



DP200/DP201/DP102 Series

Slicer Program Manual



• Read the User Manual before operating the product, and keep the manual at a convenient place near the product.

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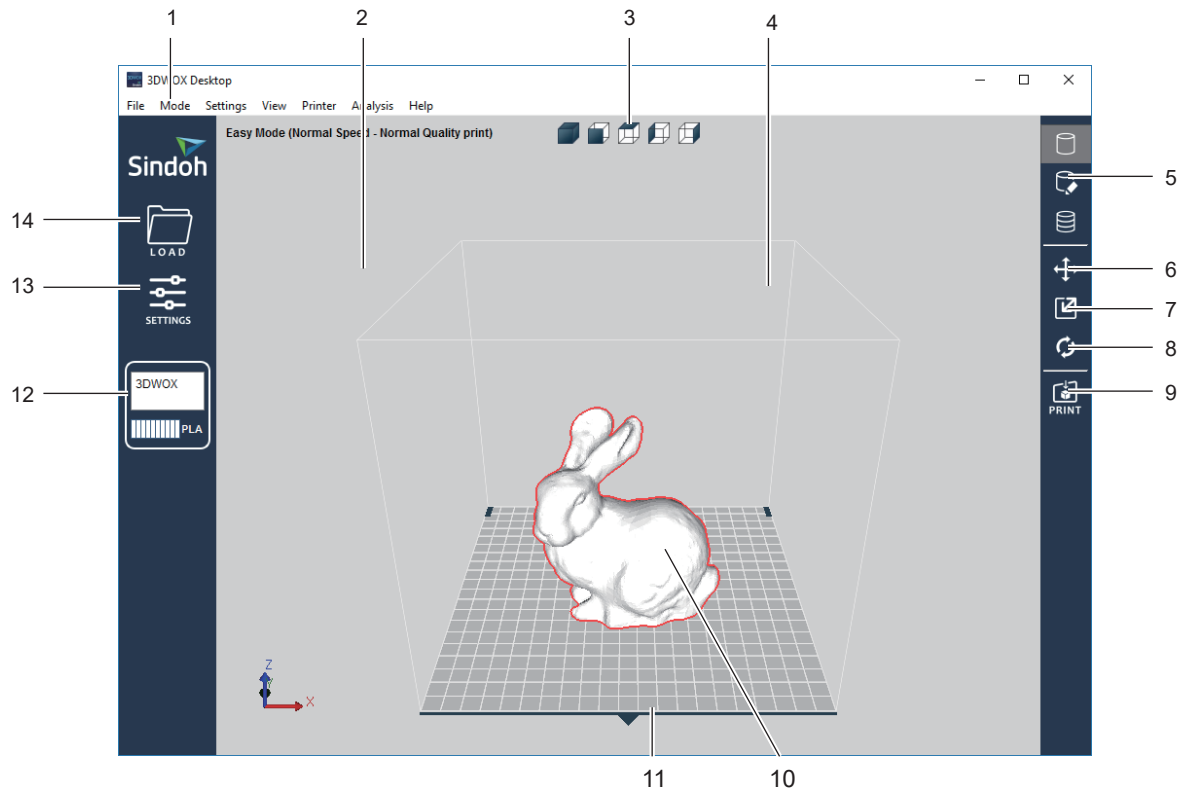
1. Slicer Program Manual

Reference

- Font used in the printer GUI and the user manual is the “NANUM” font provided by NAVER.

1.1 Basic UI Elements

After installation is complete, double click on the icon created on your desktop, a screen similar to the following appears. Explanation are the following.



| No. | Name | Explanation |
|-----|-----------------------------------|---|
| 1 | Standard menu bar | Most program functions are available in this menu bar. Opening files, Loading preset values, Exporting program values and more functions available. |
| 2 | 3D view | Displays a reconstructed 3D model loaded on the program. |
| 3 | Select view angles | You may look at the three-dimensional view from the front, back, left, right, up, and down based on the selected angle. |
| 4 | Printer Domain | In 3D view, displays actual printer domain showing the location and size of the model. |
| 5 | View Mode Selection button | On the screen 3 types of viewing modes are available. 3D Model Viewer, Support Edit Viewer, Layer Viewer are available. |
| 6 | Position button | Moves model in direction of 2 axes. |
| 7 | Scale button | Changes the model's size. (zoom or change length) |
| 8 | Rotation button | Rotates object on set angles based on 3 axis. |
| 9 | Print button | Connects to a printer to print a sliced model over the network. |
| 10 | 3D model | 3D model data displayed on the screen. |

| No. | Name | Explanation |
|-----|--------------------------------|--|
| 11 | Printer frontal indication | Indicates the front of the printout. |
| 12 | Filament information indicator | Shows information on filaments inside the printer. Easily informs user of filament material, color and remaining quantity. |
| 13 | Settings button | Settings for values necessary for slicing. |
| 14 | Import button (LOAD) | Loads printable 3D data into program. |


1.2 Functions and Information

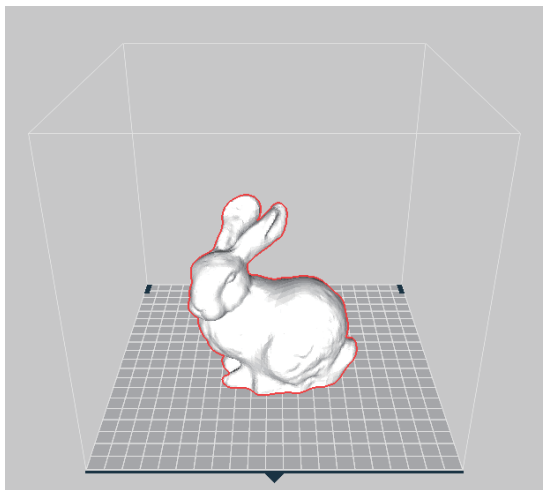
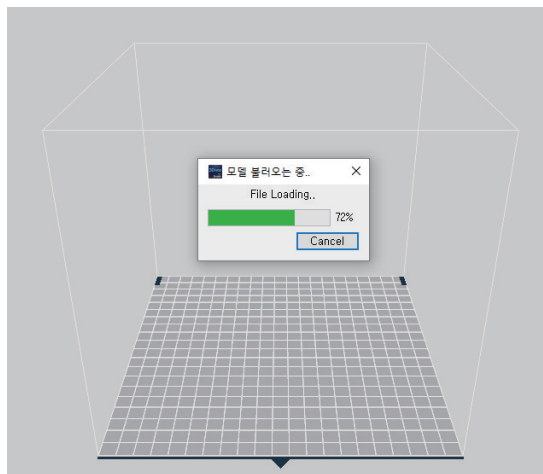
Loading

Loads a printable 3D model and displays it on the screen.

Currently supported file formats are ply, obj, stl (binary, ascii)

❖ Detailed description


- 1 Click on the  Import button located left of screen.
- 2 After selecting file, 3D model file is displayed as if it's on the printer bed.



