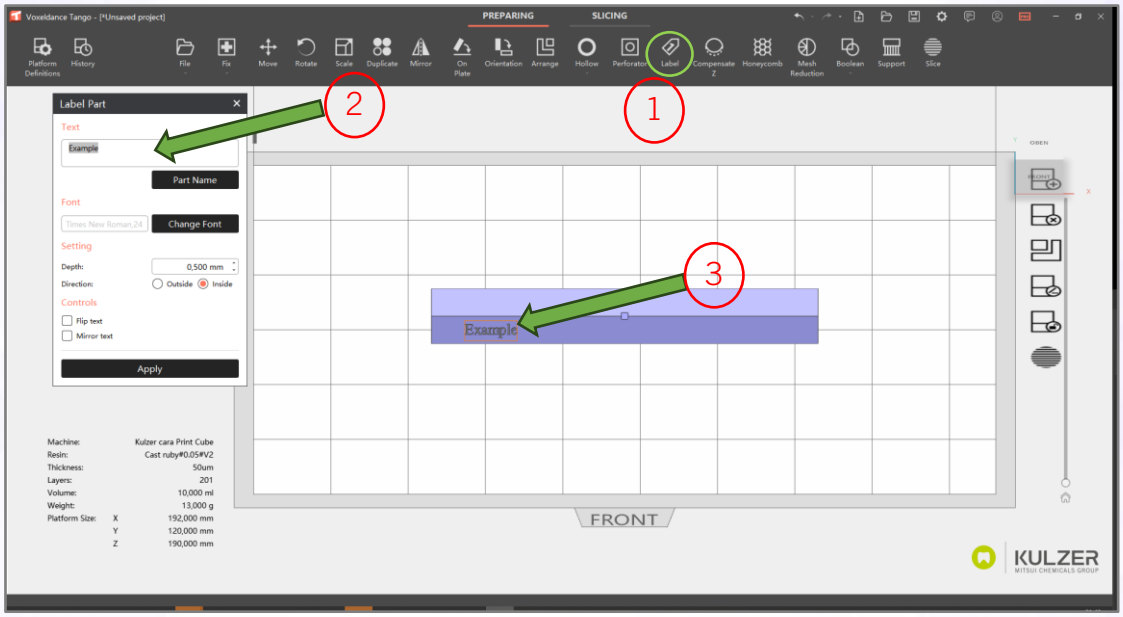



Shortcut Editor
Prepare
Slice
Basic
Views
Edit
Arrange
Shift+A
On Plate
Shift+B
Delete
Del
Duplicate
Ctrl+D
Exit
Alt+F4
Hide Selected Parts
Ctrl+H
Show/Hide Support(Edit Support)
Alt+G
Mirror
M
Move
T
Create Part
Shift+N
Transparent Parts
N
Perforator
Shift+P
Pick && Place Part
F9
Platform Definitions
Ctrl+P
Rotate
R
Restore to Default
Save


PREPARING
SLICING
FRONT
KULZER

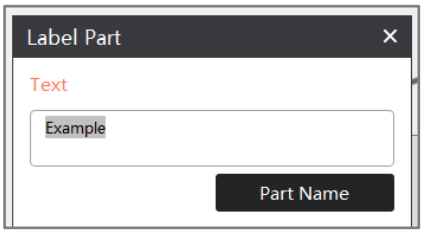
Labeling of parts

Sometimes it is helpful to engrave parts for better identification.

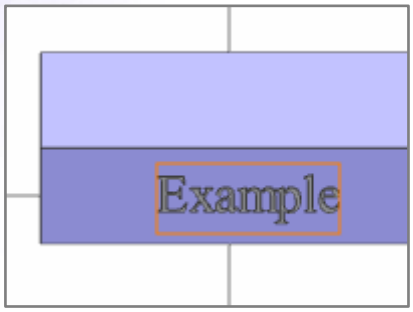


1. Click on “Label” button

2. Insert text or click “Part Name” to use part name



3. Mark/select label location on part by holding right mouse button to create text box (text will be stamped in view direction)



