

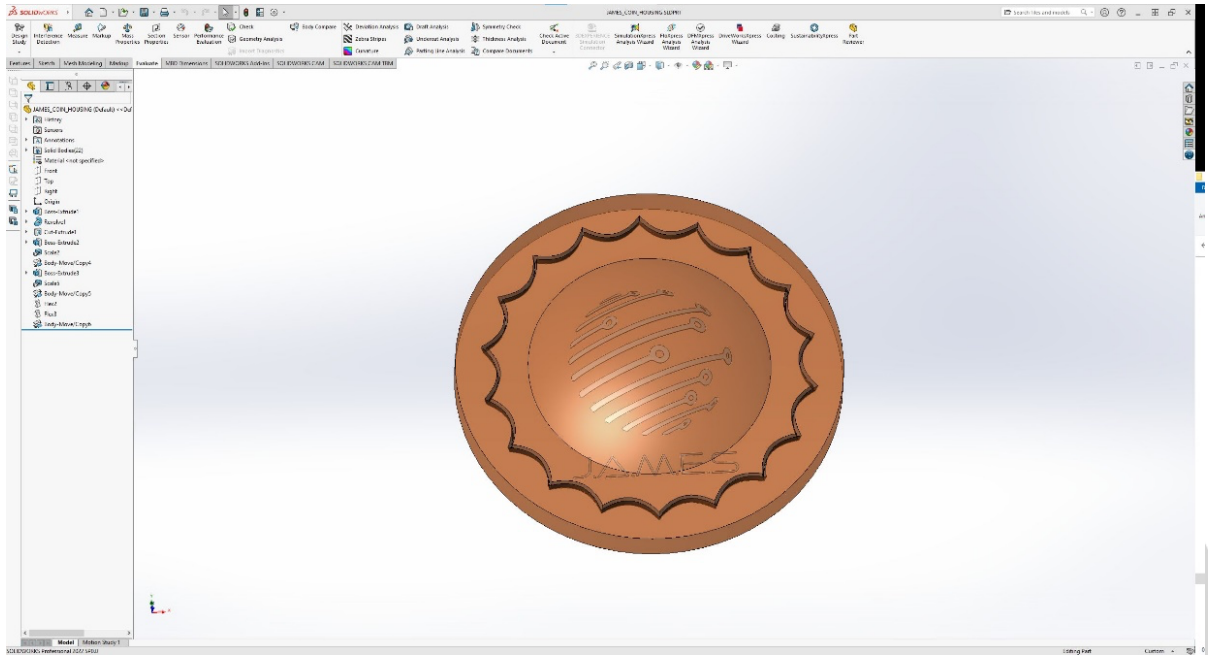


J.A.M.E.S

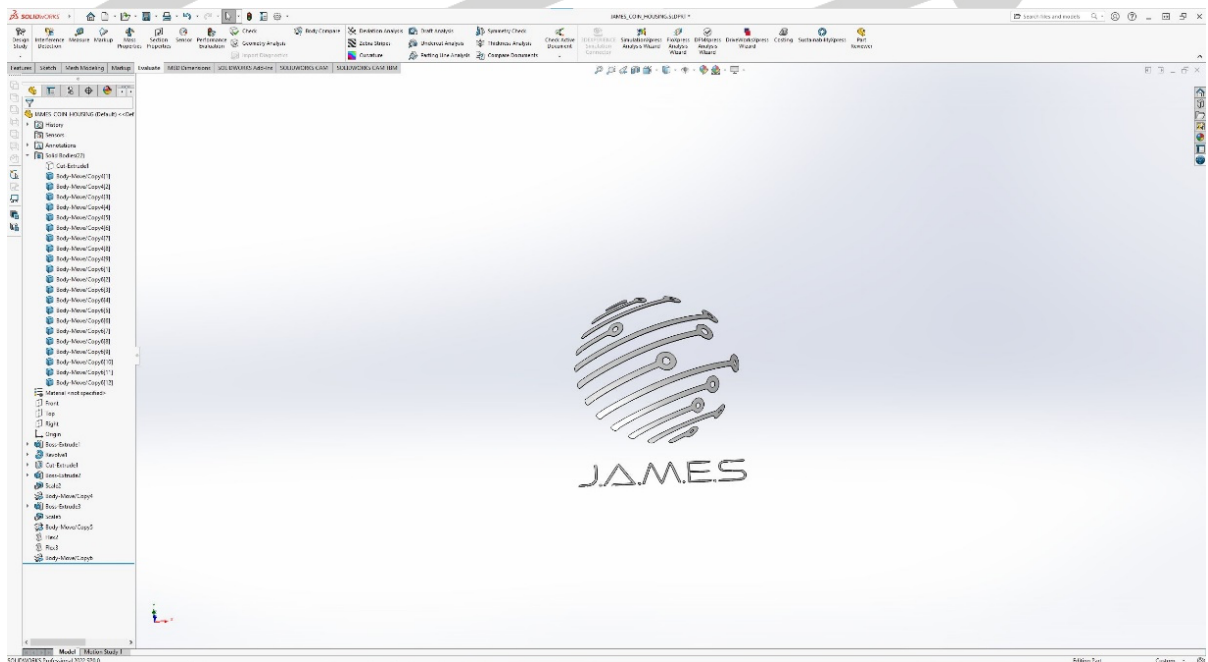
FundAMEntals: Slicing of 3D Bodies

From mCAD to a print job file
NNDM DragonFly IV

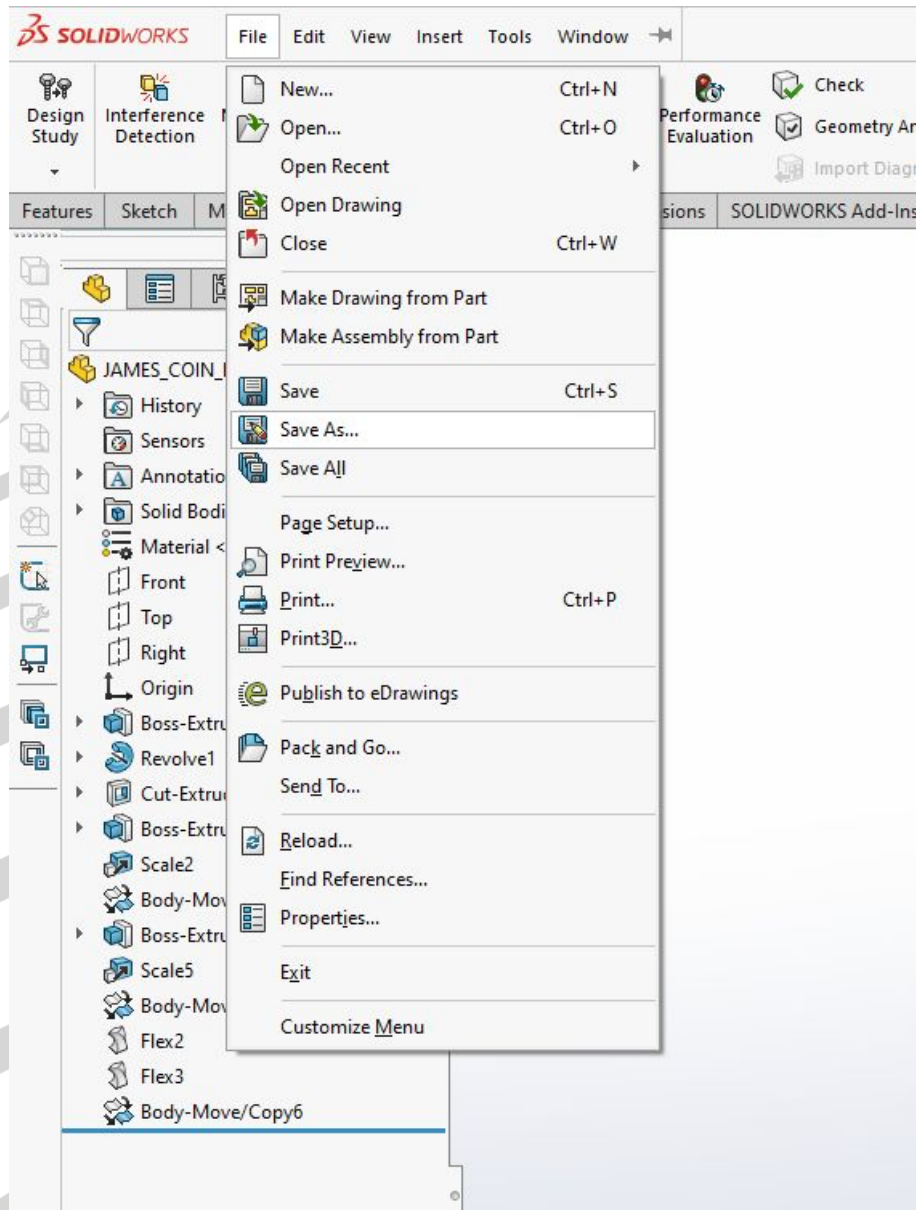
In this FundAMENTal document, we will show how to get from a finished Solidworks design to a ready-to-print job file for the Nano Dimension DragonFly IV system. To achieve this, we use the Nano Dimension FLIGHT Control software. This software allows to transform two *.STL-files (one for the conductive and one for the dielectric structure) into a *.pcbpc-file which is the file format that can be uploaded into the DragonFly IV system. To start, we open the design in Solidworks. The J.A.M.E.S. Coin housing will serve as an example for this FundAMENTal:



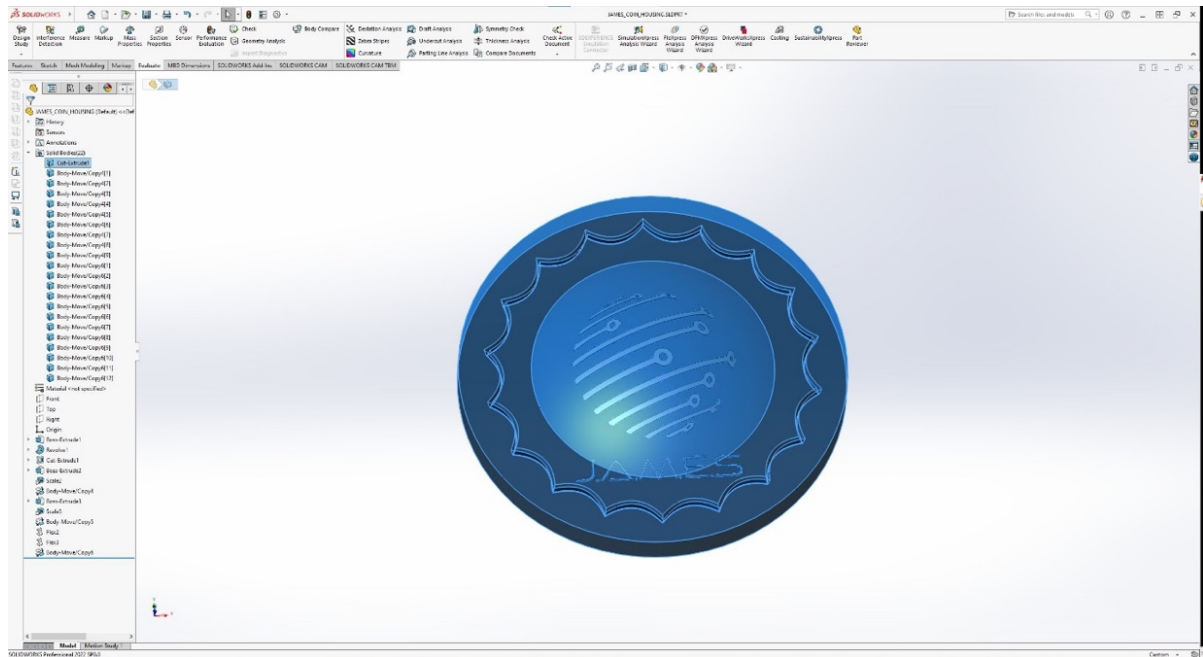
The first step consists of creating separate STL-files for the conductive and the non-conductive parts of the structure. Therefore, we hide the non-conductive parts to exclude them from the export process.



Now we select the “Save As” button and further the “STL” format. To keep the two files apart later, we add the appendix “_CI” to the file name and save it.



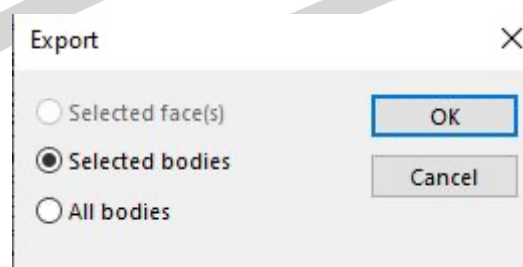
In the next step we want to export the non-conductive parts of the structure. In our example here, this is just one part. We unhide and select it.



