materialise

innovators you can count on

Materialise
Build Processor

# Magics Print Metal

*User Manual*

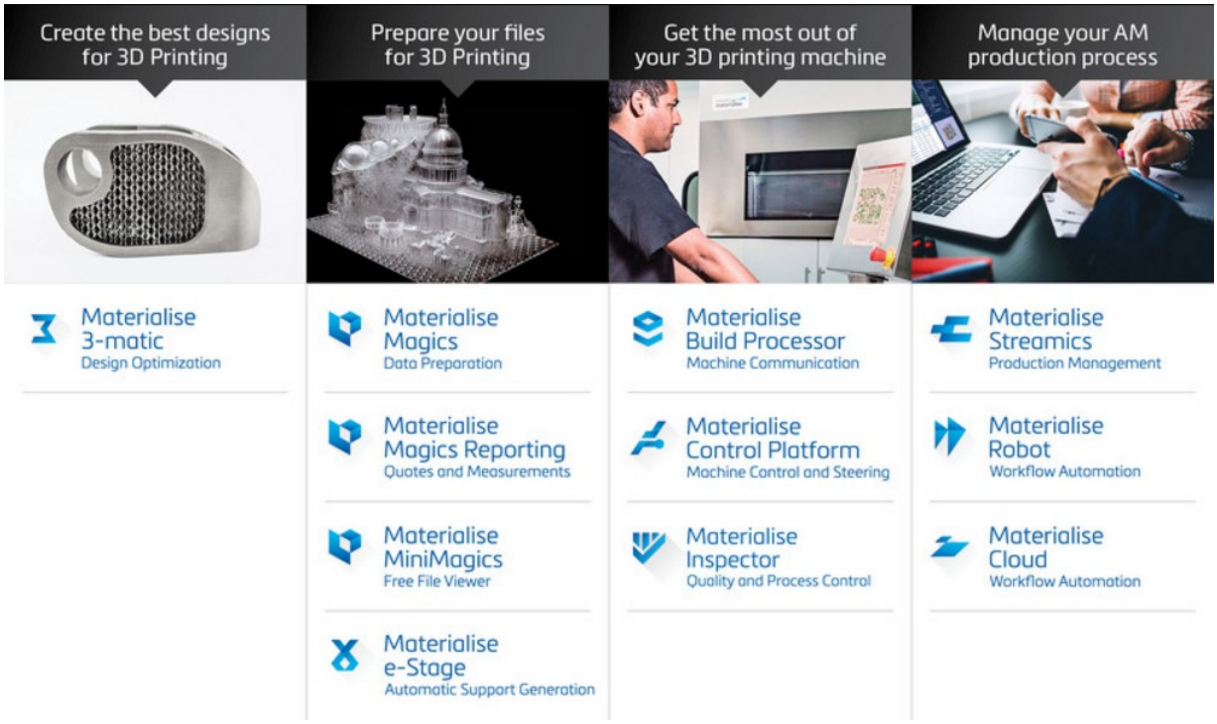
Materialise

Rev.04-2017

# Table of Contents

# 1 Introduction to Build Processors

Materialise works in close collaboration with machine developers to create a customized and integrated solution, which allows you to get the most out of your AM machines and build parts with the highest quality possible. Our Build Processor Software can be considered as an advanced export function that bridges the gap between your digital build files and your AM machine, helping to ensure a smooth and trouble free production.



# 2 This user guide…

…will give you an overview of all the features and functions of the Materialise MPM Build Processor.

For a clear presentation, it is subdivided into three parts.

PART 1 is arranged as a **tutorial**. It contains

- Installation of Materialise Magics software & Build Processor
- Licensing the Materialise MPM Build Processor
- BP Machine management and configuration
- Displaying the results of build jobs by accessing the BP Machine Queue
- Handling of the Material Development Module
- Interacting with the Profile Editor

PART 2 is designed as a **dictionary**. Explanations of all features and functions of the parameters in the Profile Editor can be looked-up here. It is structured into the main aspects:

- Rescaling
- Slicing
- Hatching
- Scanning

PART 3 represents a **frequently asked question catalog**. You will find:

- Frequently Asked Questions
- Typical error cases
- Materialise support contacts
- How to send a crash report to Materialise

**Technical Requirement**

These boxes appear throughout this guide and describe a technical requirement to ensure that the Materialise MPM Build Processor works correctly. If you are not sure on how to attend to these, please contact your IT department.

**Warnings / Notifications**

These boxes appear throughout this guide and emphasize various warnings or important notifications. Many of these are linked to some of the more frequently asked questions regarding the workings of the Materialise MPM Build Processor.

# PART 1

## Setup and tutorial

PART 1 is structured as a **tutorial**.

You will be guided through the installation process of the Materialise Magics software and the Build Processor including its licensing.

The BP Machine management will be explained step by step, including adding and removing different machines.

It will be shown how to configure the BP Machine, replacing the machine settings or change the storage location of the configuration data. It will also be explained how to get an overview of all build jobs and their results by accessing the BP Machine queue.

The material development module gets introduced and illustrated.

The handling of the Profile Editor is explained covering the editing of materials, creating build strategies and modifying parameters.

There an explanation of the individual parameters in the Profile Editor will not be given (please see PART 2).

# 3 Setup

## 3.1. Prerequisites

Before installing the Materialise MPM Build Processor

- It would be a great help if you contact us in case you experience any unexpected software behavior. For all problems, questions or suggestions regarding the Materialise MPM Build Processor (installation / use of software), please contact your local Materialise office.

- Please follow the installation steps in the given order and verify your installations to ensure that your Materialise MPM Build Processor works correctly. The Materialise MPM Build Processor has been tested and verified on Windows® operating system version 7 and version 10 and requires at least Materialise Magics software version 19. Be sure to check out chapter 3.4 Licensing on page 14 before using.

- We hope you will enjoy the Materialise MPM Build Processor!

In order to install and use the Materialise MPM Build Processor, you need the following:

Minimal System Requirements:

- Windows® operating system version 7

Software Installation Packages:

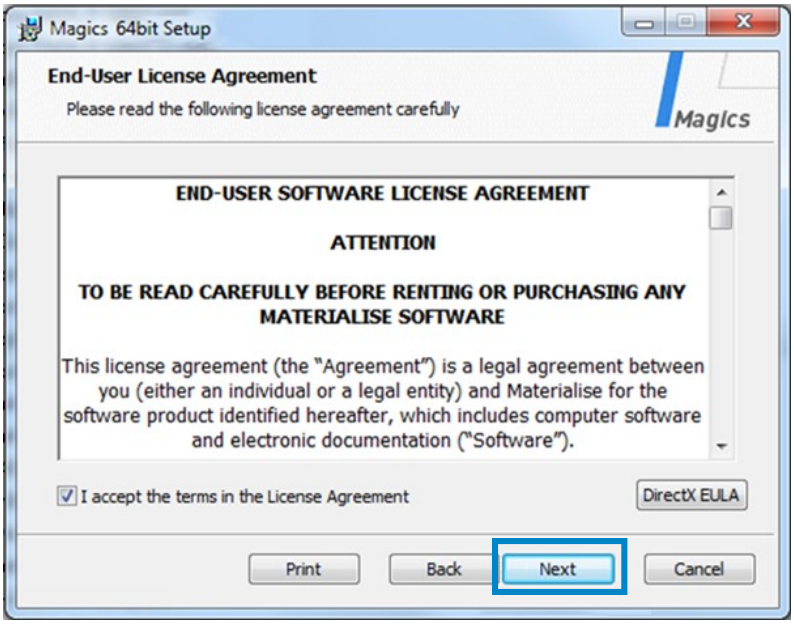
- Materialise Magics software
- Materialise MPM Build Processor (including Build Processor System)

**Technical Requirement**

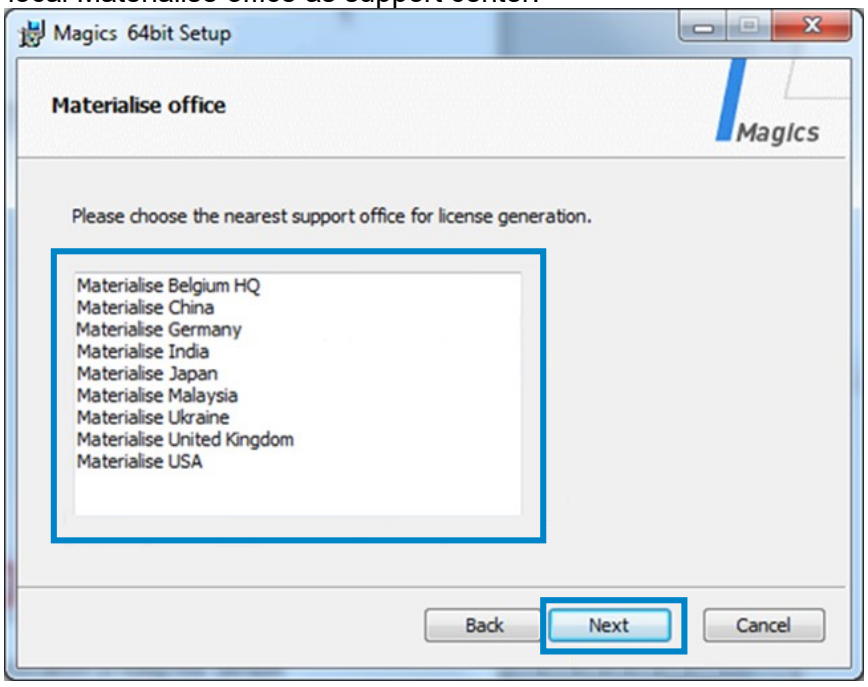
Please note that administrative rights are required to install the components.

## 3.2. Installing Materialise Magics software

1. Select and execute the Magics installer.
2. First, you need to install Magics. Accept the License Agreement and follow through the wizard.




3. Select your local Materialise office as support center.




4. In the following dialog windows, choose your preferred installation location or keep the default settings and click next. After the installation completed, click “Finish” to close the setup program.

## 3.3. Installing Materialise MPM BP

1. To launch the Materialise MPM Build Processor installers, open the
   *MaterialiseMPMBuildProcessor.exe* (32 bit Version) or
   *MaterialiseMPMBuildProcessor-x64.exe* (64 bit Version).

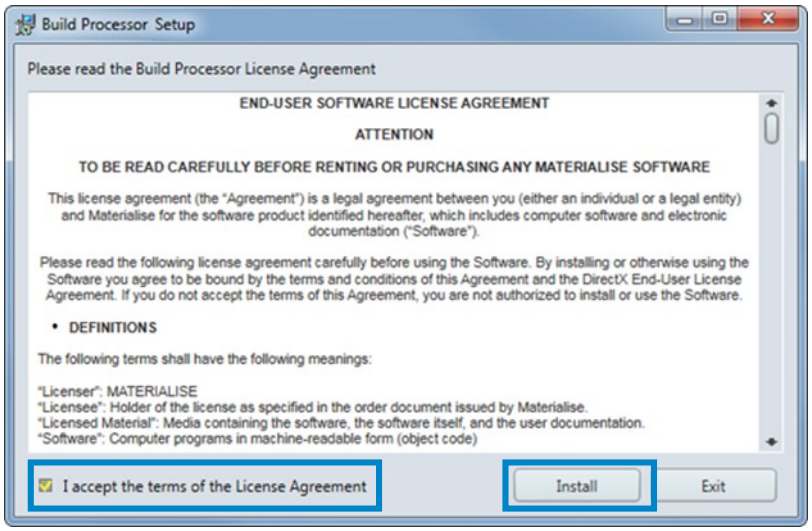
   The bit version should be the same as the bit version of your Magics installation.

   YongnianMPMBuildProcessor.exe
   YongnianMPMBuildProcessor-x64.exe

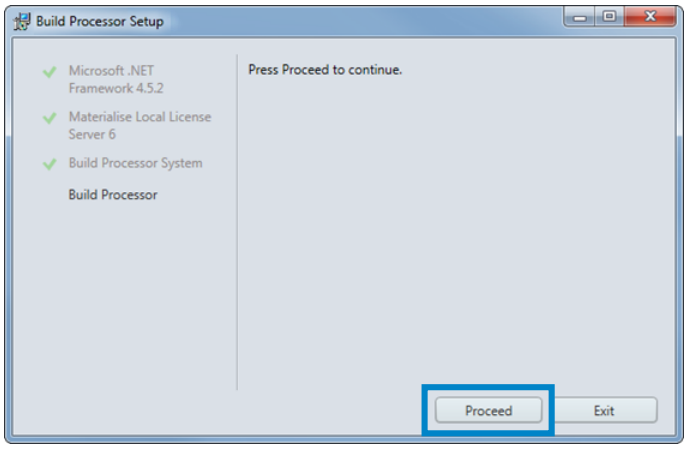
This is a 'bundled installer', meaning that it is responsible for installing all the different necessary components to run the Materialise MPM Build Processor. These include:

- Microsoft® .NET Framework 4.5.2 software (prerequisite check)
- Materialise Local License Server 6
- Build Processor System
- Materialise MPM Build Processor

2. Select a language, read and accept the terms in the License Agreement and proceed by clicking the *Install* button (when you select "I accept the terms of the License Agreement", the *Install* button will become active):

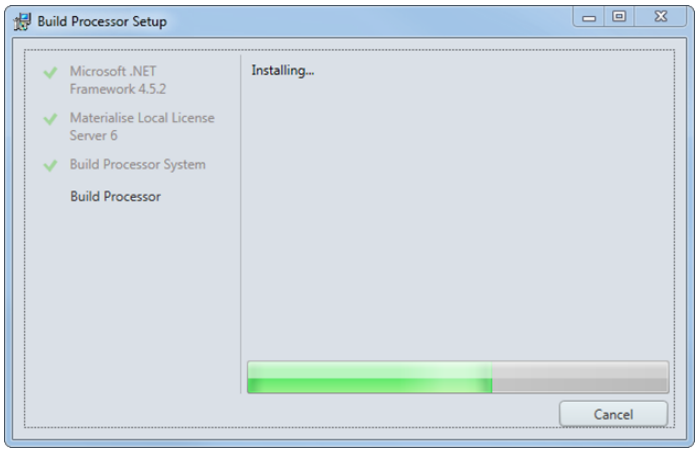



3. The following screen will appear, informing you about the components that are already installed on your system and those that will be installed during this installation. In the following dialog hit *Proceed* button:

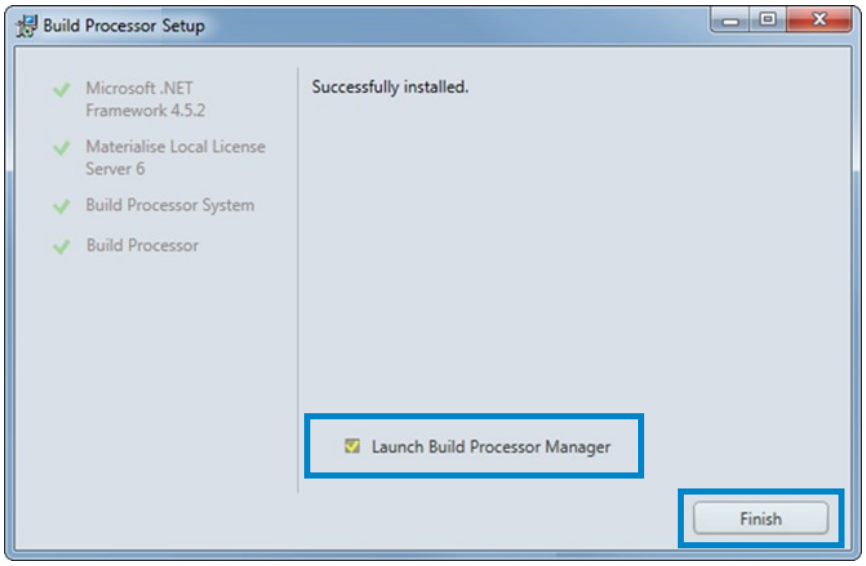



-  indicates that the component is (already) installed on your system.
- When no such icon preceeds the component name, it means that it will be installed upon clicking *Proceed.*

4. The components will be installed one by one in the shown order with progress bar indicating its progress:



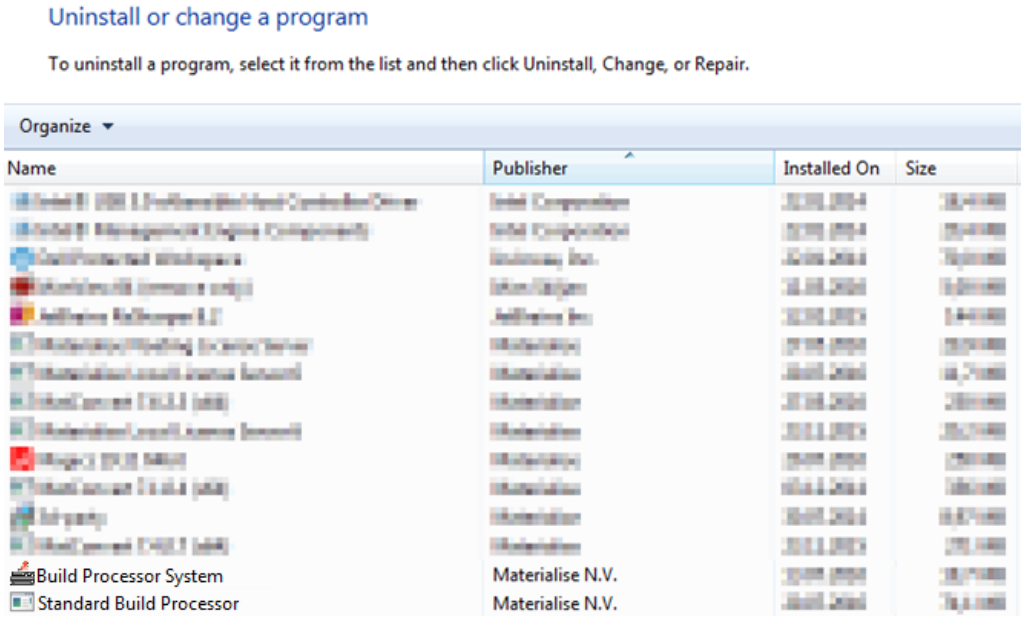

5. A final screen will appear showing you the overall result of the installation process. Pressing the “Finish” button will close the installation window. The final installation screen provides several options for improved accessibility and getting started in the Build Processor Manager. All options are checked by default. When the checkbox “Launch Build Processor Manager” is active, it will open the Build Processor Manager automatically when closing the window.




**Technical Requirement**

If prompted to reboot your system after installation, please do as such.

6. Before using the Materialise MPM Build Processor, please verify that both components have been correctly installed by checking the Programs and Features list on your system.



## 3.4. Licensing

Once Materialise Magics software and the Materialise MPM Build Processor have been successfully installed, you will need to license it.

The Materialise MPM Build Processor performs a license check when:

- Preprocessing (slicing) a job
- Uploading a job
- Calling BP functions from within Magics

The system which will perform any of the above functions should therefore have a valid license when doing so.

For information about licensing Materialise software please refer to the Frequently Asked Questions on the Materialise website:
http://software.materialise.com/frequently-asked-questions-materialise-software

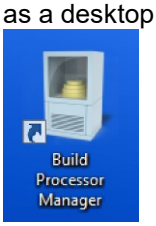
# 4 Build Processor machine management: The Basics

## 4.1. Access the Build Processor Manager

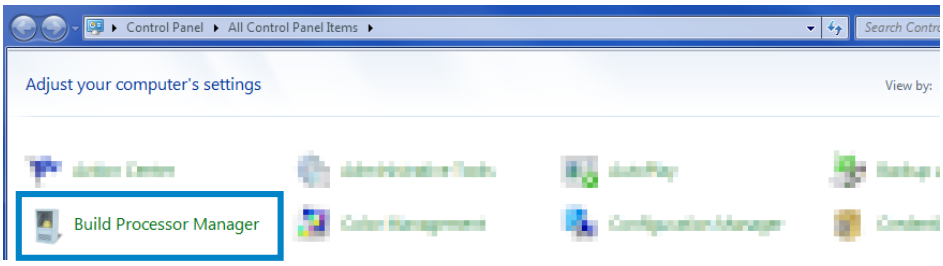
The Build Processor Manager is the main application for managing and configuring your 3D printers and their settings and profiles.

Therefore, you need to navigate to the **Build Processor Manager**, which you can find

- as a desktop shortcut icon:




- by going to your Windows® operating system *Control Panel* and clicking on Build Processor Manager



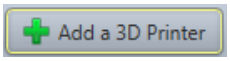

- by double clicking the tray icon in the right of your taskbar

**Note**

Depending on your Windows® operating system settings, this icon might not be permanently visible and hidden behind the arrow shown in the screenshot above.

### BP Manager Toolbar


This BP Manager Toolbar contains the following control buttons:




This button is used to add a new 3D printer (local or network) to your system

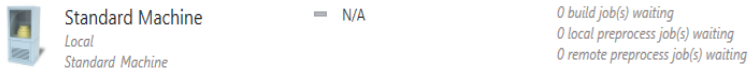
Refresh the list of installed printers.

Change the way in which the printers are shown in the Build Processor Manager.

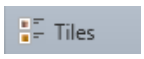

Shows all added printers in a list.

Printers can be sorted by *Name, Status, Queue Status, Build Jobs, Description, Printer Location, Manufacturer, Model and Network Location* by left clicking the according entry in the menu bar.


Combination of *Details* and *Tiles* option:

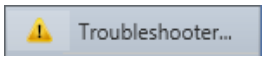



An icon and information regarding the printer is shown but without sorting option.




Default alignment of all added printers. Printers are shown as separate big icons including their *Name*, *Printer Location* and *Status*.

Opens a menu selection:

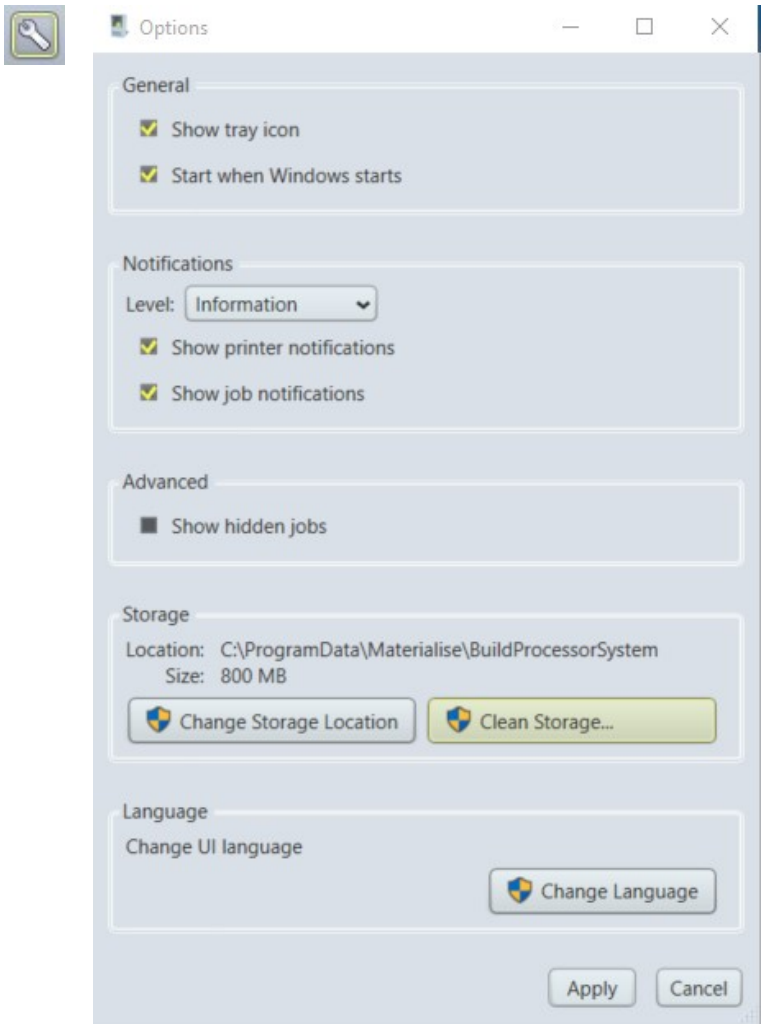



Generate a report. This tool will assist you in collecting relevant information about the status of the BP System. No personal information is collected; you can verify the contents of the report by opening the generated Cabinet (.cab) file.


Opens the user manual of the Materialise MPM Build Processor

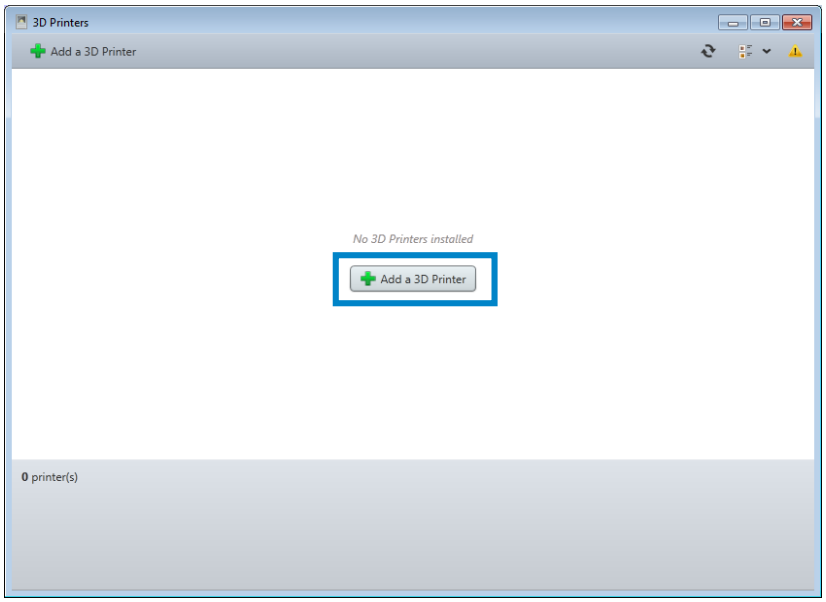

Opens new window containing information about the Build Processor system version and Copyright of Materialise.

Open the Build Processor System options window



## 4.2. Add a Local BP Machine

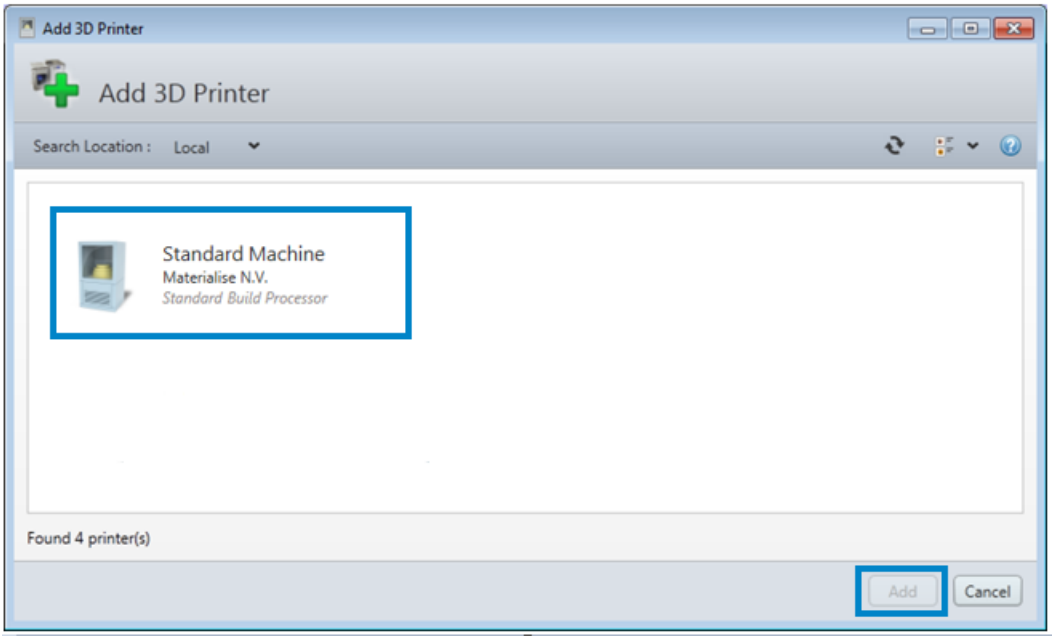
1. Open the Build Processor Manager. Click the *Add a 3D Printer* button in order to register a device in the System. When no machines have been installed yet, this button will also be visible in the center window region.



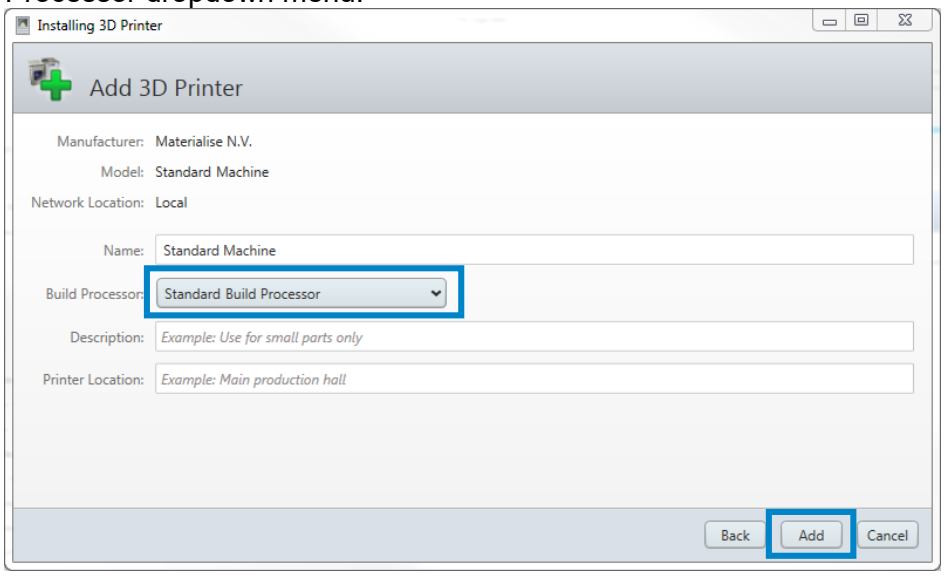

**Note**

There is no direct link between the physical machine and a machine added in the Build Processor Manager.

2. The following dialog will appear. Choose the machine type of which you want to register a new instance and hit the *Add*-Button:



3. A window will appear, allowing you to define your new printer properties. Please check if the correct version of the Materialise MPM Build Processor is selected in the Build Processor dropdown menu.




**Note**

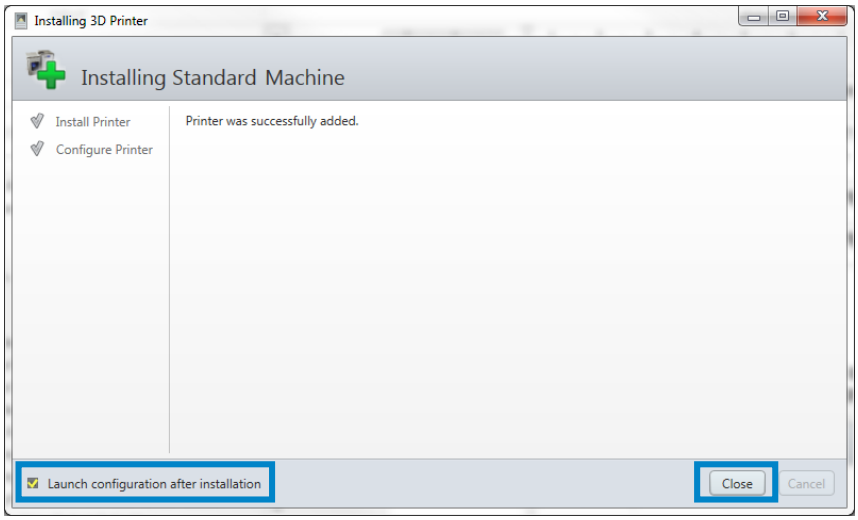
Most of the printer properties can always be changed afterwards, in the Printer Properties window.

The following printer properties can be set:

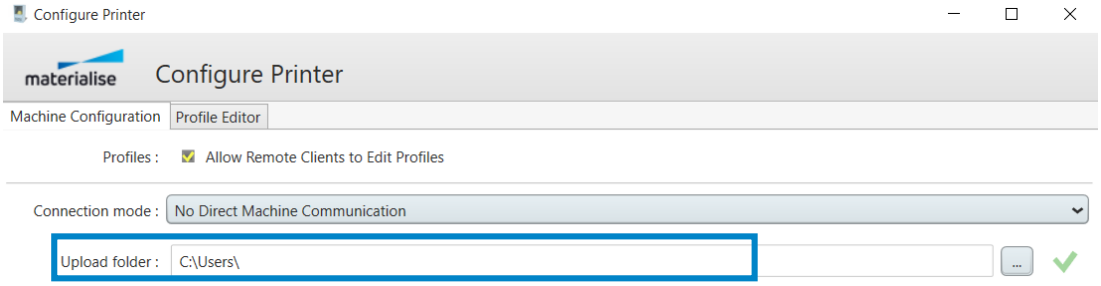
| | |
|---|---|
| *Name* | An appearance name for the printer |
| *Build Processor* | Select the appropriate Materialise MPM Build Processor driver version |
| *Description* | A description of the printer's main functionality (optional) |
| *Printer Location* | A description of the printer's physical location (optional) |

Click the *Add* button to proceed.

4. The *Launch configuration after install* option is enabled by default and will take you to Build Processor Configuration window after pressing the Close button.




5. You need to select an upload directory, which is the default location for the Materialise MPM Build Processor output for the machine you just registered. This folder should have a distinctive name so that you can easily identify the output later.

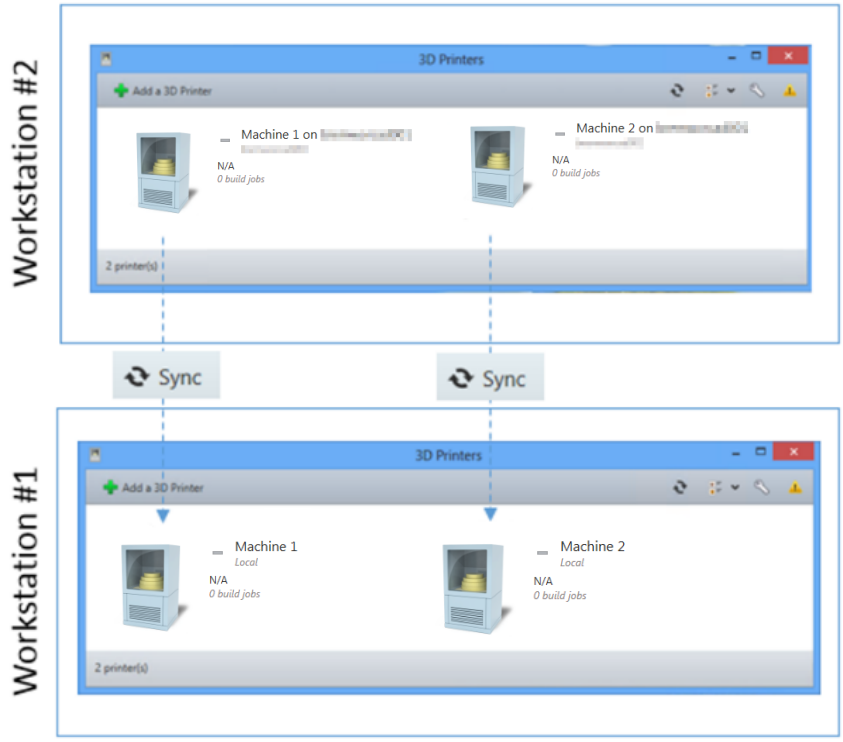



6. Once everything is configured, you can see the machine in the Build Processor Manager. If you decide to change the machine's configuration, you can select the machine you want to change and hit the *Configure* button in the Manager panel. For more information see also section 4.5: Configure a BP Machine on page 27.

## 4.3. Add a Network BP Machine

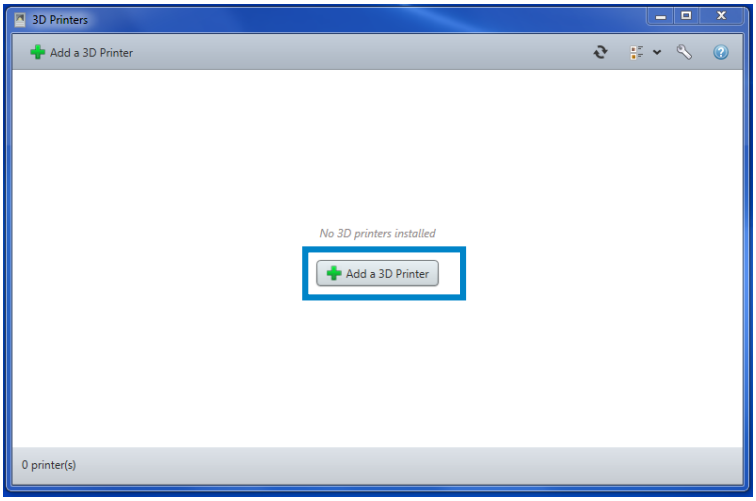
With the Build Processor System, it is possible to work with network machines. This allows multiple users or workstations to connect to the same Build Processor machine, sharing and syncing its settings and profiles.

