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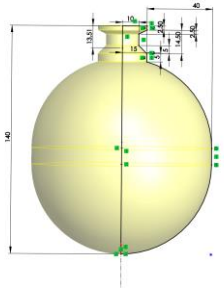
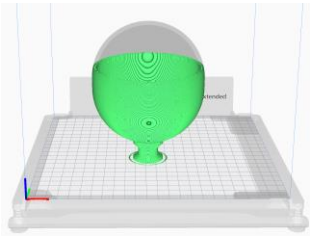
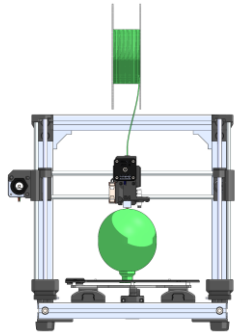
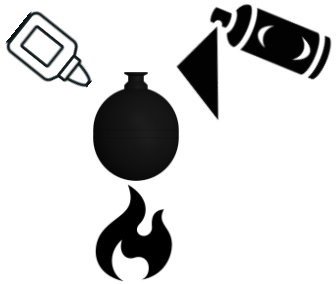
3D-Printing process

Topics









IDEA → 3D MODELLING / FINISHED MODEL → SLICING → PRINTING PROCESS → POST PROCESSING → READY

- Need
- 3D printing services
- Model libraries
- Manufacturers
- 3D-Modelling
- How the object is formed?
- Preparations
- Settings
- Monitoring
- Cleaning
- If needed

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Idea

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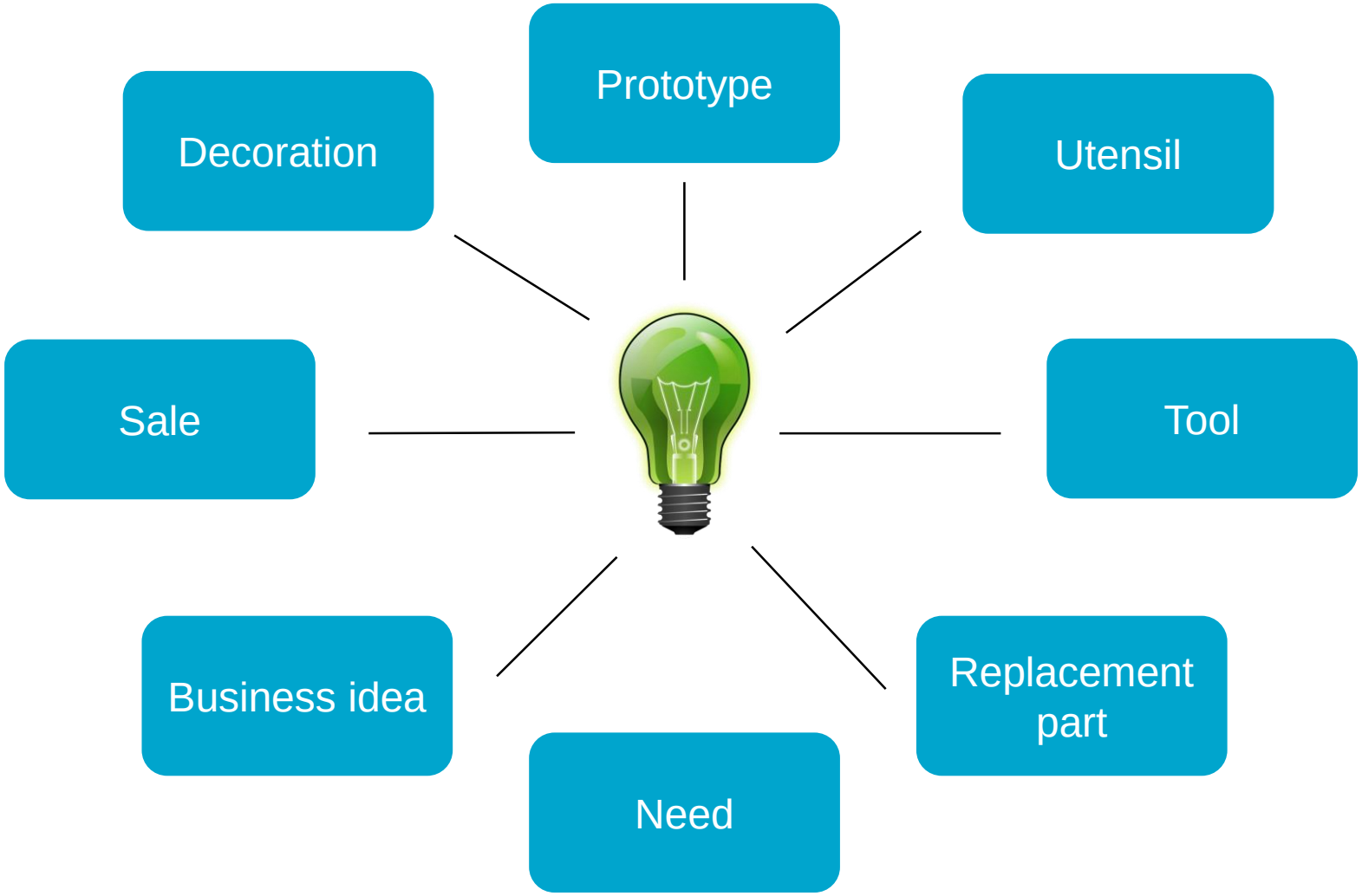
Idea


Prototype
Decoration
Utensil
Sale
Tool
Business idea
Replacement part
Need

From idea into a plan

- Requirements for the part
  - Durability
  - Possibility to clean
  - Ecological
- Resources available
  - Equipment
  - Models
  - Softwares
  - Time

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Modelling

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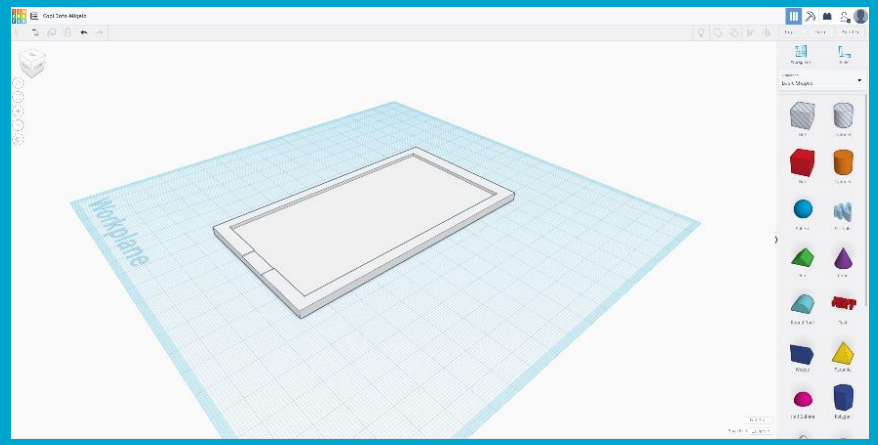

