

COBOD Training L1

Module 1.2

COBOD Slice

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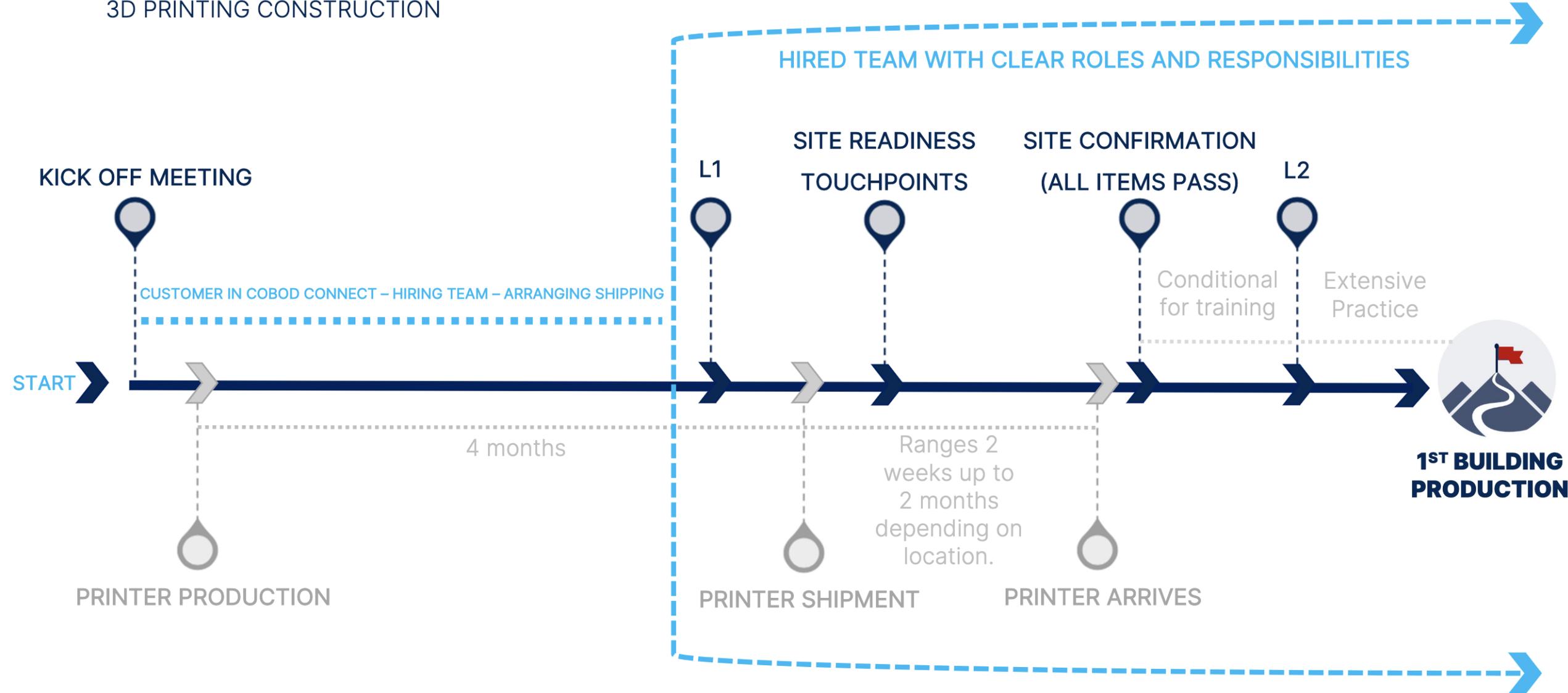
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TIMELINE

3D PRINTING CONSTRUCTION



AGENDA AND OBJECTIVES

1. INTRODUCTION AND INDEX (5 MIN)
2. DOCUMENTS THAT SUPPORT THIS MODULE (5 MIN)
3. SYSTEM OVERVIEW (5 MIN)
4. SLICING IN THE OVERALL 3DCP PROCESS DIAGRAM (5 MIN)
5. PROGRAM DEFINITION, VERSION, INSTALLATION AND LICENSE (10 MIN)
6. PROGRAM NAVIGATION AND INTERFACE (15 MIN)
7. KEY PERFORMANCE INDICATORS (5 MIN)
8. INPUT PARAMETERS (50 MIN)
9. ADDING TEXTURE (10 MIN)
10. RECAP (5 MIN)
11. FAQ (5 MIN)
12. PRACTICAL EXERCISE (QUIZ) (30 MIN)

COBOD CONFIGURATOR



COBOD CONFIGURATOR
BOD2 5-5-4

Width (X) 5 Modules 12.1m

Length (Y) 5 Modules 12.1m

Height (Z) 4 Modules 9.1m

Printable area
 3 floors
 Floor area: 147 m²
 Total area: 440 m²

Imperial units

Build volume

Concrete batch plant

Neighborhood

Printer

3D-print a building

Get in touch with COBOD



Focus nozzle Printspeed (mm/sec) Start/Stop print

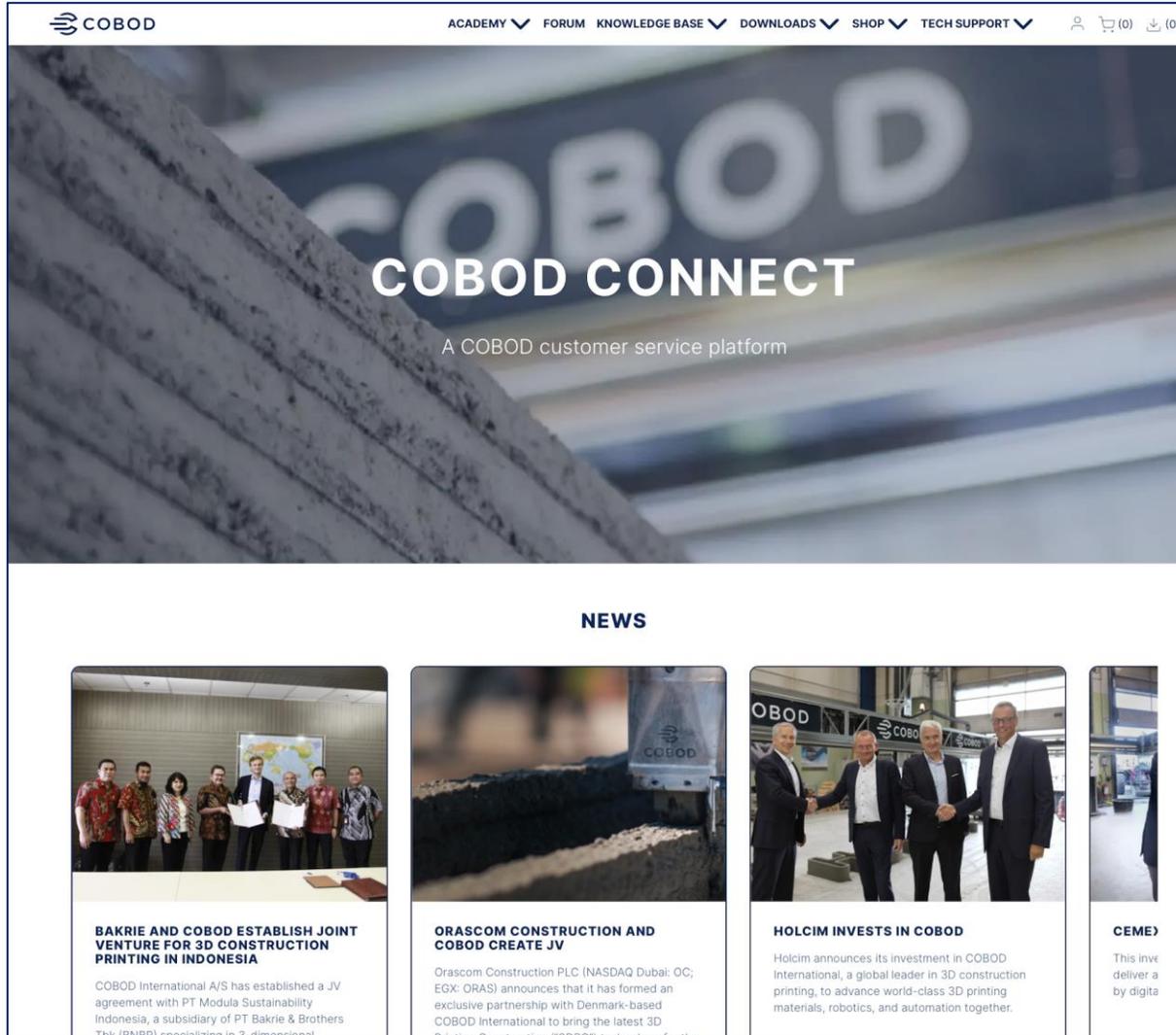
100 250 500

Modern Office Space

Total print time: 10h:30m
 Material usage: 33.5 m³
 Number of printed layers: 222

www.cobod.com/configurator/

COBOD CONNECT – LIBRARY AND RESOURCES



The screenshot shows the COBOD Connect website interface. At the top, there is a navigation bar with the COBOD logo and menu items: ACADEMY, FORUM, KNOWLEDGE BASE, DOWNLOADS, SHOP, and TECH SUPPORT. Below the navigation bar is a large hero section with a background image of a building facade and the text "COBOD CONNECT" and "A COBOD customer service platform". Underneath the hero section is a "NEWS" section with four news items, each with a thumbnail image and a brief description.

NEWS

- BAKRIE AND COBOD ESTABLISH JOINT VENTURE FOR 3D CONSTRUCTION PRINTING IN INDONESIA**
COBOD International A/S has established a JV agreement with PT Modula Sustainability Indonesia, a subsidiary of PT Bakrie & Brothers Tbk (BRNR) specializing in 3-dimensional
- ORASCOM CONSTRUCTION AND COBOD CREATE JV**
Orascom Construction PLC (NASDAQ Dubai: OC; EGX: ORAS) announces that it has formed an exclusive partnership with Denmark-based COBOD International to bring the latest 3D Printing Construction ("3DPC") technology for the
- HOLCIM INVESTS IN COBOD**
Holcim announces its investment in COBOD International, a global leader in 3D construction printing, to advance world-class 3D printing materials, robotics, and automation together.
- CEMEX**
This investment delivers a digital



WARRANTY DISCLAIMER

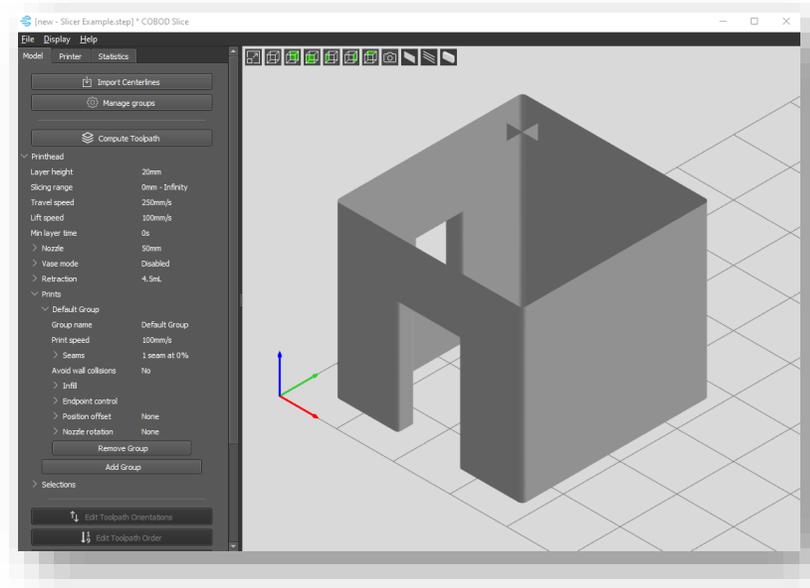
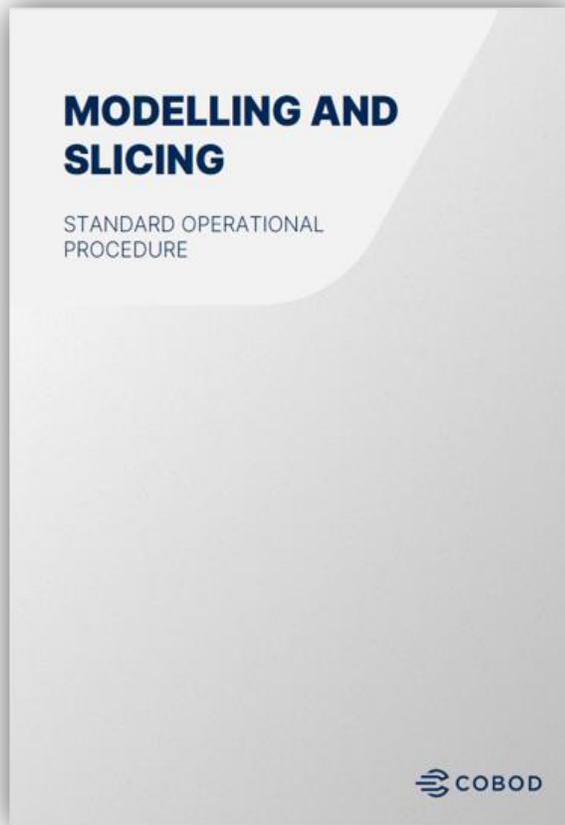
It is important to read and understand the following concepts about your product warranty:

- Warranty covers 14 months from the date the shipment departs COBOD's production facilities.
- Warranty covers free replacement of defective or missing mechanical and electrical parts.
- Warranty covers online remote support to install the parts and shipping of the parts.
- Warranty does not cover consumables or wearable parts.
- Alterations or external additions made to the equipment that are not approved by COBOD R&D technical board prior to being implemented will void warranty. Such changes include (but are not limited to):
 - Printer system changes.
 - Changes to the material delivery system or hose management.
 - Removal or covering of COBOD logos, branding stickers and other trademarks on the equipment.
 - Tampering, removal or changes to original safety elements, classification stickers or signs on the equipment.
- Failure to maintain the equipment according to the maintenance guidelines will void warranty.
- Failure to operate the equipment according to the operational guidelines will void warranty.
- In addition to the loss of warranty, modifying equipment against the manufacturer's advice is not recommended as this could generate serious safety hazards for users.
- Operation with materials not suitable for use with the COBOD -equipment will void warranty. Ask COBOD if there is any doubt about the suitability of the materials.
- The responsibility to provide sufficient documentation in the form of incident reports and/or maintenance evidence lies with the owner of the equipment.