Workstation #1 machines added as network machines on Workstation #2:

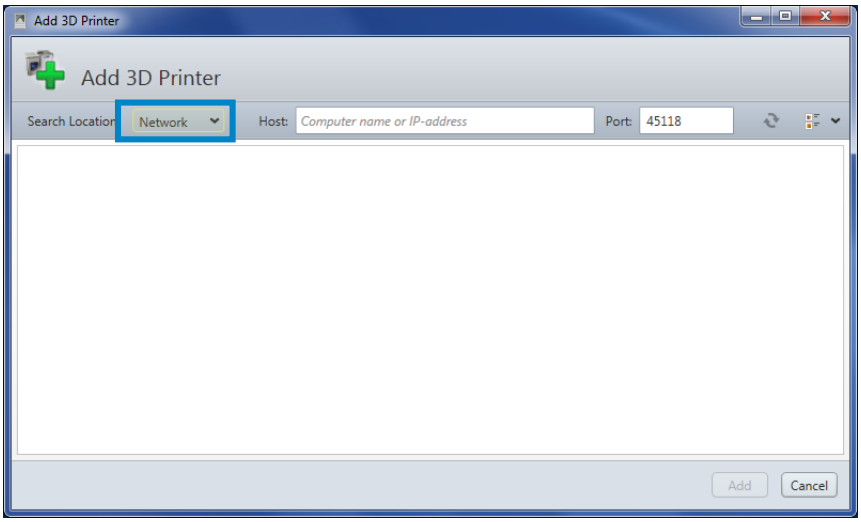



Adding a network Materialise MPM printer is similar to adding a Materialise MPM local printer. The only difference is the screen where you select your Materialise MPM printer:

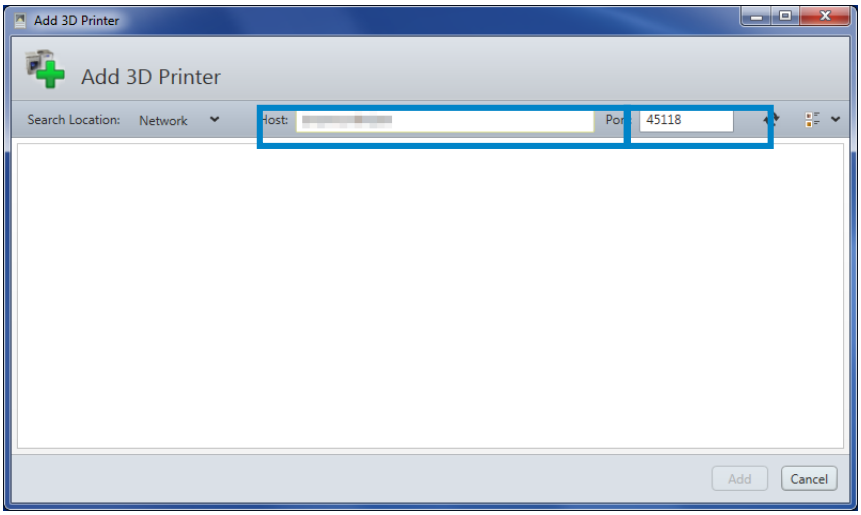
1. Open the Build Processor Manager and click the *Add a 3D Printer* button.



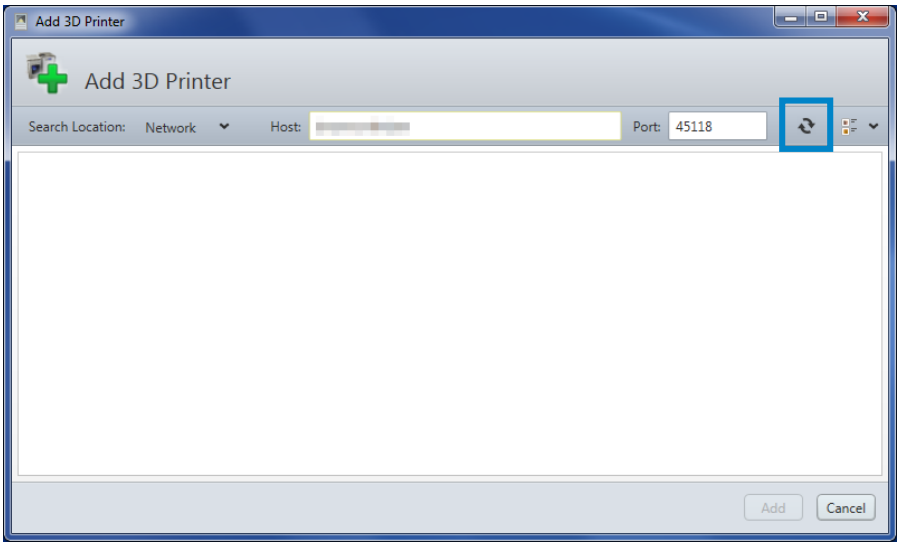
2. Pick Network from the search location drop-down list.



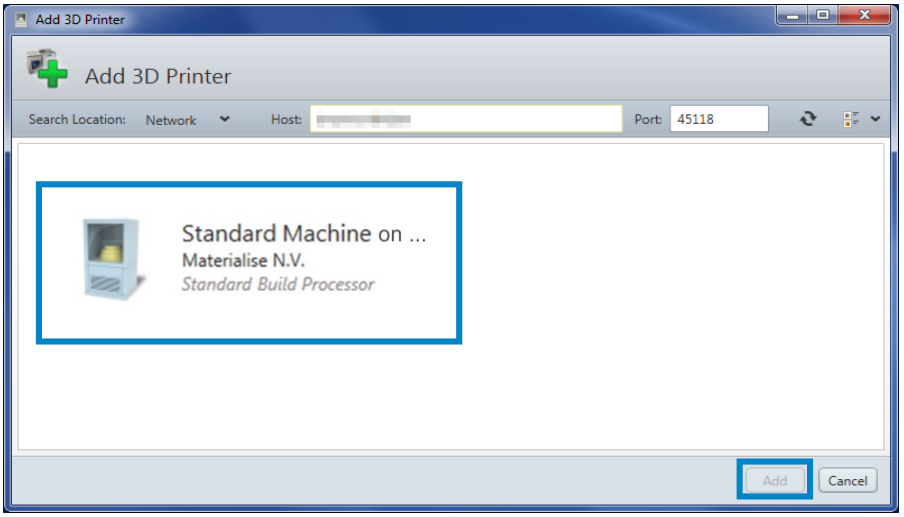

3. In the Host entry field, enter the 'Network Location' of system which has the local printer installed. The name of this 'Network Location' can be found in the Printer Properties window (see also section 4.6: Access the BP Machine Properties on page 30) of the network printer. Next to this field you can define the port to be used for communication with the specified 'Network Location' – this is *45118* by default.



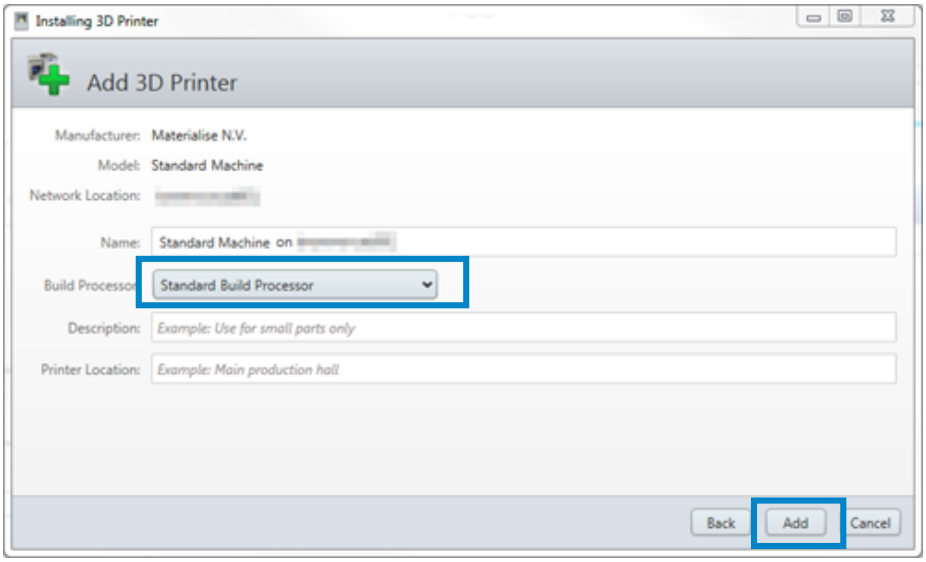
4. Press the refresh button to search for printers in this network location.



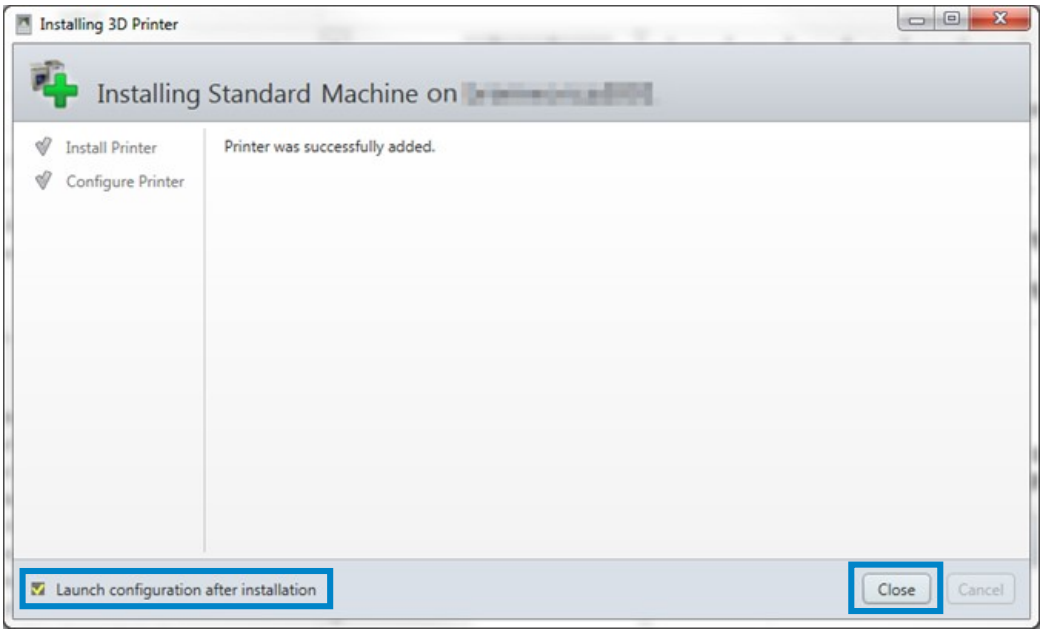

5. Select the desired network printer(s) and click the Add button to proceed. Multiple printers can be selected (using CTRL) and added simultaneously.



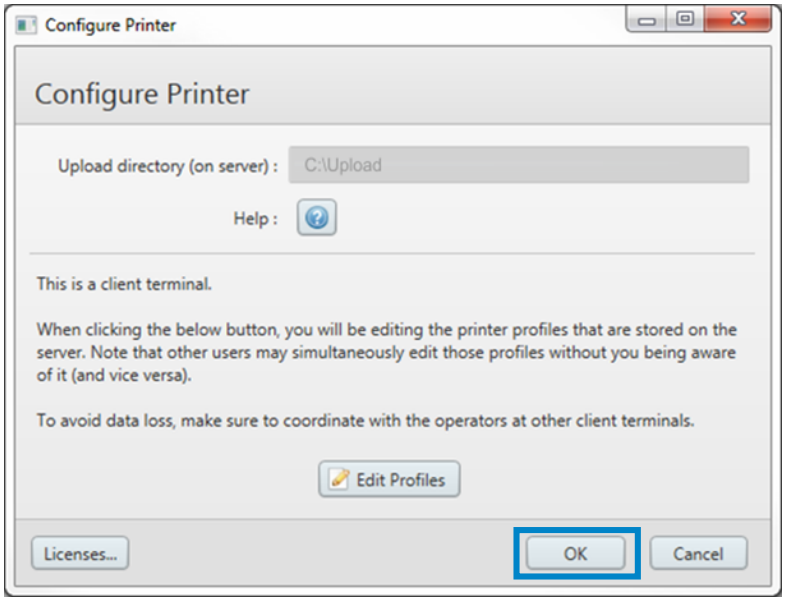
6. A window will appear, allowing you to define your new printer properties. Please check if the correct version of the Materialise MPM Build Processor is selected in the Build Processor dropdown menu. Click the *Add* button to proceed.



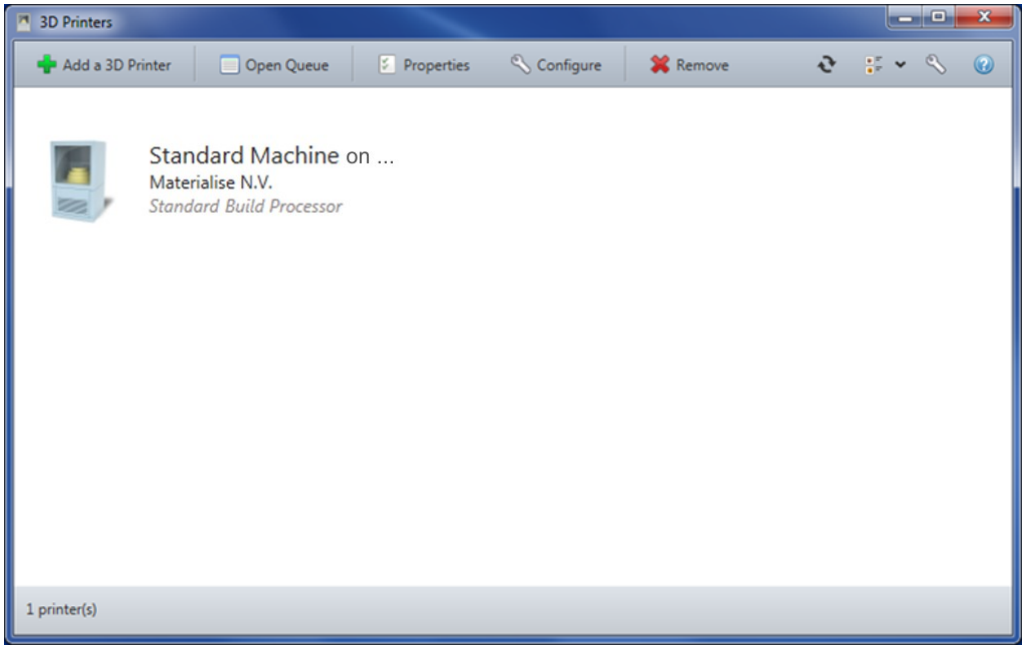

7. The Launch configuration after install option is enabled by default and will take you to the client terminal window after pressing the *Close* button.



8. The upload directory is predefined and not editable. Pressing the  button will take you to the User Guide. Once everything is configured, press the *OK* button.




9. The selected network printer(s) should now be visible in the Build Processor Manager.



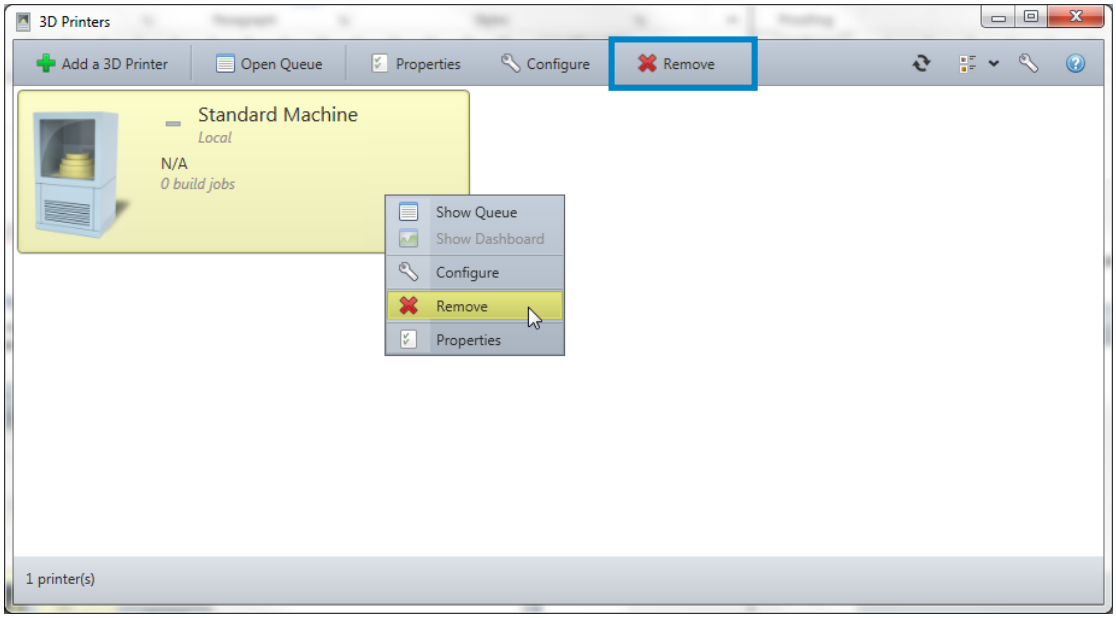

**Note**

Depending on whether the option to 'Allow Remote Clients to Edit Profiles' is enabled on the host machine, remote clients will be able to edit the profiles of the network machine.
See also section 4.5: Configure a BP Machine on page 27.

## 4.4. Remove a BP Machine

In order to remove a BP machine, you can

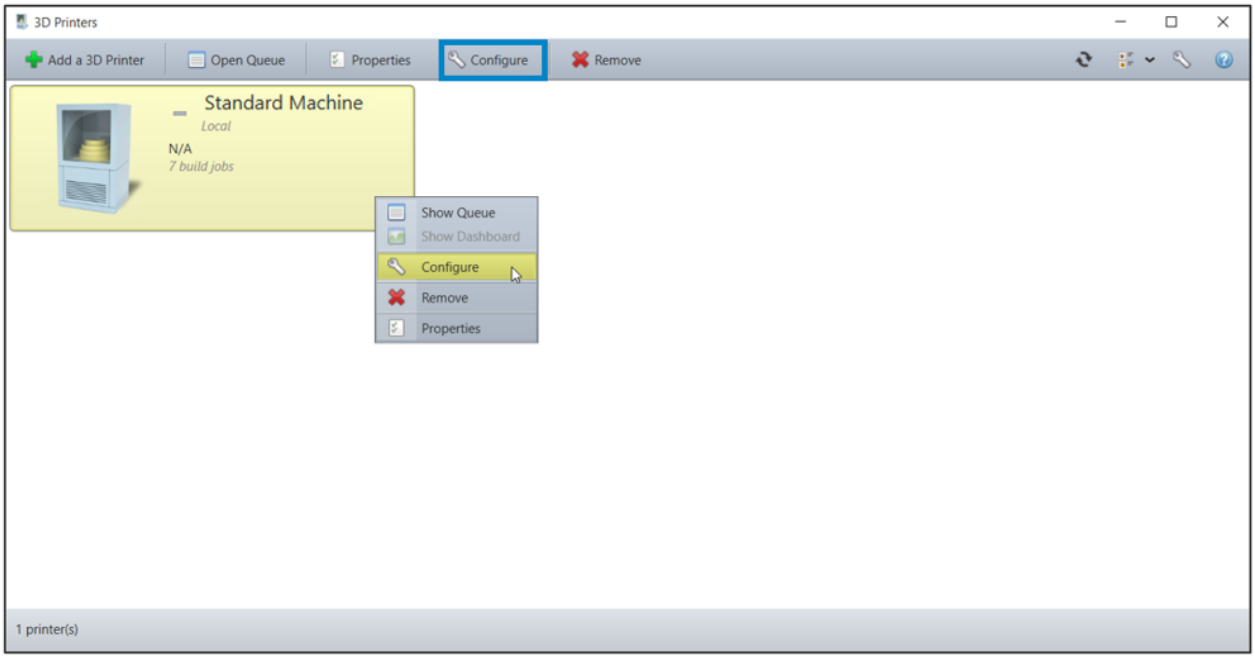
- Select the BP Machine you want to remove and click the “Remove” button in the BP Manager Toolbar
- Right mouse click on the desired BP Machine and select Remove



## 4.5. Configure a BP Machine

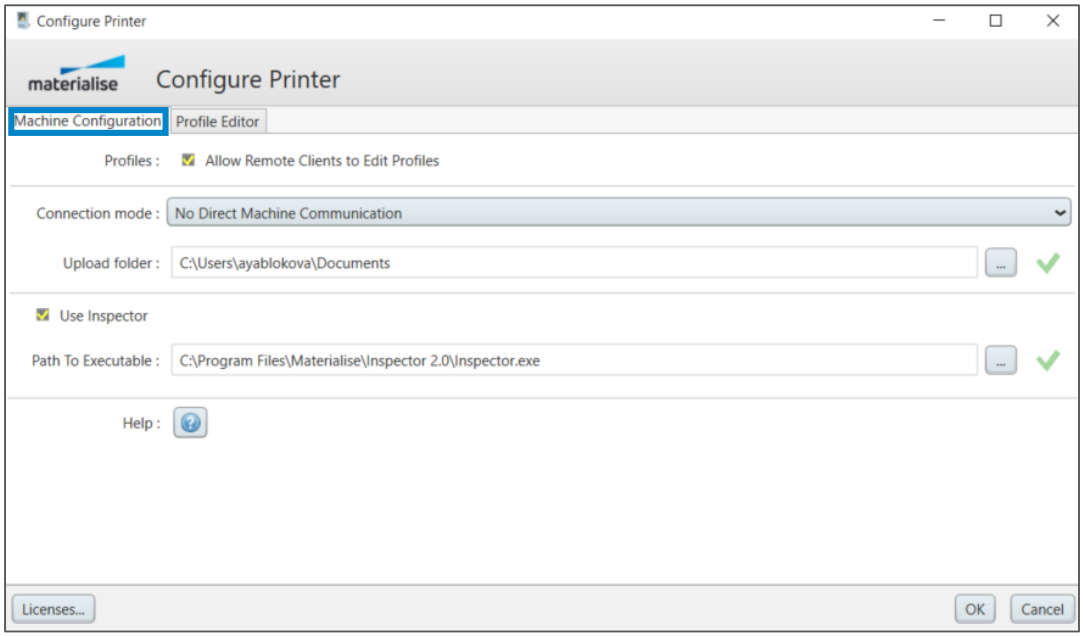
The Machine Configuration window can be accessed by either

- Selecting the desired BP Machine and clicking the Configure button
- Right mouse click on the desired BP Machine
- and selecting the Configure option

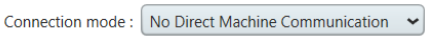



The *Configure Printer* window contains the tab *Machine Configuration* and *Profile Editor*.

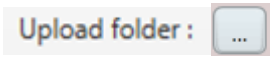
The *Machine Configuration* tab contains the following options:




Depending on whether this option is enabled on the host machine, remote clients will be able to edit the profiles of the network machine. See also section 4.3: Add a Network BP Machine on page 21.




Via thus combo box user can choose between two connection modes. Materialise Control Platform users choose for “Use Materialise Control Platform” (for more information see section 4.5.1: Materialise Control Platform users on page 28) other users choose for “No Direct Machine Communication”

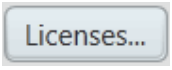



Specify the output location of your processed build jobs. An icon indicates whether this upload folder is at a valid location.

= invalid = valid

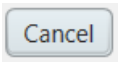
In case of network folders, please pay attention to the ‘Technical Requirement’ below.

Opens the user manual for the Materialise MPM Build Processor




Open the license manager for the Materialise MPM Build Processor. This manager allows you to view your SystemID and register new licenses.


Saves user settings and profiles




Closes “Configure Printer” window without saving user settings

**Technical Requirement**

If the chosen ‘Upload folder’ is located on a different computer, please ensure that the folder permissions include read/write access to your computer. For more information, please refer to section 14.2: How to grant a computer read/write access to a network folder on page 118.

Alternatively, you can run the BP Service under a different user account, as is shown in section 14.3: How to run the BP Service under a different user account on page 123

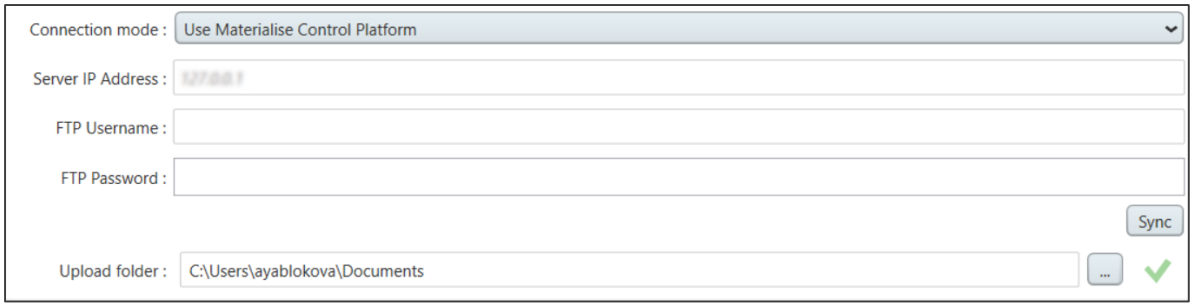
For details on the *Profile Editor* tab please refer to section 6: Usage of Profile Editor on page 45.

### 4.5.1 Materialise Control Platform users

Materialise Control Platform user connection settings become visible when “Use Materialise Control Platform” connection mode is selected. You need to connect with your Materialise Materialise MPM BP to the Materialise Control Platform. For the connection to be successful, you have to:

- enter the IP address

- enter your FTP Username and Password
- press “Sync” button




As soon as you are connected, BP will retrieve machine configuration settings:

- Build Envelope dimensions
- Scan system structure including scan field IDs, positions and dimensions (for Multi Field Setup)
- Laser Power, Speed and Diameter ranges

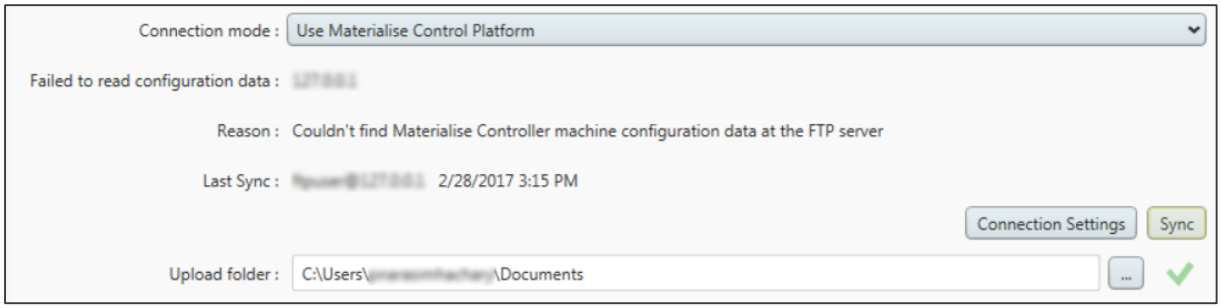
Designated fields should appear as *read only* to the end user.

Machine configuration data is retrieved each time user presses “Sync” button. Time stamp indicates when user has retrieved machine configuration settings last time.


The fields are checked and compared again with a cashed data again automatically every time

- when you open/close the configure printer window
- when you save user profiles

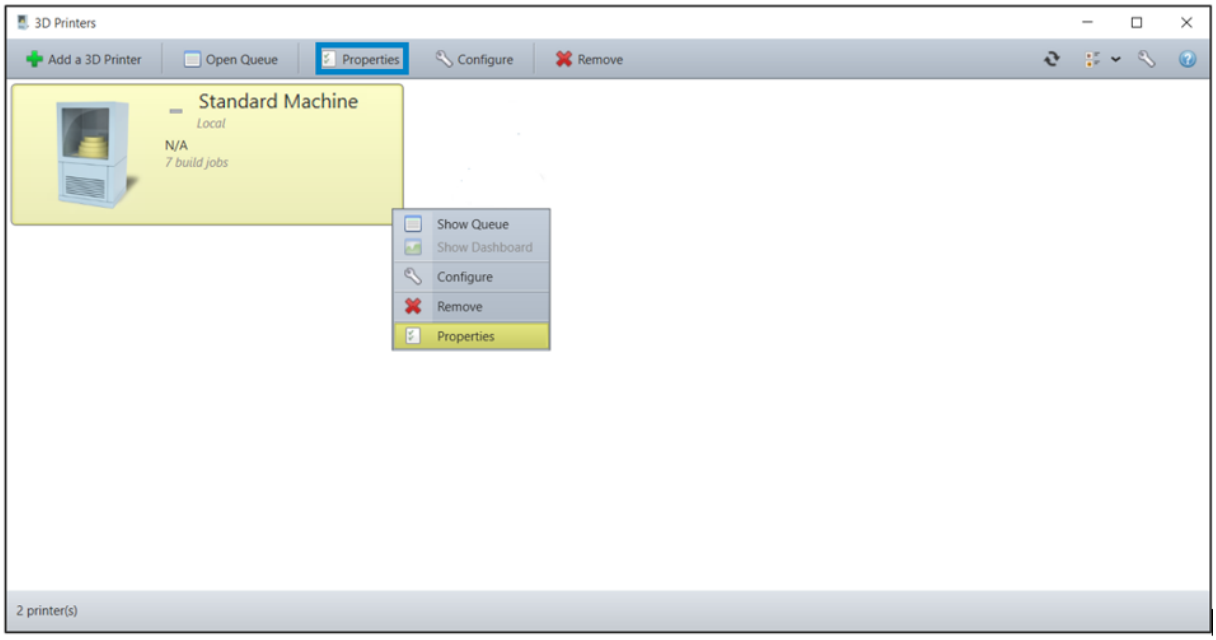
If you’ve failed to retrieve machine configuration data, you will see a message similar to the one shown in the screen shot below. BP will also indicate the possible reason, why it has failed to retrieve machine configuration data.



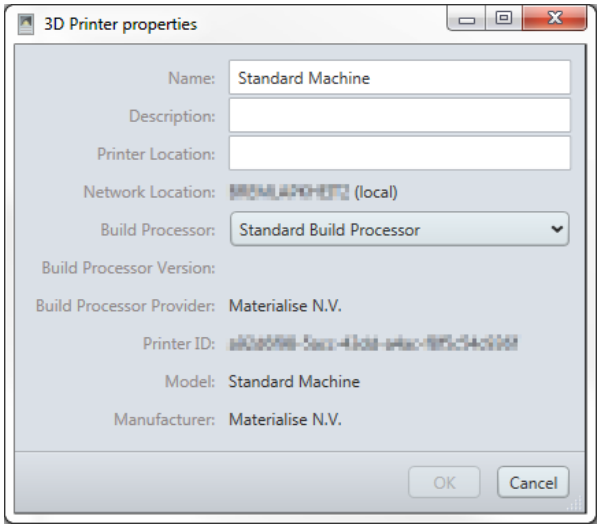
## 4.6. Access the BP Machine Properties

In order to enter the 3D Printer properties window, either

- Select the desired BP Machine and click the *Properties* button
- Right mouse click on the desired BP Machine and select the *Properties* option




The 3D Printer properties window contains all details of your Materialise MPM BP Machine. The *Name*, *Description* and *Printer Location* field of the BP Machine can be arbitrarily changed.

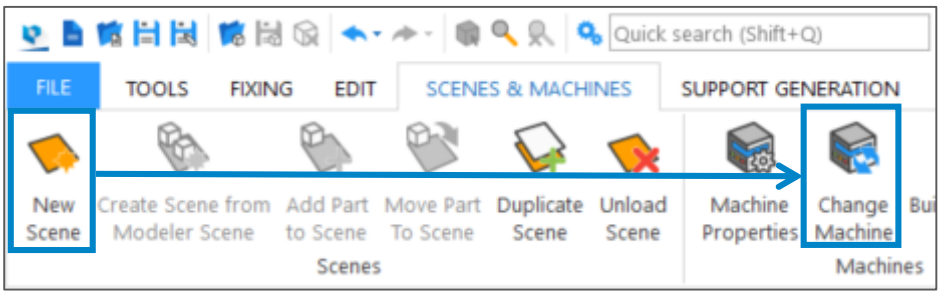



**Note**

Do not change the version in the dropdown of 'Build Processor'.
A loss of existing profiles and machine might be possible.

## 4.7. Change the BP Machine Platform Settings

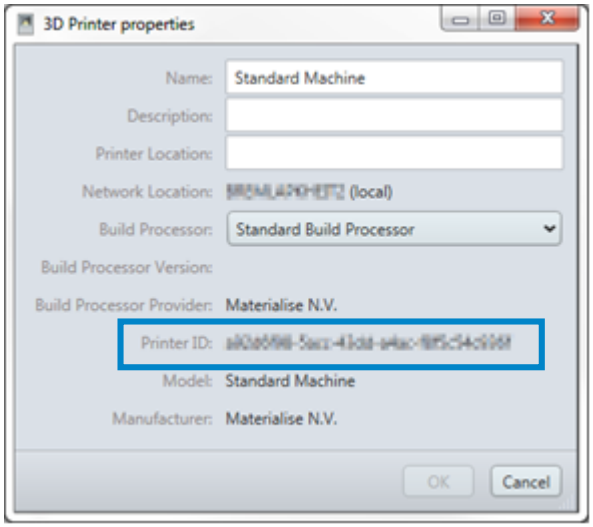
Parameters regarding the support generation module (SG or SG+), platform size and other machine related properties can be defined in Materialise Magics software at the *Machine Properties* in the *Build Preparation* tab. Prior to accessing the Machine Properties a New Scene has to be created. To do so please press the button *New Scene* first, select the desired machine and click on *Machine Properties*.




The settings will be stored in a *Magics Machine Configuration File* ('.mmcf' file format). This file exists for each Materialise MPM machine. When adding a new Materialise MPM machine to the Build Processor Manager a new .mmcf file will be added using default settings.

In case a new machine is added to the Build Processor Manager which should use an already existing set of machine parameters, the existing .mmcf file can be used for this new machine. This can be the case when the platform size is always different from the default size or when the same SG settings should be used for every machine.

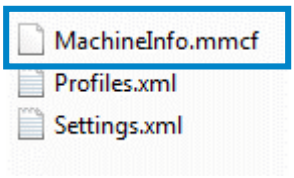
For that, open the Build Processor Manager and select the machine with the profiles to be copied. Also select the machine whose configuration file you would like to replace with a new version and open the Printer Properties window for both machines (see section 4.6 Access the BP Machine Properties on page 30).




The Properties dialog shows the *Printer ID*, which is used to identify the correct machine folder.

Now, using the Printer ID, you can easily identify the correct machine folder. Therefore, navigate to the following directory:

%ProgramData%\Materialise\BuildProcessors\<Machine name>\<Version number>\<Printer ID>




If you have identified the right folder, you can now copy the .mmcf file from the original folder and replace the .mmcf file for the new machine.

**Notification**

Please make sure that the file you are copying has exactly the same name as the existing file.

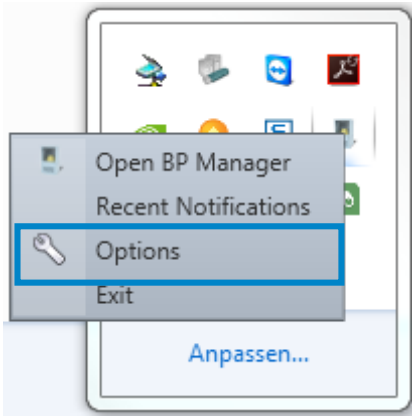
Please also make sure that Magics is closed during the copying of the .mmcf file.