Settings

“Outside” = extrudes text

“Inside” = engraves text

Add or delete supports manually

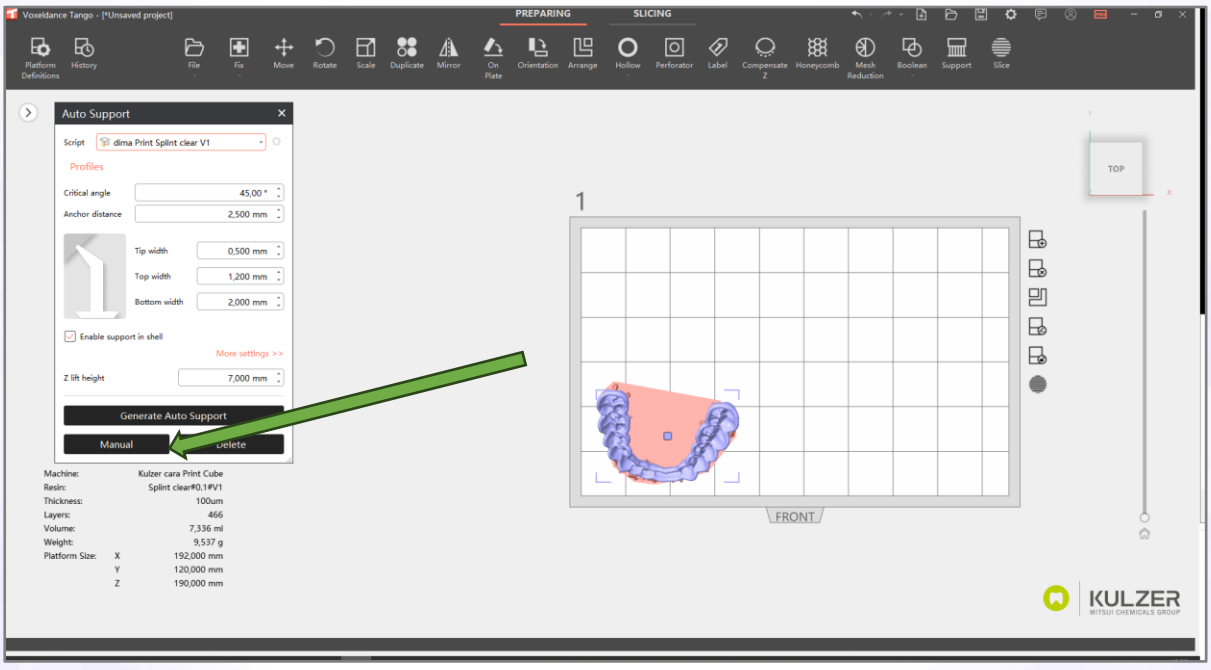
The indication related “Auto Support”-scripts are tailored to provide an optimal balance between support density and post process effort.

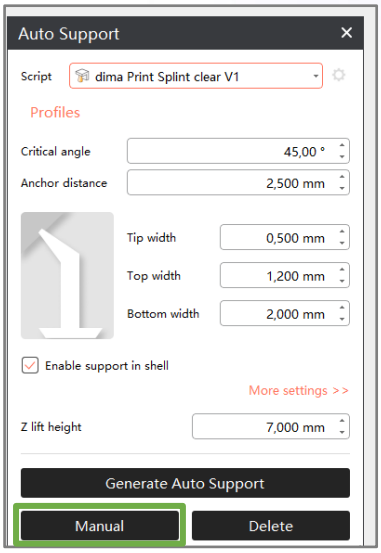
In raw cases your design needs a little more or less supports to improve your workflow and post process. Kulzer recommends to carefully check the slices for islands if you remove supports manually.

For details, please find corresponding video tutorials on Kulzer’s support hub. In the following section the workflow is just explained briefly.

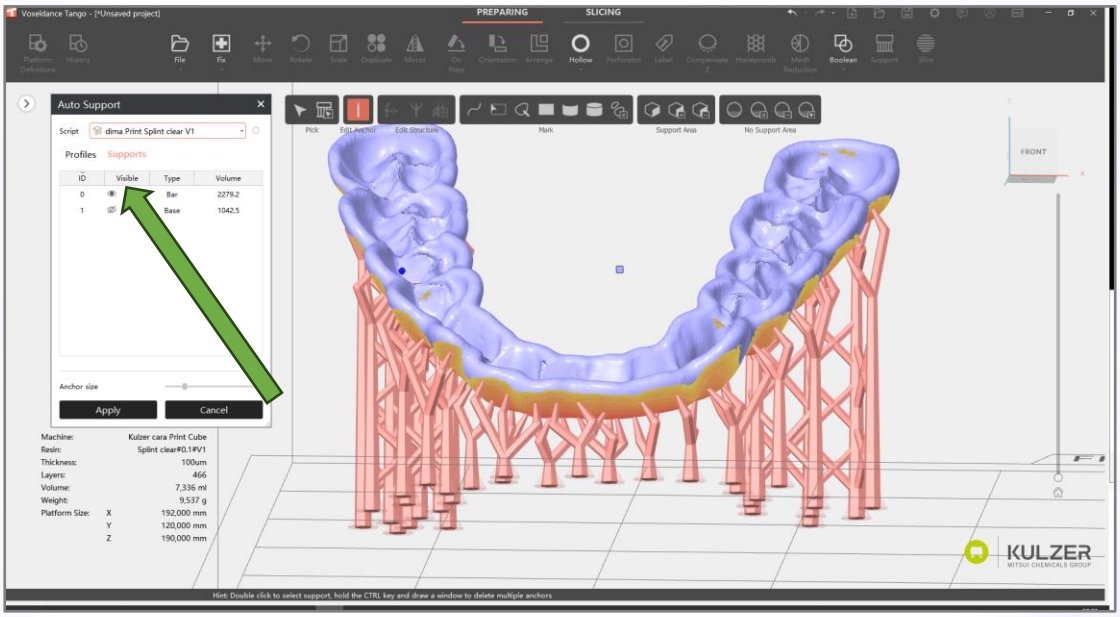
To adjust, add or delete supports:

1. Click on “Manual” in the “Auto Support” menu.

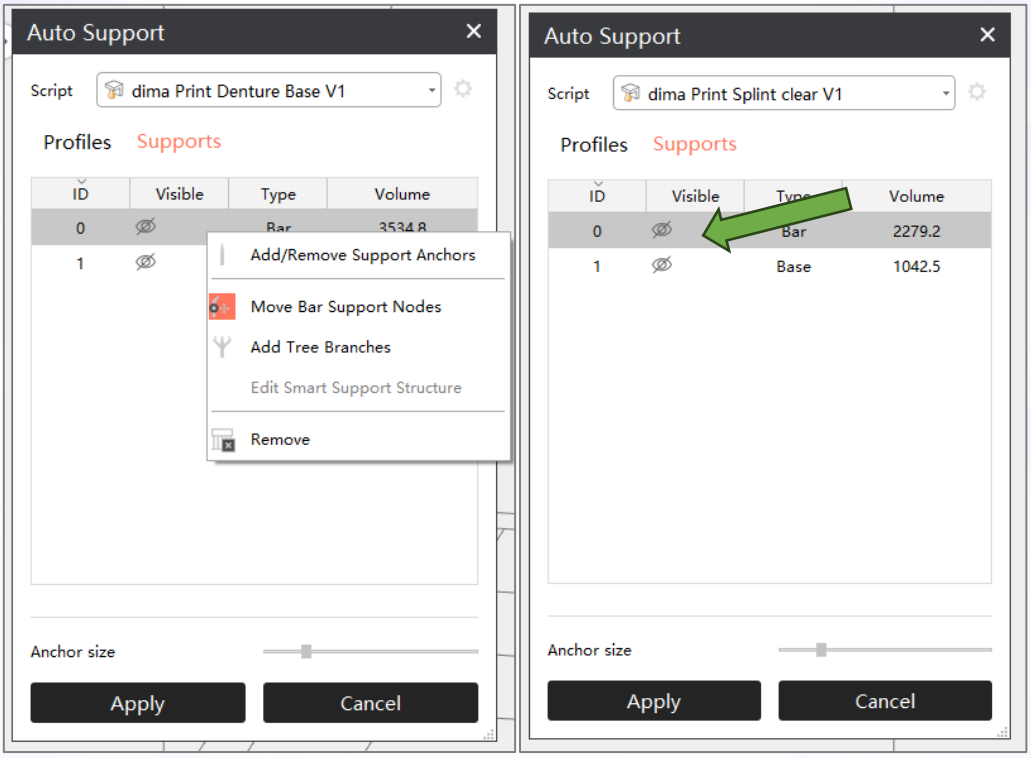




2. Hide existing supports by click on the eye in column “visible”.



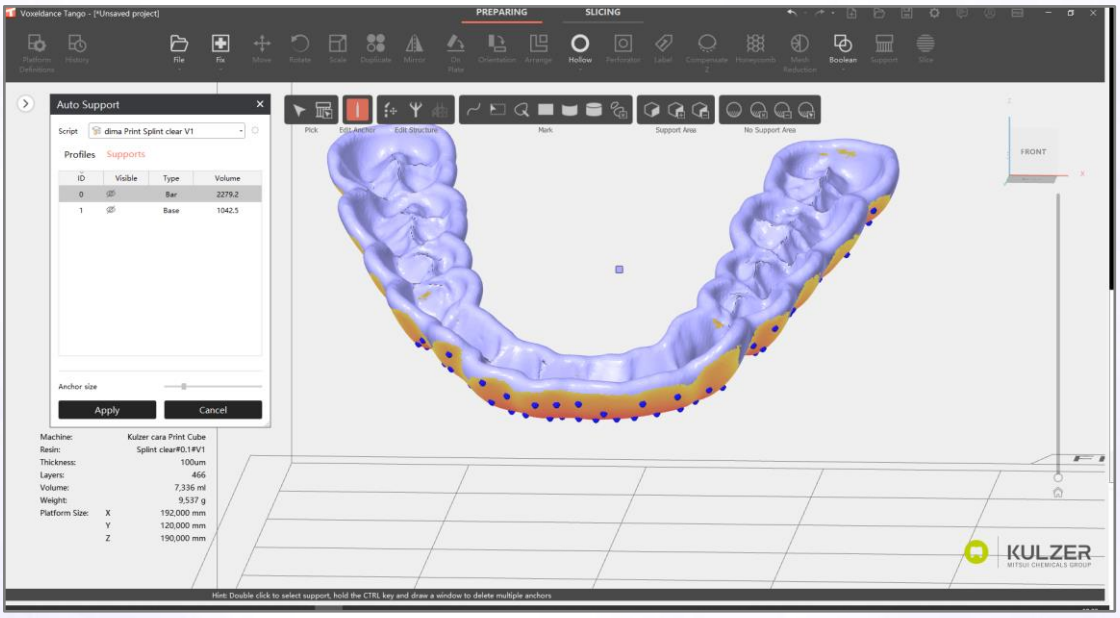
3. Click on the area next to the hide eye symbol to show the connection points (see arrow) or right click “Add/Remove Support Anchors”



4. The blue balls indicate a support connection point.

Adjust support	= Drag and drop blue ball
Delete support	= click on blue ball
Add support	= click on surface to add blue ball

