Computer controlled cutting

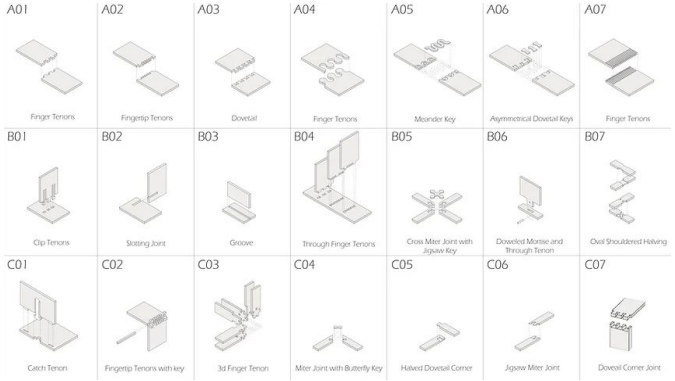
3D-2D-3D

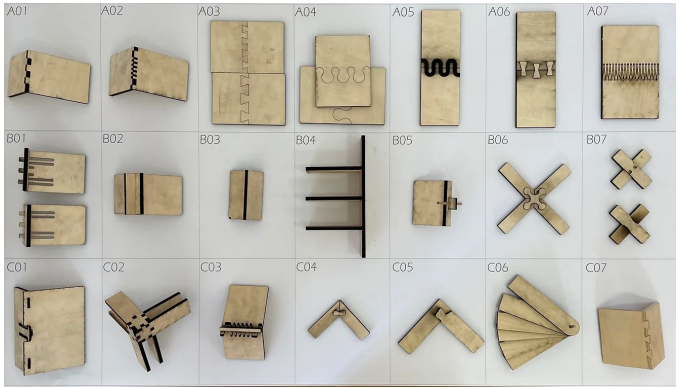
Assignment 3: Joinery
2H

use the knowledge from previous assignment and create a joinery.
create a single element that able to connect to itself from several directions.

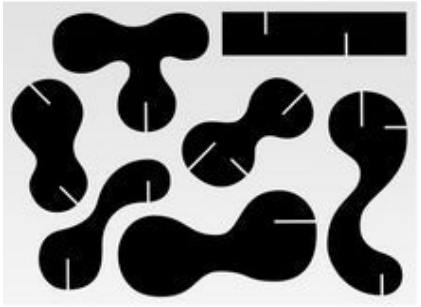
Tips:

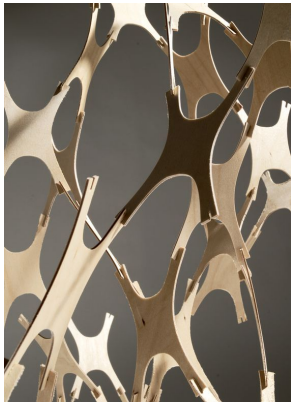
- Take into account the thickness of the material.

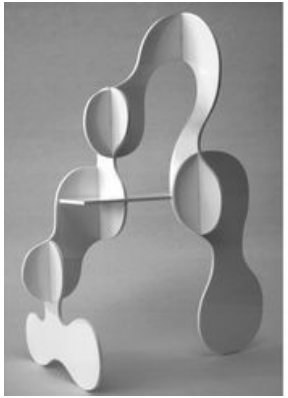


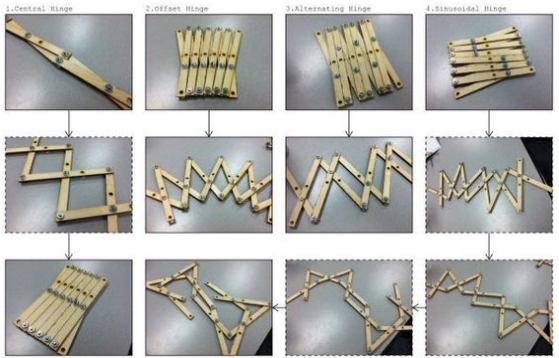


Wood, cardboard and paper









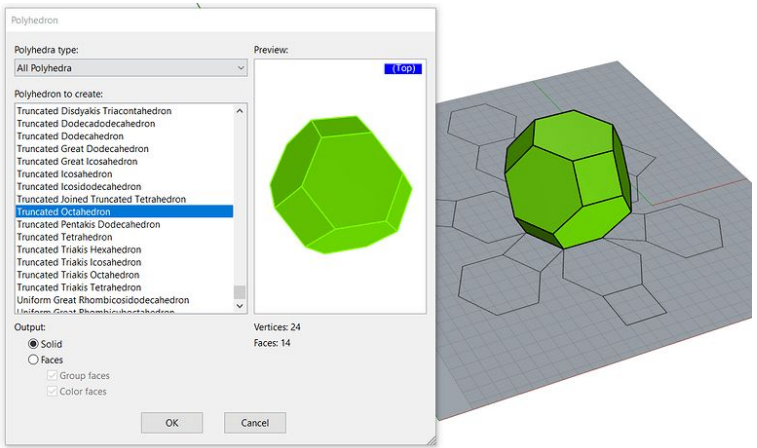
Matija Čop

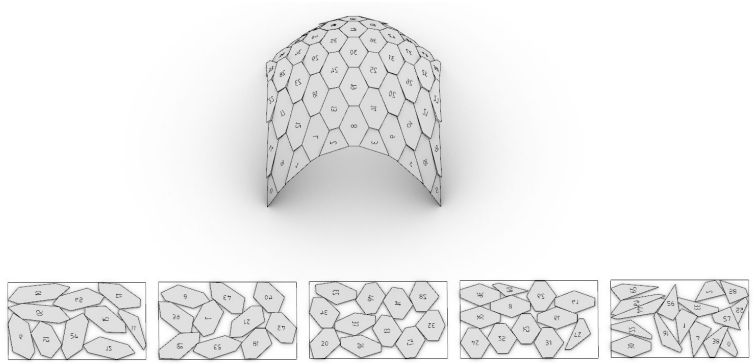
Tips for good laser files

1. Calculate the material thickness
2. Make sure your polygons are closed
3. 'Overkill' in Autocad to eliminate double lines
4. Reduce lines as much as possible
5. Explode text and edit into single lines. Then 'join'
6. Save as DXF
7. Make sure your design fits in the material and machine dimensions.