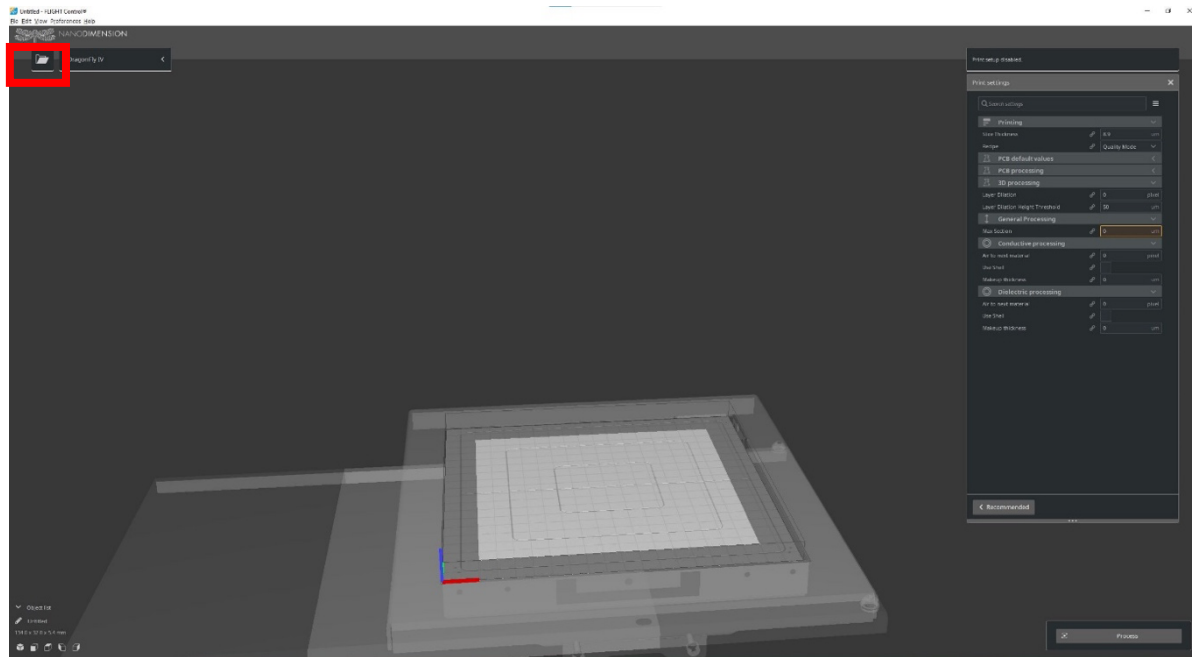
Then, we again navigate to the “Save As” button and select the STL file format. For clarity, we add “_DI” at the end of the file’s name.



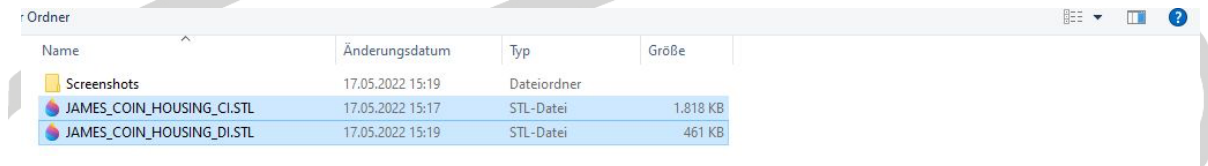
After clicking on “Save”, the following window appears. Here, we choose to export just the selected bodies and click “OK”.



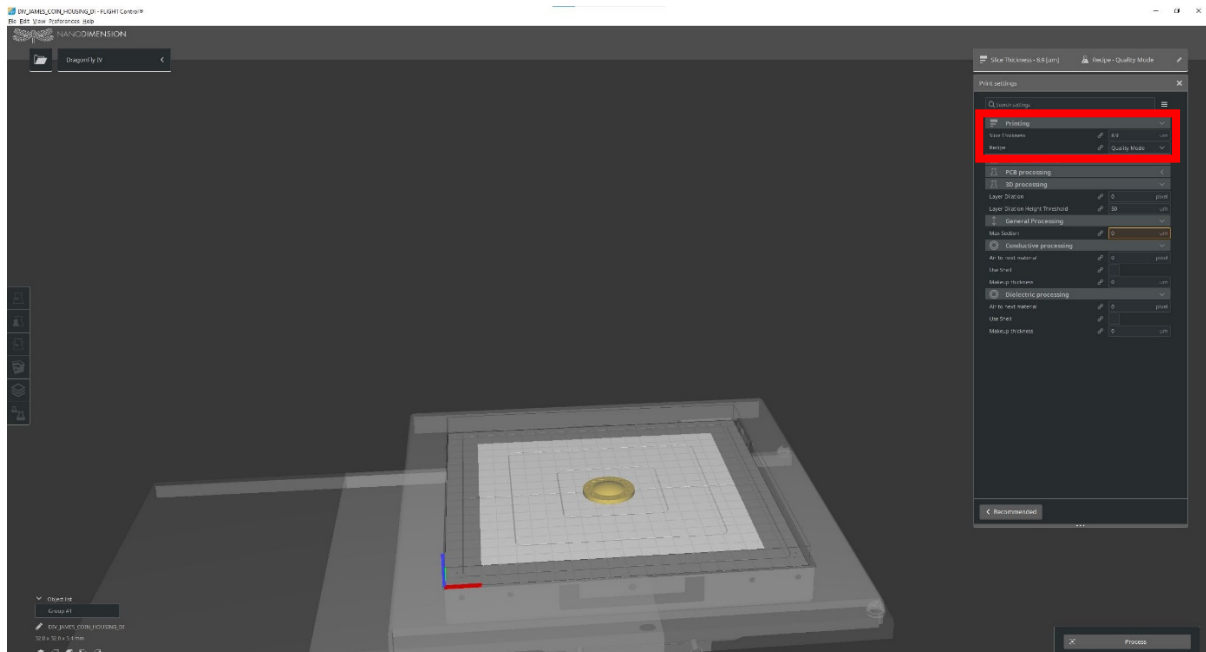
Now it is time to start the Nano Dimension FLIGHT Control software.



