IT3D GROUP

Starting with Voladd

voladd

Index

Introduction to Voladd

Using the Voladd 3D application completely simplifies the printing process, since the maintenance required by the equipment is minimized.

The creators of Voladd claim that the printer has a **"computer soul"** as it is equipped with an open source Beagle Bone Black microcomputer and a Linux operating system.
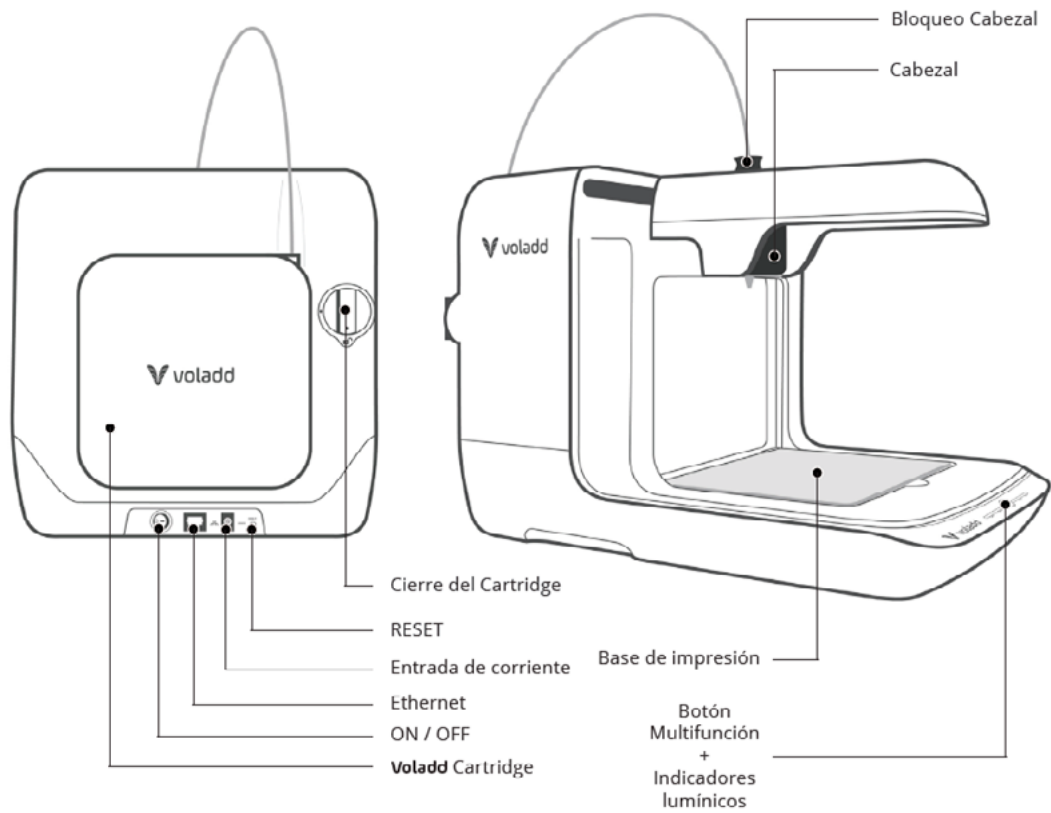

3D printing can be found perfectly integrated in multiple sectors such as industrial, food, medical, artistic, today any idea or prototype we have in mind can be brought to reality for very little money, infrastructure and time.

Other sectors have less integrated this technology, among which are the educational sector, so the important thing is to find that magical connection between technology and education that makes this integration natural and pedagogical.

For all these reasons, Voladd comes to revolutionize classrooms.

Printer parts

Bloqueo Cabezal
Cabezal

Cierre del Cartridge

RESET

Entrada de corriente

Ethernet

ON / OFF

Voladd Cartridge

Base de impresión

Botón
Multifunción
+
Indicadores
lumínicos

Voladd Cartridge

It includes a nozzle that must be heated to the necessary temperature depending on the impression material used. We have two types of nozzle, one of 0.4 mm (FINE) and the other of 0.6 mm (BOLD). In addition to a range of 7 colors, white, black, gray, orange, green, blue and red.

Head

It moves in the X and Y axes melting the filament and depositing it in the printing base or bed. It includes a nozzle that must be heated to the necessary temperature depending on the impression material used.
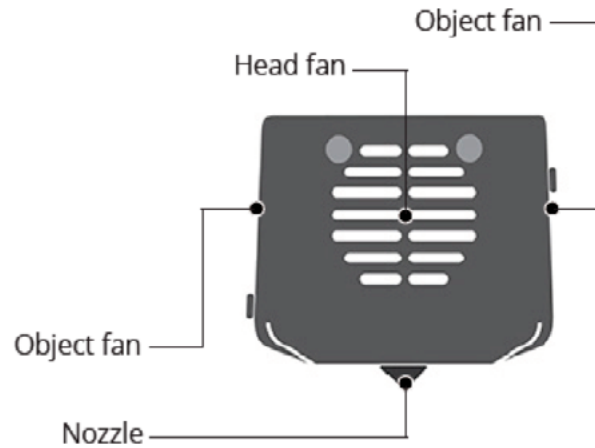

Printing base

Printing is done on a printing bed or base that is fixed with neodymium magnets on a platform that moves on the Z axis during printing. The base is easy to remove and replace thanks to the magnets. Under each magnet there are high-precision rollers for correct calibration.

The bed is methacrylate, although there are also mirrored beds available for use at Voladd. The latter require printing lacquer or any other product that helps the pieces adhere to the bed.

It is absolutely essential that the distance between the base and the nozzle is adequate for printing is optimal. Later we will see how to carry out the calibration process.
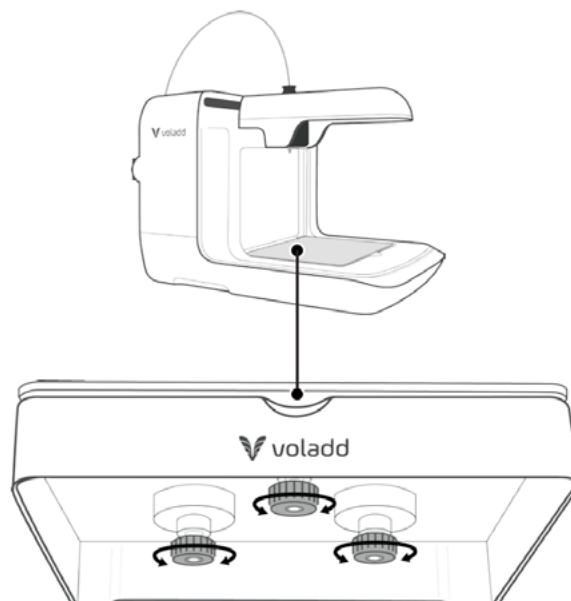
Luminous indications
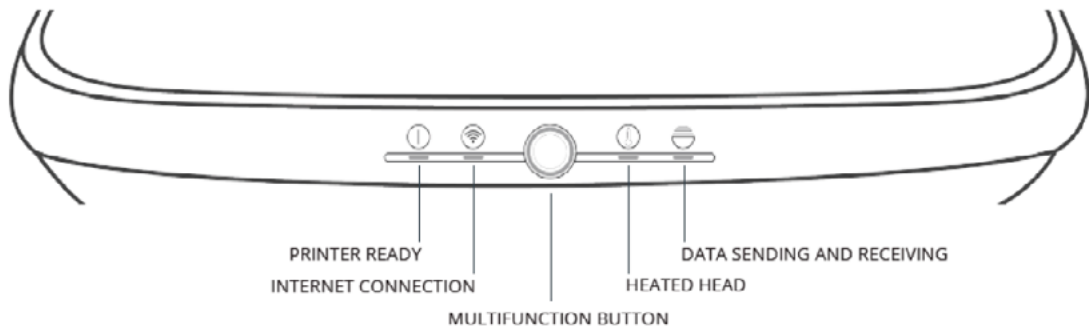
- **Printer ready:** First the light flashes. When the printer is operative, the light will be on.

- **Internet connection:** It will be on when the Internet connexion is stablished. If not, it will flash.

- **Multifunción button:** Allows you to control printer functions with a single button.
    - *Blue: Waiting for user*
    - *Green: Printer enabled. Waiting*
    - *Cyan: Calibration*
    - *Orange: Printing cancelled*
    - *Yellow: Cartridge is not recognised*

- **Heated head:** It will flash while the head warms up. The flashing's frequency will in-crease as the head reaches the adequate temperature for printing.

- **Data sending and receiving:** It will flash when the data exchange is done between the printer and the platform.

Setting up

IMPORTANT: For the first configuration of the machine, an IP assigned by DHCP is required on the network


WINDOWS

- Install Bonjour software to can manage Voladd.
  https://support.apple.com/kb/DL999?viewlocale=en_US&locale=es_ES

- The 22 (SCHC) and 80 (WEB) ports are open.

- Add this web adress https://bitbucket.org/ in the firewall to be able to access without problems.

LINUX

- Intall Avahi-daemon software to can manage Voladd.
  https://packages.debian.org/es/jessie/avahi-daemon

- Install the following library https://pkgs.org/download/libavahi-compat-libdnssd-dev

- The 22 (SCHC) and 80 (WEB) ports are open.

- Add this web adress https://bitbucket.org/ in the firewall to be able to access without problems.

### Printer and software instalation

1. Connect cable to the power and power supply to the printer.

2. We will connect the Voladd printer via Ethernet cable to the same network that we have the equipment, preferably also connected by Ethernet cable.

3. Wait while the printer begins the startup sequence (may take several minutes).

4. We will proceed to install the Voladd application on our computer.

5. We will select the Spanish or English language. We can always return to this screen to change the language whenever we need it.

Welcome to Voladd

CONNECT TO PRINTER

Español | English
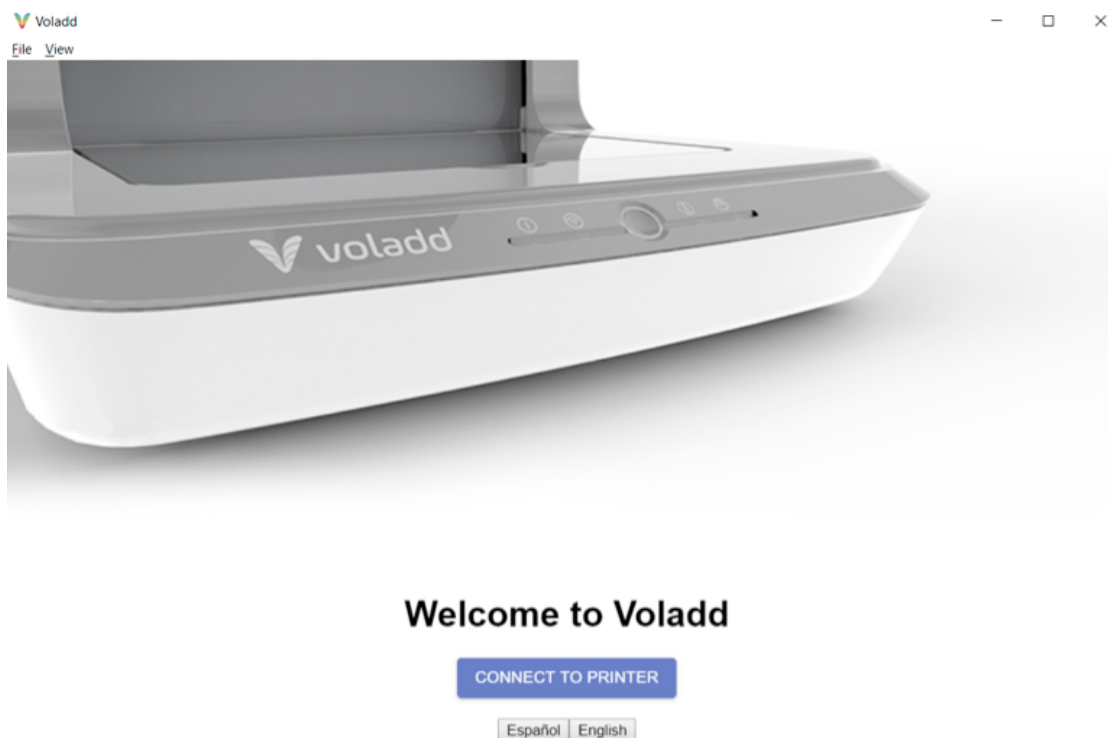
6. From the application we will connect to the printer following the following steps:
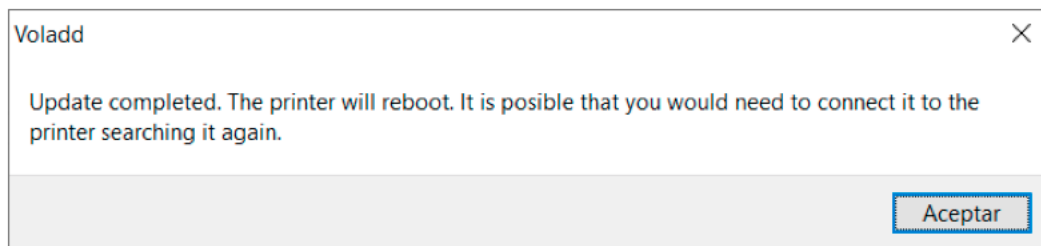- Connect to printer **(a)**
- Search printers **(b)**
- Select your printer **(c)**
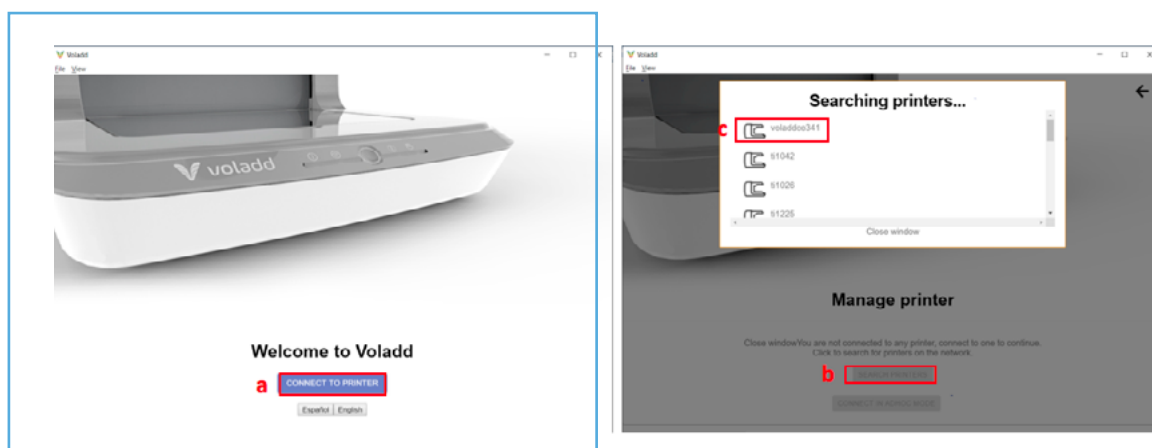
7. Once connected the application will show us a message to update the firmware of our Voladd printer in order to continue managing it from the application. Optional (only in the event that the printer is not up to date)

