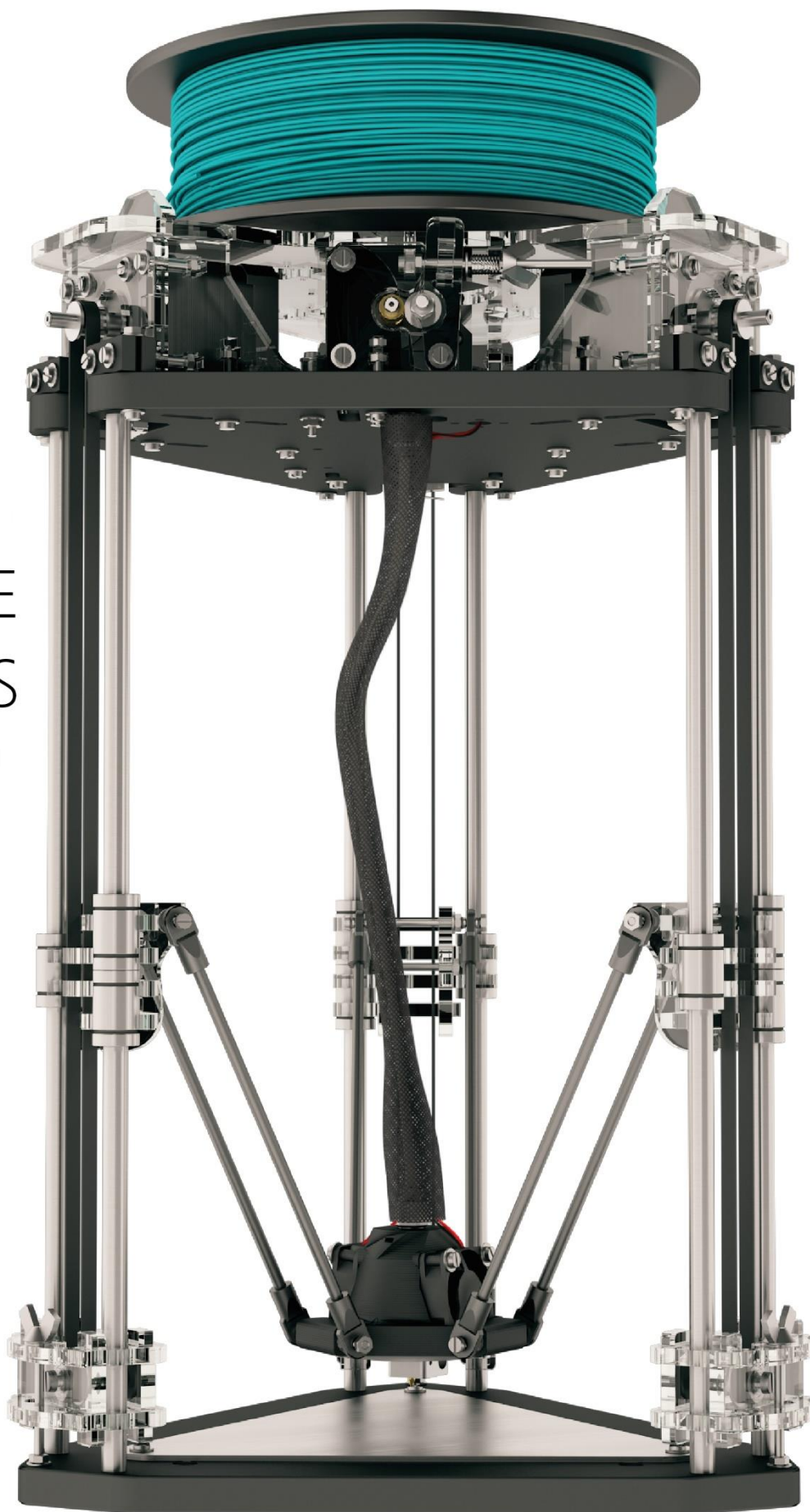


# USE INSTRUCTIONS

Version 1.1



# Introduction

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- **Photographic credits :**

Pictures and 3D representations made by  
eMotion Tech <http://www.emotion-tech.com>

Picture director: Antony Soury

- **Sources :**

<http://reprap.org/wiki/RepRap>

<http://www.repetier.com/>

- **License :**

µdelta: CC BY-NC-SA 4.0

This document: CC BY-NC-SA 4.0



<http://creativecommons.org/licenses/by-nc-sa/4.0/>

- **Update:**

Last update : 25/06/2014

- **Links:**

Reprap community: <http://reprap.org/wiki/RepRap>

Repetier-Host: <http://www.repetier.com/>

3D models database: <http://www.thingiverse.com/>



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# INSTALLATION

## WINDOWS

---

**The following chapter concerns windows users only**

Installation details:

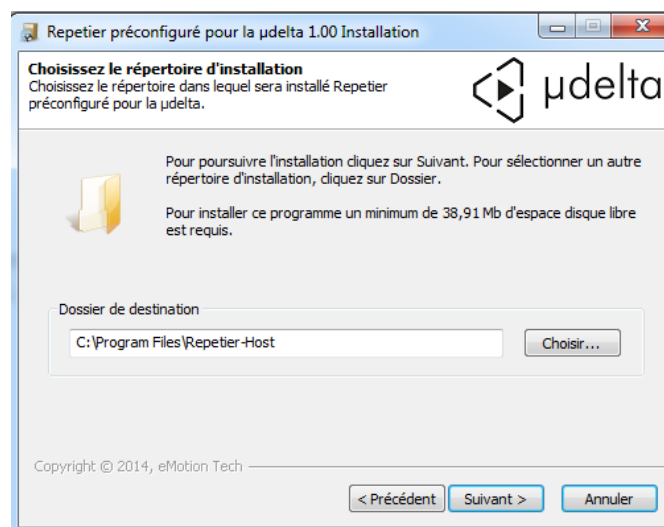
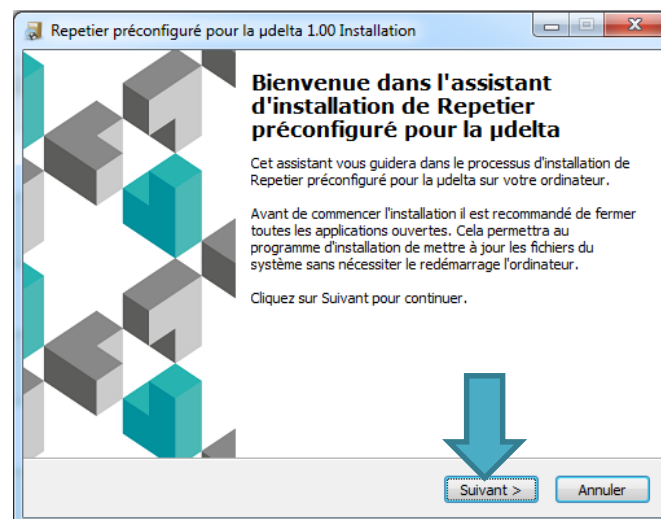
- Repetier-Host
- µdelta plugin
- Preconfigured settings for Repetier-Host
- Basic profiles for Slic3r
- Teensylu drivers

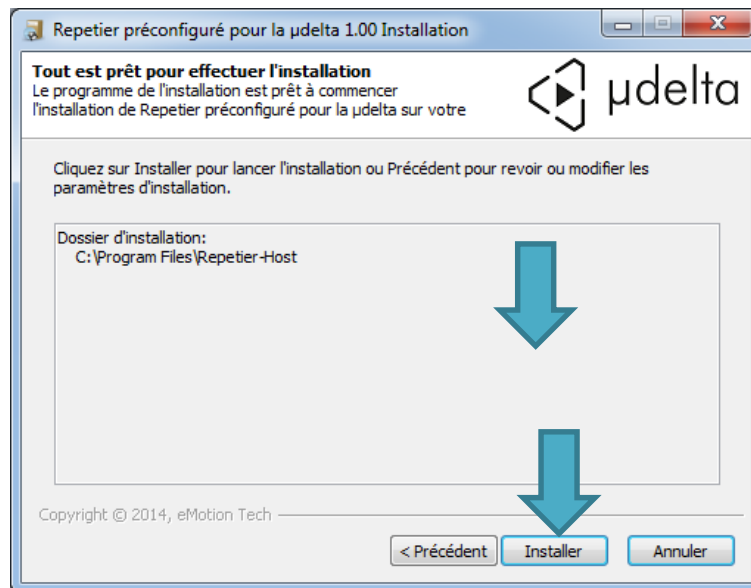
Required:

- directX drivers up to date
- .net Framework 4.5

Note: The installation and µDelta plugin is in French only. A translation is coming soon.

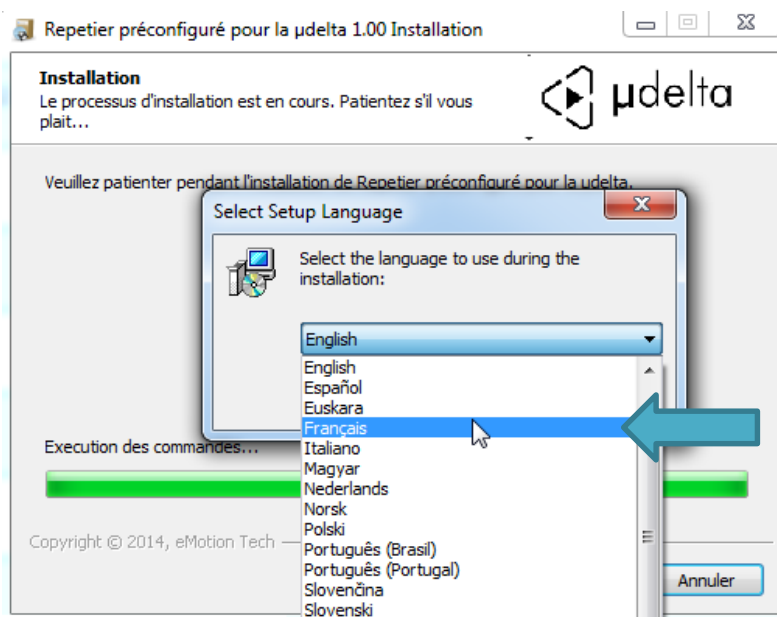
Launch the application:





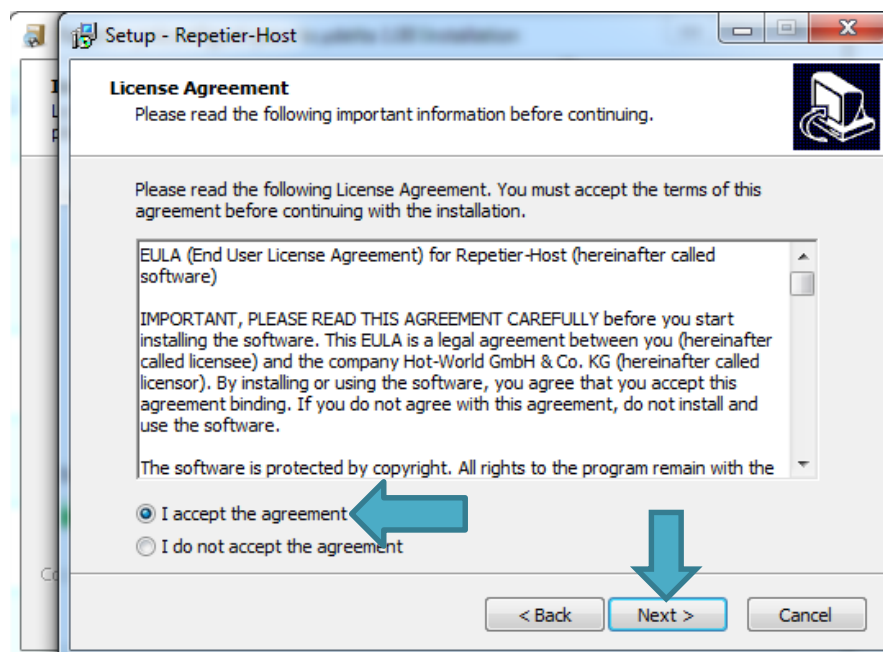
**Do not quit the new Repetier-Host window. If you do, you have to launch the installer again.**

Choose the language. (Choose English here, not French)

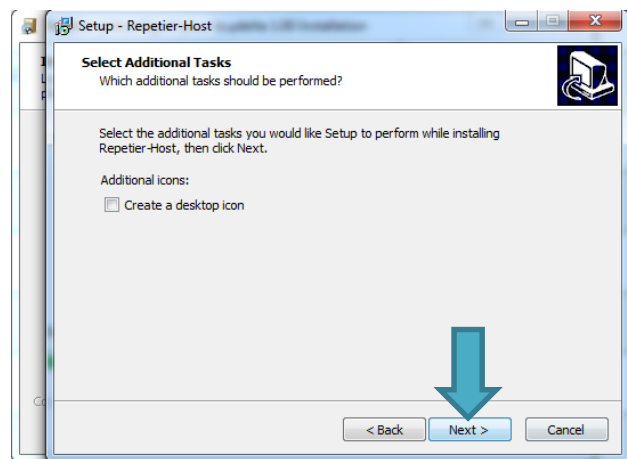
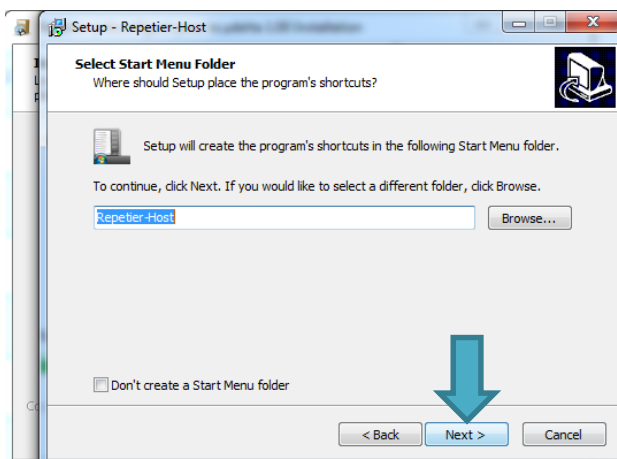
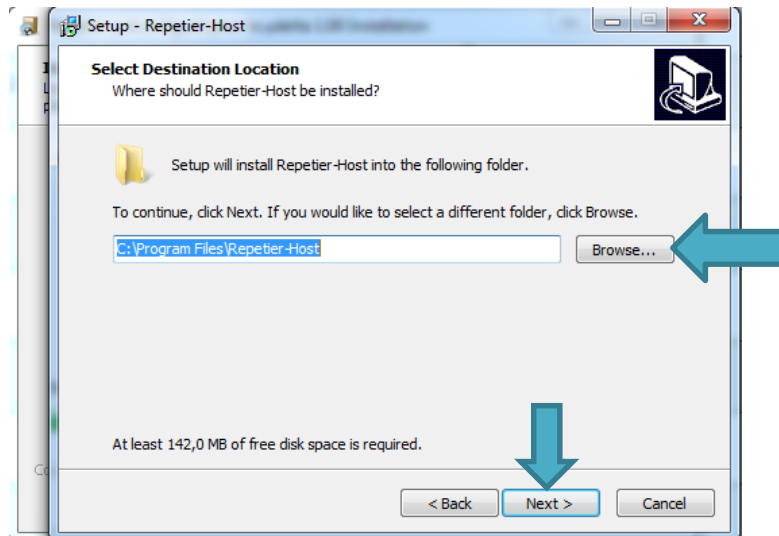