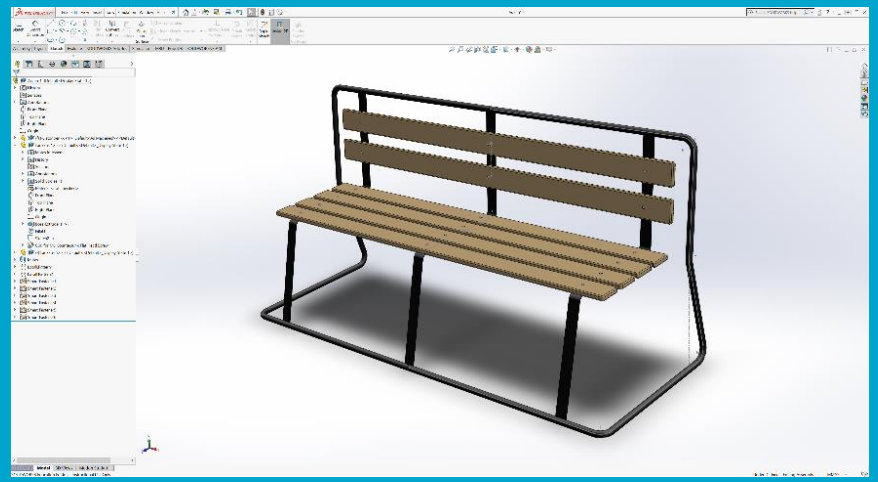

Modelling with different programs

- TinkerCad
- SketchUp
- Fusion 360
- Siemens NX
- Solidworks
- Blender
- OpenSCAD
- Rhinoceros
- …

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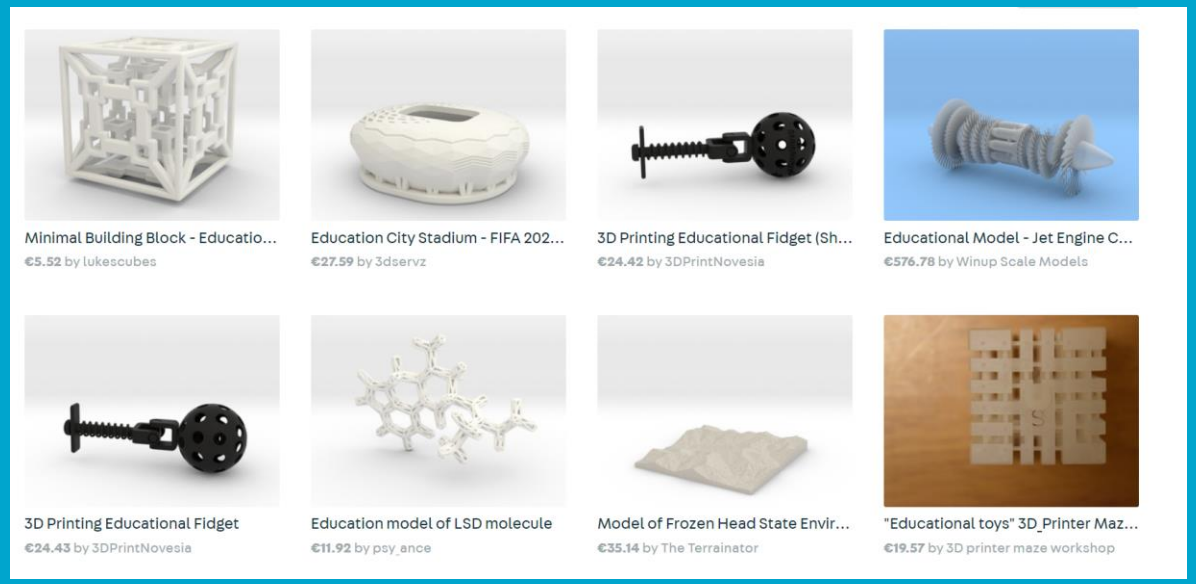