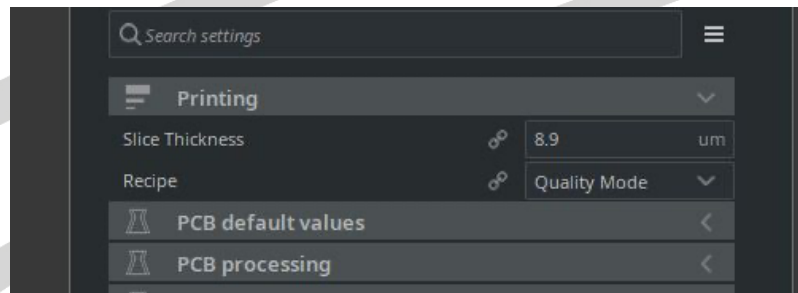
To load the generated *.STL-files, we click on the open button in the upper left corner, select both *.STL files simultaneously and click "Open".



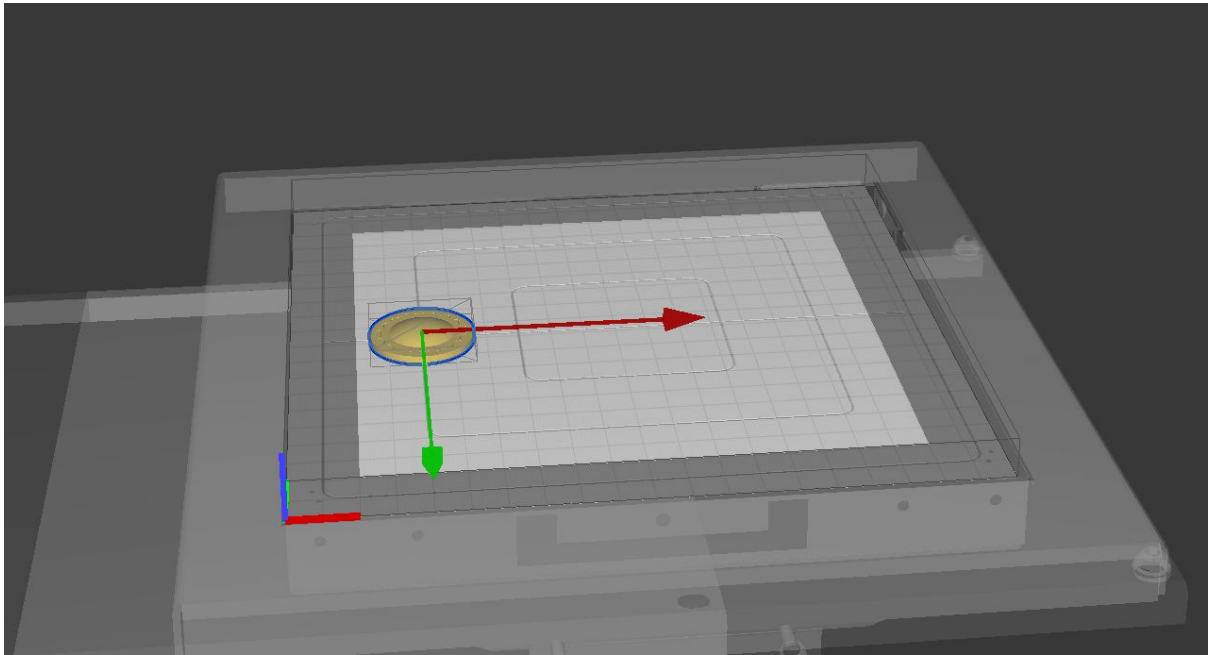
Now the conductive and non-conductive structures are both loaded in the FLIGHT Control software.