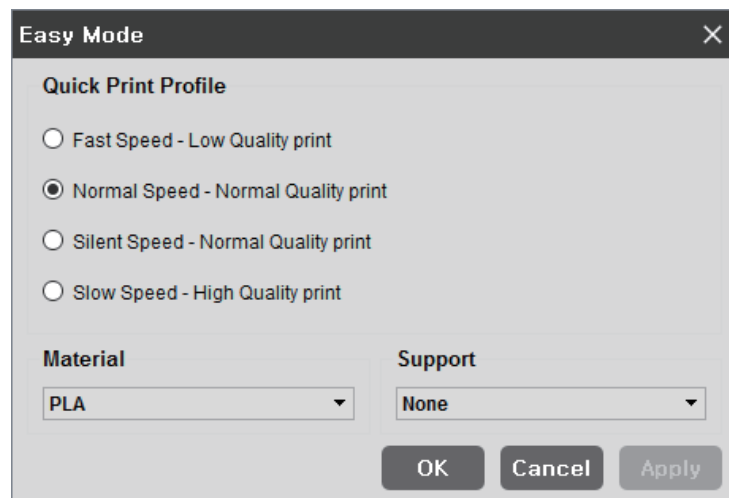
Profile Value Setting

Slicing and printing require variety of parameter values. From the material of the filament, to the height of the sliced layers, and to the printing speed, various parameters should be configured.

❖ Detail description

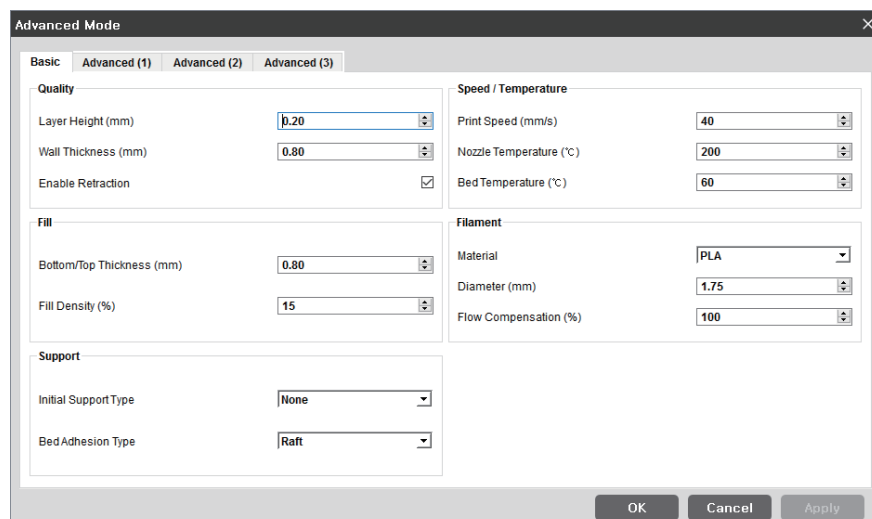
- 1 Click on the Settings button  located on left bar.
- 2 According to selected mode a window will pop up, user can input desired profile.

<Easy Mode>



<Advanced Mode>

• Basic Settings



• Advanced Settings (1)

• Advanced Settings (2)

• Advanced Settings (3)

- OK button: Saves all values and closes window.
- Apply button: Save all values without closing the popup window.
- Cancel button: Closes the window without saving changes.

❖ When the printer in use is DP102

The settings screen of DP102 is same as the above.

❖ When the printer in use is DP201

For 3DWOX DP201, the settings screen would change as below.

<Easy Mode>

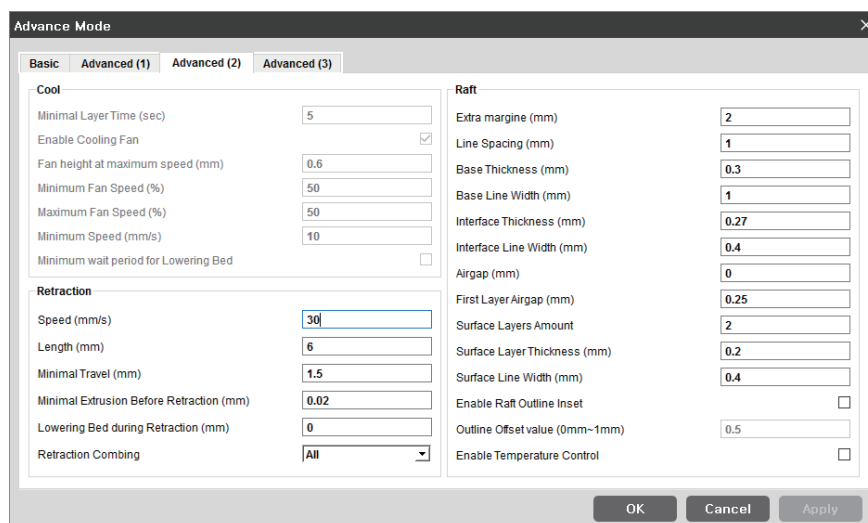
- The material is fixed to be PLA and other materials are unavailable.

<Advanced Mode>

• Basic Settings

- Bed temperature selection and material selection capabilities are deactivated.

• **Advanced(2)**



- The Printer controls the cooling settings automatically.
Besides the changes above, other settings screens would be the same as DP200's.

Filament Information Indicator

Printer automatically reads condition of filament in printer and displays on screen.

❖ Detail description



Current default printer name

Current quantity, condition and remaining material of filament inside the printer

View Mode Selection Button



Top right hand side of the viewer you will see buttons as shown on the left. Clicking button on screen will display 3 types of view modes to be selected.(From the top, Normal Viewer, support edit view, Layer view button) Once selected, the selected view type is highlighted for the user.

❖ Detail description

• 3D Model Viewer



This mode renders the 3D model loaded and displays it on the screen.

In this mode user is able to change position, angle and size of the 3D model and print it out.

• Support Edit Viewer



When the model contains a slant surface, support is needed at the bottom of the model to ensure good printing output. Hence, in this mode user is given the accessible views to position the support at the right location.

• Layer Viewer

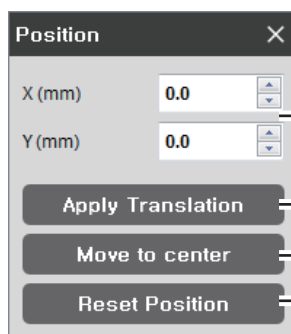


This mode slices the 3D model to print. Pressing this button allows user to slice 3d model parallel to the printer bed by reflecting parameter values, and to display the layers.

Moving a model



Moves the model on screen in directions of x and y axes.



Moves (in mm) a selected model in 2 axes.

Applies values to model.(Equivalent to Enter key)

Place the selected model in the center of the bed.

Moves the selected model to the location where it was initially loaded.

Adjusting Model Size



Scale and length of selected model on screen can be adjusted.

Scale

Scale X1.0

Scale Y1.0

Scale Z1.0

Scale X(mm)0.00

Scale Y(mm)0.00

Scale Z(mm)0.00

☒ Uniform Scale

Max Size

Reset Scale

Size of scale can be controlled in direction of 3 axes.

Size of length can be controlled in direction of 3 axes.

Adjusts in proportion of the original size.

Adjust model to maximum printable size.

Reset to original size.

Model Rotation



Selected model can be rotated in the direction of the 3 axes.

Rotation

Axis X (deg)+90-900

Axis Y (deg)+90-900

Axis Z (deg)+90-900

Apply Rotation

Reset Orientation

Lay Flat

Enter the angle to rotate in 3 axes.