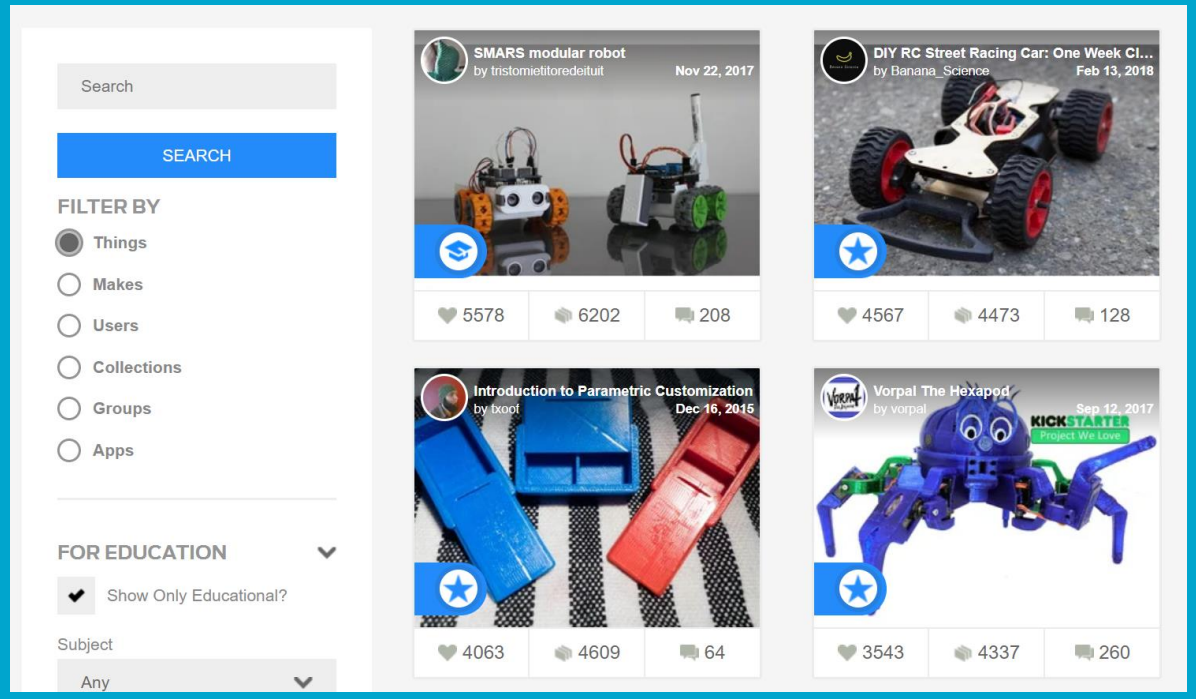

Ready to print models

- Grabcad
- thingiverse
- shapeways
- Craftcloud
- Myminifactory
- Cults3d

- …

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Slicing

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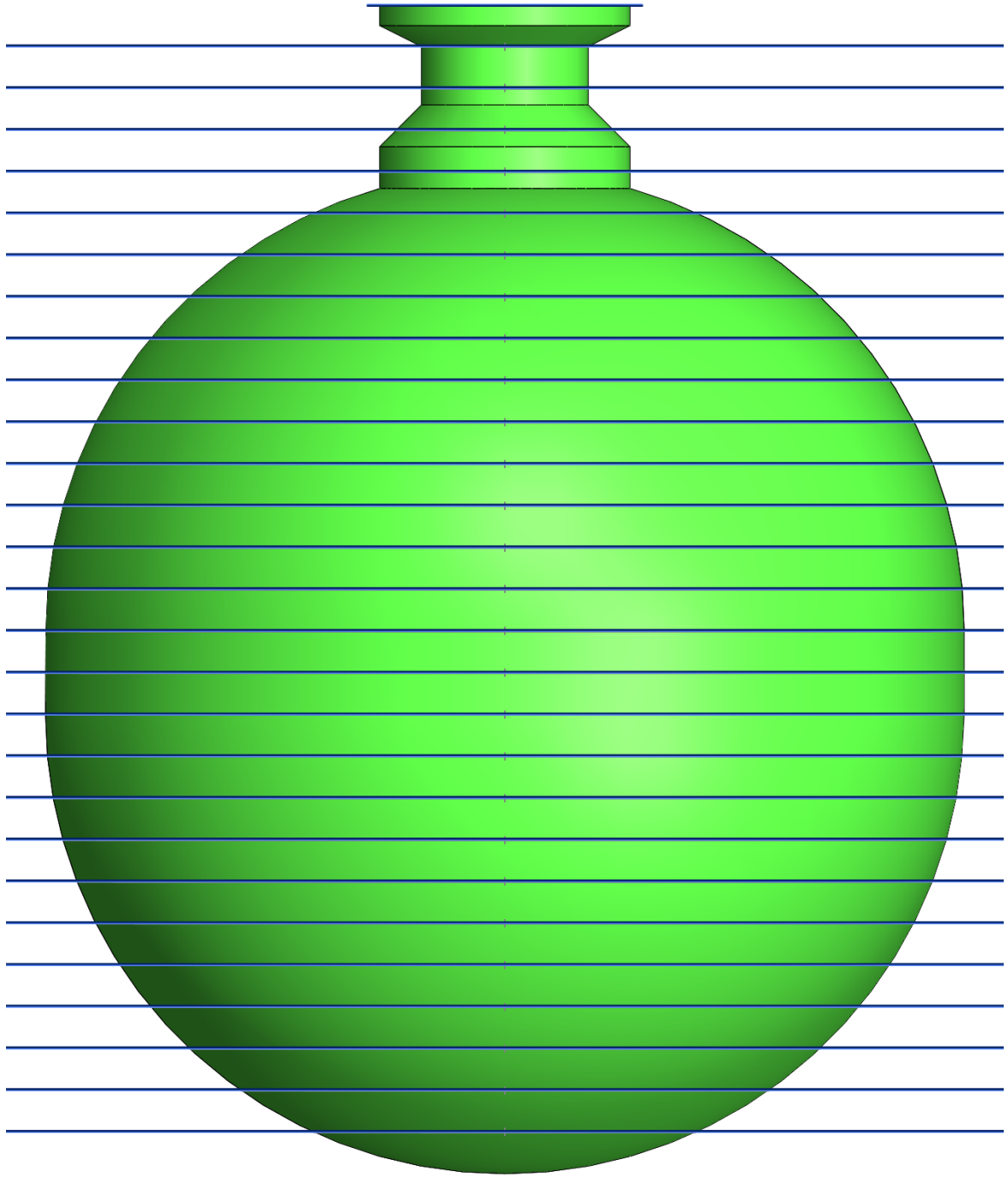

Slicing (FDM)

- “Driving instructions” to the 3D printer on how to create the physical object
- PrusaSlicer, Preform, Cura, Simplify3D, 3DSlicer, Slic3r…

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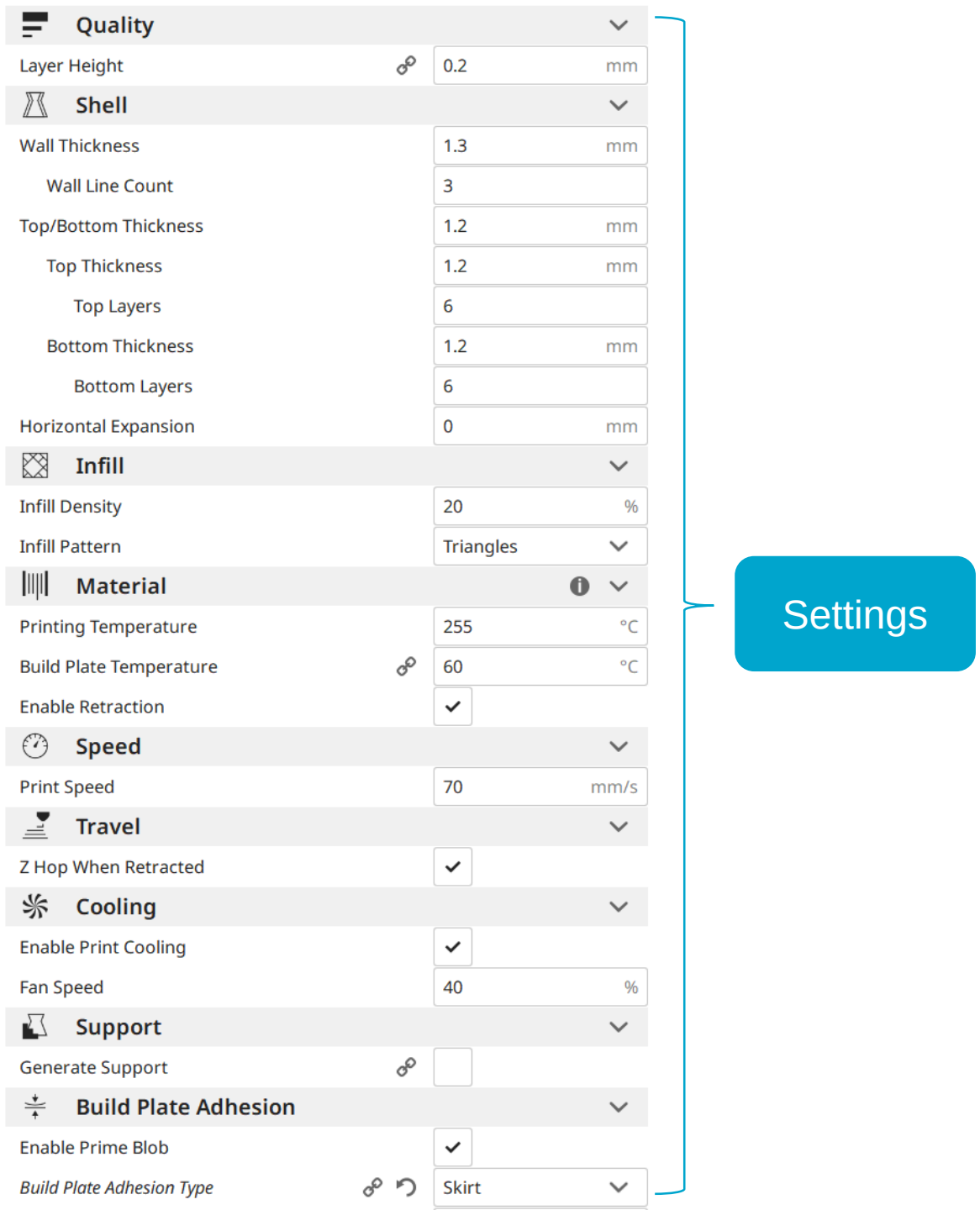
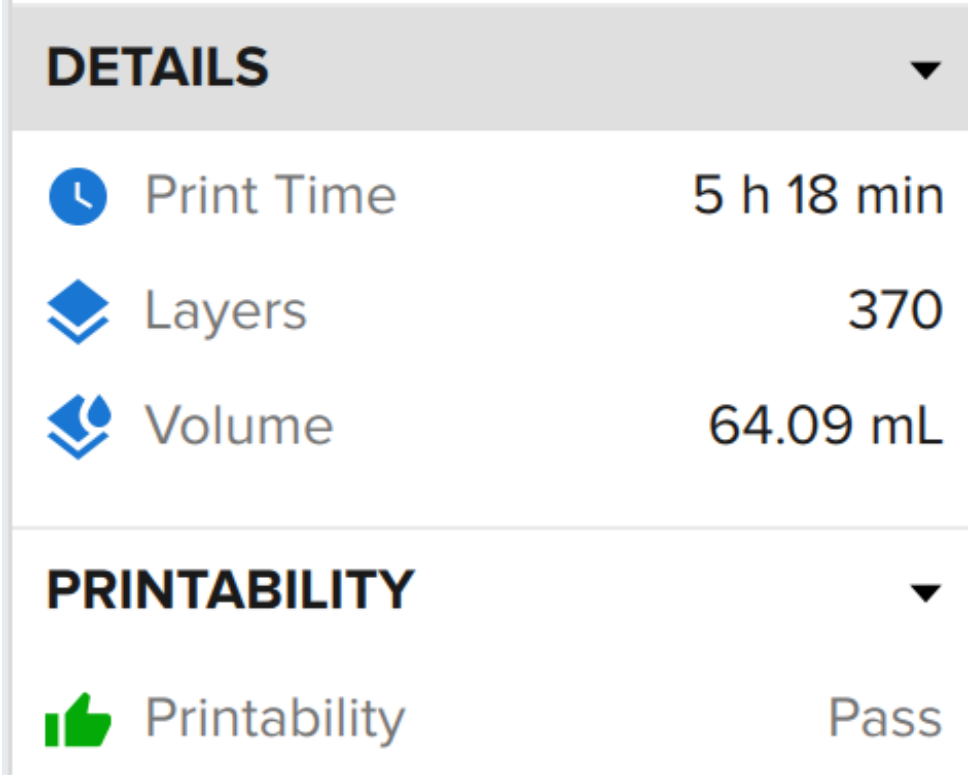