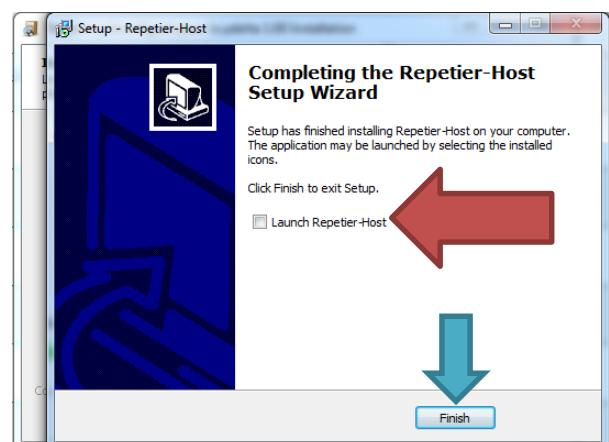
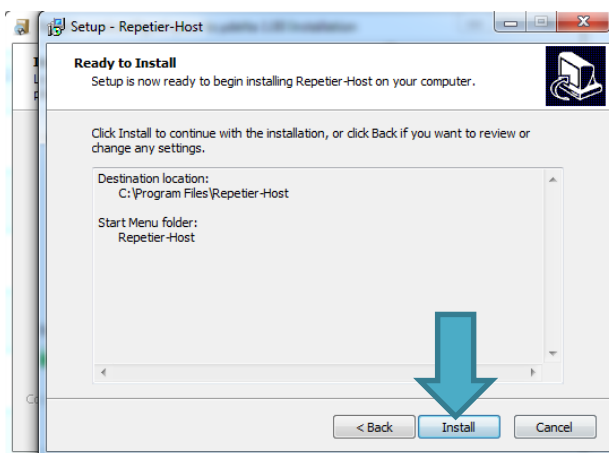
Read and accept the license agreement.



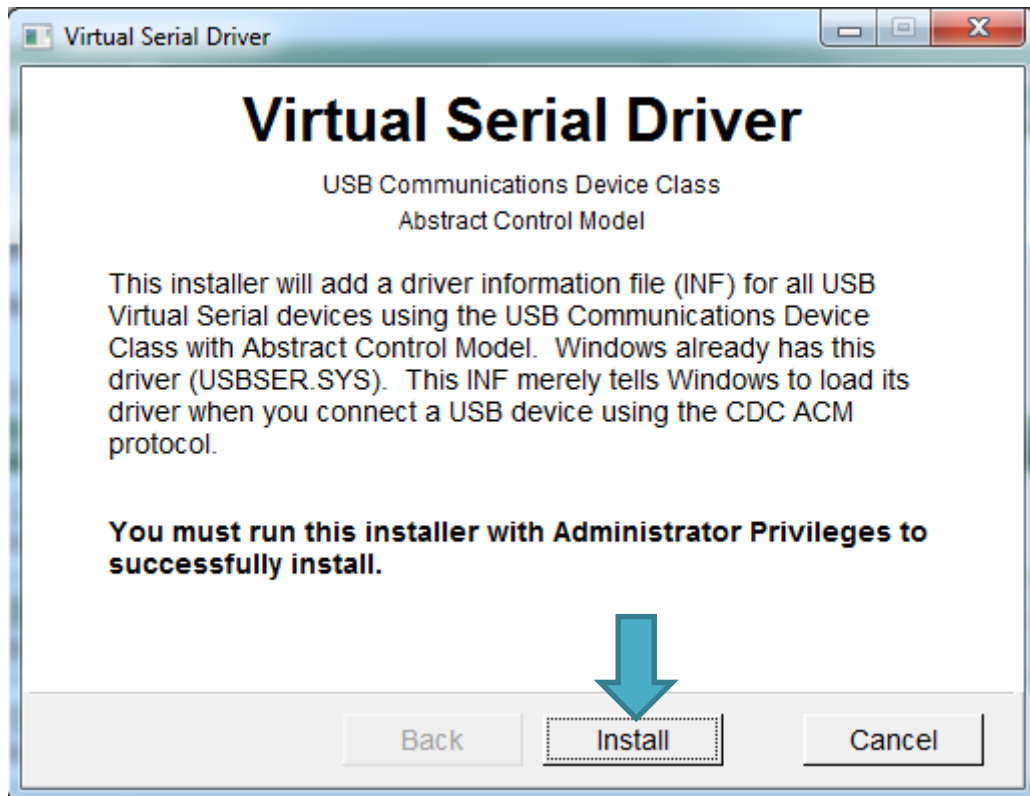
Select the location you chose previous (Or do not change the destination location).



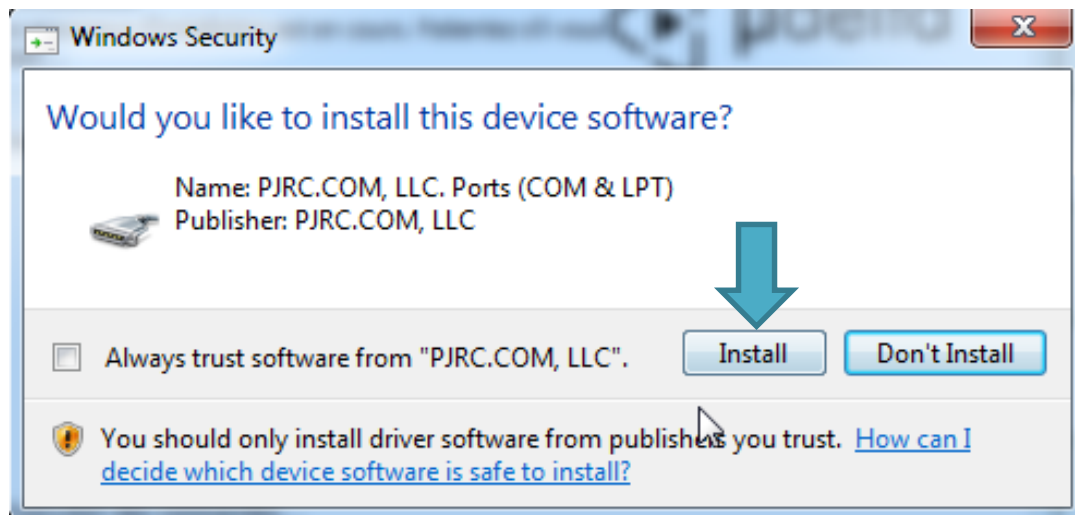
**Untick "Launch Repetier-Host"**

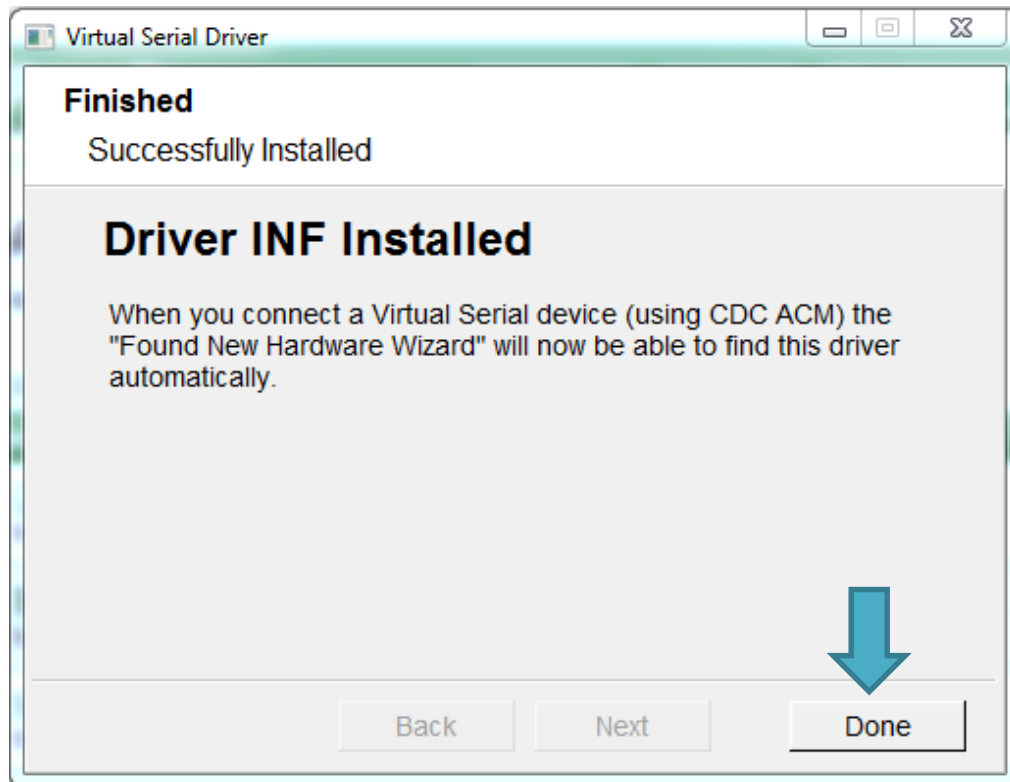




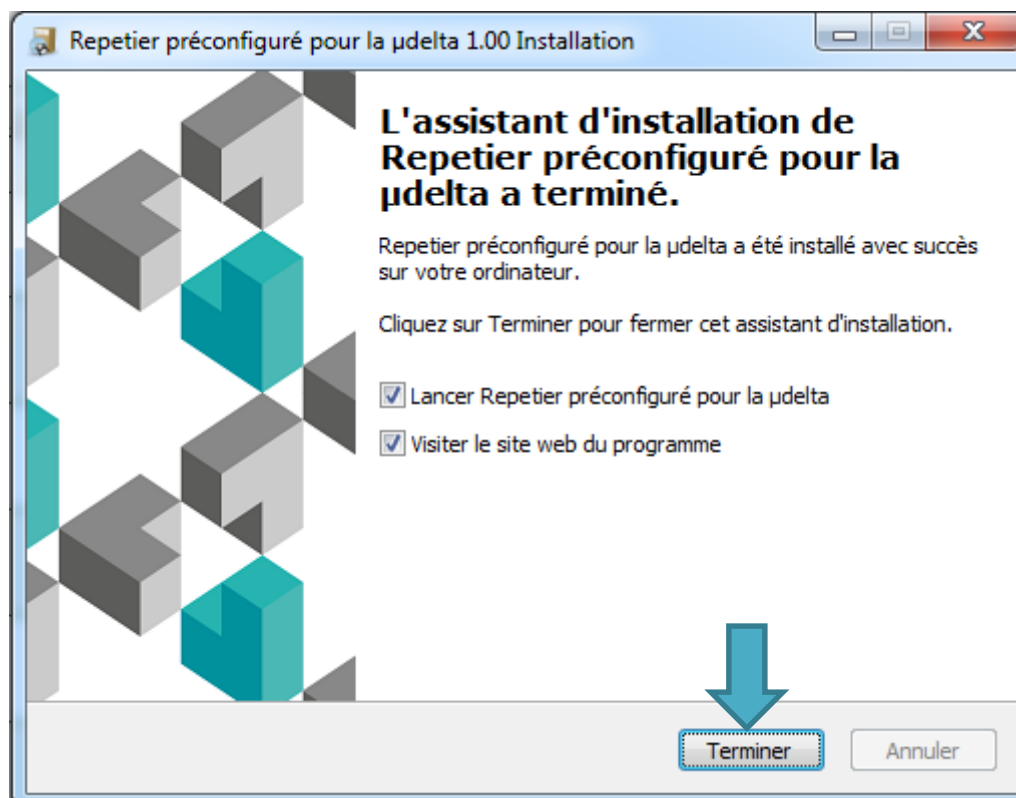


According your windows version, you can receive the following message.