Apply the entered value to the model (Same as Enter Key)

Restore the model's original direction when it was initially loaded.

If the model's angle is tilted, this will automatically adjust the angle so that the model is adhered to the flat surface of the bed.

Print



Connect to a printer to print a sliced model over the network.

Standard Menu Bar

File Mode Settings View Printer Analysis Help

Contains File, Settings, and Network printer related functions and located at the top of the program window.

❖ Detail description

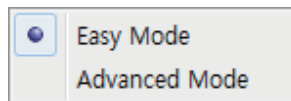
• File

| | | |
|-------------|---|---|
| Load Model | — | Loads 3D model (equivalent to Load button) |
| Save Model | — | Save the loaded model to another type of file or name |
| Load G-code | — | Load G-code and the model to show the print path |
| Save G-code | — | Save G-code after slicing the loaded model |
| Print | | |

• MODE

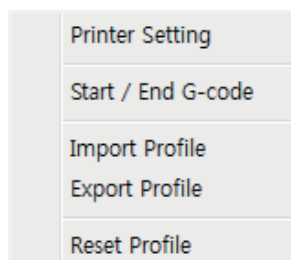
3DWOX offers users two types of different modes for slicing.

“**EASY MODE**” offers an predefined setting for a fast and easy print, “**ADVANCED MODE**” allows users to set each and every detailed value for user preference, to achieve desired printouts.

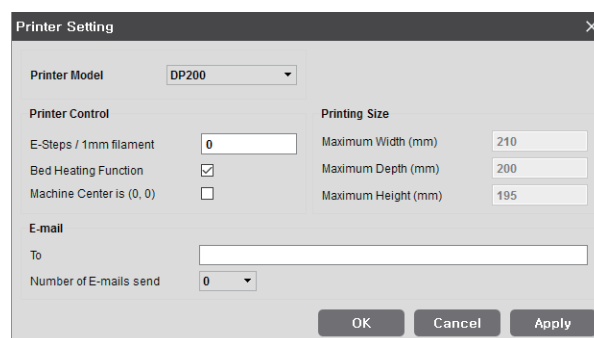


• Select Settings

Various parameters for slicing can be configured. (apparatus, G-code and profile)



<Printer Setting>



- Printer Model : A connected default printer appears on the screen.
- E-steps / 1mm filament: Number of the motor's rotation steps when 1mm filament is discharged. Setting this value to 0, the printer firmware will ignore this function and will operate with the default value.
- Bed Heating Function: Only select when bed heating function is available. When left unchecked, G-code for bed heating will not be created.
- Slicing Origin Point Correction (based on the equipment's origin point): Place the 3D model on the bed based on the equipment's origin point (0,0).

- Origin Correction (Bed center): Automatically controls model to be always positioned in center of printer bed.
- Maximum Printing Size: Insert maximum printable size of the connected printer.
- E-mail : Sends the printing status to the entered e-mail address.
Under 'email', input the recipient email address(es) and select the number of times to send the notification emails.

Additional recipient addresses can be added by using ';'.
ex> recipient1@test.com; recipient2@test.com; recipient3@test.com

The maximum number of notification emails that can be sent is 10.

An email notification, an email will be sent out for the user to see if the email notification is working properly by default. So the email will be sent out one more time than the number that the user entered.

However, the number of email that is sent will not exceed 10 times.

(When user selects 10 times, the notification email will be sent out 10 times)

❖ When the printer in use is DP102

Below is the settings screen of 3DWOX DP102.

The screenshot shows the 'Printer Setting' dialog box for the DP102 printer. It includes sections for 'Printer Model' (set to DP102), 'Printer Control' (with checkboxes for E-Steps, Bed Heating Function, and Machine Center), 'Printing Size' (with input fields for Maximum Width, Depth, and Height), and 'E-mail' (with a 'To' field and a 'Number of E-mails send' dropdown). Buttons for 'OK', 'Cancel', and 'Apply' are at the bottom.

Printer Settings screen and features are same as P200.

❖ When the printer in use is DP 201

For 3DWOX DP201, the printer setting screen has been changed as below.

The screenshot shows the 'Printer Setting' dialog box for the DP201 printer. It is similar to the DP102 version but with a different 'Maximum Height' value of 189 mm. The 'Bed Heating Function' checkbox is shown as unchecked.

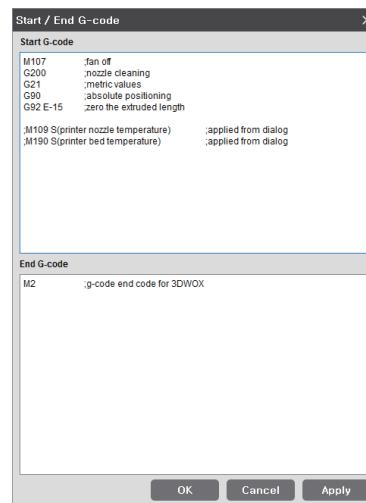
- Bed Heating Function: This function is deactivated for DP201.
Beside the change above, other setting screens are same as DP200's.

⚠ Caution

- E-mail feature must be selected from the UI menu before being used.
For further details, please refer to "UI Menu Feature Description"

<Start/End G-code>

View default settings for start/end code, modify text to apply to sliced model.

**<Import/Export Profile>**

This function allows user to import predefined profile parameter values or export values for slicing. File format for profile is *.ini and editing is available through “notepad”.

<Reset Profile>

Resets all profile parameter values to default value.

- **View**

Able to choose viewing mode that is equivalent to features of View Mode Selection button. For more details, please refer to **<View Mode Selection button>** on p.6.

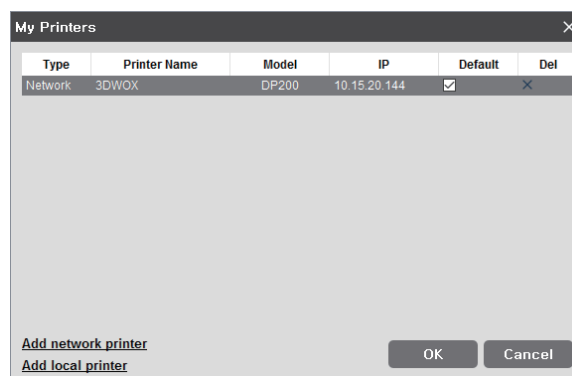
- **Printer**

Finds and adds printers on the network.

<My Printer Management>

This screen manages the printers added by user.

On restart of the program, without any settings required, prints will be directed to the default printer.



<Add Network Printer>

Automatically searches and finds available printers in network.

Select from the found printers and press “**add**”, then selected printer will be added to “**My Printer**”.



<Find Printer by IP Address>

Add by inserting specific printer IP address.

After typing the IP address, press “**Add**”. If the IP address is available, the printer within the IP address will be added to “**My Printer**”.



<Add Local Printer>

Automatically searches the printer that is connected by the USB Cable and displays it on the screen.

If you click the [Add] button after selecting the searched printer, the printer is added to “**My Printer**”.