Settings

Information



Slicing

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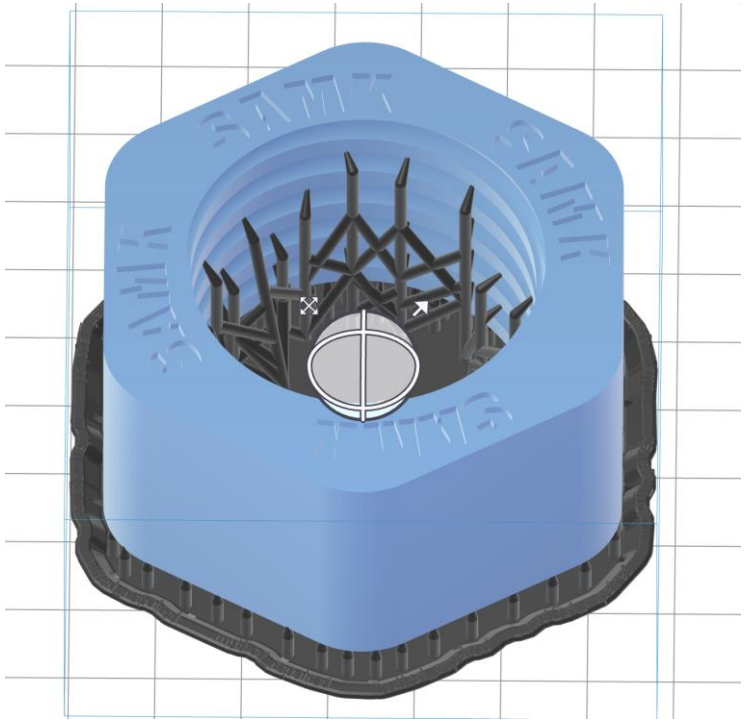

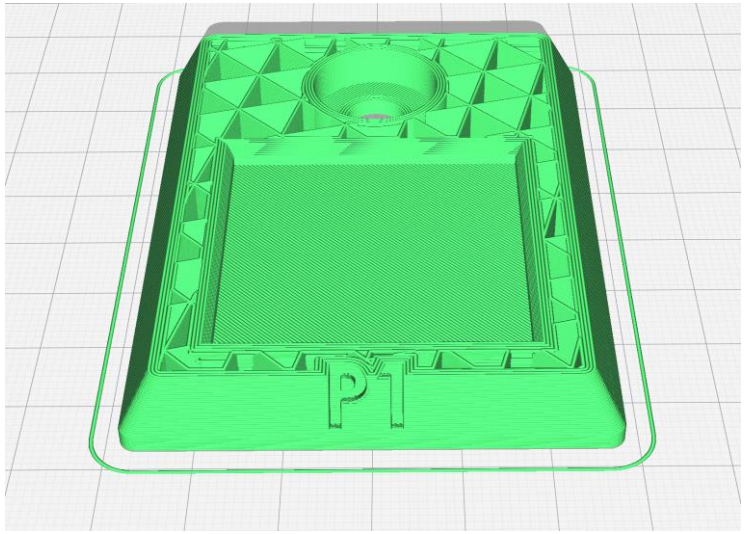

Slicing

- Quantity
- Speed
- Material
- Support
- Orientation
- Infill
- Wall thickness

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Printing

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Preparations

- Cleaning
- Inserting material
- Heating chamber
- Bed leveling
- Cleaning the powder
- Moving the file to the printer