## 4.8. Change the BP System storage location

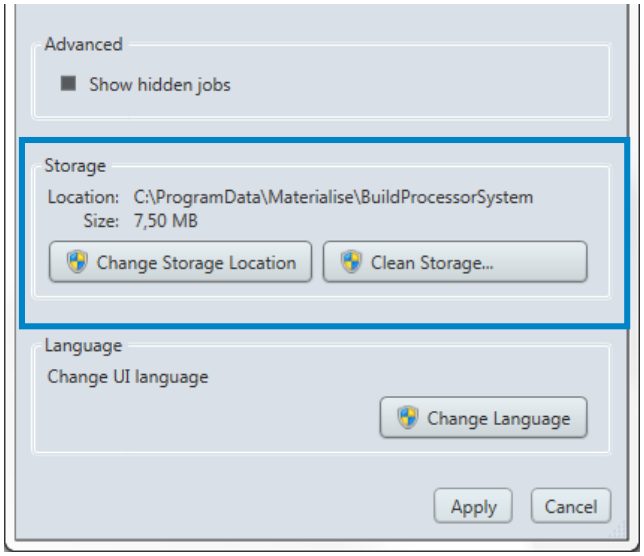
By default, the Build Processor System stores its configuration data and its temporary data used during job processing in a specific directory located in the Windows® operating system partition. You may choose a different directory if you wish to. To do that, you need to bring up the options dialog first:

- In the Build Processor Manager, click the tool icon:

- In the tray icon context menu, select the entry *Options*:



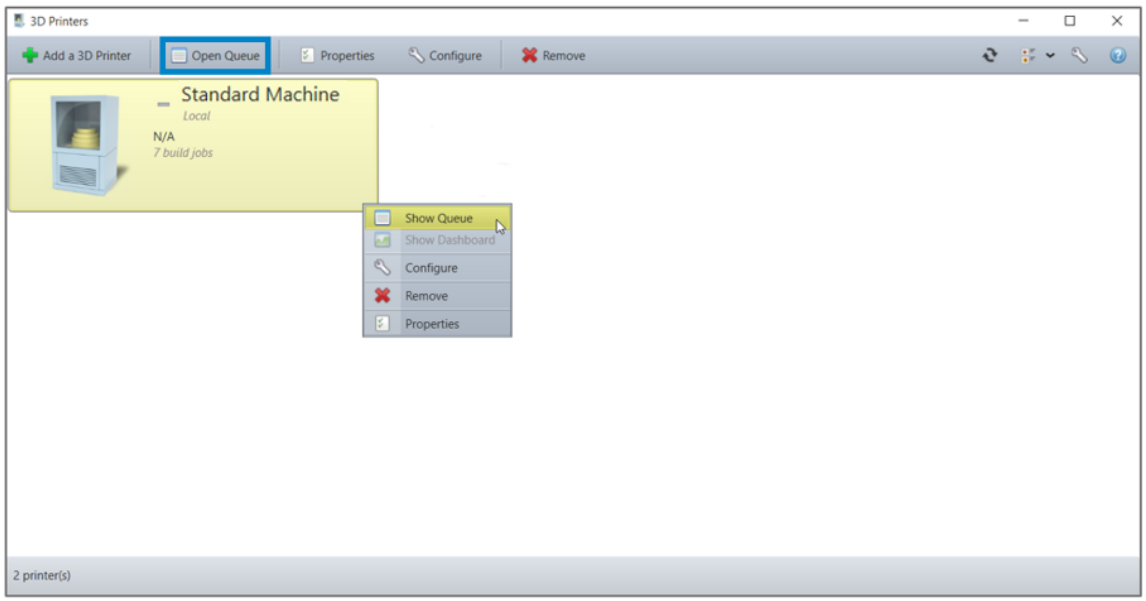

Either way, you will be shown the Options dialog. In that window, click *Change Storage Location*. A dialog will pop up, offering you the selection of a directory.



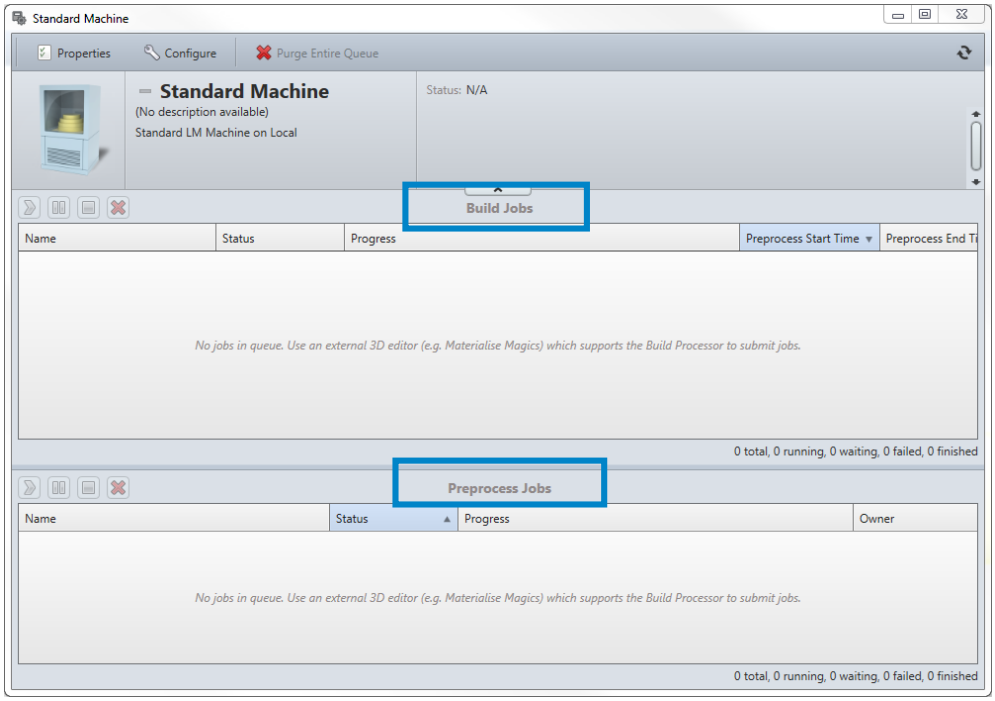
## 4.9. Access the BP Machine Job Queues

You can access the list of jobs associated with a given BP Machine by either

- selecting the BP Machine in the Build Processor Manager and then clicking Open Queue in the tool bar
- right mouse click on the desired BP Machine and selecting the Show Queue option
- double click on the desired BP Machine



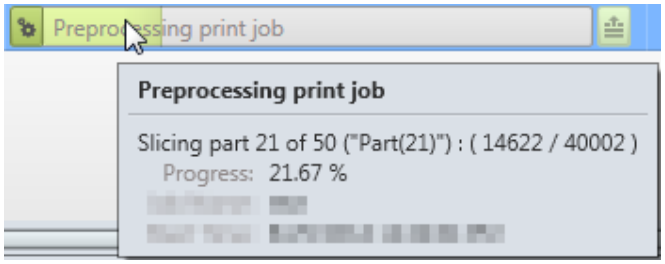

The BP Machine queue window will then show up:




The job queues give an overview of all the jobs processed by the Materialise MPM Build Processor. There are two job queues: ‘Preprocess Jobs’ and ‘Build Jobs’.

### Preprocess Jobs

This queue shows information regarding jobs that are in the preprocess phase. You can get more detailed information on processing progress by hovering on the progress bar of the active job:




### Build Jobs

If the job was sent for '3D Build', the processed files from the 'Preprocess Jobs' queue will be sent to the 'Build Jobs' queue which gives an overview of all jobs that have been sent to the configured upload folder for this BP queue.

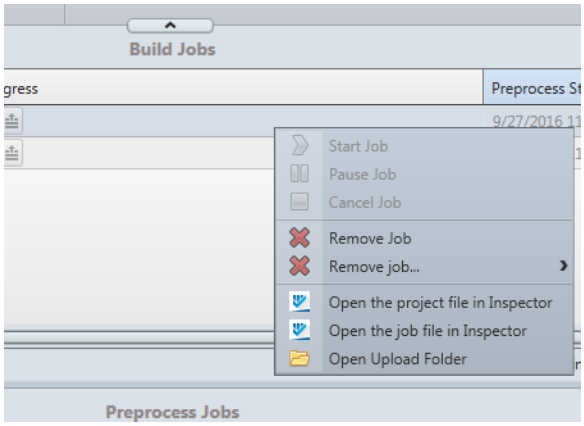
In case monitoring is enabled, this queue will also display the building progress for each job.

The columns of the job queues are customizable (through a right mouse click on the column headings) and can display the following information for each job:

| | |
|---|---|
| *Name* | The name that was assigned to the job |
| *Status* | The status of the job, depending on the job queue:<br>Preprocess Jobs: Preprocessing, Finished, Error, Paused<br>3D Print Jobs: Waiting, Error, Paused |
| *Progress* | This will display either a progress bar or icons which show event start and end times when hovering over them |
| *Owner* | Displays the user who sent the job to the queue |
| *Creation Date* | This will display the date the file was transferred from the Magics to the AM machine |
| *Preprocess Start Time* | Displays the time the preprocess of the build job started |
| *Preprocess End Time* | Displays the time the preprocessing of the build job was finished |
| *Output Directory* | This will show the output path of the job folder when build setting is set to *Preprocess Only* |

| | |
|---|---|
| *Input File* | Shows the file path of the input JobInfo.xml data |
| *Upload Time* | Shows the time after the preprocess was finished and the build job was uploaded correctly into the section “Build Jobs” |

The right click options for each job are the following:

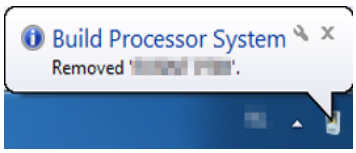


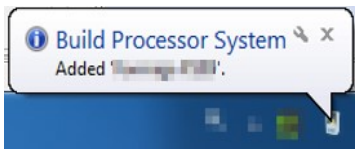

| | | |
|---|---|---|
| | *Start job* | (Re)start the job (after pausing) |
| | *Pause job* | Pause the job’s current progress |
| | *Cancel job* | Cancel the job’s current progress |
| | *Remove job* | Delete job from the job queue, any relevant data on MCS side will remain intact. |
| | *Remove job…* | and MCS data — Delete job from the job queue including any relevant data on MCS side. |
| | | Forcibly — If a job hangs in *Cancelling* or *Deleting* state after asked to be removed (e.g. job owner is a remote client that is not available), this option removes the job regardless. |
| | *Open the project file in Inspector** | Open the Inspector using the 2D MatAMX file (Export of 2D MatAMX must be activated) |
| | *Open the job file in Inspector** | Open the Inspector using the job file |
| | *Open Upload Folder* | Open the folder where the processed job is sent to |

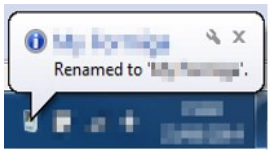
## 4.10. Configure BP Tray Notifications

Whenever the status of a build job or BP Machine changes, you will be notified via tray callouts as shown below:

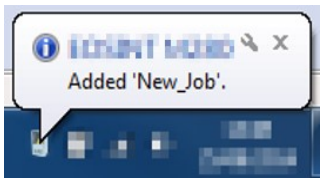
The Tray Icon is able to provide BP Machine notifications:

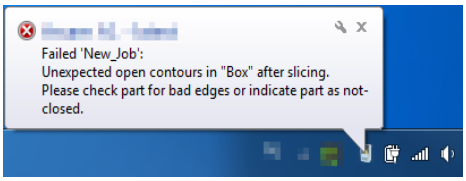


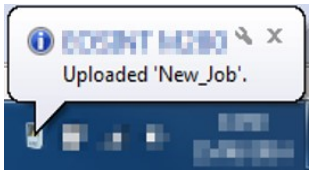




And job notifications:

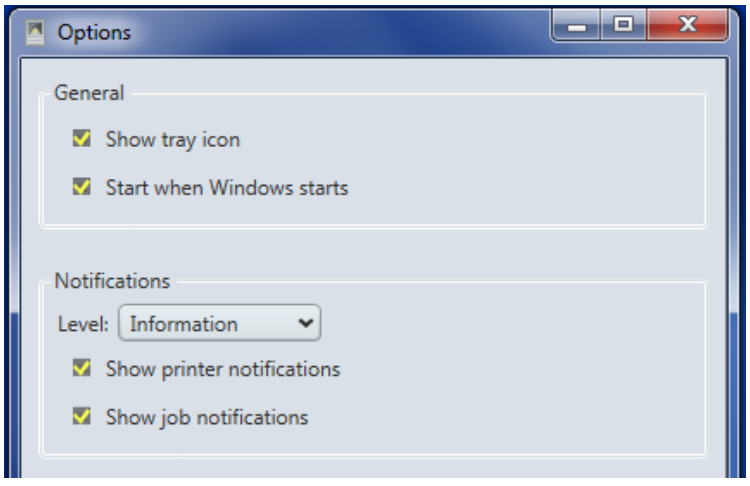



Clicking on these pop-up message will display the corresponding Build Processor window.

To configure the Tray Icon and its properties, go to the Build Processor System Options which is accessible via the BP Manager Toolbar or via the right-click menu of the Tray Icon itself. See also section 4.8: Change the BP System storage location on page 33 on how to enter the BP Options menu.

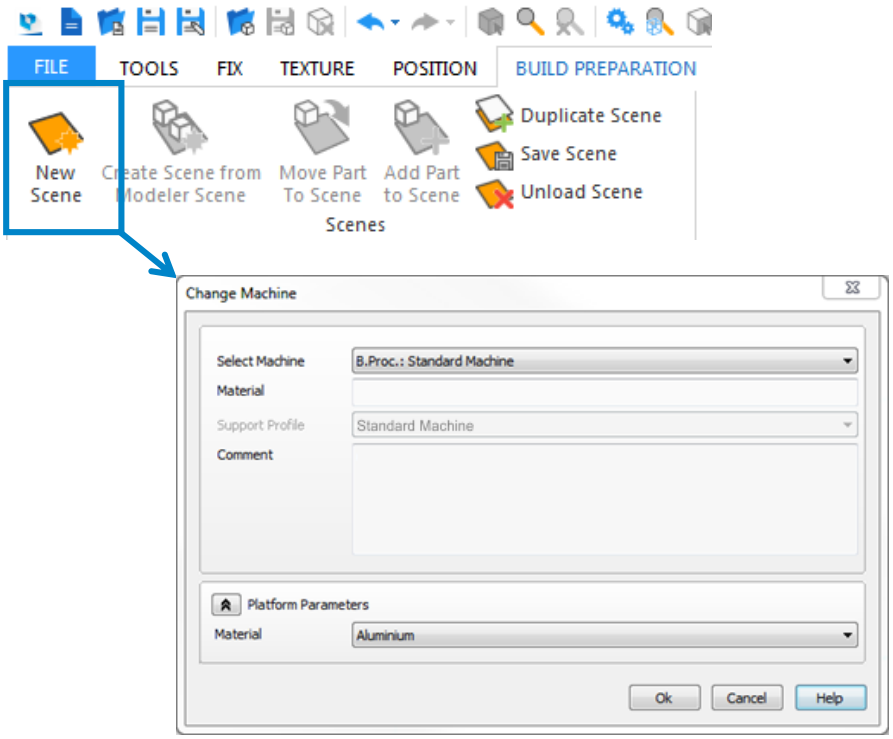


# 5 Build Processor and Magics

This section will guide you through a typical workflow, using Magics and the Materialise MPM Build Processor.

## 5.1. Create a Build Processor Scene

In Magics, go to the *Build Preparation* toolbar and click *New Scene*. A Change Machine dialog box will appear, where you can choose your Build Processor machine, e.g. *"B.Proc.: Standard Machine",* to load a platform using Materialise MPM Build Processor.




In section *Platform Parameters* the material can be selected which should be used for this scene:


The material can also be changed later in *Platform Properties Configuration*.

The platform will now appear in your Magics workspace. You can import, fix and orientate all necessary parts as you normally would, followed by the usual positioning and support generation operations where needed.

## 5.2. BP Toolbar

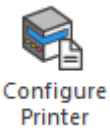
Prior to sending a 3D print job from Magics to the Materialise MPM Build Processor, you must configure the job by adjusting *Platform Properties Configuration* to the parts you have placed in your Magics scene.

This features are listed in the toolbar of the active machine scene:

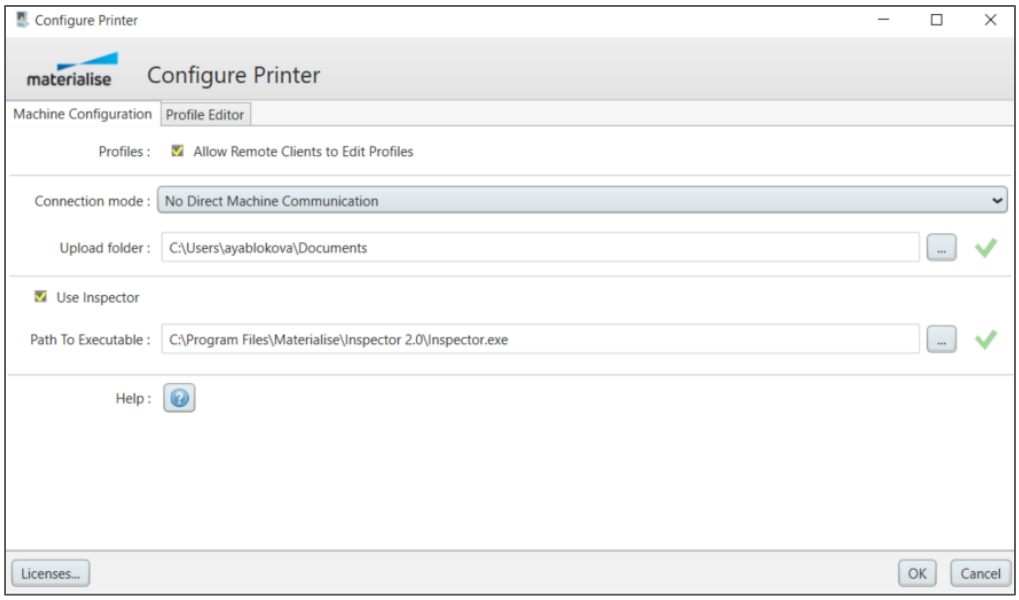

Furthermore the Profile Editor can be accessed via Magics.


For details on the concepts please refer to section 6.1: Introduction and concepts on page 45.

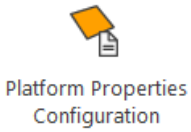
### 5.2.1 Configure BP Printer



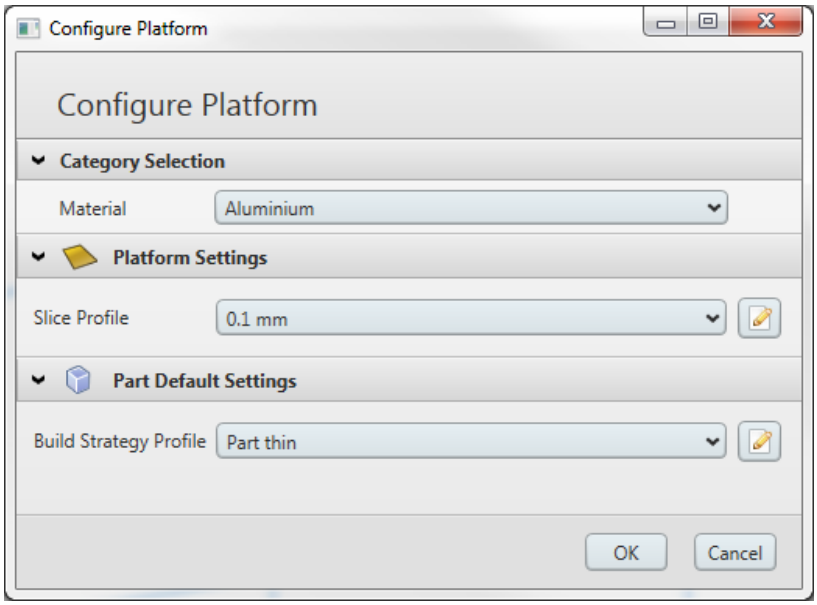

The Configure Printer window will appear with the possibility to change the Machine Configuration and the machine profiles at the Profile Editor (described in section 6: Usage of Profile Editor on page 45 and the PART 2 in this manual).




### 5.2.2 Platform Properties Configuration




Pressing the button *Platform Properties Configuration* the window *Configure Platform* will appear:




This window allows you to assign settings used by the entire platform.

In section **Category Selection** the **Material** used for this build job can be selected. Depending on this selection the *Slice Profile* and *Build Strategy Profile* related to the selected material will be shown.

A **Slice Profile** can be selected at **Platform Settings**. All slice profiles of the selected **Material** are listed.

Select a Build Strategy used for all parts on the platform (scene) by default. The drop-down list in the section **Part Default Settings** contains all the **Build Strategies** which are

- available for the currently selected **Material**
- the same or a multiple of the slice thickness according to the selected **Slice Profile**

A specific profile can be viewed and edited by pressing the  button next to it.

**Note**

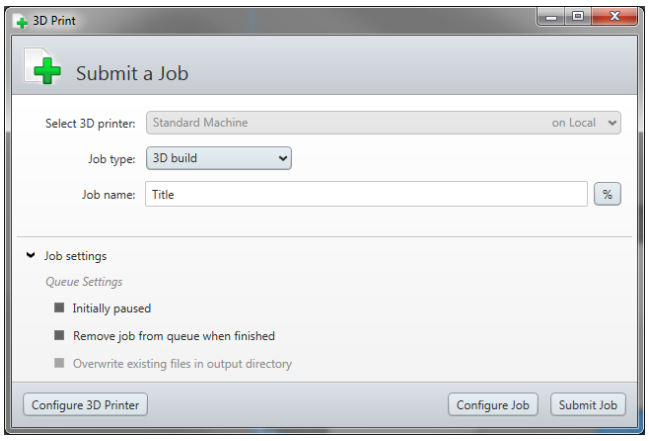
Any profile editing at this point is saved to the machine profiles file (and not just applied for this current platform).

This edit button will not be available in case you are working on a network machine, where remote profile editing is disabled (see section 4.3: Add a Network BP Machine on page 21).

### 5.2.3 Submit a Job (Build)


Once you made your settings, you can submit the build job to the Materialise MPM Build Processor using the *Build* button.

You will be shown the following dialog:



This window allows you to set some general build settings, specific job settings and eventually submit your build job for further processing.

The dialog consists of three different sections

- General build settings
- Job settings
- Control buttons

## General build settings

| | | |
|---|---|---|
| Select 3D printer: | | Shows the selected BP Machine (usually the one that was chosen when loading the platform) |
| Job type: | 3D build | The build will be processed and the generated .job files will be placed in the upload folder of the selected BP Machine as specified in the window for this machine |
| | Preprocess Only | Allows you to send the processed job to a custom output directory |
| Job name: | | This name will appear in the BP Machine's queue. It is also the name of the subfolder (in the specified upload folder) containing all the generated build files |
| | % | This button allows adding tags to the job name (such as current date) which will be resolved upon job generation |

## Job settings

| | | |
|---|---|---|
| Initially paused | ☑ | The job enters the 'Preprocess Jobs' queue in a paused state. It needs to be manually turned to waiting before it will start |
| | ☐ | The job enters the queue in a waiting state. It will automatically start when the queue is available |
| Remove job from queue when finished | ☑ | When the job is finished, it is automatically removed from the queue |
| | ☐ | When the job is finished, it stays in the queue until it is manually removed |

| | |
|---|---|
| Overwrite existing files in output directory | This option is only available when 'Preprocessing Only' is selected as a Job type.<br>☑ Overwrite any previous files if a job with the same name already exists in the specified output directory<br>☐ Create a new folder in the specified output directory, regardless of any existing folders. |

The visibility of this menu can be toggled by clicking the ⌄ arrow button. It is hidden by default.

### Control buttons

| | |
|---|---|
| Configure 3D Printer | Opens the *Configure Printer* window for the selected BP Machine |
| Configure Job | Open a window that provides an overview of the current job configuration. It is still possible at this point to change these settings if necessary. |

**Note**

Any changes made at this point will be taken into account when submitting the job, but will not be saved back to the Magics session.

| | |
|---|---|
| Submit Job | Submit the job to the BP Machine Queue. A message will appear informing whether the job was successfully sent |

You can check the job progress in the corresponding BP Machine Queue (see section 4.9: Access the BP Machine Job Queue on page 34) or stay informed using the BP Manager Tray notifications (see section 4.10: Configure BP Tray Notifications on page 37).

## 5.3. The Build Output

The generated output files for each machine are uploaded to the predefined *Upload folder* as specified in the machines' Printer Configuration. The job will also appear in the BP Machine queue, where it can be opened using the 'Open Upload Folder' option in the right click context menu of the job entry.

The files generated upon submitting a job are:

| | |
|---|---|
| *Platform.MatAMX* | A Materialise AM Exchange file (file ending *.matamx) will be created containing the 3D STL parts of the Magics scene. It can be opened using Materialise Software.<br>The option to output this file can be toggled on or off (see section 7.1: Export on page 60). |
| *SliceStacks.MatAMX* | A Materialise AM Exchange file (file ending *.matamx) will be created containing the 2D slice data.<br>The option to output this file can be toggled on or off (see section 7.1: Export on page 60). |
| *.job file* | These files contain the binary data (which includes all geometrical data and vectors to be scanned) for each part. Also it contains all data to guide the building process. This file can be loaded and interpreted by the machine control software. |

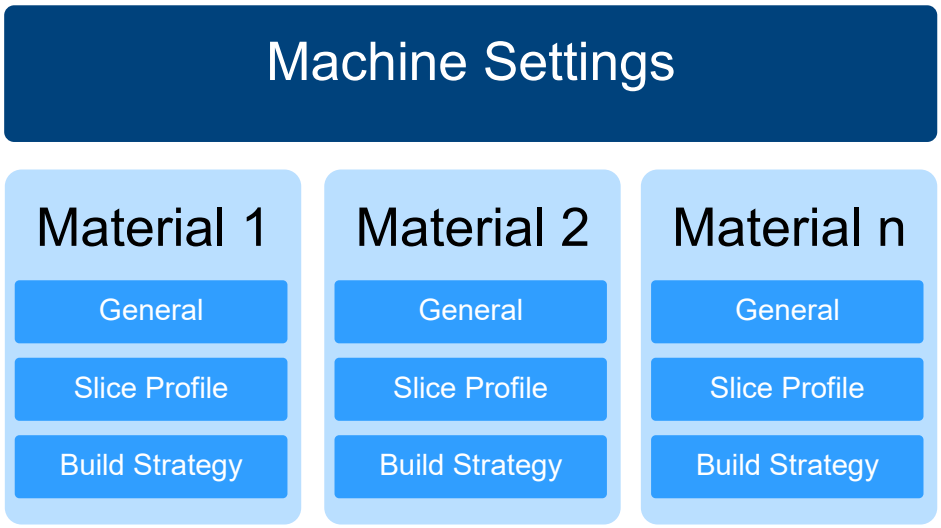
# 6 Usage of Profile Editor

## 6.1. Introduction and concepts

The outcome of a 3D build job generated by the Materialise MPM Build Processor depends on different parameter groups, each of which has a well-defined scope:

- Machine Settings
- Material
- General
- Slice Profile
- Build Strategy

The following diagram illustrates how these types relate to each other:

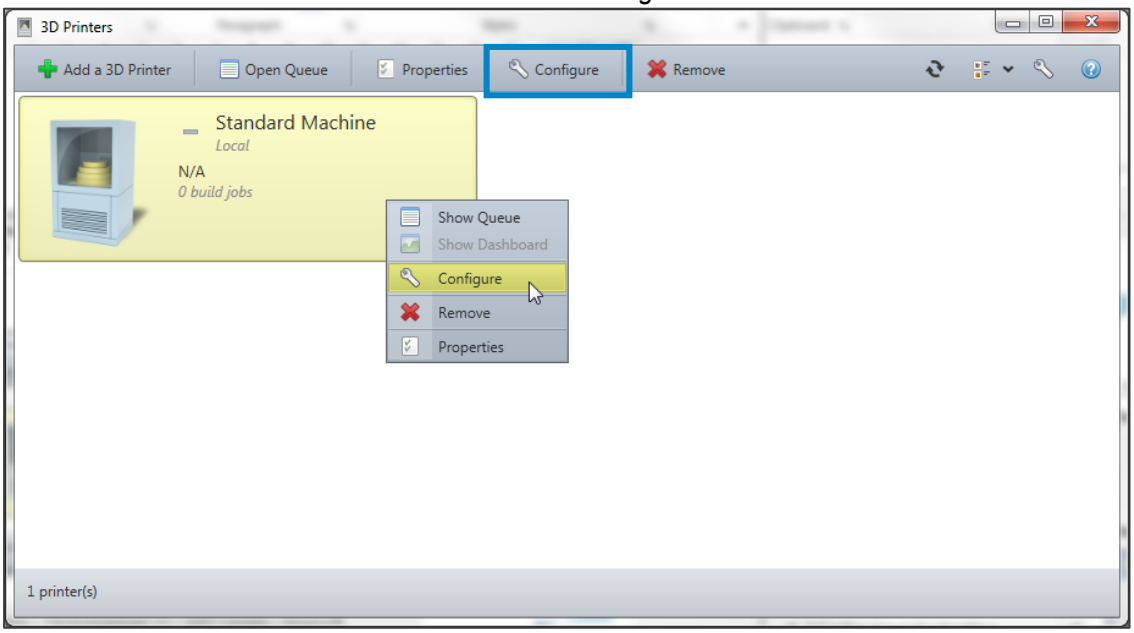


## 6.2. Launching the Profile Editor

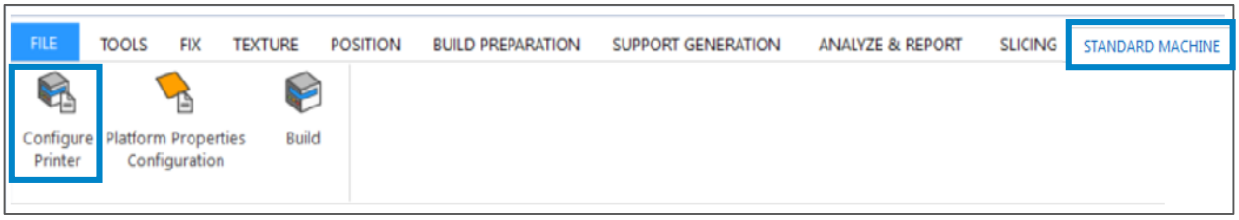
The Profile Editor is located in the Configure Printer window. It can be opened either via the Build Processor Manager or Magics.

### Via Build Processor Manager

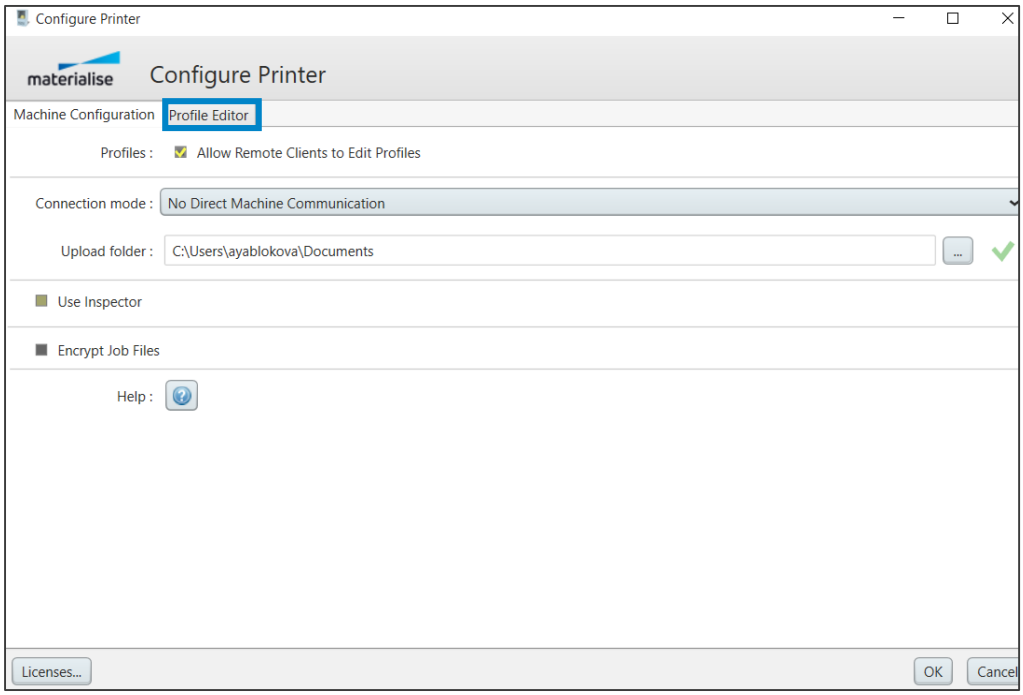
- Right mouse click on the desired BP Machine and selecting the *Configure* option or
- Select the desired BP Machine and click the *Configure* button



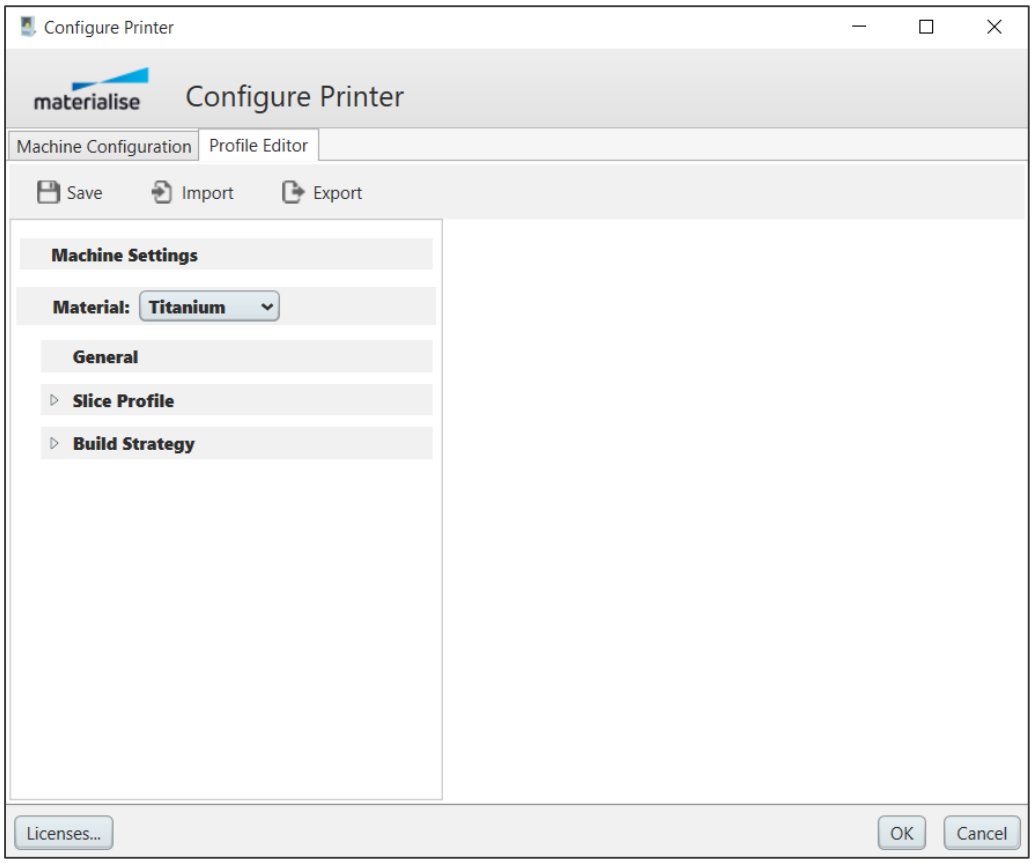

### Via Magics




Either way, you will be shown the Build Processor Configure Printer window. Click on the *Profile Editor* tab to access the Profile Editor.




This will finally bring up the Profile Editor:

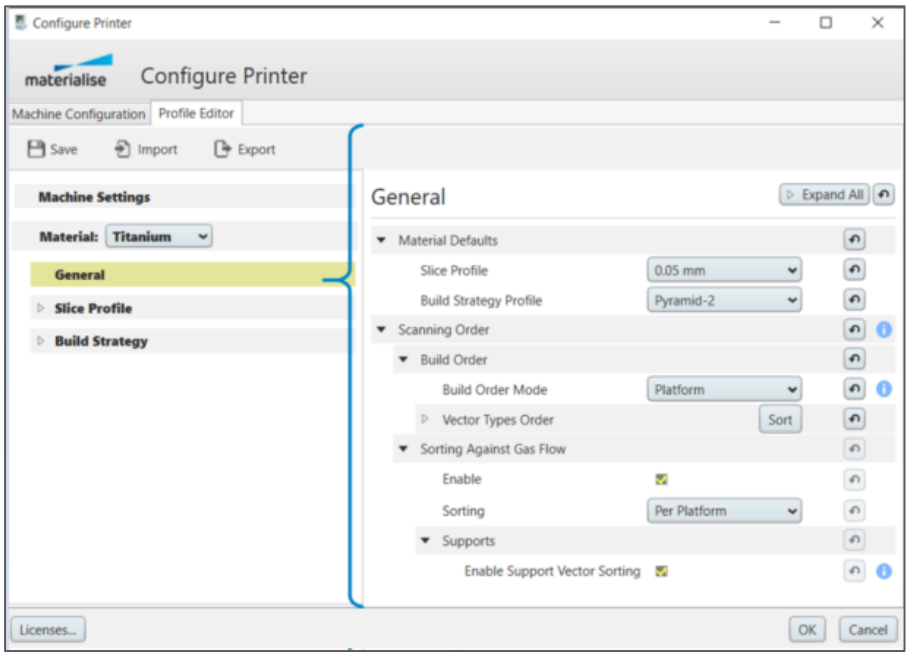


## 6.3. General usage of the Profile Editor

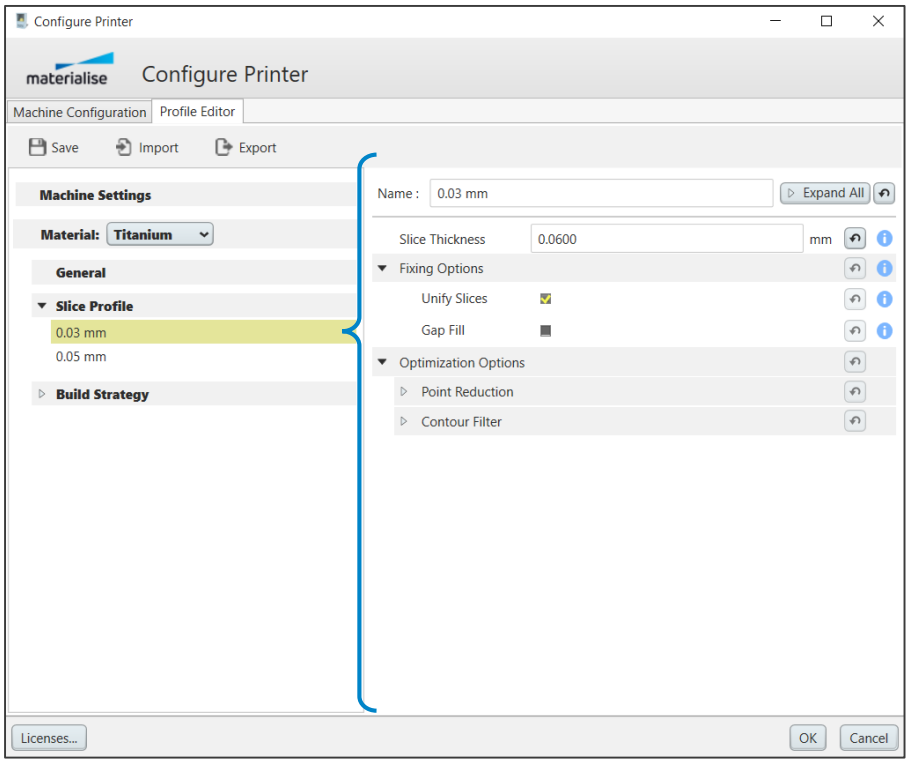
The Profile Editor allows you to define profiles, which describe different aspects of the building process with a defined set of parameters. These profiles can later be accessed from within Magics when sending the build job to the BP Machine.