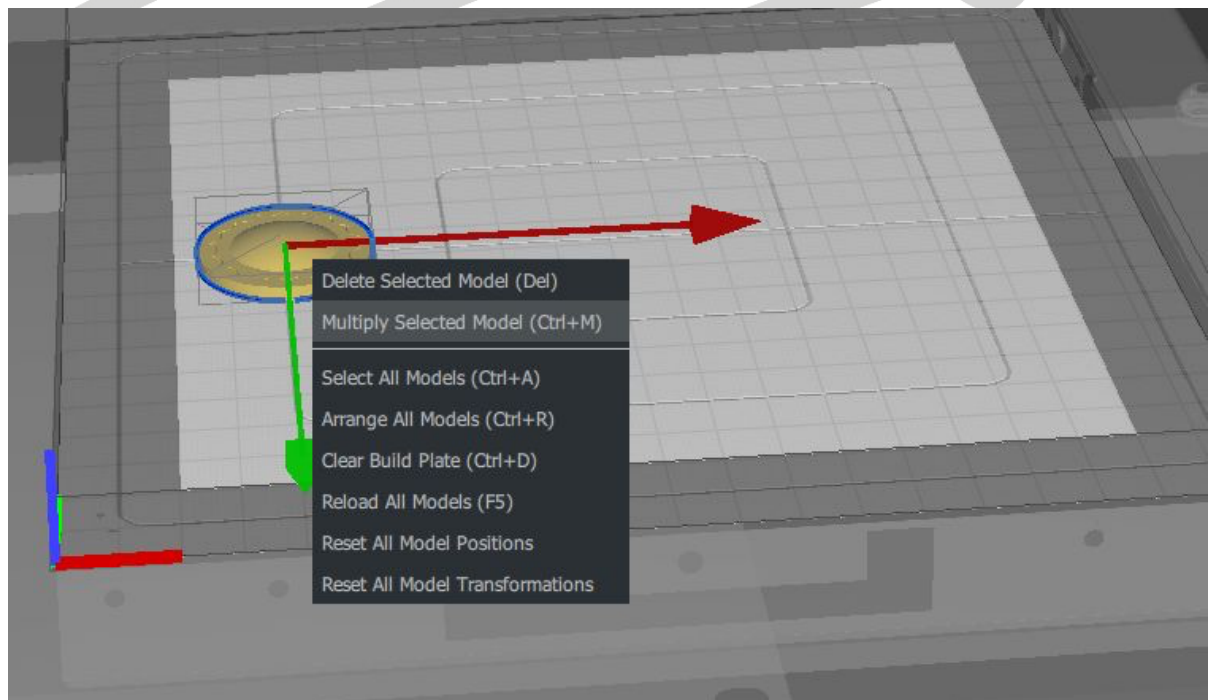
Before starting the slicing process of the J.A.M.E.S Coin, it is essential to select the right slicing thickness on the upper right corner. For the Dragonfly IV system, it is recommended to select here the value of the layer thickness of the dielectric material set in the printer. For this case, it is assumed to be 8.9 um. Furthermore, it is possible to select a recipe. We chose the "Quality Mode". However, the recipe can easily be changed afterwards in the printer, so the choice can be omitted here.



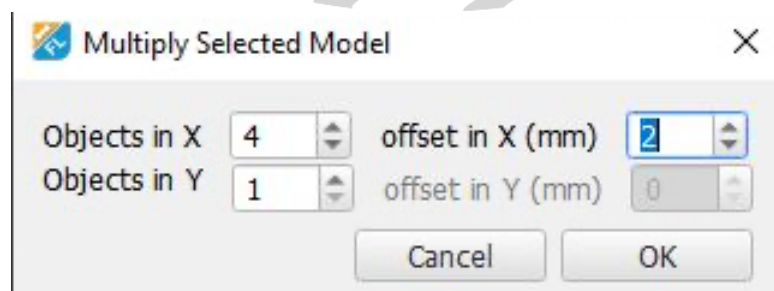
Since we do not want to print only one of the coins, we will multiply it in the next step. To do so, we select the coin and move it towards the front side of the tray by just clicking and dragging.