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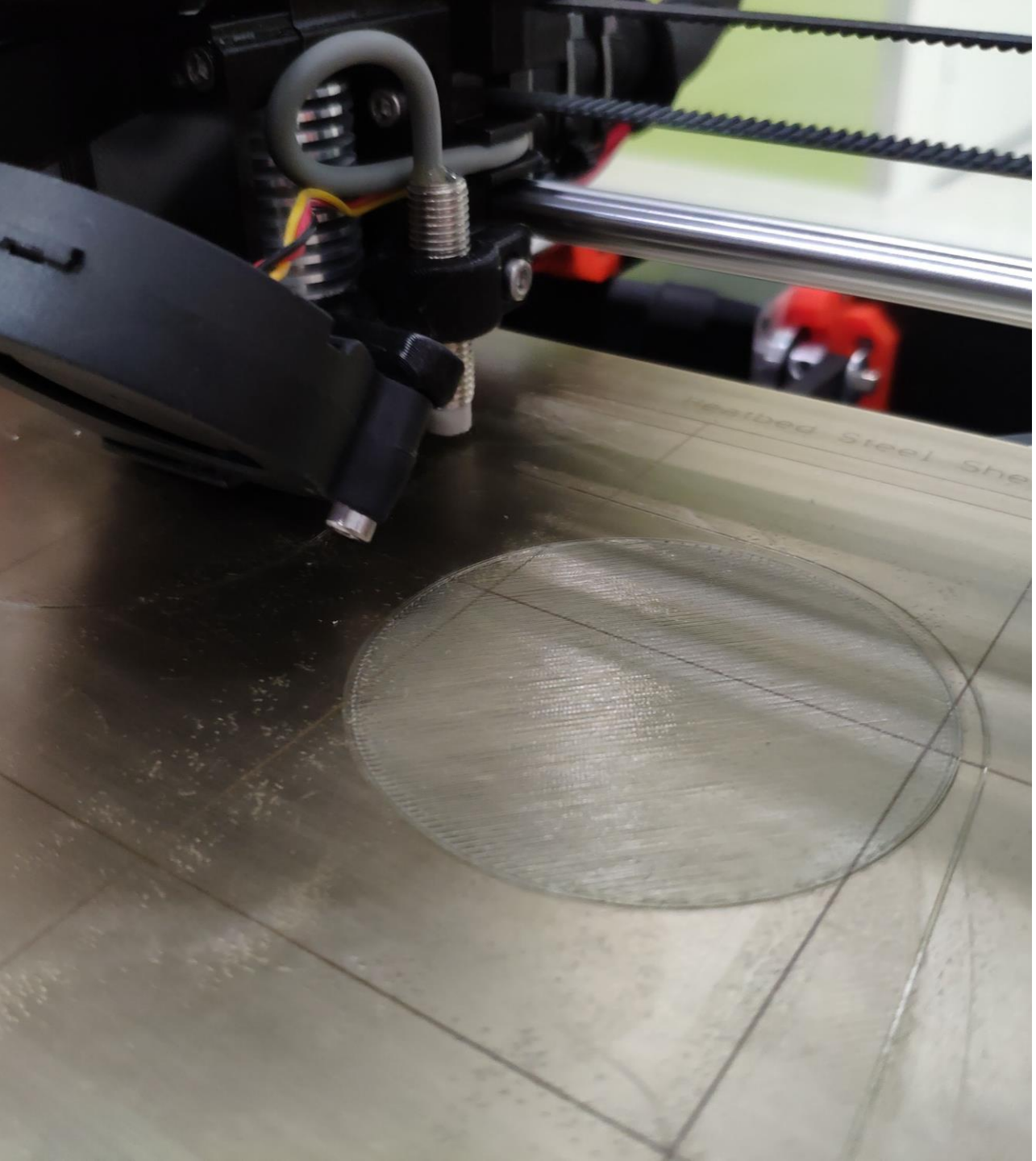

First layer / Start

- How the printer behaves
- Succesful first layer
- Adhesion
- Material clogging
- Settings

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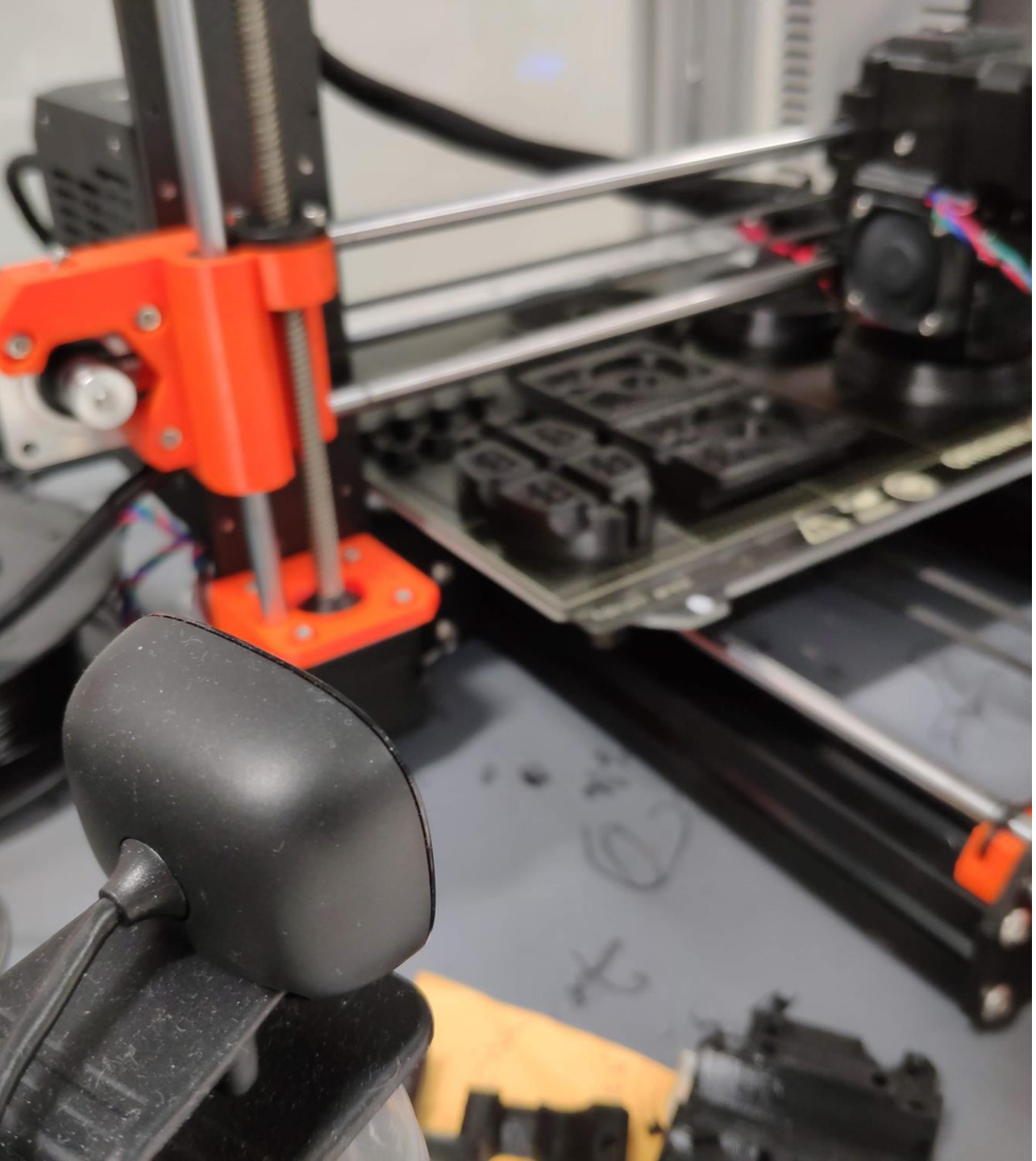