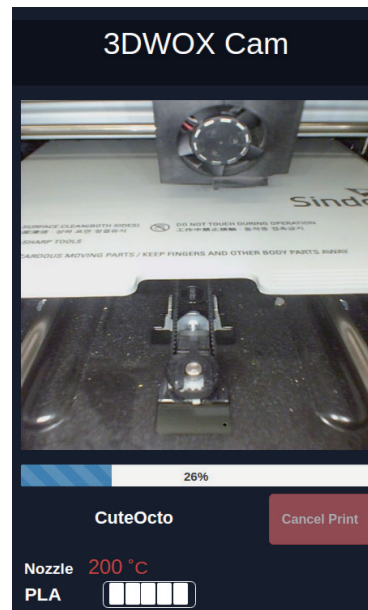


<Web Monitoring>

Function allows user to monitor the operation of the network printer connected to this program.

Caution

- Compatible browser versions are Internet Explorer 11 or FireFox 40.0 or Chrome 47.0 or higher. Some features may not function properly if the browser version is lower than the above.



- **Analysis**

This function analyzes the 3D model and notifies user of any problems that might arise.
(refer to Advanced Functions)

- **Help**

User can gain access to information on Language, Keyboard Shortcuts, Online FAQ and Program Updates.

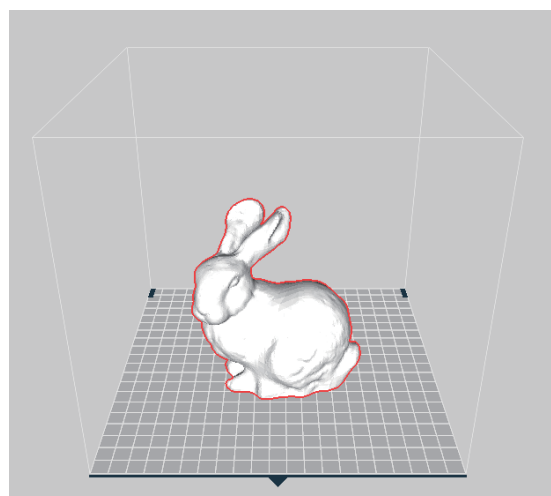
1.3 Printing (basic functions)

Explanation of the steps to printing 3D model using base functions.

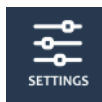
Loading 3D Model Files

Click on the **[LOAD]** button located on the left hand side of the screen and select the 3D model file user wants to import. (For each function refer to detailed descriptions).

Selected model will be positioned in the center of showing printer bed.



Basic Parameter Setting

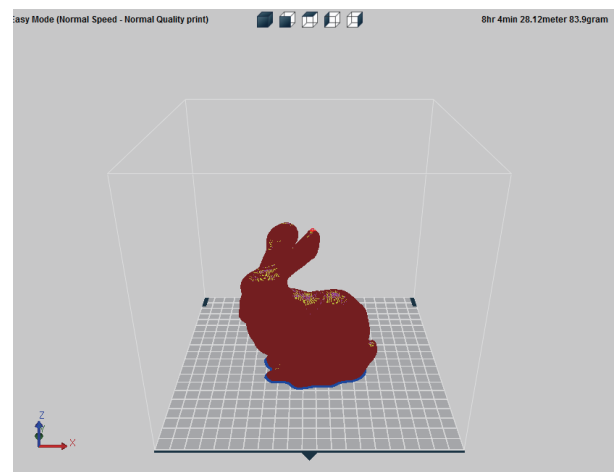
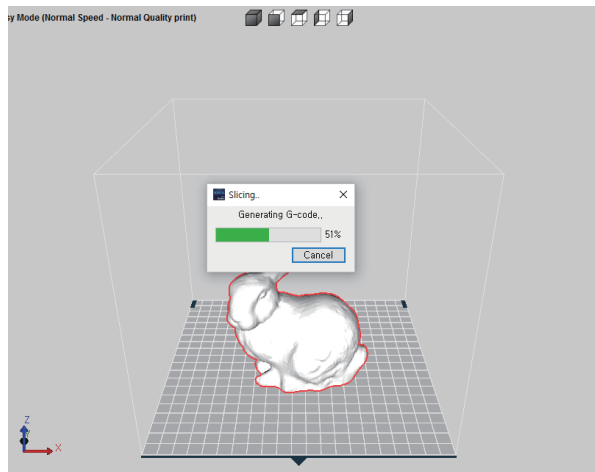


Click on the **[SETTING]** button to change any parameter values.
eg) change the slicing layer height value which does determine the quality of the printable or adjust the support application.

Slicing

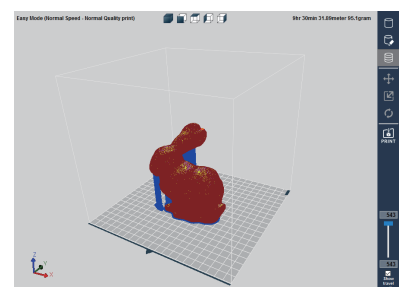
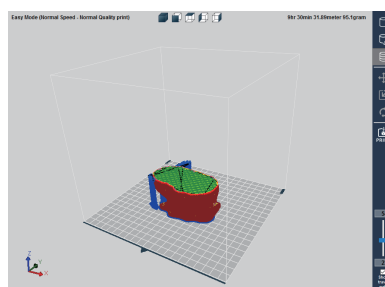
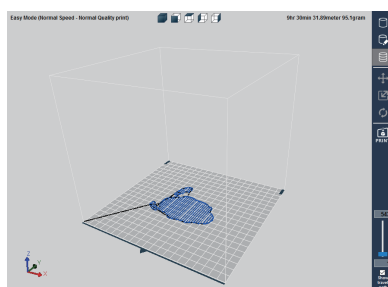
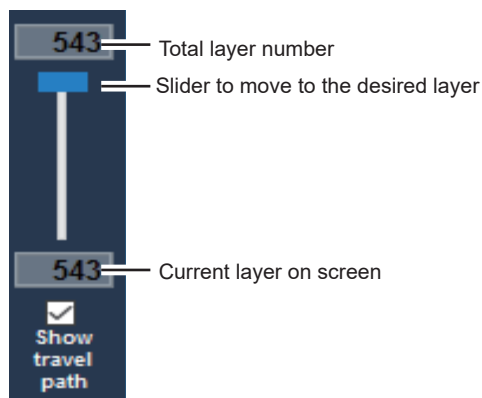


After checking 3D model is positioned on the bed, selecting Layer Viewer mode will apply the parameter values and execute the slicing.



The result of slicing in the layer view will be displayed on screen.

Model will not be a whole instead will be displayed in lines of layers, using the slider located at the bottom, user is able to analyze each layer of the model.

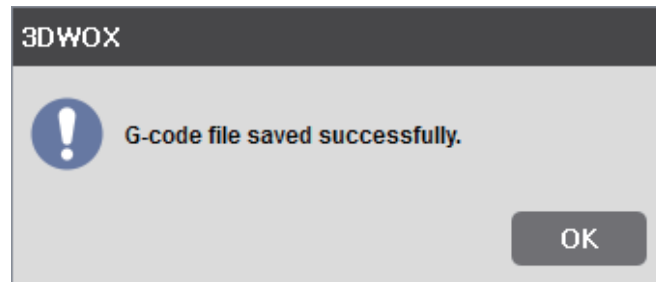


Print

There are three ways to print the sliced model.

<USB Thumbdrive>


- 1 Slice the model and press **[Save G-code]** on the File menu.
- 2 Save the G-code file in the USB Thumbdrive.