5. Click on “Apply” to activate new supports

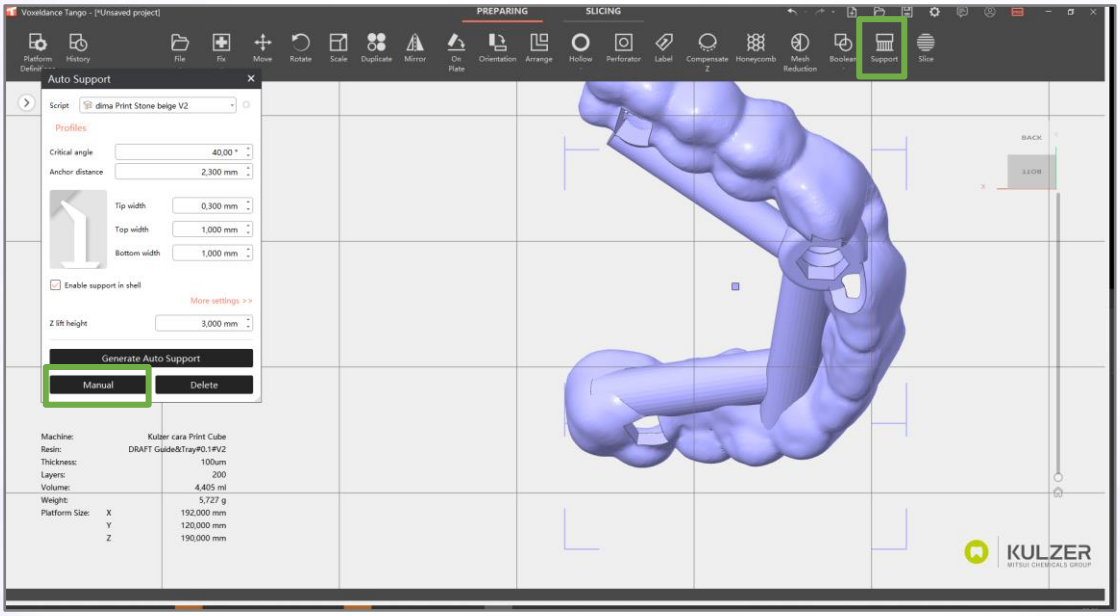


No Support Area

Some indications have functional areas which should be support free if possible. One example would be a surgical guide as shown below. To skip functional areas in the support generation, the option “No Support Area” can be used. This option is an alternative to deleting supports after Auto Support. Kulzer recommends to carefully check the slices for islands if you use the No Support Area function. Islands are local minima which are not supported.

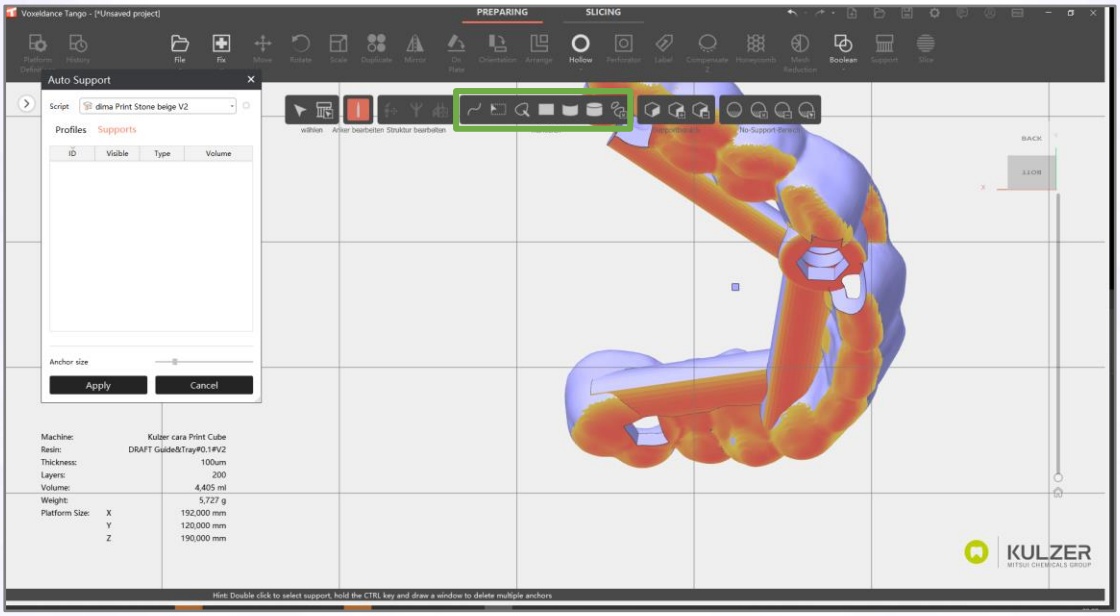
For details, please find corresponding video tutorials on Kulzer’s support hub. In the following section the workflow is explained briefly.