Preparing files

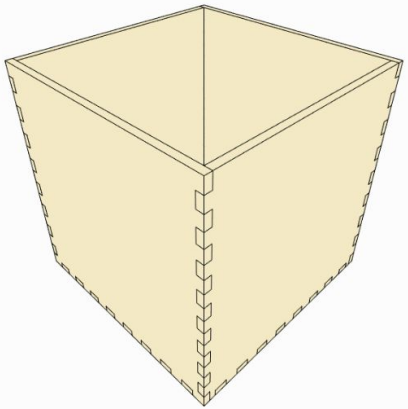
From 2D to 3D :preparing files in Rhino



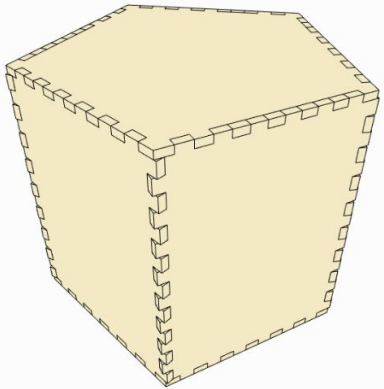


https://kyub.com

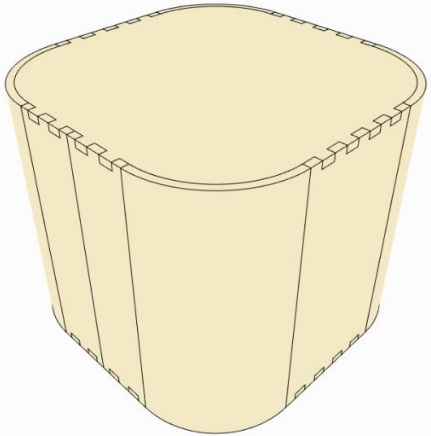
MakerCase



Basic Box

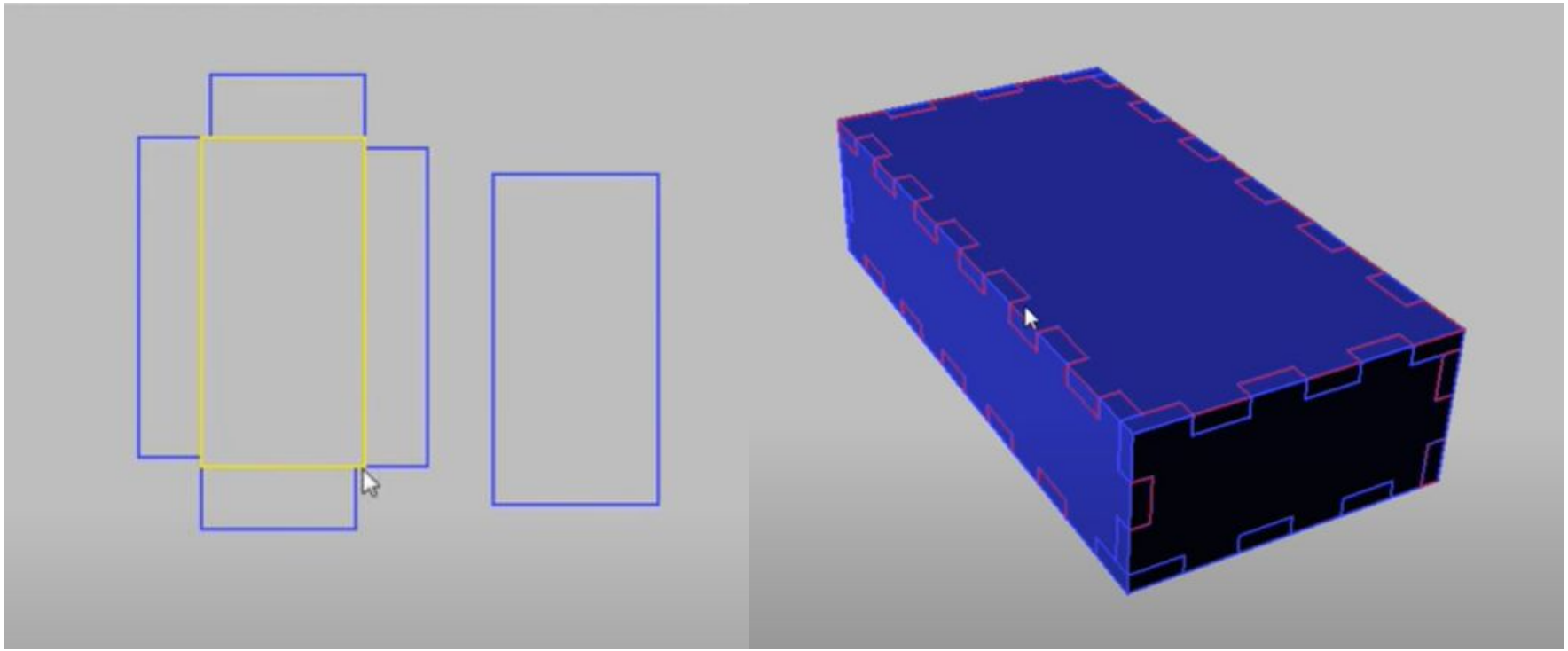