COBOD's technical team will assess each case to determine if warranty is applicable based on the information provided above.

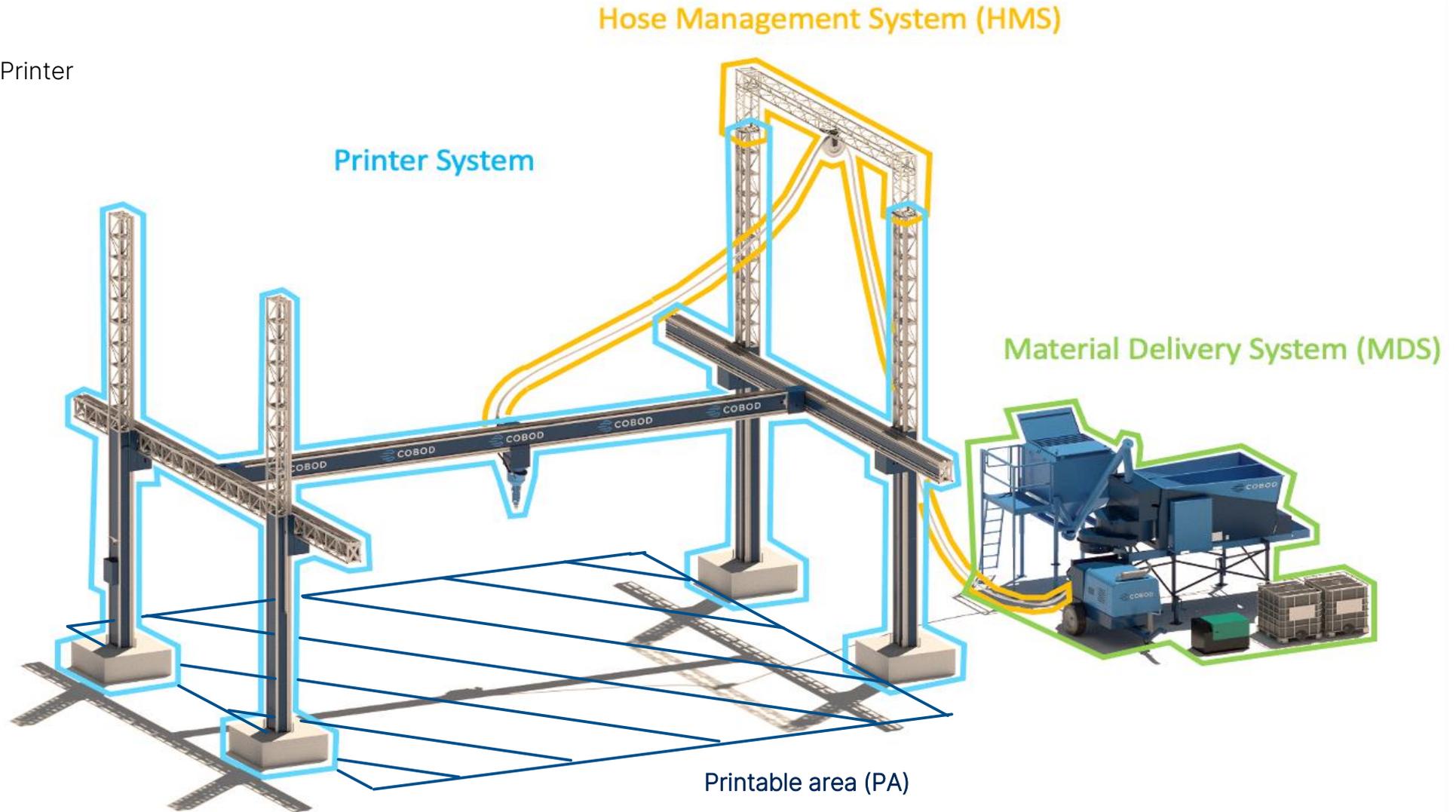
DOCUMENTATION THAT SUPPORT THIS MODULE

1. COBOD SLICE STANDARD OPERATIONAL PROCEDURE (SLICER V2.3)
2. TEST STEP FILE



SYSTEM OVERVIEW

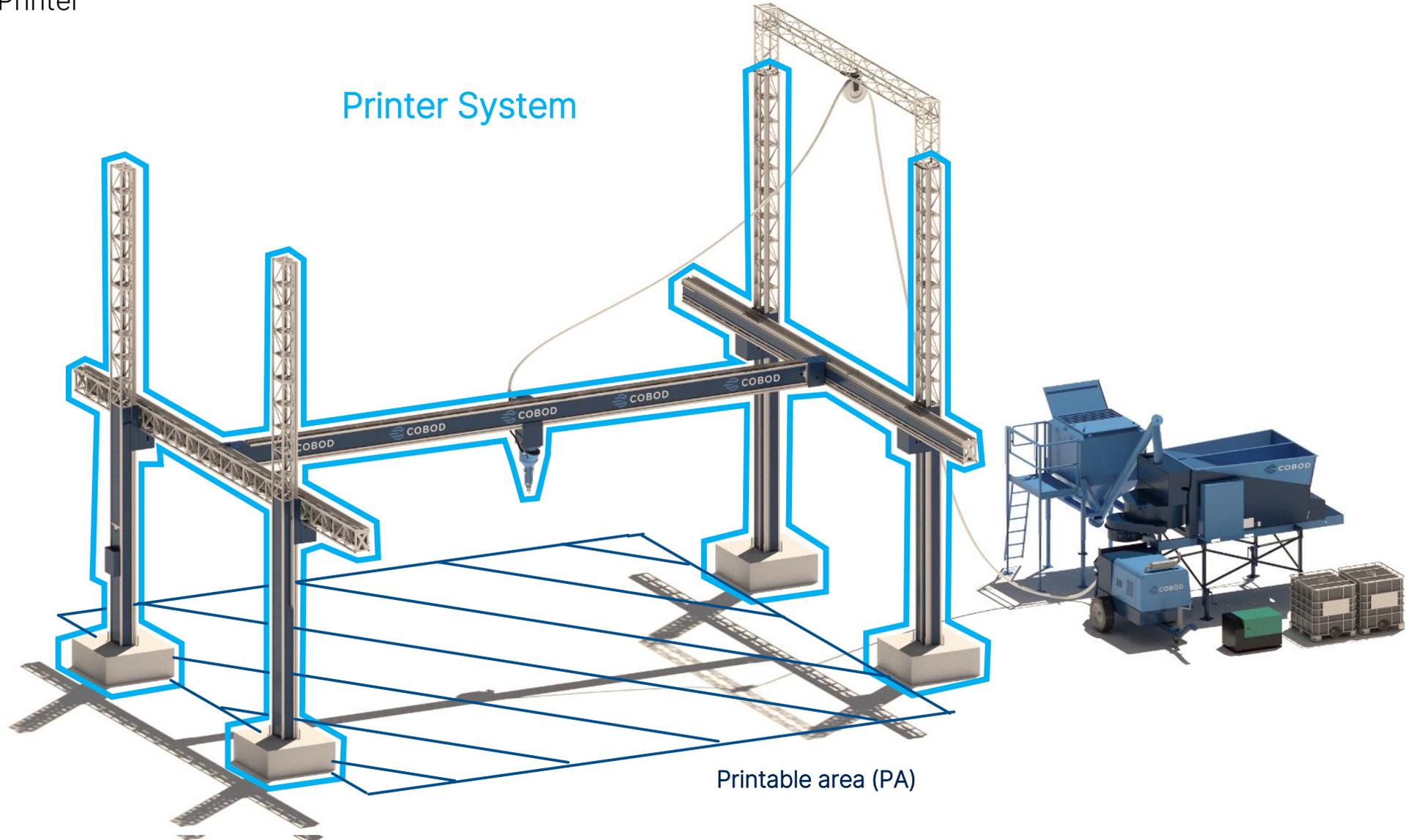
BOD2 - 3D Printer



SYSTEM FOCUS

BOD2 - 3D Printer

Printer System



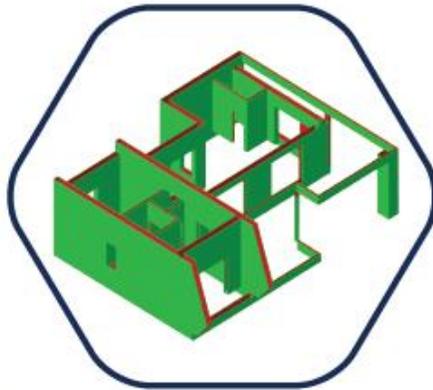
Printable area (PA)

SLICING IN THE OVERALL 3DCP PROCESS DIAGRAM

WEEKLY PROGRESS



**Converting a 3D/
BIM model into a
3D printable file.**



**Slicing the
geometry and
DIGITAL RUN.**



**BOD2 Installation,
Operation and
DRY RUN.**



3DCP Materials.



**Material Delivery
System
and HMS.**

PROGRAM BASICS

WHAT IS A SLICER ?

Software that converts a surface/centerline geometry (imported from your CAD file) into a G-CODE file (printer instructions) "slicing it" into 3d printable layers, each layer is a detailed coordinate deposition instruction for the cartesian coordinates.

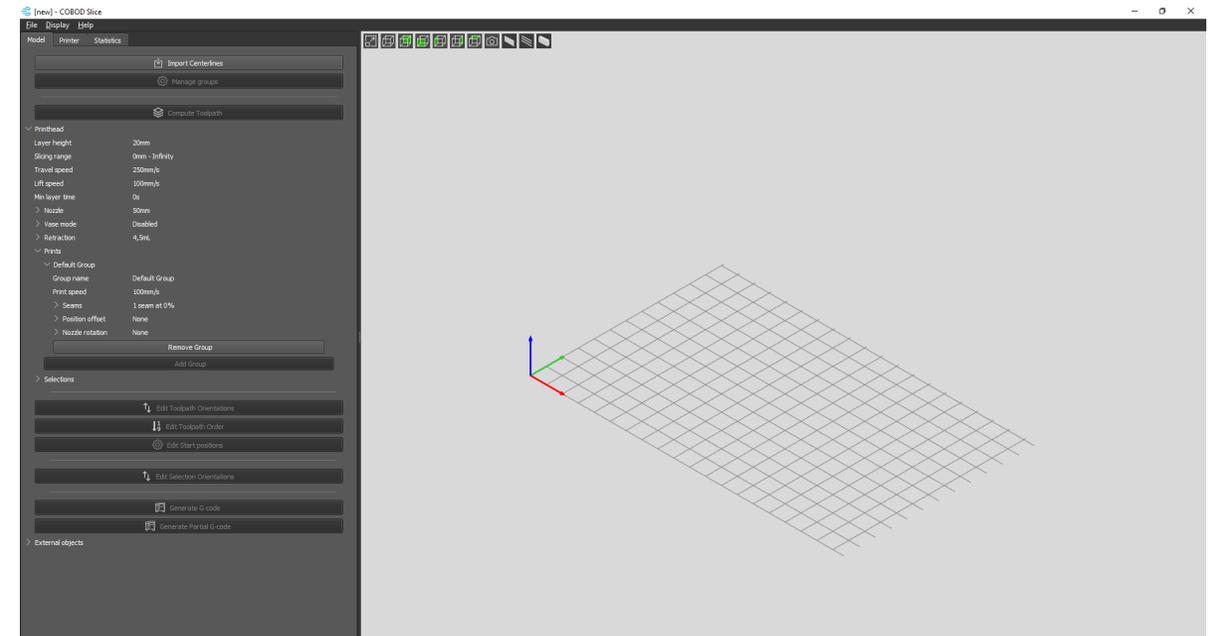
WHAT IS THE FUNCTION OF THE SLICER IN 3D PRINTING:

- ▶ Transforms a geometry into 3D printable G-code.
- ▶ Simulates the print based on inputted printing parameters.
- ▶ Estimates material consumption and time for budgeting.
- ▶ Provides a simulation tool before printing objects in sequence physically.

WHO IS RESPONSIBLE FOR THE SLICED FILE?

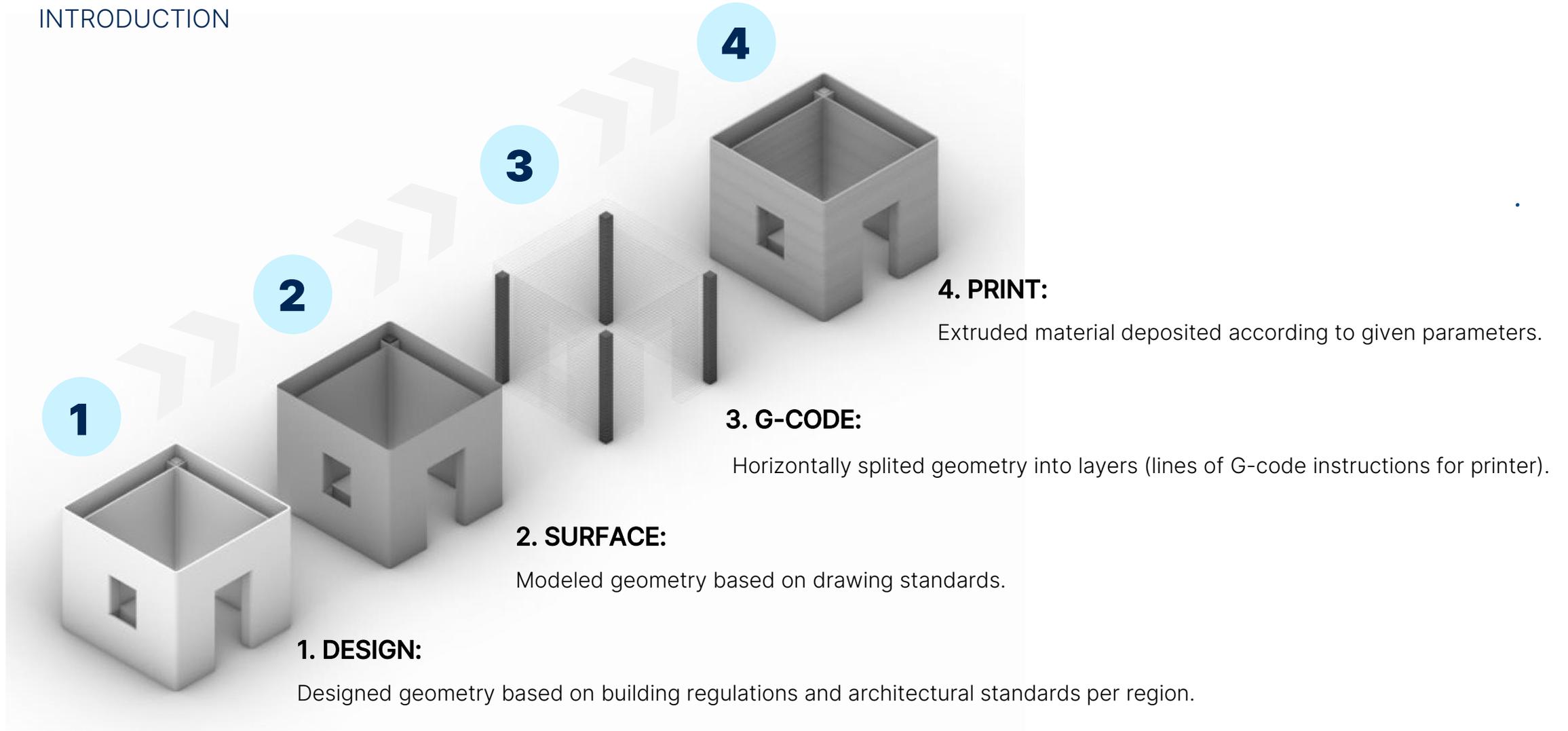
The printer operator (PO) will be responsible to adjust the parameters in the file for its sliceability and printability with the 3d printer. Nevertheless, the actual design, dimensions, construction details and overall parameters should be provided by the locally certified architect and structural engineer in the original step file from the permitted drawings or in an accordance to local applicable regulations.