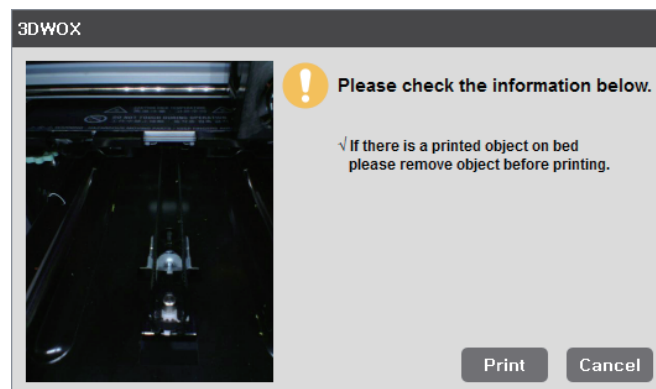


- 3 Connect to the USB port on the front side of the printer and load the G-code file to directly print the model.

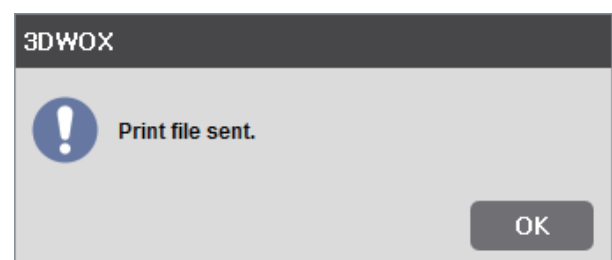
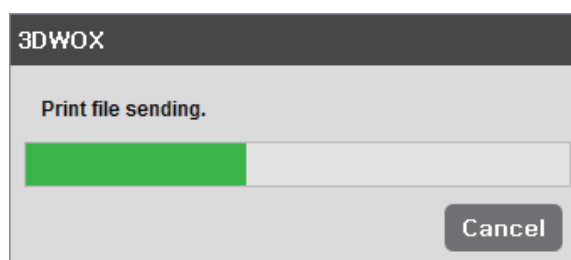
<Network Connection>

- In order to use this function, the printer has to be connected through network.
More details can be found in the **<My Printers>** and **<Add Network Printers>** section.

- 1 Slice the model and select the print icon  on the right or **[Print]** in the File menu.
- 2 If the monitor shows no problems as shown below, press **[Print]** to begin printing.




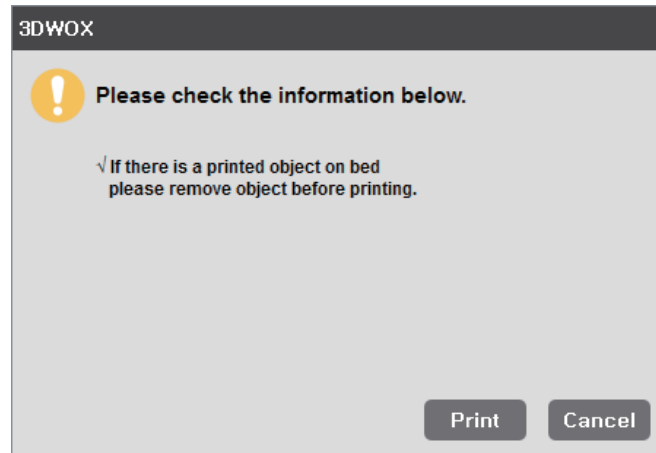
- 3 G-code is sent through the Network and the printer begins printing.



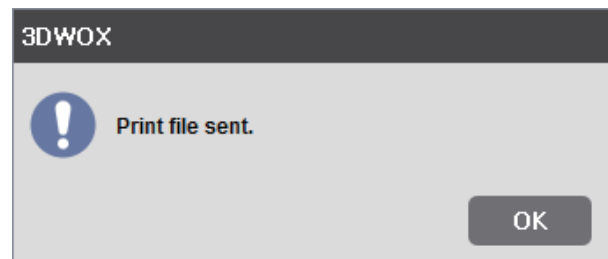
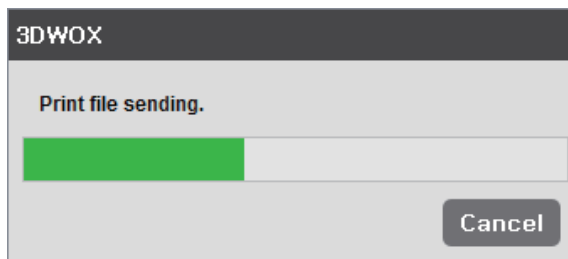
<Local Network Usage>

- In order to use this function, the printer must be connected through the USB cable.
More details can be found in the <My Printers> and <Add Local Printers> section.

- 1 Slice the model and select the print Icon  on the right or **[Print]** in the File menu.
- 2 If the monitor shows no problems as shown below, press **[Print]** to begin printing.



- 3 G-code is sent through the USB Cable and the printer begins printing.



1.4 Advanced Features

Support Edit Function

3DWOX offers users to not only use the setting values automatically calculated by the program but can be changed manually.

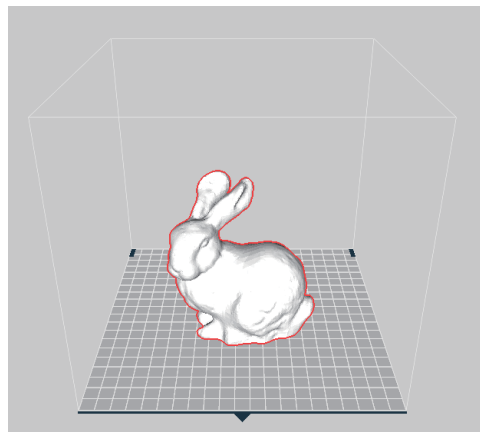
Thus, you can add or delete additional supports in addition to the established supports.

These types of editing tools can be executed in Support Editing View Mode.

Support Editing View Mode

- **3D Model**

First load 3d model into program.



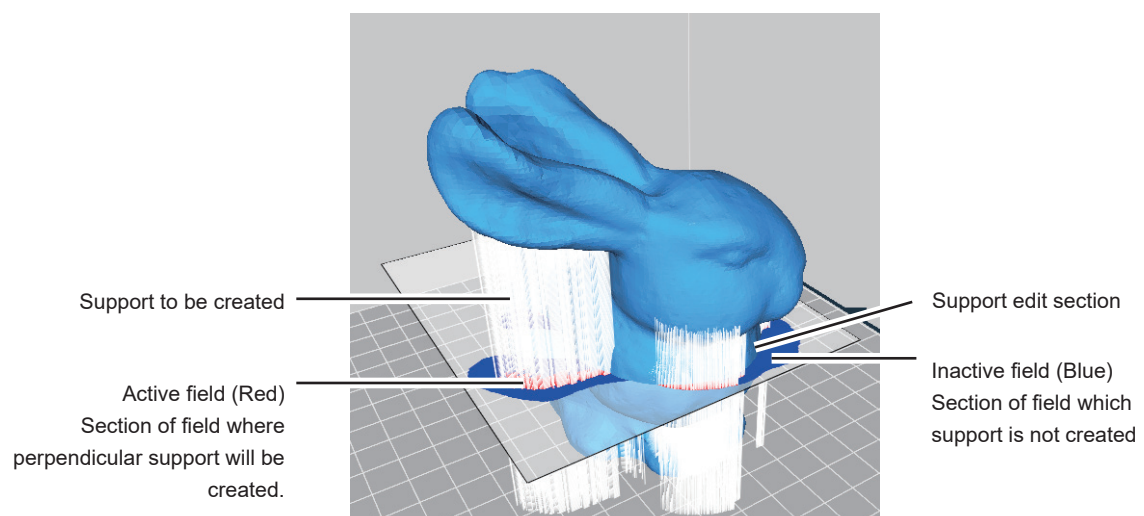
- **Conversion to Support Edit Viewer mode**



Click Support Edit Viewer mode button located on right side of screen. Edit mode will change to Support edit view (look under setting - advanced mode - support type) either **“Touching Buildplate”** or **“Everywhere”** has to be selected for support to be created. In case of **“None”** support editing will not create a support.