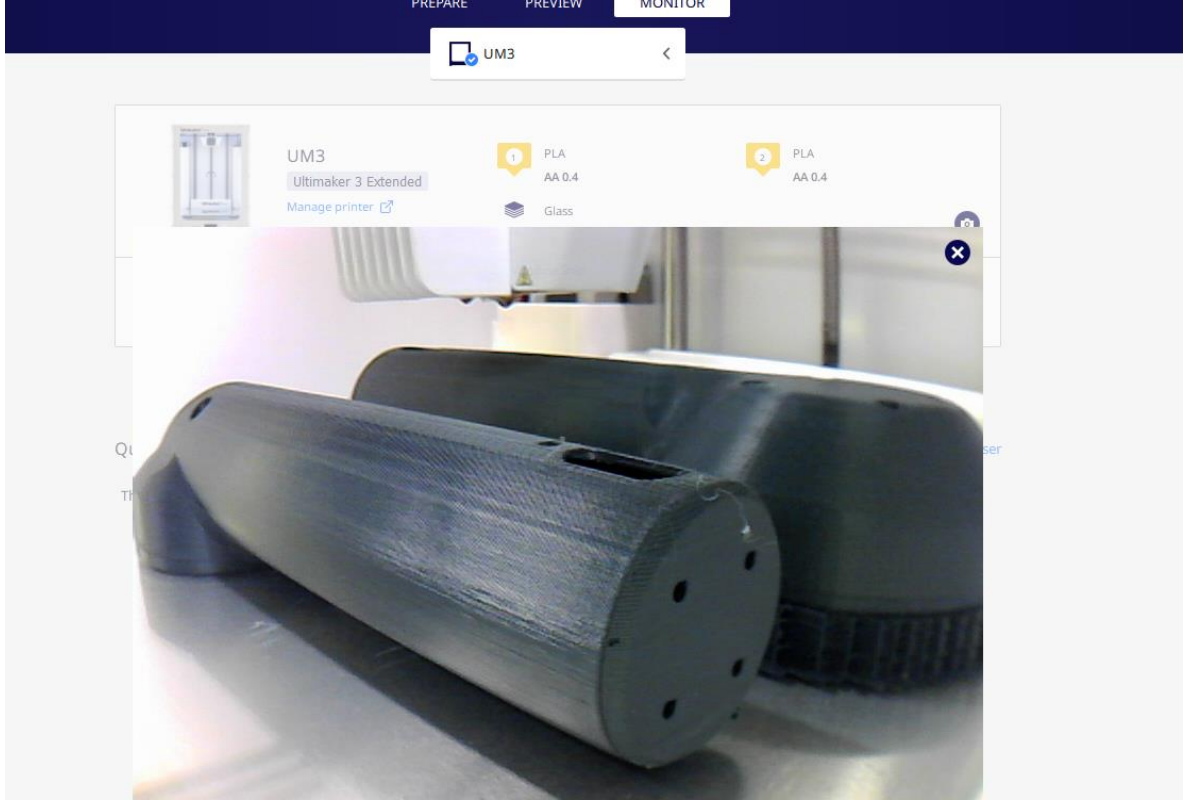

Monitoring

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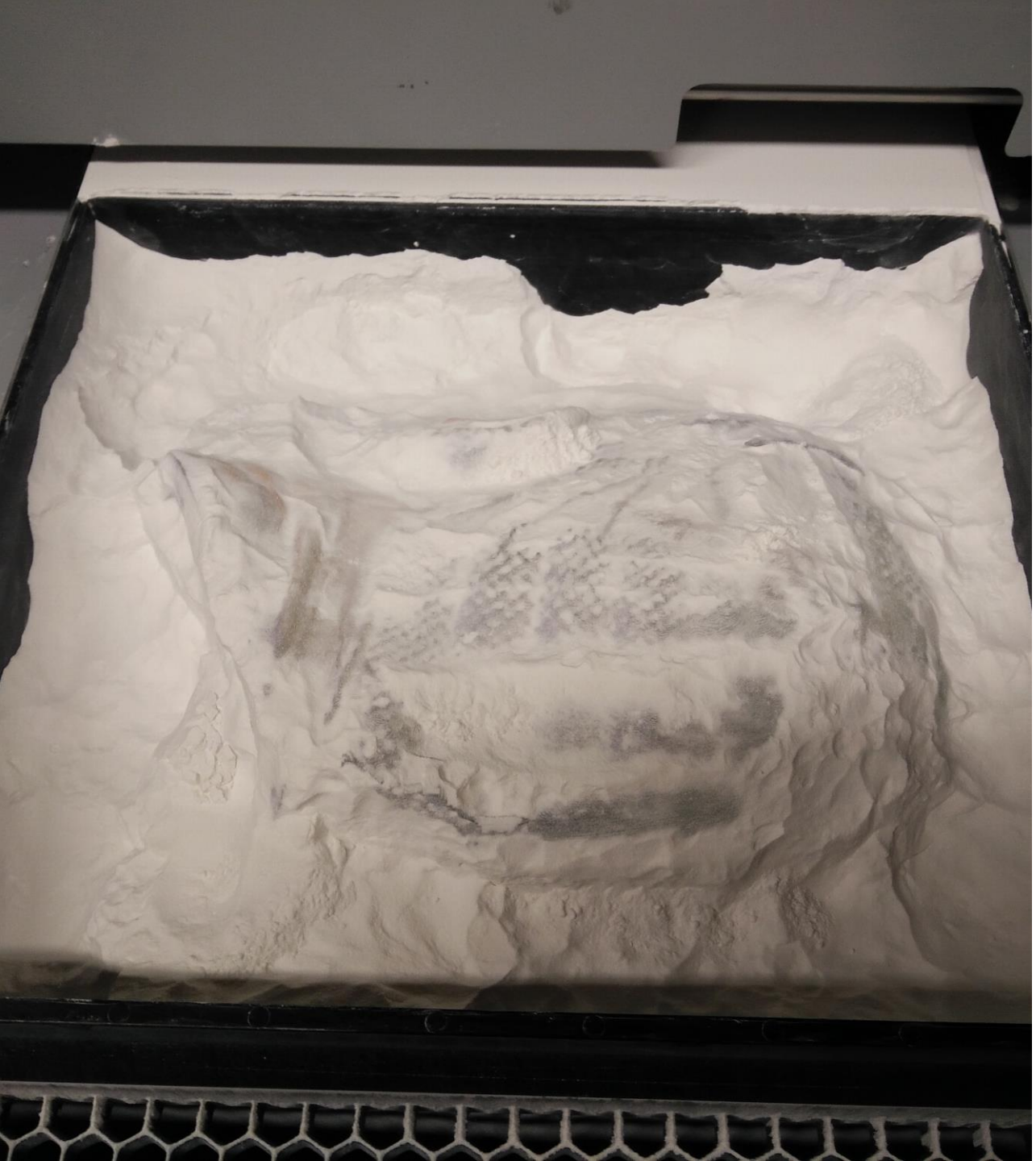

Print finish

- Cooling down bed and nozzle
- Cooling printing chamber
- Removing excess powder
- Removing material and storaging it
- Cleaning