1. Open the “Auto Support” menu
2. Click on “Manual”
3. Use “Mark” tools to mark surfaces
4. Activate marked area (changes from yellow to orange)
5. Auto support to generate supports

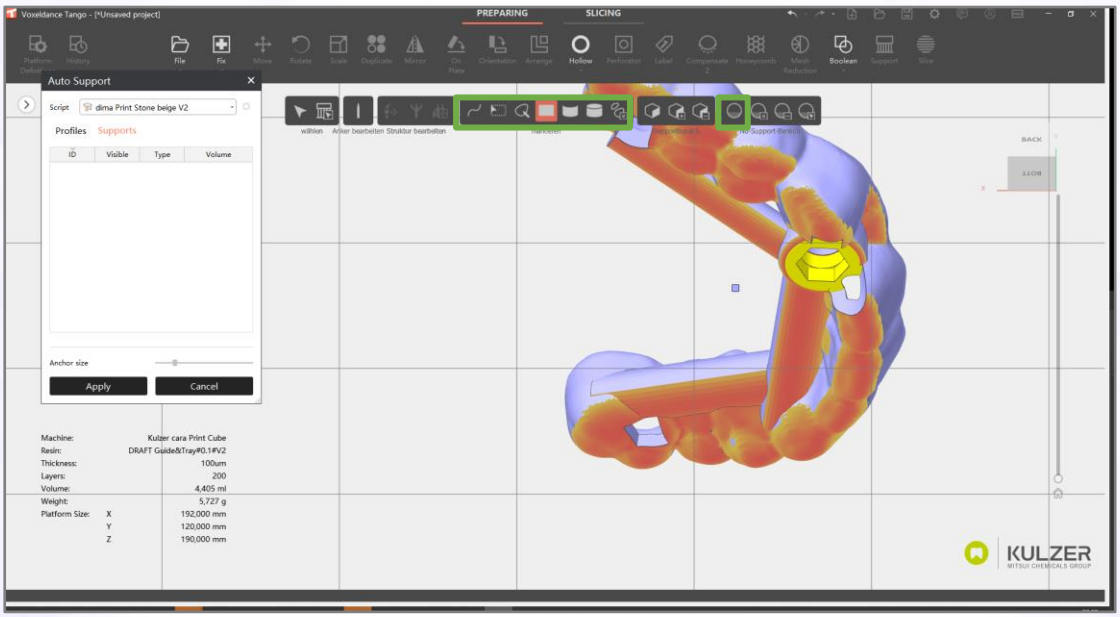


Tools

Tools to mark

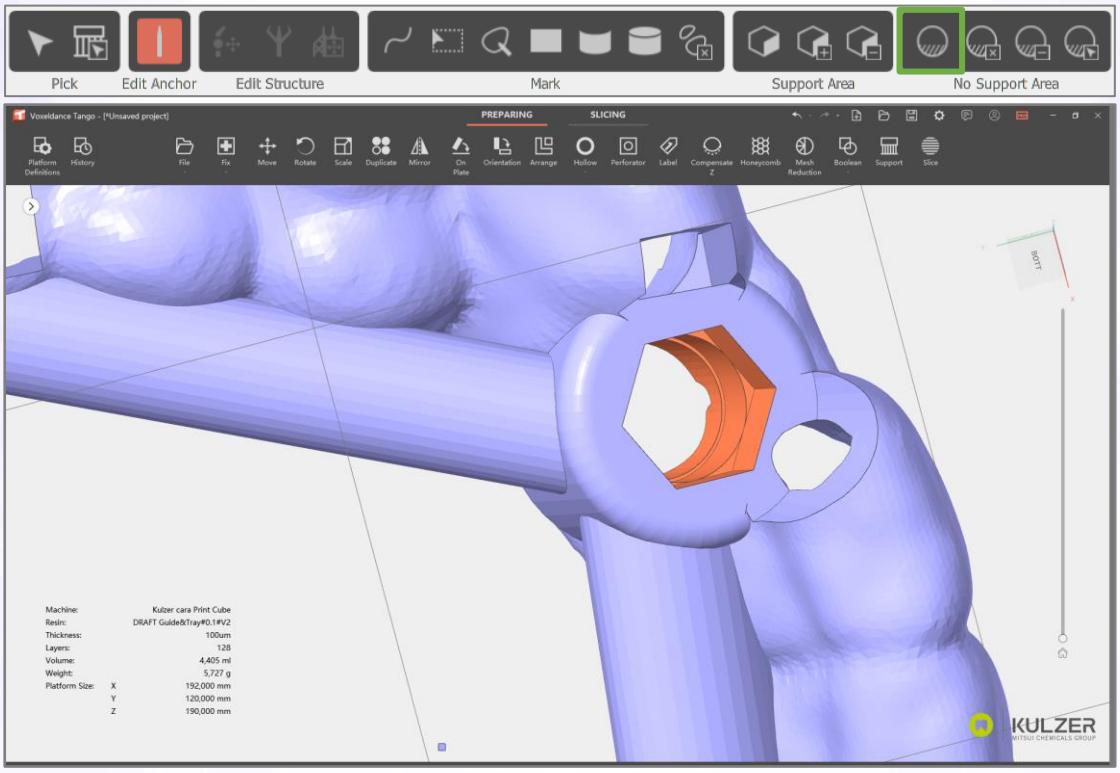


Marked area is yellow.