COBOD Slice Interface



PROGRAM WORKFLOW

INTRODUCTION



PROGRAM INSTALLATION, VERSION AND LICENSE

INSTALLATION

1



2



3



4



1. REQUEST

COBOD Slice program to techsupport@cobod.com.

Remember the software is only Windows compatible, ensure you get the latest version.



cobod-slice_v2303...

2. INSTALL

The slicer software

File type .exe



3. OPEN

the COBOD slicer and Send the PC identifier code displayed on the software, techsupport@cobod.com



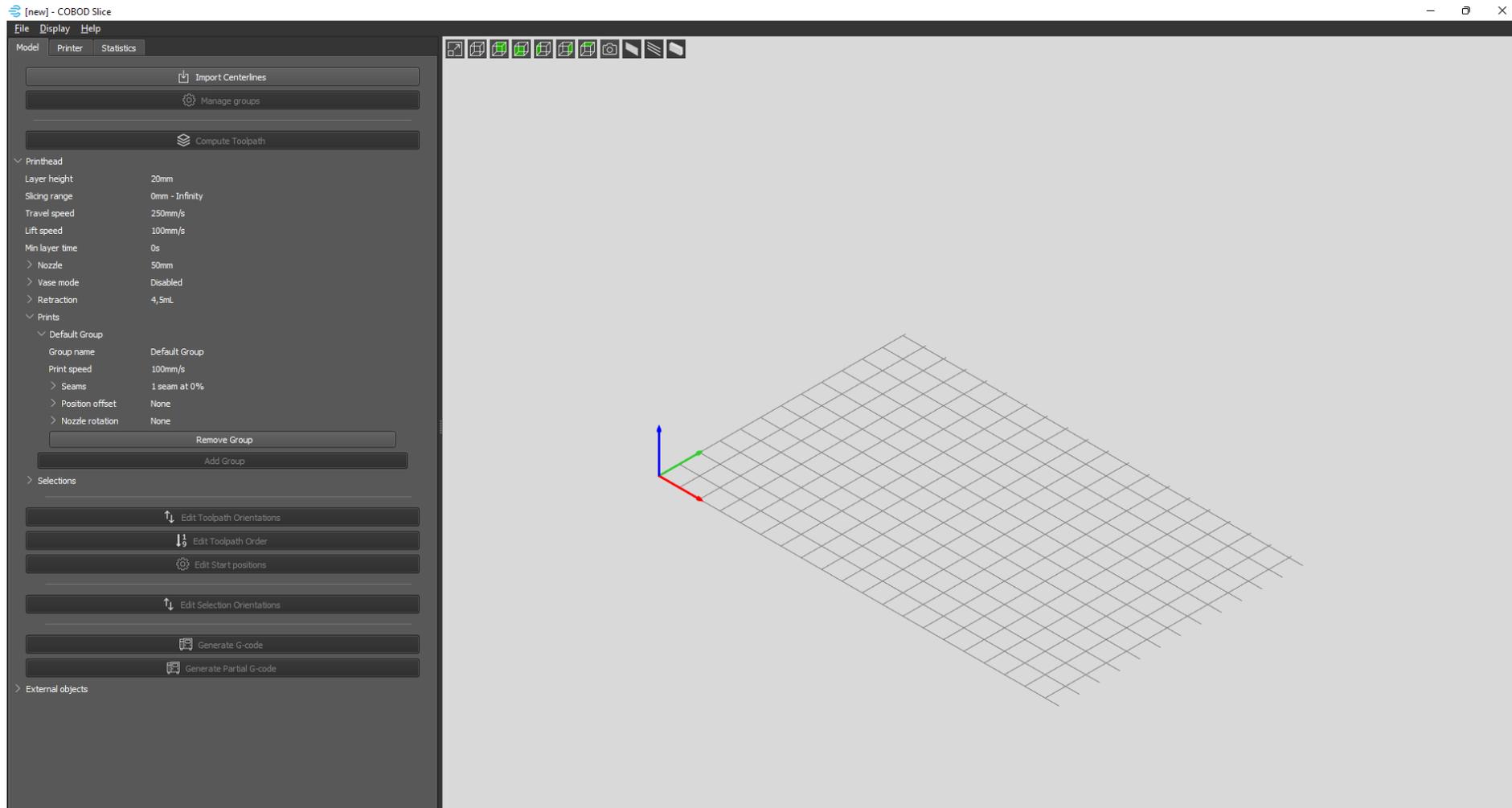
4. ACTIVATE

The slicer by importing the activating code: File type.lic (License expires after 6 months).

THE SLICER IS ACTIVATED AND IS TIME TO SIMULATE THE TEST FILE.

PROGRAM NAVIGATION AND INTERFACE

MAIN INTERFACE



PROGRAM NAVIGATION AND INTERFACE

INTERFACE TABS

Import , print parameters and Gcode export

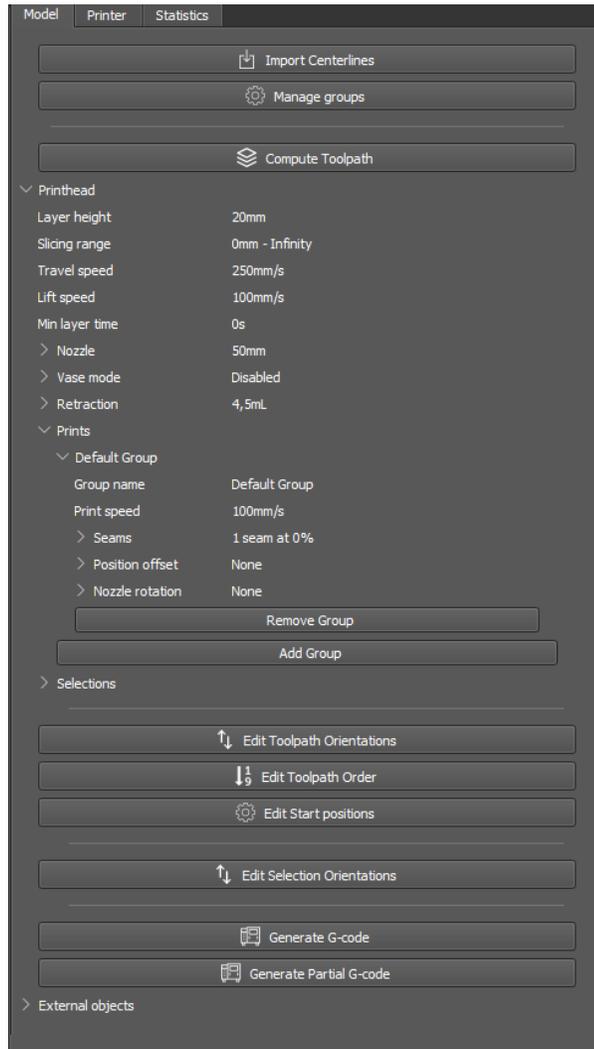
Toggle and elevations

Statistics/output

Layer	Print length	Rapid length	Duration	Print speed	V0

PROGRAM NAVIGATION AND INTERFACE

INPUT PARAMTERS AND GCODE EXPORT

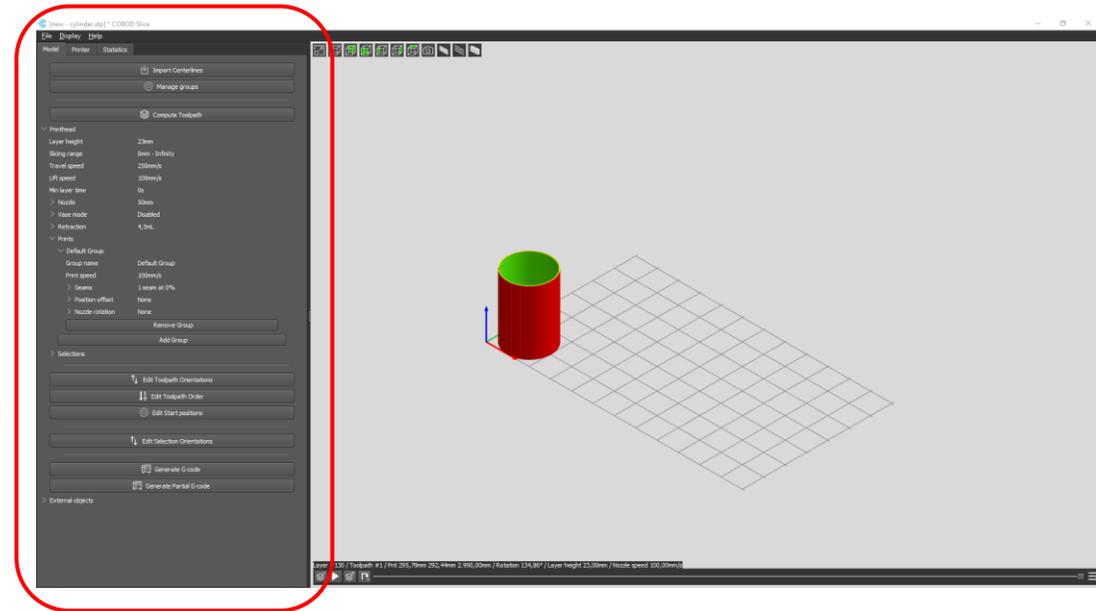


Importing the center line surface

Activate simulation after import and print paramters

- Print parameter
1. Print speed
 2. Layer height
 3. Layer width
 4. Orientation
 5. Order of printing
 6. Seam

Gcode export



PROGRAM NAVIGATION AND INTERFACE

OUTPUT/STATISTICS

Model	Printer	Statistics
Total length	5,916.21m	
Print length	3,497.75m	
Rapid length	2,418.46m	
Estimated duration	12h 30m 2s	
Estimated concrete volume	3,497.66L	
Layer count	150	
First layer Z	0.02m	
Last layer Z	3m	
Average layer time	5m	
Min layer time	2m 11s	
Max layer time	5m 37s	

Layer	Print length	Rapid length	Duration	Print speed	Volume	Volume per hour
1	24.73m	15.12m	5m 10s	100mm/s	24.73L	287.06L/h
2	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
3	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
4	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
5	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
6	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
7	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
8	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
9	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
10	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
11	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
12	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
13	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
14	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
15	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
16	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
17	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
18	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
19	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
20	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
21	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h
22	24.73m	18.15m	5m 22s	100mm/s	24.73L	276.02L/h

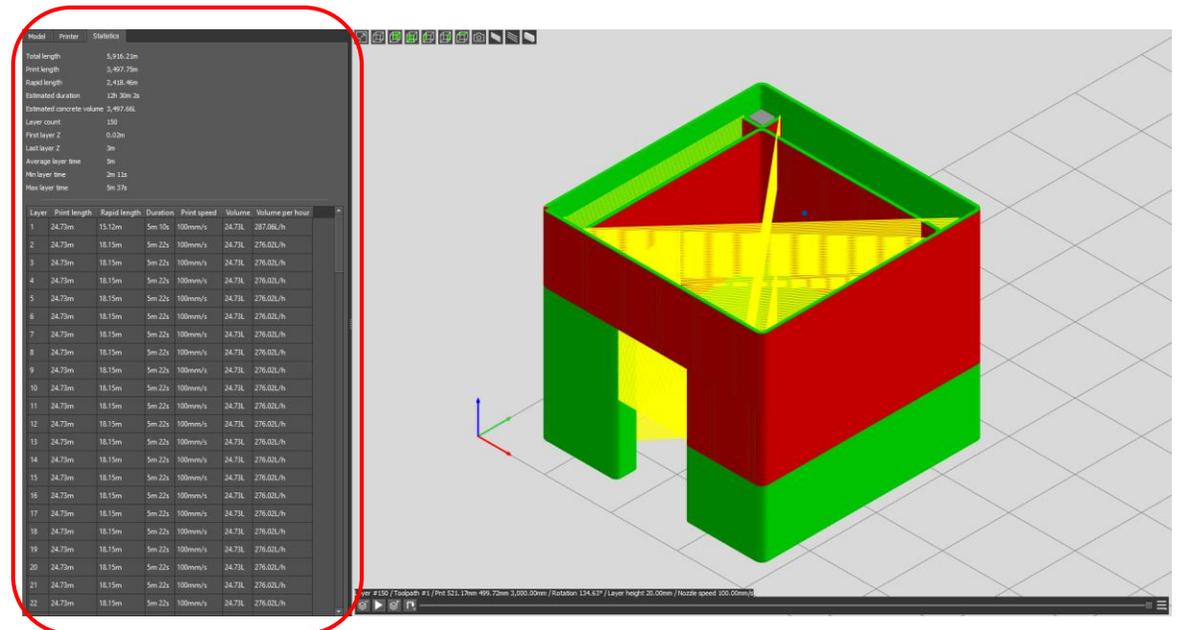
Print statistics

Print statistics do not contain the safety margins.

For estimated duration it is added a factor of 30%.

For the estimated material it is added a factor of 5%.