The installation is over:



---

# INSTALLATION

LINUX

---

**The following chapter concerns Linux users only**

*(Tested on Ubuntu 12.04 and Mint based Debian)*

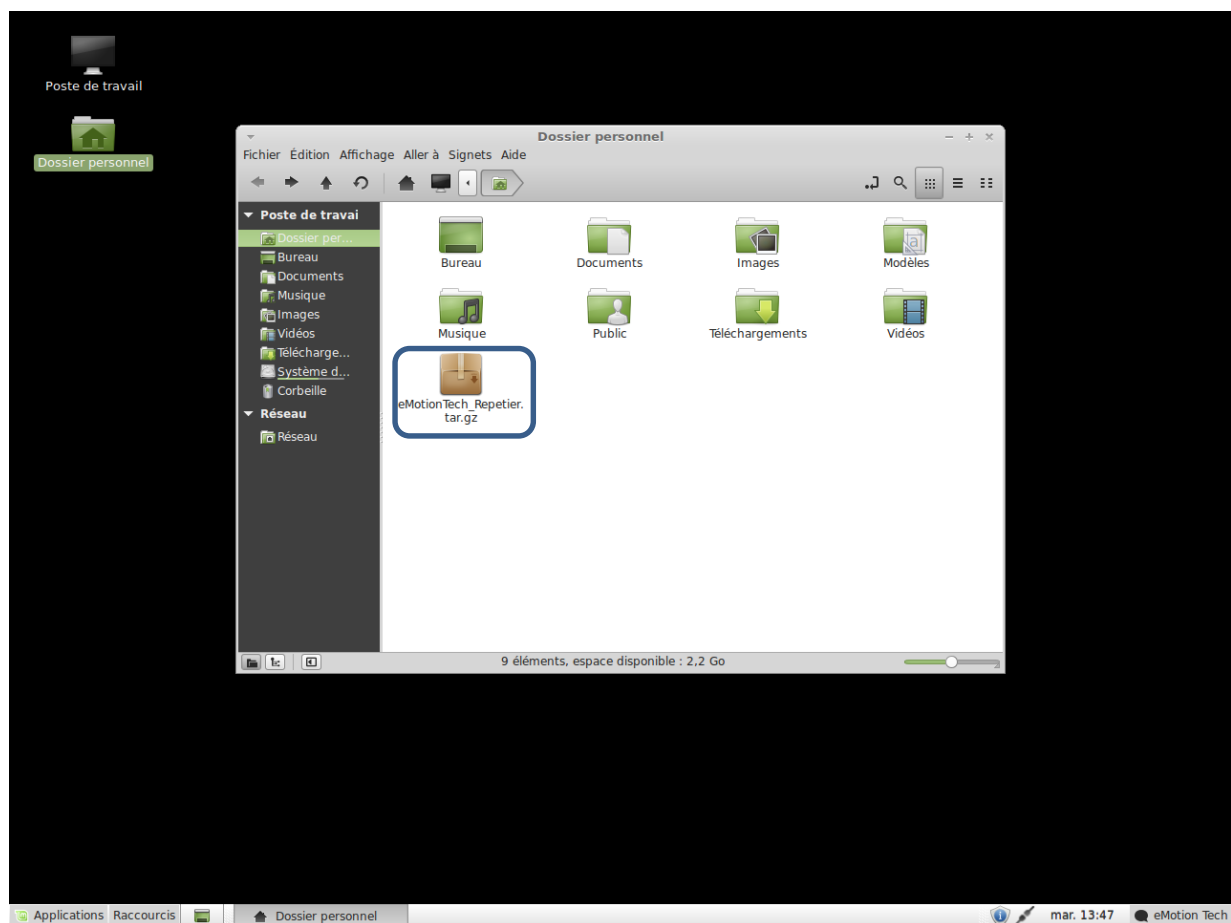
The installer copy:

- Repetier-Host
- μdelta plugin
- Preconfigured settings for Repetier-Host
- Basic profiles for Slic3r

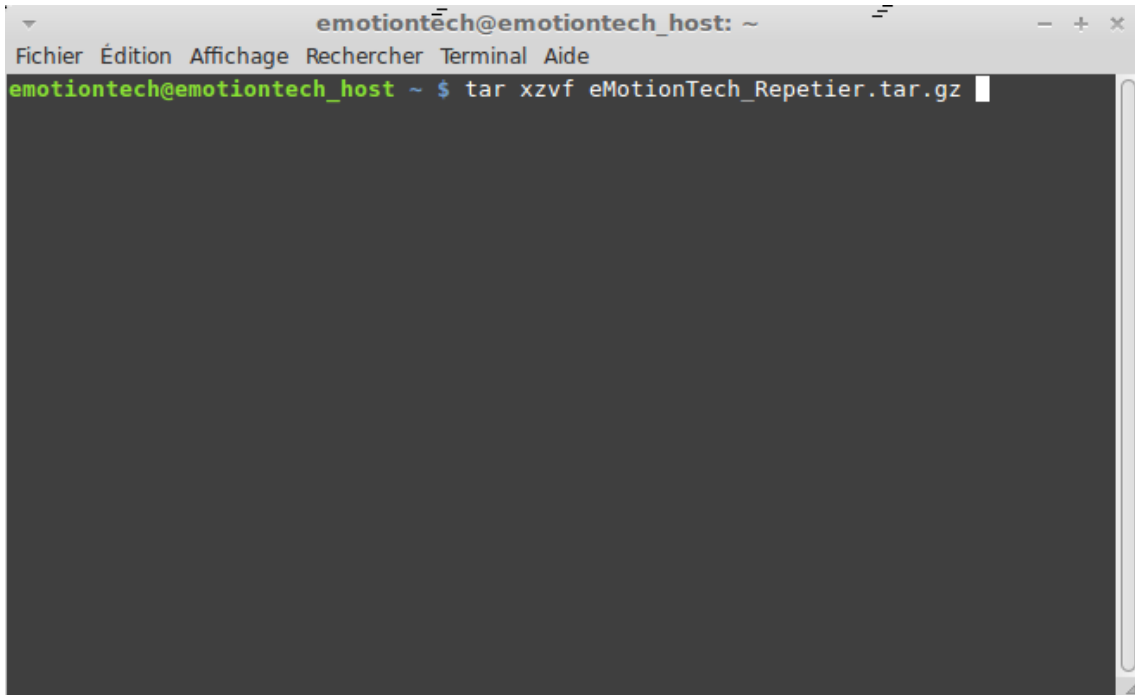
Required:

- Graphic hardware correctly installed
- OpenGL

Copy the file eMotionTech\_Repetier.tar.gz

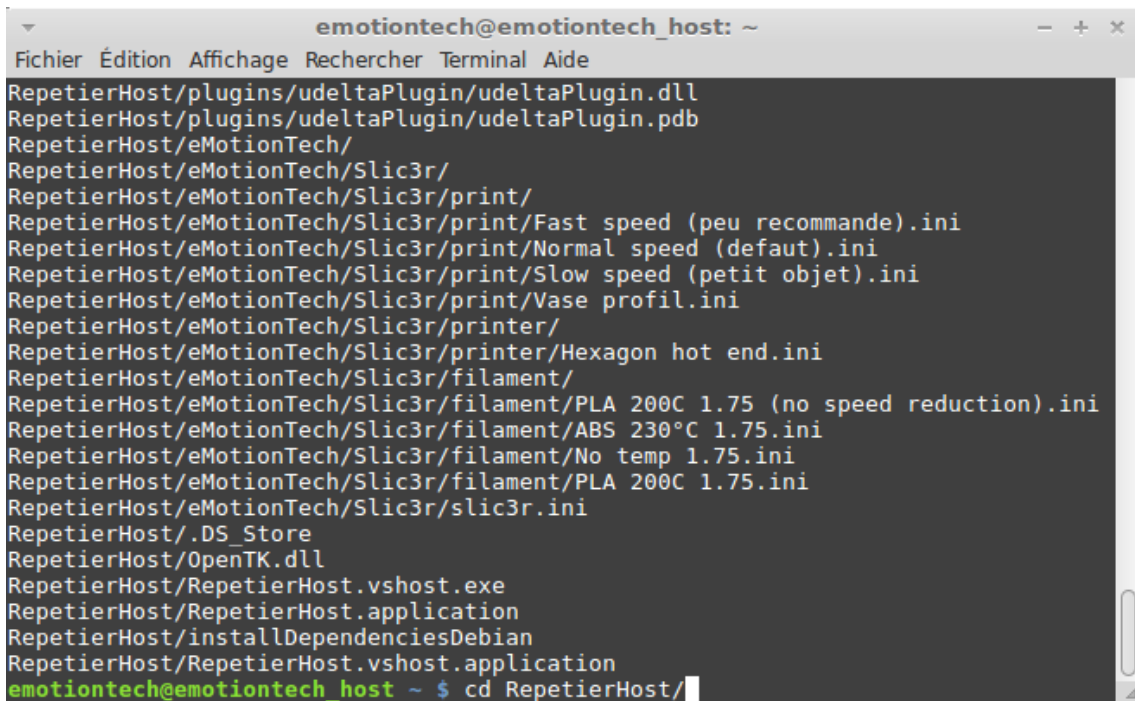


Decompress the archive file with "tar xzvf eMotionTech\_Repetier.tar.gz"



```
emotiontech@emotiontech_host: ~  
Fichier Édition Affichage Rechercher Terminal Aide  
emotiontech@emotiontech_host ~ $ tar xzvf eMotionTech_Repetier.tar.gz
```

Access to the file:



```
emotiontech@emotiontech_host: ~  
Fichier Édition Affichage Rechercher Terminal Aide  
RepetierHost/plugins/udeltaPlugin/udeltaPlugin.dll  
RepetierHost/plugins/udeltaPlugin/udeltaPlugin.pdb  
RepetierHost/eMotionTech/  
RepetierHost/eMotionTech/Slic3r/  
RepetierHost/eMotionTech/Slic3r/print/  
RepetierHost/eMotionTech/Slic3r/print/Fast speed (peu recommande).ini  
RepetierHost/eMotionTech/Slic3r/print/Normal speed (default).ini  
RepetierHost/eMotionTech/Slic3r/print/Slow speed (petit objet).ini  
RepetierHost/eMotionTech/Slic3r/print/Vase profil.ini  
RepetierHost/eMotionTech/Slic3r/printer/  
RepetierHost/eMotionTech/Slic3r/printer/Hexagon hot end.ini  
RepetierHost/eMotionTech/Slic3r/filament/  
RepetierHost/eMotionTech/Slic3r/filament/PLA 200C 1.75 (no speed reduction).ini  
RepetierHost/eMotionTech/Slic3r/filament/ABS 230°C 1.75.ini  
RepetierHost/eMotionTech/Slic3r/filament/No temp 1.75.ini  
RepetierHost/eMotionTech/Slic3r/filament/PLA 200C 1.75.ini  
RepetierHost/eMotionTech/Slic3r/slic3r.ini  
RepetierHost/.DS_Store  
RepetierHost/OpenTK.dll  
RepetierHost/RepetierHost.vshost.exe  
RepetierHost/RepetierHost.application  
RepetierHost/installDependenciesDebian  
RepetierHost/RepetierHost.vshost.application  
emotiontech@emotiontech_host ~ $ cd RepetierHost/
```

Use "sh configureFirst.sh" to install Repetier-Host:

```
emotiontech@emotiontech_host: ~/RepetierHost
Fichier Édition Affichage Rechercher Terminal Aide
RepetierHost/RepetierHost.vshost.exe
RepetierHost/RepetierHost.application
RepetierHost/installDependenciesDebian
RepetierHost/RepetierHost.vshost.application
emotiontech@emotiontech_host ~ $ cd RepetierHost/
emotiontech@emotiontech_host ~/RepetierHost $ ls
changelog.txt                                OpenTK.pdb
ColorSlider.dll                             OpenTK.xml
configureFirst.sh                           plugins
createDesktopIcon.sh                       README.txt
data                                         repetierHost
eMotionTech                               RepetierHost.application
empty.txt                                   RepetierHost.exe
installDependenciesDebian                  RepetierHost.exe.config
installDependenciesFedora                  RepetierHost.exe.manifest
OpenTK.Compatibility.dll                   RepetierHostExtender.dll
OpenTK.Compatibility.dll.config            Repetier-Host-licence.txt
OpenTK.Compatibility.pdb                   RepetierHost.vshost.application
OpenTK.Compatibility.xml                   RepetierHost.vshost.exe
OpenTK.dll                                 RepetierHost.vshost.exe.config
OpenTK.dll.config                         RepetierHost.vshost.exe.manifest
OpenTK.GLControl.dll                      repetier-logo.png
OpenTK.GLControl.xml                      Slic3r
emotiontech@emotiontech_host ~/RepetierHost $ sh configureFirst.sh
```

Write your super-user password if you need.

Launch Repetier-Host.

```
emotiontech@emotiontech_host: ~/RepetierHost
Fichier Édition Affichage Rechercher Terminal Aide
emotiontech@emotiontech_host ~ $ cd RepetierHost/
emotiontech@emotiontech_host ~/RepetierHost $ ./repetierHost
```

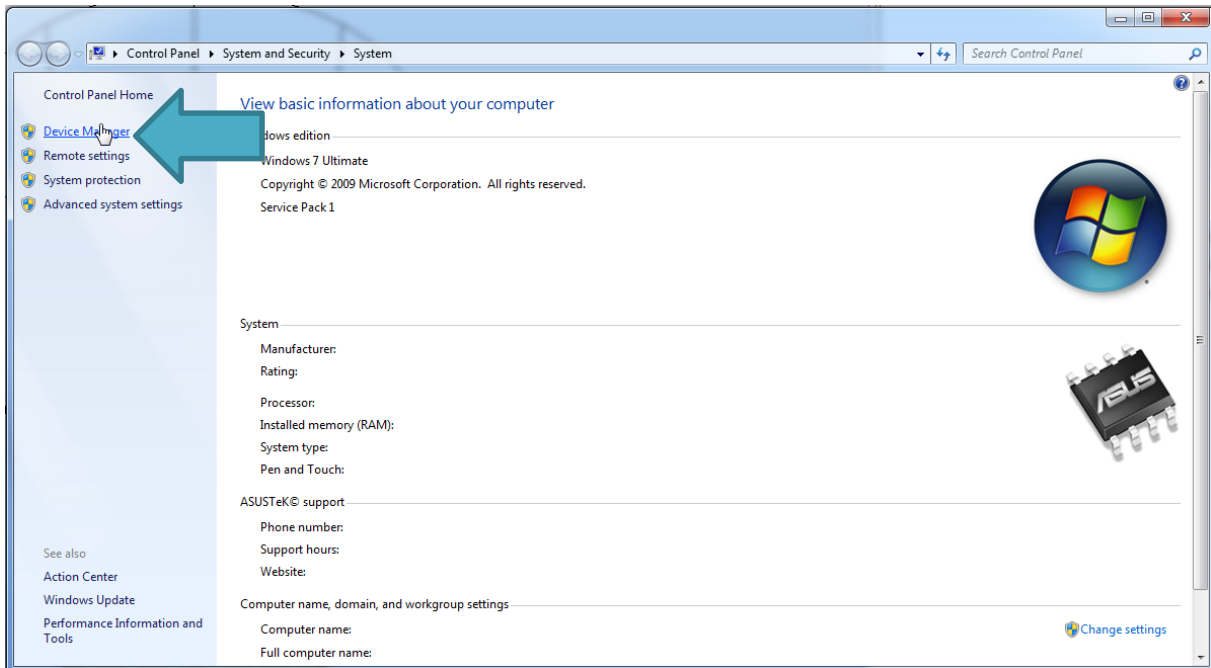
---

# CALIBRATION

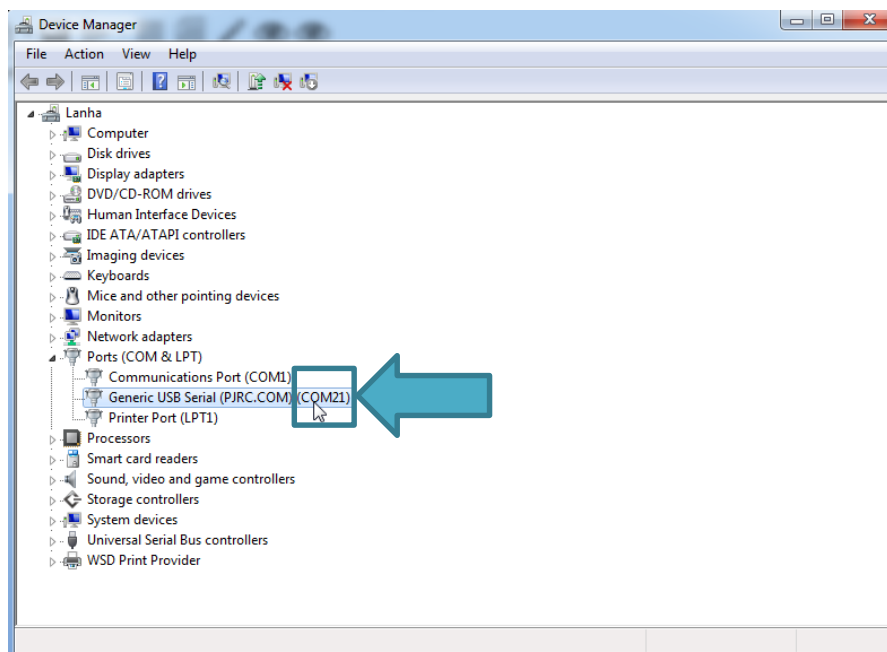
---

## A. Connexion with Repetier-Host

Make sure the teensylu is recognized by your PC. Open the control panel « Windows + Pause », and choose Device manager.