### 6.3.1 Selecting a profile for editing

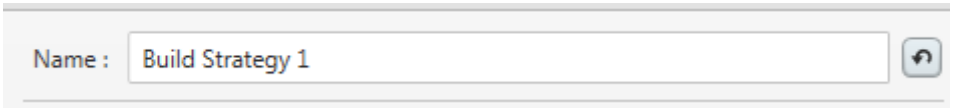
To edit a profile, click onto the corresponding entry in the list located on the left hand side of the editor. The panel on the right hand side will then show an initially collapsed tree structure for the chosen parameter categories.




The Slice Profile and Build Strategy categories need to be expanded by clicking on the small triangle ▷ left to the section name followed by clicking on the profile name before showing the parameters on the right hand side:



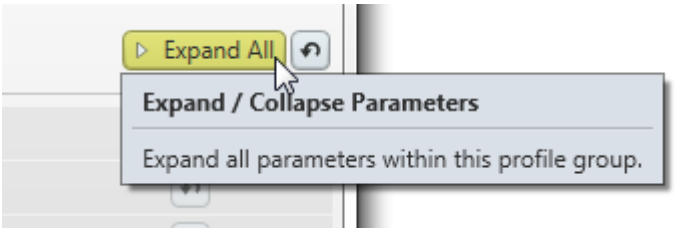

### 6.3.2 Editing profile names




In the field *Name*, a name for the Slice Profile / Build Strategy can be defined to identify it in the Profile Editor, for profile import and export and during assigning it to the platform and parts.

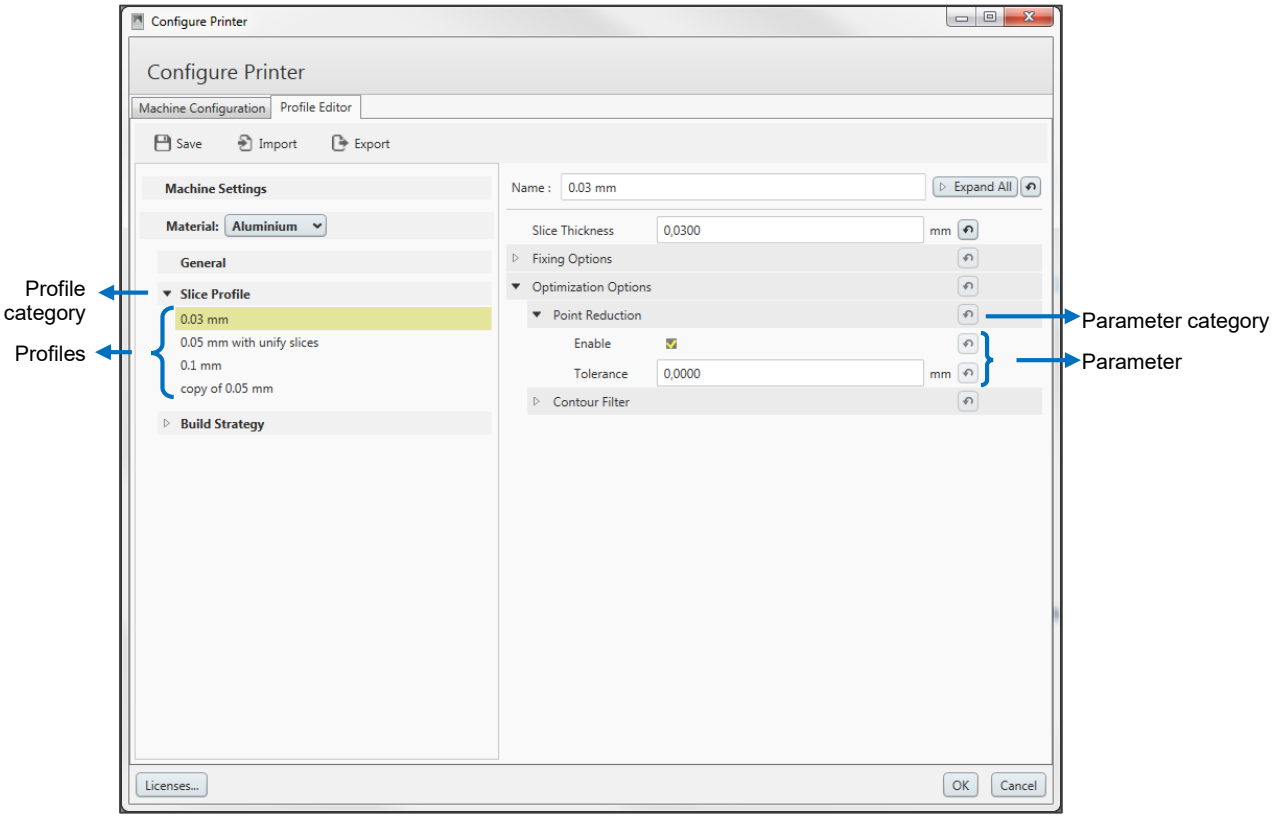
### 6.3.3 Expand and Collapse All

To expand or collapse all nodes press the button *Expand All* / *Collapse All*




### 6.3.4 Modifying parameters

By selecting a parameter category on the right hand side of the Profile Editor, the corresponding parameters to this category will appear. Here you can edit the parameters as needed.

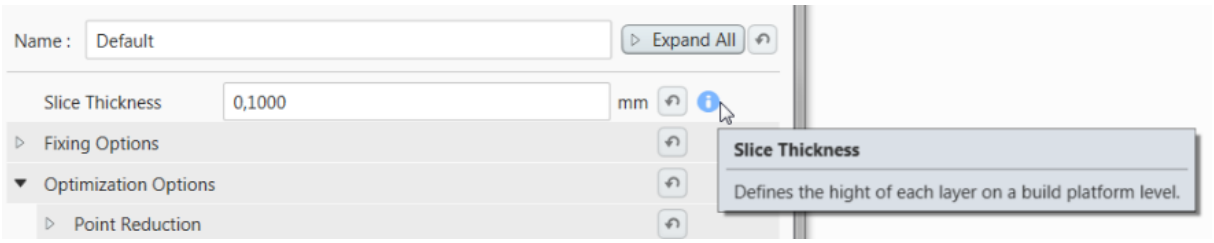



Each parameter is identified by:

- A concise description of the parameter
- An entry field, checkbox or dropdown list (with a validity check where needed)
- A button, which resets the parameter value to its factory default
- Tooltip which provides information on the corresponding parameter upon hovering

### 6.3.5 Getting information about parameters

Some parameters offer a 'tooltip field' next to their editing components, represented by the symbol :




Moving the mouse pointer onto these elements will trigger the display of a tooltip.

### 6.3.6 Resetting parameters to their default values

In case you want to reset parameters to their factory default, click the following button next to the element you want to reset: 

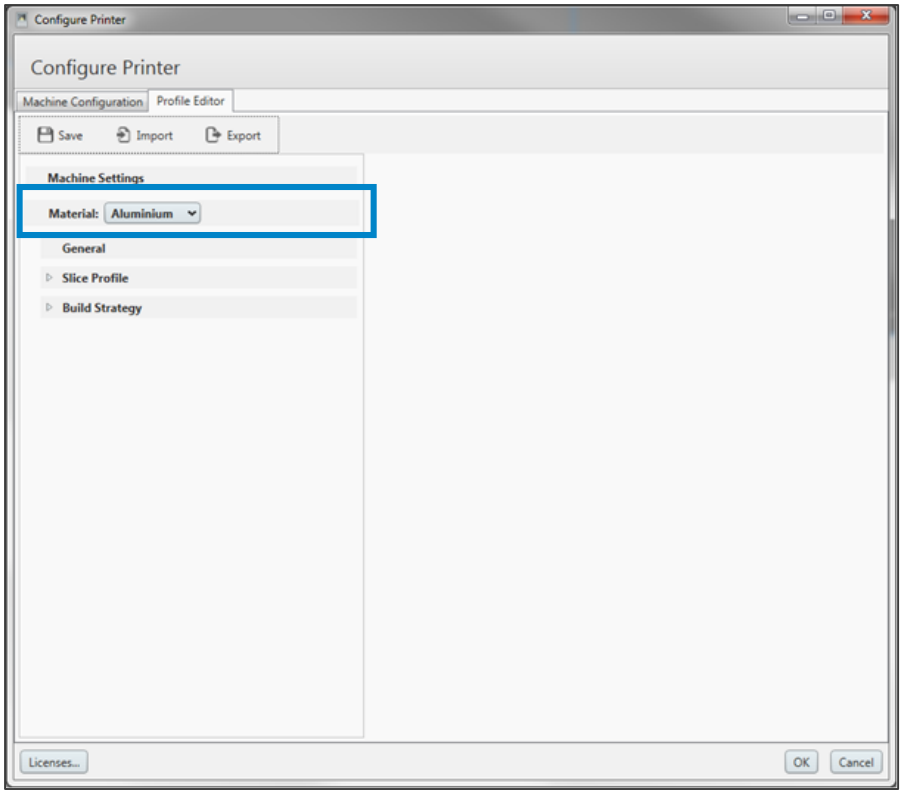
**Warning**

All parameters will be reset to their defaults. This operation can´t be undone.

Press *Cancel* to undo this operation and default settings will not be saved.

## 6.4. Creating and editing Materials

The Profile Editor offers buttons to edit the set of materials:




The materials can be defined in the *Material* field at the left hand side of the Profile Editor.


The following buttons will be shown by hover the mouse above the *Material* field:

 Add a new material that contains the factory default profile

 Delete the current material

 Create a copy of the selected material

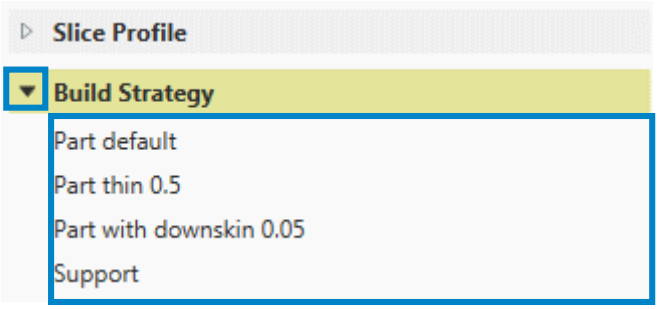
 Rename the selected material

 Set the selected material as default material

## 6.5. Creating and deleting Profiles

In the Materialise MPM Build Processor two profile categories are existing: Slice profiles and Build Strategies. In these categories several profiles can be added which can be used to assign them to parts (via Magics, see section 5: Build Processor on page 38) and define the way in which they must be hatched and consequently scanned by the machine.

To edit a profile, e.g. a Build Strategy profile, click onto the triangle ▷ left to the entry *Build Strategy* in the list located on the left side of the editor. The panel will show all existing profiles of the category 'Build Strategy'.




Clicking on one Build Strategy, e.g. 'Part thin 0.5', will show all parameters related to this profile on the right hand side.

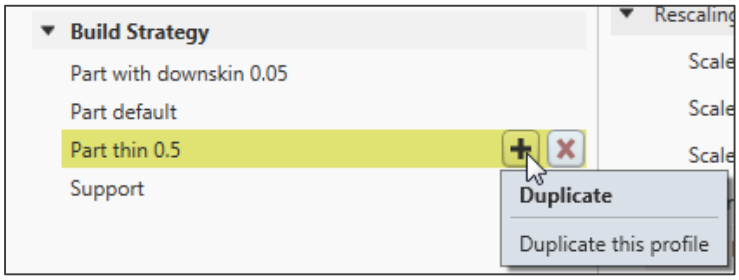
Besides editing the Build Strategies on the right hand side you can also create new Build Strategies.

There are two ways of creating Build Strategy profiles: either clone an existing one or create a new one based on the factory default.

### 6.5.1 Creating Build Strategies by cloning existing Build Strategies

If you want to base a new profile on an existing one, do as follows:

Move the mouse pointer onto the entry of interest. Two buttons will then be shown. Use the + button to create a new Build Strategy:

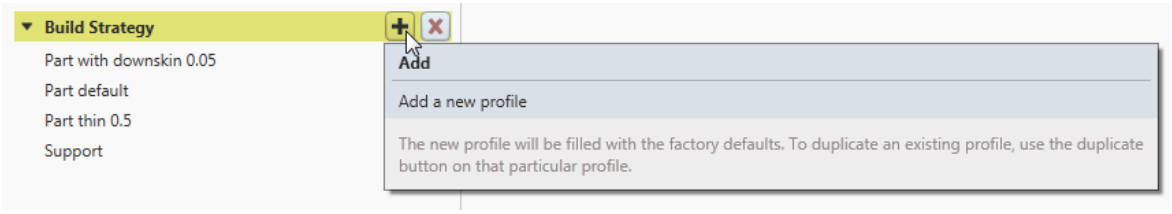



The *Duplicate* button will add a copy of the selected material. It will contain one build strategy with the same name and the prefix *copy of*, in this case consequently 'copy of Part thin 0.5'.

You can change the automatically created name using the text box in the upper right of the editor window. See also section 6.3.2: Editing profile name on page 49.1.

### 6.5.2 Creating Build Strategies based on factory defaults

The 'factory default' is an inbuilt template profile that cannot be altered by any user. To create an instance of that profile, move the mouse pointer onto the *Build Strategy* entry and click onto the  button that appears while hovering on the entry:




 This will add a new material. It will contain a new Build Strategy called 'copy of Factory Default' containing default values which needs to be adjusted by the user.

**Warning**

The new Build Strategy contains default values which need to be adjusted by the user. The given values may result into bad build quality or build errors. Please adjust them.

You can change the automatically created name using the text box in the upper right of the editor window. See also section 6.3.2: Editing profile name on page 49.

### 6.5.3 Deleting Build Strategies

Build Strategies can be deleted by moving the mouse button onto the corresponding entry and clicking the  button.


 This will delete the current Build Strategy profile.

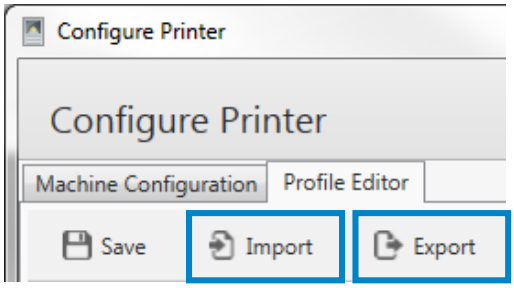
**Warning**

This will delete the Build Strategy profiled. Click *Cancel* if you do not want to save these changes and to udo the action.

## 6.6. Exporting and importing build parameters

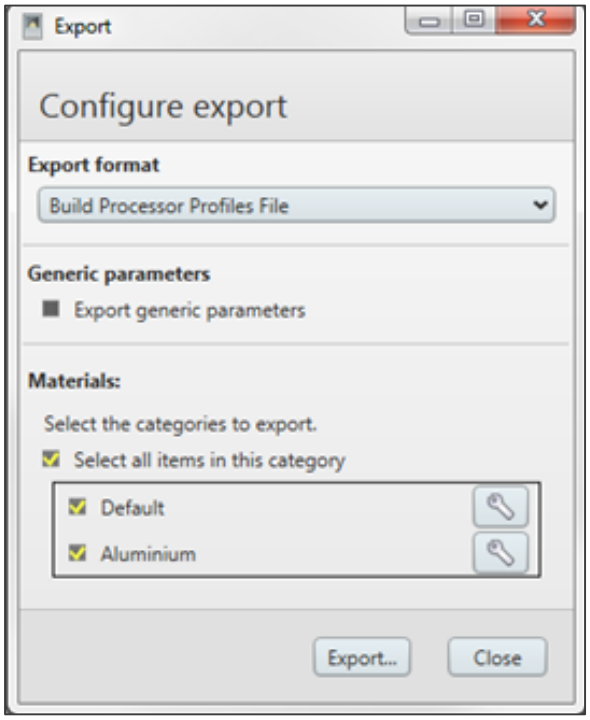
The options for exporting and importing Build Processor parameter profiles can be found at the upper part of the Profile Editor. By doing that the entire or a subset of the existing parameters can be stored on an external location and/or transferred to another Materialise MPM Build Processor machine. The file format for the Build Processor parameter profiles is .bpprof (Build Processor Profile).

With the following buttons Build Processor parameter profiles can be exported and imported:

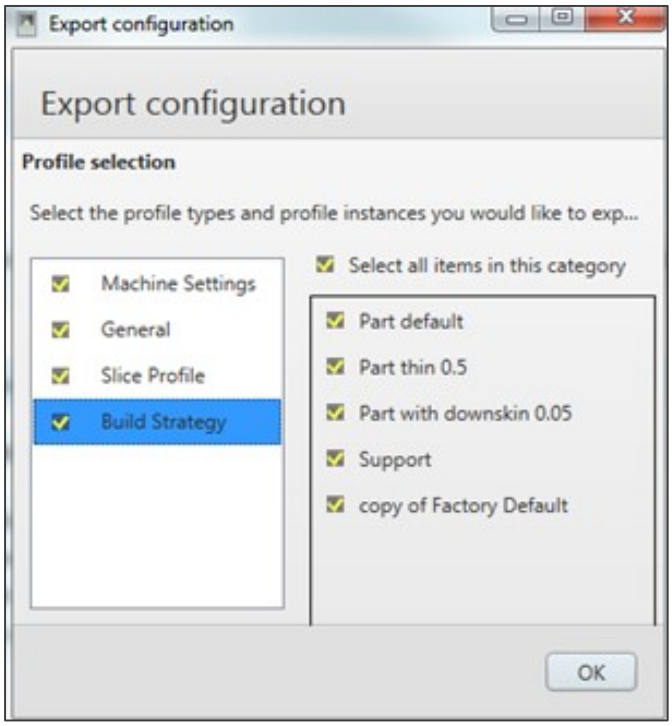



### 6.6.1 Exporting build parameters

Clicking the Export button will bring up a dialog in which you can specify the items to export:




- For each Material you want to export, check the corresponding checkbox.
- If you only want to export a subset of a Material's items, click onto the tool icon next to Material entry and select the items you wish to export:

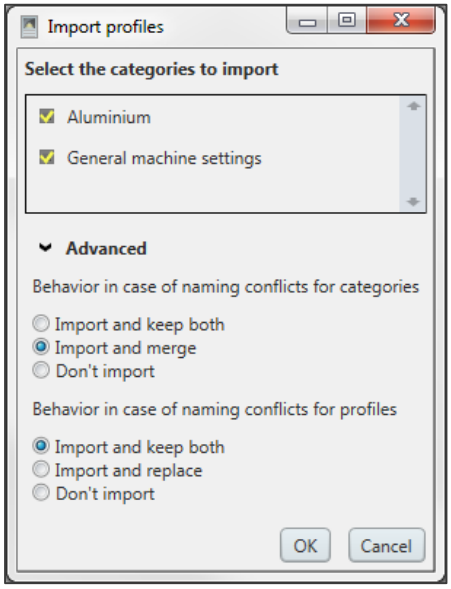



Clicking *Export…* will prompt you to specify a name and a location for the export file. Once such a file is created, it can be used for import later on.

### 6.6.2 Importing build parameters

Clicking the Import button will prompt you to select a file to be imported. After that the application will show you a dialog in which you need to clarify the following issues:

- Which elements of the file shall be imported?
- How shall the importer behave in case of naming conflicts?



The section labeled *Select the categories to import* offers you a list with the Materials found in the file.

As it is possible that naming conflicts arise – that is, if Materials. Slice Profiles or Build Strategies in the import file have got the same names like the ones already present in the database – you may define special behavior for that case in the section labeled *Advanced.*

**Behavior in case of naming conflicts for Materials (Categories)**

Let's assume your current database already holds a Material called *Aluminium* and now you are about to import a file containing a Material with the same name. The outcome of such a situation depends on the setting defined for that case:

*Import and keep both:*

The item from the import file will be added as a new item to the set of Materials but its name will be suffixed with *(Imported copy)* just so you can tell them apart.

*Import and merge:*

The Build Strategies contained in the Material to import be added to the set of Build Strategies of the existing Material but their names will be suffixed with (*Imported copy)* just so you can tell them apart.

*Don't import:*

The entry from the import file will just be ignored.

**Behavior in case of naming conflicts for profiles**

Similarly, naming conflicts with Build Strategies may arise. In that case, three strategies for resolving are available:

*Import and keep both:*

The item from the import file will be added as a new item to the 'parent Material' but its name will be suffixed with *(Imported copy)* just so you can tell them apart.

*Import and replace:*

In this case, the existing Build Strategy will be replaced by the one from the import file.

*Don't import:*

The entry from the import file will just be ignored.

**Warning**

As the import function can´t be undone it is recommended to save the existing parameters before importing.

This can be done by exporting the parameters into a temporary location.

# PART 2

## Profile Editor

PART 2 is designed as a library.

The explanations of all features and functions of the parameters in the Profile Editor can be consulted in this section.

As already mentioned in section 6: Usage of Profile Editor on page 45, the Profile Editor is separated into different parameter groups:

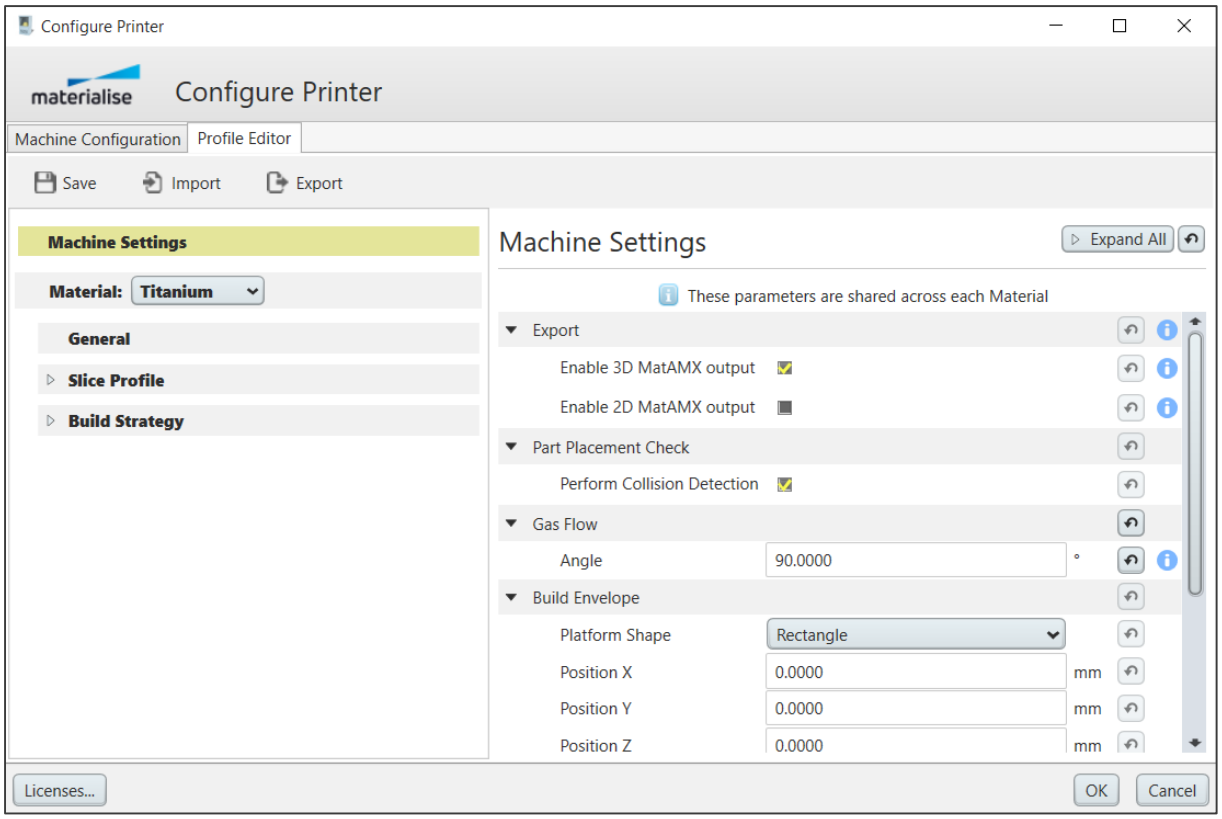
- Machine Settings
- General
- Slice Profile
- Build Strategy

This chapter gives a detailed description of the parameters associated to those groups and gives an extensive overview of their purposes.

# 7 Machine Settings

In the Machine Settings, one can configure Export options and Gas Flow settings.

Click onto the entry *Machine Settings* on the left side (as shown in yellow in the screenshot below):




The Machine Settings are shared between all Material profiles, meaning that the machine-specific settings are applied independently on what Material, Slice Profile and Build Strategy are selected. For instance, one can't set the gas flow angle separately for materials and build strategies as this parameter is tied to a physical machine only.

## 7.1. Export

The native export format of the Materialise MPM Build Processor is the .job file format which gets exported with every build job.

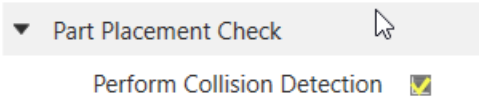
However additional export files are available which can be enabled or disabled in the export section.

| Parameter | Description |
|---|---|
| **Enable 3D MatAMX output** | The file *Platform.MatAMX* will be created containing the Magics scene with the 3D STL parts. It can be combined or not combined with other STL data for creating a new job with the same or different settings. |

| | |
|---|---|
| **Enable 2D MatAMX output** | The file *SliceStacks.MatAMX* will be created containing the 2D slice data of the build job. This data can be imported into Magics or Inspector for slice inspection. |

## 7.2. Part Placement Check

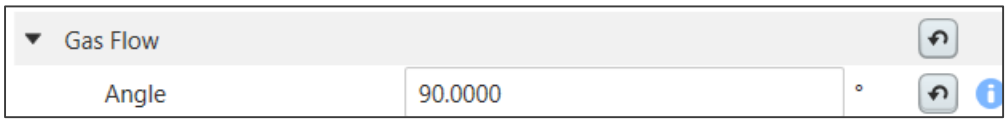
Part Placement Check consist of out of bounds and collision check. Both out of bounds and collision check happens upon job preprocessing. Out of bounds check allows to verify if parts and/or supports on the platform exceed Build Envelope bounds. If that is the case preprocessing fails and doesn't allow user to upload the job. While out of bounds check is always activated and hardcoded, collision check can be activated or deactivated by user.



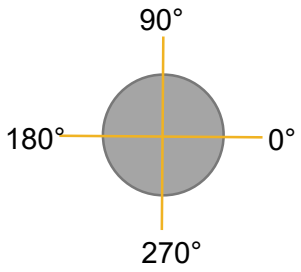

| Parameter | Description |
|---|---|
| ***Perform Collision Detection*** | If activated parameter allows to verify if any parts in the build envelope are colliding. Collision detection is applied only for parts and **not for supports**. If Perform Collision Detection checkbox is OFF, collision check will not be carried out which will considerably decrease preprocessing time. |

## 7.3. Gas Flow

If Sorting Against Gas Flow is enabled the gas flow direction determines the scanning order and direction of scan paths (hatch vectors) as well as the scanning order of parts, part regions and supports on the platform. For more information about sorting against gas flow, please, refer to the chapter 12.2 Sorting Against Gas Flow on page 109.

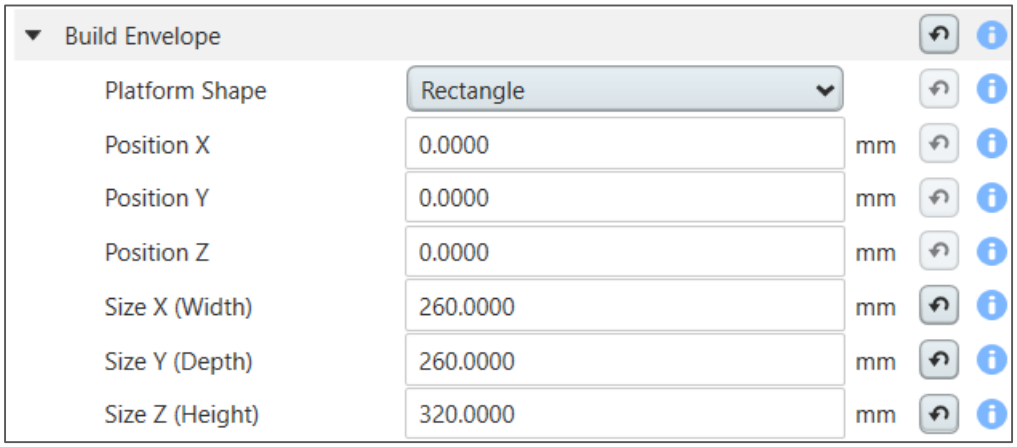



| Parameter | Description |
|---|---|
| ***Angle*** | The Gas Flow Angle is measured from a line anticlockwise. Angle 0° defines the gas flow direction from right to left. |

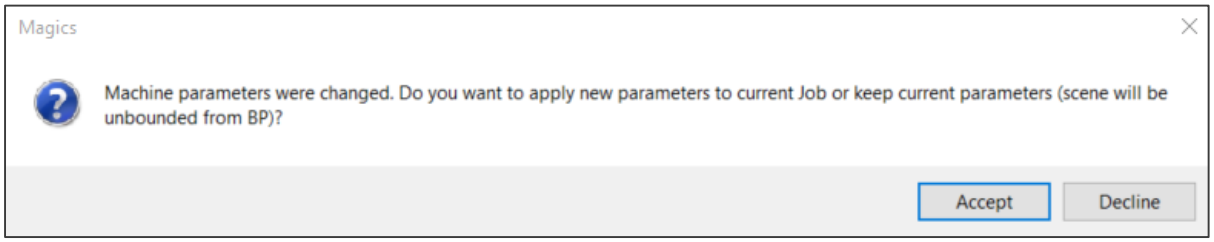



## 7.4. Build Envelope

This section is to fill in Build Envelope settings. If BP uses Materialise Control Platform, these settings will be automatically retrieved from FTP server and the whole section will be available as *read-only*.

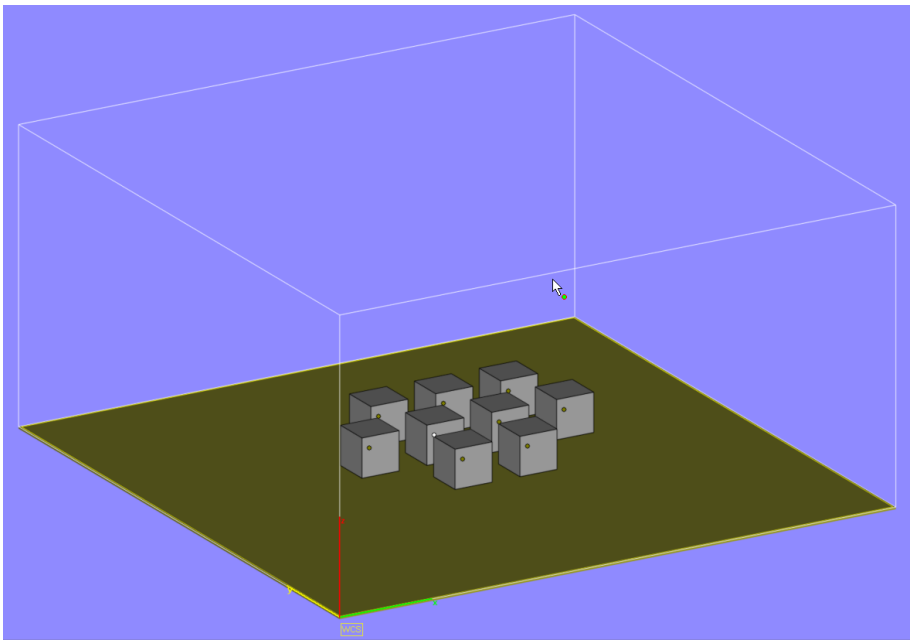



If these settings are different from those in Build Preparation/Machine Properties in Magics, user will be asked to accept or to decline changes in Magics.