You must update your printer to continue

UPDATE PRINTER

8. The process will finish correctly when after a few minutes the printer automatically restarts and the two solid white lights on the left and the dark blue multifunction button are displayed (The printer status will be "Waiting fot user").. Optional (only in the event that the printer is not up to date)

9. We will have to look for the printer again and connect to start working with it.
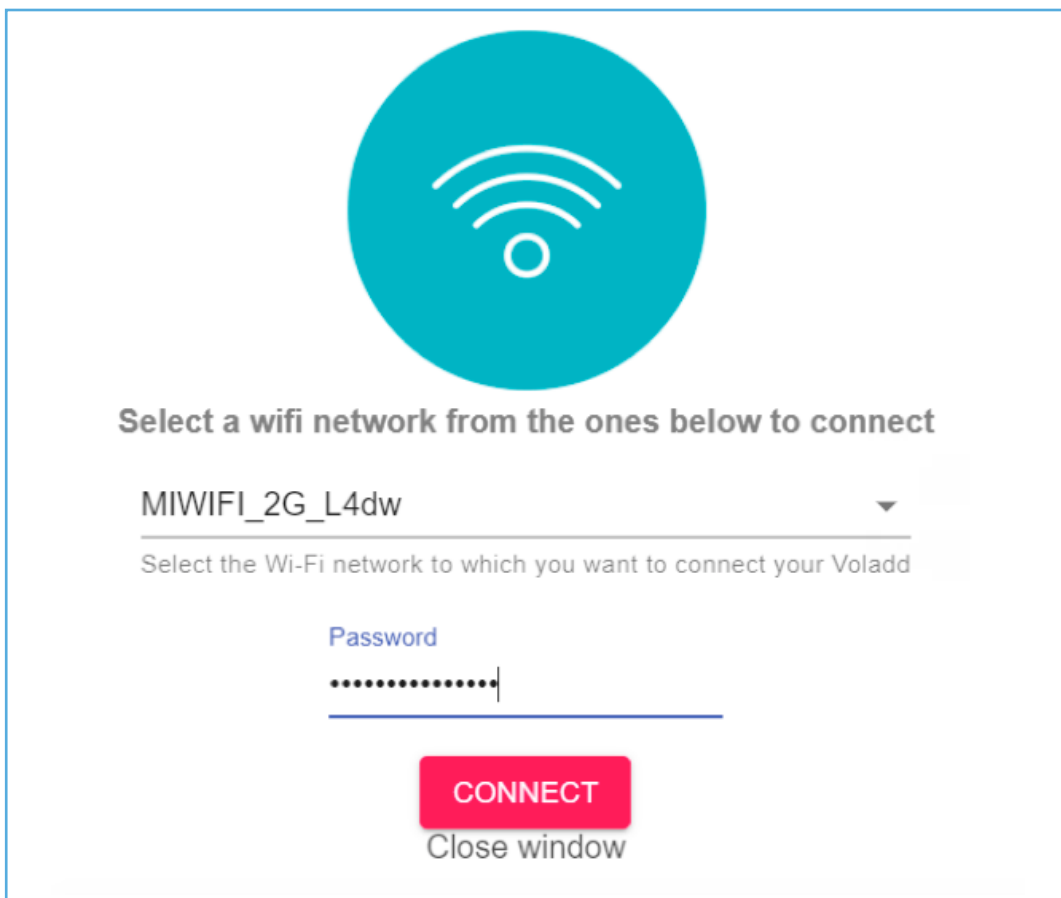
Application information and options

Back

Show more settings

State: Show printer status

Wifi: Show the SSID of the wifi network to which the printer is connected, in case of connecting via Ethernet cable it will be empty

Firmware version: Shows the current version of the printer firmware

Send GCode to print

Find a new printer to manage it without leaving this screen using this option

Connect to a Wifi network

To connect our Voladd printer to a wifi network we will follow the following steps:Enter the application:

1. Enter the application.
2. Connect to the printer.
3. Select your printer.
4. Access to settings / Connect to a wifi network.
5. Select the Wifi network to which we want to connect and enter the password.

6. We will wait the necessary time for the connection to be configured. The printer's wifi light will blink and the following confirmation message will appear.
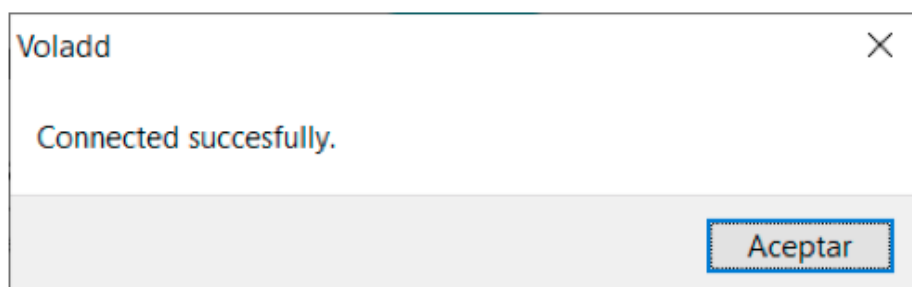
Voladd calibration

1. Before calibrating, put the cartridge in and insert the head into place in the printer.
2. Enter the application.
3. Connect to the printer.
4. Select your printer.
5. Access to *settings / calibration.*
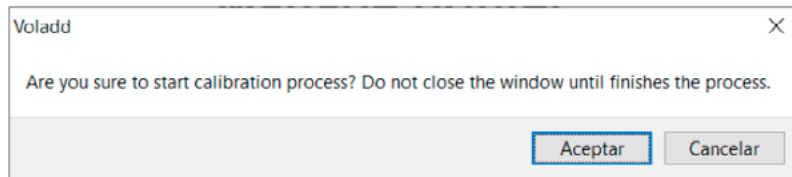
6. Follow the instructions of the application that will indicate what steps ti follow.

7. **IMPORTANT:** Do not close the process window until the end of the calibration is reached.
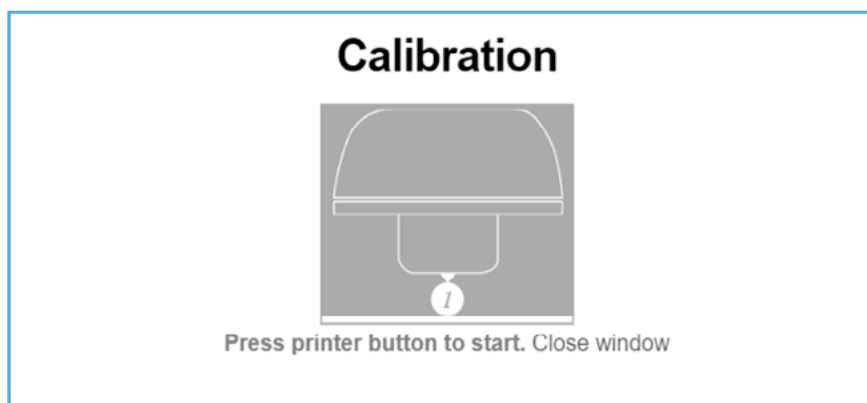
8. Place the penny, facing away from the printer, on the first magnet on the back left.

Calibration

Put the coin over the moving-extruder, right on the magnet. When lightly rubbing the surface, press the button to continue to the next point.Close window
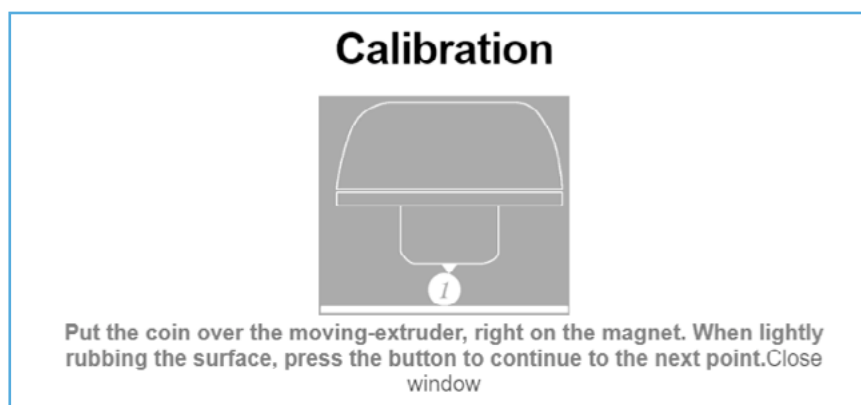
9. There are 3 calibration points (3 magnets). Respect the order of the points.

10. The printer will start recognizing your workspace. When the recognition is complete, click the middle button to start the calibration.

11. Below the base are the controls for raising and lowering the calibration points.

12. Lower the base with the corresponding screw until the head does not touch the coin.

13. Each turn is a "click". It is important that it is calibrated little by little: "click to click".

14. Raise the calibration point to the first point where the coin moves, but does not tip. The point will already be calibrated.

15. Once the first calibration point is calibrated, repeat the process on the other two points. Always respect the order of the calibration points.

Bajar cama   Subir cama
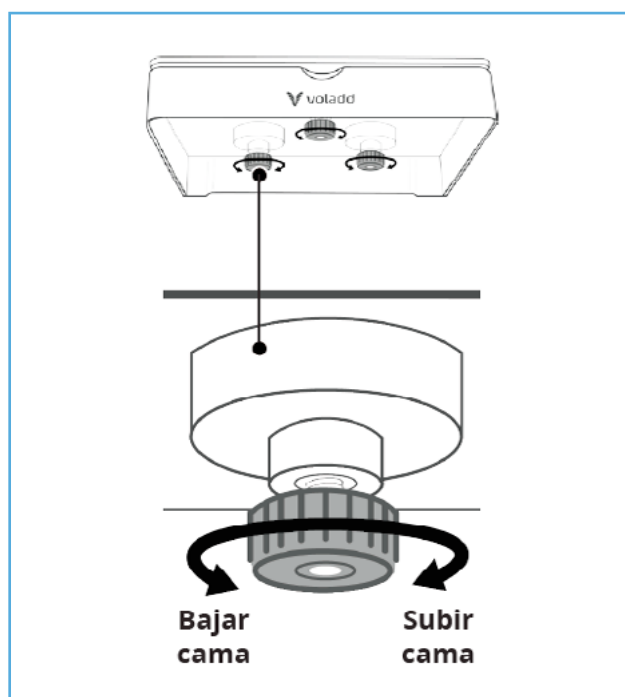
16. Once the last calibration point is finished, we will finish the process.

Calibration
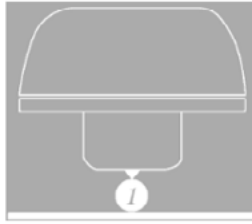
Click the central button of the printer and close the window to finish the process. Close window

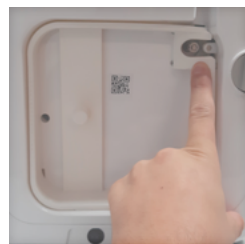## *Spool adapter Instalation for Voladd*

1. Stand behind the printer and turn clockwise the gray wheel to the position indicated in the image.

**2.** Place the adapter by inserting the tabs into the notches at the bottom side.

3. Press on the top of the adapter until the entire frame fits perfectly, especially the extruder part.

4. Stand behind the printer and turn the gray wheel anticlockwise to the position indicated in the image, so the adapter is fixed and finally screw the reel holder.