Polygon Box

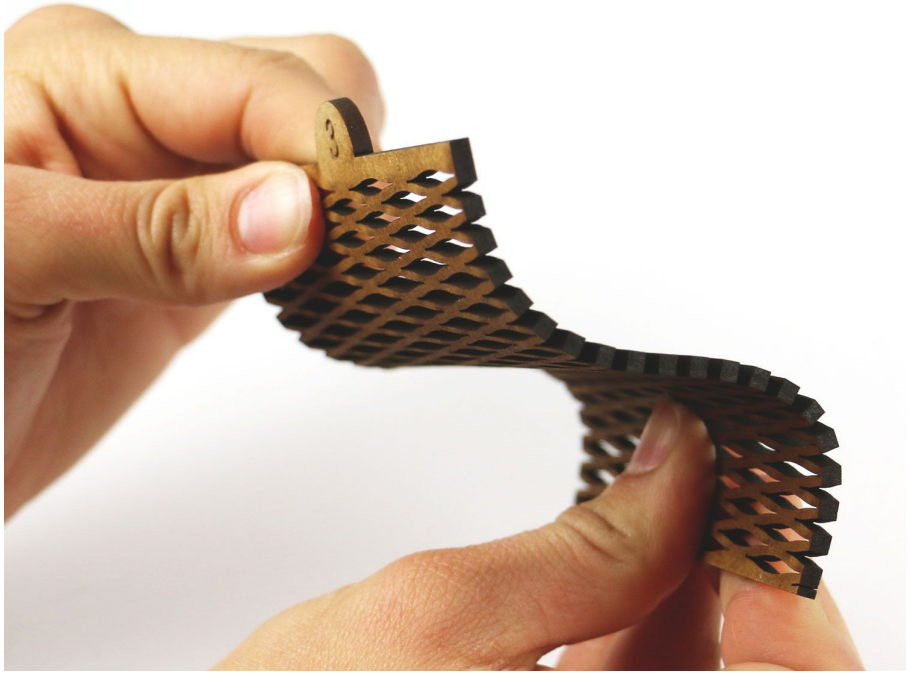


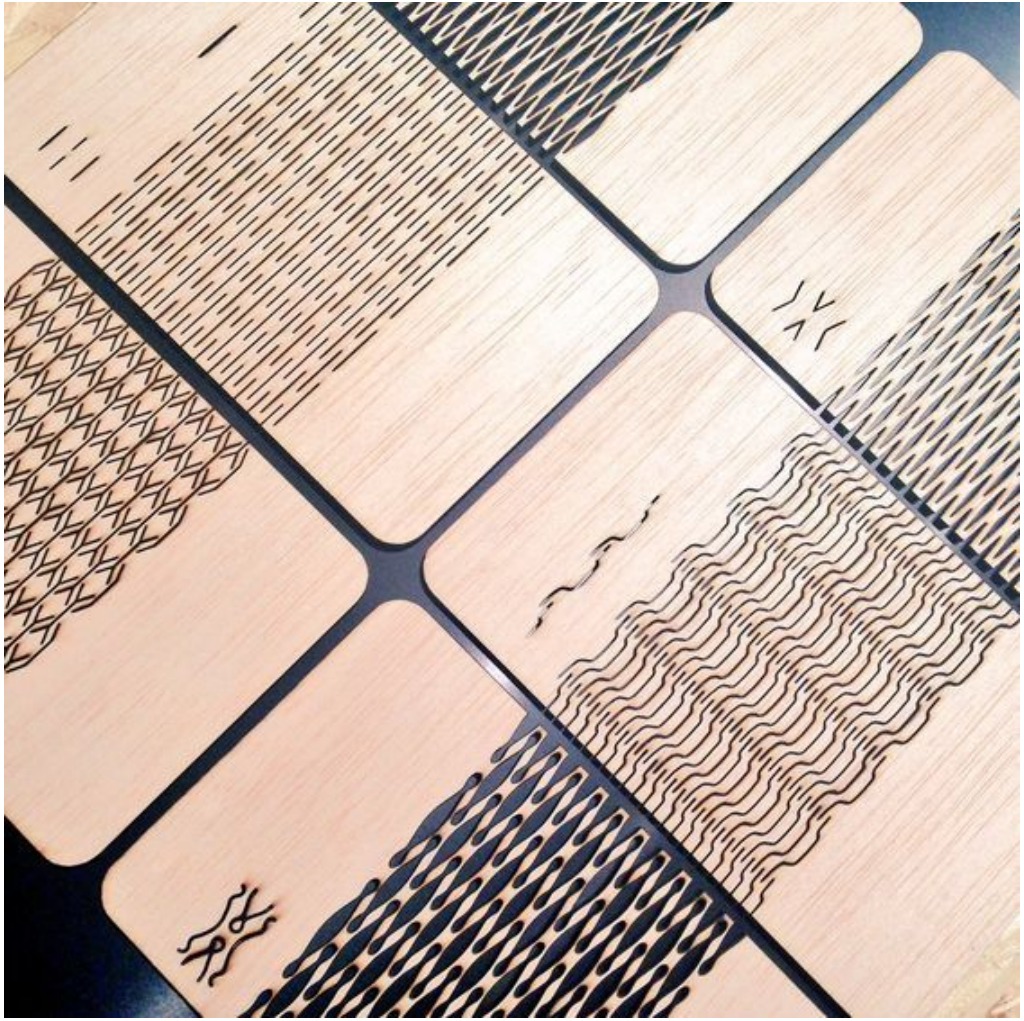
Kerf Bent Box

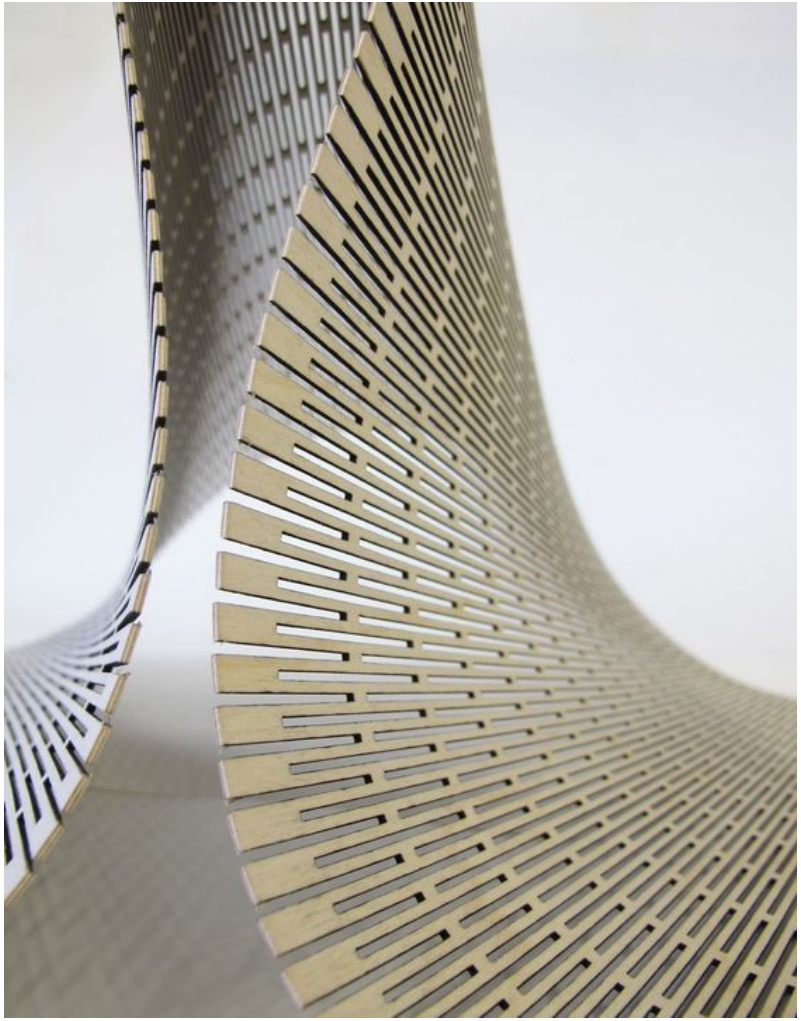
Unroll Polysurfaces for Lasercutting



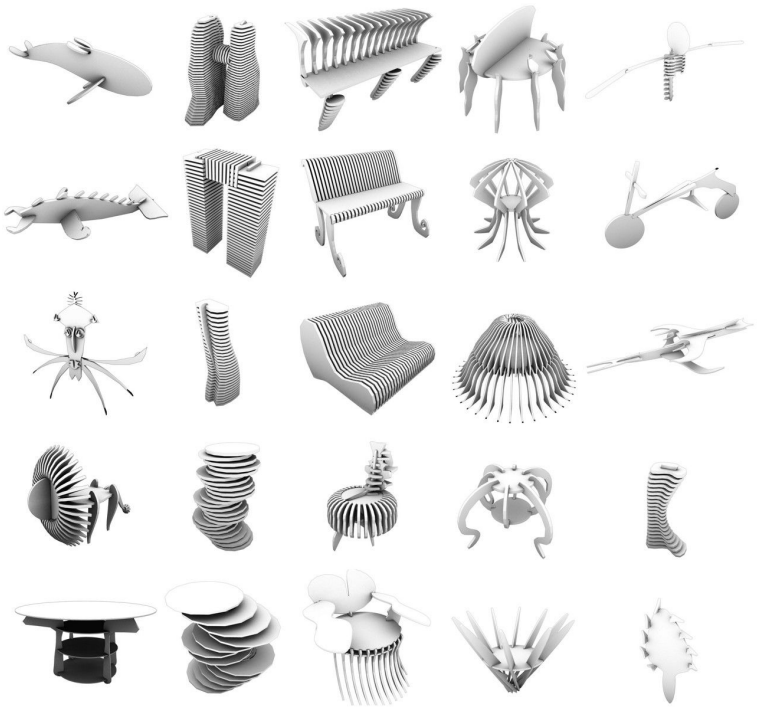