Reverse changes from the Machine Properties in Magics to the BP are not possible.

| Parameter | Description |
|---|---|
| ***Platform Shape*** | With this combo box user can choose among circular and rectangular platform. |

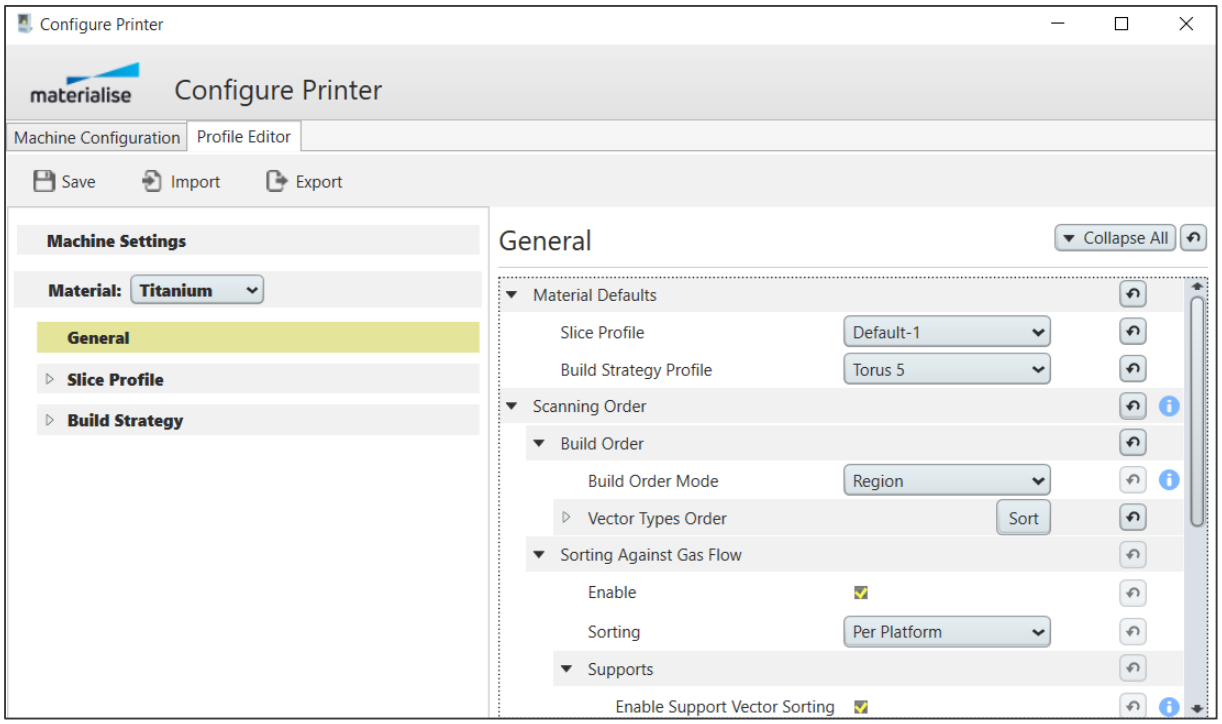
| | |
|---|---|
| |  |
| ***Position (X, Y, Z)*** | The X, Y and Z coordinates are used to define position of the Build Envelope (the bottom corner for the rectangular platform or the center point for the circular platform) in WCS.<br>  |
| ***Size X (Width)*** | Define here the width of the platform in X direction. |
| ***Size Y (Depth)*** | Define here the depth of the platform in Y direction. |
| ***Size Z (Hight)*** | Define here the height of the platform in Z direction. |

# 8 General

The parameters shown in the *General* will be applied on the entire platform and therefore they are not part specific. In this section user can define settings for:

- Material Defaults
- Scanning Order

Click onto the entry *General* on the left side (as shown in yellow in the screenshot below):

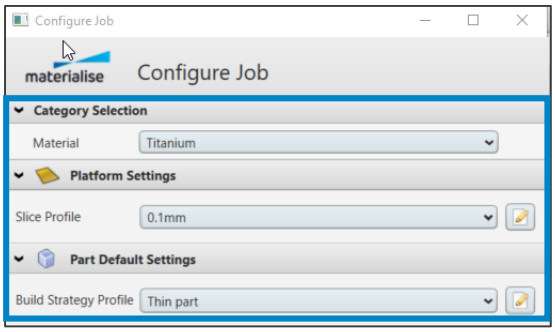


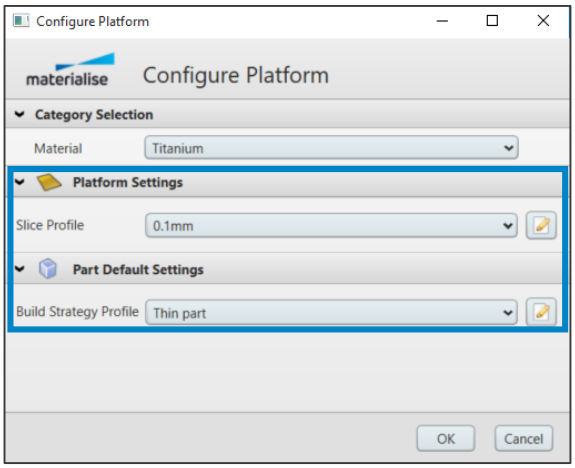

## 8.1. Material Defaults

In the *Material Defaults* user can set default profiles applied on the platform and part level:

- Slice Profile (applicable on the platform level)
- Build Strategy Profile (applicable on the part level, **however**, in the current BP **only one** Build Strategy profile can be selected for all parts on the platform)

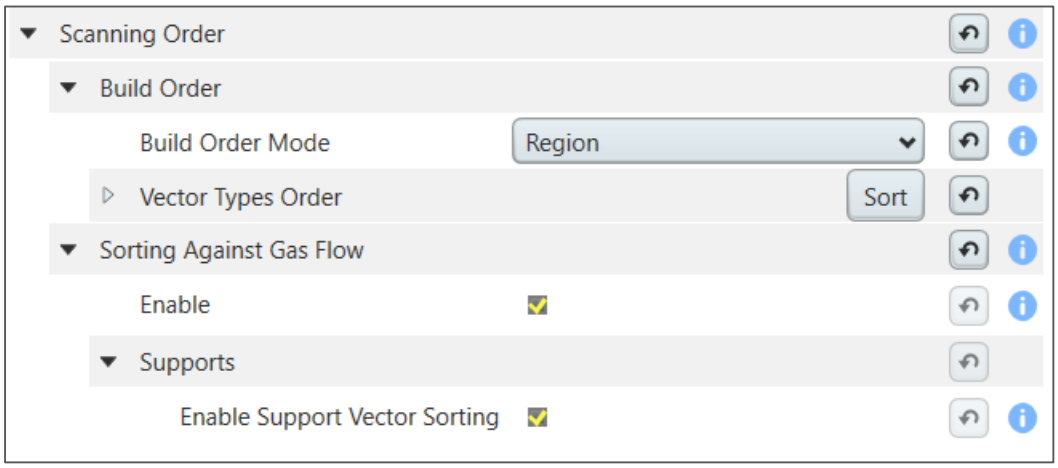
Those default profiles are preselected upon opening the *Configure Platform, Configure Job and Configure Parts* dialogs in Magics. The user can select among all the profiles defined in the Profile Editor under *Slice Profile* and *Build Strategy* sections in the *Configure Platform* in Magics:


Configure Job
materialise
Configure Job
Category Selection
Material
Titanium
Platform Settings
Slice Profile
0.1mm
Part Default Settings
Build Strategy Profile
Thin part


Configure Platform
materialise
Configure Platform
Category Selection
Material
Titanium
Platform Settings
Slice Profile
0.1mm
Part Default Settings
Build Strategy Profile
Thin part
OK
Cancel

## 8.2. Scanning Order

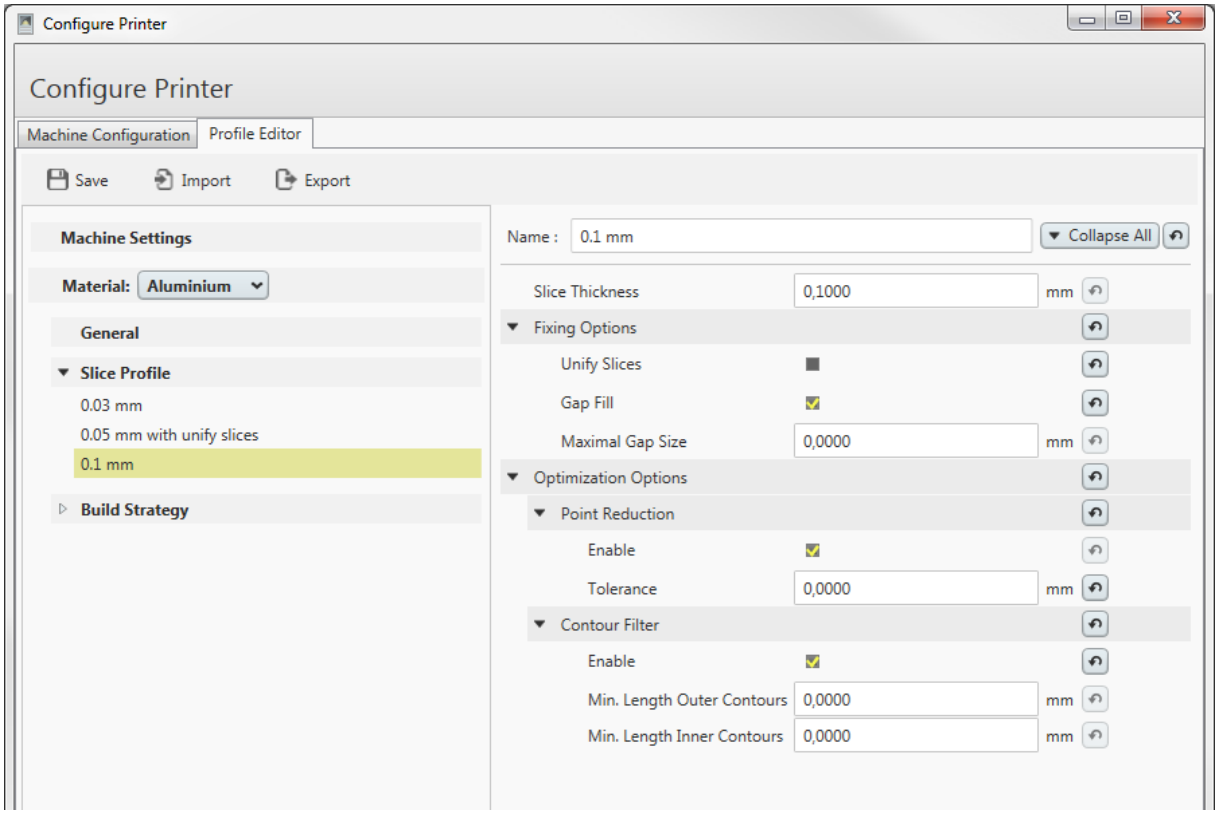
At Scanning Order the build order of regions (closed part contours) and vector types can be defined. The build order determines the order in which the regions and supports are scanned.




For detailed information please see section 12 Scanning Order on page 106.

# 9 Slice Profile

In the Slice Profile the Slice Thickness and all other parameters in the section are defined on a platform level (applicable to all parts on the platform), however, the settings related to geometric fixing and optimizing of slice geometries will be applicable for a Slice Thickness defined in the Build Strategy section (Slice Thickness is assigned to each part separately).




## 9.1. Slice Thickness

In this field the slice thickness is defined on a platform level.


**Note**

The **Part** Slice Thickness defined in the Build Strategy can be assigned on a part level and has to be equal or multiple of the Slice Thickness defined on the platform level (PST≥ST).

Slice thickness in the Slice Profile section should be mainly considered as a parameter which allows to filter build strategies per slice profile. Build Strategy profiles can be combined with a Slice Profile only in the case they have the same or multiple Part Slice Thickness (PST). In order to combine the Build Strategy profile with a relevant Slice Profile the following condition should be satisfied: **Part Slice Thickness ≥ Slice Thickness**.

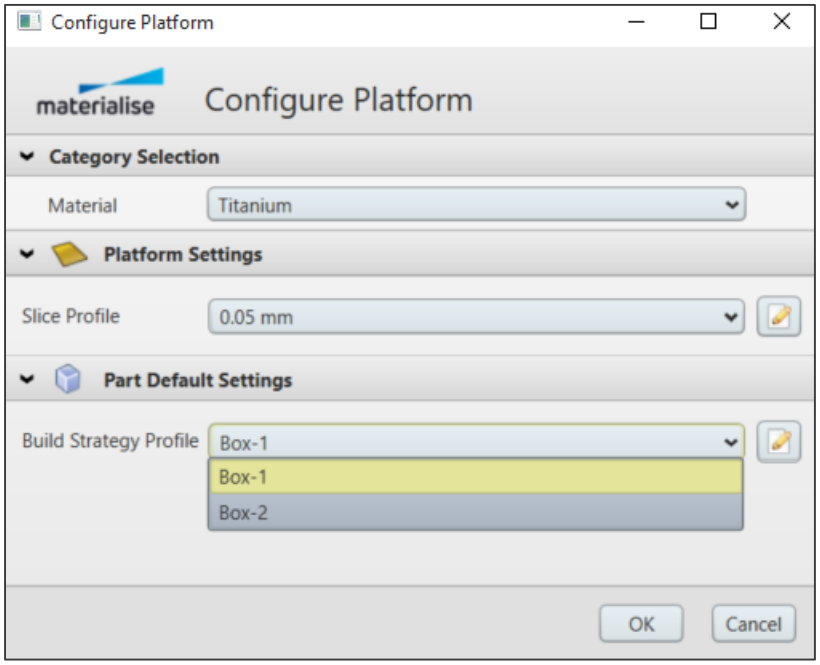
For example, user has created two Slice Profiles (SP):

SP with a slice thickness 0.05 mm and SP with a slice thickness of 0.03 mm.

User has also saved 4 Build Strategy profiles:

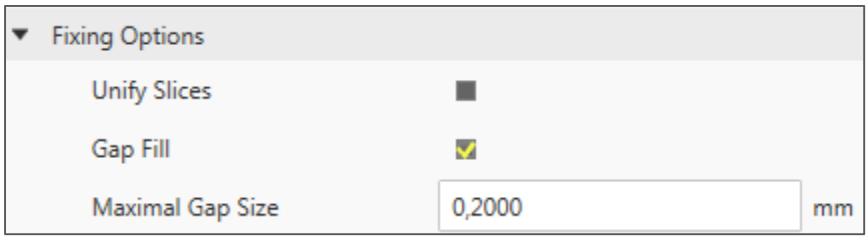
Box-1 (PST = 0.1), Box-2 (PST = 0.05), Pyramid-1 (ST = 0.06) and Pyramid-2 (ST = 0.03).

At the Configure Platform window of Magics when choosing Slice Profile 0.05 mm the user will see only Box-1 and Box-2 at the Build Strategy drop-down menu. When choosing the 0.03 mm Slice Profile the user will see only Pyramid-1 and Pyramid-2.



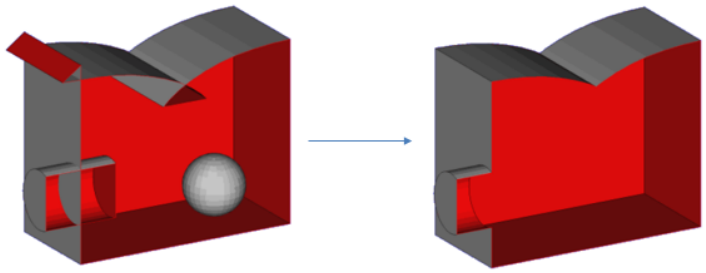
## 9.2. Fixing Options

Part contours are checked for errors after the slicing process and can be repaired using the Fixing Options parameters.




**Note**

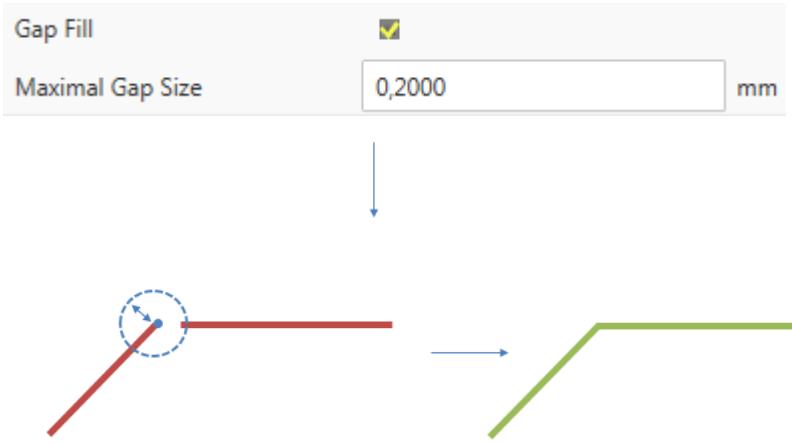
It can happen that settings given in Fixing Options lead to changes in the original geometry of the part.

| Parameter | Description |
|---|---|
| ***Unify Slices*** | When the Unify Slices option is enabled, only the outer triangles will be preserved and all inner triangles will be discarded. This operation is performed on a slice-level per part and can be illustrated using the following example:<br>  <br>For parts with a lot of internal intersections, unify will help you to make clean parts.<br>**Note**<br>Enabling this option introduces an additional operation during slicing, causing the process to take longer. |
| ***Gap Fill*** | The Materialise MPM Build Processor contains an open contour stitching algorithm. In the logical workflow, fixing operations will take place in Magics, prior to sending the job to the Build Processor. However, in case for example: the user does not attend to some poorly visible near bad edges, or does not check the part again for errors after performing certain operations; some open contours could still be present. |

When enabled, the ‘Gap Fill’ will take care of these gaps as follows:

1. Check for each point of an open contour…
2. … whether there is another point of an open contour within a ‘Maximal Gap Size’ radius
3. If this is the case, the edges are stitched together

This can be illustrated graphically:

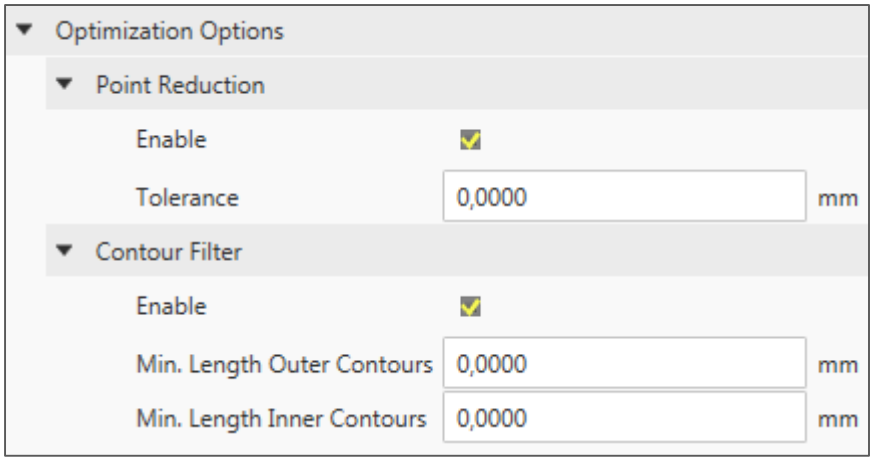



**Maximal Gap Size**

In case the slicer detects open contours which are not automatically stitched by the Gap Fill in the selected slicing profile, slicing will abort. Such errors indicate that there are errors present in the original digital model. It is highly recommended to fix these in Magics, where you have a large set of dedicated fixing functions and visual feedback available. Alternatively, you can increase the Maximal Gap Size value to force stitch together all open contours. Please note that this can lead to unexpected output results.

## 9.3. Optimization Options

With Optimization Options, the geometry of the part gets simplified for the process.



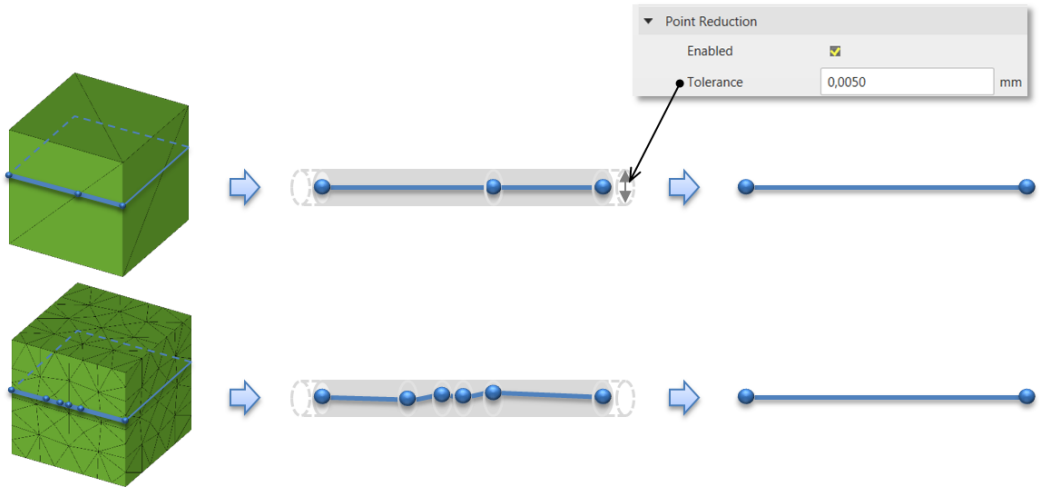

**Note**

Using Optimization Options can lead to changes in the original geometry of the part.

### 9.3.1 Point Reduction

The Point Reduction algorithm is used to reduce the amount of contour (border) vectors. It works by merging successive vectors that lay on one line (close enough within a given Tolerance). When enabled, it will reduce the file size of the resulting slices. Point reduction can also prevent rough surfaces on physical parts in extreme cases where digital part imperfections lead to a very high concentration of vectors (causing the machine software to steer the laser in such a way that there is a longer exposure time in this area of high vector concentration).

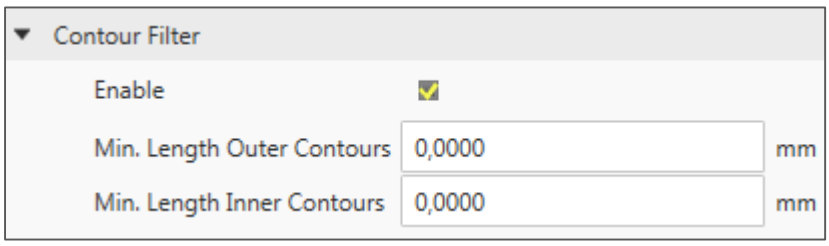
The algorithm can be illustrated graphically:

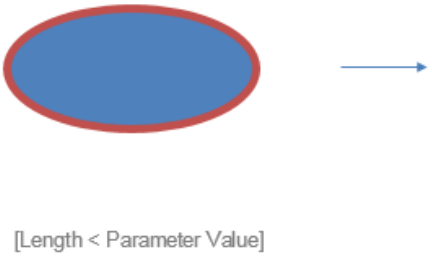
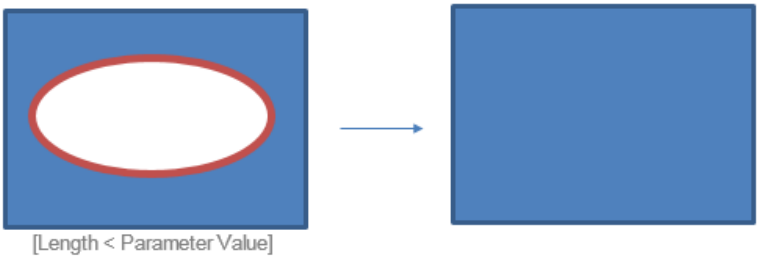


Note how the number of points reduces to produce ‘cleaner’ contours. The file size of the part slice stack is reduced accordingly.

### 9.3.2 Contour Filter

The Contour Filter algorithm takes the scanning limits of the 3D printing machine into account. Some features (on the digital model) have a detail which cannot be accurately reproduced due to physical limitations (machine HW, powder particle size …). The Contour Filter allows the user to specify which of such features should be removed, based on the length defined by each contour.



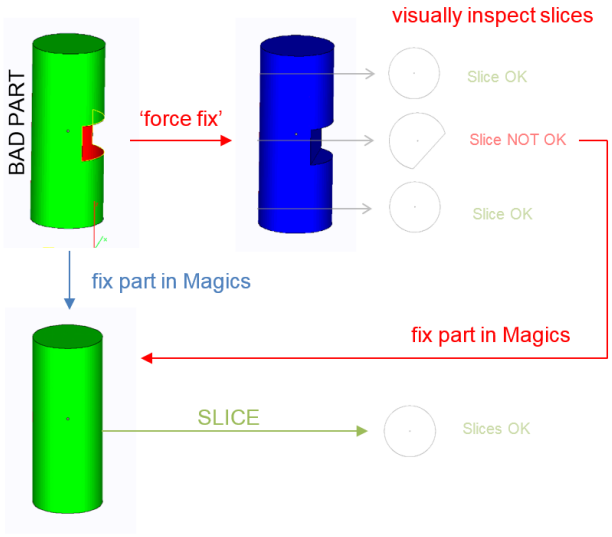

| Parameter | Description |
|---|---|
| **Minimal Length Closed Outer Contours** | Closed outer contours, with a length smaller than this value, will be discarded.<br>  <br>[Length < Parameter Value] |
| ***Minimal Length Closed Inner Contours*** | Closed inner contours, with a length smaller than this value, will be discarded.<br>  <br>[Length < Parameter Value] |

## 9.4. Side Note: The Build Processor fixing philosophy

Having open contours in your slices means that there is something wrong with the geometry of your original part, which can be visually checked and fixed in Magics beforehand. In this workflow, the Build Processor is not responsible for applying any geometric changes (for example: closing large gaps in open contours on a slice level, the results of which can be unexpected and would have to be verified slice-per-slice). The guarantee for the user is: a part that is geometrically correct (i.e.: no errors detected in the part analysis), will not have any unexpected results in their slices after processing as no geometric corrections on a slice level are required.

The diagram below illustrates the two different (fixing) workflows to obtain the desired slice result from a 'bad part':

1. Force fixing on a slice level
2. Fixing on an STL level (in Magics)



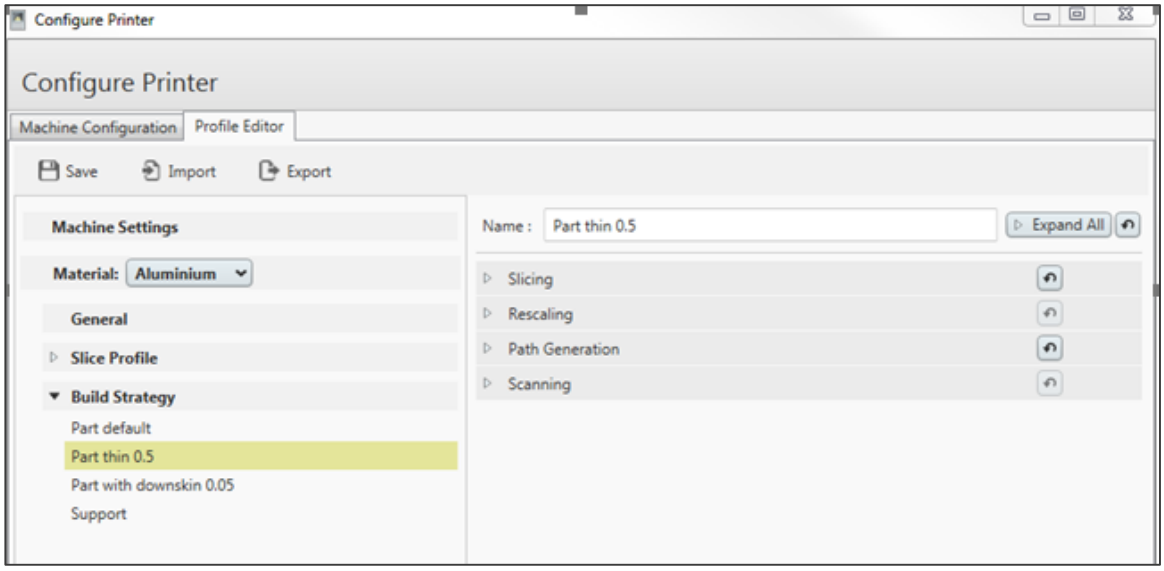

Below is a comparison of the different (fixing) workflows:

| 1. Force fixing on a slice level | 2. Fixing on an STL level | 3. Advantage of workflow 2 |
|---|---|---|
| **Visual slice-per-slice inspection** | No slice checking required | Save time |
| **No 3D visual feedback of entire part after fixing** | Fixing on 3D model gives visualization of entire part | Reduce chance for unexpected geometric changes in final part |
| **Limited fixing options / control** | Many (auto) fixing options | Improved control over final part quality |
| **Bad results require to go back in the workflow anyway** | Bad results are avoided earlier in the workflow | Save time |

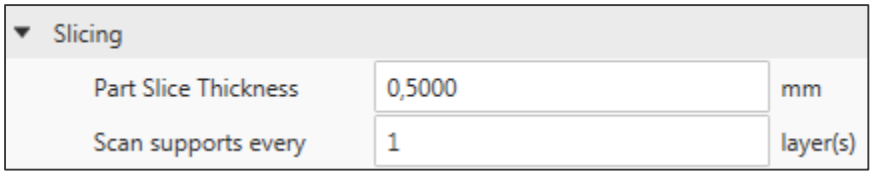
# 10 Build Strategy

The Build Strategy contains the description on how a part and supports should be built. This includes part slicing, scanning patterns, fill area hatch sorting styles and provides possibility to assign different laser parameters to each vector block. A Build Strategy can be assigned per part, meaning it can be applied to only one part or multiple parts, and consists of 4 sections:

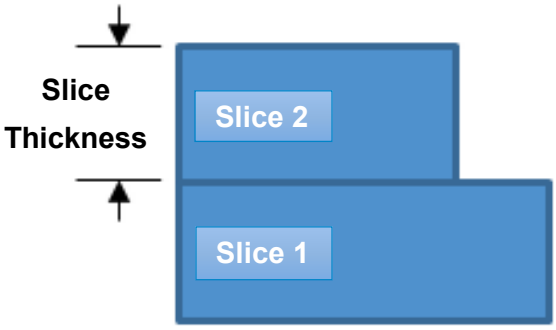
- Slicing
- Rescaling
- Path Generation
- Scanning



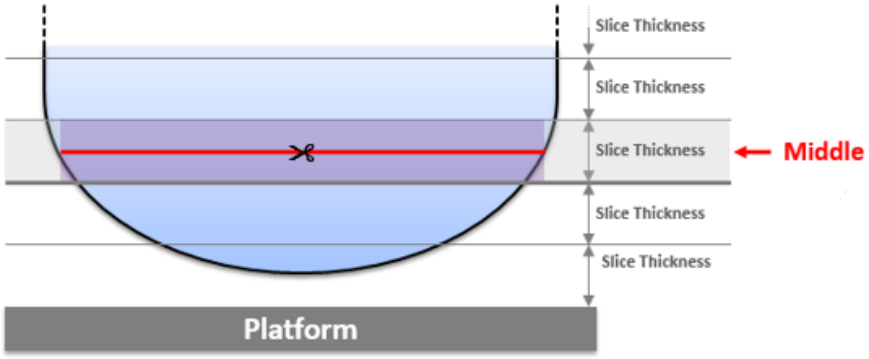

## 10.1. Slicing




| Parameter | Description |
|---|---|
| ***Part Slice Thickness*** | The Part Slice Thickness defines the height of each layer, i.e. the distance between two neighboring slices. In comparison with the Slice Thickness in the Slice Profile section which is applied on a platform level, this parameter is applied on a part level (see also chapter 9.1 Slice Thickness on page 67). |

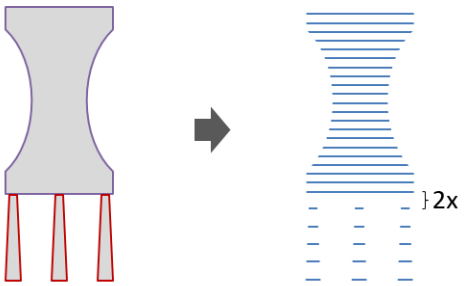



The cutting plane of the slice will always be taken in the middle of the slice layer. The following image should give a clear explanation of what is expected.



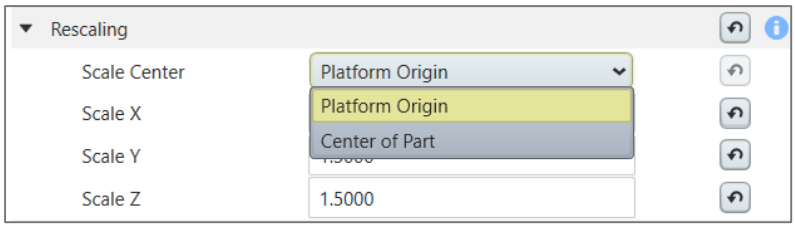

***Scan Support every _ layer(s)***

Overall scanning time can be saved on scanning supports. The height of a single layer defines the slicing resolution which is highly important for complex geometry parts. At the same time, it impacts process speed. For support structures, the resolution can be limited. Therefore, in certain cases, it might be useful to scan supports with a higher slice thickness than parts. The user should adjust individual laser scanning parameters for supports properly to avoid support failure during the build. The number in *Scan supports every … layer(s)* defines n-1 layers to be skipped. For example, if the value equals 1 every layer of the support is scanned, if the value equals 2 every 2nd, 4th, 6th, … layers of the support are scanned, etc. See example for a value of '2' in the figure below:

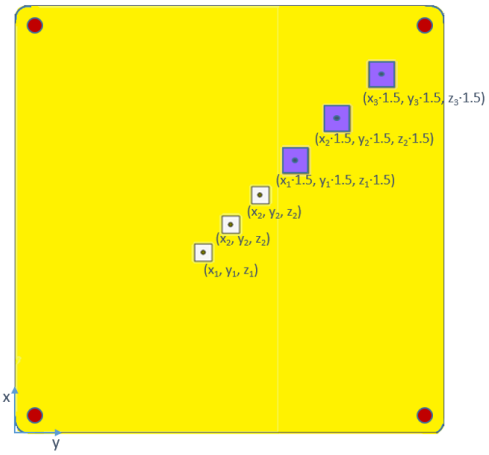


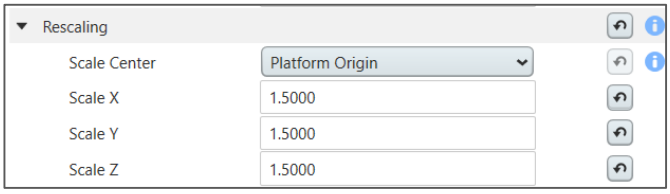
## 10.2. Rescaling

Shrinkage of a cooling part can be partially compensated by applying scaling factors to the part in X-, Y- and Z-direction. The scaling center can be set to the origin of the platform (X = 0, Y = 0, Z = 0) or to the center of a part. It defines relative to what point each part will be scaled.

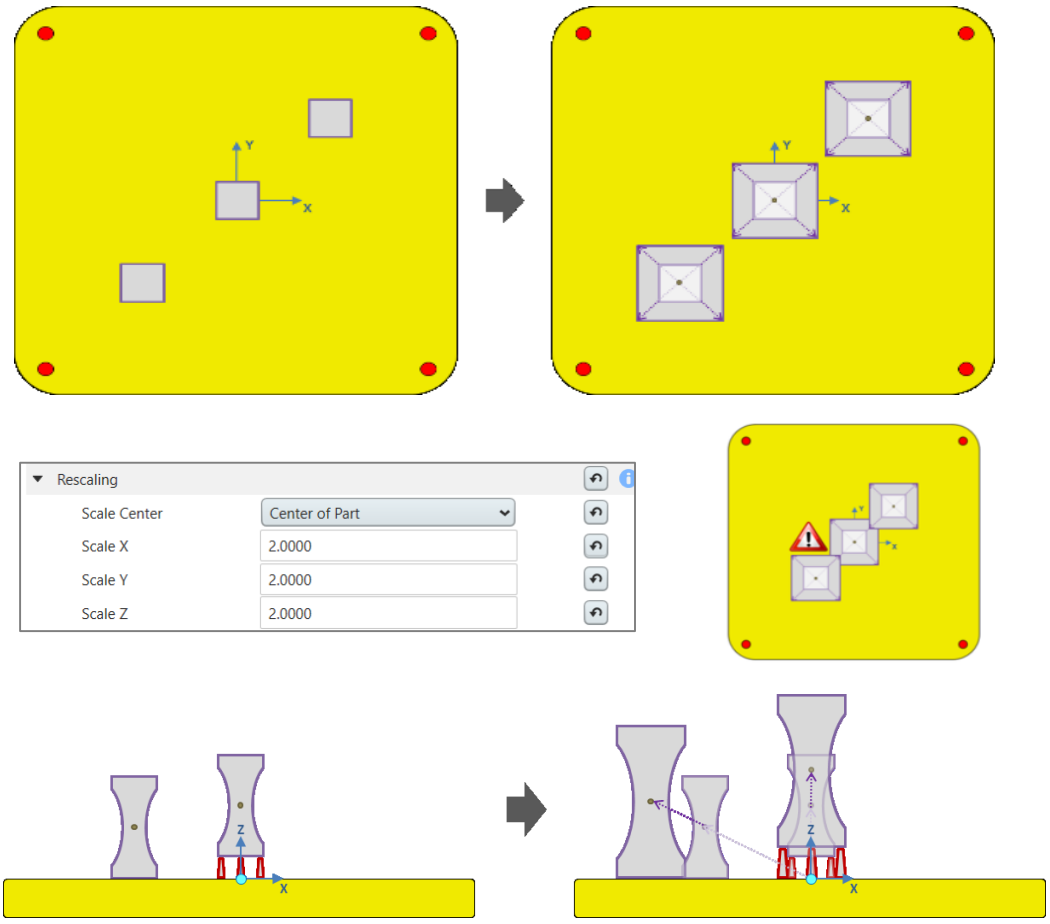



The example below illustrates this using the factor of 1.5 in each direction. In the case of rescaling relative to **the platform origin** part collision after rescaling is avoided because parts are not only rescaled but also moved according to values defined by a user in X, Y and Z directions. Each coordinate is multiplied by 1.5.The white rectangles are the original parts. The dark purple rectangles visualize the resulting slice stacks after rescaling. However, it still may result in supports collision and/or out of bounds problem.




If rescaling relative to a Center of Part collision may occur if parts on the platform are positioned close to each other. The examples below illustrate this using the unrealistic factor of 2 in each direction.

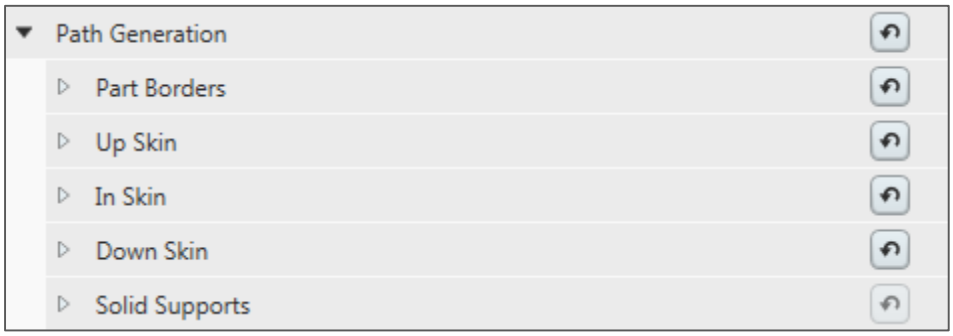



**Effect on Supports**

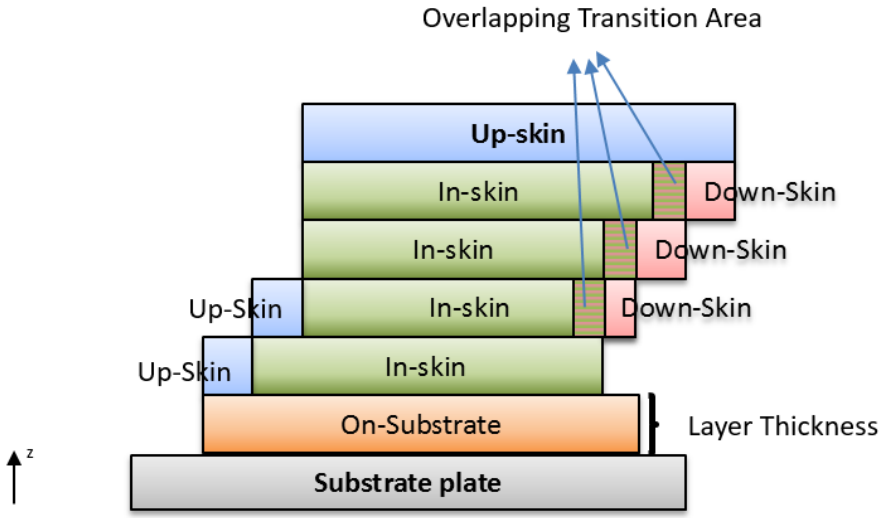
The chosen rescaling profile affects all parts on the platform. All the corresponding supports are rescaled accordingly.