5. Insert the end of the nozzle into the upper connector of the adapter as indicated in the image until it stops.
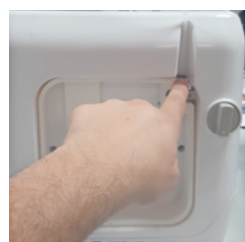

6. Finally, place the spool on the spool holder and insert the end of the filamentthrough the lower guide tube of the adapter until it touches the gear.
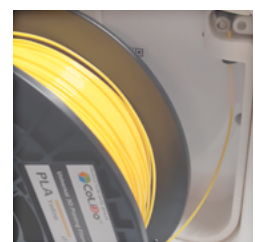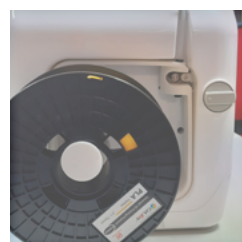
Change nozzle/Cartridge

Sometimes, when the nozzle is cold, we may have difficulties to extract it in the event that we want to change the filament cartridge, for this, we will use this option to be able to extract the nozzle without problems.

1. Open the application.

2. Connect to the printer to change the nozzle or the cartridge.

3. Select your printer.

4. Access to Settings / *Nozzle change*.
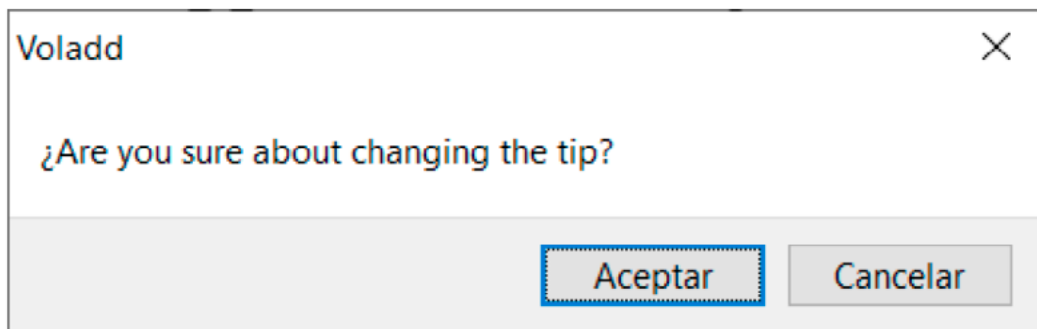
5. Activating this option the multifunction button will change cyan color, indicating that you are executing the action correctly.

   IMPORTANT: We can manually cancel this process by holding down the multifunction button on the printer.

6. After a few seconds, turn the nozzle counterclockwise 90º * and in the rear part we will lower the black tab to remove the tube that goes with the nozzle.

In case we do not have **the tool to use to open filament spools** we will follow the next steps:

1. Press the black tab on the top of the adapter.

2. Without releasing the tab, pull the guide tube upwards until it is removed.

**3.** In the part where the nozzle is inserted, turn anticlockwise.

4. Once turned, completely remove the nozzle.

5. To install a new nozzle, perform the same steps in reverse.

In case **it is a Voladd cartridge we will continue with the following steps**. Stand at the back of the printer..

7. Stand on the back of the printer.

8. Turn the knob clockwise to the open padlock.

9. Remove the cartridge.

10. Insert the new cartridge from below until a slight "click" is heard.

11. Insert and secure the head.

12. At the end of the process in the application, the following warning message will appear.

Voladd ✕
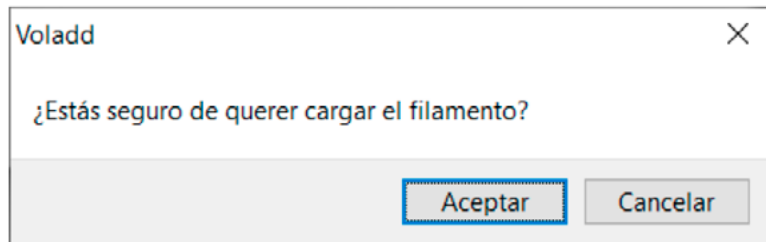
Secuencia de cambio de filamento finalizada

Aceptar
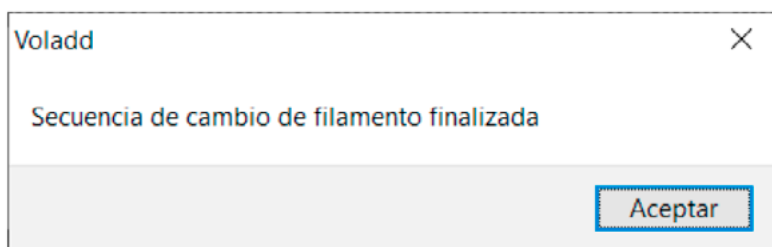
* Be careful when removing the printing head as it heats up to 80°C during the cartridge change process.
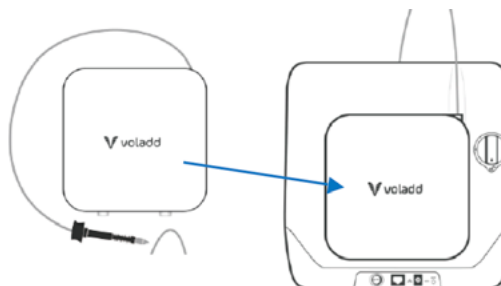
Load filament (option only for open filament)

If we have purchased the accessory to use open filament spools we can use this option to load the filament and extrude to be able to print with filament in spools using a spool holder.
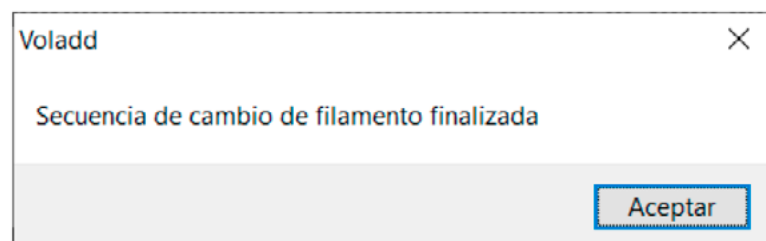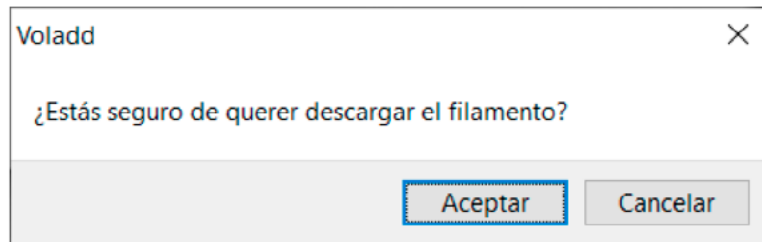
1. Open the application.

2. Connect to the printer to change the cartridge.

3. Select your printer.

4. Access to *Settings / Nozzle change*.

5. Follow the instructions of the application.

Introduce el filamento por el tubo inferior, y cuando haga tope, gira la rueda de bloqueo. Si al girar el extrusor no avanza el filamento, puedes ayudarle empujando manualmente el filamento hacia arriba.
(¡cuidado!, ¡la punta está caliente!)
La impresora absorberá el filamento y extruirá unos centímetros.

Cerrar ventana

6. If we have problems introducing the filament, try to cut the inclined end to facilitate its entry into the tube that goes to the nozzle

7. At the end of the process in the application, the following warning message will appear.

Unload filament (option only for open filament)

If we have purchased the accessory to use open filament spools, we can use this option to remove the filament to be able to change the filament spool.
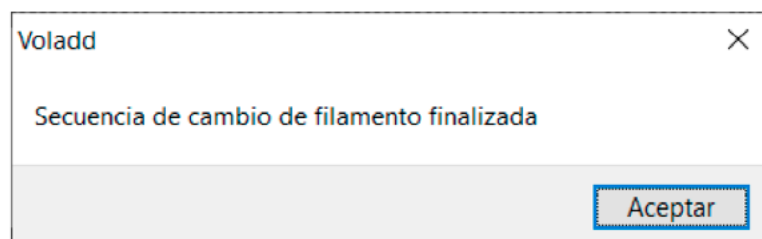
1. Open the application.

2. Connect to the printer to change the cartridge.

3. Select your printer.

4. Acces to *Settings / Unload filament.*

5. Follow the instructions of the application.

6. At the end of the process in the application, the following warning message will appear.

Hot and extrude (advanced users)

This option will allow us, in case no filament comes out of the nozzle, to extrude a few centimeters of plastic so that we unclog the nozzle.

1. Enter the application
2. Connect to the printer where we want to extrude filament to unclog the nozzle.
3. Select your printer.
4. Access Setting / Heat and Extrude.
5. Activating this option the multifunction button will change to light blue, indicating that you are executing the action correctly.
6. After a few seconds, the printer will heat up to the extrusion temperature and will proceed to extrude a few centimeters of filament.
7. At the end of this process the light of the multifunction button will change to idle state, blue.

Check firmware

To find new firmware updates for our Voladd printer we will follow the following steps:

1. Enter the application.
2. Connect to the printer.
3. Select your printer.
4. Access to settings / Check firmware update.

Voladd ✕

Checking if there is new firmware version, you will see a message in the screen if some update is available.

Aceptar
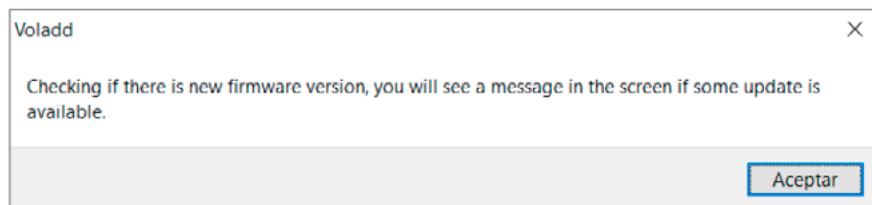
5. If it finds any available update it will show us a message in the application.

Update available, please update it.
UPDATE PRINTER
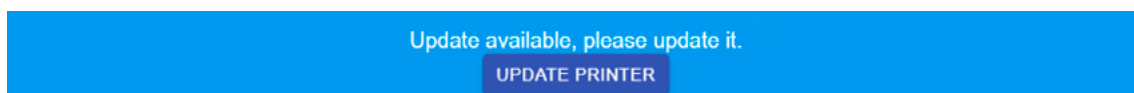
6. Press *Update* to update the printer.

Voladd ✕

Are you sure? The printing will reboot.

Aceptar   Cancelar
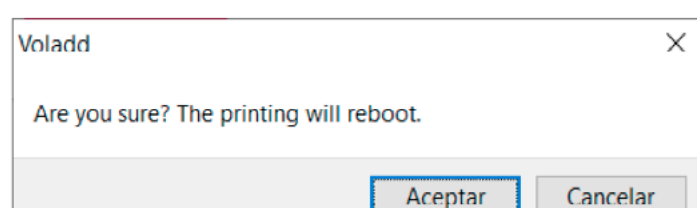
Printing with Voladd

From the desktop application we can send to print our GCode files generated with any of the most used programs on the market, Repetier-Host (Slic3r), Cura, Craftware or Simplify3D.

To do this, we must first generate our GCode from the 3D file in STL format. Next, we will indicate the parameters necessary to configure our profile for Voladd in the softwares named above.

Repetier-Host (Slic3r) presets

Download the free software from the following link https://colido.es/software-repetier-host. Start Repetier-Host and configure the following parameters.