Individual layer statistics



PROGRAM NAVIGATION AND INTERFACE

SIMULATION CONTROL

Isometric view

Toggle between isometric and perspective view

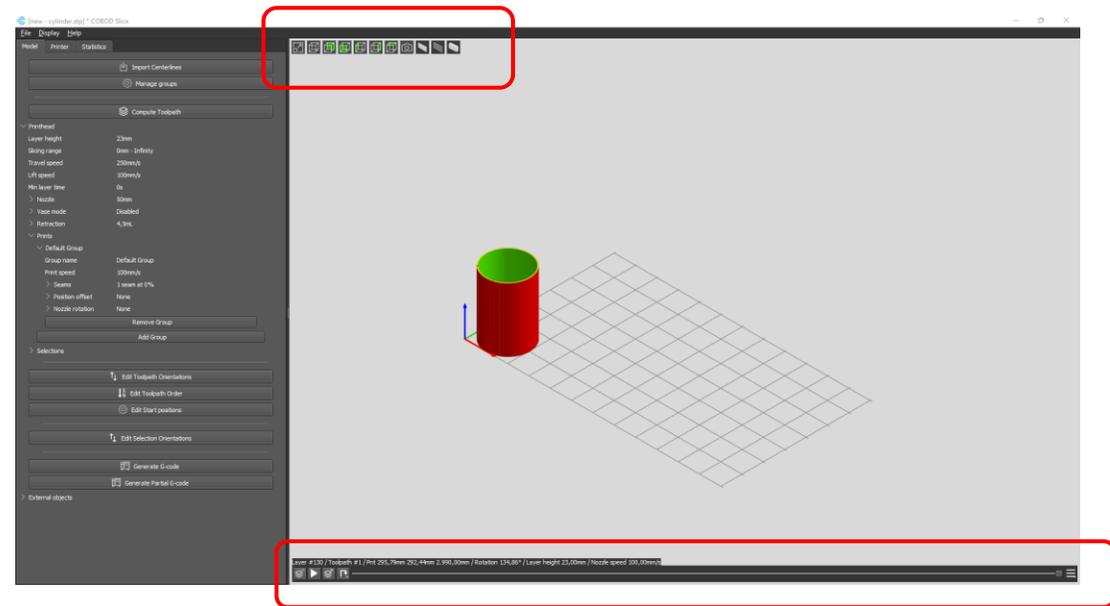
Toggle toolpath

Fit screen Elevation Toggle center lines Toggle print

Substract layer Add layer

Layer #150 / Toolpath #1 / Pnt 295,79mm 292,44mm 3.000,00mm / Rotation 134,86° / Layer height 20,00mm / Nozzle speed 100,00mm/s

Real time simulation bar



▶ KEY PERFORMANCE INDICATORS (KPIs) FOR SLICING

PRINTING TIME

Definition: Correct settings in the COBOD Slicer mean the objects that will be printed will be placed in the right sequence with the least number of printer movements possible.
This optimization results in a correct printing time.

Measurement unit: Hours

QUALITY OF THE PRINT

Definition: There are several settings that impact the visual and structural quality of the print.

Measurement unit: Satisfied / Not Satisfied

COLLISION

Definition: Collision is something you want to avoid in 3DCP, many times you might have existing objects that you want to avoid colliding with.

Measurement unit: YES/NO

PRODUCTIVITY

Definition: Productivity is measured in the total volume of material extruded per hour.

Measurement unit: Liters/Hour

BASIC INPUT PARAMETERS/SETTINGS

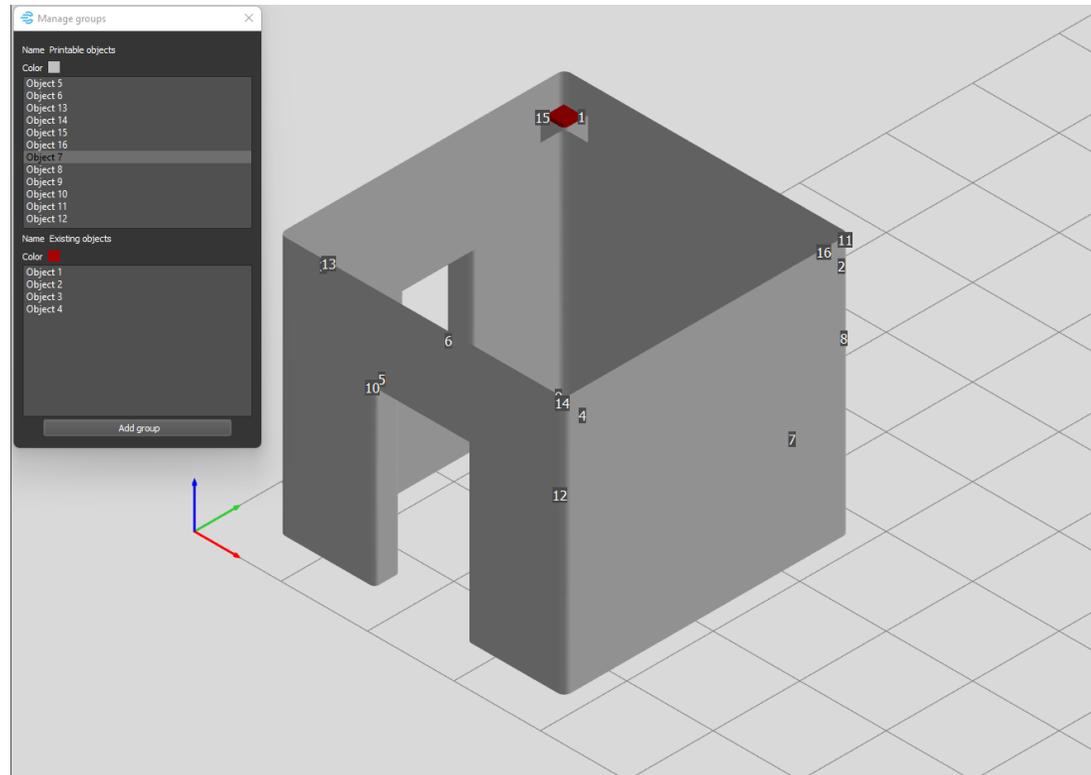
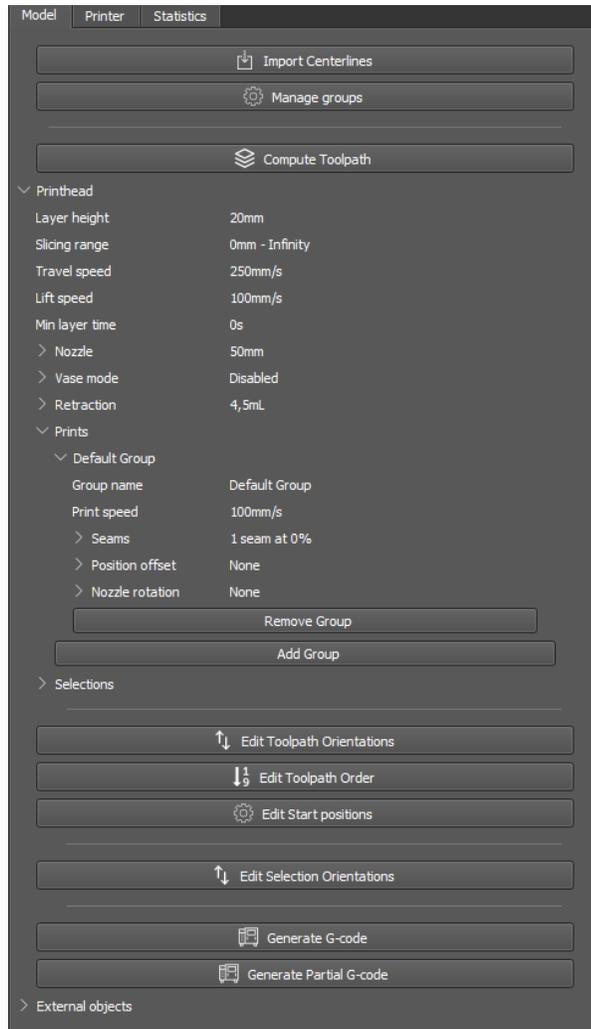
INPUT PARAMETERS

IMPORT AND MANAGE GROUPS

TIME

COLLISION

Import Centerlines as a STEP file from the your design program.



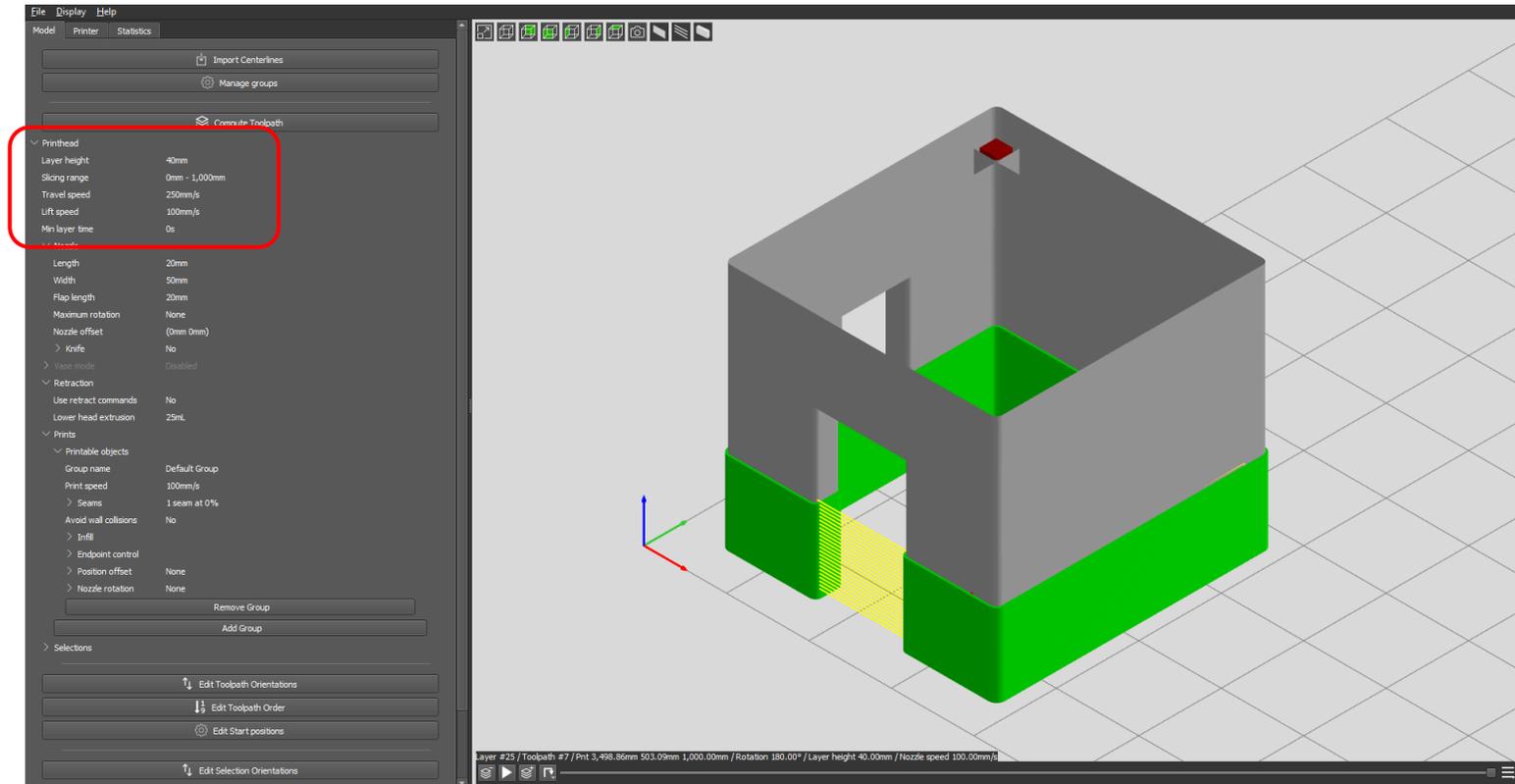
One can create different groups inside the slicer. This helps for isolated printing selected surfaces from a group. Besides that, it also makes the difference between existing objects (reinforcement, already printed elements), to not collide with them. Existing objects must be created as solids.

INPUT PARAMETERS

PRINT HEAD

PRINT HEAD

1. **Layer height** to be printed. This could vary from 10mm to 40mm depends on the design requirements and it influences the volume per hour printed, as well as the **total time** estimated for printing the design.
2. **Slicing range** is a tool to divide your design in different g-codes for printing in multiple days. It also helps to place the objects in the best order possible to facilitate the time of the print.
3. **Min layer time** is based on the type of material used for the print, some materials need a specific number of minutes before laying the next layer on top.