By changing View mode user will be able to view model with supports, shown below.

Brief explanation of support edit view is as the following.



By standards support is shaped in a section projecting in the direction of Z axis.

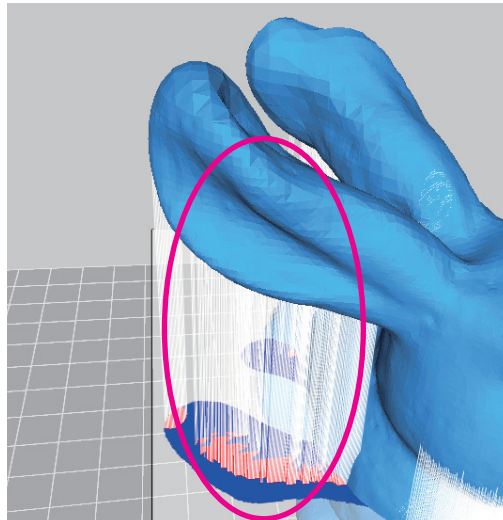
Thus, shape can be created in perpendicular direction and support edit cross sections will show the maximum area that support can be created in the current section.

- **Creating and Removing Support**

<Support Creation>

To create a support, click on the inactive area (blue) in the edit region.

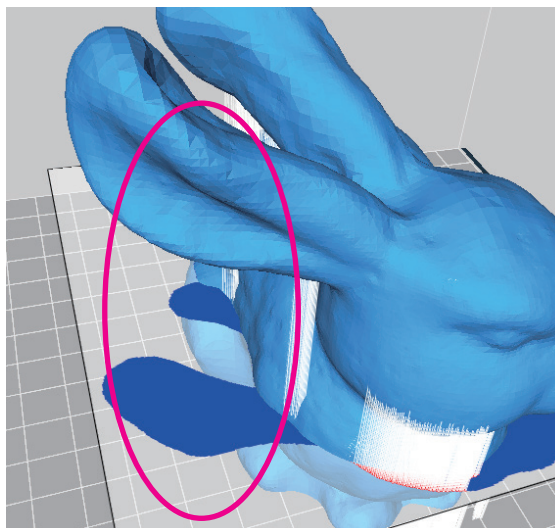
Now, the region will turn red and creation of perpendicular supports can be seen .



<Removing Support>

To remove support, press and hold Ctrl key and click on the active area of the edit cross section.

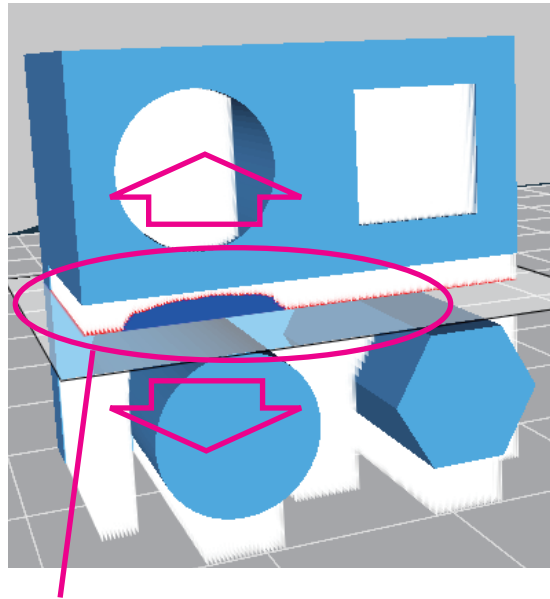
The area that has been selected will turn black (inactive), Supports that have been created will be removed.



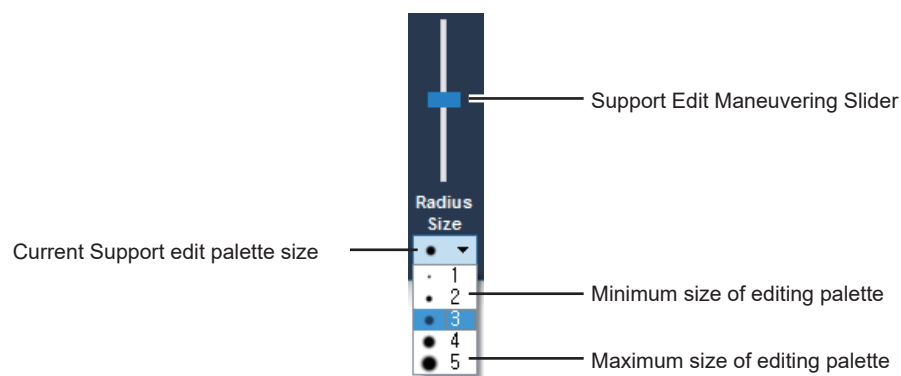
- **Support Edit Cross Section Maneuvering**

Length of Support is determined by having the cross section as the center and creating a support vertically both ways until a shape is created.

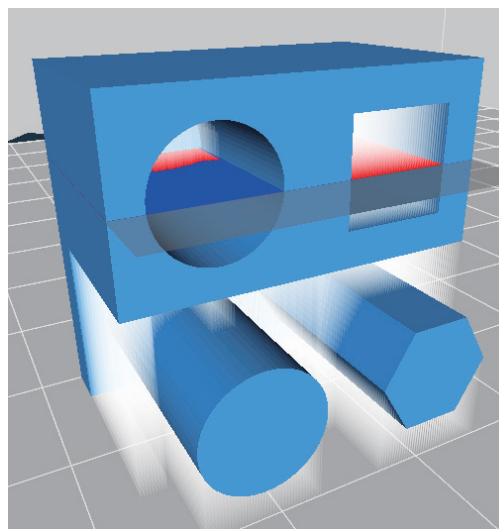
Thus, if there is a shape in the middle of the area, support creation have to be divided and edited separately. For example like the model below, when editing the support located in the middle of the model, in the circle, only the lower half will be edited. So when removing, only the lower half of the support will be removed, and the support in the middle of the model will remain as is.



Because of the shape in the middle, Support area has been divided.