1. **Configure printer** we will access the **Printer Dimensions** tab and complete the data shown in the blue box. We will do this whenever we are going to generate a GCode for Voladd, it is important that it is correctly completed with the indicated values. **Apply and OK.**
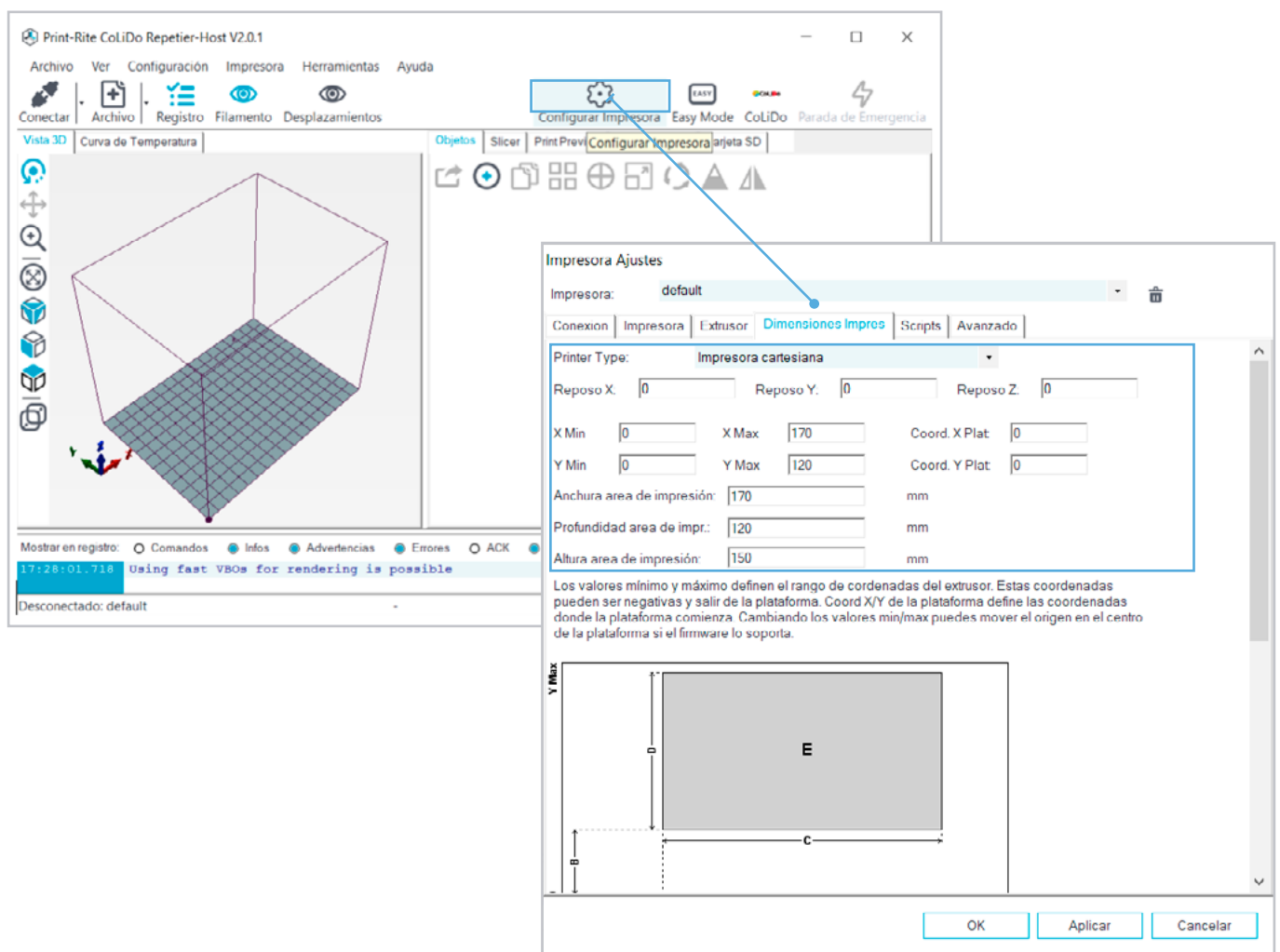
2. Secondly, in the Slicer tab, select **Slic3r** as the slicer program. Then **Configuration** to access manual configuration.
Once the GCode has been generated using the **Slice option with Slic3r**, we must save the file by selecting **Save to File**.
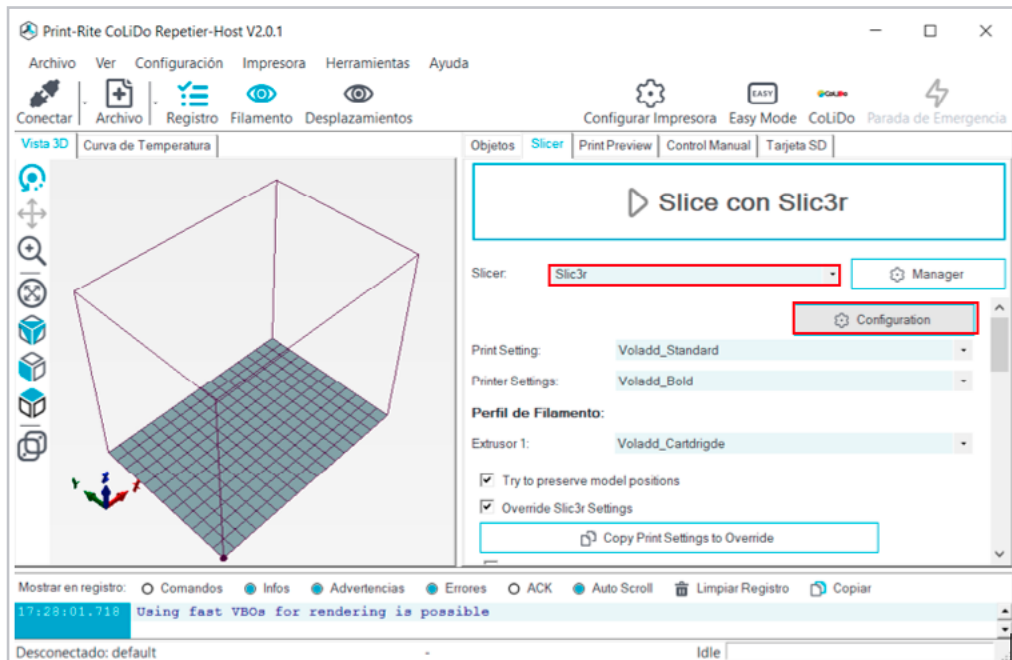
3. Once we access Slic3r, we will have to load three configuration files.

- **Print Settings:** The default print quality file, which we can adjust in advance to create our own profiles.
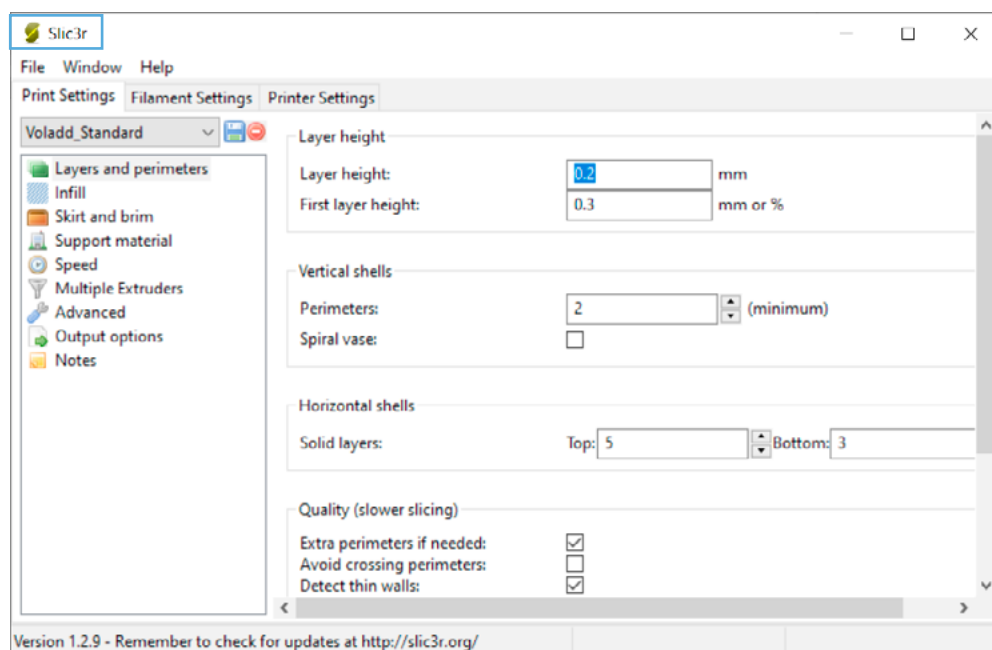
In the corresponding tab we will go to **File / Load Config** and select the **Voladd Standard Print Quality Slic3r** configuration file to load the parameters.
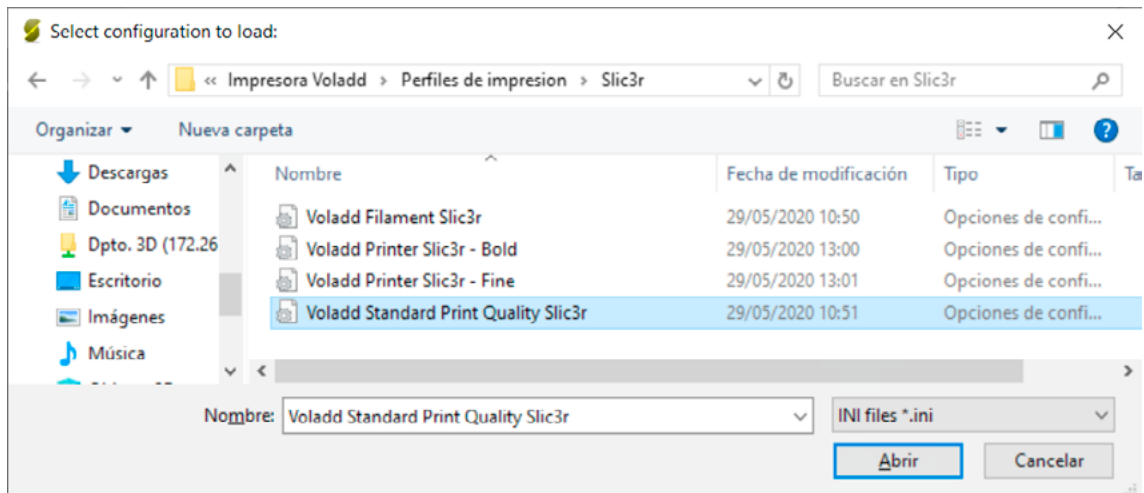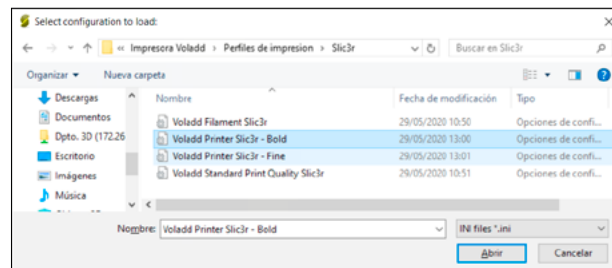