TIME

QUALITY OF
THE PRINT

COLLISION

PRODUCTIVITY

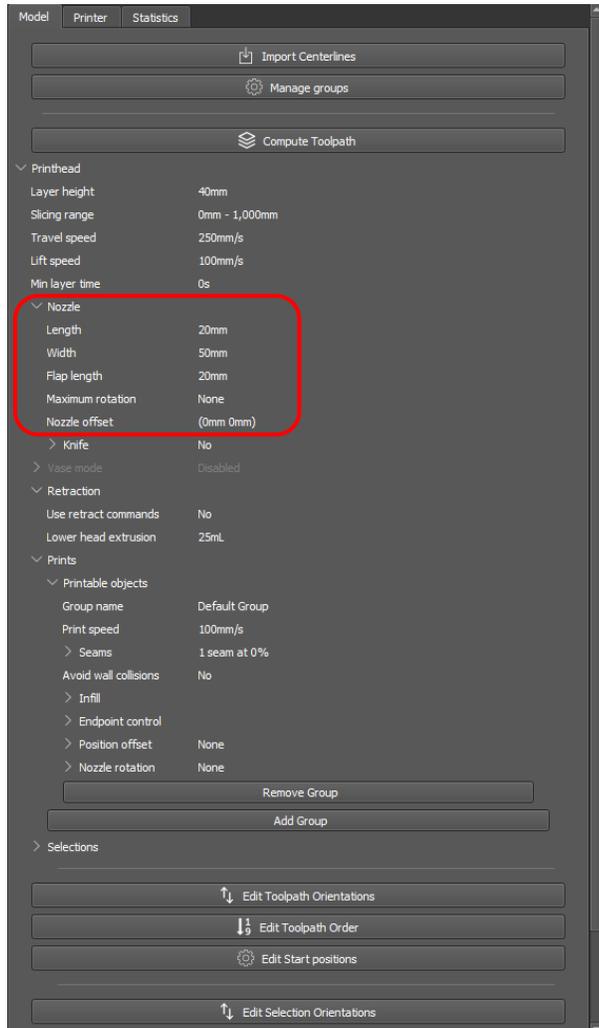
INPUT PARAMETERS

NOZZLE

PRODUCTIVITY

QUALITY OF
THE PRINT

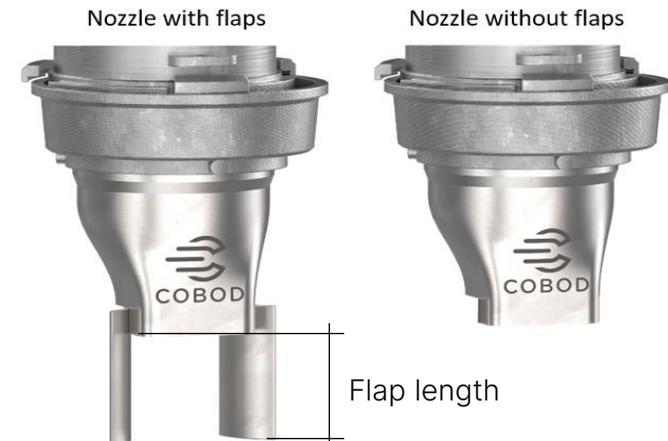
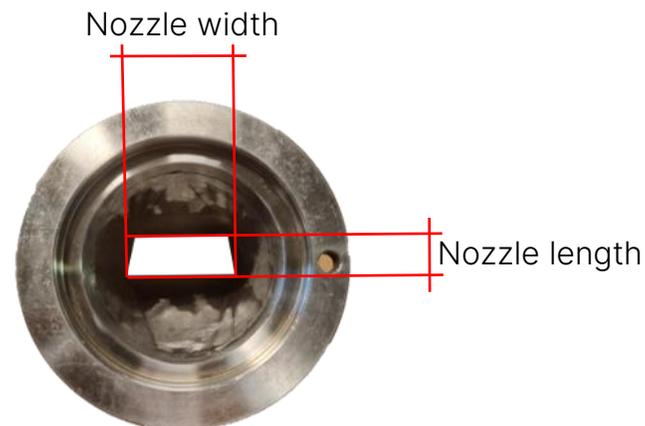
COLLISION



NOZZLE

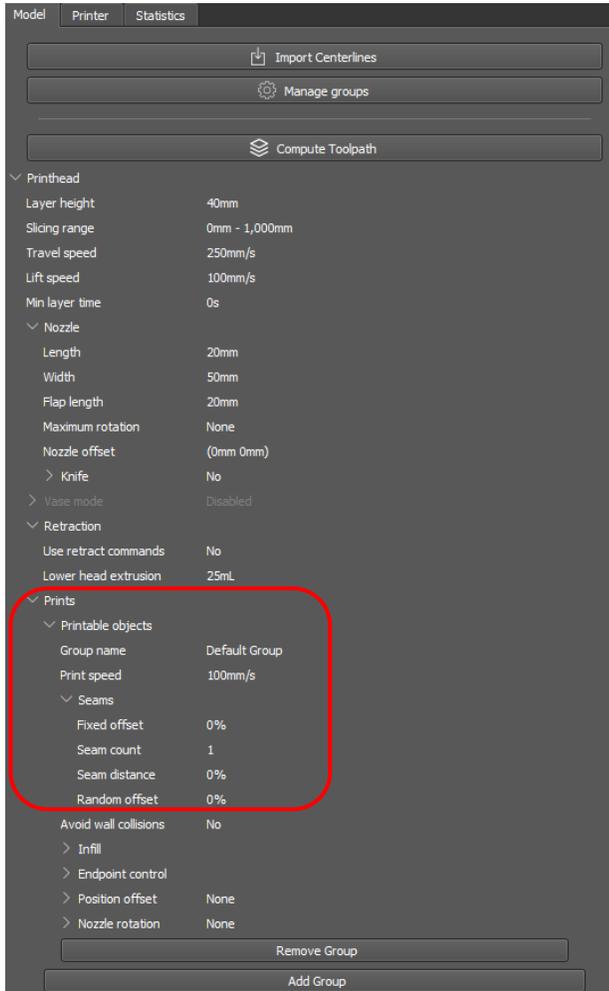
1. **Length** of the nozzle using for the proposed print.
2. **Width** : Width of the nozzle will be the width of the layer to be printed.
3. **Flap length** : Depth of the flap used. This could be single layered or double layered flap. It is very important to input here the length of the flap, so the printer lifts with the flap aswell, avoiding collision.
4. **Example:** If the flap length is 100mm, it is recommended to add 120-150mm in the input parameter, this way, the printhead, will lift with 20-50mm above the printed elements while travelling.

Note: Layer height is not limited to the length of the nozzle. You can have a nozzle which is 20x50mm, and print a layer of 30x50mm.



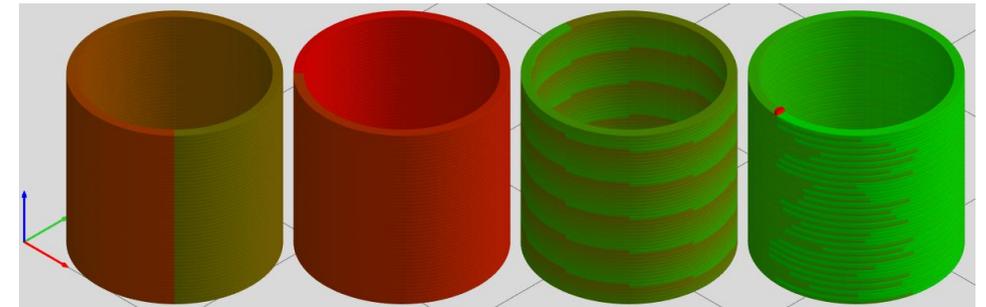
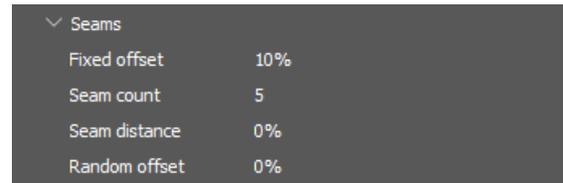
INPUT PARAMETERS

PRINTS



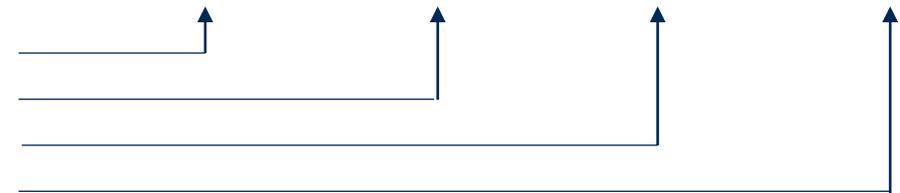
- Group name** : Out of the groups created, you can choose which group needs to be printed. In case you don't have any group, you can keep it as default group.
- Print speed** : This is the speed of the print. Even though you have a speed factor here, one can adjust the speed on the duet while printing adapting the material consistency.
- Seams** : Seam lines are created when you print a closed geometry (loop) with same start and stop point for the entire height. This point is always prone for cracking and most weak part of a printed geometry. In order to avoid this, we recommend to increase the same count to multiple numbers, as well as the fixed offset.
 - Fixed offset**: Offset the starting point by a fixed distance
 - Seam count**: number of seams in a printable loop
 - Seam distance**: the distance between consecutive seams

Note: When changing percentage parameters, add the percentage sign too, otherwise will jump to 100%.



Add/ remove group : If one has to print multiple groups with different parameters at the same time.

- 1 seam
- Vase mode
- Spiral seams
- Random seams



TIME

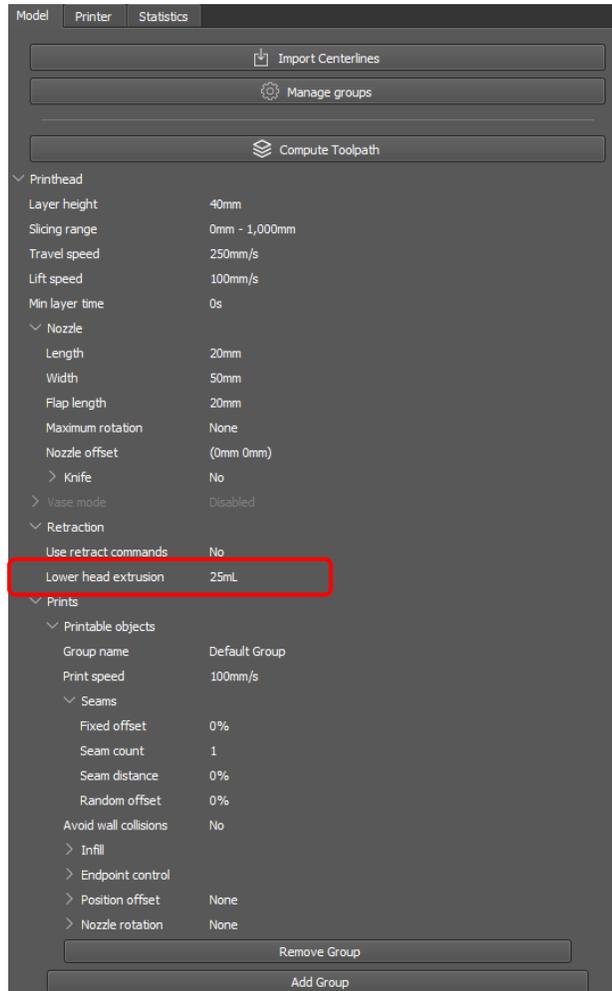
QUALITY OF THE PRINT

COLLISION

PRODUCTIVITY

INPUT PARAMETERS

LOWER HEAD EXTRUSION (LHE)



- Function :** The function of the "Lower head extrusion" (LHE) value is to offset the amount of concrete that is removed from the nozzle when the printhead is lifted from the print at the end of a layer. The amount selected will then be extruded as the printer starts the next layer, effectively priming the nozzle to create an accurate start point.
- LHE too low :** If the value is too low the printer will seem to not extrude material at the beginning of a layer until material fills up the nozzle. The extrusion will stabilize shortly after starting the layer indicating the LHE too low rather than the extrusion value being too low.
- LHE too high :** If the value is too high the printer will seem to extrude a lot of material in the very beginning of a layer. The extrusion will stabilize shortly after starting the layer indicating the LHE is too high rather than the extrusion value being too high.
- Variables :** Outside variables will require you to adapt the LHE value. Some of these are: Nozzle dimensions and geometry, layer height, material rheology etc.

TIME

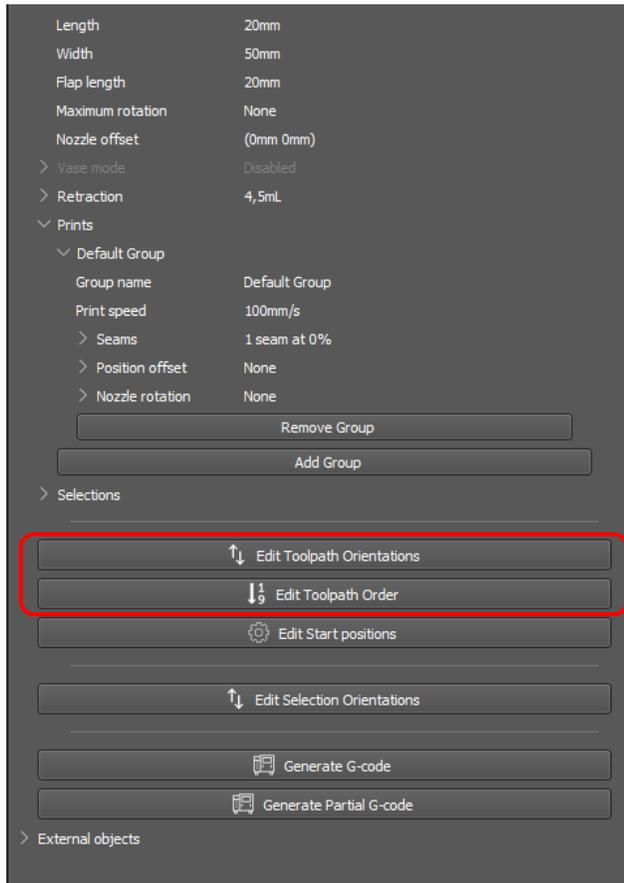
QUALITY OF
THE PRINT

COLLISION

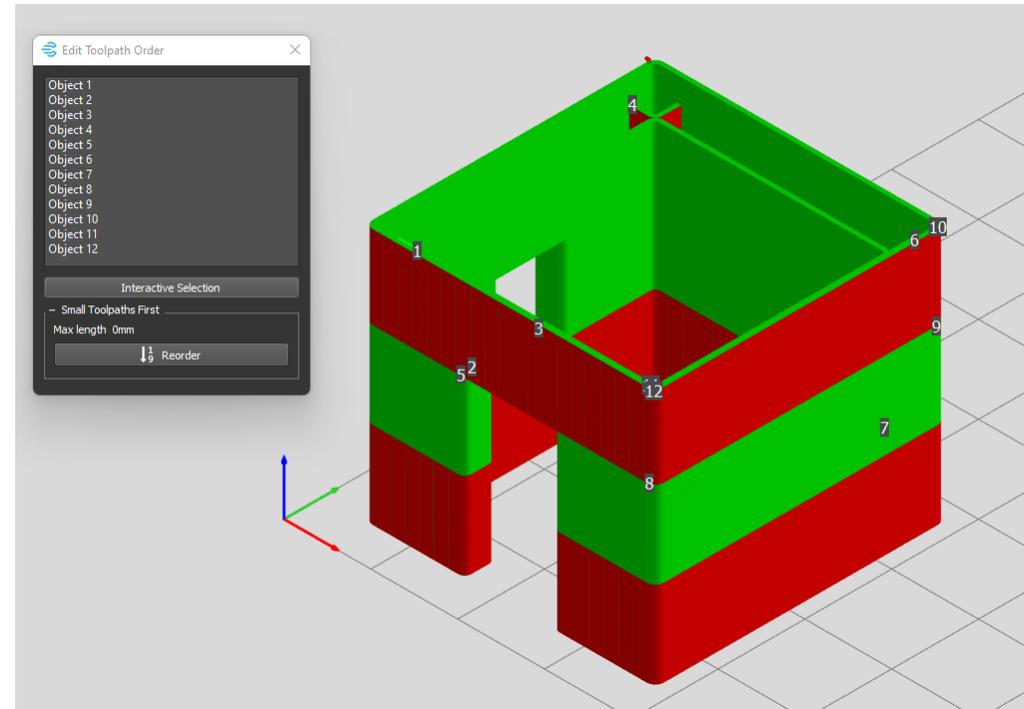
PRODUCTIVITY

INPUT PARAMETERS

TOOLPATH SETTINGS



1. **Edit toolpath orientation:** The orientation of the toolpaths should be on the same direction while printing the layers. This orientations is more applicable when steel binders are provided in side the printed walls.
2. **Toolpath order:** The order of printing can be selected manually based on the geometrical and requirements. This is one of the key factor influencece the printing efficiency.