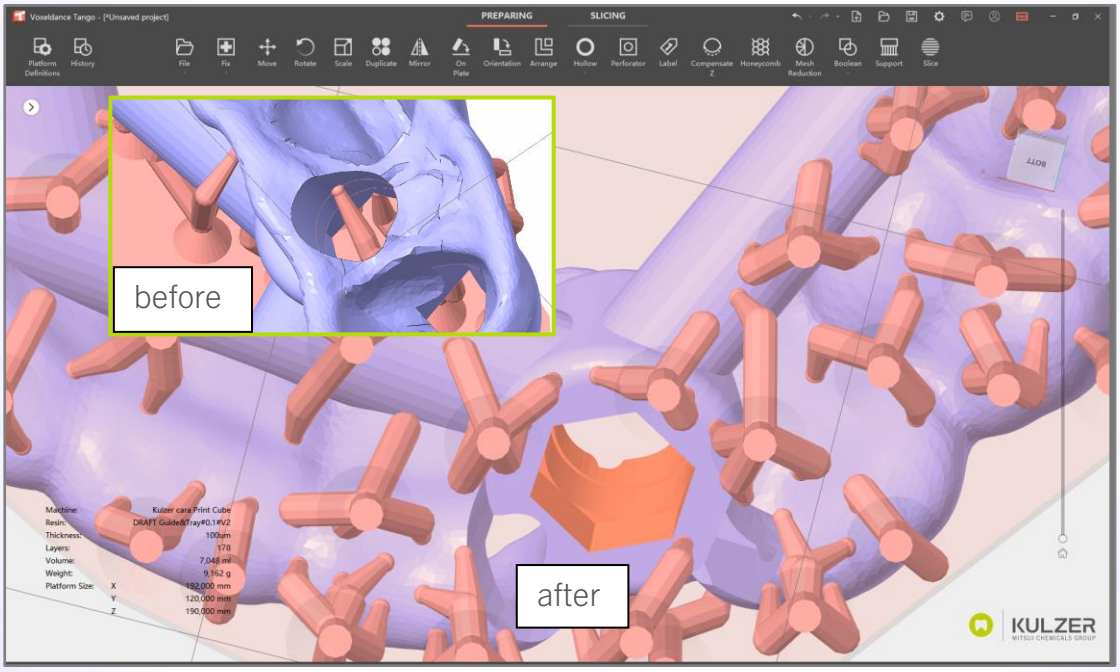


When the surface is marked, click on “no support area” to activate marked area.

It switches from yellow to orange.