Then, we will save this profile with the save symbol with the name that appears on the screen.
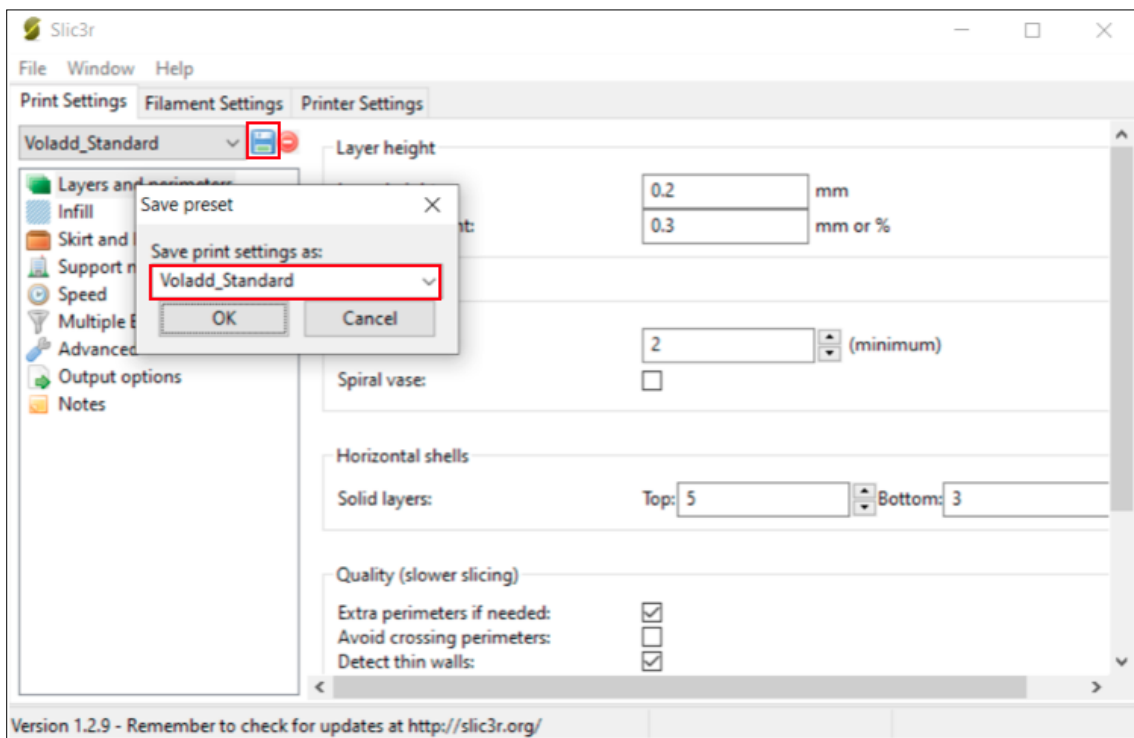
- **Filament Settings:** The configuration file for printing parameters for Voladd filament cartridges
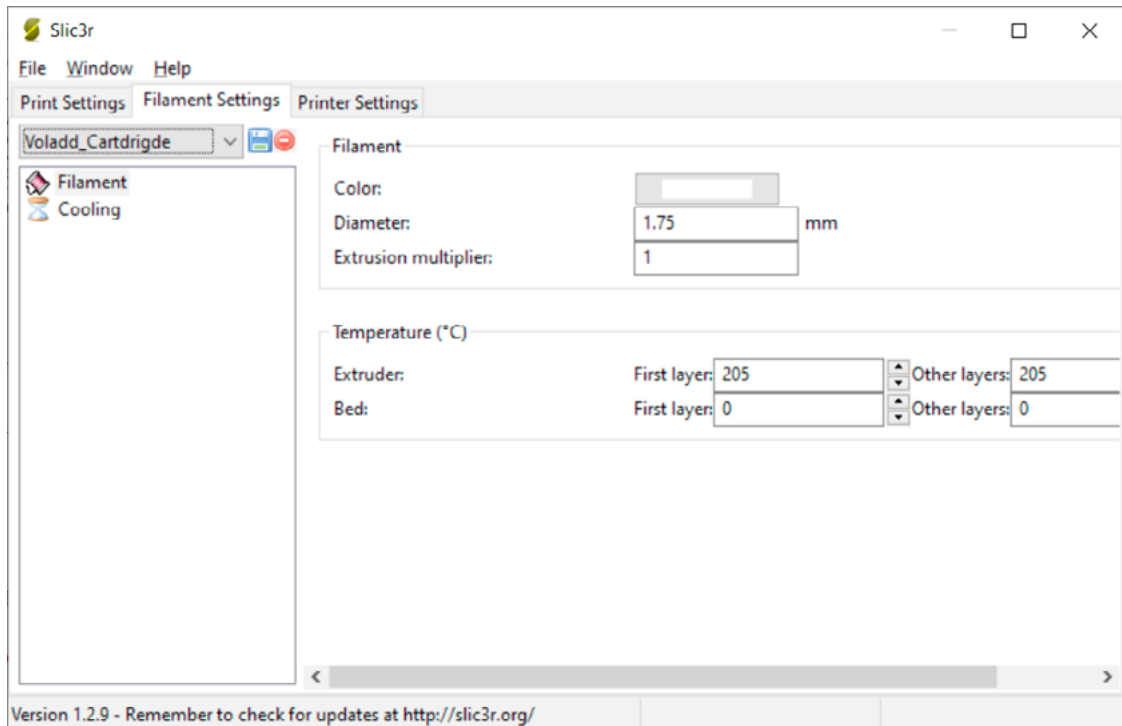
In the corresponding tab we will go to **File / Load Config** and select the **Voladd Filament Slic3r** configuration file to load the parameters.
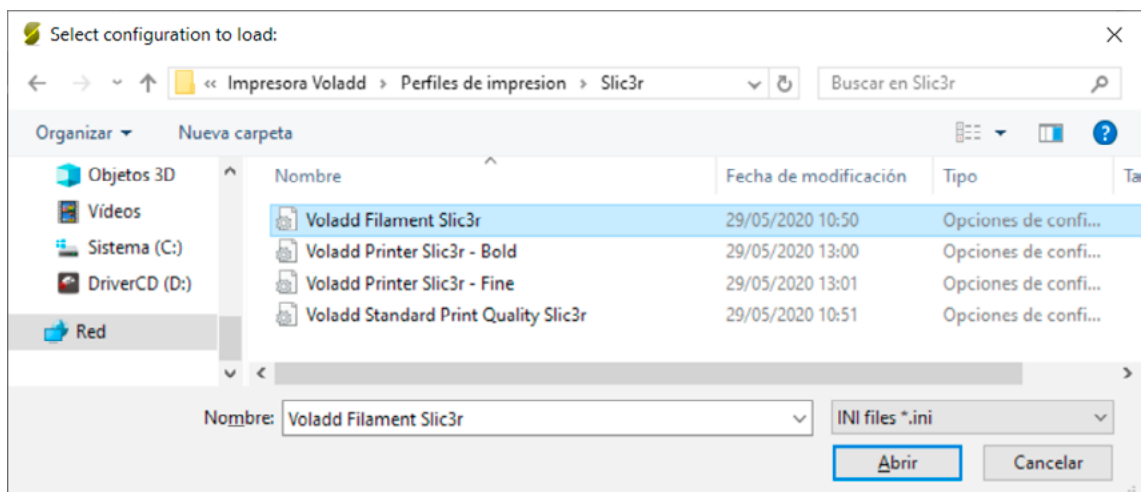
Then, we will save this profile with the save symbol with the name that appears on the screen.
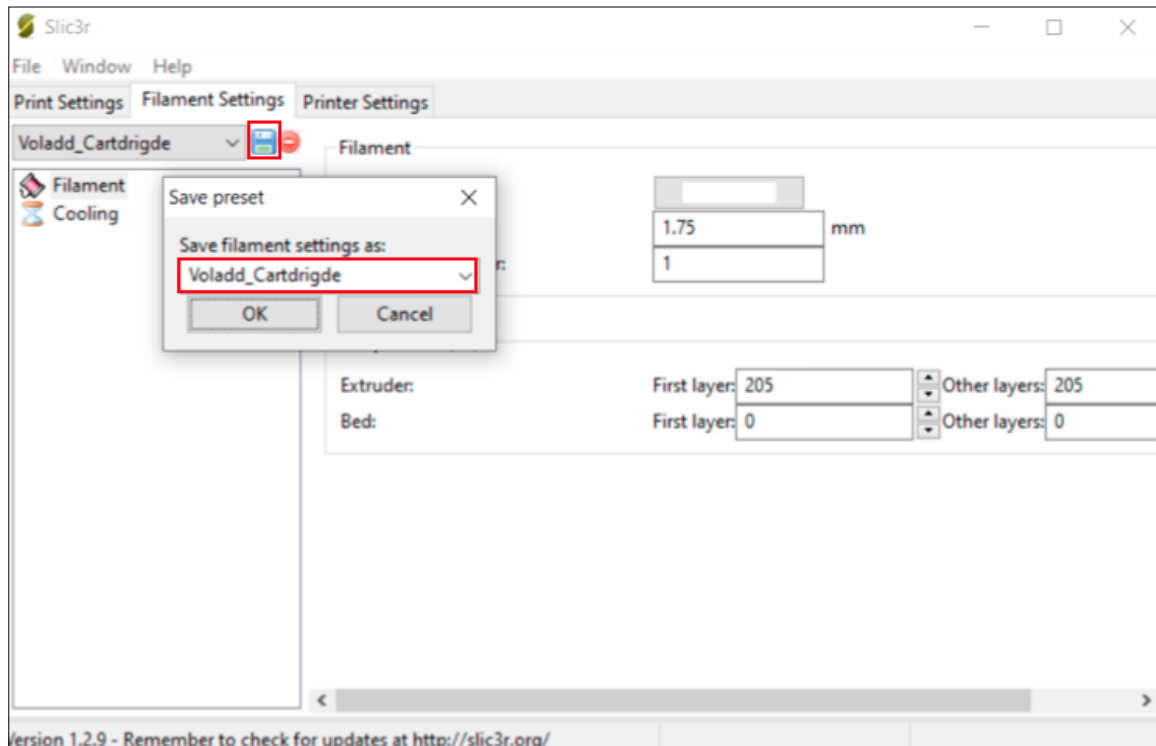
- **Printer Settings:** The Voladd printer parameter configuration files for cartridge with BOLD nozzle and for cartridge with FINE nozzle.
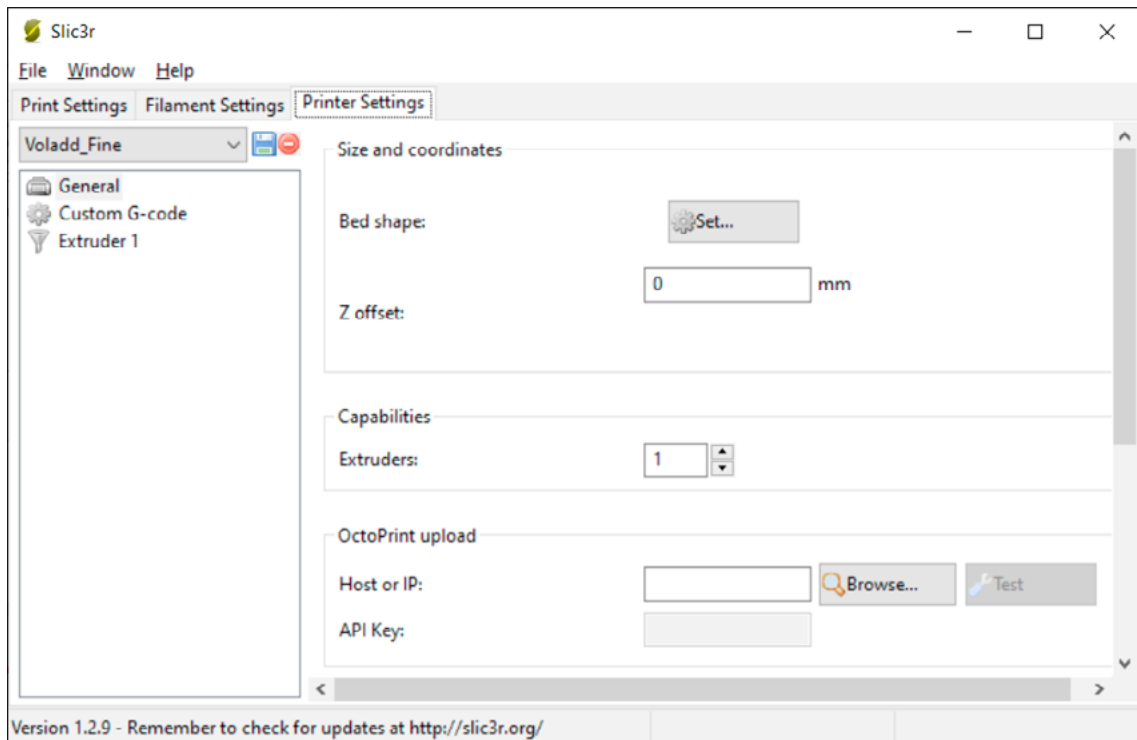
In the corresponding tab we will go to **File / Load Config** and select the configuration file **Voladd Printer Slic3r - Bold** and **Voladd Printer Slic3r - Fine** to load the parameters, first load and save one and then the other.

Then, we will save this profile with the save symbol with the name that appears on the screen.
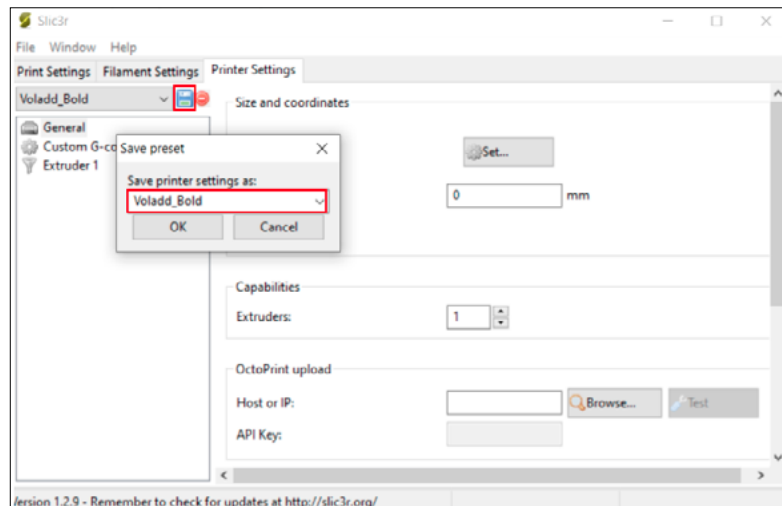
With this process we can finally select the profiles to generate our GCode with Repetier-Host (Slic3r).
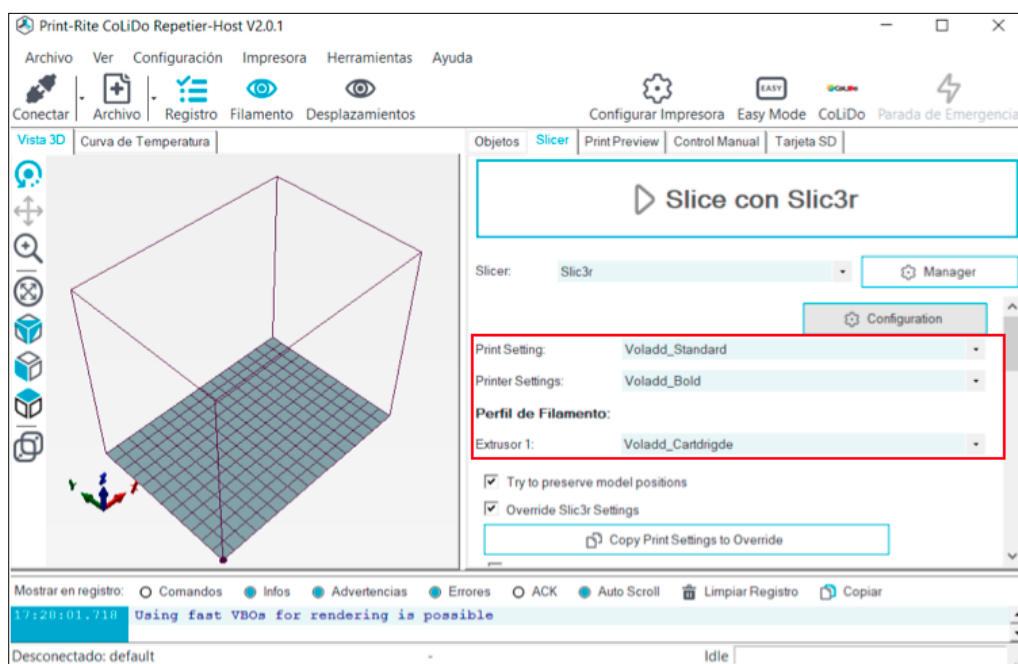
Cura presets

To configure the printer in Cura we must create a custom printer with the following parameters.