Kerfing

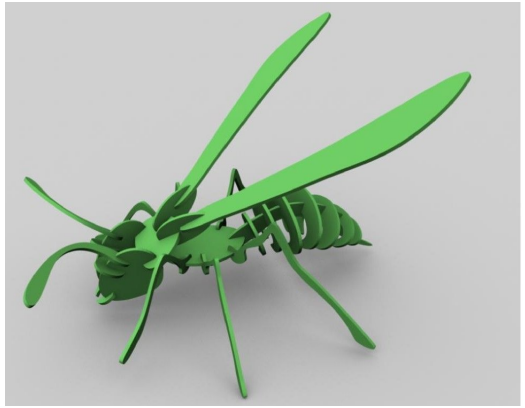


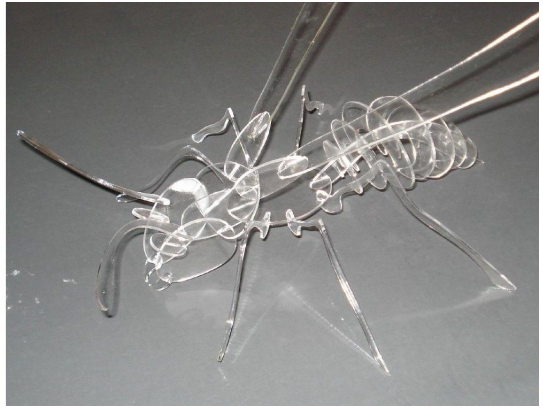




FlatFab

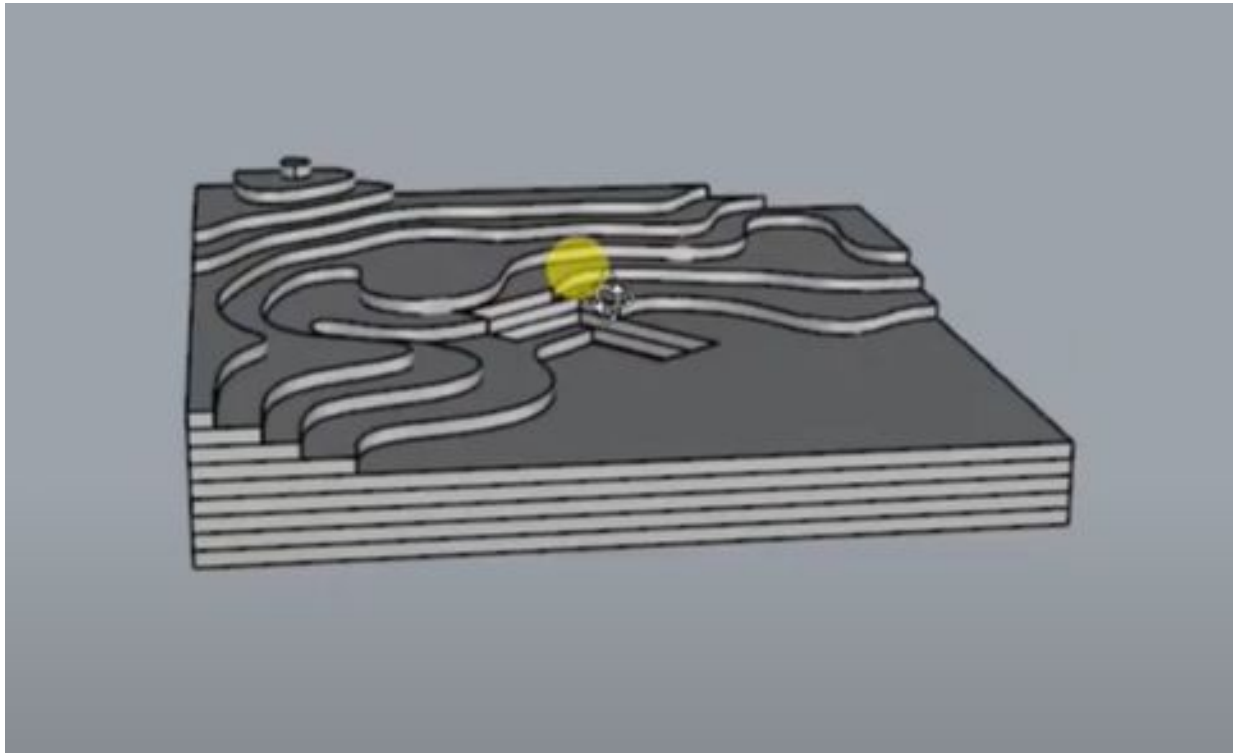






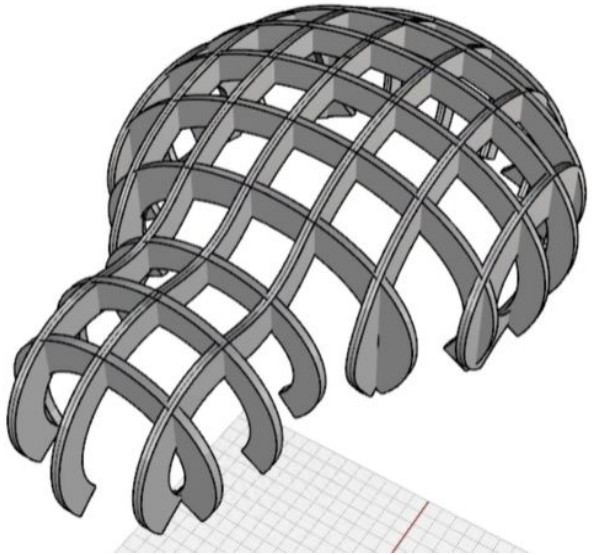
[Rhino Beginner Series: 3D Rhino File to Laser Cut Model - Part 1]