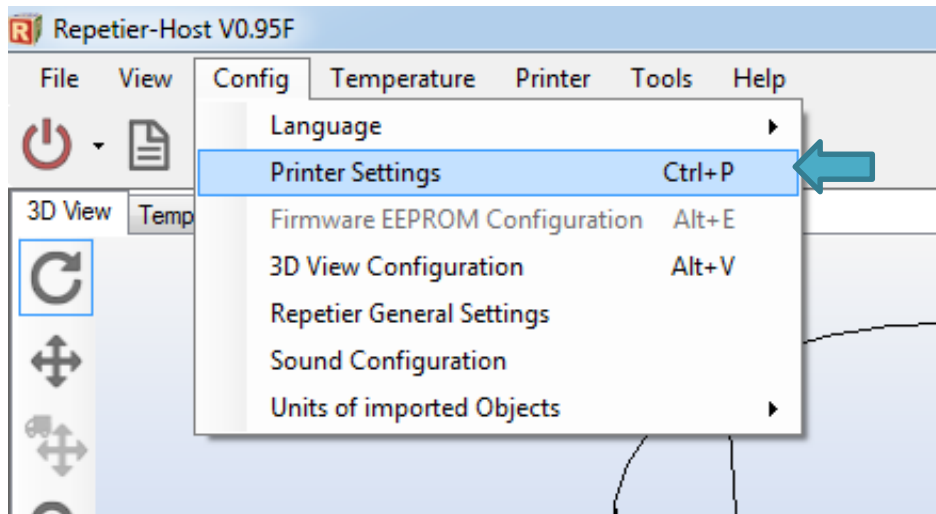


The teensylu should appear as a new COM port. Memorize it (Here COM21)

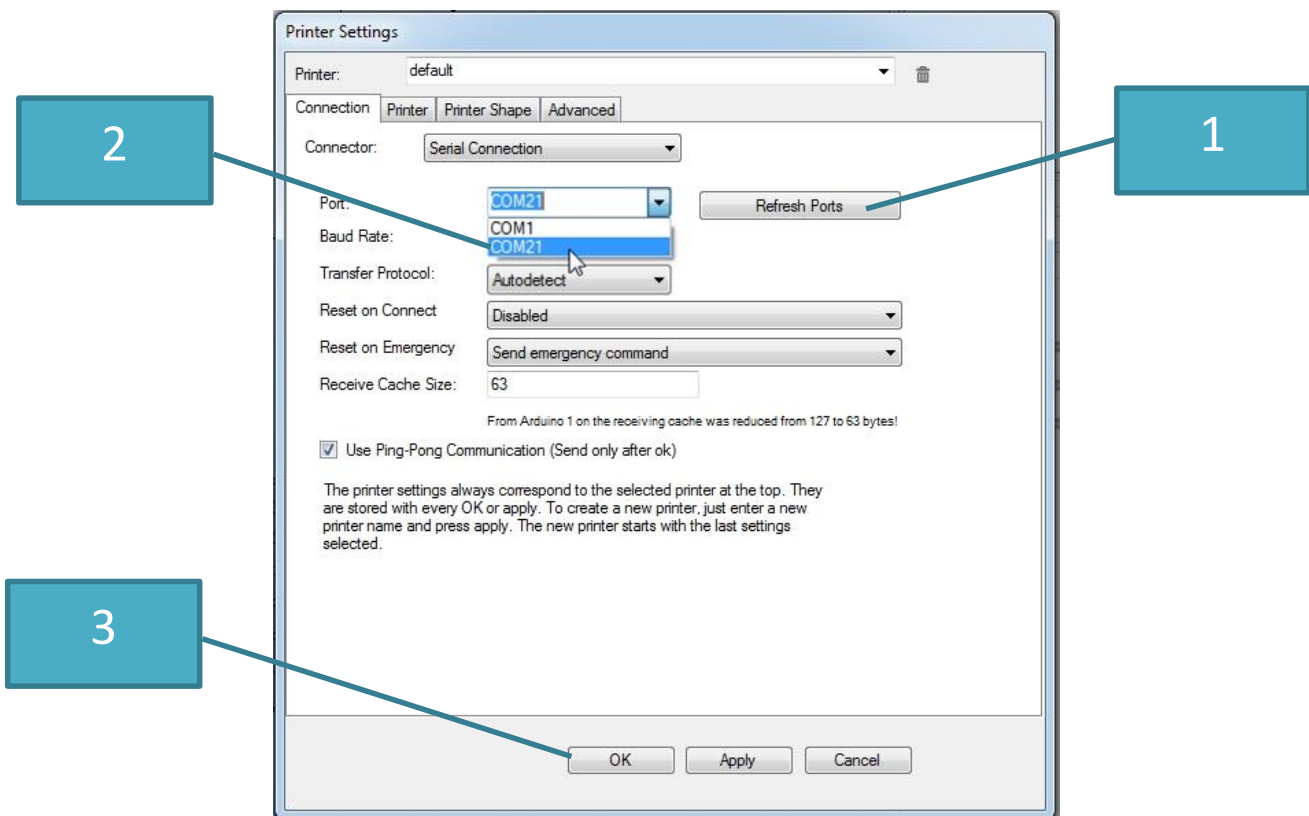




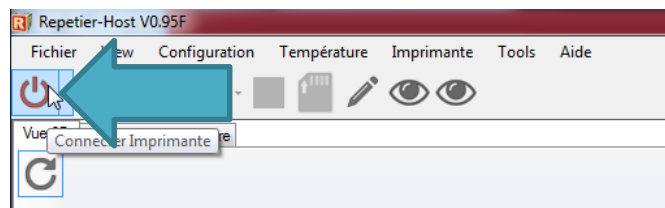
Start Repetier-Host and open “Printer Settings”.



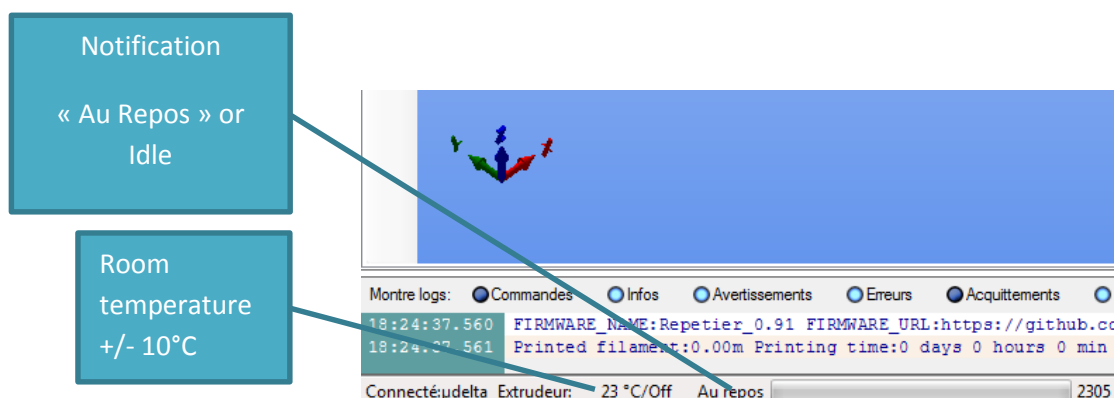
Follow the steps below (choose the same COM port as before):



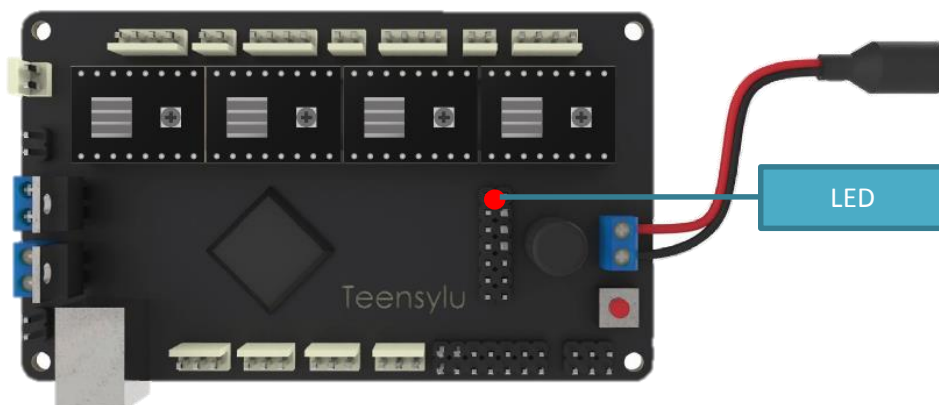
Connect your printer to your computer:



Make sure the teensylu is well connected.



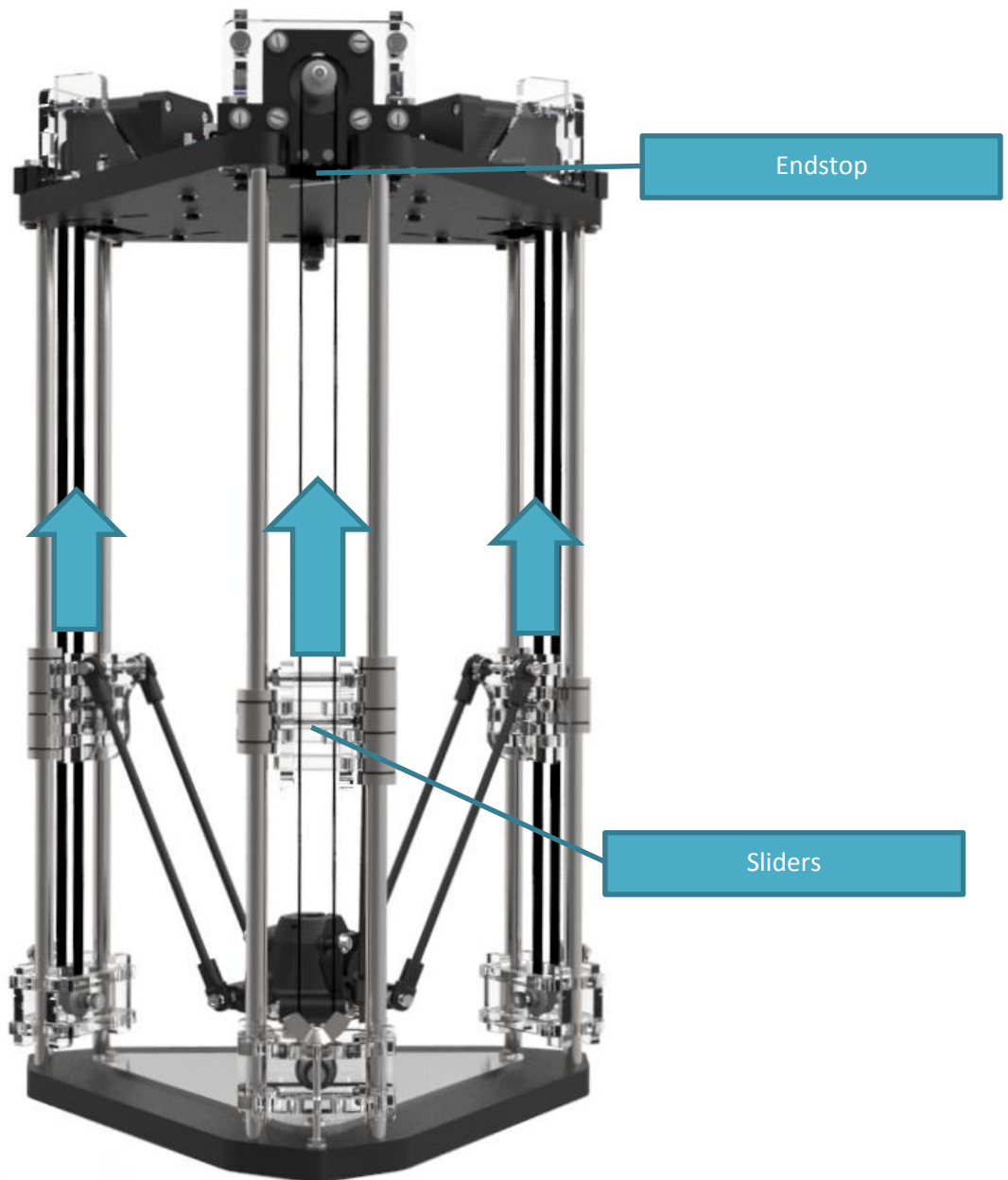
If you have waiting commands, check that your USB cable is well connected, that the teensylu LED light and that you chose the good COM port.



NOTE 2: If there is a difference higher than 15°C to the room temperature check the thermistor assembly. If the problem persists please call eMotion Tech. (a difference of 10°C is not a problem).