1. Access to **setting / printer / add printer**
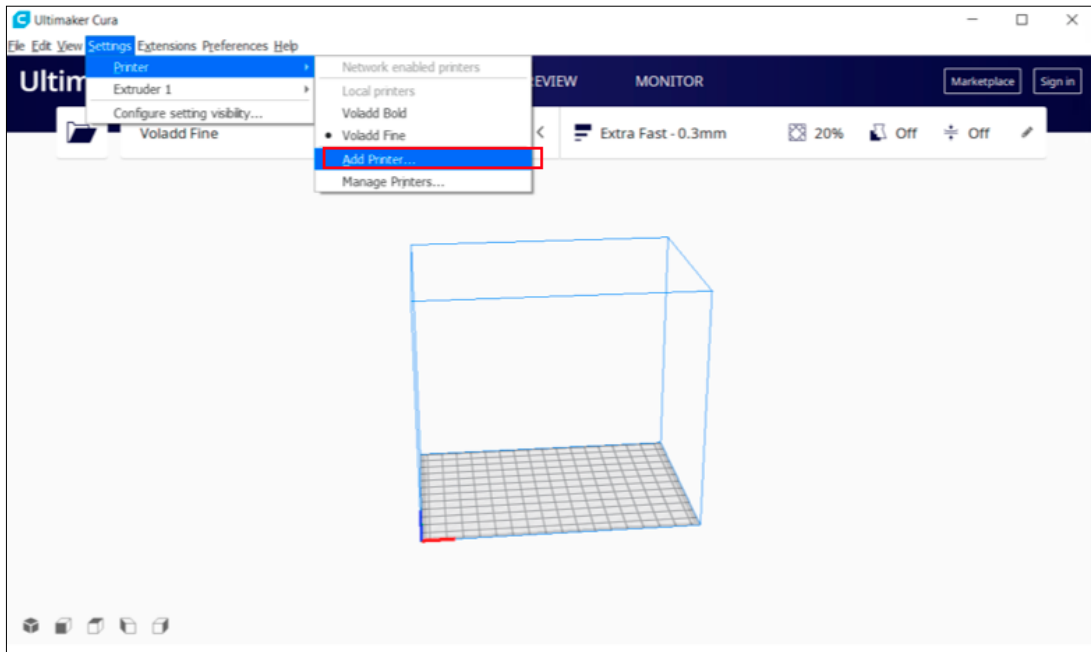
2. We will go to the section Add an offline printer / Custom and modify the name of the printer. We will create two printers in the case of Voladd, **Voladd Bold** for when we use Bold filament cartridge and **Voladd Fine** for when we use Fine filament cartridge.
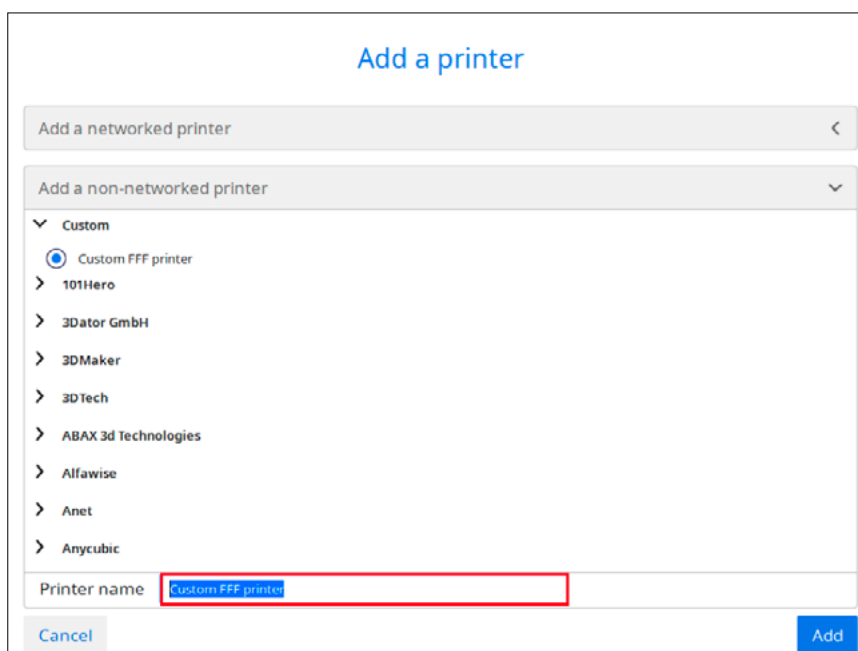
3. We will add the following parameters for both custom printers.

<table>
<tr><th>Voladd Bold</th><th>Voladd Fine</th></tr>
</table>

Iniciar GCode
G1 X0 Y0 F2000
G90
G92 E0 ;Zero extruder position
G1 Z0.2 F1000
G1 Y110 E35 F200 ;Extrude 35mm of filament
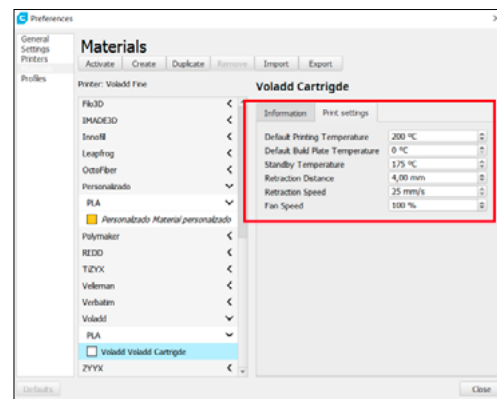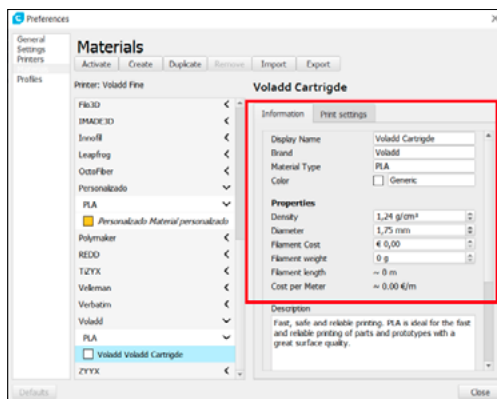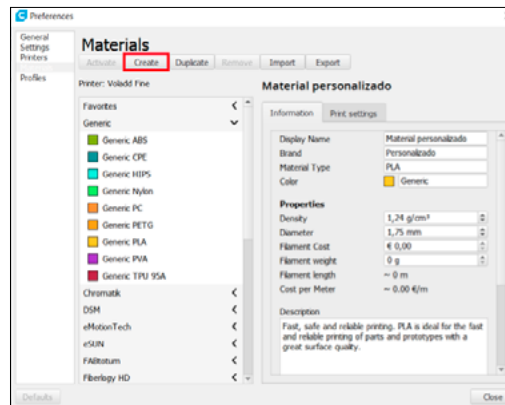G92 E0 ;Zero extruder position
G21
G90
G64 P0.01

Finalizar GCode
M104 S0 ;Extruder heater off
G91 ;Relative positioning
G90 ;Absolut positioning
G0 X0 Y100 F6000 ;Go to X Y repose position
G0 Z149 F1000

4. We will create the profile for the Voladd filament in **Settings/ Extruder 1 / Material / Manage Materials.**
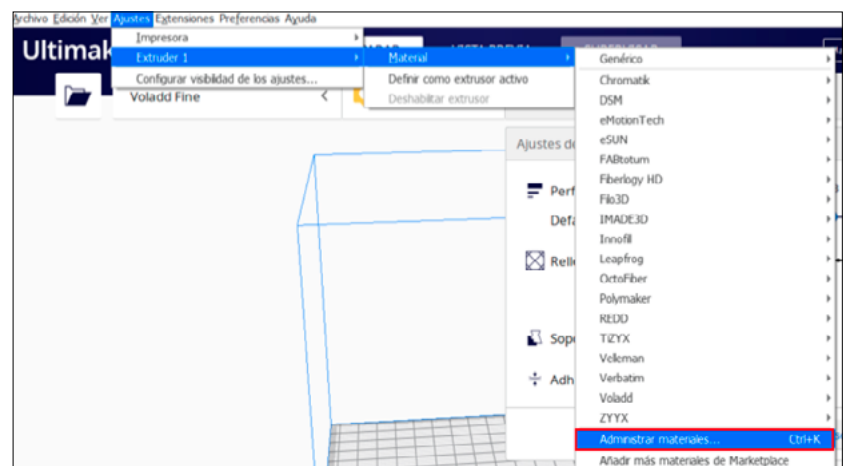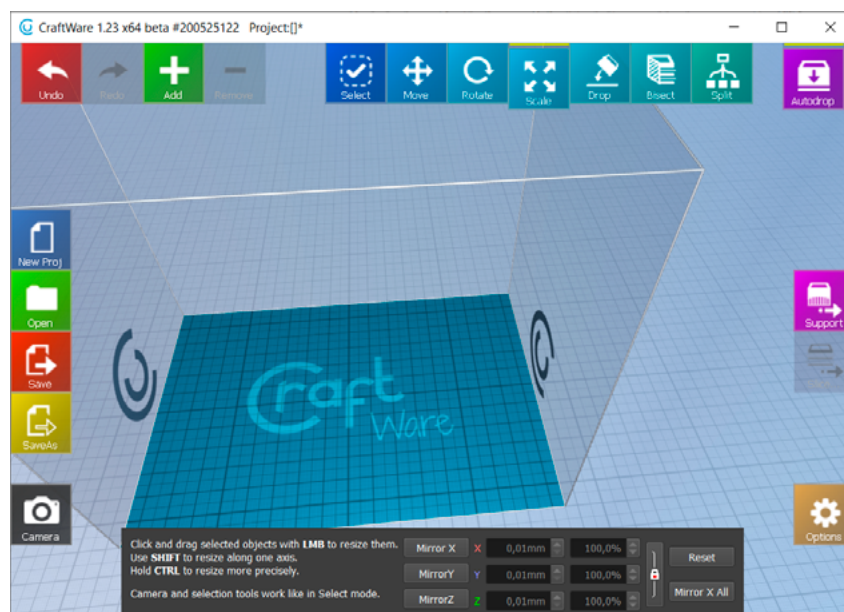
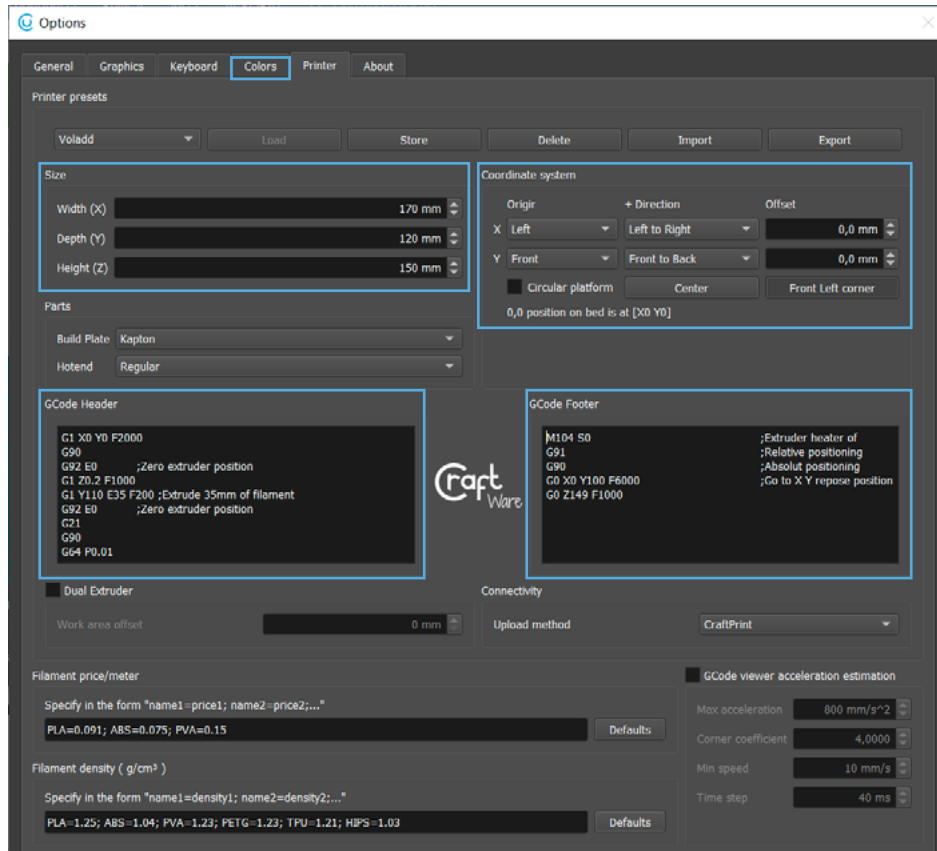**5.** We will go to **Create** to create the new custom material.