TIME

QUALITY OF
THE PRINT

COLLISION

INPUT PARAMETERS

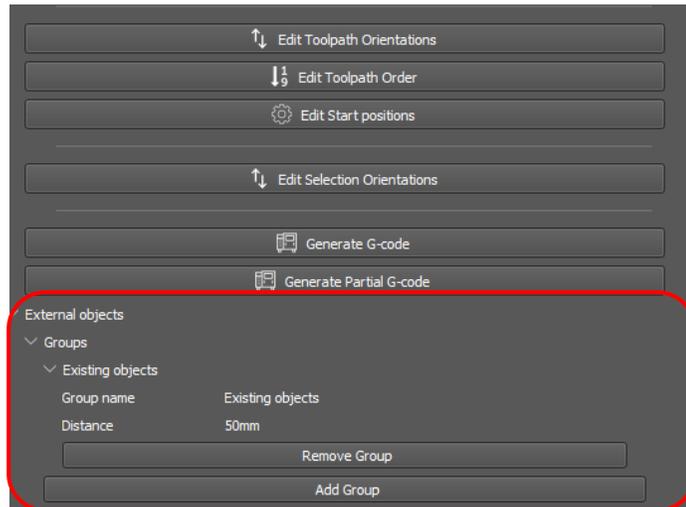
EXTERNAL OBJECTS

1. **Group name:** Add the group with external objects, as reinforcement in this case, or other already printed elements.
2. **Distance:** The offset the printe travels around the object.

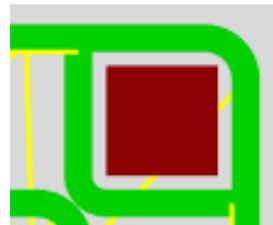
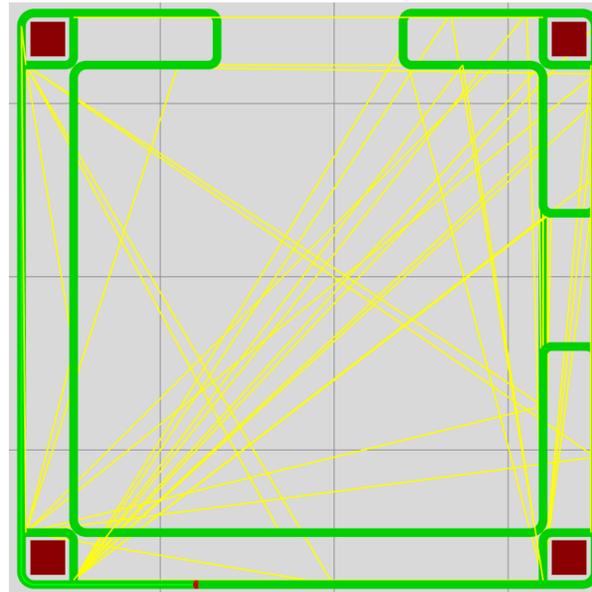
TIME

QUALITY OF
THE PRINT

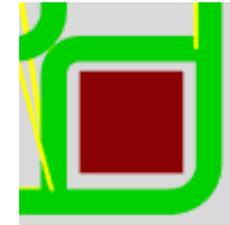
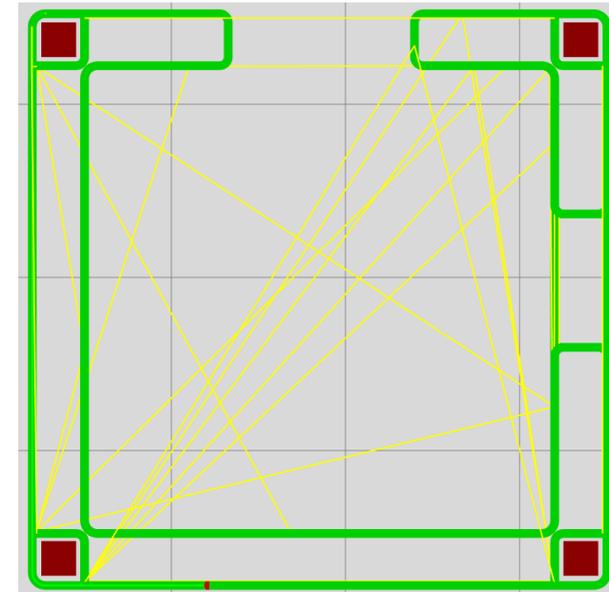
COLLISION



Before adding external objects

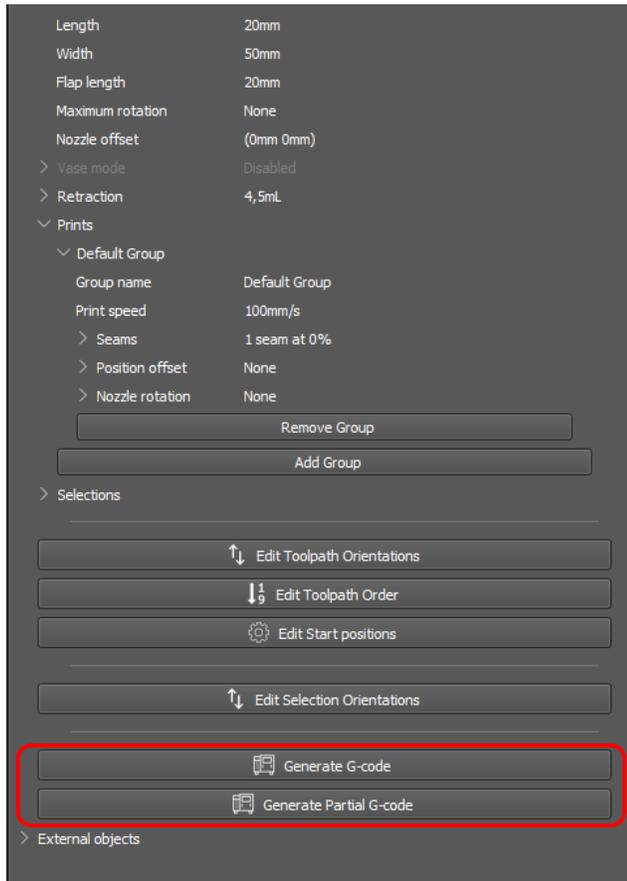


After adding external objects



INPUT PARAMETERS

G-CODE EXPORT



1. **Generate G-code:** Generates a G-code for the full geometry, for uploading in the COBOD Printer.
2. **Generate Partial G-code:** Using the animation Slider, you can digitally print as many layers as you already physically printed, then stop the animation approximately where you stopped printing, and generate a partial G-code from that point and forward.

```

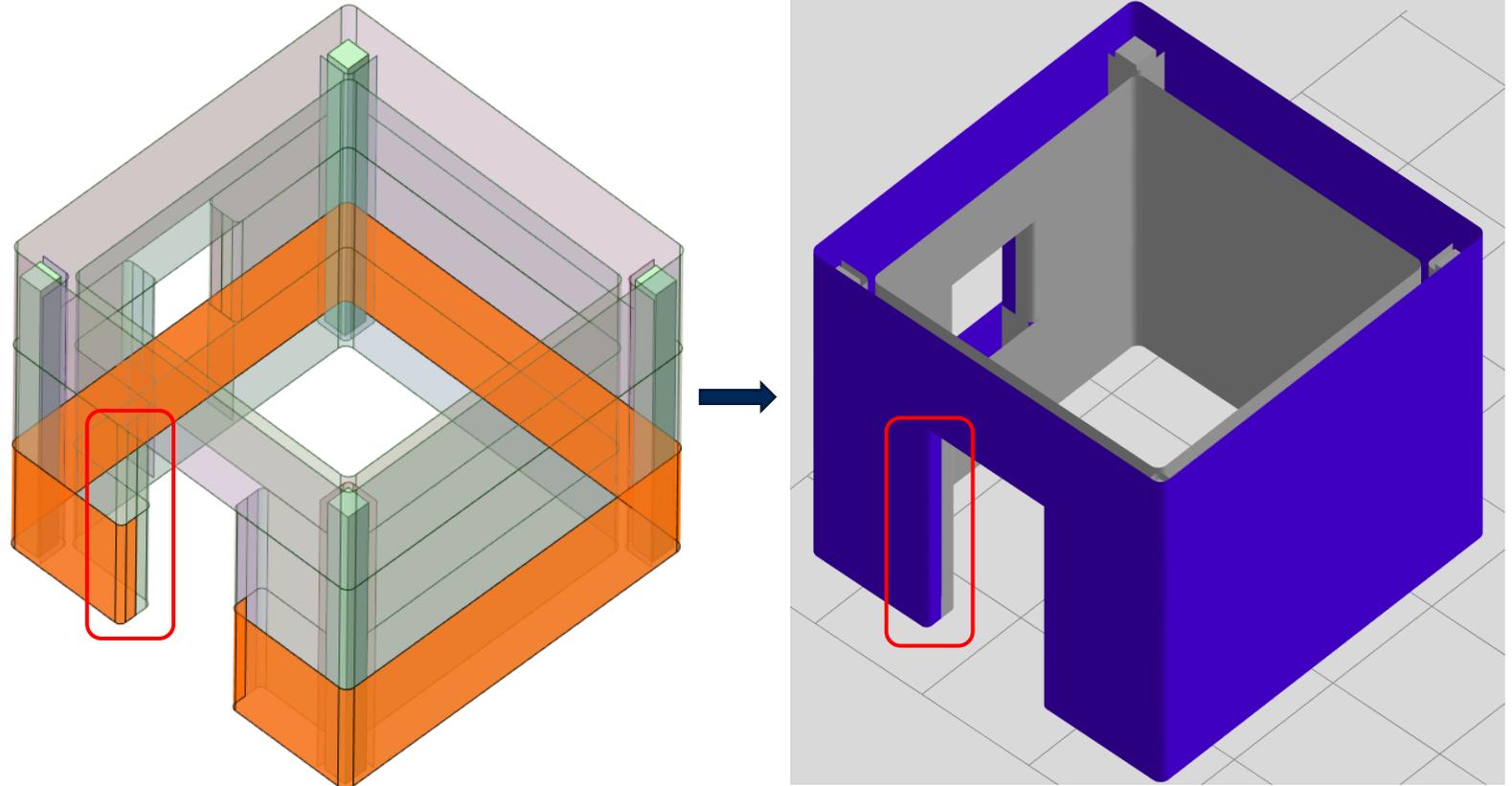
da - Notepad
File Edit View

; COBOD Slice 2.5.0.3260-41595203
; Layer width: 50.00
; Layer height: 20.00
; Flap length: 20.00
; Max segment length: 5.00
; Layer count: 150
T0 ; Select head 0
M302 P1 ; Allow cold extrusion
G90 ; Absolute position
M83 ; Relative extrusion
G21 ; Metric values
G1 U0.00 ; Reset rotation
; tool H20.00 W50.00 - Set visualization width and height for Simplify3D
;LAYER:0
; Layer #0 / Print #0
; Start Travel
G1 Z50.00
G1 X523.86 Y3478.09 Z50.00 U90.00 E0.00 F6000.00
G1 X523.86 Y3478.09 Z20.00 U90.00 E4.50 F6000.00
; End Travel
G1 X523.86 Y3478.09 Z20.00 U90.00 E0.00 F6000.00
G1 X528.86 Y3478.09 Z20.00 U90.00 E5.00 F6000.00
G1 X533.86 Y3478.09 Z20.00 U90.00 E5.00 F6000.00
G1 X538.86 Y3478.09 Z20.00 U90.00 E5.00 F6000.00
G1 X543.86 Y3478.09 Z20.00 U90.00 E5.00 F6000.00
  