## 10.3. Path Generation

After the slicing operation is performed various build strategies can be generated to fill in layers with scan vectors (hatches). Different zones in the slices of a part require different scanning and hatching strategies. This is because the solidified slices can interact with the solidified material in different ways. This is dependent on the thermal stresses inside and in between the slices, the desired material properties (for surface and volume of the parts), and the orientation of the parts on the platform. Also the supports and the way how they are oriented and attached to the part are of crucial importance. Due to all these reasons it makes sense to assign own build strategies and scanning parameters to different zones of the part. To make it possible, each layer gets divided into ‘Up Skin, ‘In Skin’, ‘Down Skin’ areas and ‘Solid Supports’.

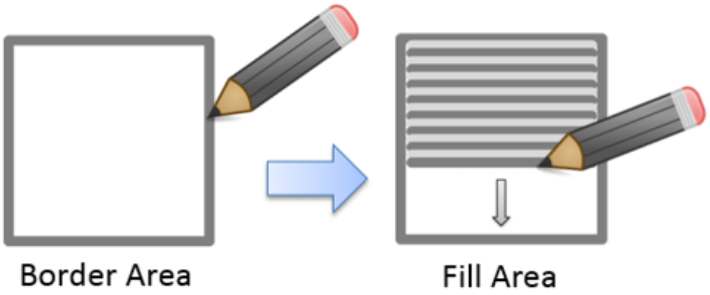



The ‘In Skin’ is defined as the area between ‘Up Skin’ and ‘Down Skin’ areas. Defining an overlapping area between Down Skin and In Skin is used to ensure solid lamination of In Skin and Up Skin areas helping to avoid occurrence of tiny regions with untreated material.

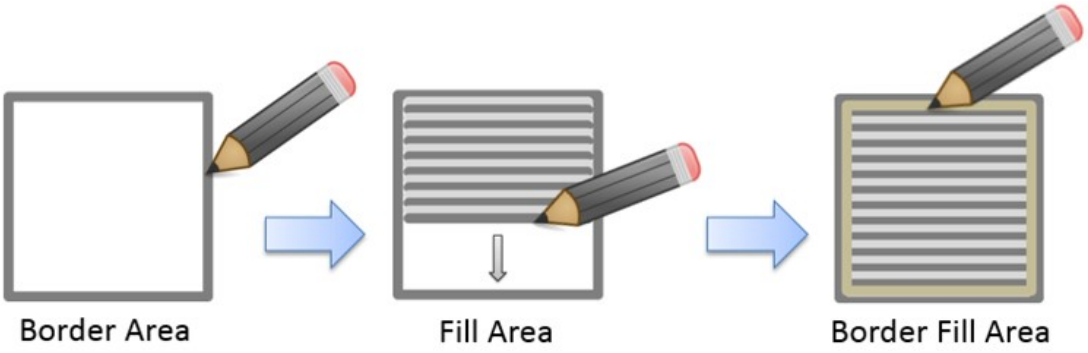


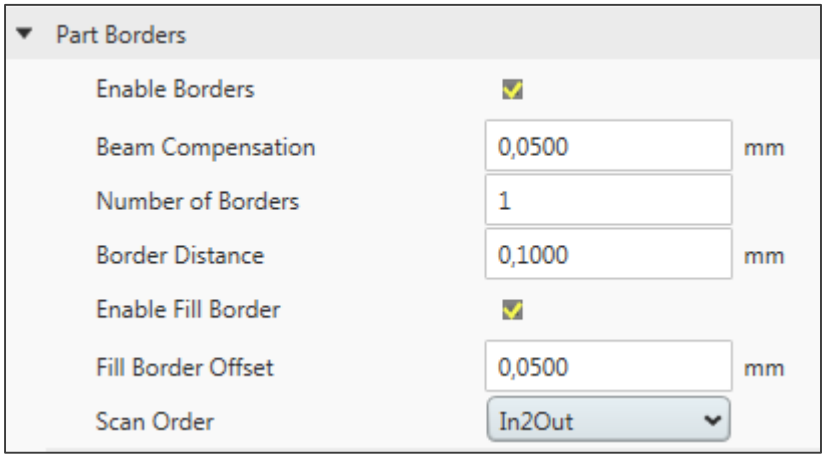
### 10.3.1 Part Borders

The Part Border is a contour that surrounds the fill area, e.g. In Skin, Up Skin and/or Down Skin. It defines the outer surface of the part.

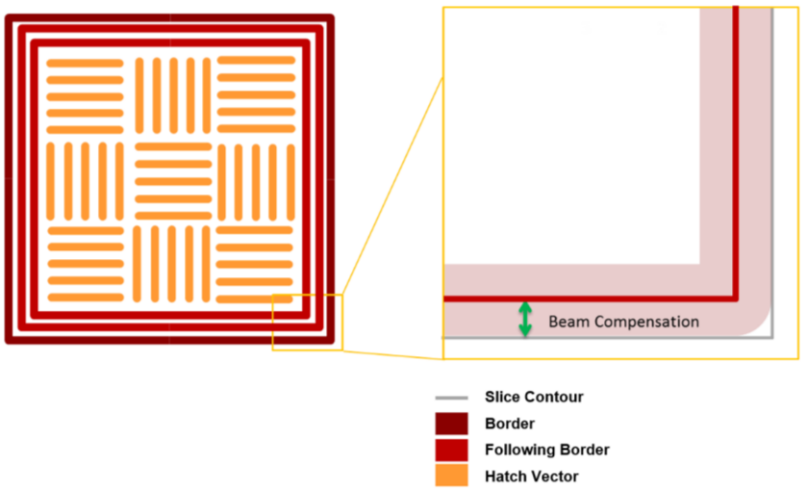
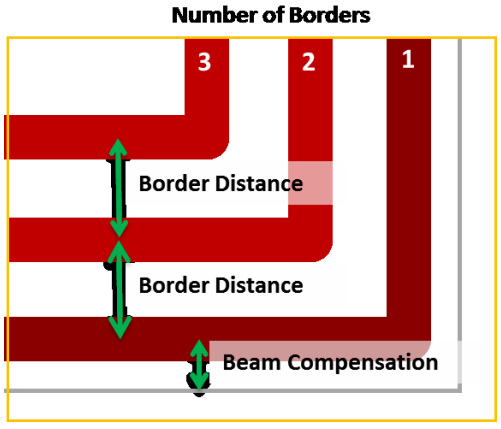



Fill Borders are generated to close gaps that are created when a hatch vector and a border converge. It glues together the hatches and the Part Border, and is often printed last, when shrinkage has mostly settled because of heat dissipation.



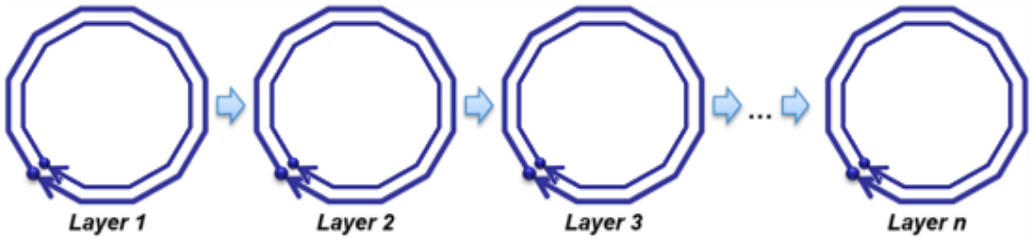

| Parameter | Description |
|---|---|
| ***Enable Borders*** | Enable or disable Part Border via the checkbox: |

| | |
|---|---|
| | ☑ Borders enabled |
| ***Beam Compensation*** | This value compensates for the melting pool width. It determines an offset between the original slice contour and the outermost border to guarantee the correct build size of the part.<br>Entering a value (e.g. 0.06 mm) will offset the outermost border to the inside of the slice contour as shown in the illustration below.<br>  |
| ***Number of Borders*** | Determines the amount of borders to be generated.<br>Entering “1” will create one border.<br>Entering “2” will create one border and one Following Border.<br>All higher numbers will increase the amount of Following Borders. |
| ***Border Distance*** | Defines distance between the borders. The distance between following and Fill Border is not considered when defining this value.<br>  |
| ***Enable Fill Border*** | Enable or disable the Fill Borders via the checkbox:<br>☑ Fill Borders enabled |
| ***Fill Border Offset*** | The distance between innermost Border and Fill Border. Consider the Hatch Offset when defining this value. |
| ***Scan Order*** | Please refer to section 12.3.1 Scan Order on page 110. |

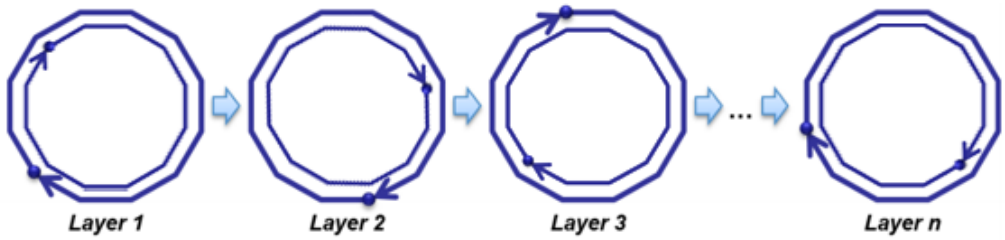
### Start Point Relocation

Part Borders starting points are randomly distributed from one to the next layer to avoid visible marks on the part surface. If enabled, it is applied to the outermost, following and fill in border.


Two modes are available:




**None**: Start Point Relocation disabled



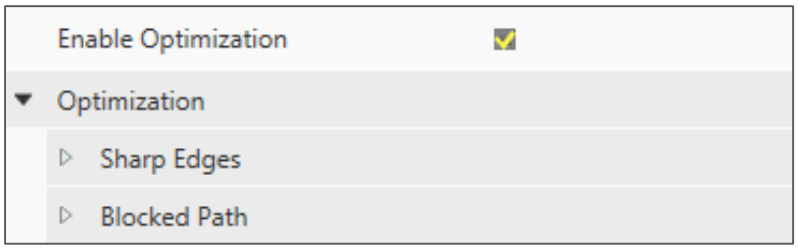

**Random**: Start Point Relocation enabled

**Note**

Only existing vectors are considered for the Start Point Relocation, no new vectors are inserted.

### Optimization

Optimization will improve the quality of part borders in certain geometrical situations.

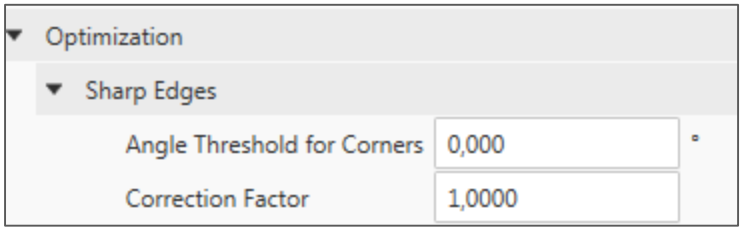



Optimization has to be explicitly enabled to be generated.

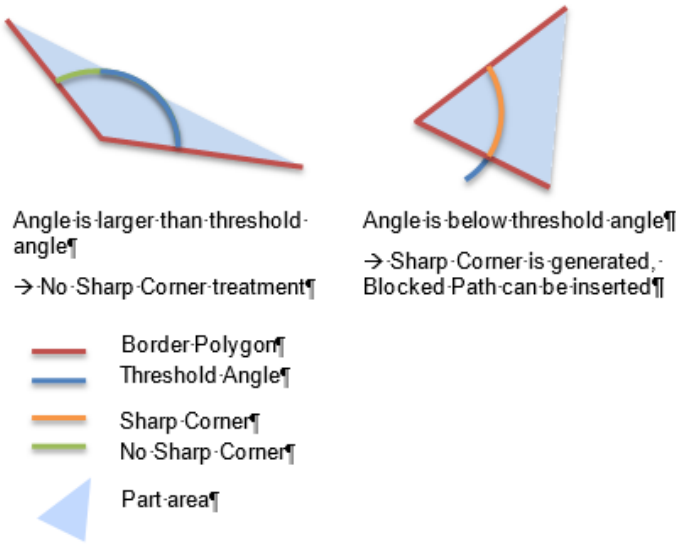
> **Note**
>
> Due to complex operations enabling this option extends the processing time significantly.

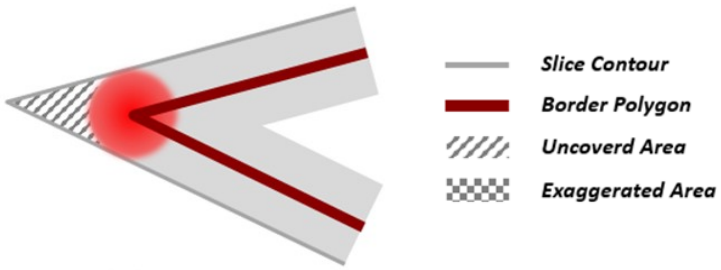
### Sharp Edges

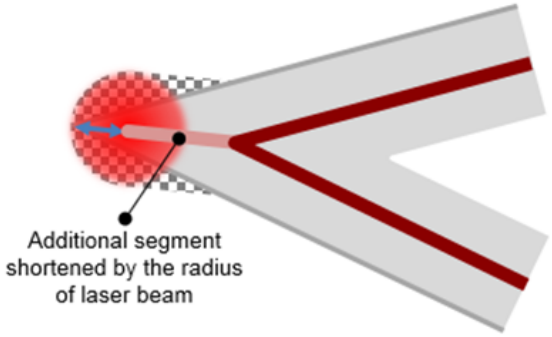
This feature helps to avoid uncovered areas at sharp edges during printing caused both by beam compensation issue and cone-shaped laser beam.



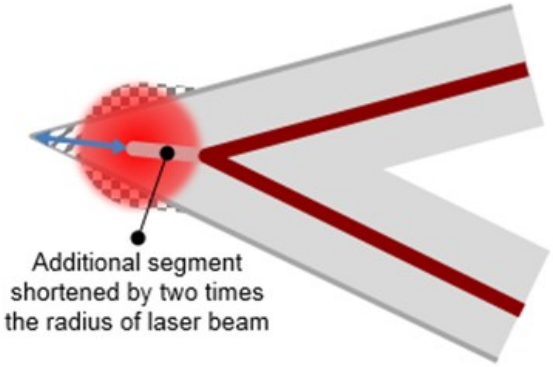

| Parameter | Description |
|---|---|
| ***Angle Threshold for Corners*** | The angle between two vectors is checked. Only angles below this value are considered for offset correction. Angles are defined in degrees. |

| | |
|---|---|
| |  |
| ***Correction Factor*** | This parameter defines the length of a segment that is additionally scanned in a corner between the original slice contour and the beam compensated Border.<br>In this process the whole corner path (from the original slice contour to the offset contour) gets shortened by the Correction Factor value multiplied by the Radius of the Laser Beam (Correction Factor*Radius Laser Beam). |



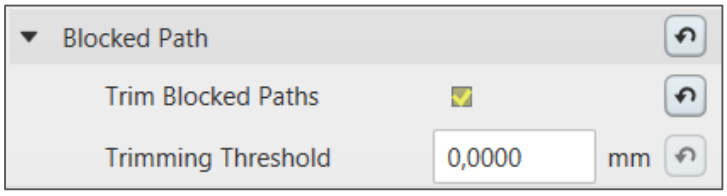




**Shortened Corner Path by Radius * Correction Factor (=1.0)**



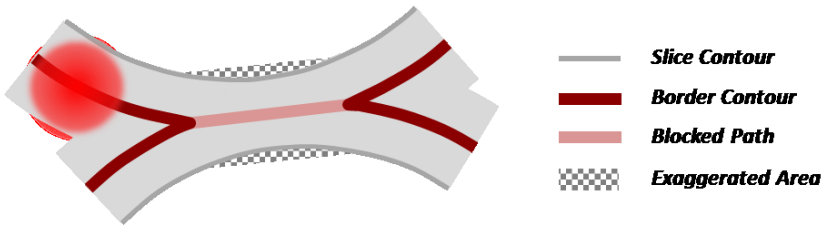

**Correction Factor = 2.0**

### Blocked Paths



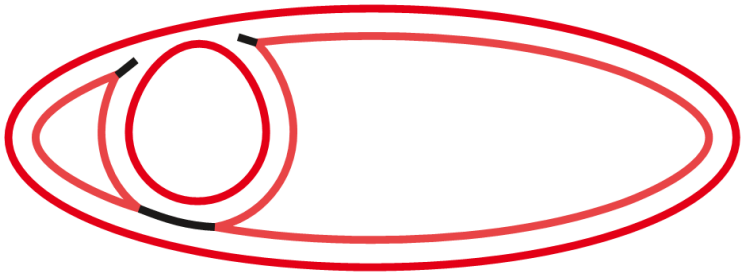

A Blocked Path is a segment that is created in geometrically thin areas which would not be scanned at all. It helps maintaining the original geometry of the part that could otherwise not be realized because of physical limitations such as the beam diameter.


**Blocked Paths disabled**

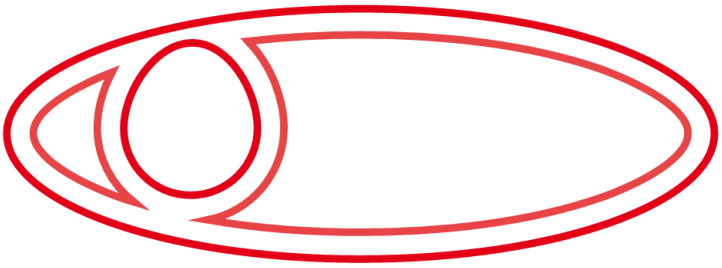



**Blocked Paths enabled**

| Parameter | Description |
|---|---|
| ***Trim Blocked Paths*** | This feature prevents from generating too much material in geometrically narrow areas of additional Borders. It is applied only when more than one border is defined. |
| ***Trimming Threshold*** | Defines part regions (thin walls) which are thinner than the given threshold. In these regions blocked path is trimmed. The smaller the threshold value the more Blocked Paths remain. If the Trimming Threshold value is larger than the Border Distance all Blocked Paths are removed.<br>Segments of the outermost border are never trimmed. |



Blocked Path is trimmed from the thin region which is thinner than the Trimming Threshold



All Blocked Paths are removed; due the Trimming Threshold being larger than the Border Distance

The outermost Border

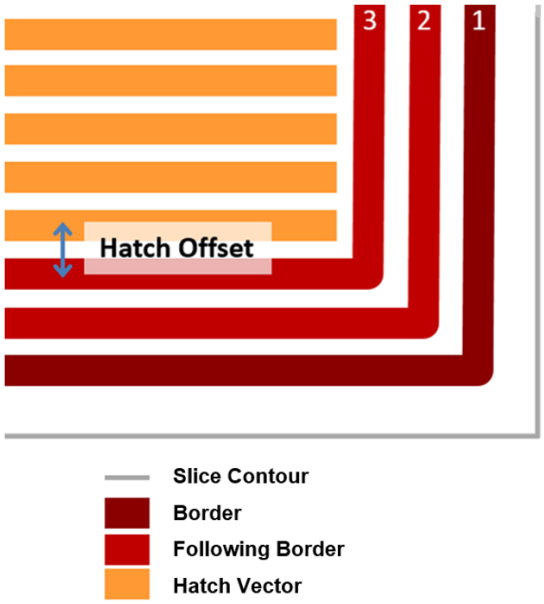
Following Border

Blocked Path

The beam speed, power and diameter for the Blocked Paths can be set in the Scanning section.

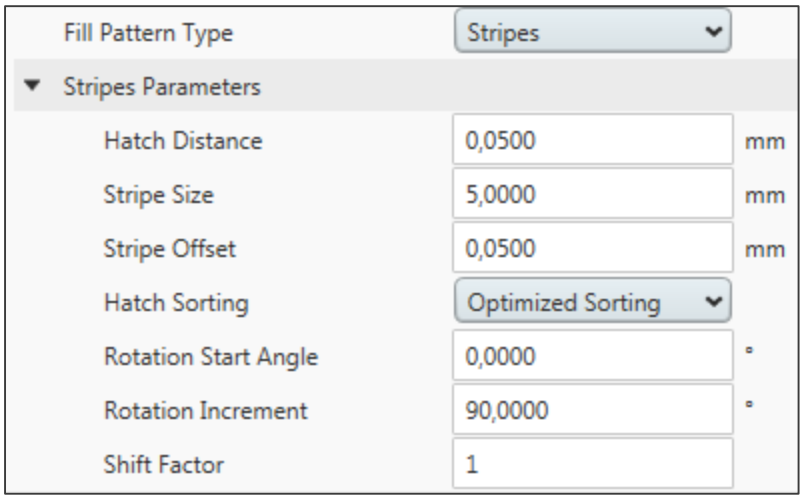
### 10.3.2 In Skin

To fill inner areas of a layer, parallel scan vectors, called hatches, are generated.

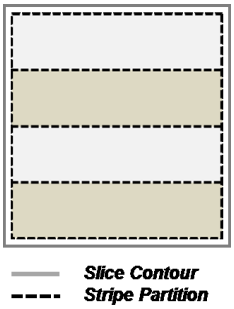

| Parameter | Description |
|---|---|
| ***Hatch Offset*** | The Hatch Offset defines the distance between the innermost border and the fill pattern.<br>  |
| ***Fill Pattern Type*** | In the drop-down menu, the Fill Pattern Type can be selected.<br>Different patterns are possible:<br>— Stripes<br>— Chess<br>— No Pattern<br><br>When a pattern is applied, the entire hatching area is divided into smaller sub areas to be filled in with the hatch vectors, to which defined Hatch Sorting style is applied. |

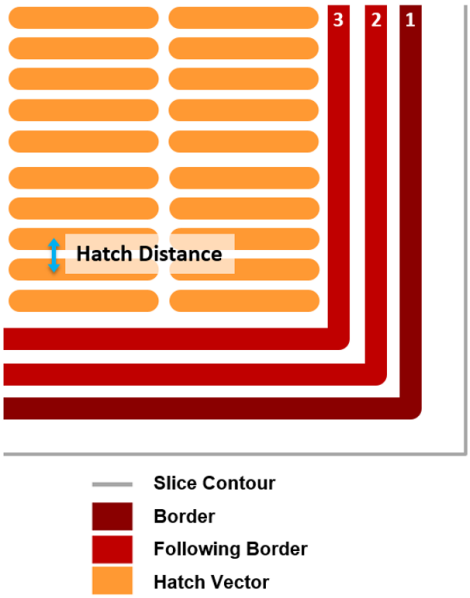
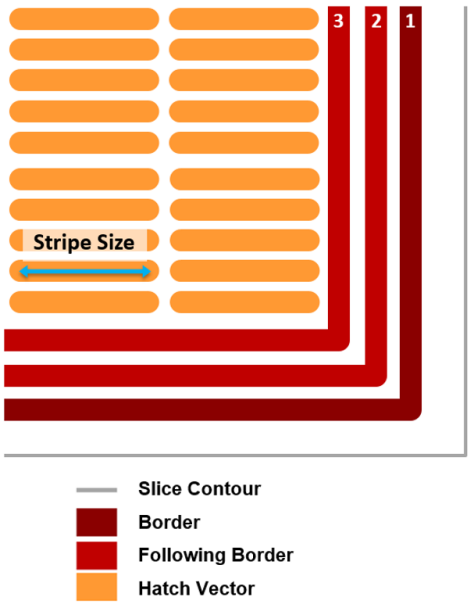
### Stripe Pattern

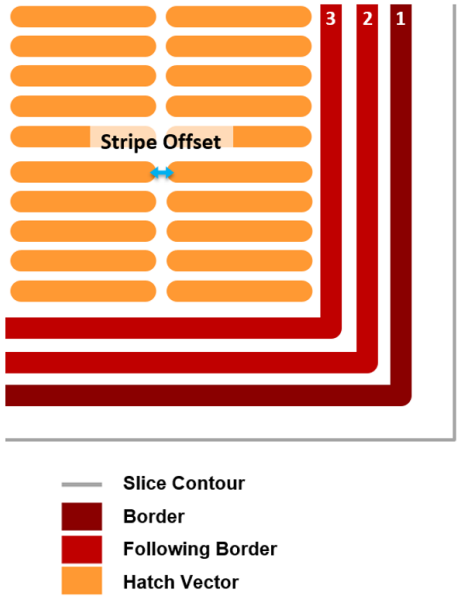
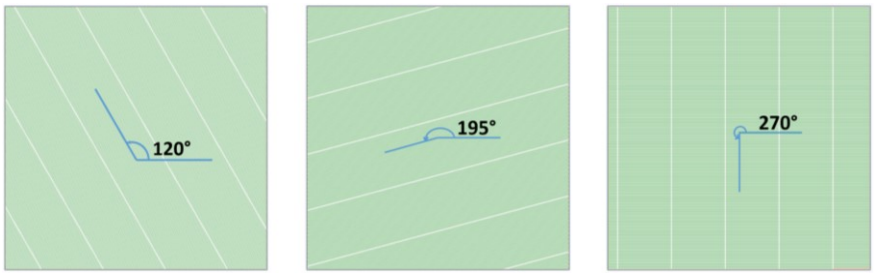
Is applied when selected from the Fill Pattern Type combobox.

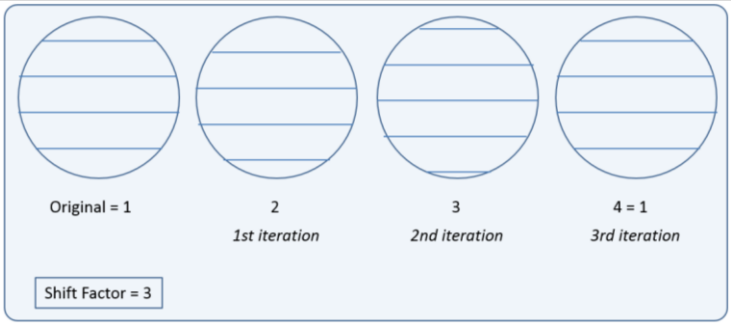



The Stripe Pattern will sub divide the hatching area in stripes, filled with hatch vectors following a selected vector direction.



| Parameter | Description |
|---|---|
| ***Hatch Distance*** | This is the distance between two neighboring hatch vectors.<br>  |
| ***Stripe Size*** | The Stripe Size parameter defines the width of a pattern element.<br>  |
| ***Stripe Offset*** | This parameter defines to which extent the pattern elements overlap or are distanced from each other. Positive values will result in a gap, negative values will result in an overlap. |

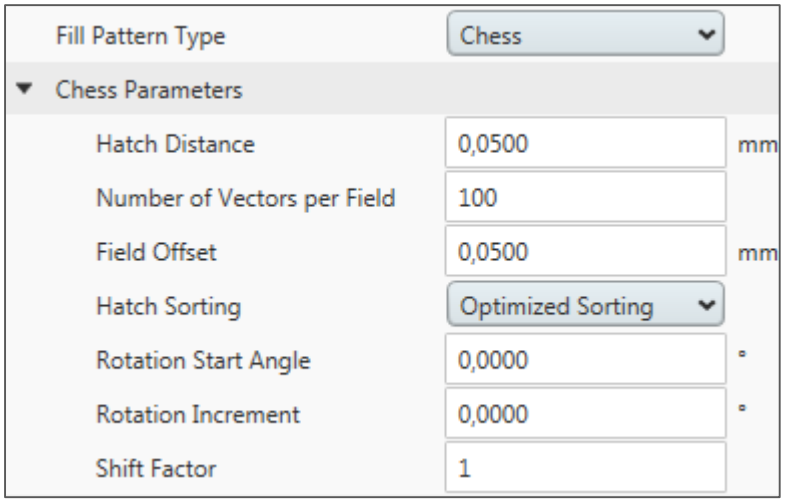
| | |
|---|---|
| |  |
| ***Hatch Sorting*** | Please see section 12.3.2 Hatch Sorting on page 110. |
| ***Rotation Start Angle*** | Hatch patterns can be rotated each following slice with a defined increment. This value defines the initial start angle from which rotation of the pattern starts. |
| ***Rotation Increment*** | Defines the increment value of the rotation angle between consecutive layers.<br>Below, three subsequent layers demonstrate the way stripes rotation works. The initial rotation is 120°, incremented by 75° per layer (when only In Skin is enabled):<br>  <br>Layer 1: 120° Layer 2: 195° Layer 3: 270°<br>If Down Skin is enabled Rotation Start Angle = 195°, considering In Skin first layer as the second layer. |
| ***Shift Factor*** | The Shift Factor will result in a shift of the entire pattern in y-direction; the original pattern position will be reached after *n* iterations, with *n* being the value entered. The shift factor can be used in combination with the rotation in order to perform a Reference Point Relocation. |



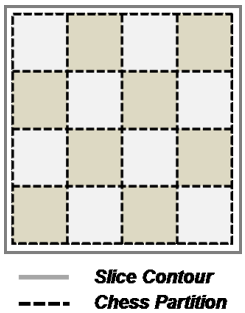

Both rotation and shift are used to “scatter” the residual stresses in the layer stack and to reduce porosity.

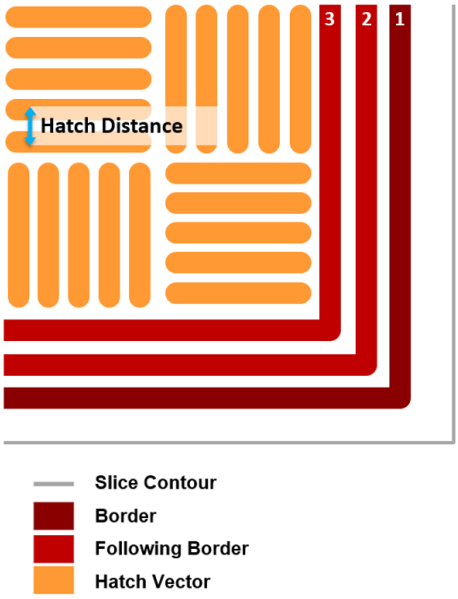
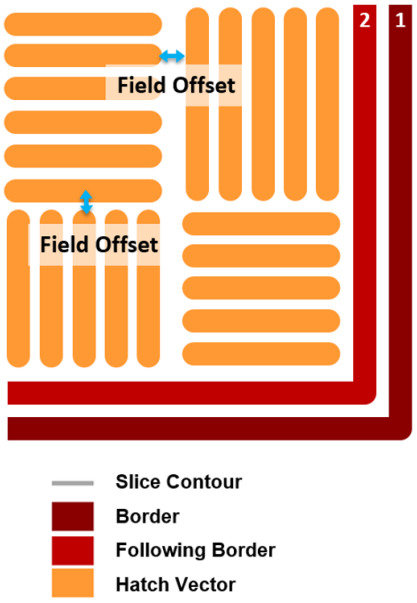
### Chess Pattern

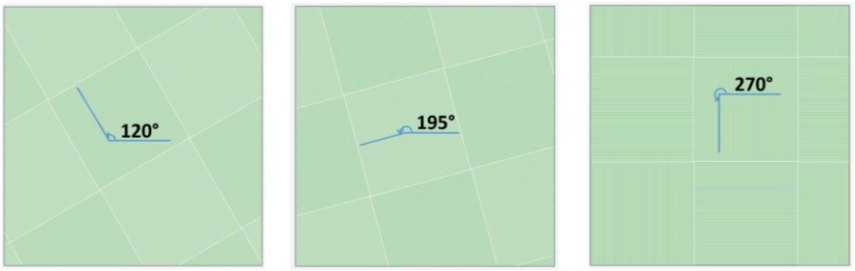
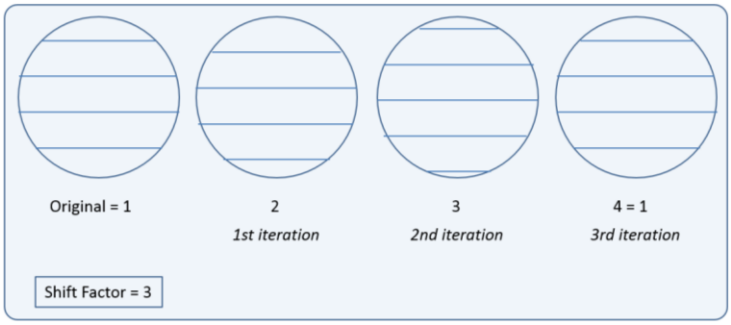
In the drop-down menu, the Chess Pattern can be selected.




The Chess Pattern will subdivide the complete hatching area in rectangular fields. Two different types called black and white fields are defined. The hatching vectors of those black and white fields are perpendicular to each other. The hatching vectors are always parallel to their field edge.

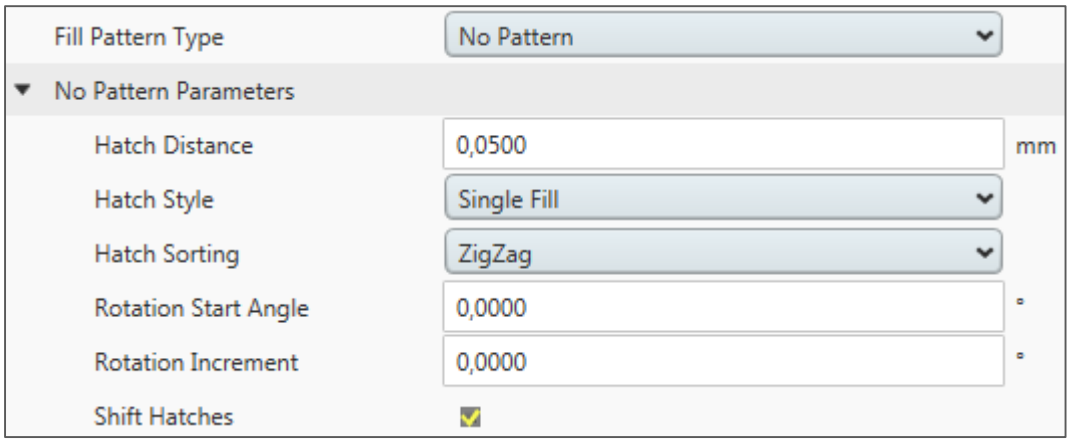


| Parameter | Description |
|---|---|
| ***Hatch Distance*** | This is the distance between two neighboring Hatch Vectors.<br>  |
| ***Number of Vectors per Field*** | The field size is defined by the Hatch Distance and the Numbers of Vectors intended to fill in the field. A field starts and ends always with a vector. |
| ***Field Offset*** | This parameter defines to which extent the pattern elements overlap or are distanced from each other. Positive values will result in a gap, negative values will result in an overlap.<br>  |
| ***Hatch Sorting*** | Please see section 12.3.2 Hatch Sorting on page 110. |
| ***Rotation Start Angle*** | Hatch patterns can be rotated each following slice with a defined increment. This value defines the initial start angle from which rotation of the pattern starts. |

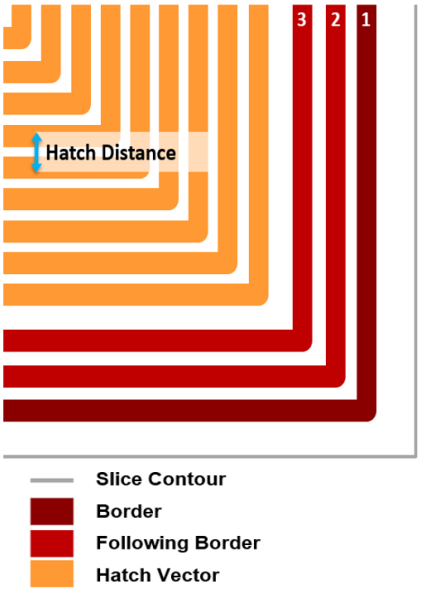
| | |
|---|---|
| ***Rotation Increment*** | This value can be used if the pattern is supposed to be incrementally rotated about a certain angle each layer. It defines the increment value of the rotation angle between consecutive layers.<br><br>Below, three subsequent layers can be seen. The initial rotation is 120°, incremented by 75° per layer (when only In Skin is enabled):<br><br>  <br><br>Layer 1: 120° Layer 2: 195° Layer 3: 270°<br><br>If Down Skin is enabled Rotation Start Angle = 195°, considering In Skin first layer as the second layer. |
| ***Shift Factor*** | The Shift Factor will result in a shift of the entire pattern in y-direction; the original pattern position will be reached after *n* iterations, with *n* being the value entered. The shift factor can be used in combination with the rotation in order to perform a Reference Point Relocation.<br><br>  <br><br><br>Both rotation and shift are used to “scatter” the residual stresses in the layer stack and to reduce porosity. |

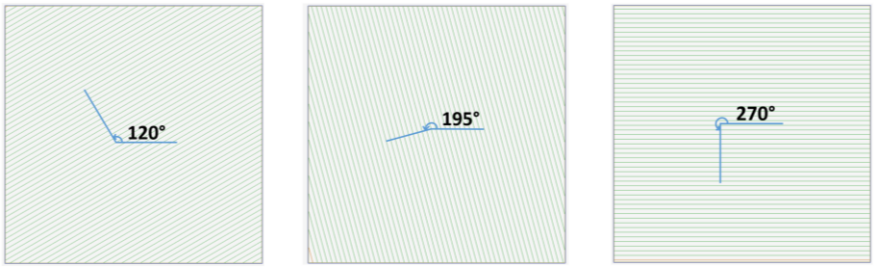
### No Pattern

In the drop-down menu, the Hatch Style *No Pattern* can be selected.