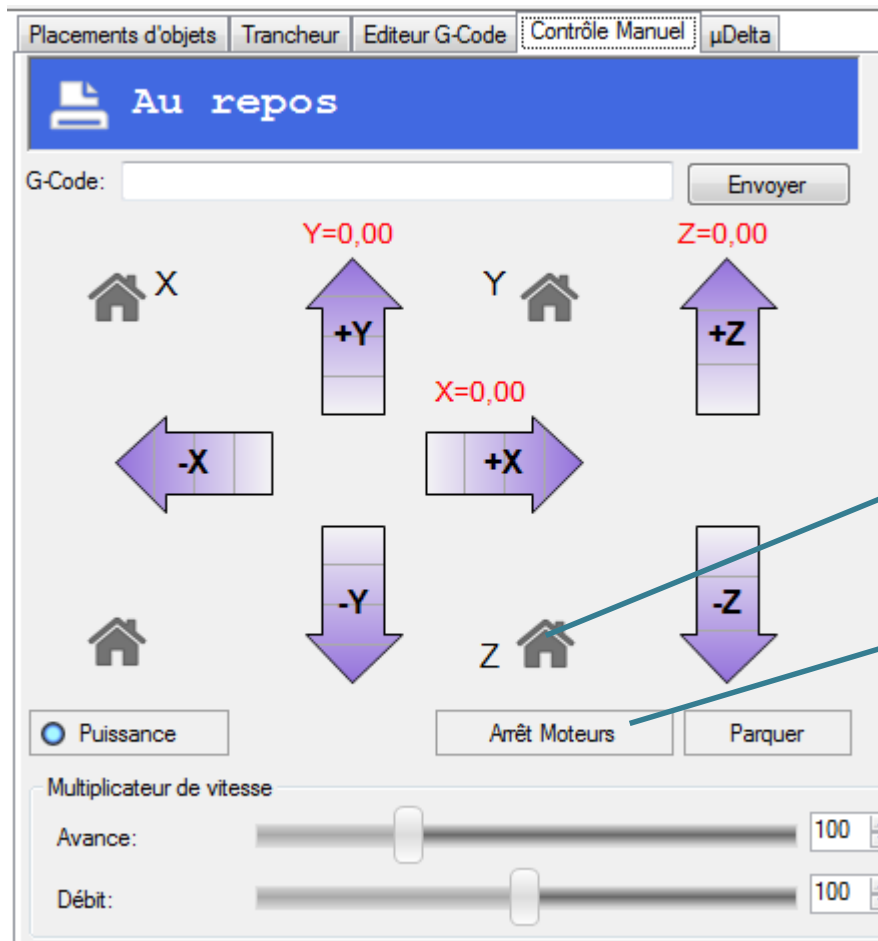
## B. First machine test

Push the sliders on the endstops. **If the motor are blocked use the turn motor off command (see next page).**



For each sliders you must hear a “click”. Check that there is nothing between the slider and the endstop (be careful to the linear bearings).

For the next step, if you hear a vibration and that the motor is forcing unplug the power supply.

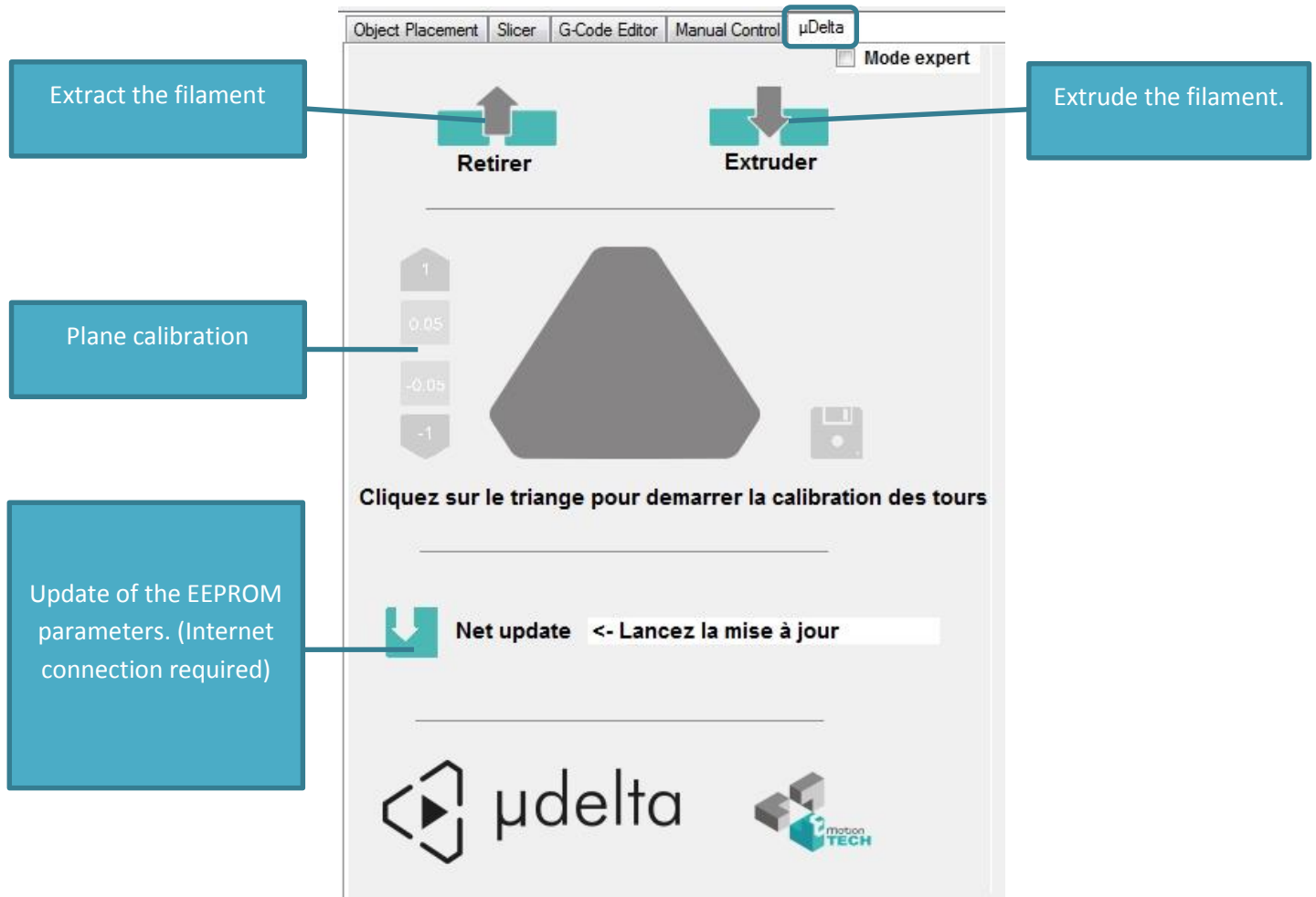


The sliders should position on the endstop. If the motor does not stop, check the connections of the endstops. Do not hesitate to move slightly the plug in case of bad contact.

### C. eMotion Tech Plugin

We developed a plugin to calibrate the μdelta.

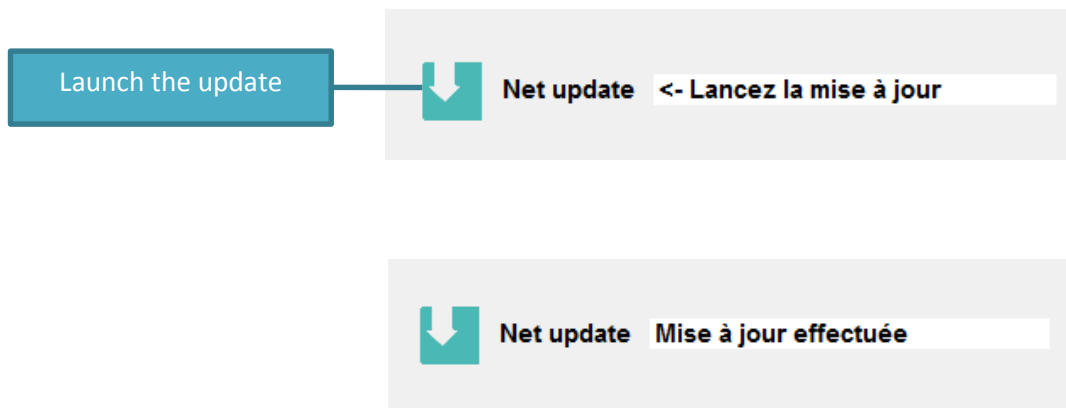
Open the “μdelta” tab:



## D. Update

Your printer is calibrated but calibration data might change.

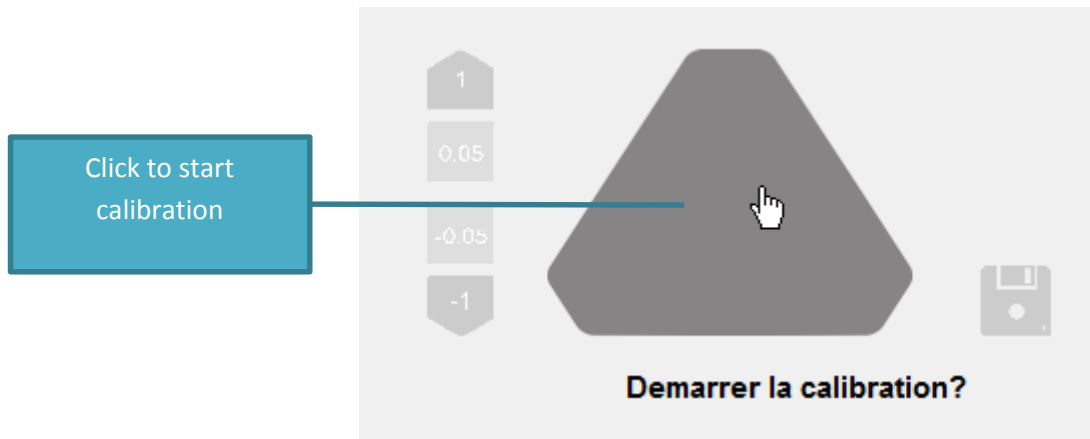
**This update is strongly recommended.**



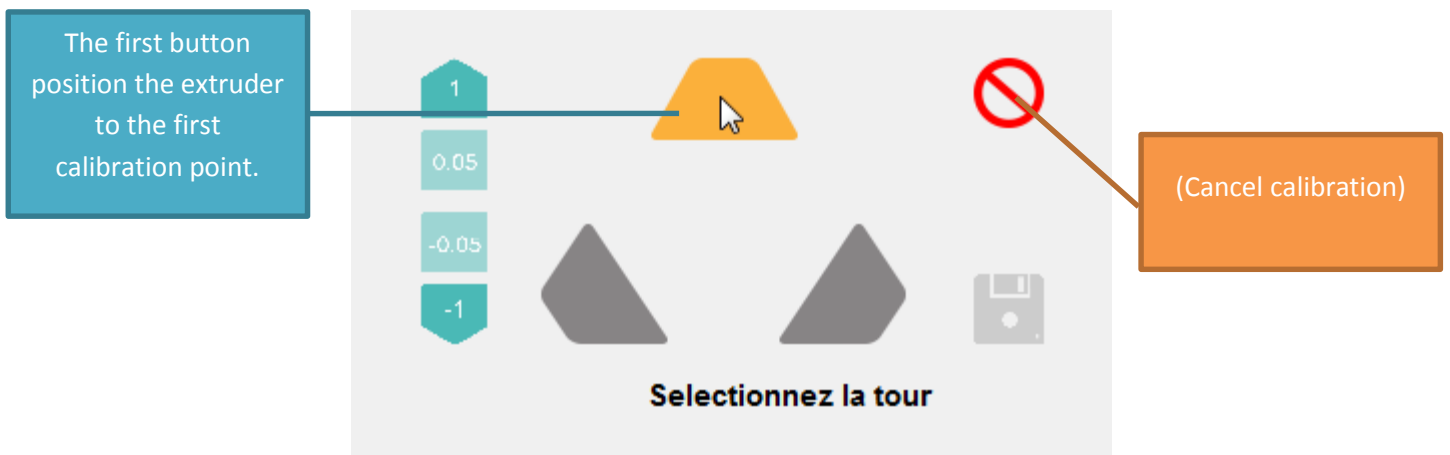
If you have internet problems, check your connection and your firewall parameters. Offline update is also possible (see annex 2).

## E. Plane setting

If you have already used the printer make sure the nozzle is clean. If there is dry plastic on the nozzle heat the extruder to 130°C to clean the nozzle.

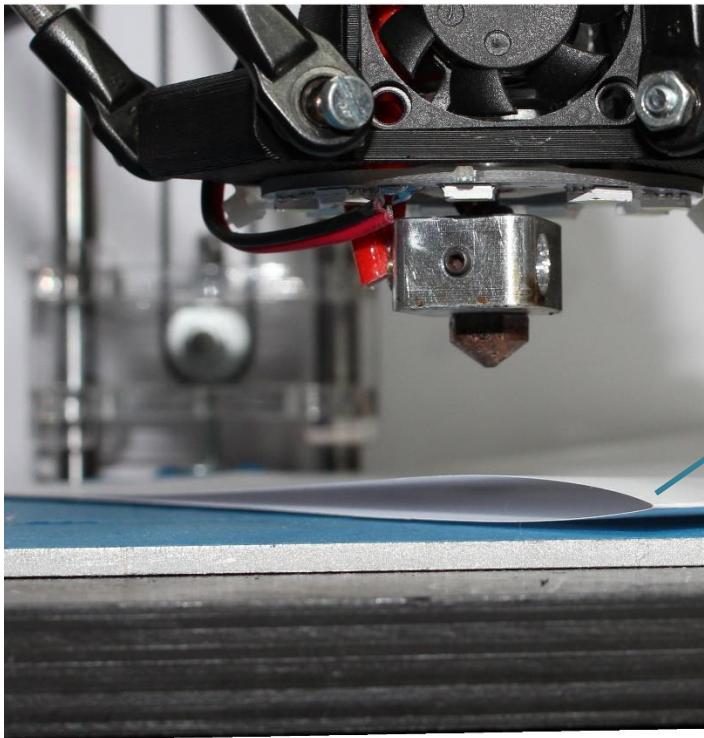


The printer will initialize and block each slider against the endstops.

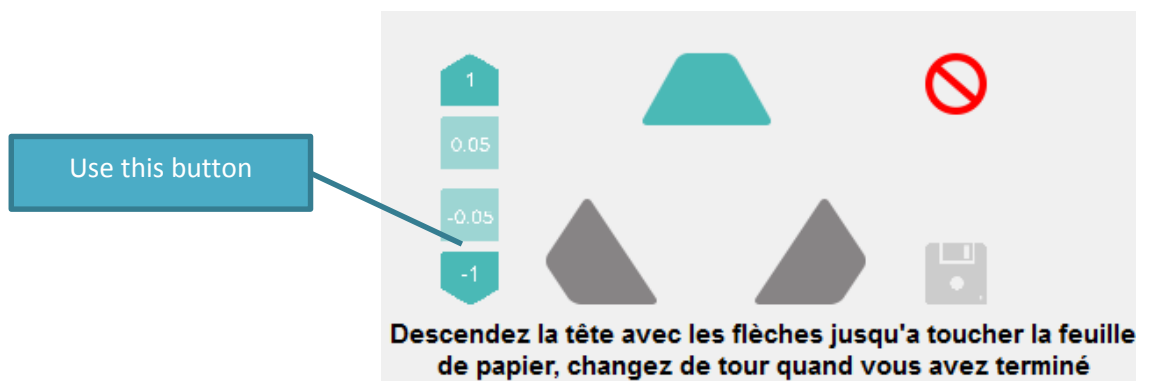


The printer will go to the first calibration location.