```

SPECIAL PARAMETERS

ADDING TEXTURE – PREPARING THE MODEL

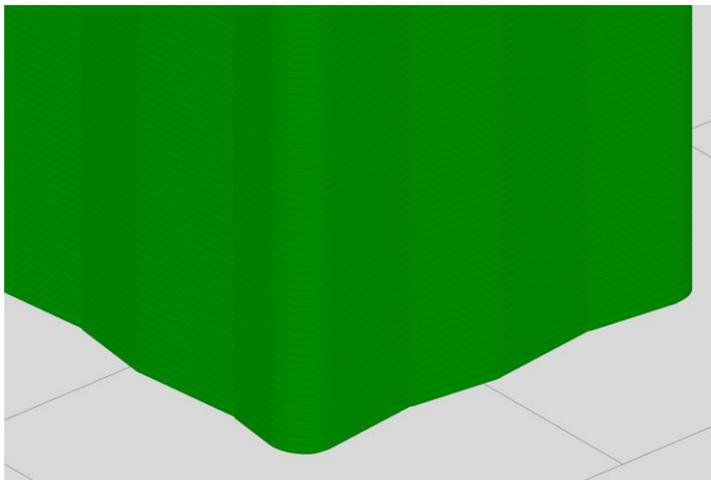
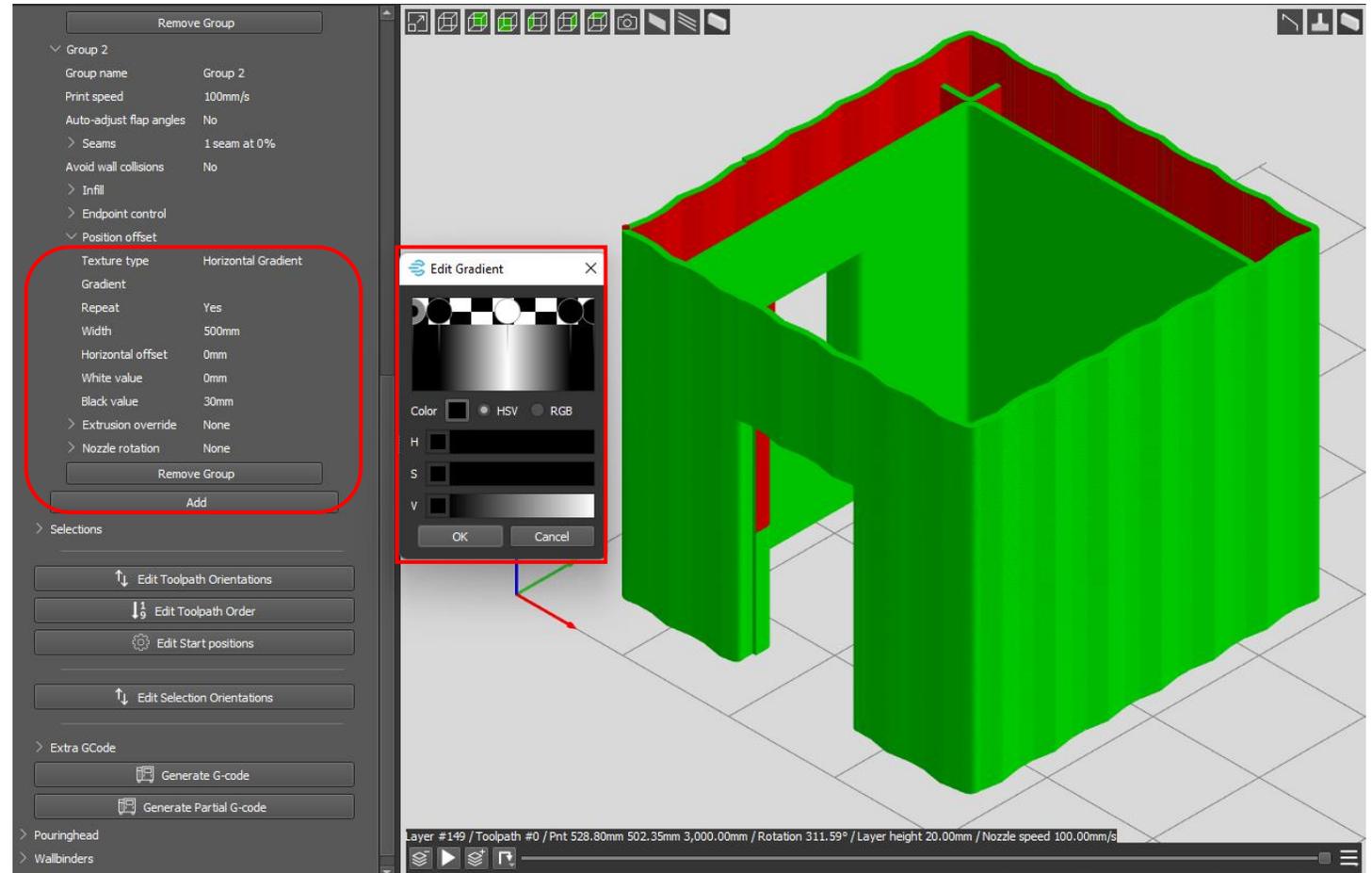
1. Divide the surfaces representing centerlines as one object where you want the texture to be applied.
2. A split of 3mm is needed at where the door/window is placed.
3. Next, in the Slicer the centerlines must be grouped for applying texture, otherwise texture will be applied everywhere.



▶ ADDING TEXTURE

HORIZONTAL OR VERTICAL GRADIENT TEXTURE

1. Select texture type to: **Horizontal Gradient**
2. Check the box to repeat the gradient
3. Set the width of the gradient
4. Set the value for white or black in mm.
This will determine how far the wall will offset from its original position

The screenshot shows the COBOD Slicer interface with a 3D model of a green, textured object. The 'Edit Gradient' dialog box is open, showing the following settings:

- Texture type: Horizontal Gradient
- Gradient:
- Repeat: Yes
- Width: 500mm
- Horizontal offset: 0mm
- White value: 0mm
- Black value: 30mm
- Extrusion override: None
- Nozzle rotation: None

The 'Edit Gradient' dialog box also shows a color selection area with a checkered pattern and a gradient bar, with 'Color' set to HSV. The 'OK' and 'Cancel' buttons are visible at the bottom of the dialog box.

The main interface shows the 'Texture type' settings for 'Group 2' with a red box highlighting the 'Horizontal Gradient' option and the 'Repeat' checkbox. The 'Remove Group' and 'Add' buttons are also visible.

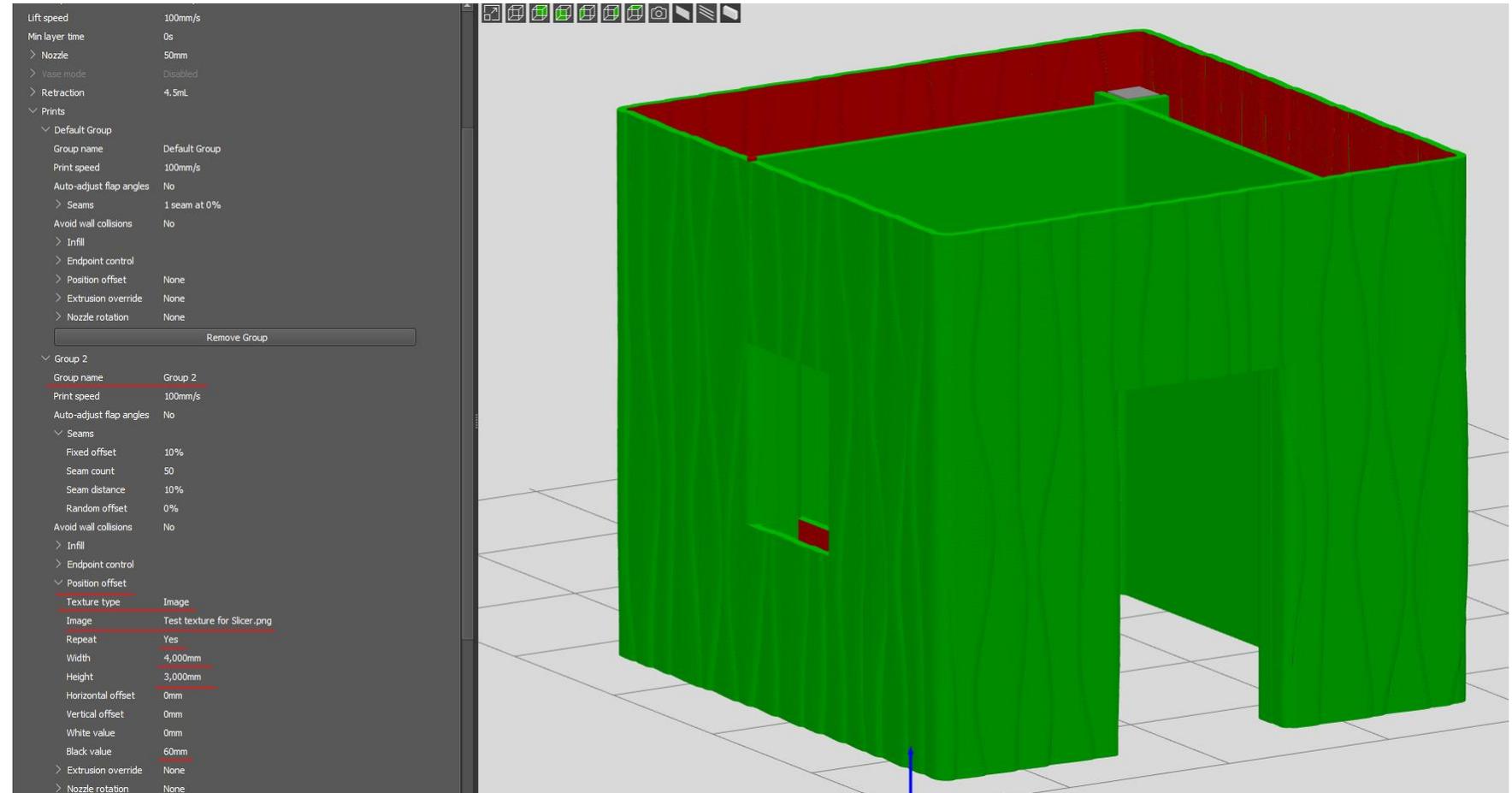
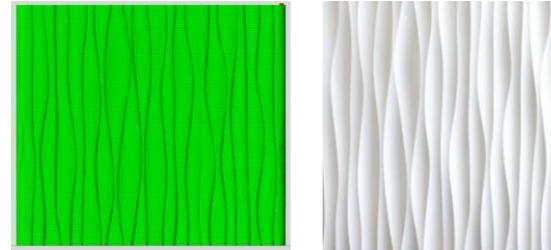
At the bottom of the interface, the status bar displays: Layer #149 / Toolpath #0 / Prit 528.80mm 502.35mm 3,000.00mm / Rotation 311.59° / Layer height 20.00mm / Nozzle speed 100.00mm/s

▶ ADDING TEXTURE

TEXTURE FROM AN IMAGE

1. Select texture type to: Image
2. Import a Black and White PNG.
3. Check the box to repeat the gradient
4. Set the **Width** and **Height** of the gradient
5. Set the value for **white** or **black** in mm. This will determine how far the wall will offset from its original position with the pattern.

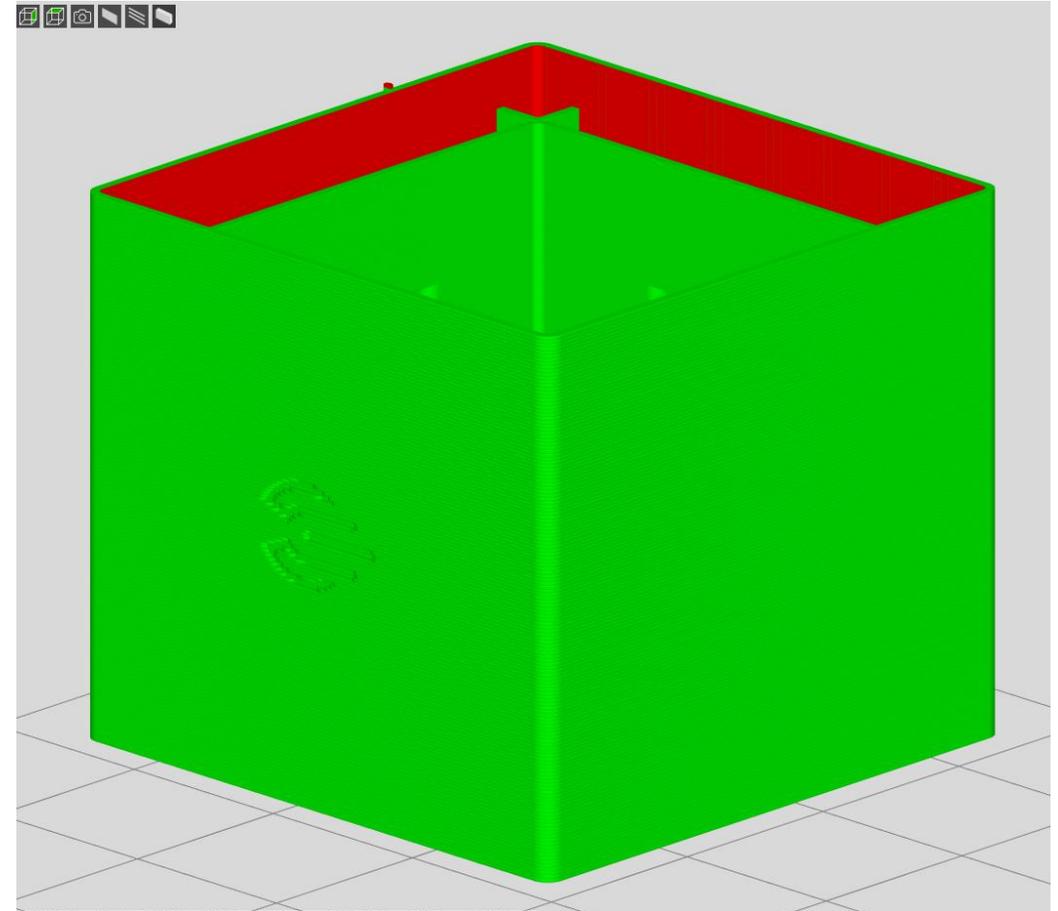
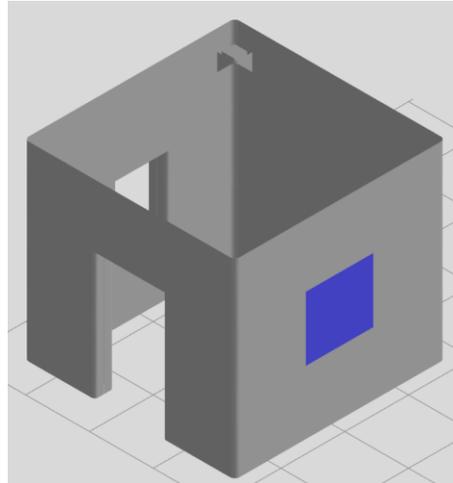
Experiment with the numbers from the **Black/white** value and the **Height/Width**. You will notice the same texture can generate different kind of patterns.



▶ ADDING TEXTURE

TEXTURE FROM AN IMAGE

1. Cut a piece of centerline from the main wall, to be able to add a logo, otherwise the logo will be printed everywhere.
2. Select texture type to: **Image**
3. **Import a Black and White PNG.**
4. Check the box to repeat the gradient
5. Set the **Width** and **Height** of the gradient
6. Set the value for **white** or **black** in mm. This will determine how far the wall will offset from its original position with the pattern.