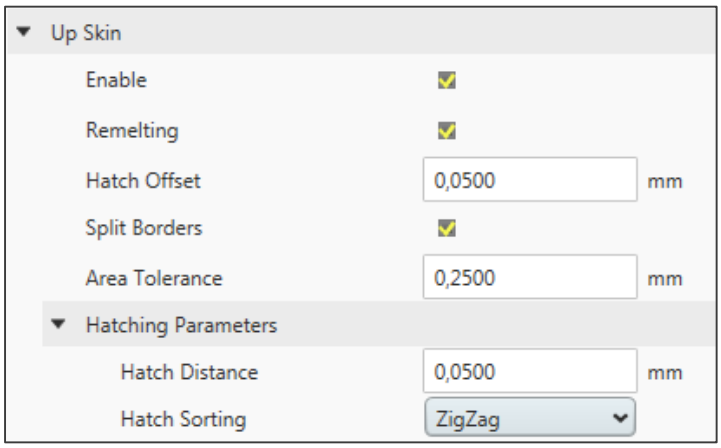

If No Pattern is activated, there is no subdivision of the hatching area in partitions.

| Parameter | Description |
|---|---|
| ***Hatch Distance*** | This is the distance between two neighboring Hatch Vectors of the fill pattern.<br>  |
| ***Hatch Style*** | Please refer to section 12.3.3 Hatch Style on page 111. |
| ***Hatch Sorting*** | Please see section 12.3.2 Hatch Sorting on page 110.<br>*(Not available with Offset Fill)* |
| ***Rotation Start Angle*** | Hatch patterns can be rotated each following slice with a defined increment. This value defines the initial start angle from which rotation of the pattern starts.<br>*(Not available with Offset Fill)* |

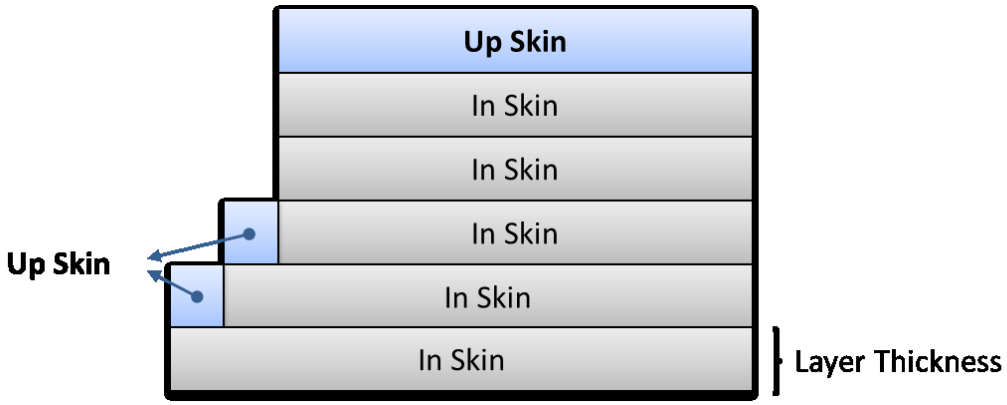
| | |
|---|---|
| ***Rotation Increment*** | This value can be used if the pattern is supposed to be incrementally rotated about a certain angle each layer. It defines the increment value of the rotation angle between consecutive layers.<br>Below, three subsequent layers can be seen. The initial rotation is 120°, incremented by 75° per layer (when only In Skin is enabled):<br>  <br><br>Layer 1: 120° Layer 2: 195° Layer 3: 270°<br>If Down Skin is enabled Rotation Start Angle = 195°, considering In Skin first layer as the second layer.<br>*(Not available with Offset Fill)* |
| ***Shift Hatches*** | Enable or disable shifting of hatch vectors via the checkbox:<br>☑ Shift Hatches enabled<br>*(Not available with Offset Fill)* |
| ***Order*** | Please see section 12.3.1 Scan Order on page 110.<br>*(Only available with Offset Fill)* |

### 10.3.3 Up Skin

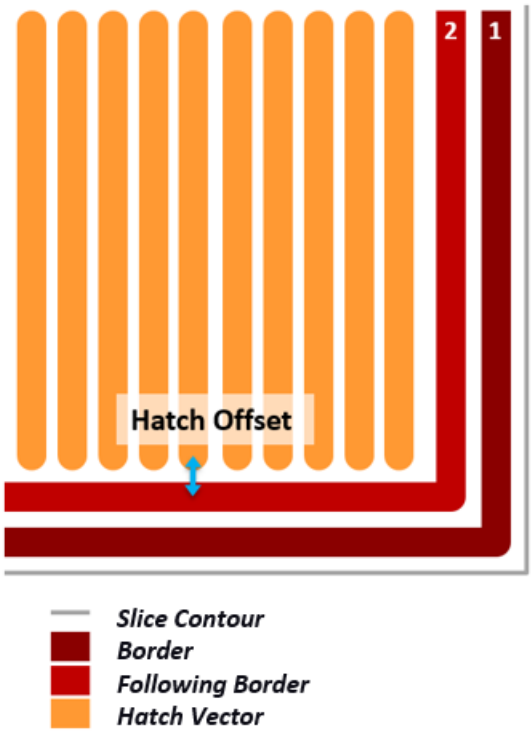
Area on a layer, above which there is no area to be exposed, is termed as Up Skin. If remelting is enabled Up Skin area will be additionally scanned with the In Skin hatching parameters.

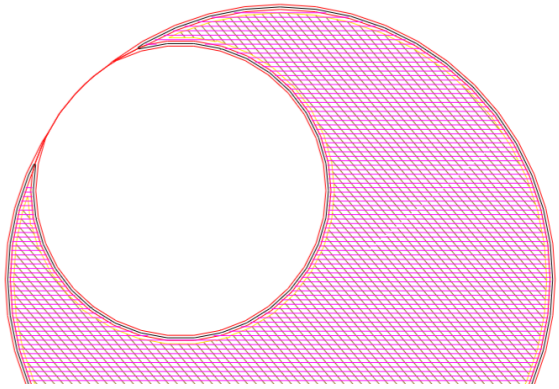
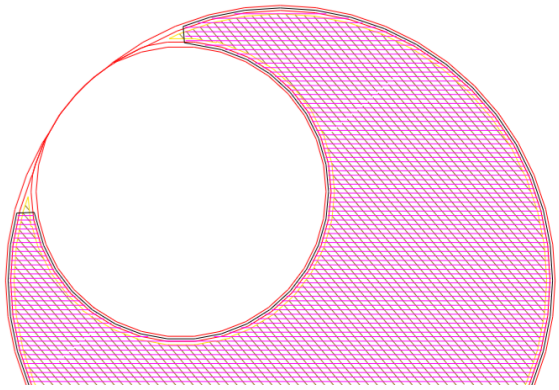


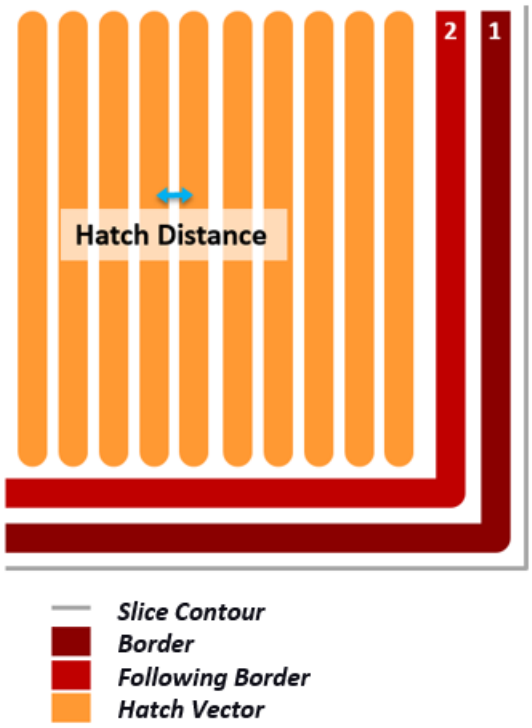

To determine whether there is an Up Skin area present in a slice, the current slice is compared with one slice above. The offset value sets a border offset on the current slice to calculate the area difference between the current slice and the slice above. If the value is positive it indicates that there is an upside surface. Then the next volume area is changed into an In Skin area.




These areas are part of the visible up-facing surface of the 3D model. A different Build Strategy for these areas can be applied for a better surface quality.

| Parameter | Description |
|---|---|
| ***Enable*** | Enable or disable the Up Skin hatching via the checkbox:<br>☑ Up Skin hatching enabled |
| ***Remelting*** | Enable or disable the Up Skin Remelting via the checkbox:<br>☑ The complete slice (Borders and Fill Area) is first scanned as In Skin area. The Up Skin and Transition Area are rescanned and thus remelted (with the Up Skin Remelting scanning parameters).<br>☐ The In Skin areas are scanned with the In Skin build strategy (defined in the In Skin) and the Up Skin areas are scanned with the Up Skin build strategy (defined in the Up Skin). |
| ***Hatch Offset*** | The Hatch Offset defines the distance between the innermost Border and the Up Skin hatching area.<br>  |
| ***Split Borders*** | ☑ Border which follows the contour of the same slice is split into Up Skin and In Skin border according to the area it belongs to, creating two different vector types<br>☐ Border which follows the contour of the same slice is subjected to NO split and is defined as In Skin border vector type |
| ***Area Tolerance*** | The Area Tolerance is applied after an Up Skin area is detected. |

| | |
|---|---|
| | It is used to limit and enhance the calculation of the Up Skin Area. It filters out narrow sections regardless of the fact that single vectors may fit into the calculated area.<br>  <br>**No Up Skin Tolerance**<br>  <br>**0.5mm Tolerance** |
| ***Hatch Distance*** | This is the distance between two neighboring Hatch Vectors of the Up Skin area. |

| | |
|---|---|
| |  |
| ***Hatch Sorting*** | Please see section 12.3.2 Hatch Sorting on page 110. |

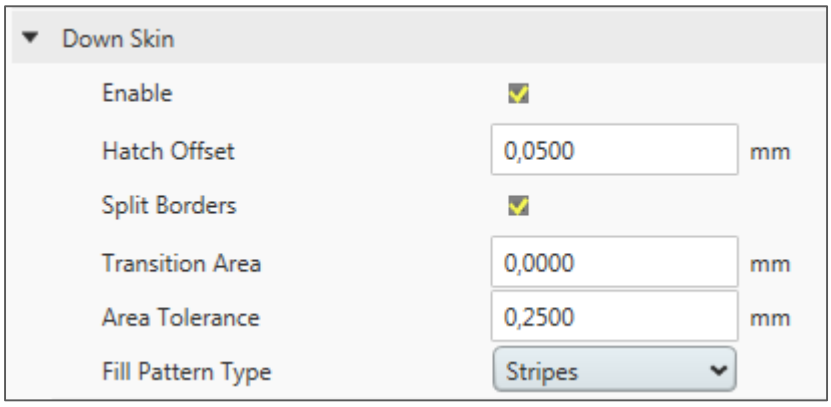
**Note**

Enabling Up Skin will increase the processing time.

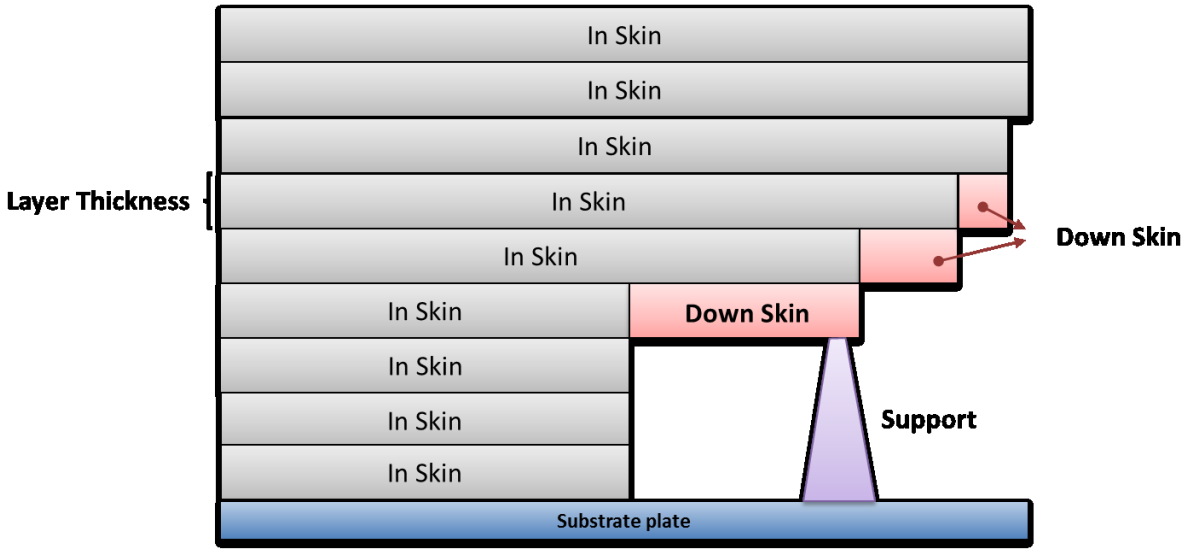
### 10.3.4 Down Skin

A Down Skin is a surface area facing down without volume in the previous layer and therefore scanned on powder.

These areas are part of the visible down-facing surface of the 3D model. A different build strategy (especially energy input) for these areas can be used to ensure a better surface quality.



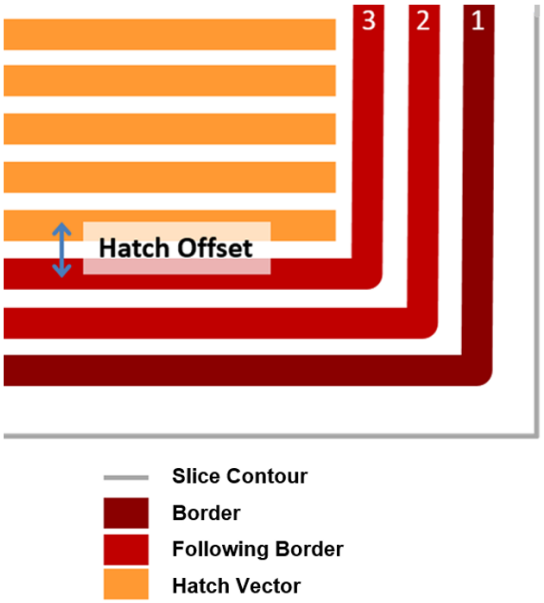

To determine whether there is a Down Skin area present in a slice, the current slice is compared with the slice below. The offset value that will be set by a user sets a border offset on the current slice to calculate the area difference between the current slice and the slice below. If the value is positive, this indicates that this is a downside surface. Then a previous volume area is changed into a Down Skin area.

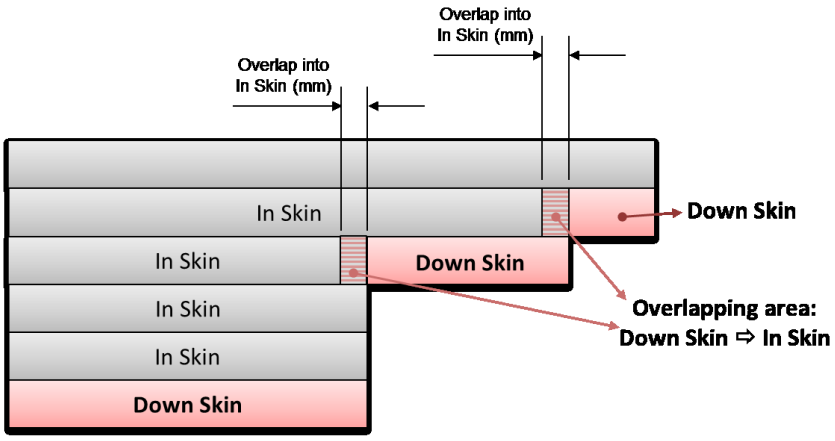



**Note**

- Down Skin areas are not detected for the very first layer attaching the substrate plate.
- Down Skin areas will be applied to connecting areas between solid supports and part.

The Down Skin hatching has to be explicitly activated in order to be generated.

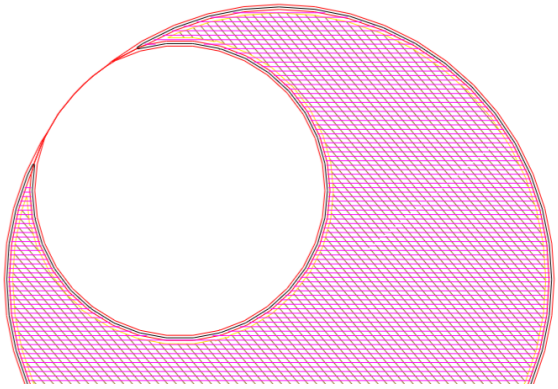
| Parameter | Description |
|---|---|
| ***Enable*** | Enable or disable the Down Skin hatching via the checkbox:<br>☑ Down Skin hatching enabled<br>In Skin hatches will be replaced by Down Skin hatches in the Down Skin area. |
| ***Hatch Offset*** | The Hatch Offset defines the distance between the outermost Border and the Down Skin hatching area.<br>  |
| ***Split Borders*** | ☑ Border which follows the contour of the same slice is split into Down Skin and In Skin border according to the area it belongs to, creating two different vector types<br>☐ Border which follows the contour of the same slice is subjected to NO split and is defined as In Skin border vector type |
| ***Transition Area*** | A Transition Area should be processed from the Down Skin area into the In Skin, based on an offset value. It ensures a solid lamination of the Down Skin and In Skin area. In these Transition Areas Down Skin hatches are located on top of In Skin hatches. |



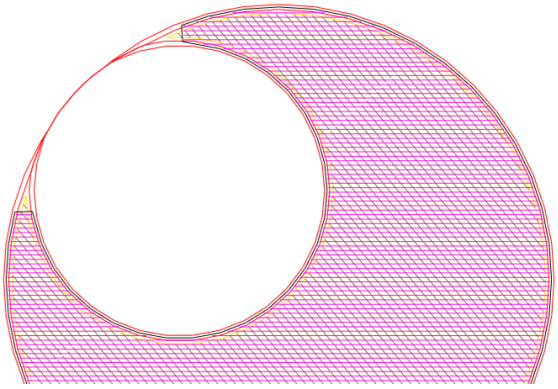

***Area Tolerance***

The Area Tolerance is applied after a Down Skin area is detected.

It is used to limit and enhance the calculation of the Down Skin Area. It filters out narrow sections regardless of the fact that single vectors may fit into the calculated area.



**No Down Skin Tolerance**



**0.5 mm Tolerance**

***Fill Pattern Type***

A pattern style can be defined. Different patterns are available:

- Stripes
- Chess
- No Pattern

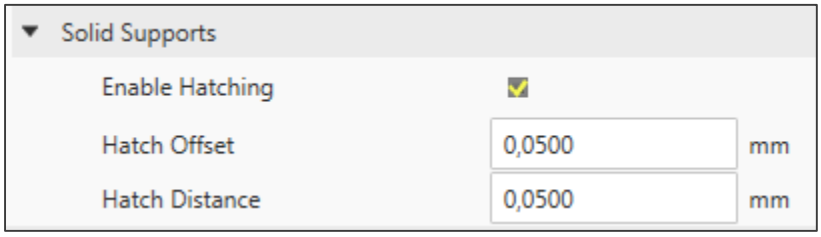
| | |
|---|---|
| | Please see subsections of 10.3.2 In Skin on page 87 and following for information on different pattern styles. |

**Note**

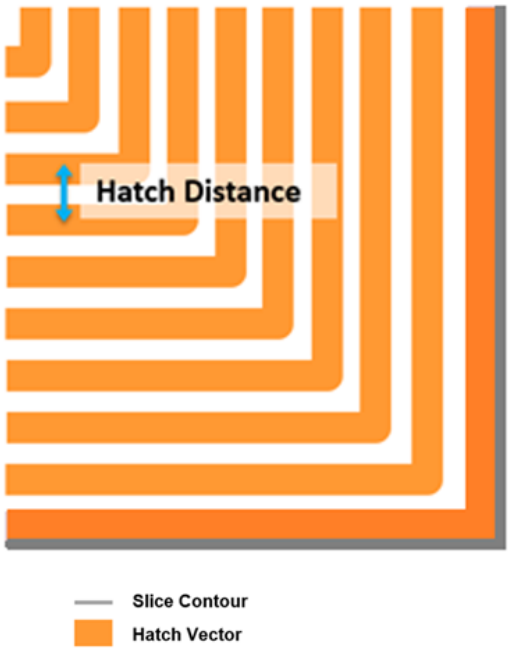
Enabling Down Skin will increase the processing time.

### 10.3.5 Solid Supports

Separate vector types are required for supports, to assign dedicated strategies. A difference is made between solid and non-solid supports. Non-solid supports typically have no volume and only consist out of lines. Solid supports have a volume and the slices need to be hatched.




| Parameter | Description |
|---|---|
| ***Enable Hatching*** | Enable or disable hatching for Solid Supports via the checkbox:<br>☑ Solid Support hatching enabled |
| ***Hatch Offset*** | The Hatch Offset defines the distance between the slice contour and the Solid Support hatching area.<br>  |

| | |
|---|---|
| ***Hatch Distance*** | This is the distance between two neighboring hatch vectors of the Solid Support area.<br>  |

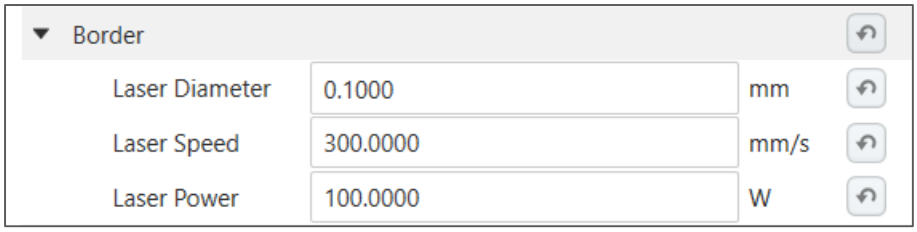
# 11 Scanning

The Scanning Parameters are added as metadata to the output .job file and can be interpreted by the machine control software to steer the machine and its building process accordingly. They are specified per vector type.

The following laser parameters apply to all available vector type categories, which can be found in the build profile.

- Laser Diameter
- Laser Speed
- Laser Power

All vectors can be modified:




| Parameter | Description |
|---|---|
| ***Laser Diameter*** | Determines the diameter of the laser beam for this vector type in mm |
| ***Laser Speed*** | Determines the scanning speed of the laser for this vector type in mm/s |
| ***Laser Power*** | Determines the Laser Power for this vector type in Watt |

By clicking on an entry (e.g. In Skin) the vector types will be shown:

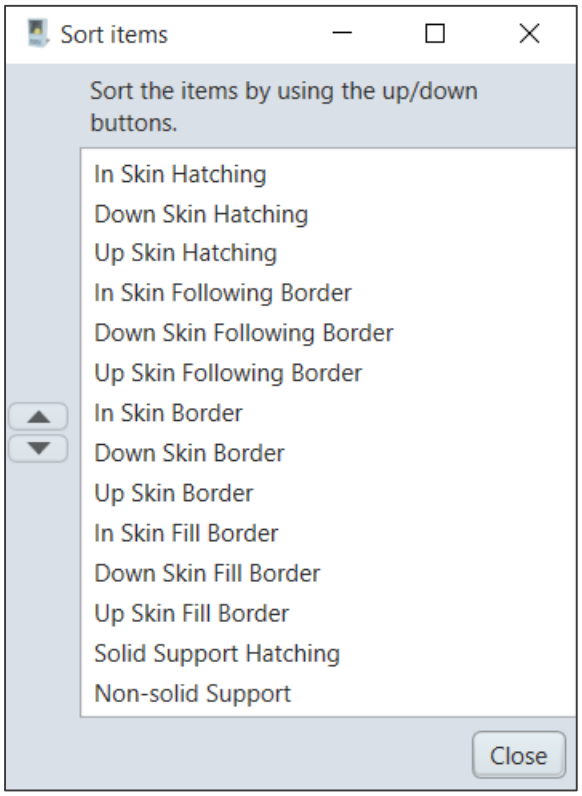
# 12 Scanning Order

The scanning order for parts and their supports, the border and the fill area vectors is defined here. In the Build Order section the general scanning order direction for all parts can be altered regarding their position on the platform and gas flow direction (if sorting against gas flow is enabled). Both sorting of vectors within a part and within the hatch pattern itself is described.

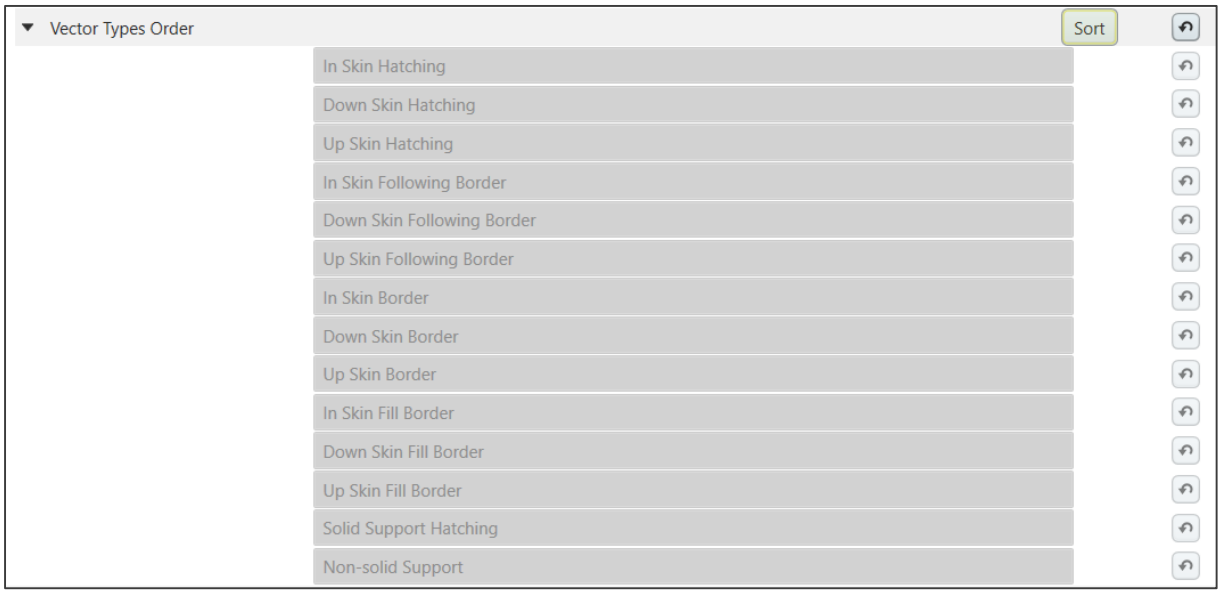
## 12.1. Build Order

### 12.1.1 Vector Types Order

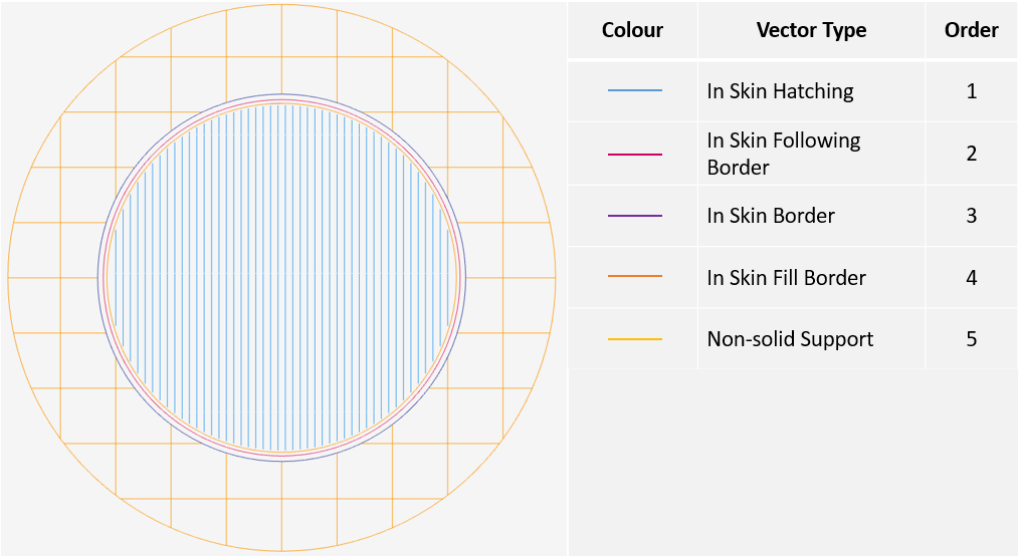
The Vector Types Order is a list where user can set the order in which each of the vector types is exposed. To change a vector types order press “Sort” button and change position of vector types in the menu using up-down control buttons.




According to this list build processor will expose the layer starting with the 1st vector type in the list, continue with the 2nd vector type and so on.




On the example shown below for every layer vector types will be printed explicitly in the order shown on the screenshot below. The Vector Types Order list shows all available vector types. In the case the vector type is not present in the layer *(e.g. Up Skin and/or Down Skin build strategies, fill border are disabled in the UI; Up Skin and/or Down Skin are not present in the layer)*, the vector type remains in the list but will not be taken into account.

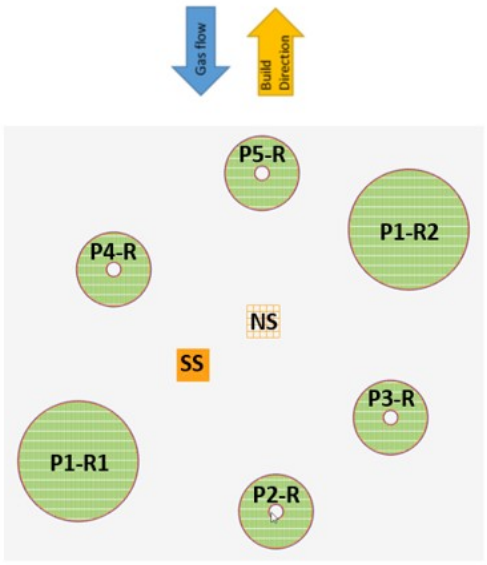


| Colour | Vector Type | Order |
|---|---|---|
| | In Skin Hatching | 1 |
| | In Skin Following Border | 2 |
| | In Skin Border | 3 |
| | In Skin Fill Border | 4 |
| | Non-solid Support | 5 |

Here, one should pay attention on solid and non-solid supports which have their own vector types different from those defined for parts. Supports will be printed in the explicit output order defined in the vector type list (in the current example non-solid support is the last in the Vector Types List and, consequently, will be printed the last).

### 12.1.2 Build Order Mode

Slice cut planes create intersection contours with a model of a part. Intersection between one part and a slice cut plane can result in multiple contours referred further in the text as individual **regions.**




| Colour | Vector Type | Vector Type Number |
|---|---|---|
| | In Skin Hatching | $VT_1$ |
| | In Skin Following Border | $VT_2$ |
| | In Skin Border | $VT_3$ |
| | In Skin Fill Border | $VT_4$ |
| | Solid and Non-Solid Support | $VT_{5-6}$ |

Abbreviations:

P – Part

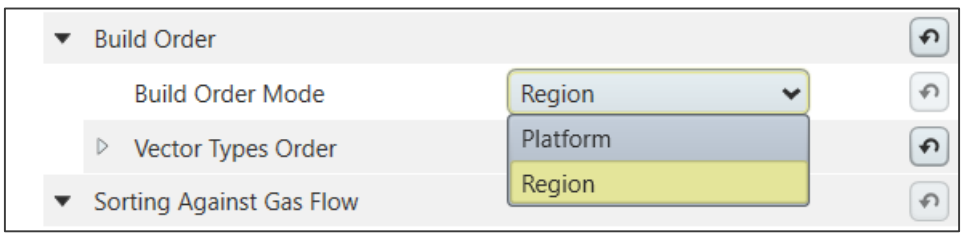
R – Region

SS – Solid Support

NS - Non-solid Support

VT – Vector Type

To assign a printing order to each of the regions, one of two build order modes can be used. A user can choose between **platform** and **region** sorting. Selected build order mode influences the rest of the output order.




| Parameter | Description |
|---|---|
| ***Region*** | When **region** build order mode is selected vector types are scanned one after another within the same region rather than platform-wide until the whole region is printed. |

The order of regions is arranged so that printing starts with the regions the most distanced from a gas flow source and continues with those positioned further in the direction **against** the gas flow. If to take into account the Vector Types Order shown on the screenshot on the page 106 all vector types are printed in a sequence illustrated in the corresponding table below.

| **Build Order Mode** | Region |
|---|---|
| **Gas Flow Angle** | 90˚ |
| **Build Order of Regions** | P2-R → P1-R1 → P3-R → SS → NS |
| **Build Order of Vector Types** | P2-R-$VT_1$ → P2-R-$VT_2$ → P2-R-$VT_3$ → P2-R-$VT_4$ → P1-R1-$VT_{1..4}$ → … → P1-R1-$VT_{1..4}$ → P3-R-$VT_{1..4}$ → P4-R-$VT_{1..4}$ → P1-R2-$VT_{1..4}$ → P5-R-$VT_{1..4}$ → SS-$VT_5$ → NS-$VT_6$ |

P1-R1 and P1-R2 regions belong to the same part but will not be printed one right after another.

***Platform***

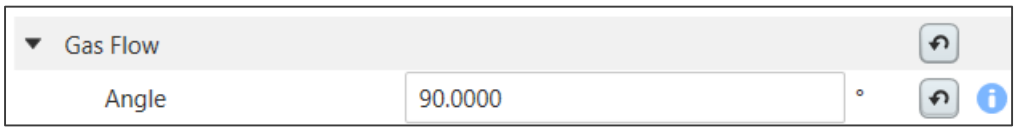
When **platform** build order mode is active, all same vector types are scanned one after another and each in a corresponding region. The order of regions is the same as in the region build order mode. If to take into account the Vector Types Order shown on the screenshot on the page 106 all vector types are printed in a sequence illustrated in the corresponding table below.

| **Build Order Mode** | Platform |
|---|---|
| **Gas Flow Angle** | 90˚ |
| **Build Order of Regions** | P2-R → P1-R1 → P3-R → P4-R →P1-R2 → P5-R → SS → NS |
| **Build Order of Vector Types** | P2-R-$VT_1$ → P1-R1-$VT_1$ → P3-R-$VT_1$ → P4-R-$VT_1$ →P1-R2-$VT_1$ → P5-R-$VT_1$ → SS-$VT_5$ → NS-$VT_6$ |

## 12.2. Sorting Against Gas Flow

There is always an inert gas (nitrogen or argon) flowing over the platform in a defined direction. This gas flow is primarily used to maintain the required inert atmosphere during processing to minimize the oxidation of the metal powder. However, it also serves a secondary function by removing any process by-products such as vaporized powder (condensate) and sputtered powder particles from the path of the laser, which may affect the laser beam properties and cause powder bed unevenness.

Consequently, direction of the inert gas flow across the build platform together with sorting against gas flow can significantly influence the quality and reproducibility of components across the build area. Direction of the gas flow can be defined in Configure Printer/Machine Properties/Gas Flow.



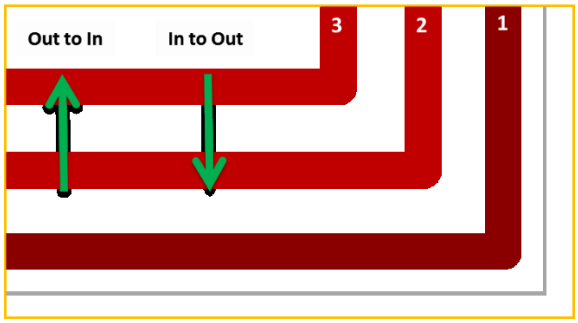

## 12.3. Fill Area Vector Sorting

After defining the sorting methods for the platform, the Fill Area Vector Sorting describes the build order of hatches within an area.