Fold a sheet of paper and position it under the extruder.

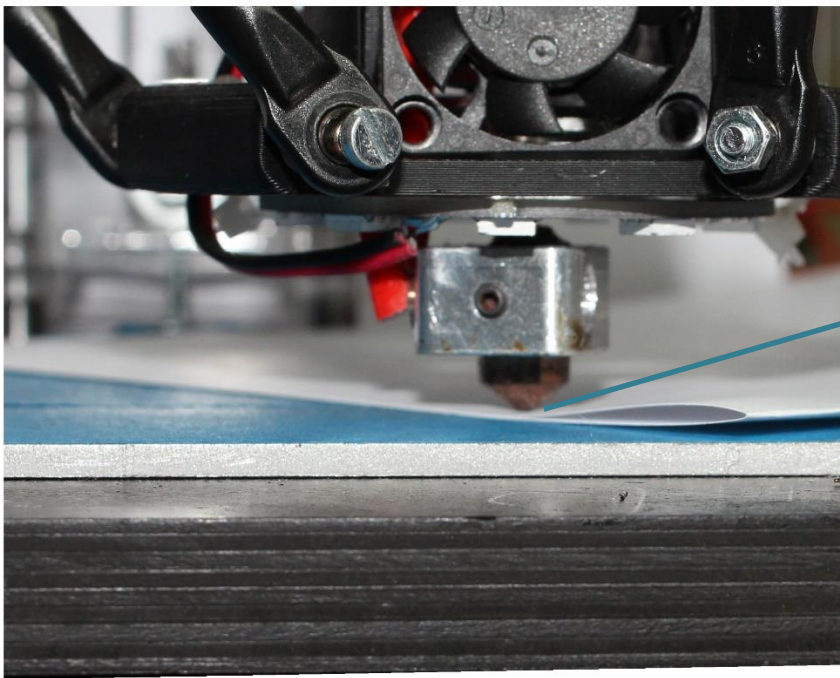


Down slowly the extruder until the hot end touch the folded sheet. Begin with 1mm and finalize with 0.05.



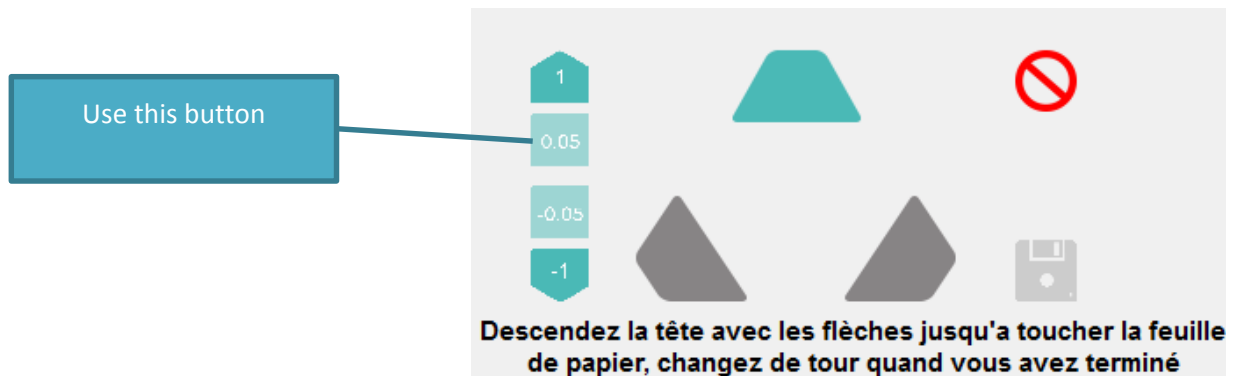
**Be careful: Do not get too low, you can disrupt the calibration. In that case you will have to start again.**





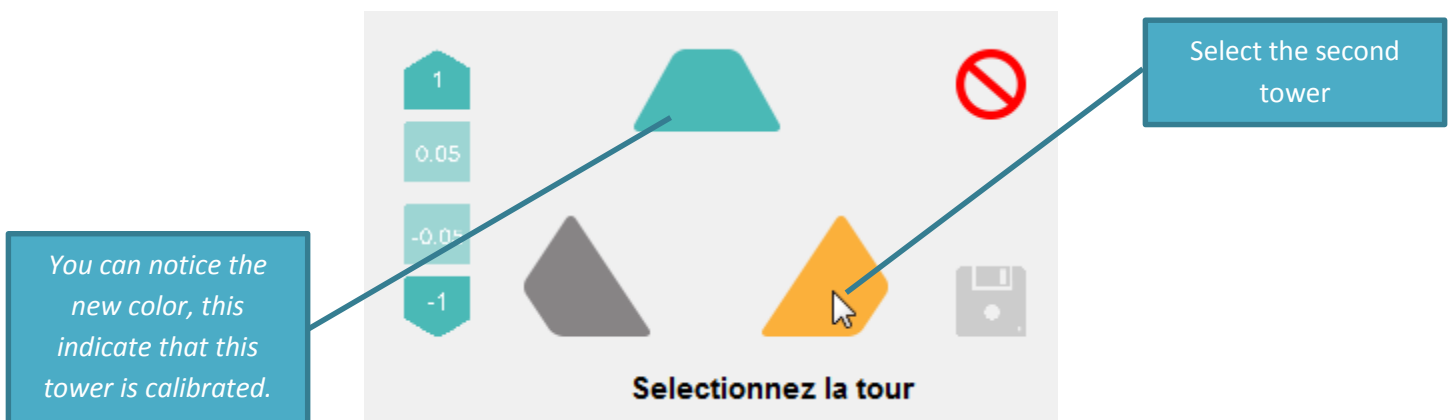
The sheet must be slightly blocked by the nozzle

Now the sheet is blocked go 0.05mm up.



If the sheet can slide, the calibration of the tower is completed.

Do the same for the others towers.



Once the three tower are calibrated, you must save the calibration.



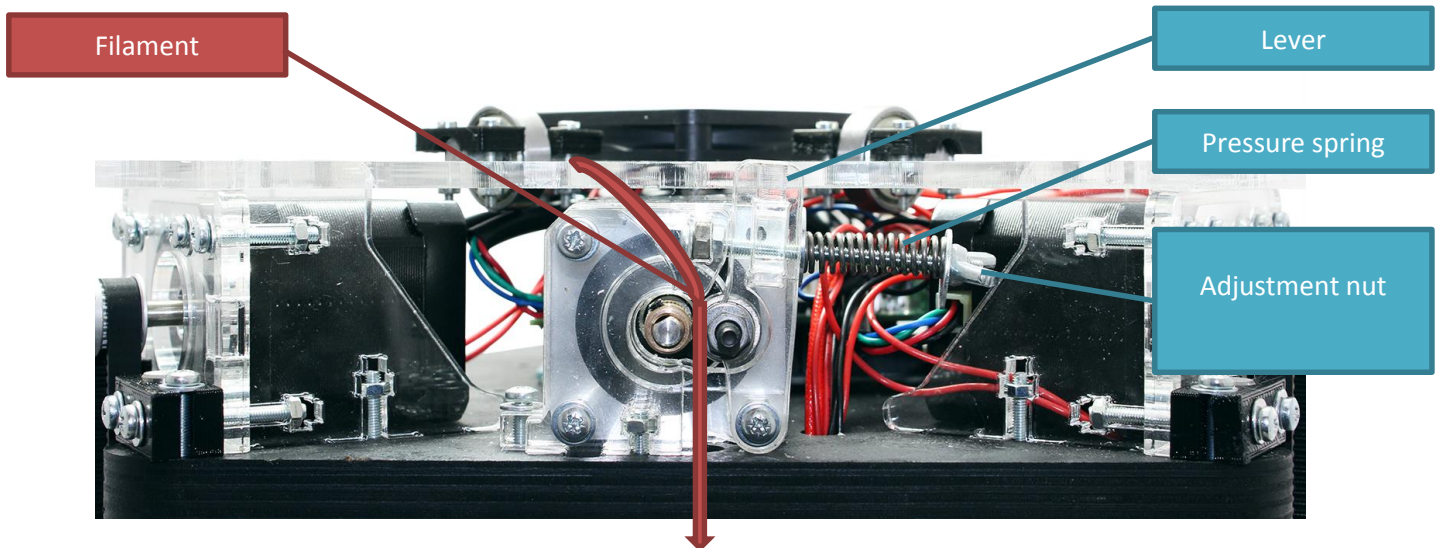
***Congratulation! You complete your printer calibration!***