Now apply and generate supports

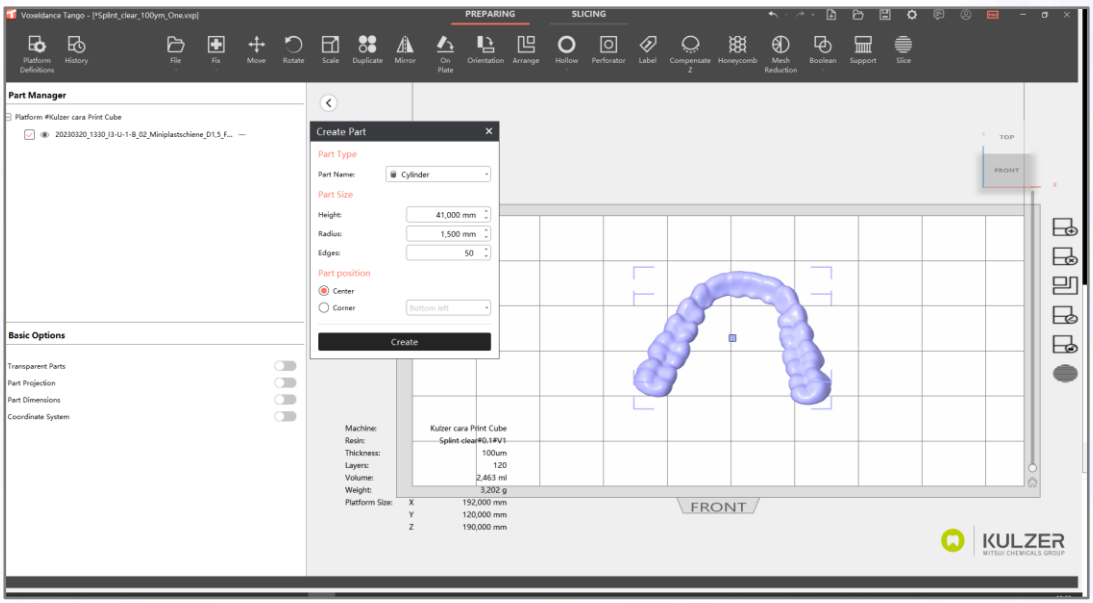


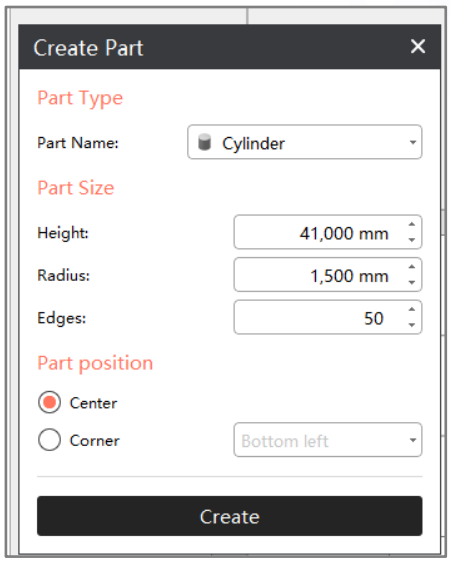
Reinforcement bars

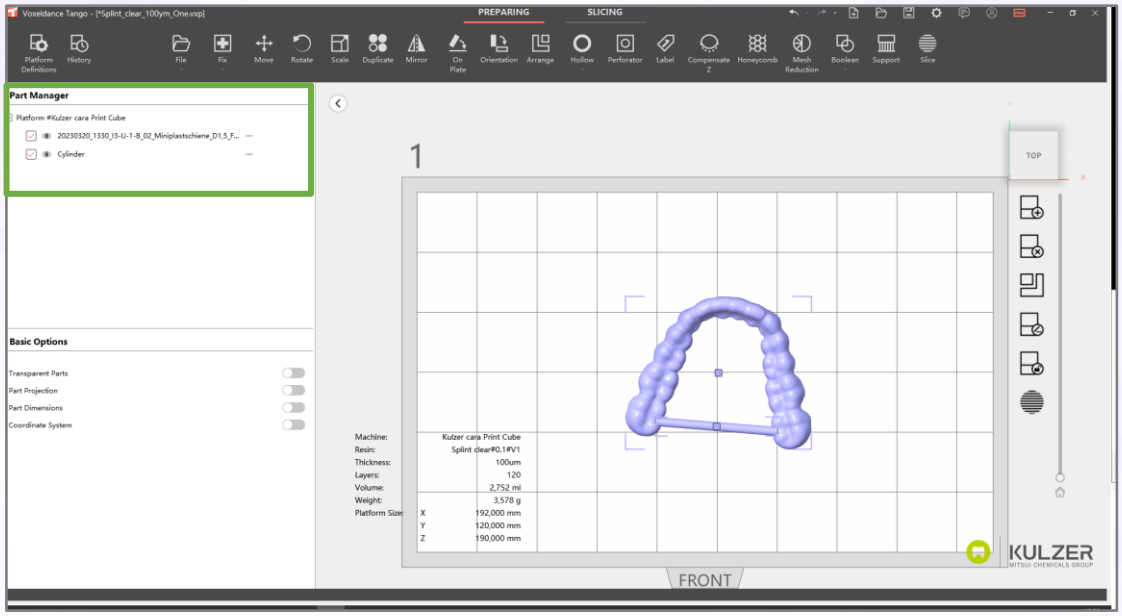
Some designs benefit from a reinforcement bar. Voxeldance Tango enables the user to create simple geometries which can be used as a reinforcement bar by merging them to the design. The Boolean tool enables even more options to combine and subtract parts.

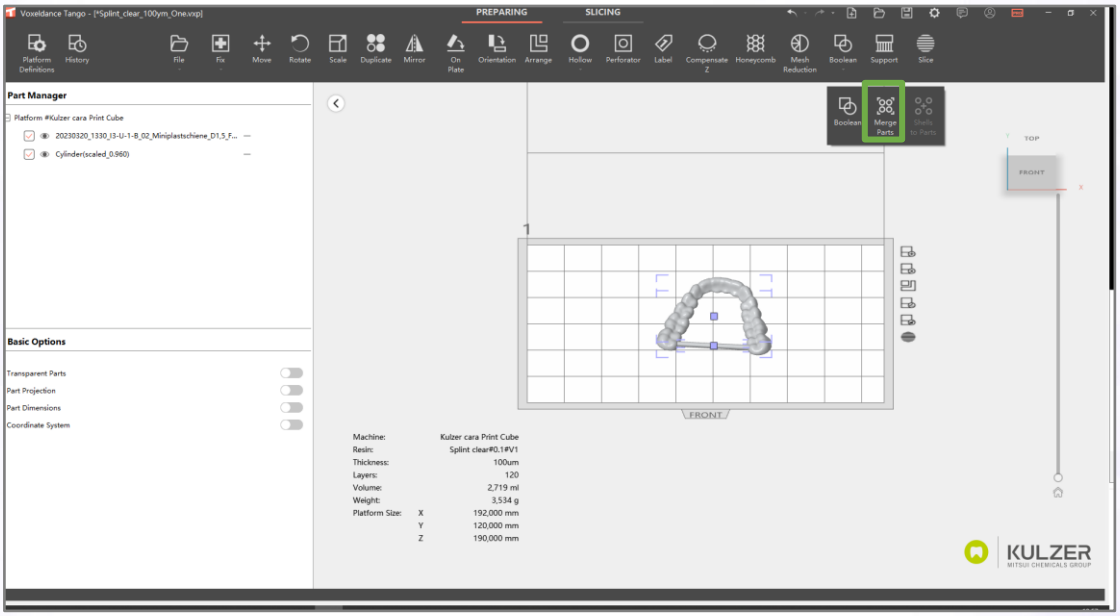
For details, please find corresponding video tutorials on Kulzer's support hub. In the following section the workflow is explained briefly.