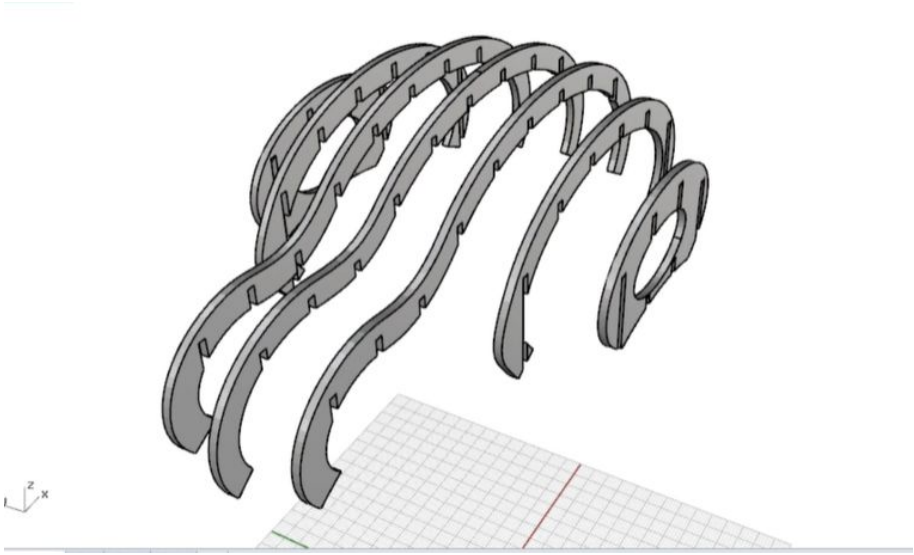
[Rhino Beginner Series: 3D Rhino File to Laser Cut Model - Part 2]



GSAPP Skill Trails

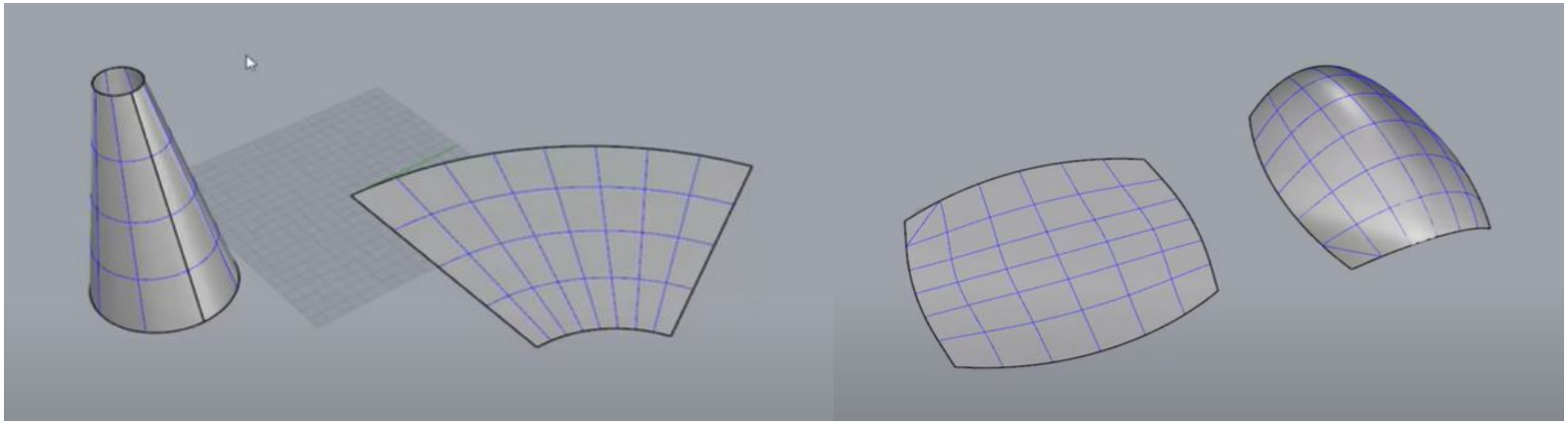
Surface rationalization - part 2/4 - ribbing on Vimeo