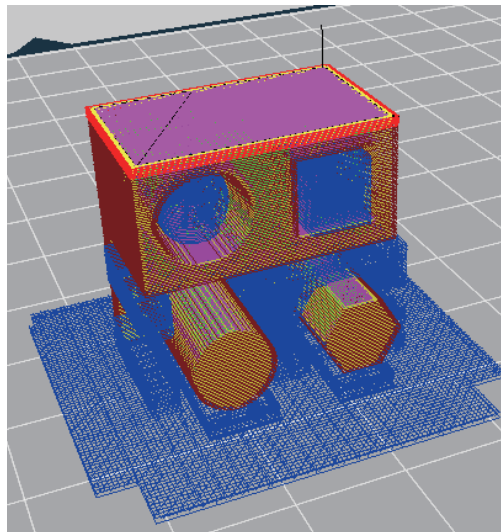
To edit the support inside, the model user has to move the edit cross section.
Use the support edit slider to maneuver around.



Move the Support Editing Cross Section up to place it in the area to edit.
The supports of the interior can be edited by clicking on the interior area of the editing cross-section.

- **Creating Final Support**

After finishing the touches to the support, change to Layer Viewer mode. The model will go through the slicing process again. Now the user can interact with the finished slice with edited supports.

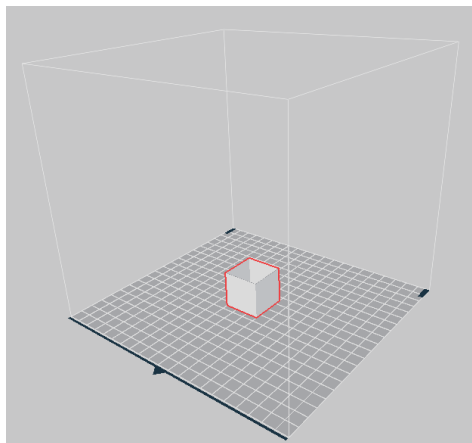


3D Model Analysis Function

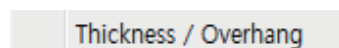
3DWOX has the function where printing the program analyses the shape of the 3D model and informs user of any problems that might occur before printing. Performs thickness analysis of the model based on the cross section of the slicing direction and analyses the counter gradient of the shape in the z axis direction.

- 1** Select 3D Model

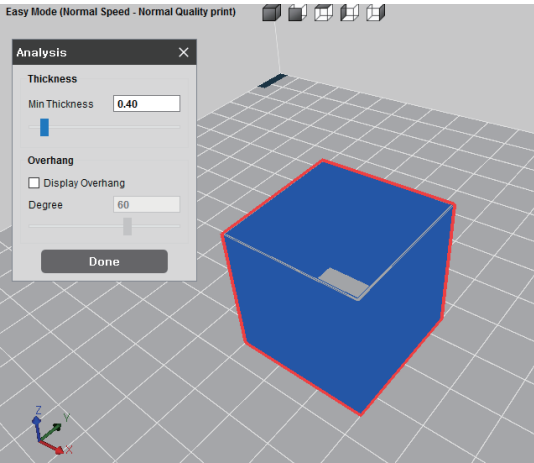
Click and select the 3D model.



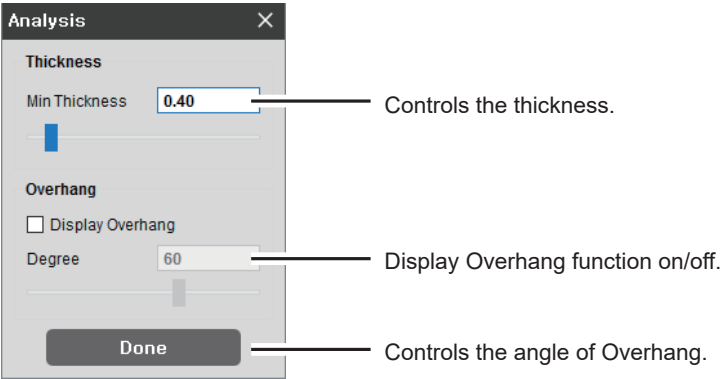
- 2** Under Analysis menu, select Thickness / Overhang.



At the top of the screen, under the Analysis menu select Thickness / Overhang. The analysing process is displayed and calculated results and analysis control window appears.

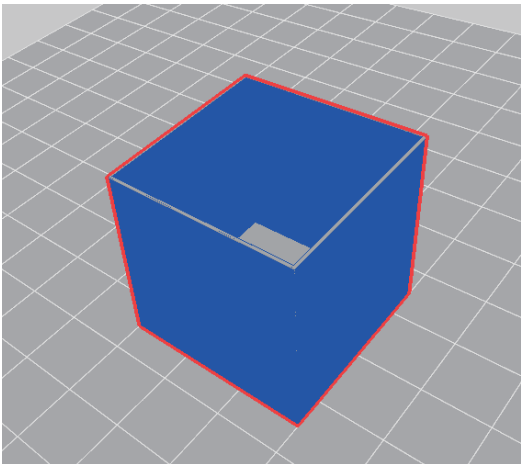


3 Analysis Control Window

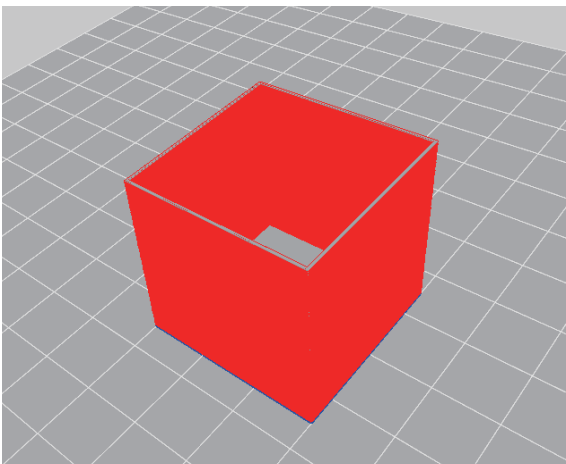


4 Thickness Analysis Function

Shows layers that are thinner than the minimum thickness value. If minimum thickness layer was set to 0.4mm, any layers that are thinner than 0.4mm (in the order of BLUE, GREEN and RED) will be indicated, and user will be notified with any problems that might arise.



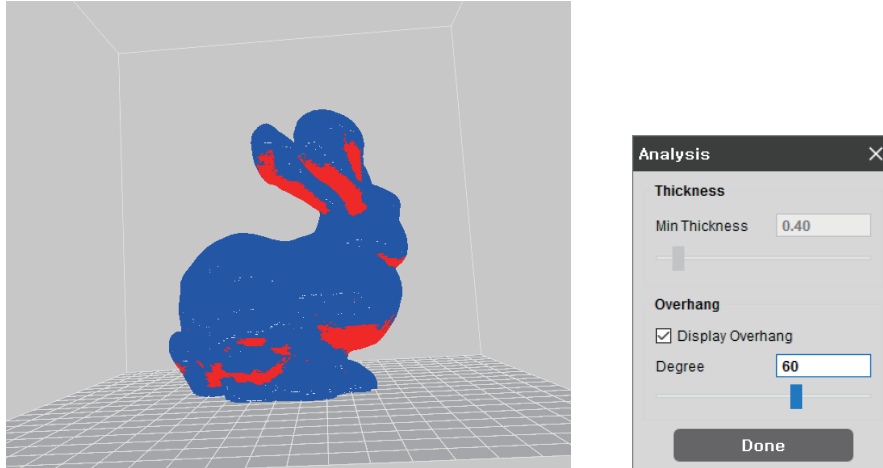
<Geometry is thicker than set value>



<Geometry is thinner than set value>

5 Overhang Analysis Function

In 3D printing, it's very favorable if object is perpendicular to bed surface, more horizontal the shape is, the more disadvantageous it is. When the angle in horizontal direction is small, supports are needed. The Overhang analysis function calculates the geometry's inverse draft and notifies the user of possible problems that might occur during an actual printing.