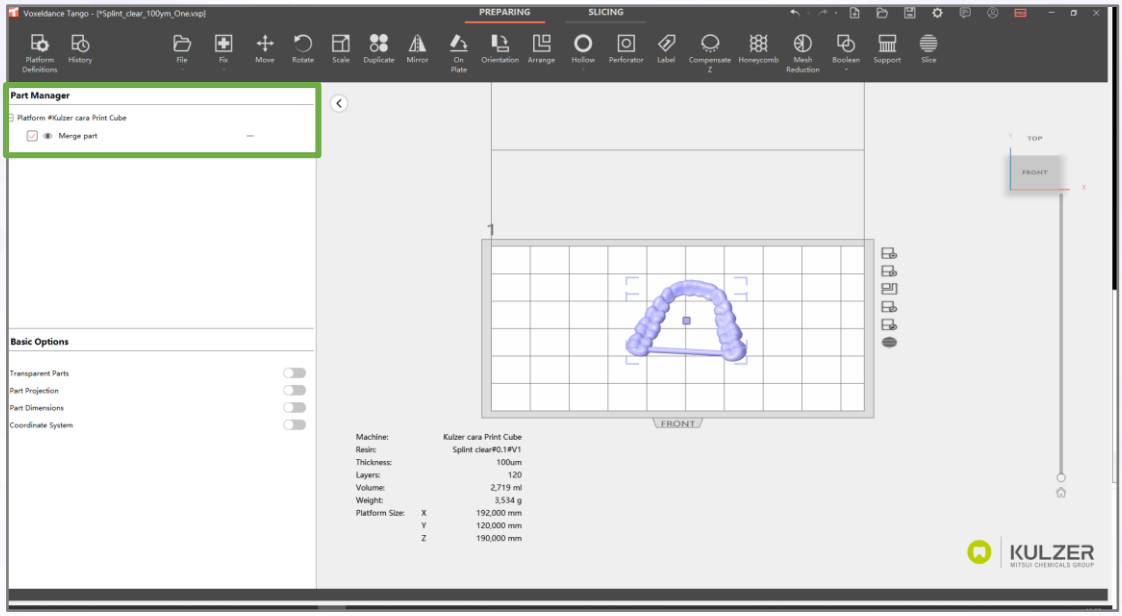
1. Create part for reinforcement > File > Create Part > Define Part size > Create
Help: The standard grid size of the platform is 20mm
2. Move part to position for reinforcement
3. Merge parts by >Boolean> Merge Parts






Voxeldance Tango - [*Splint_clear_100ym_One.vxp]
PREPARING
SLICING
Part Manager
Platform #Kulzer cara Print Cube
20230320_1330_I3-U-1-B_02_Miniplastschiene_D1,5_F...
Cylinder
Basic Options
Transparent Parts
Part Projection
Part Dimensions
Coordinate System
Machine: Kulzer cara Print Cube
Resin: Splint clear#0.1#V1
Thickness: 100um
Layers: 120
Volume: 2,752 ml
Weight: 3,578 g
Platform Size: X 192,000 mm
Y 120,000 mm
Z 190,000 mm
TOP
FRONT
KULZER


Voxeldance Tango - [*Splint_clear_100ym_One.vxp]
PREPARING
SLICING
Part Manager
Platform #Kulzer cara Print Cube
20230320_1330_I3-U-1-B_02_Miniplastschiene_D1,5_F...
Cylinder(scaled_0.960)
Basic Options
Transparent Parts
Part Projection
Part Dimensions
Coordinate System
Boolean
Merge Parts
Shells to Parts
Machine: Kulzer cara Print Cube
Resin: Splint clear#0.1#V1
Thickness: 100um
Layers: 120
Volume: 2,719 ml
Weight: 3,534 g
Platform Size: X 192,000 mm
Y 120,000 mm
Z 190,000 mm
KULZER


PREPARING
SLICING
Part Manager
Platform #Kulzer cara Print Cube
Merge part
Basic Options
Transparent Parts
Part Projection
Part Dimensions
Coordinate System
Machine: Kulzer cara Print Cube
Resin: Splint clear#0.1#V1
Thickness: 100um
Layers: 120
Volume: 2,719 ml
Weight: 3,534 g
Platform Size: X 192,000 mm
Y 120,000 mm
Z 190,000 mm
FRONT
TOP
KULZER

Technical Support

If you need support during the use of cara Print Cockpit, please contact your local Kulzer representative. Please see a list of contacts below.

Brasil	Kulzer South America Ltda. Rua Cenno Sbrighi, 27 - Sala 42 - Água Branca 05036-010 São Paulo SP Brasil support.br@kulzer-dental.com
Germany	Kulzer GmbH Leipziger Straße 2 63450 Hanau Germany cara@kulzer-dental.com
France	Kulzer France S.A. Les Conquérants - Bât. Everest 1, avenue de l'Atlantique 91976 Les Ulis - ZA Courtabœuf Cedex France support.fr@kulzer-dental.com
Italy	Kulzer S.r.l. Via Console Flaminio 5/7 20134 Milano Italy support.it@kulzer-dental.com
Republic of Korea	Kulzer Korea Co., Ltd. Room 501, Namsung Plaza Bldg. 345-30 Gasan-dong, Geumcheon-gu, Seoul 153-782 Republic of Korea support.kr@kulzer-dental.com
USA & Canada	Kulzer, LLC 4315 S. Lafayette Blvd. South Bend, IN 46614 USA cara-service-na@kulzer-dental.com
Australia & New Zealand	Kulzer Australia Pty Ltd New Unit 20 / 53 Lorraine St, PEAKHURST, NSW, 2210 Australia support.anz@kulzer-dental.com