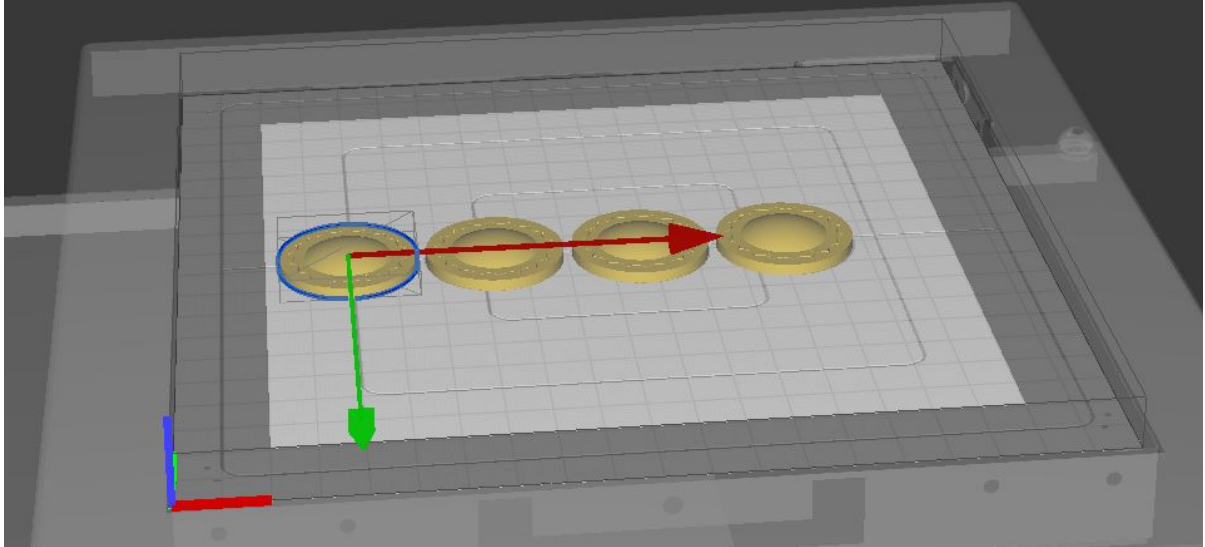
Then we will right click on it and select “Multiply Selected Model”.



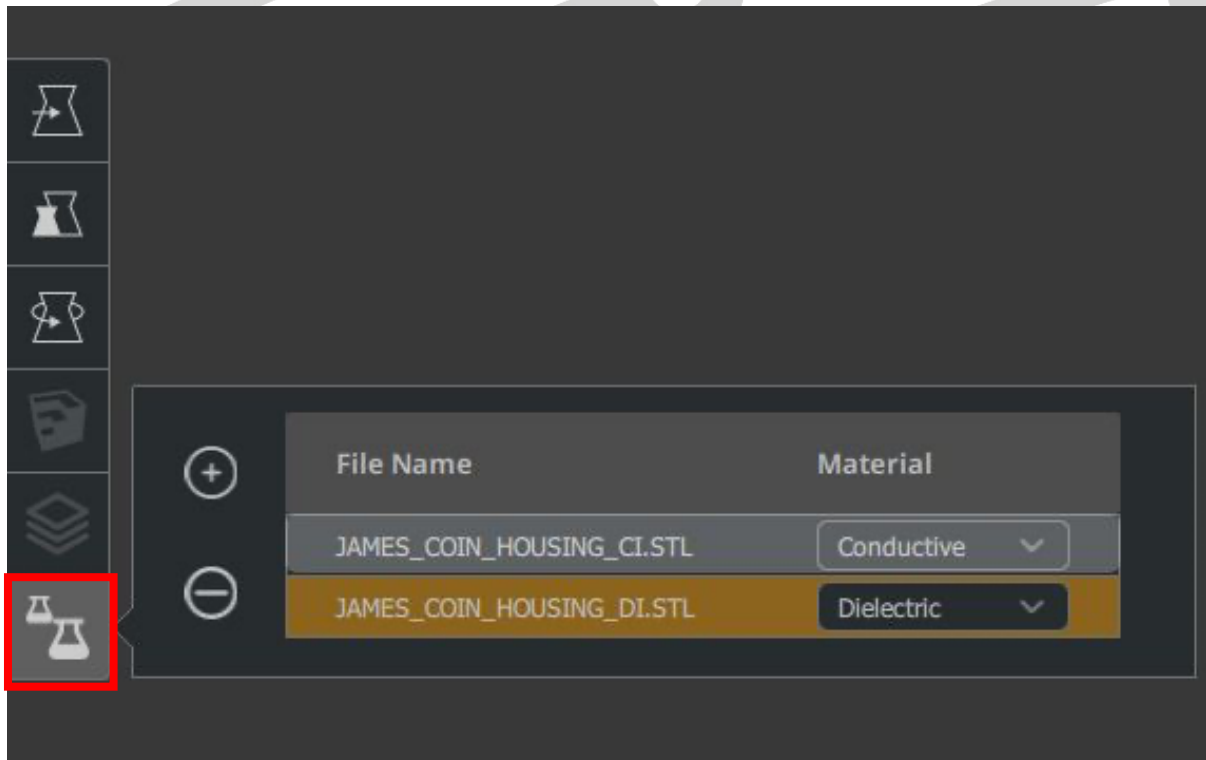
The following window will pop up:



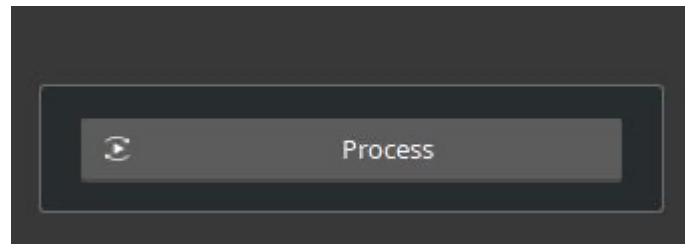
In this example, we want to create one line of coins consisting of four samples along the print axis, which corresponds to the x-axis. We select 2mm as offset between the individual samples. In this way it is guaranteed that there will be enough space between the samples to remove them safely from the tray after the print. After clicking “Ok”, the tray will look like the following image.



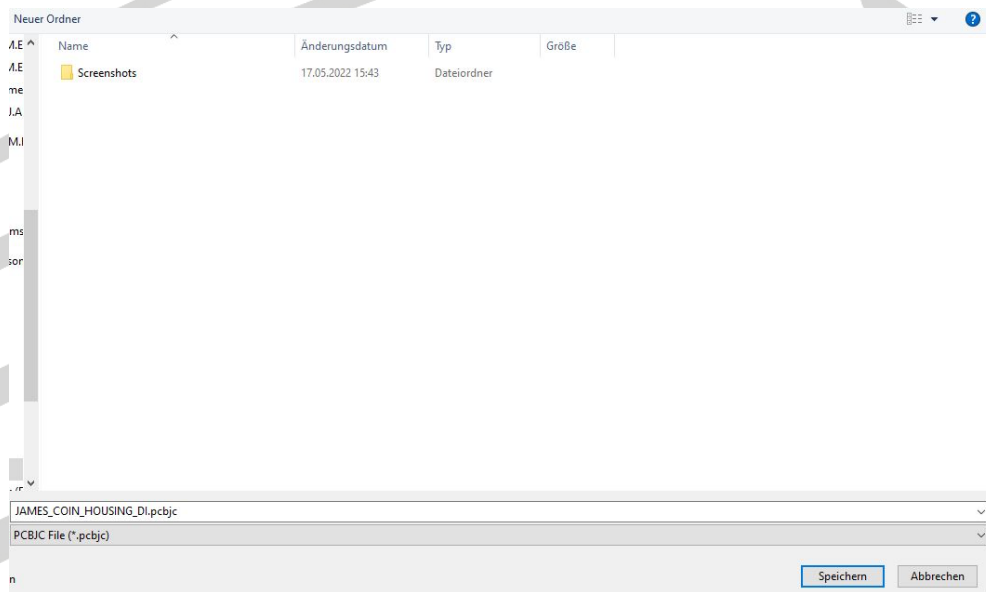
In some cases, it might be advisable to check if the right material is assigned to the right *.STL-files. This can be done by clicking on the “Material” tab on the left-hand side and make sure the conductive and non-conductive STL-files are set to the right material.



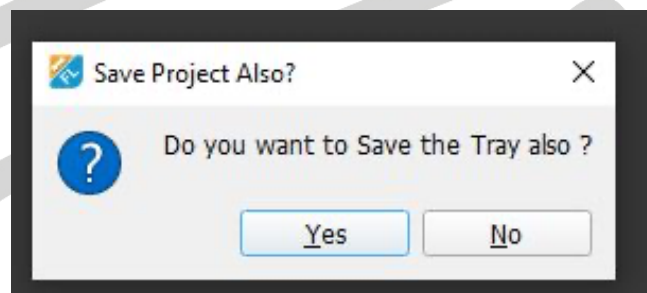
When material assignment is correct, we are good to go and click on the “Process” button in the lower right corner.



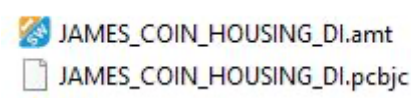
The slicing process will take some time. When it is finished we click on “Save to file” and select a folder and a file name to which the *.pcbjc-file will be saved.



During the saving process, the FLIGHT control offers the possibility to also save the tray in a *.amt file. This gives us later the chance to slice it again with a different slicing thickness without having to arrange the bodies on the tray again.



If choosing yes here, we obtain two files as output:



To print the design, we just need to copy the *.pcbjc file to the DragonFly IV printer and open it in the DragonFly software.