Function to Calculate Optimal Printing Direction

3DWOX has a feature which calculates and recommends the user the most optimal direction for printing. On the basis of pre set standards, this feature calculates 6 different printing directions having the Bed as the base and shows the optimal direction to the user. There are 3 types of evaluation criteria and explanation for each type is as follows.

- **Estimated Printing Error Surface**

Using thickness analysis of the 3D model, the function calculates the area of the part thinner than the current nozzle diameter. For areas which are thinner than the nozzle diameter, there is an extensive chance that the model may not accumulate as expected. So the program pre-calculates these to find printing errors.

- **Overhang Surface**

Through Overhang analysis, the program takes into consideration of errors that might occur during printing. Smaller the Overhang surface is, better the quality is. Thus, considering the calculated area value in the opposite way, the optimal printing direction is determined.

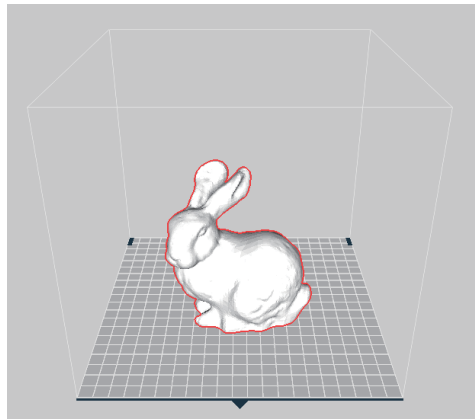
- **Amount of Support**

Where there is an Overhang, support is needed for a normal accumulation. However, more supports there are, lower the quality and longer the printing duration becomes.

Taking the factors into consideration the program pre-calculates the optimal printing direction.

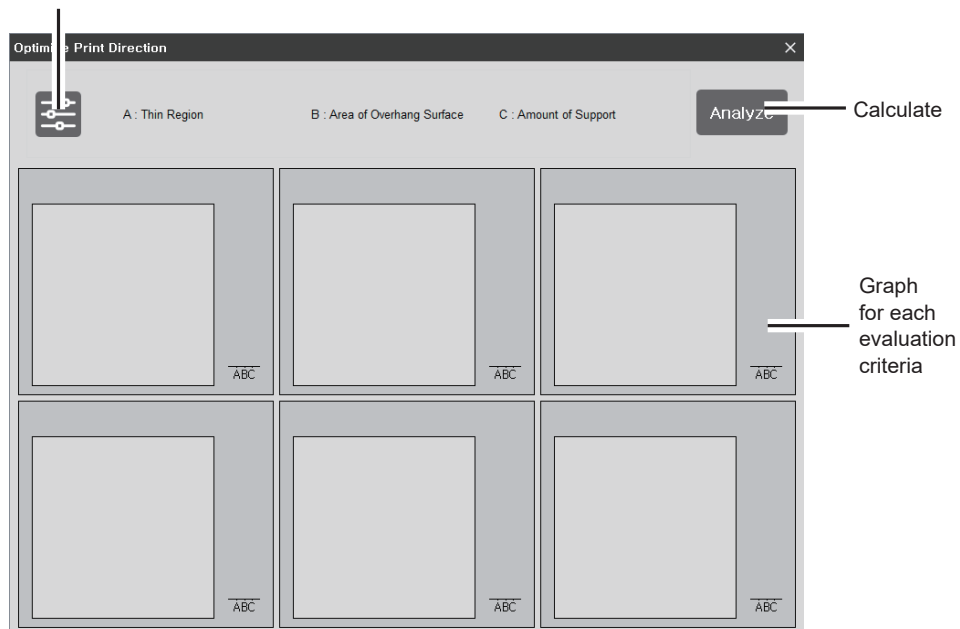
1 Select 3D model

With the 3D model loaded, click on the model to select.



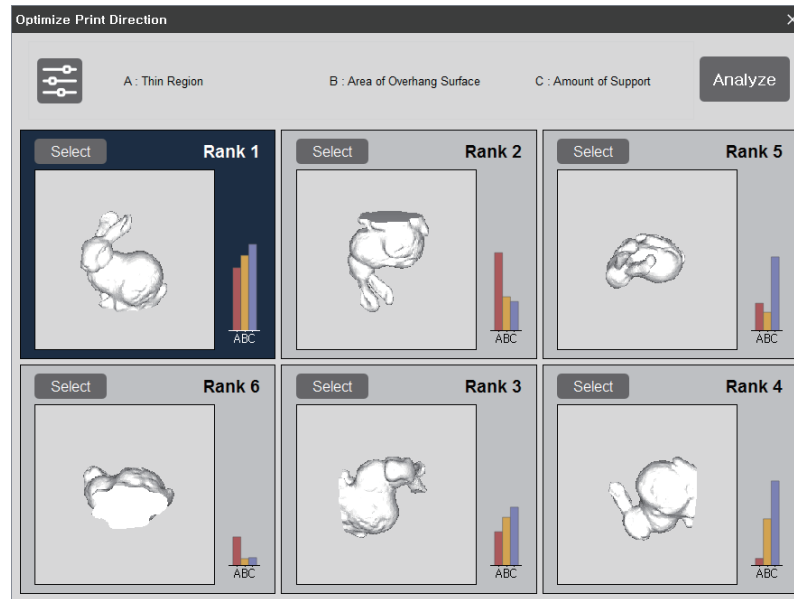
- 2 In Analysis menu, select “**Optimal Printing Direction**” and a window similar to the following appears.

Parameter Settings



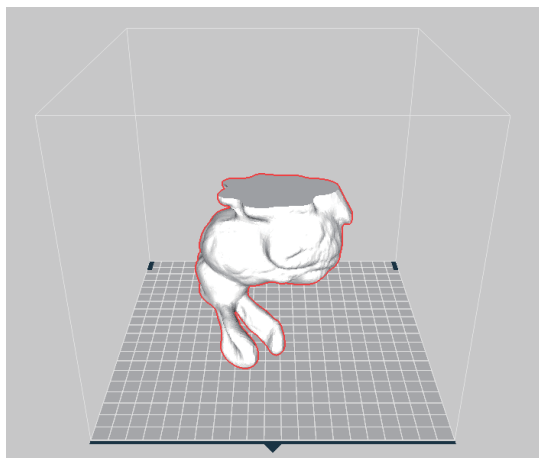
- 3 Calculation for each 6 different direction would be initiated once the user clicks on the Caculate button.

- 4 Results of 6 different directions of the model will be displayed, and each direction will be ranked on the evaluation results. Following the results of the evaluation, the most optimal direction will be graded accordingly, and a graph of each evaluation analysis can be examined.



The taller the graph, the higher the scores are achieved for the corresponding evaluation criteria. All scores would be added and ranks of the 6 directions be displayed on the screen.

- 5 Select the preferred direction by pressing the “select” button, and the model appears facing the direction selected. (Rank 2 had been selected in this reference image image)



■ Memo