### 12.3.1 Scan Order

Defines the order of the Offset Fill hatch vectors or borders. The user can select:

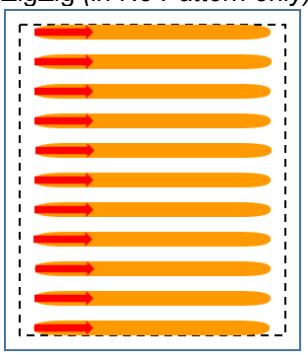
- In2Out
- Out2In



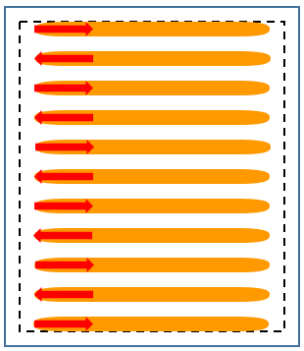

### 12.3.2 Hatch Sorting

There are three different hatch sorting styles available. The sorting of the scanned vectors of the fill area is defined here. In the drop-down menu the user can select:

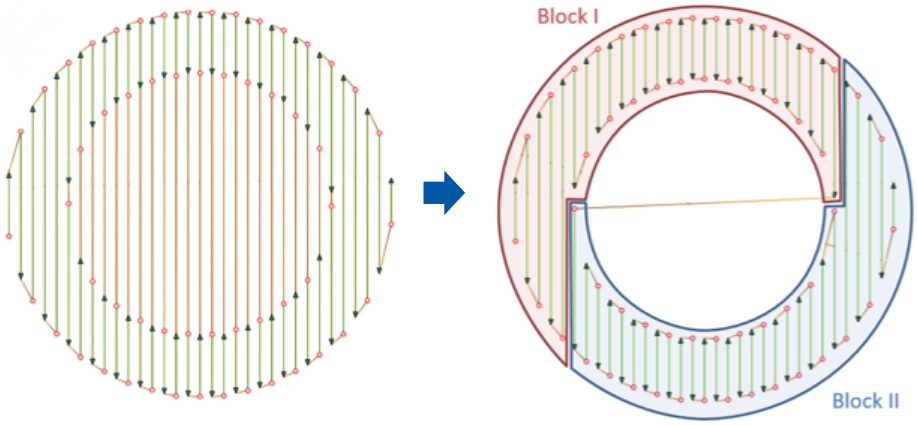
- ZigZig *(in No Pattern only)*



- ZigZag



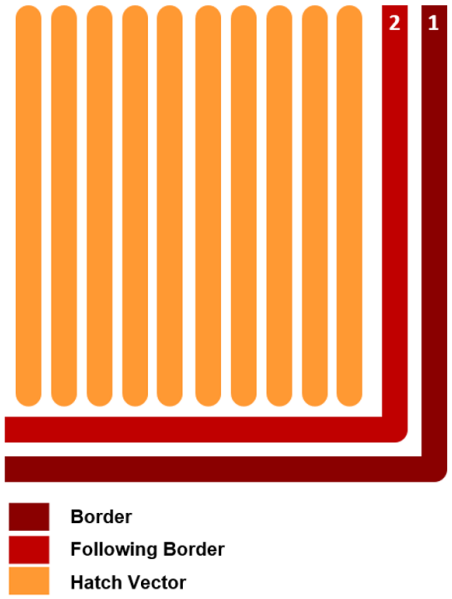
— Optimized Sorting
Optimized Sorting combines functionality of both ZigZag and jumps optimization. To minimize the number of jumps the Optimized Sorting will group the vectors in blocks following the shape of the slice. The figure below shows the difference between 2 sorting mechanisms: ZigZag on the left, Optimized Sorting on the right.



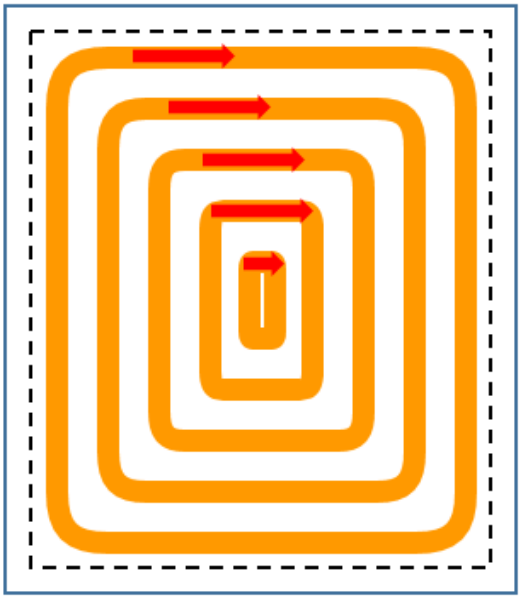

### 12.3.3 Hatch Style

There are three different Hatch Styles available when *No Pattern* Fill Pattern Type is selected:

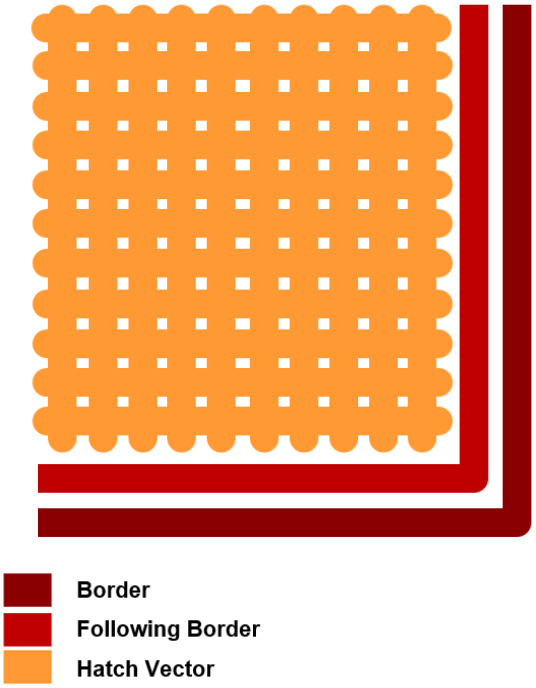
— Single Fill




— Offset Fill

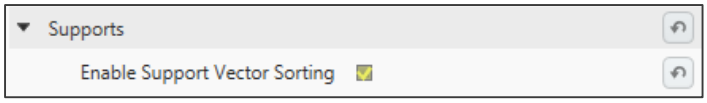


— Cross Fill




## 12.4. Support Vector Sorting

The parameters in this section are applied on non-solid (wall) supports only.




| Parameter | Description |
|---|---|
| ***Enable Support Vector Sorting*** | Enable or disable Support Vector Sorting via the checkbox:<br>☑ Support Vector Sorting<br>If activated, gas flow direction is taken into account following the same logic of hatch vectors sorting against gas flow even if the Gas Flow is deactivated (see also chapter 12.2 Sorting Against Gas Flow on the page 109).<br>If deactivated, Support Vectors are printed in a random order and a number of jumps is minimized. |

# PART 3

## Frequently Asked Questions

PART 3 represents a question catalog.

The frequently asked question section explains the solving of common issues like ‘How to grant a computer read/write access to a network folder’.

Also typical error cases like ‘Unexpected open contours in … after slicing’ or ‘Uploading print job to machine’ are demonstrated.

It includes a list of Materialise offices worldwide including their contacts and explains how to create a report file for the support.

# 13 Slice Based Operations

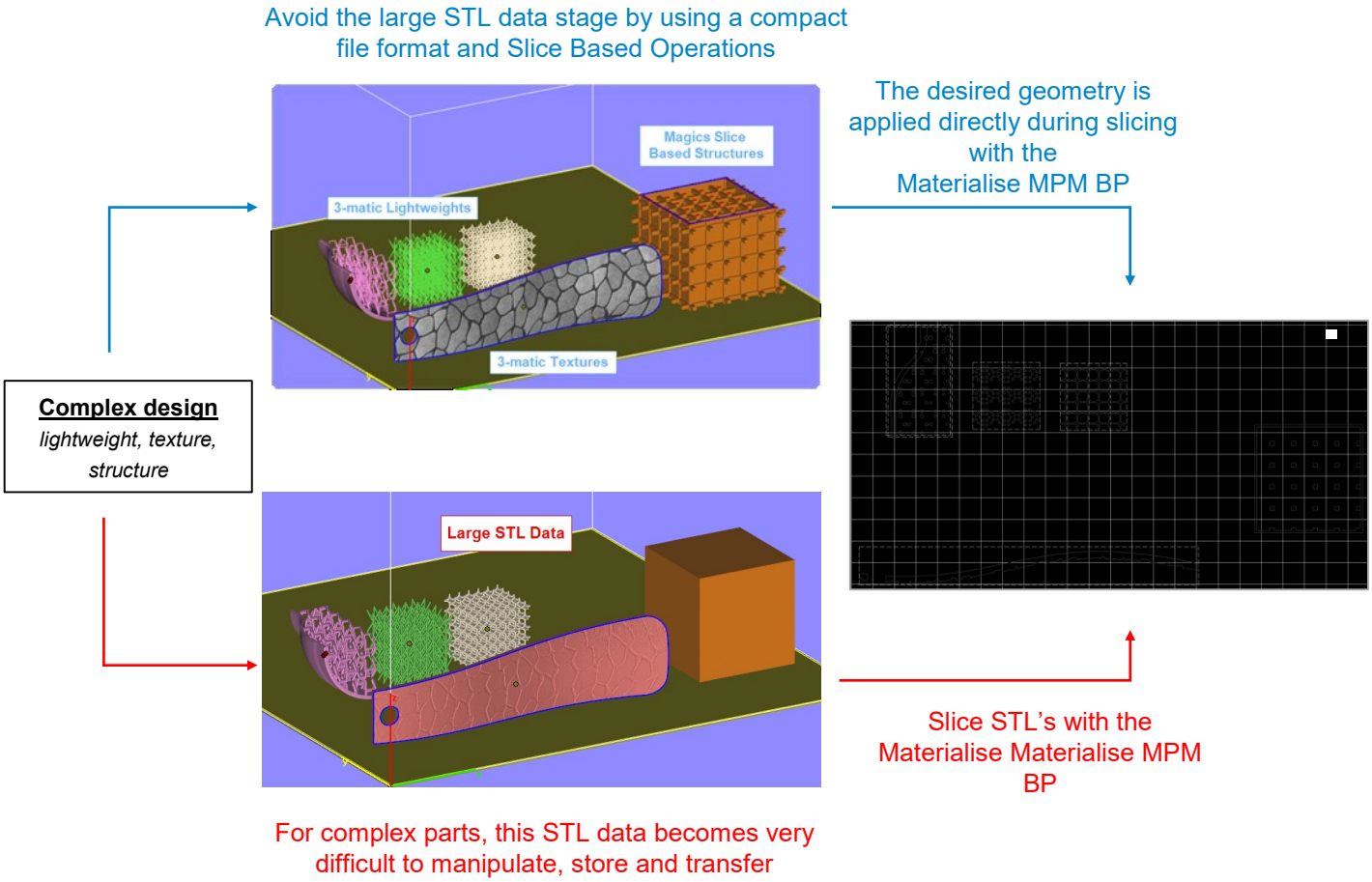
## 13.1. Why

Applying textures or structures to a model can easily result in very large STL files which become difficult to manipulate, store and transfer. Materialise has developed a technique to skip the intermediate STL file stage by generating the desired geometry directly into the slices using the Materialise Materialise MPM Build Processor.

## 13.2. How

**Materialise 3-matic$^{STL}$ software** models containing metadata about textures (texture bitmap, location and size of texture, white and black offsets) or structures (area, graphs, thickness of graphs) can be loaded into Materialise Magics software and placed on the build platform. The Materialise Materialise MPM Build Processor will then automatically apply the textures or structures directly into the generated slices.

**Materialise Magics software** offers a module to generate Slice Based Structures straight from within Materialise Magics software.




For more information on how to access slice based operations please visit http://software.materialise.com/making-complex-designs-printable

# 14 Frequently Asked Questions

## 14.1. How to create a report file

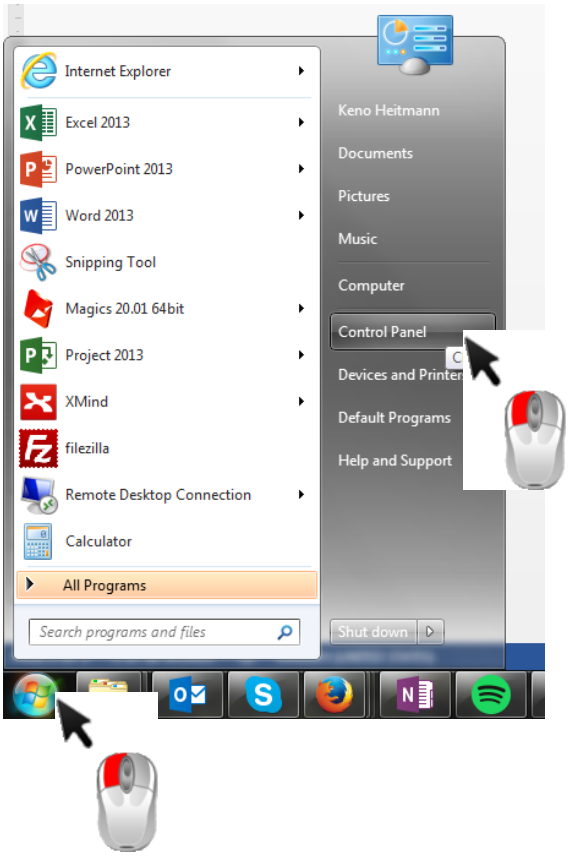
In case of unknown errors the technical support of Materialise needs more detailed information of what has happened with the Build Processor or Build Processor System.

This information can be provided by the Build Processor System by creating a report file collecting data which might be useful to detect the error.

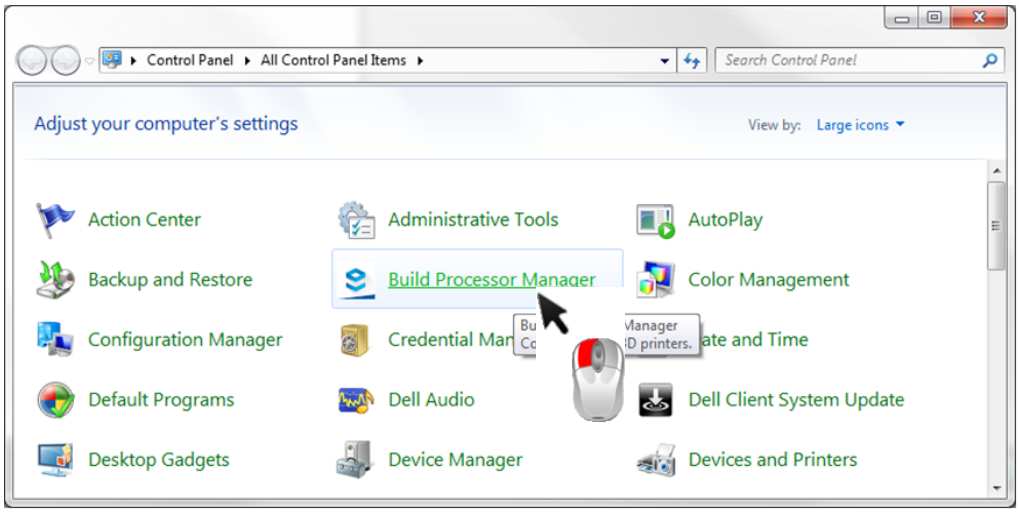
**Notification**

Please do the actions described below as soon as possible after the error appears.

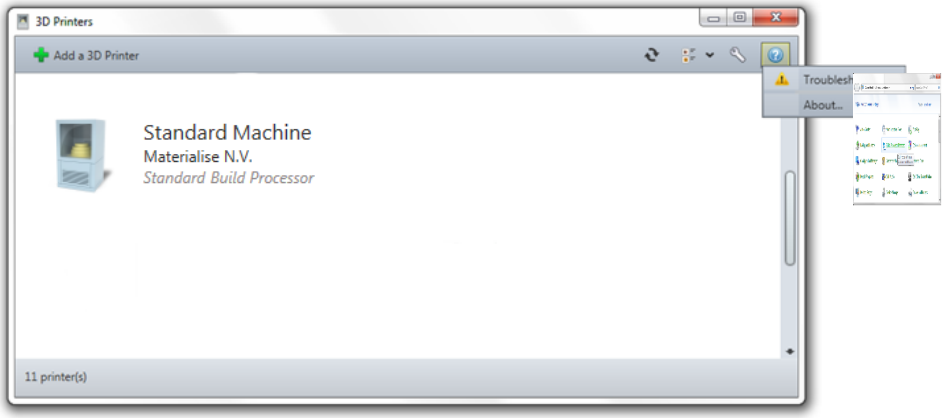
1. Open ‘Control Panel’.



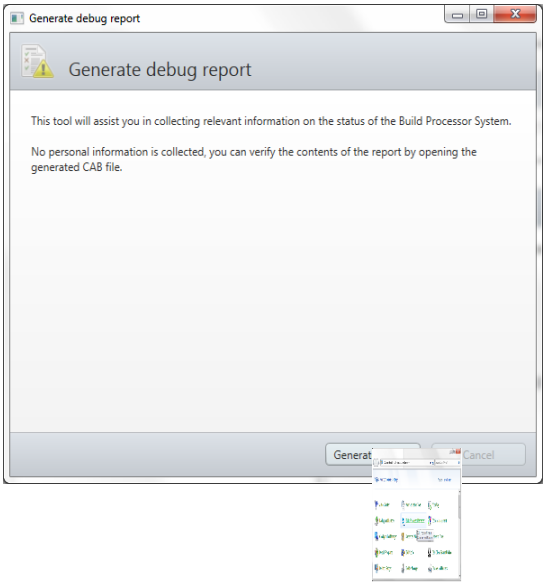
2. Click on ‘Build Processor Manager’.



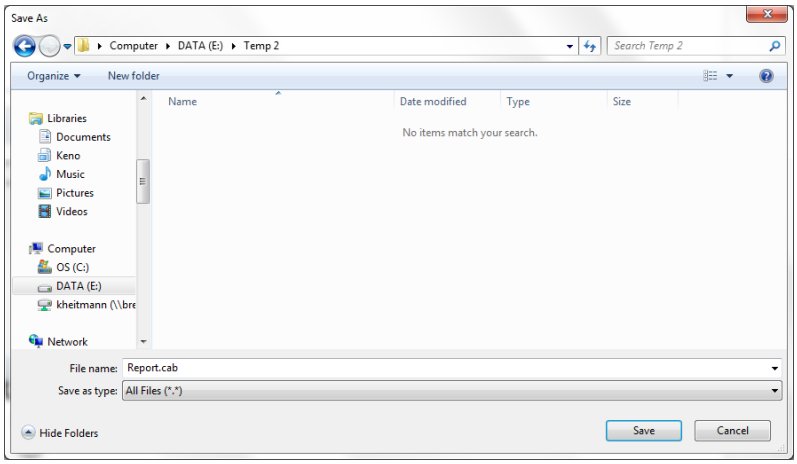

3. Click on the ‘Help’ button in the top right corner and click on ‘Troubleshooter’.




4. Press ‘Generate Report’ to collect all data.



5. Save report.cab to a temporary folder.




**Notification**

No personal data will be collected. The collected data are mainly log files of the Build Processor, information on the system environment, parameter files…

Before sending the report file to Materialise it is advised to open the report.cab to check the collected data. Make sure no data are enclosed which might be in conflict to the security policies of your company.

6. In order to send the report file successfully to Materialise the file must be zipped and password protected in order to pass the Materialise firewall.

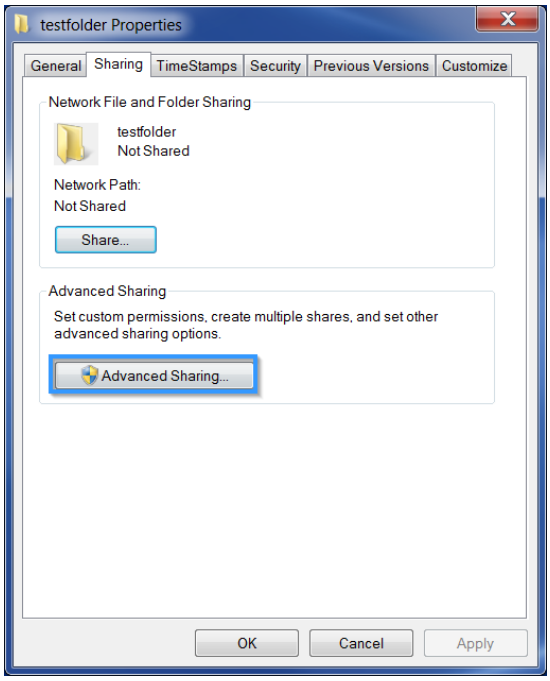
   *This step is temporary as Materialise is working on a more easy solution of sending the report file.*

7. Send the zipped file together with the password and a good error description to the technical support of Materialise.

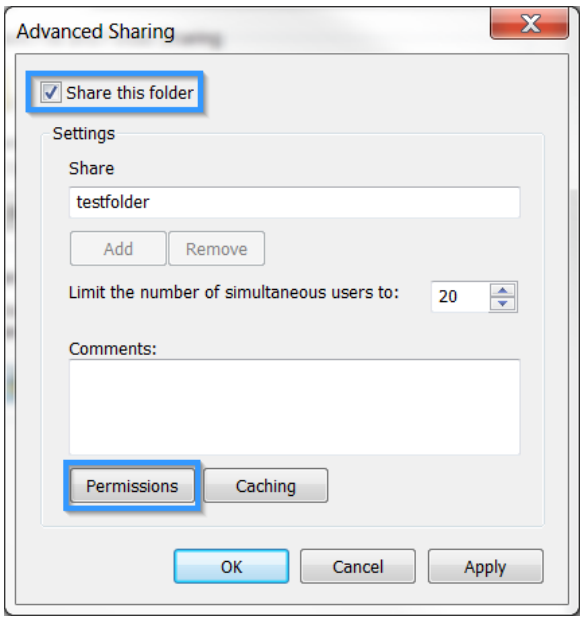
## 14.2. How to grant a computer read/write access to a network folder

The BP uploads the jobs under the *local system account* by default, meaning that you must give read/write access for the upload folder to the computer from which you are sending the job, in case the target folder is a network folder. The screenshots below illustrates how a computer can be given access to a folder (in Windows® operating system version 7):

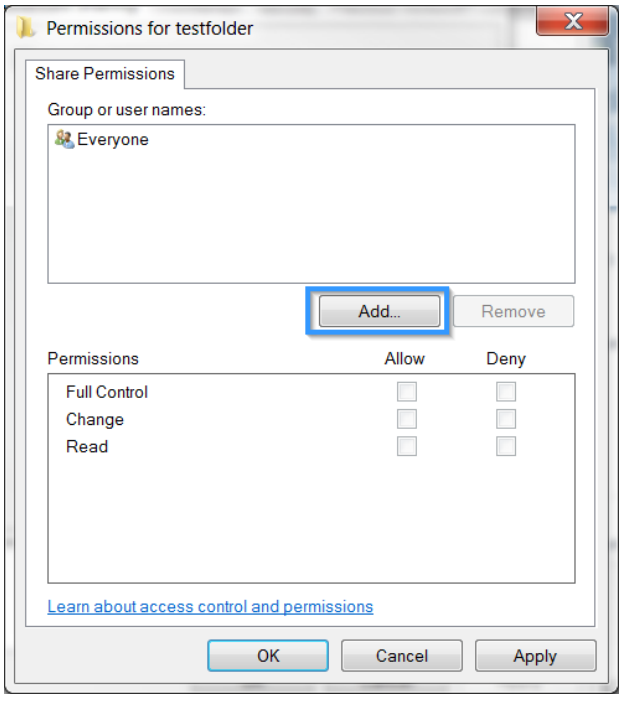
1. Right click on the folder and select *Properties*. Go to the tab *Sharing* and then click on *Advanced Sharing*


testfolder Properties
General
Sharing
TimeStamps
Security
Previous Versions
Customize
Network File and Folder Sharing
testfolder
Not Shared
Network Path:
Not Shared
Share...
Advanced Sharing
Set custom permissions, create multiple shares, and set other advanced sharing options.
Advanced Sharing...
OK
Cancel
Apply

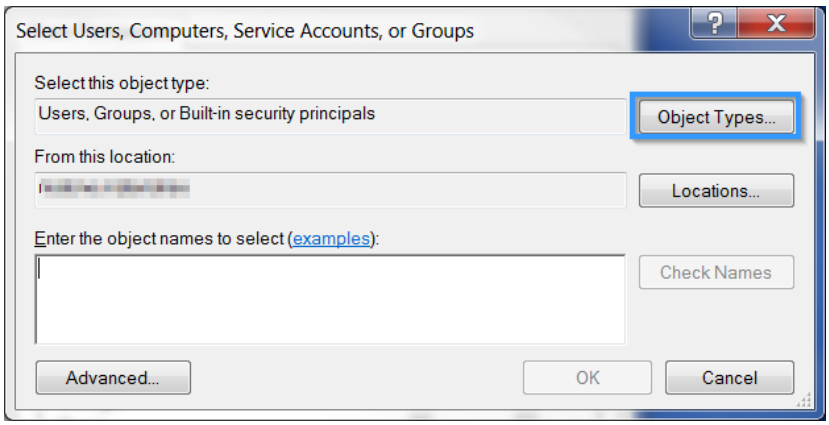
2. Check the option *Share this folder* and click on *Permissions*



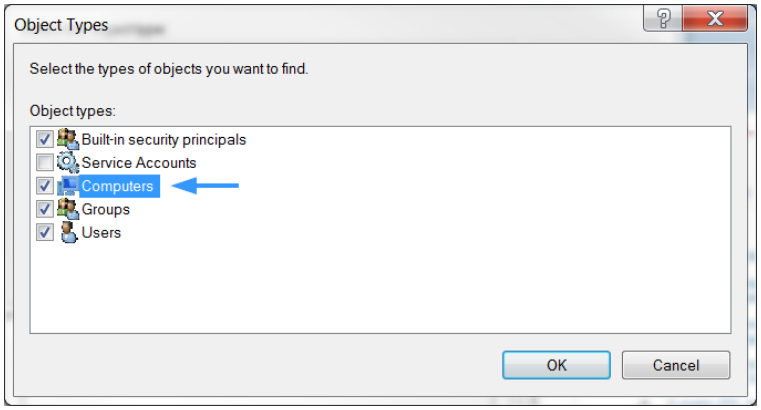

3. Click on *Add*



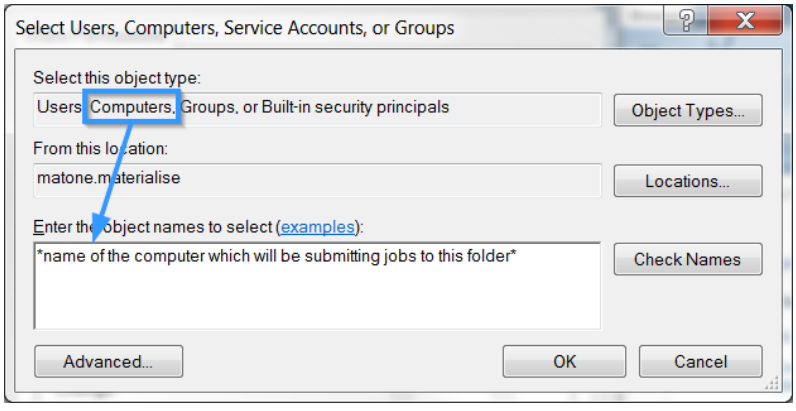
4. Click on *Object Types*



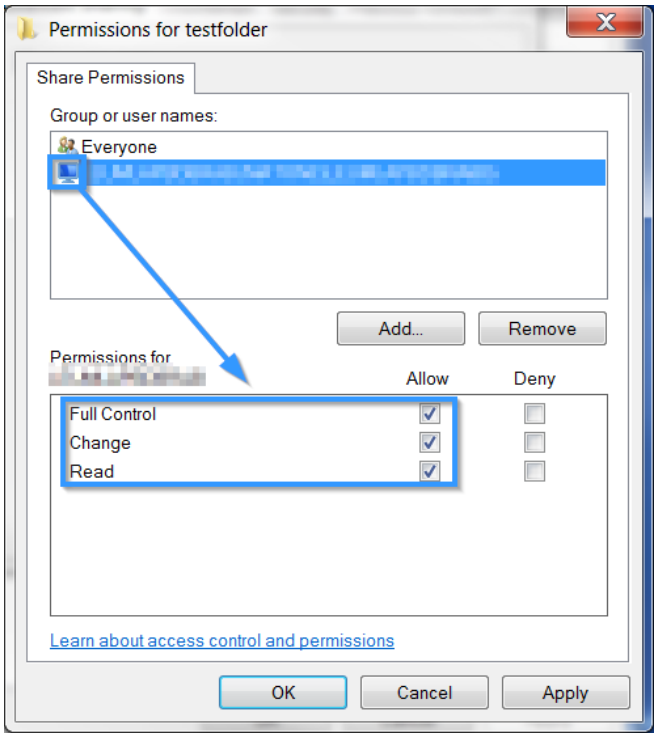

5. Check *Computers* and press OK




6. Enter the (network) name of the computer which will submit jobs to this folder and press *OK*



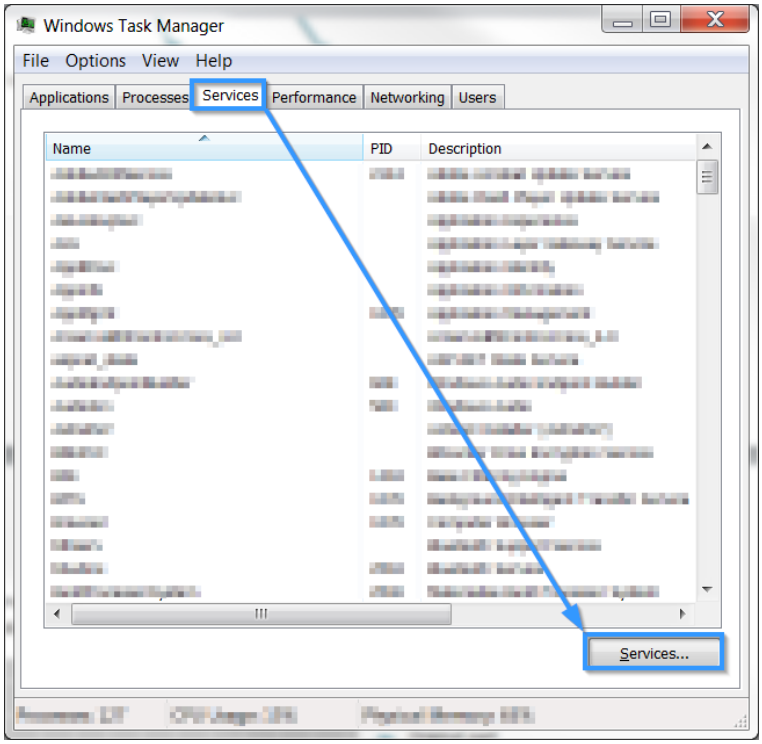

7. Select the Computer you have just added and grant it Full Control of this folder. Proceed by pressing *OK* (followed by *OK* and *Close* to exit the other two windows)


Permissions for testfolder
Share Permissions
Group or user names:
Everyone
Add...
Remove
Permissions for
Allow
Deny
Full Control
Change
Read
Learn about access control and permissions
OK
Cancel
Apply

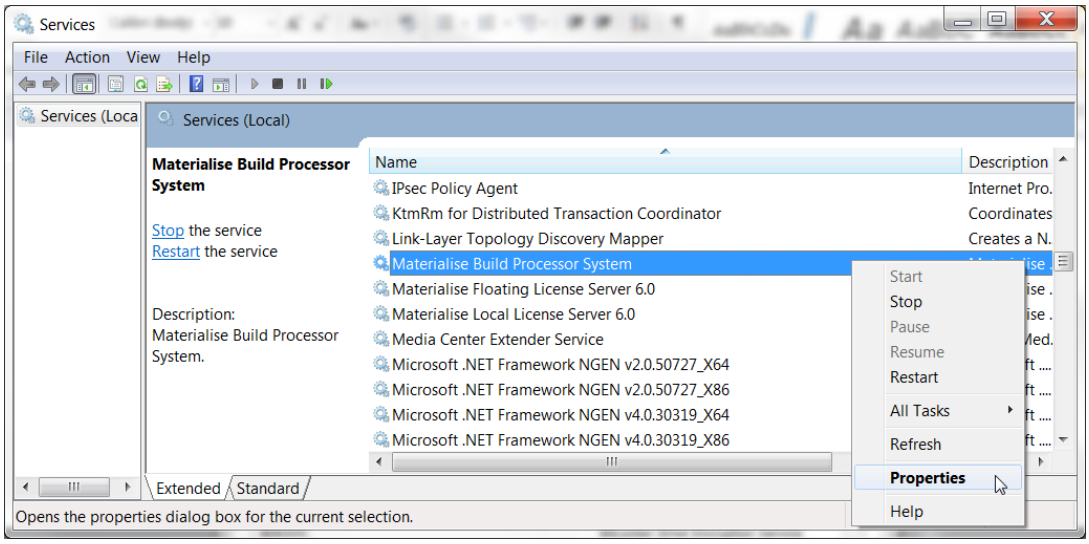
## 14.3. How to run the BP Service under a different user account

You can let the BP Service run under a different user account, which means jobs will be uploaded under that user's credentials. The BP will then be able to upload jobs to the folders which this user has access to. The screenshots below show how you can run the BP Service under a different account:

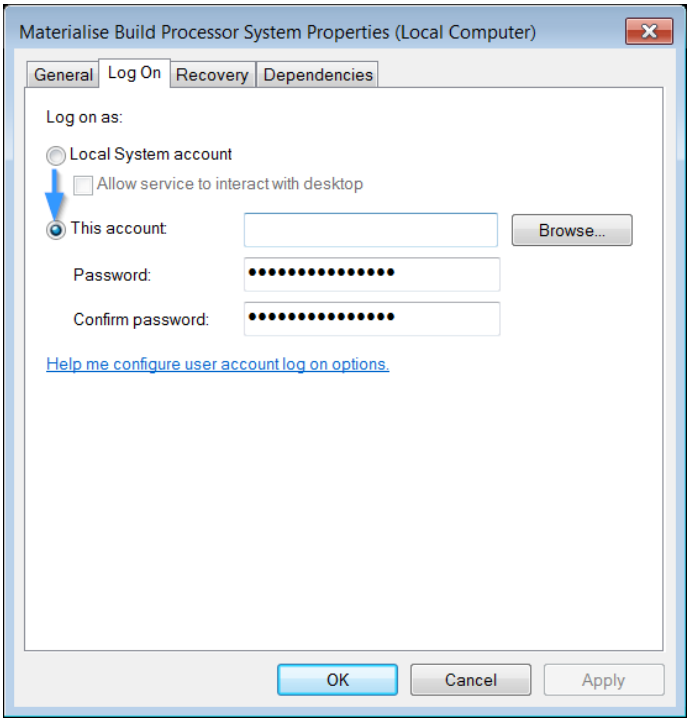
1. Go to the Windows® operating system Task Manager (*CONTROL+SHIFT+ESC*) and click on the *Services…* button in the Services tab.




2. Locate and right click the *Materialise Build Processor System* entry and go to *Properties*



3. In the tab *Log On*, select the *This account* button and *Browse* to the user account under which you wish to run the BP Service. Enter and confirm the corresponding password.




4. Exit by pressing *OK*. You will get a warning that you must restart the service, which can be done by right clicking the *Materialise Build Processor System.*

## 14.4. The Build Processor Manager is not in the Control Panel

This indicates that the Build Processor System has not been installed correctly. Please verify that the BP Manager is installed correctly, as described in section 3.3: Installing Materialise MPM BP on page 11. If this is not the case, try running the installer file again to reinstall.

## 14.5. Where can I check if I have a valid Materialise Materialise MPM BP license?

The Materialise Materialise MPM BP license is (currently) not visible in the license manager when it is launched from Magics. Please refer to section 3.4: Licensing on page 14 for more information.

## 14.6. Can I see what profiles were applied to my processed job?

Yes, you can reopen the ‘MatAMX input platform’ (in Magics version 19 or higher).

# 15 Typical Error Cases

## 15.1. Error message in queue: ‘Unexpected open contours in … after slicing’

This error message means that the indicated part contains open contours which are not automatically stitched by the Gap Fill in the selected slicing profile. Such errors indicate that there are errors present in the original digital model. It is highly recommended to fix these in Magics, where you have a large set of dedicated fixing functions and visual feedback available. Alternatively, you can increase the Maximum Gap Size value to force stitch together all open contours. Please note that this can lead to unexpected output results.

## 15.2. Error message in queue: ‘Uploading print job to machine’

Below the failed job entry, a more specific warning will be visible:

- ‘The system cannot find the path specified’
  This indicates that no valid upload folder has been configured for the printer. Please refer to section 4.5: Configure a BP Machine on page 27 for more information on how to specify the printer upload folder.

- ‘Access denied’
  This indicates that your computer does not have modify/read/write access to the chosen folder.

# 16 Support contacts

We want you to have a smooth user experience when working with Materialise Build Processor. If you do encounter any error, please always try to save your work and restart your system first. Should the problem persist, you may contact Materialise Support. The technical support will be able to help you with technical problems you have when working with Materialise Build Processor.

If you have a valid **Materialise software maintenance contract** you can contact your local helpdesk via:

| | |
|---|---|
| Worldwide | software.support@materialise.be |
| Korea | software.support@materialise.co.kr |
| USA | software.support@materialise.com |
| Germany | software.support@materialise.de |
| UK | software.support@materialise.co.uk |
| Japan | support@materialise.co.jp |
| Asia-Pacific | software.support@materialise.com.my |
| China | software.support@materialise.com.cn |

Please include a report in your support request.

## 16.1. Materialise Offices Worldwide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