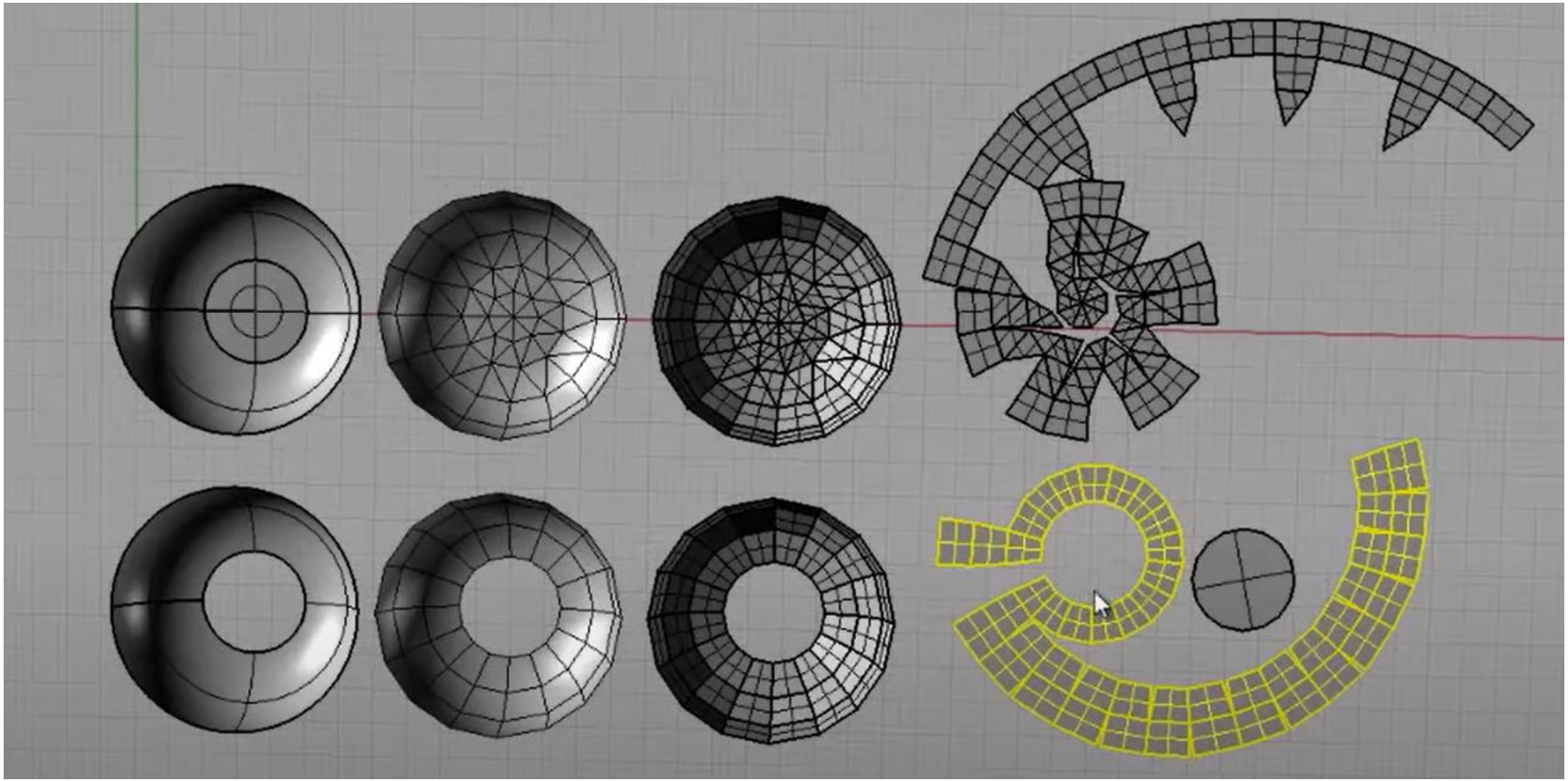


Rhino Sectioning for Laser Cutting or CNC

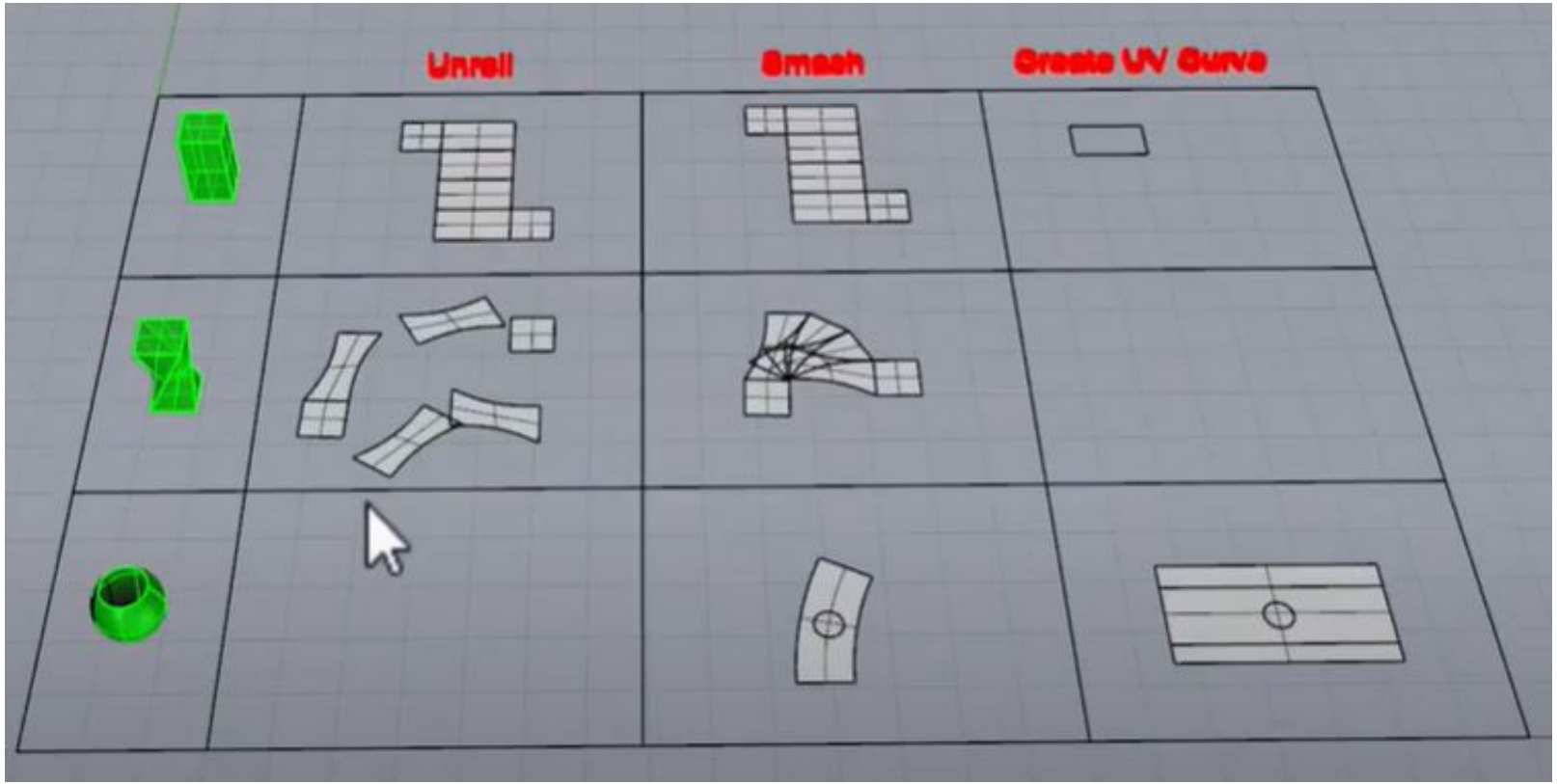
Introduction to Developing and Flattening Surfaces in Rhino3d



[Unroll Surface in Rhino 4: Tricks for managing compound curves]