---

# PRINTING

---

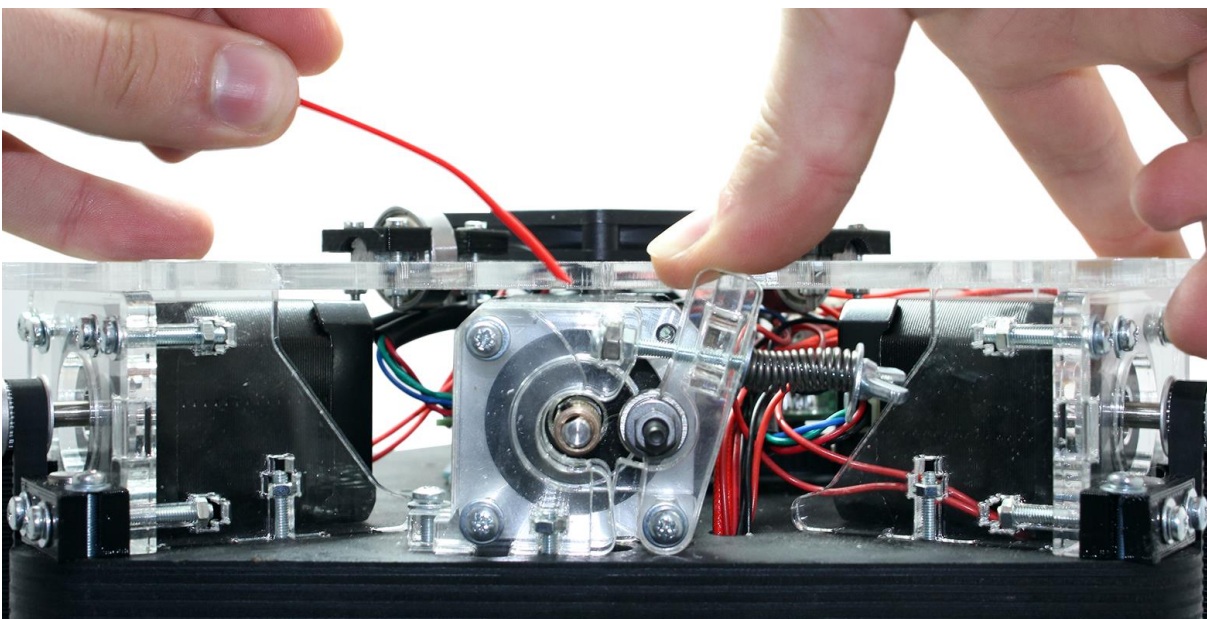
## A. Filament positioning

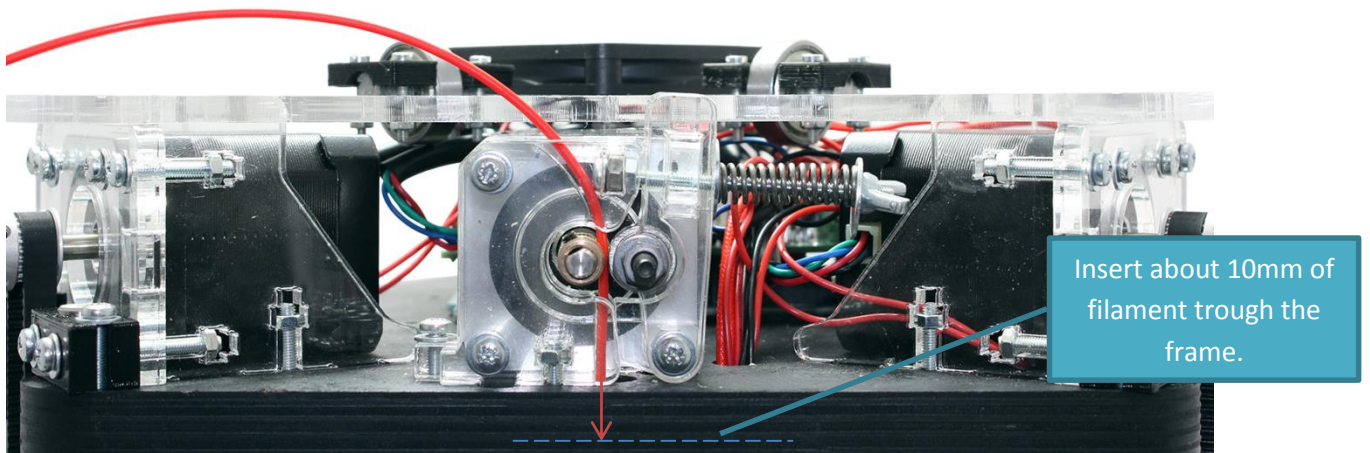


Slice the filament obliquely

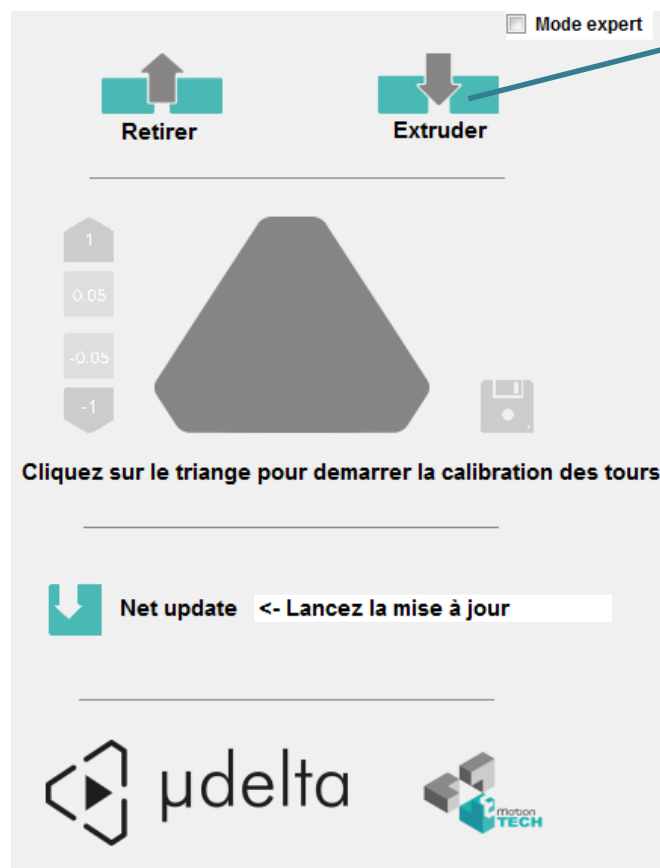


Pull the lever and insert the filament





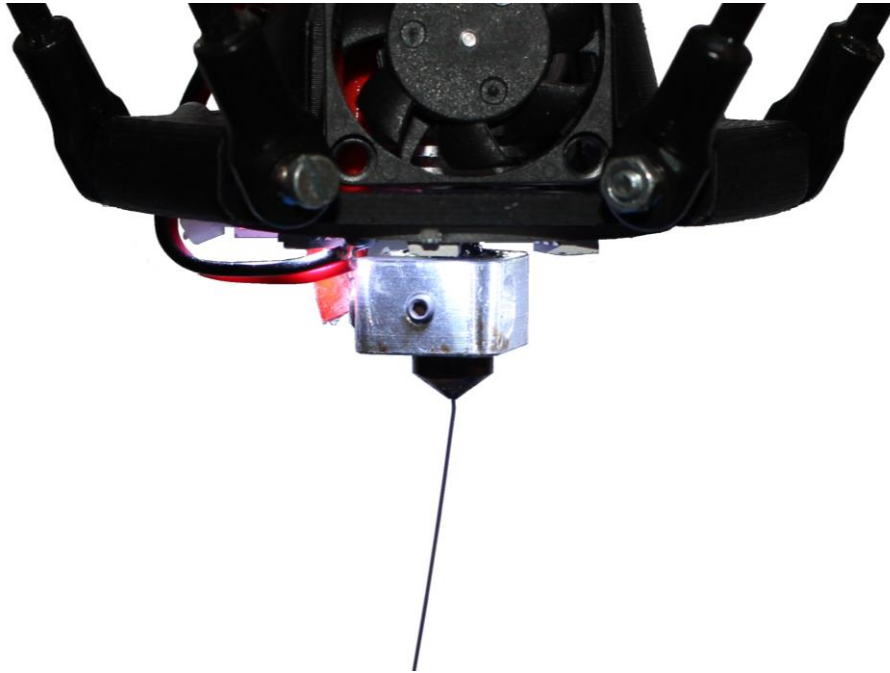
Open the “μdelta” tab and click on extrude:



The hot end will heat until 200°C.



After reaching 200°C the filament will be driven until the nozzle.



If your printer extrude, the filament is well positioned.

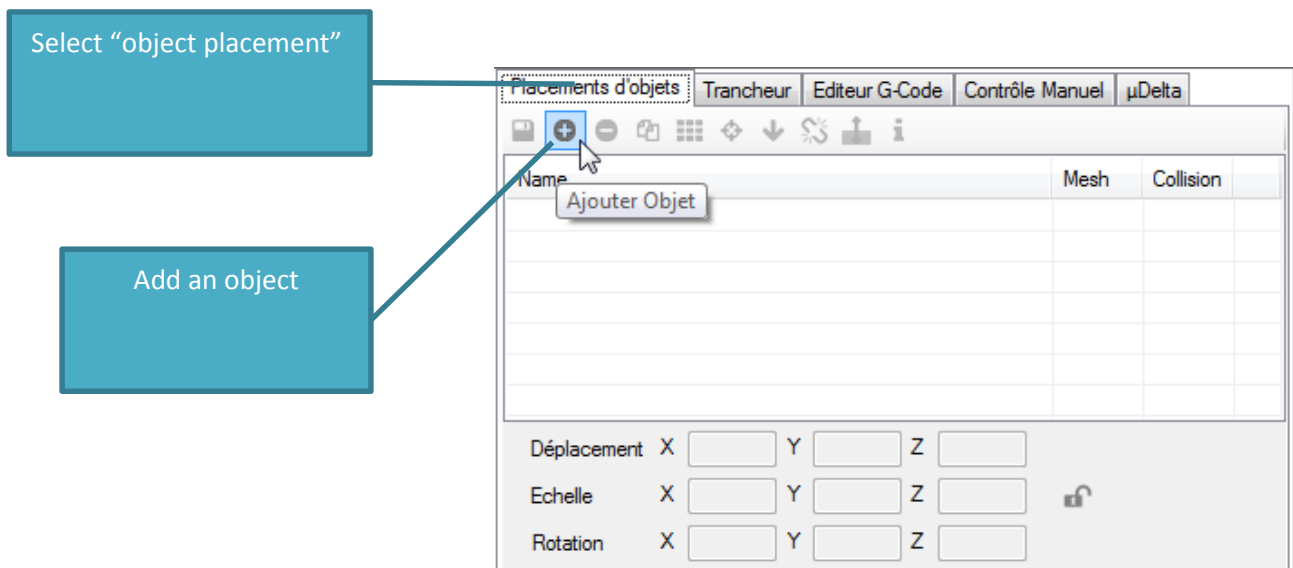


## B. Printing with Repetier-Host

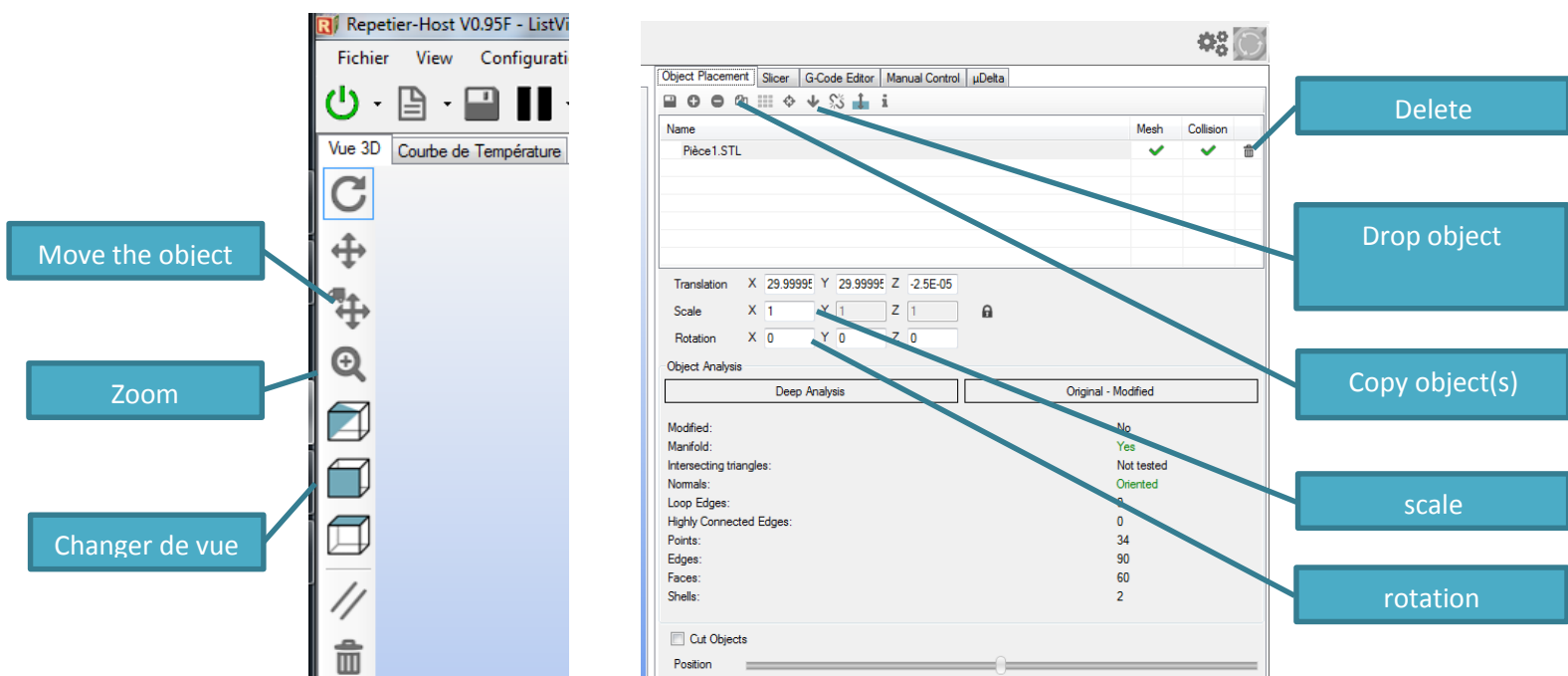
First you need to choose an object to print. We recommend that you start with this object:

[http://www.reprap-france.com/download/1ere\\_impression.STL](http://www.reprap-france.com/download/1ere_impression.STL)

(You can also create an object or download it on the website [thingiverse](http://thingiverse.com) for instance)



Presentation of the interface.



Open the tab slicer and follow the steps bellow :

1

slicer

2

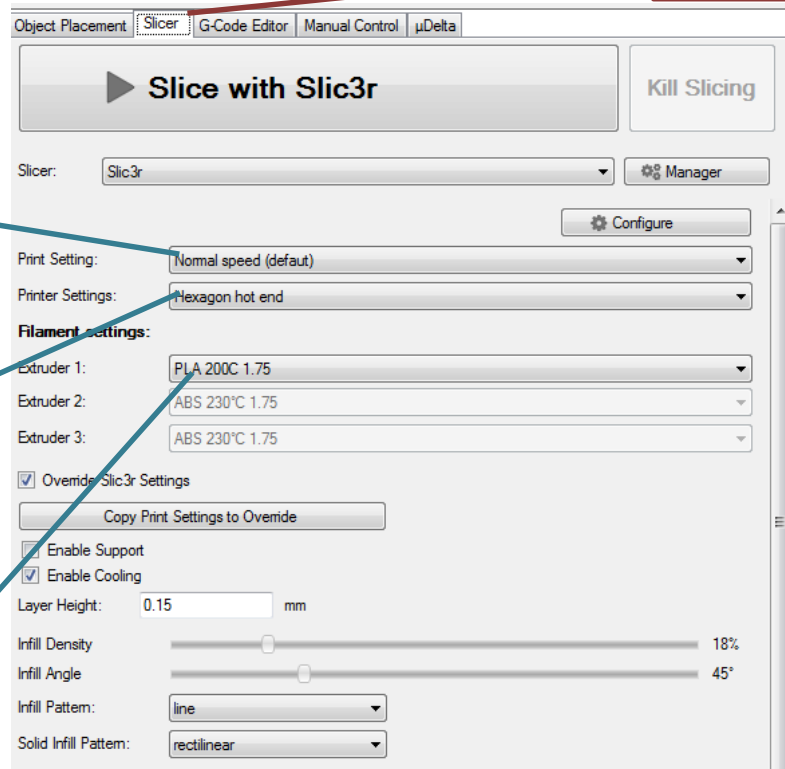
Choose normal speed

3

Choose Hexagon hot end

4

PLA profile for 1.75mm filament heated at 205°C



6

Reset parameters

7

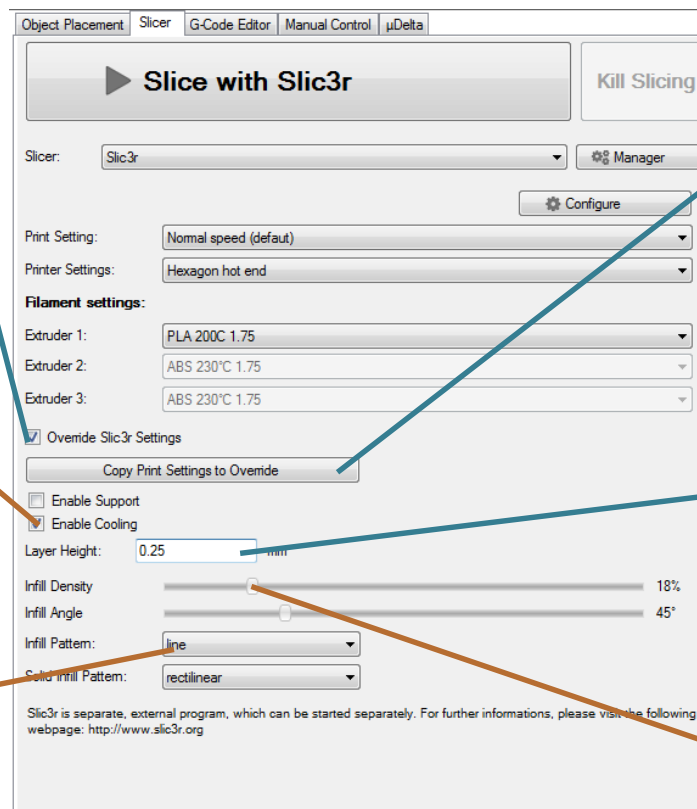
Choose the layer height 0.25mm is good to begin

5  
Tick this box to change slic3r parameters.

Cooling

Infill pattern

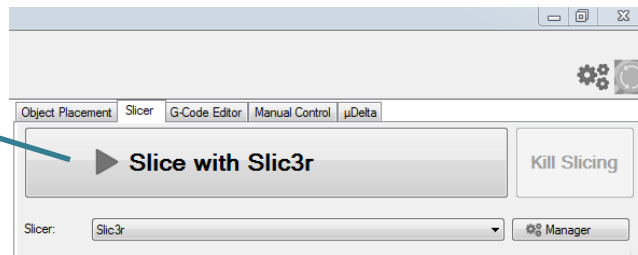
Infill density





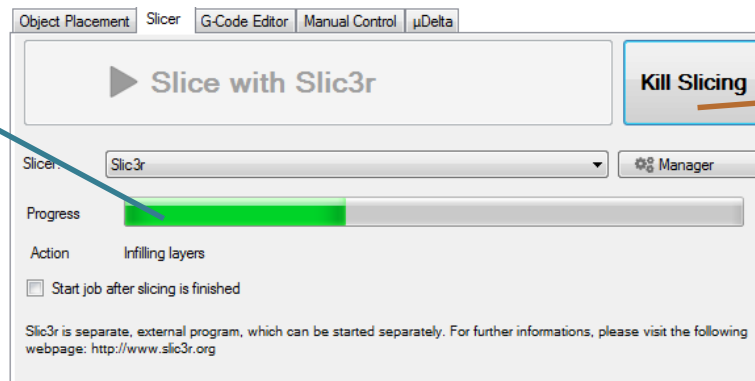
Launch the slicer :