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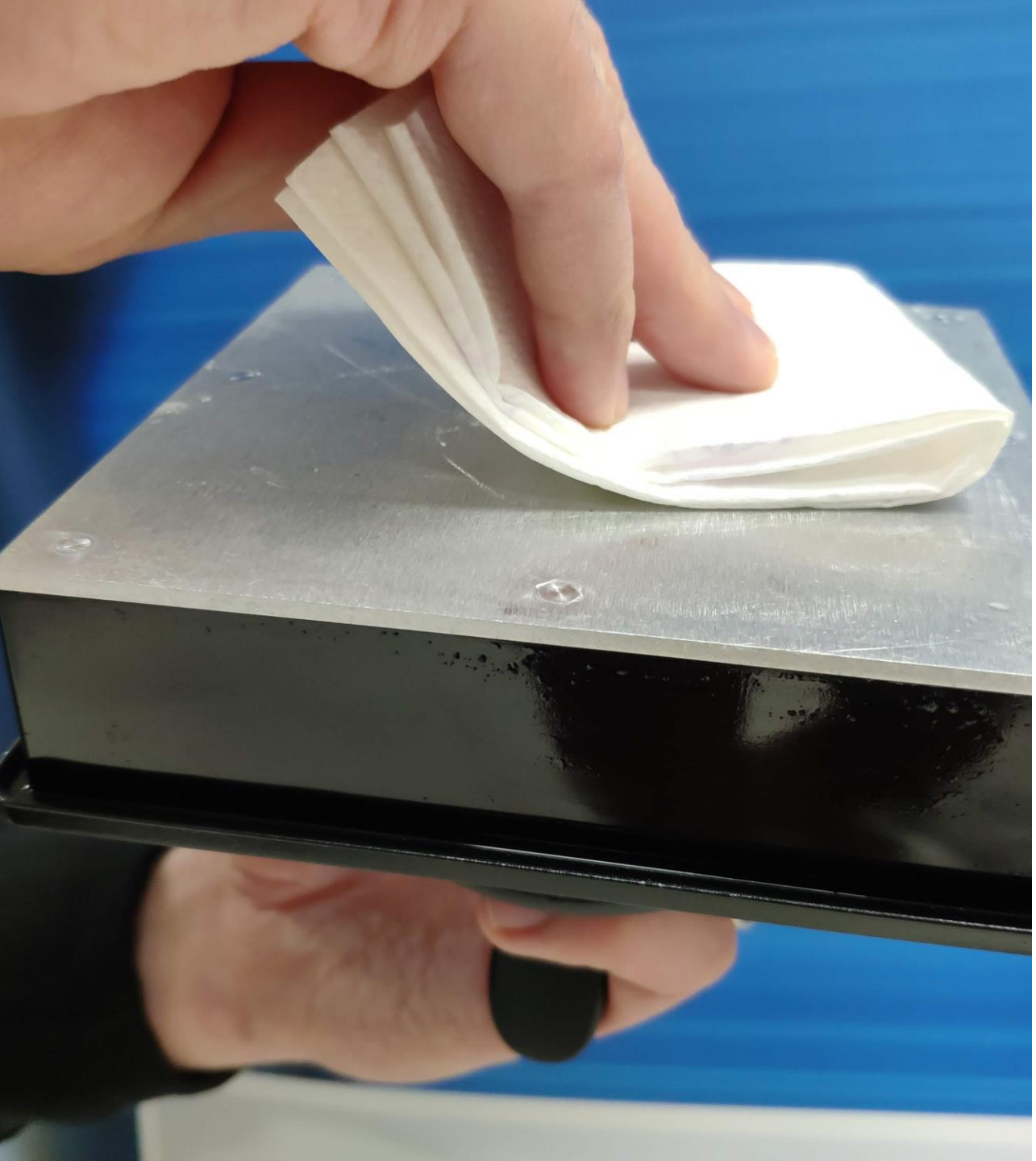

Cleaning

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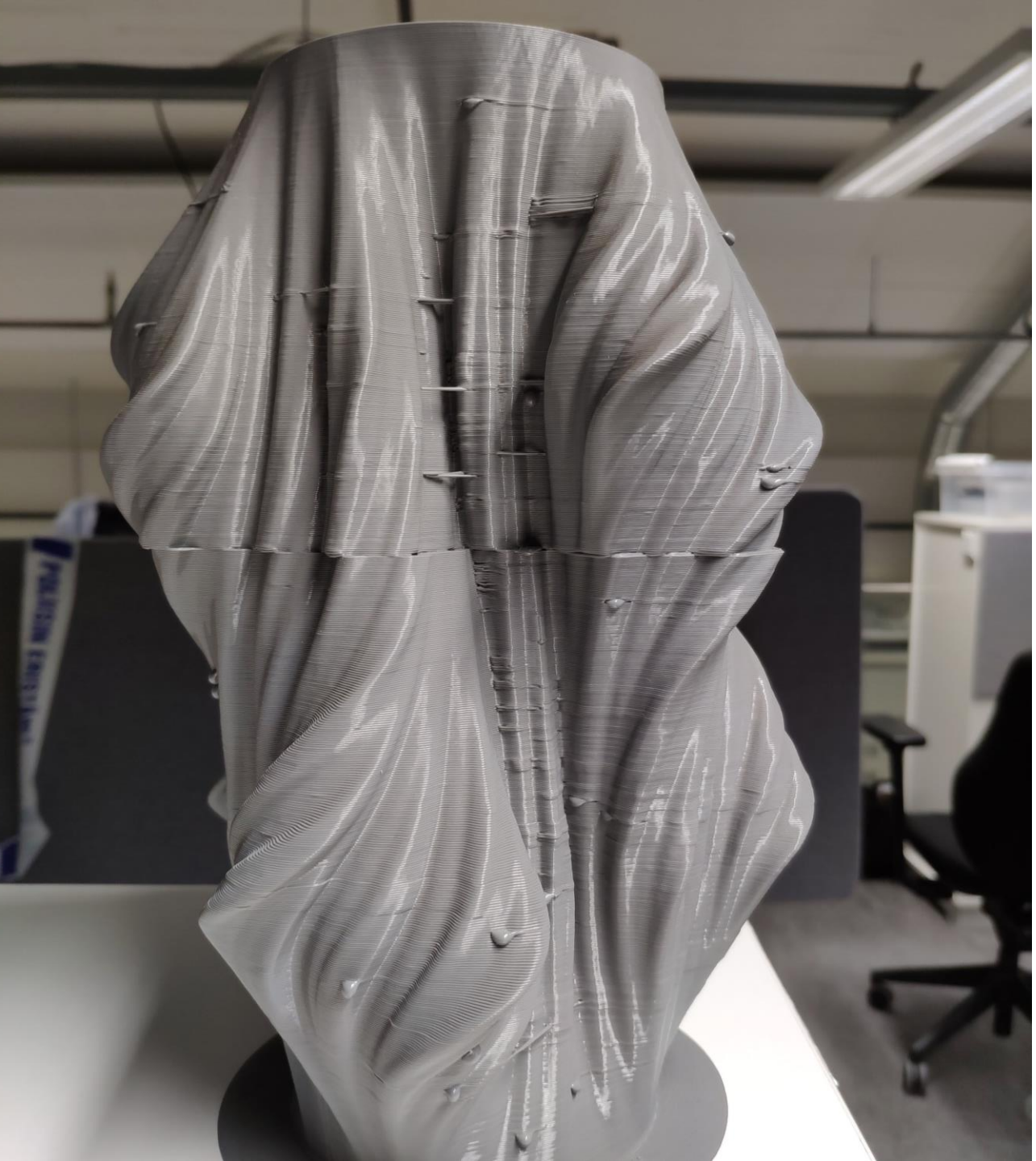

Checking the finished object

- Succesful?
- Measurements?
- Transformations?