Rhino 3D CAD Technique #12: Difference between Unroll, Smash and Create UV Curve commands

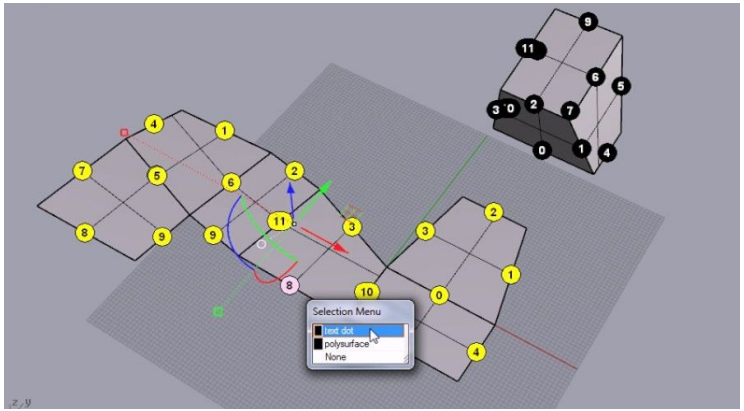


Tips

- Labels

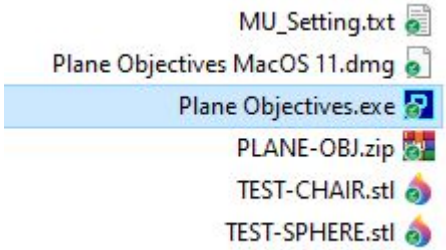
```
Select curves on polysurface to unroll ( Explode=Yes Labels=Yes KeepProperties=Yes ):
```