Craftware presets

To configure the printer in Craftware we must create a custom printer with the following parameters.
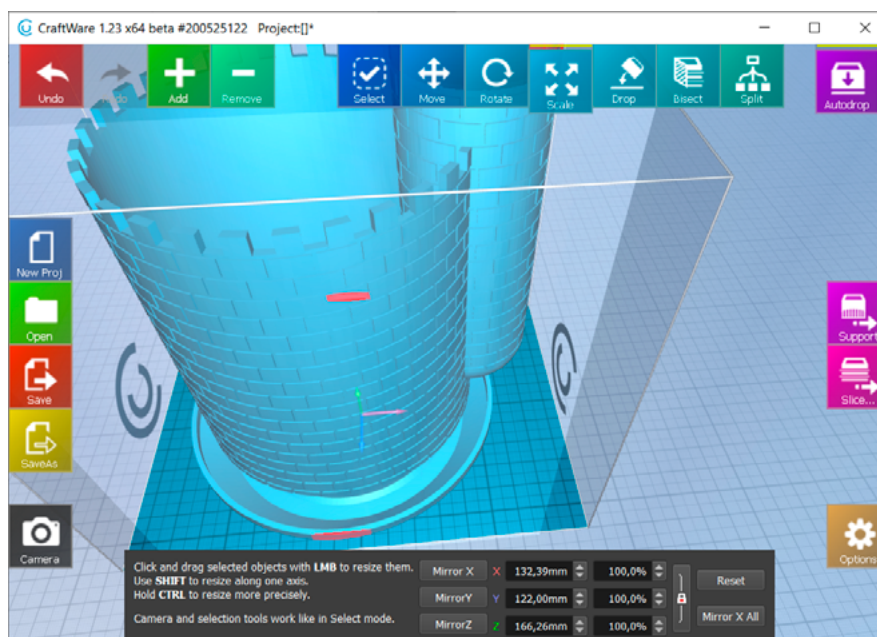
1. Access to **Options**.

2. In the **Printer** tab, we will complete the parameters that we see in the image and we will use the **Store** option to save the profile for our Voladd printer..
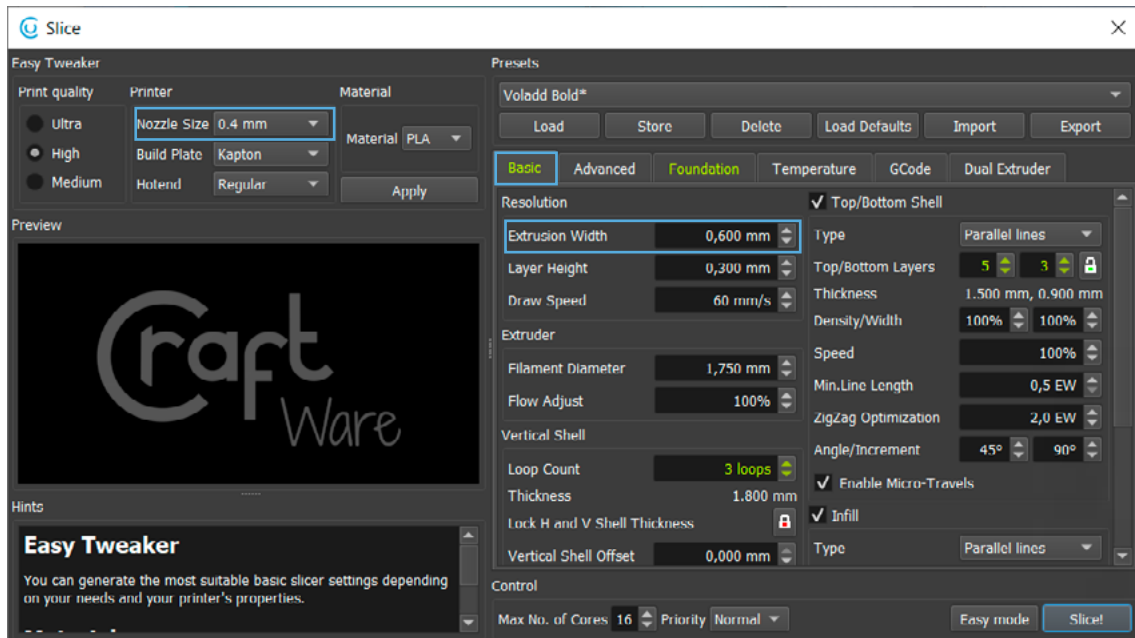

**3.** When we go to configure the slicing parameters, we access **Slice**.

4. To generate the GCode for a cartridge with a **Bold nozzle**, we will configure the **Nozzle Size 0.6mm** in the **Printer** section and for the cartridge with a **Fine nozzle** we will use **Nozzle Size 0.4 mm**. The same on the **Basic** tab, the **Extrusion Width** parameter.
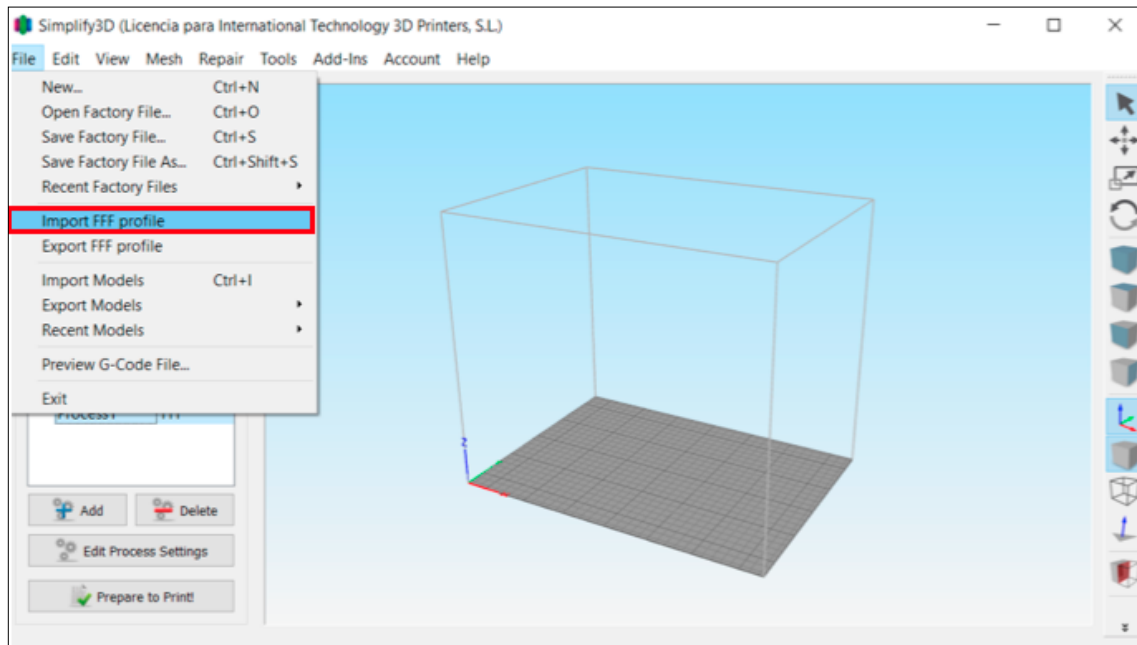

5. Regarding the printing temperature, we must go to the **Temperature** tab, configure the **Head Temperature** parameter at 200ºC and deactivate the **Bed Temperature** option.
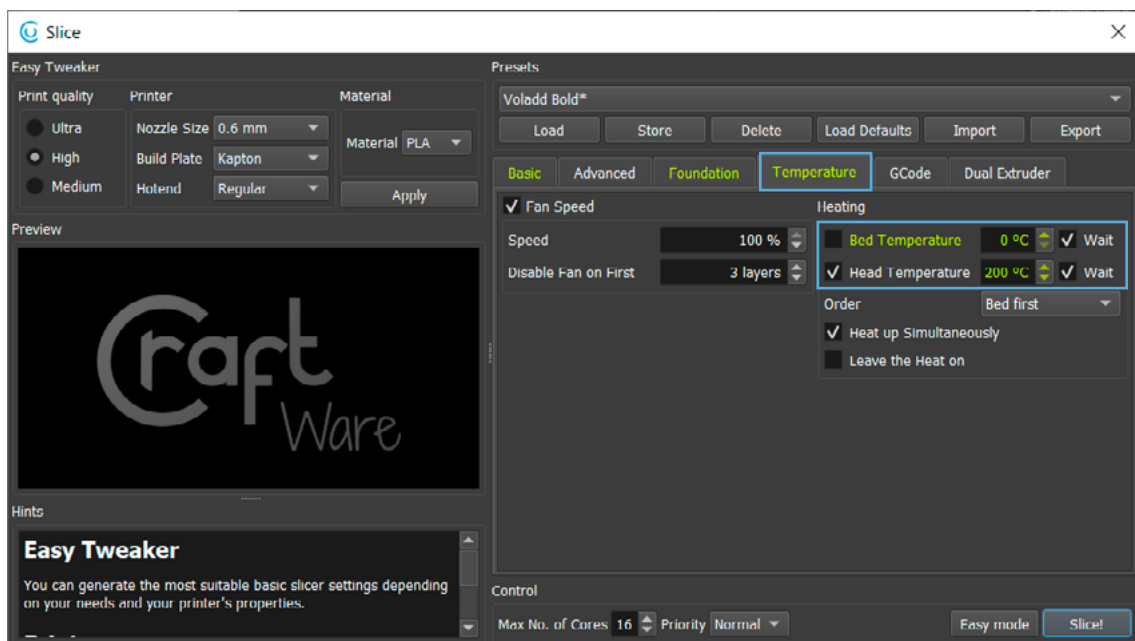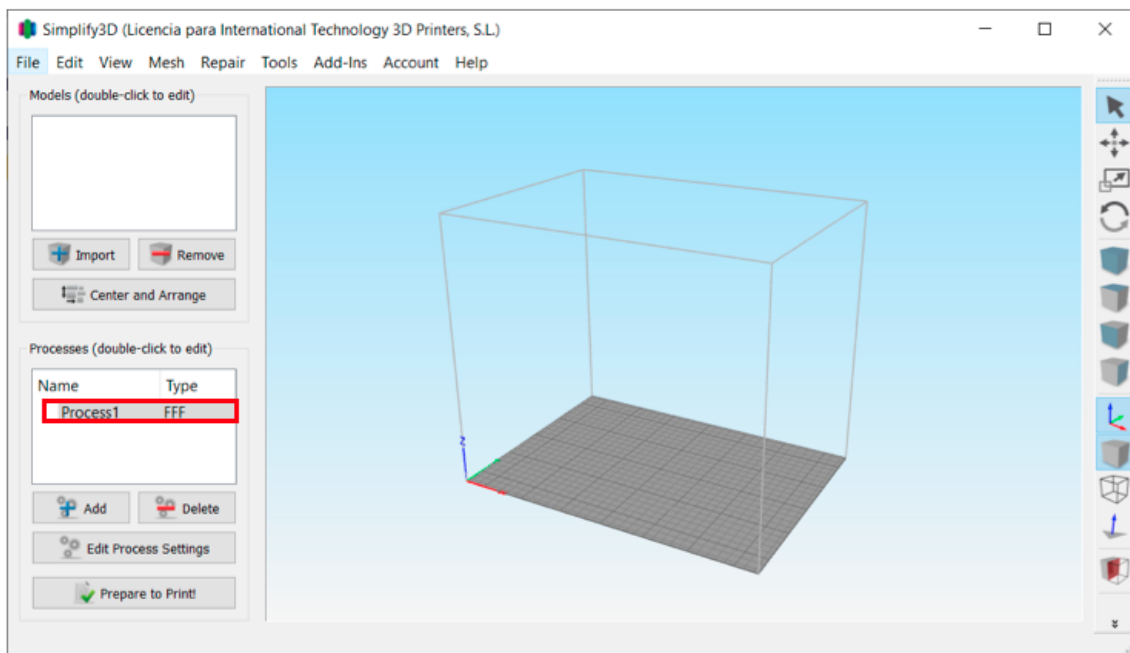
Simplify3D presets