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Post processing

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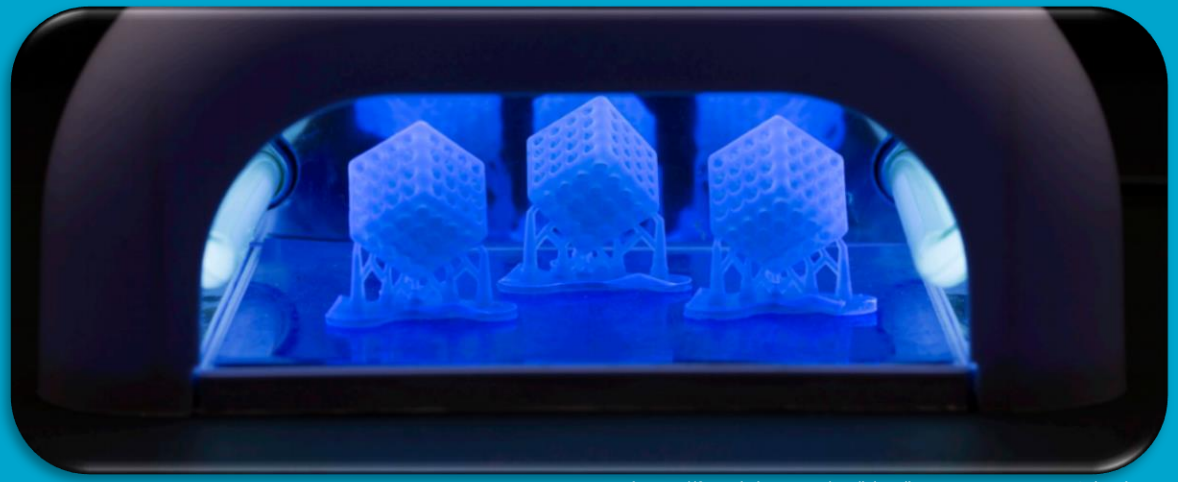
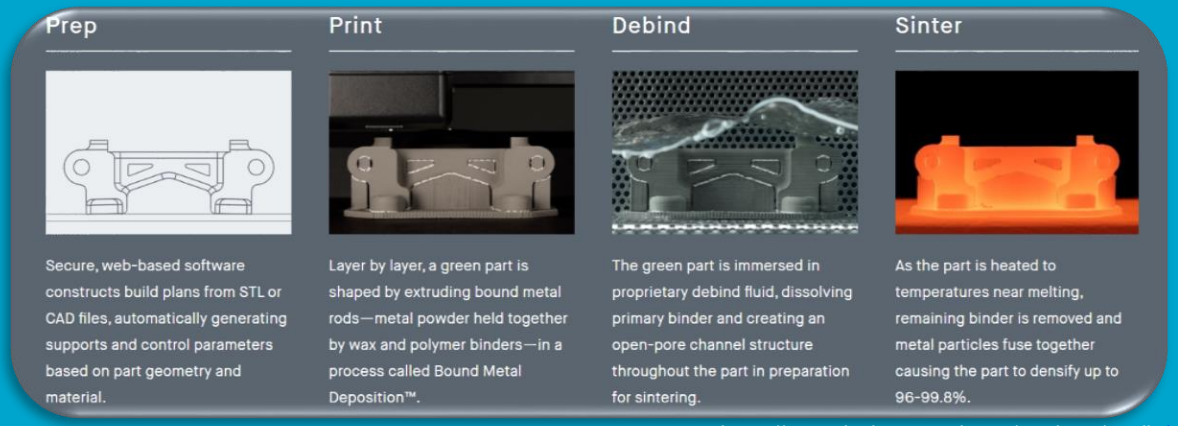
https://www.flickriver.com/photos/creative_tools/sets/72157625807924478/



https://formlabs.com/eu/blog/how-to-post-cure-3d-prints



https://www.desktopmetal.com/products/studio/

Post-processing

- Post-processing which has to be done
  - Removing excess material
  - Heating / sintering
  - Drying
  - UV

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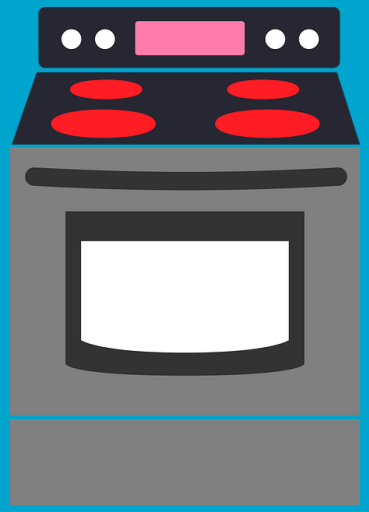

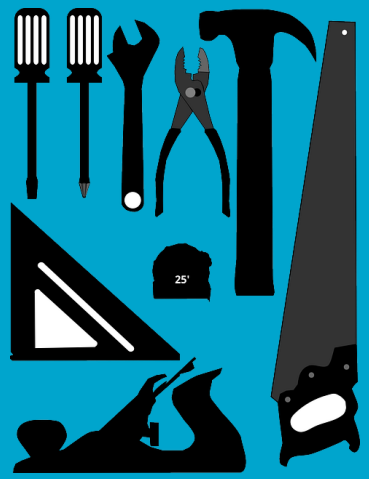

Post-processing

- Coating or any other means of post-processing
  - Coating
  - Treating features (Heat)
  - Mechanical treatment
  - Chemicals

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Usage and iterations

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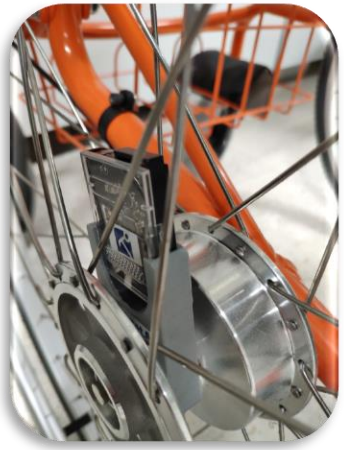



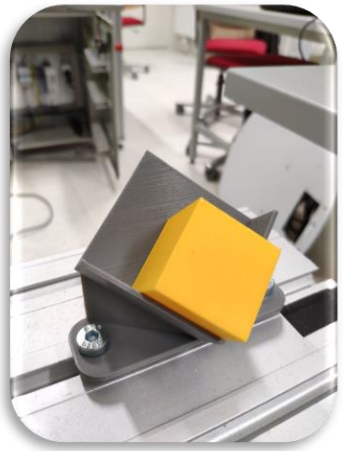



Suitability

- Measurements
- Functionality
- Durability
- Feedback
- Suggestions

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Iterations

- Changing sizes
- Improving functionality
- Adjusting tolerances
- Uniqueness