Launch the slicer



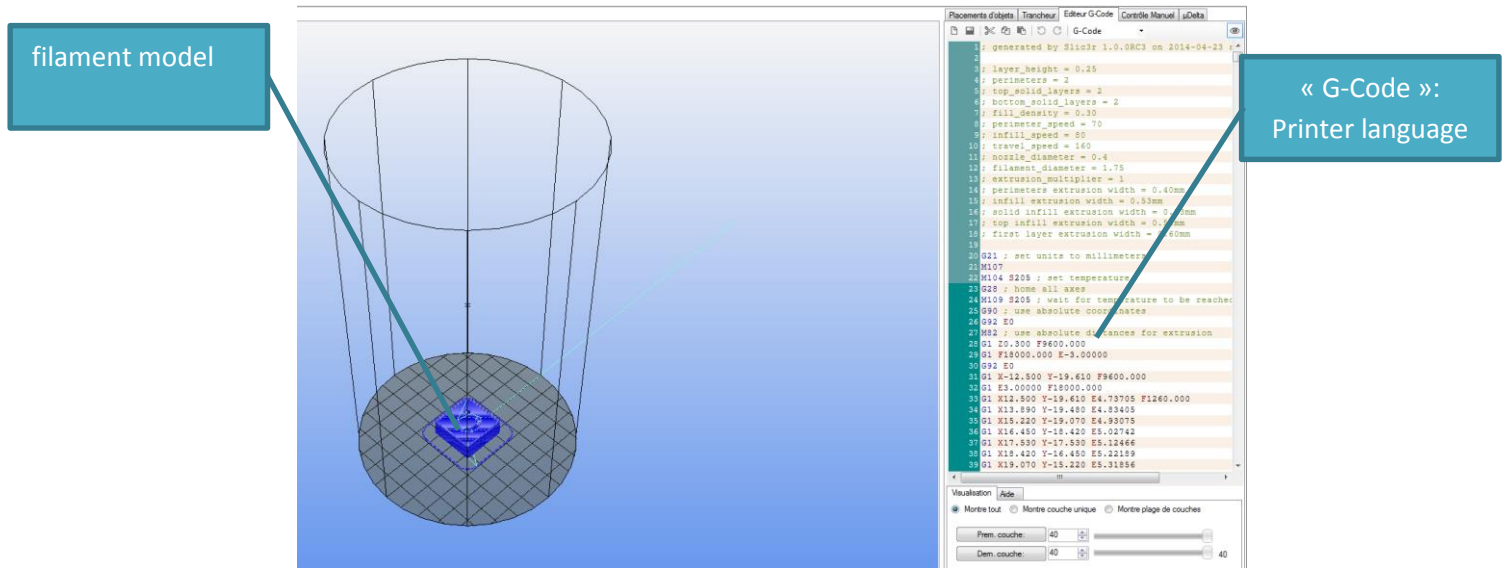
The slicing is the conversion of a virtual shell into a program for the printer.

Progress



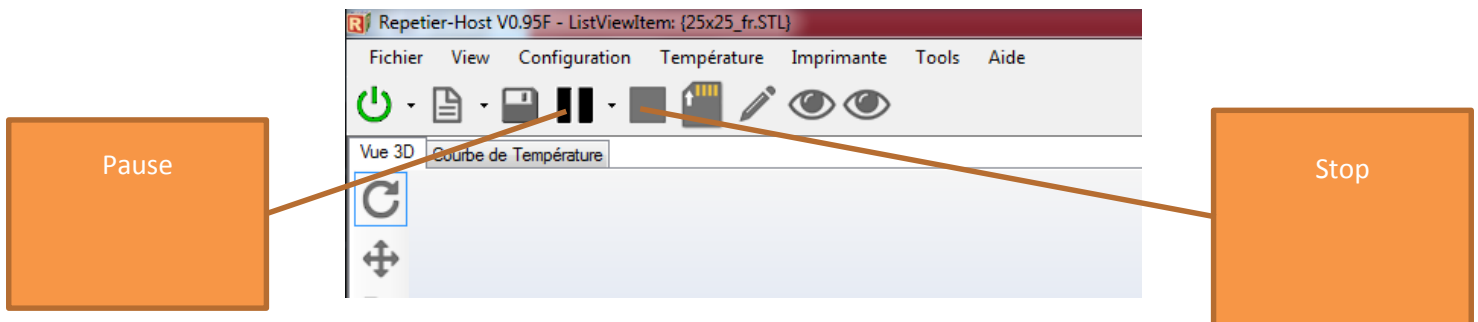
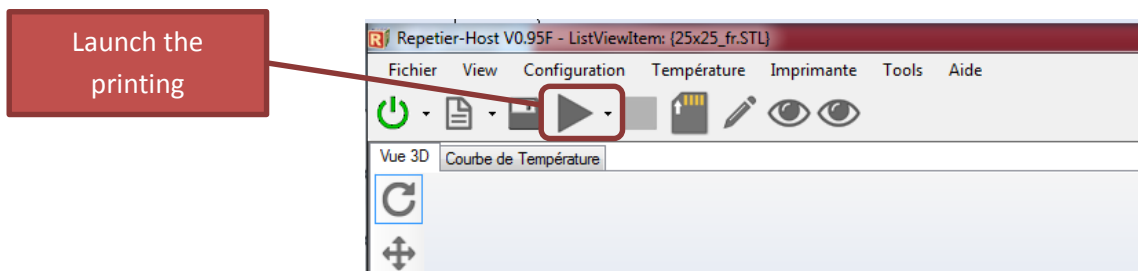
You can stop the slicing

After slicing the Repetier-host will choose automatically "G-Code editor" ( 3<sup>rd</sup> tab)



If you zoom you can see filament details of the object

Launch the printing:



*Congratulation for your first printing!!*

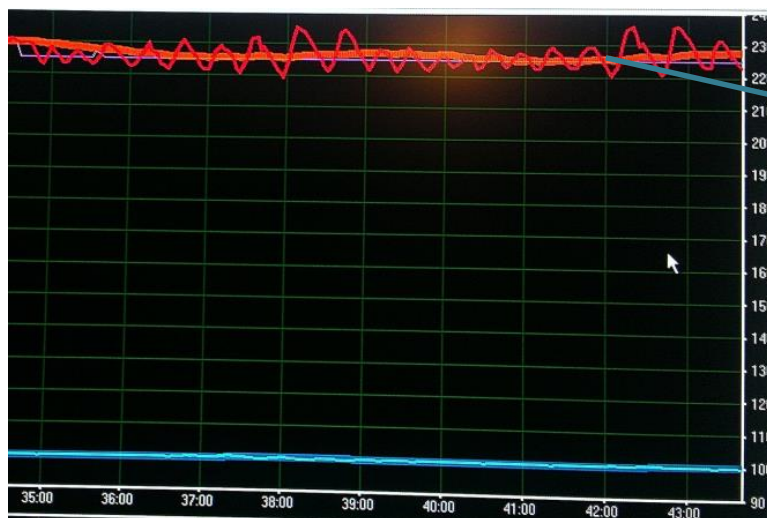
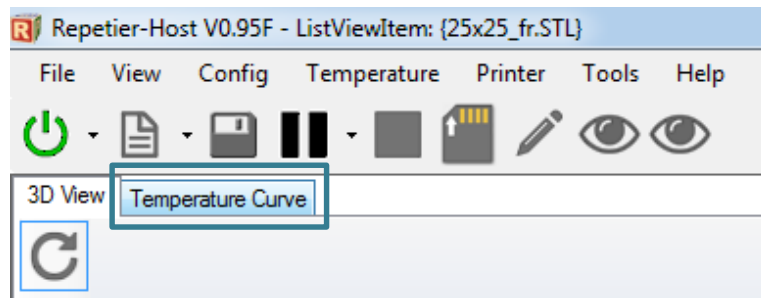
---

# ANNEXES

---

## Annex 1: Heat control setting (optional)

Select the temperature curve tab.



Les oscillations ne s'arrêtent pas

If there is big temperature oscillation (more than 5°C), the printer is not well regulated.

First let the hot end cool down.

More information about the regulation here: [http://en.wikipedia.org/wiki/PID\\_controller](http://en.wikipedia.org/wiki/PID_controller)

☒ Mode expert

**Retirer** **Extruder**

1  
0.05  
-0.05  
-1

Vous avez terminé? N'oubliez pas de sauver la calibration

**Net update** <- Lancez la mise à jour  
Update depuis un fichier

Distance entre le haut et la buse:  
Aller à la position 0 Définir hauteur  
Zmax actuel: 210 Home Z

Calibration chauffe (lancez à froid et attendez patiemment):  
Auto-tune PID Reset default PID

 µdelta 

Choose expert mode

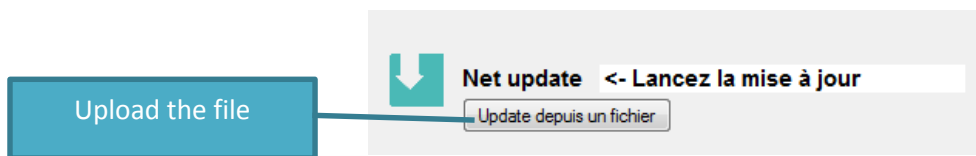
Launch automatic  
setting

Initialize PID

## Annex 2: Offline update

If you don't have an internet access follow the steps bellow:

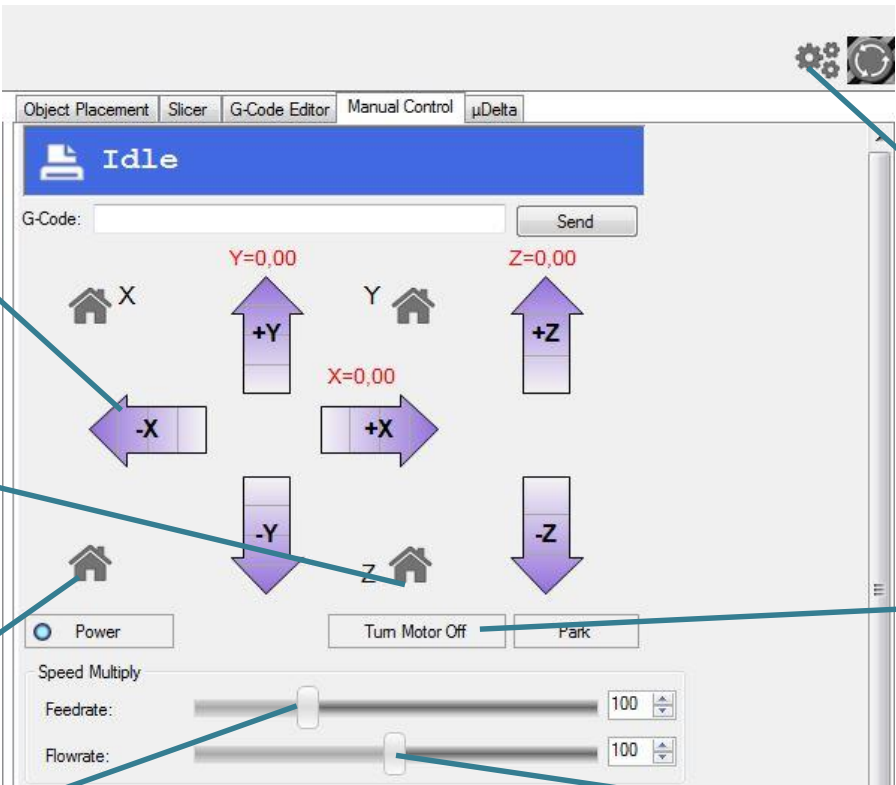
- Download the EEPROM configuration file :  
[http://www.reprap-france.com/download/eprom\\_udelta.emtc](http://www.reprap-france.com/download/eprom_udelta.emtc)
- Copy the file on your computer
- Choose expert mode
- Upload the file





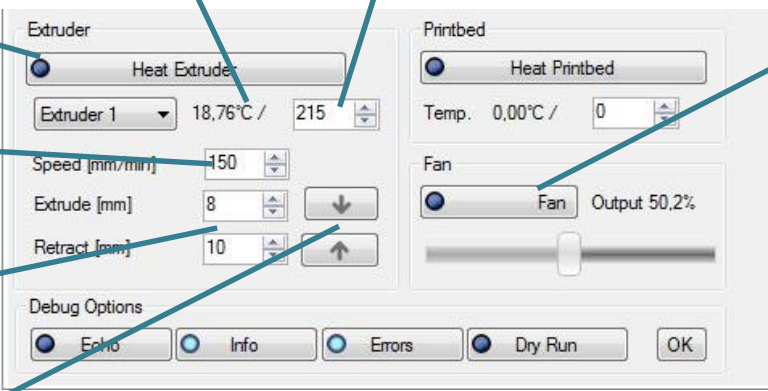
## Annex 4: Manual control

You can control the printer with the “manual control” tab



The screenshot shows the 'Manual Control' tab in the μDelta software. It features a central area with directional arrows for moving the core (+X, -X, +Y, -Y, +Z, -Z) and a 'G-Code' input field. Callouts point to specific features:

- Printer settings:** Points to the gear icon in the top right corner.
- Move the core of 0,1 / 1 / 10 / 50 mm for X, Y or Z:** Points to the directional arrows.
- Move the extruder to its defined position in Z axis:** Points to the +Z and -Z arrows.
- Move the extruder to its defined position:** Points to the home button (house icon) for the Z-axis.
- Change the printing speed:** Points to the 'Speed Multiply' slider.
- Change extrusion speed:** Points to the 'Flowrate' slider.
- Turn motor off:** Points to the 'Turn Motor Off' button.



The screenshot shows the 'Extruder' and 'Printbed' control panels. Callouts point to specific features:

- Nozzle temperature:** Points to the temperature display for the extruder (18,76°C / 215).
- Required temperature:** Points to the temperature input field for the extruder (215).
- Heat extruder:** Points to the 'Heat Extruder' button.
- Manual speed:** Points to the 'Speed [mm/min]' input field (150).
- Extrusion/retraction length:** Points to the 'Extrude [mm]' (8) and 'Retract [mm]' (10) input fields.
- Extrude / Retract:** Points to the arrows next to the extrusion and retraction length fields.
- Turn on the second fan:** Points to the 'Fan' button in the 'Printbed' section.