To configure the printer in Simplify3D we will have to import the profile corresponding to Voladd in the following way.
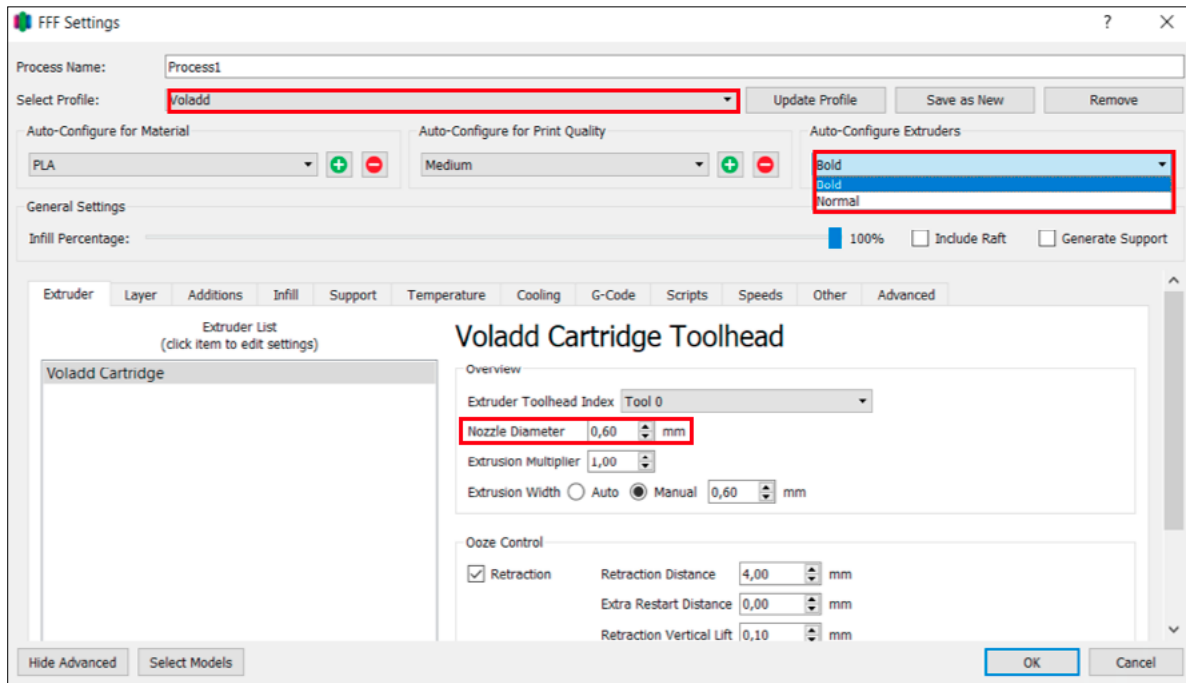
1. Access to **File / Import FFF profile.**

2. Select file **Voladd_Simplify3D.fff**
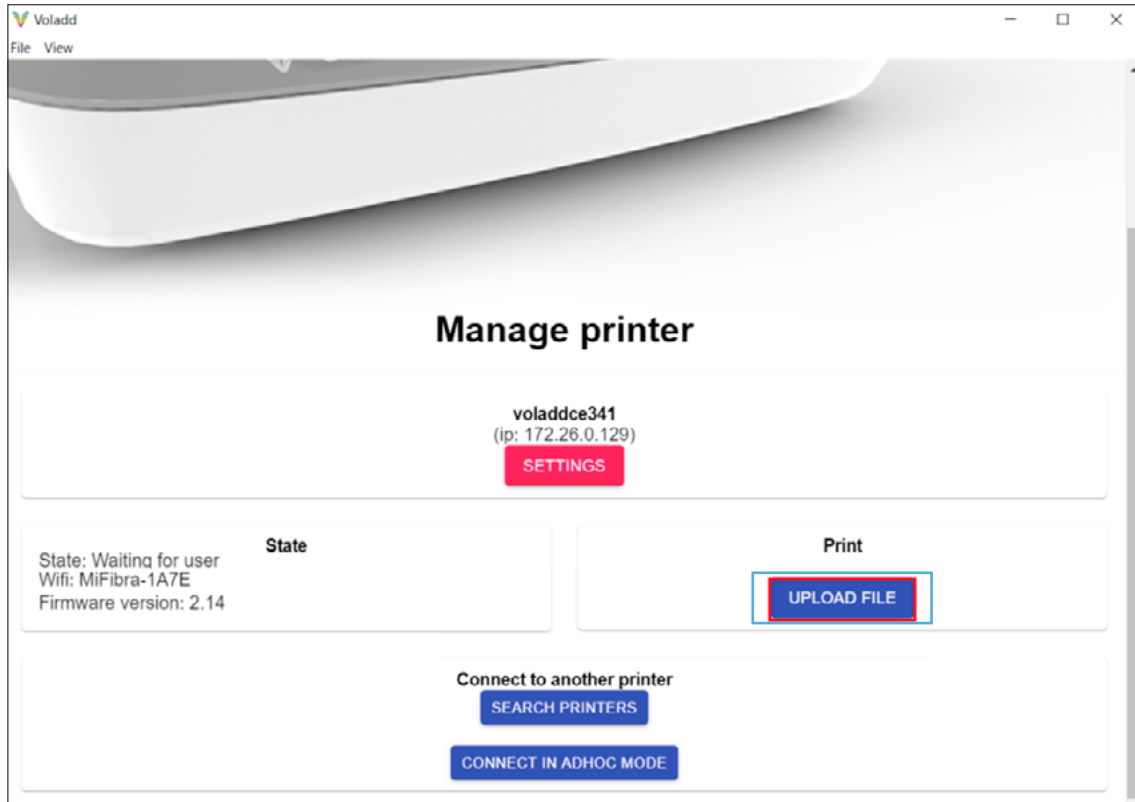
3. Access to the **Process**.

4. Select profile and then Auto-Configure Extruders drop-down select the Bold or Fine (normal) nozzle to adjust the Nozzle Diameter.
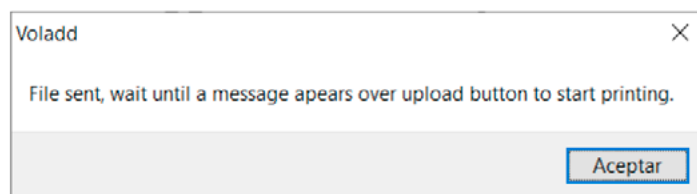
Sending GCode

In order to send a GCode file previously generated to our Voladd printer, we will follow the following steps:
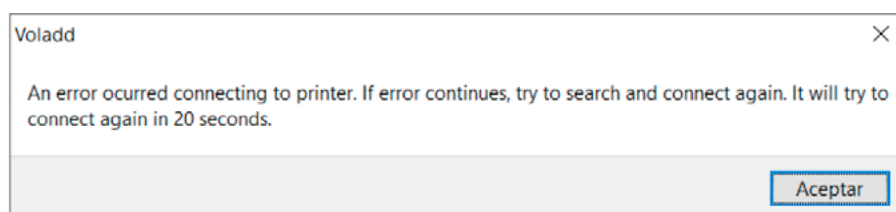
1. Select **Upload File**

2. Once the file is selected and uploaded the following warning message will appear.


- *IMPORTANT: If the Voladd printer is disconnected from the Wifi network or the Ethernet cable while sending the file to print, the following message will be displayed, so the network connection should be checked.*

3. Next, we will press the multifunction button on the printer to start sending the file to print, heat the extruder and start printing.
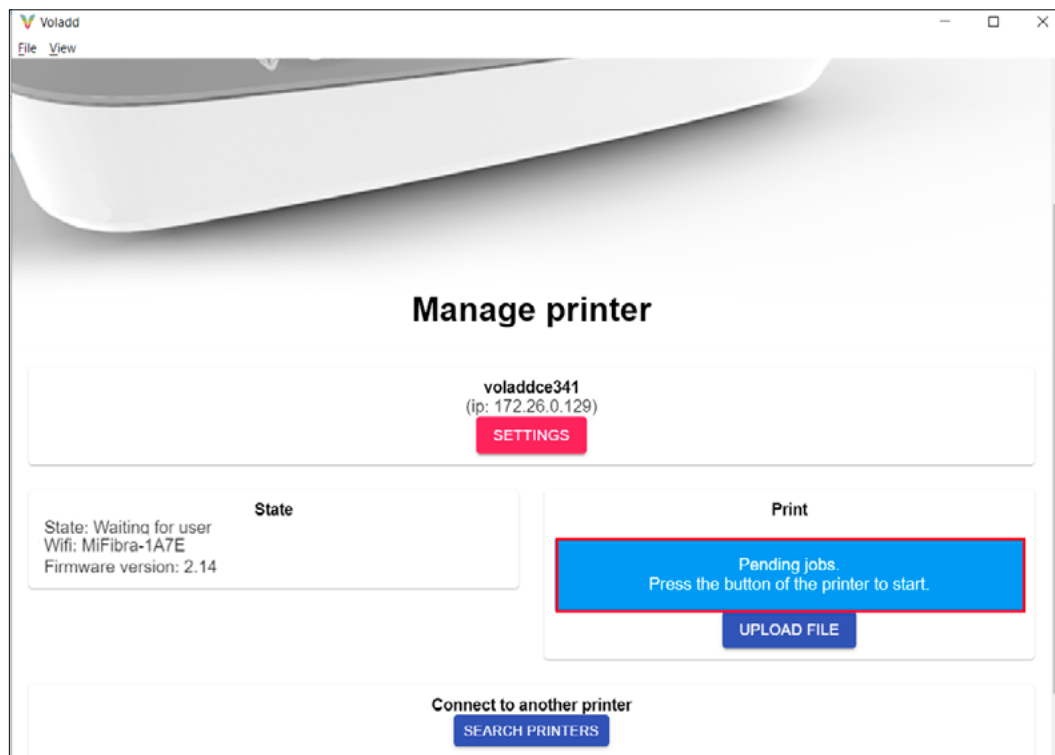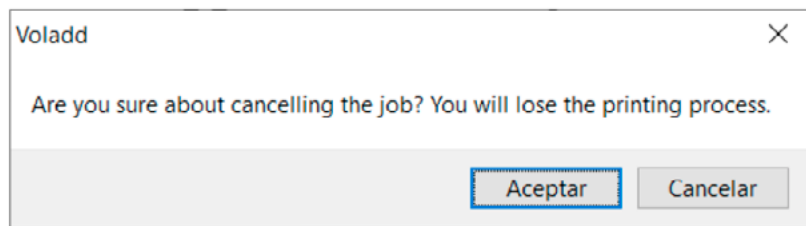

4. Once started the file name and percentage of printing progress will be displayed.
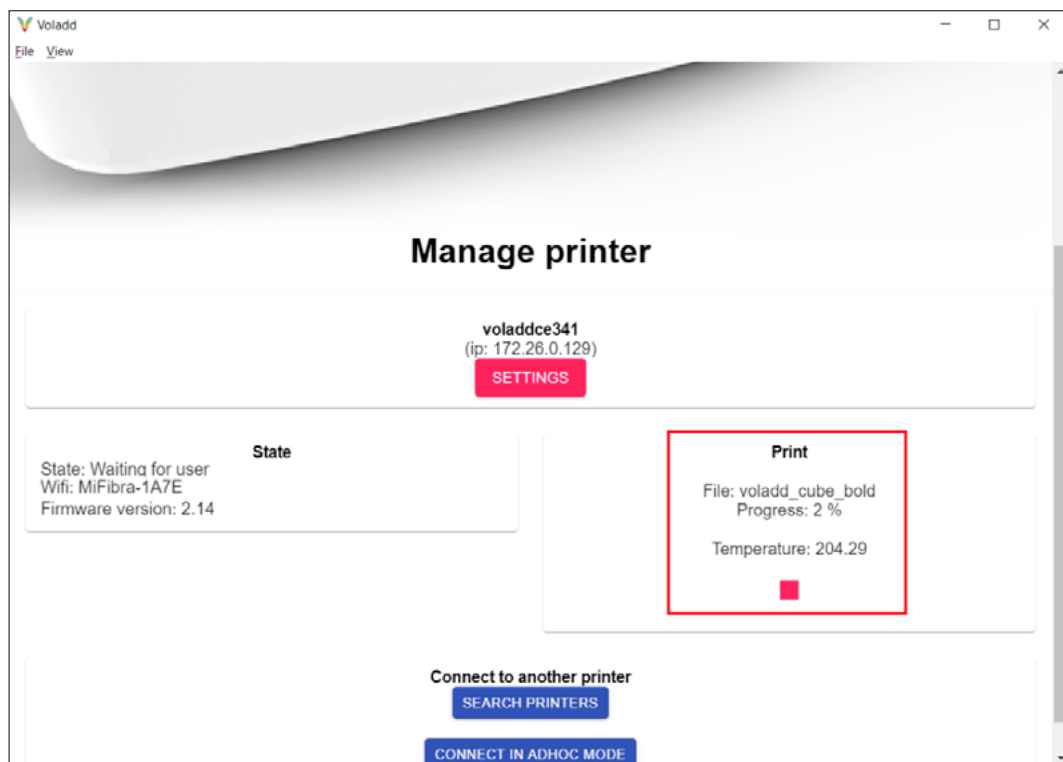
Cancel print

In order to cancel a print we have two ways:

1. Holding down the multifunction button until it changes to orange, finishing printing.
2. Using the STOP button to finish printing from the application, displaying the following message.

Uploading a new GCode file will overwrite the old one that we send to the printer

Basic recommendations

Follow this warning information to prevent accidents and to guarantee the safe and correct use of Voladd.

Heated surface

The head nozzle can be heated up to 240ºC, therefore caution is recommended.

Make sure you have good wifi coverage so that Voladd correctly communicates with the platform.

Risk of entrapment

Place Voladd on a firm surface without any vibration.

Do not tamper with any mechanical part of the printer while it is operating.

Take special care with the platform. Do not put your hand or any object under it due to risk of entrapment.

Place Voladd in an environment without drafts and with an ambient temperature between 15ºC - 25ºC, and without direct sun exposure.

Correct Disposal

Follow the installation instructions and start the printer.

The presence of this symbol in the product, accessories or informative material indicates that nor the product nor the accessories should be eliminated along with other domestic waste

For more information about the environment commitment of Voladd and the specific obligations with certain normative of the product.

Do not expose the printer to impact, shock, or sudden movements.

Use the power supply and cartridges supplied by the manufacturer.

Be careful when folding the methacrylate bed.

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