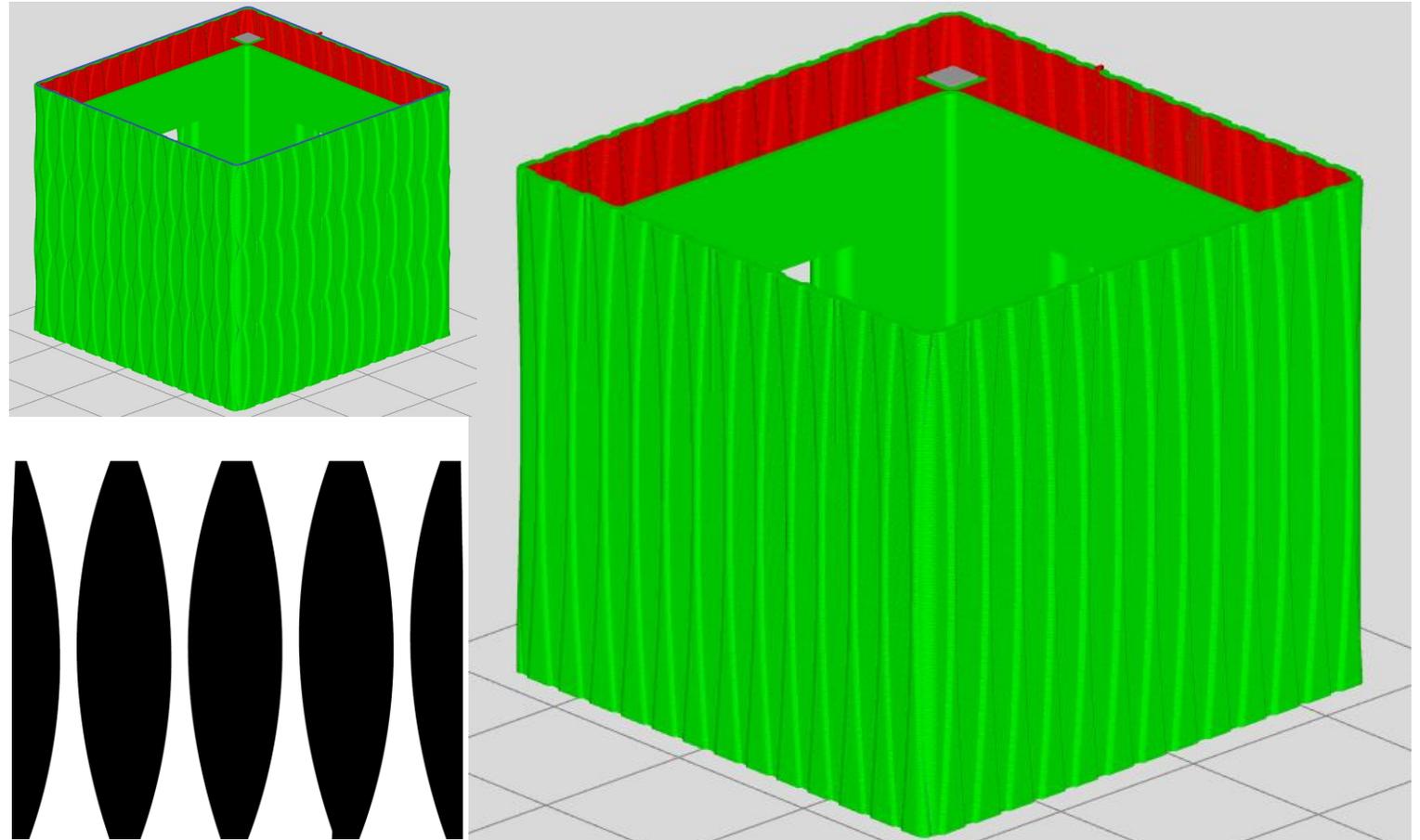


Experiment with the numbers from the **Black/white** value and the **Height/Width**. You will notice the same texture can generate different kind of patterns.

▶ ADDING TEXTURE

TEXTURE FROM AN IMAGE

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2. Import a Black and White PNG.
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5. Set the value for **white** or **black** in mm. This will determine how far the wall will offset from its original position with the pattern.



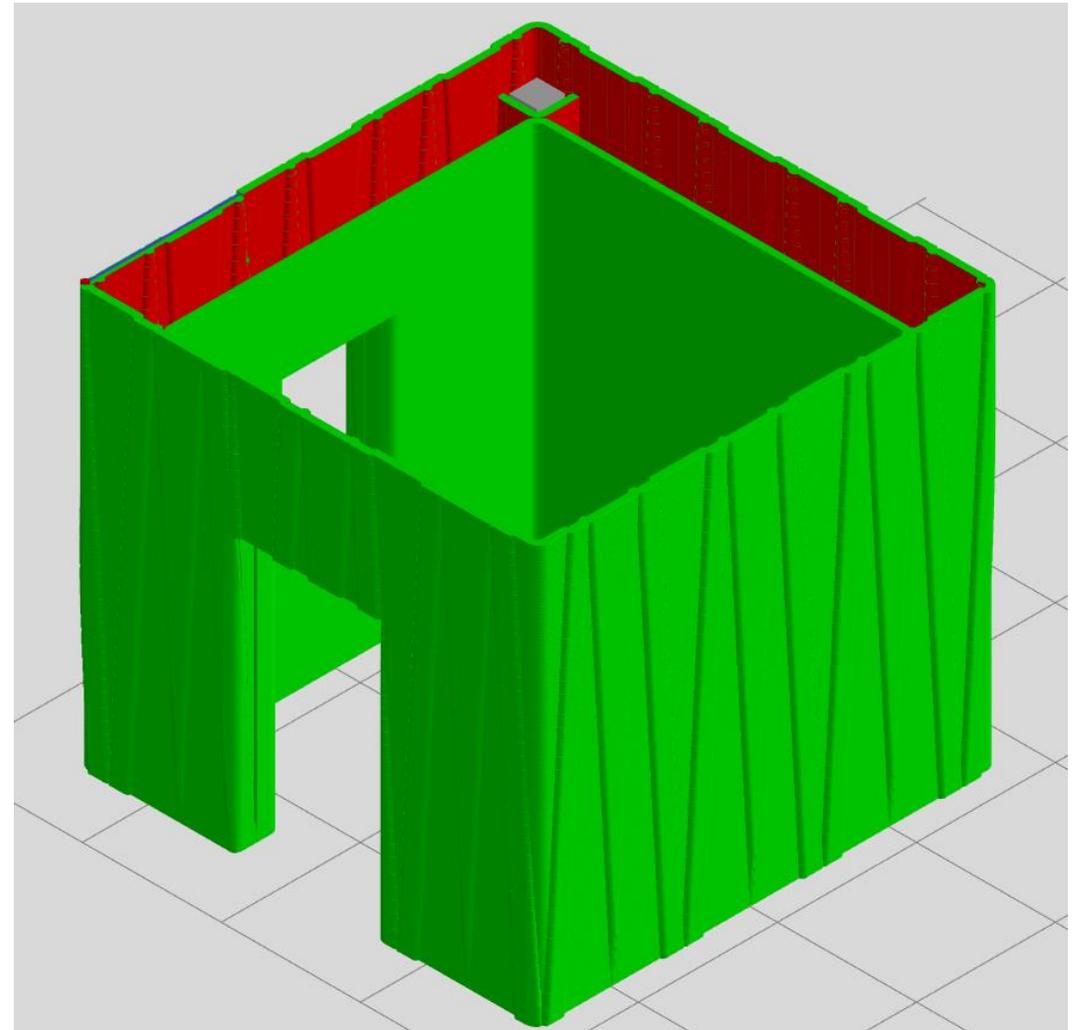
Experiment with the numbers from the **Black/white** value and the **Height/Width**. You will notice the same texture can generate different kind of patterns.

▶ ADDING TEXTURE

TEXTURE FROM AN IMAGE

1. Select texture type to: **Image**
2. Import a **Black and White PNG**.
3. Check the box to repeat the gradient
4. Set the **Width** and **Height** of the gradient
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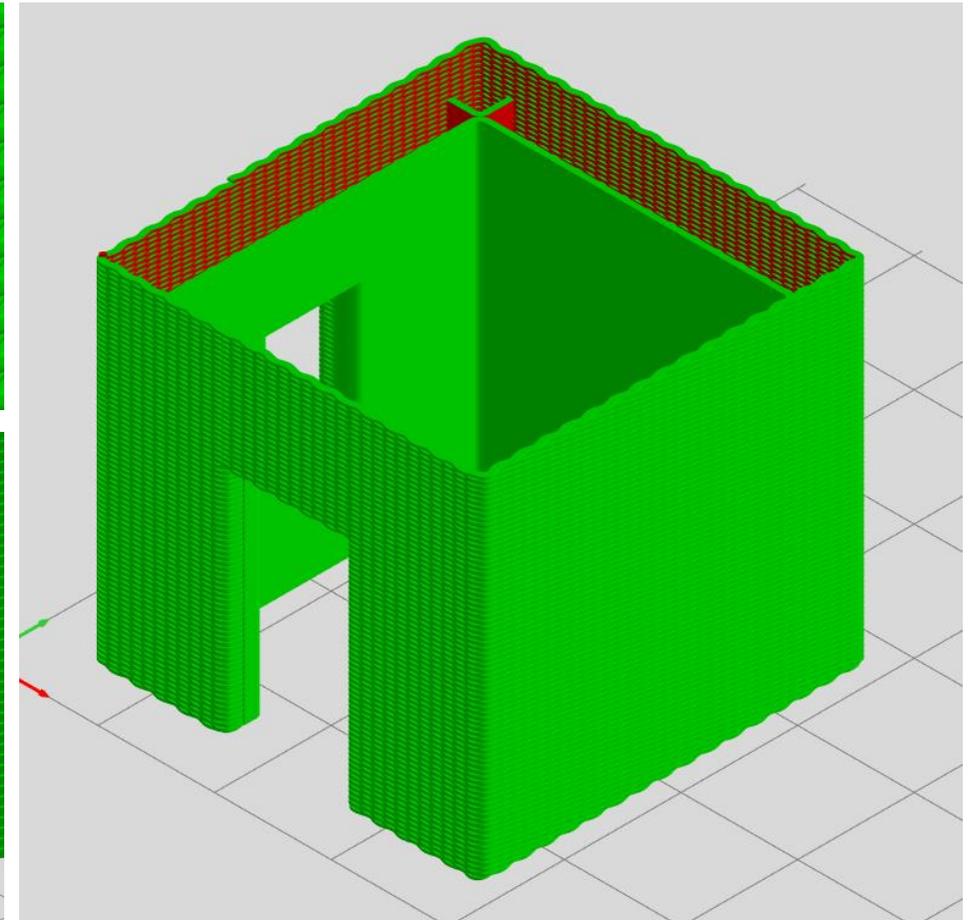
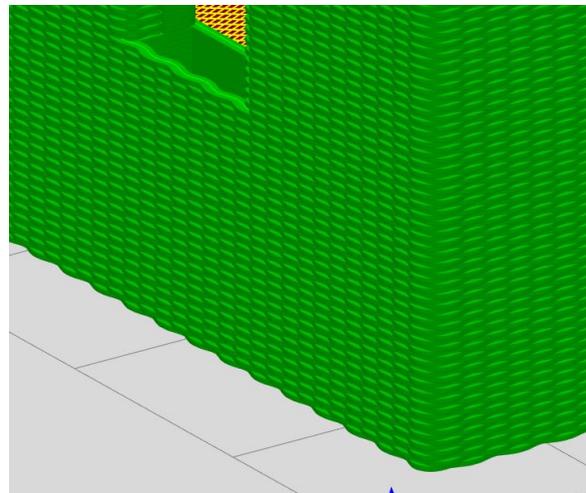
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▶ ADDING TEXTURE

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Experiment with the numbers from the **Black/white** value and the **Height/Width**. You will notice the same texture can generate different kind of patterns.

▶ RECAP OF PARAMETERS/SETTINGS

BASIC PRINT PARAMETERS/SETTINGS

1. **Layer height** : 20mm -40mm
2. **Lower head extrusion** : 25-40mL
3. **Print speed**: 250mm/s
4. **Length, width and flap length of the nozzle and flaps**
5. **Seam count**: More than 5
6. **Fixed offset**: 5-10 %
7. **Seam distance**: More than 5%
8. **Toolpath orientation**: same orientation for all geometry while using single flaps
9. **Tool path order**: Order in the smallest sequence possible, reducing the travel time
10. **External objects**: Add reinforcement or other objects as Solids in your Design

IMPORTANT

All these parameters are subject to change according to the weather condition and material consistency in your region. We recommend you create a small test print, and print it multiple times until you achieve your desired result, until you don't do that, you will risk to print a house with a poor quality, visually and structurally.

TIME

QUALITY OF
THE PRINT

COLLISION

PRODUCTIVITY

MOST COMMON SLICING MISTAKES FOR BEGINNERS

Lower head extrusion is set too low

Lower head extrusion found in the retraction parameter, needs to be tested according to your material.

Set it higher than normally and test it to find the right number for the start of your layer.

Solids are not in a different group

For setting the printer to avoid your solids, they must be added in a different group than the printable elements.

Make sure you create a different group and place the solids there before setting the printer to avoid them in the external objects.

Seams are not defined

Define your seam/s, either multiple seams or 1 hidden seam is a good option too.

Define the seam/s for every single loop geometry.

Generate a G-code for the entire model

Use the Slicing range to generate multiple g-codes.

Most likely you will be printing in multiple days, so its better to have a smaller g-code to handle.

Slicing range offers you the option to create the toolpath order easier as well.

Flap length is not defined.

Flap length must be grater than the actual length of your flap, for avoiding collision with the fresh printed layers while the printhead is travelling.

Flap length can be measured from the tip of the nozzle until the end of the flap, while is mounted on the nozzle.

FAQ

1. Where do I download the slicer from?

From the virtual library. The slicer will ask you for a license to operate, which needs to be requested through techsupport@cobod.com. To create a license, they need the identifier code that the program gives you when it asks for a license.

2. How many users are supported by each license?

Account is per computer. There are no logins.

3. Are we going to require individual passwords or accounts per user?

Account is per computer. There are no passwords once the slicer has been licensed

4. Is it a one-time license that covers the use of the printer, or it requires yearly renewals?

License requires renewal every 6 months due to security reasons, nevertheless, with your printer purchase you get 3 years of included slicer use. The new version of the slicer will alert the user when the license is close to expiring.

5. How are updates notified?

Updates are communicated to customers via P&I who can then download the newest slicer from the virtual library.

6. Which version should I download if I have an older computer?

It is always recommended to use the newest version of the slicer.

7. Can I use COBOD Slice to generate gcode for a different 3d printer?

This may work, but it is only officially supporting COBOD printers.

CERTIFICATION TEST

TEST CRITERIA

- ▶ Link: <https://www.flexiquiz.com/SC/N/db08d11d-6d44-4639-ae3-50c348973c78>
- ▶ Time limit: 20 minutes.
- ▶ Dynamic: All documents can be used as help.
- ▶ Approval: At least an 80% score to pass.
- ▶ Sequenced: Need to pass Level 1 test before proceeding to site training (Level 2).

**THANK YOU FOR
YOUR ATTENTION!**