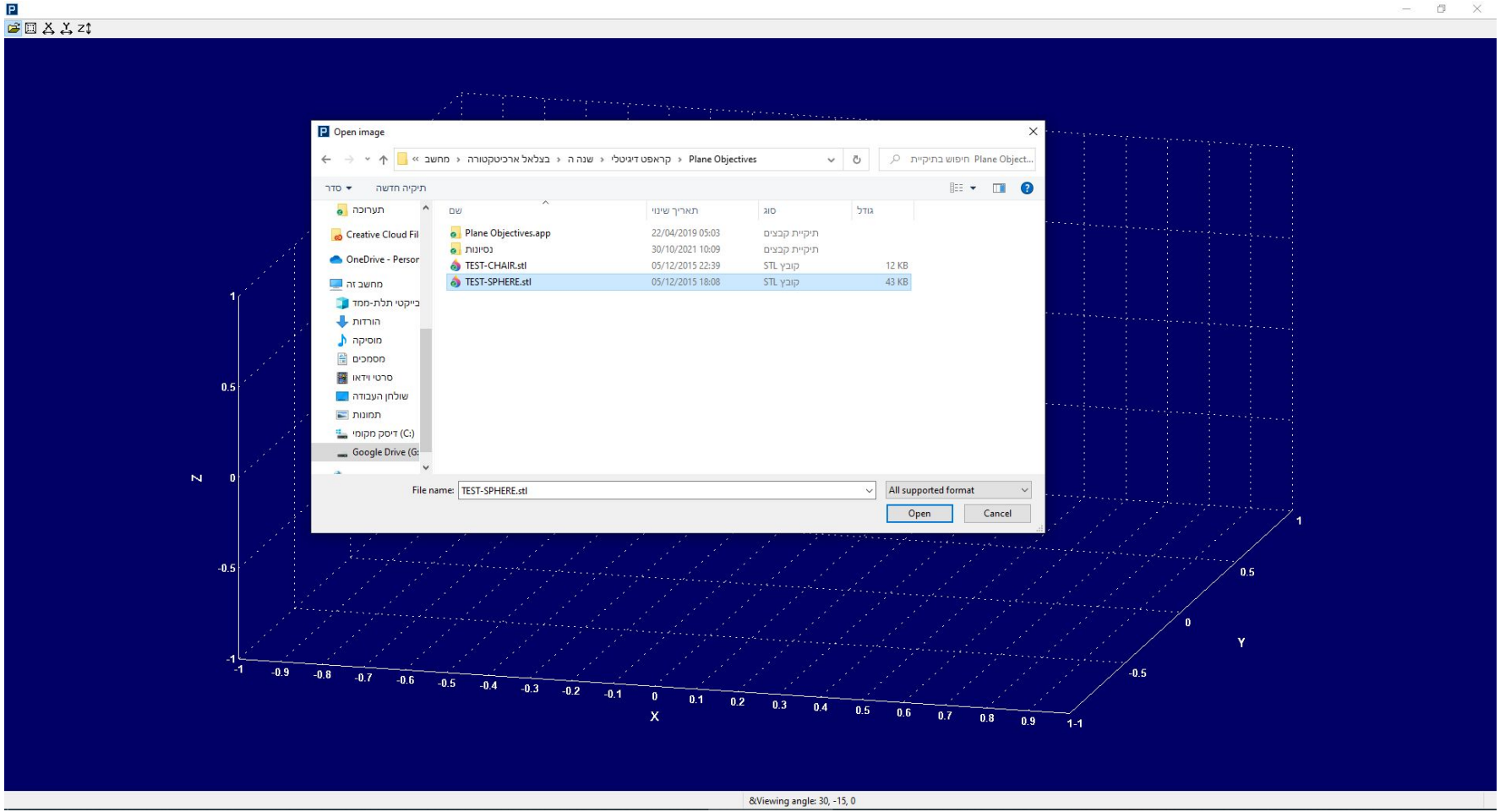
- Convert Dots - Exports the numbers



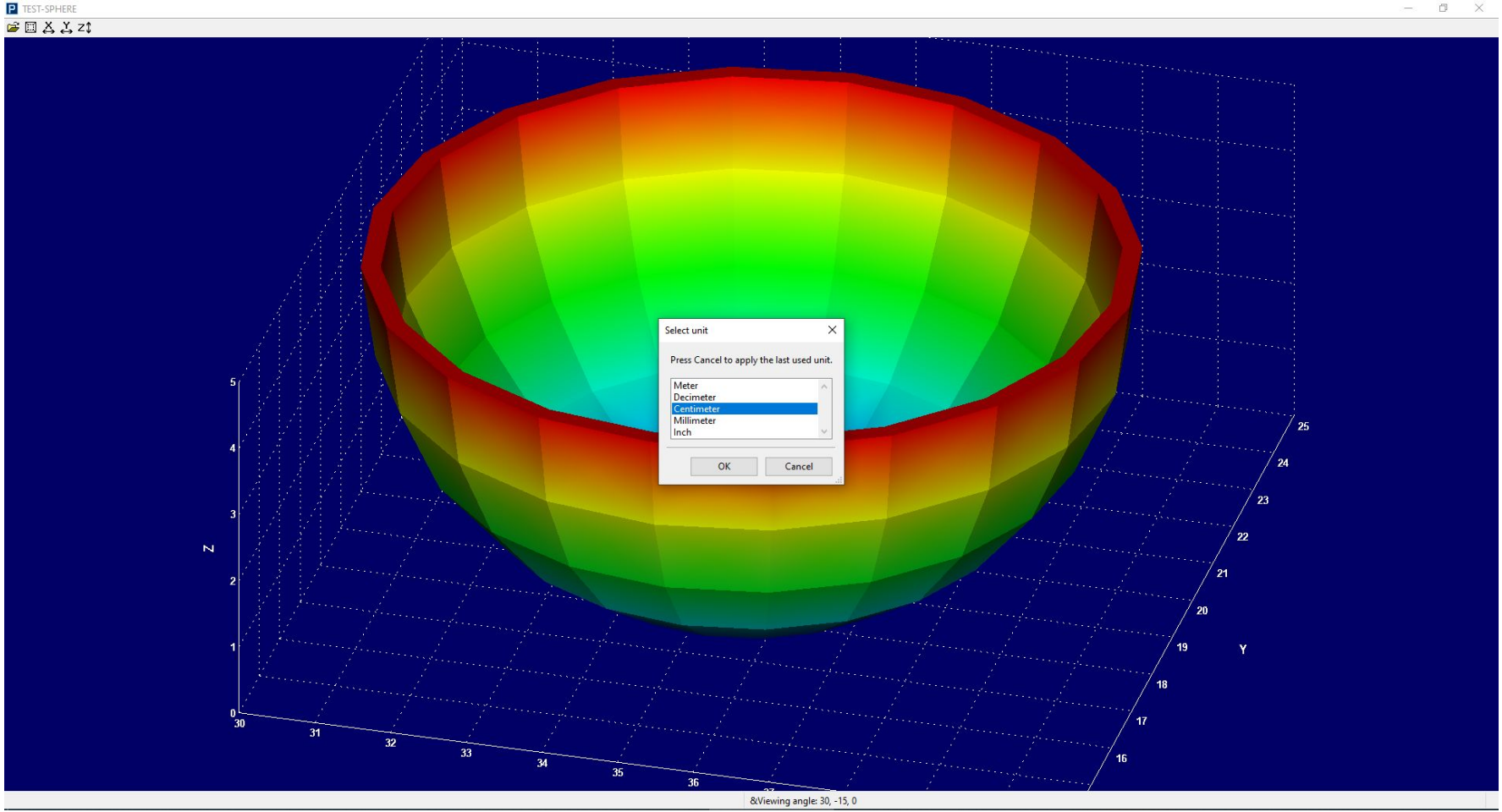
- Make sure to read some comments on the videos - sometime someone offers another way to do things

Plane Objectives

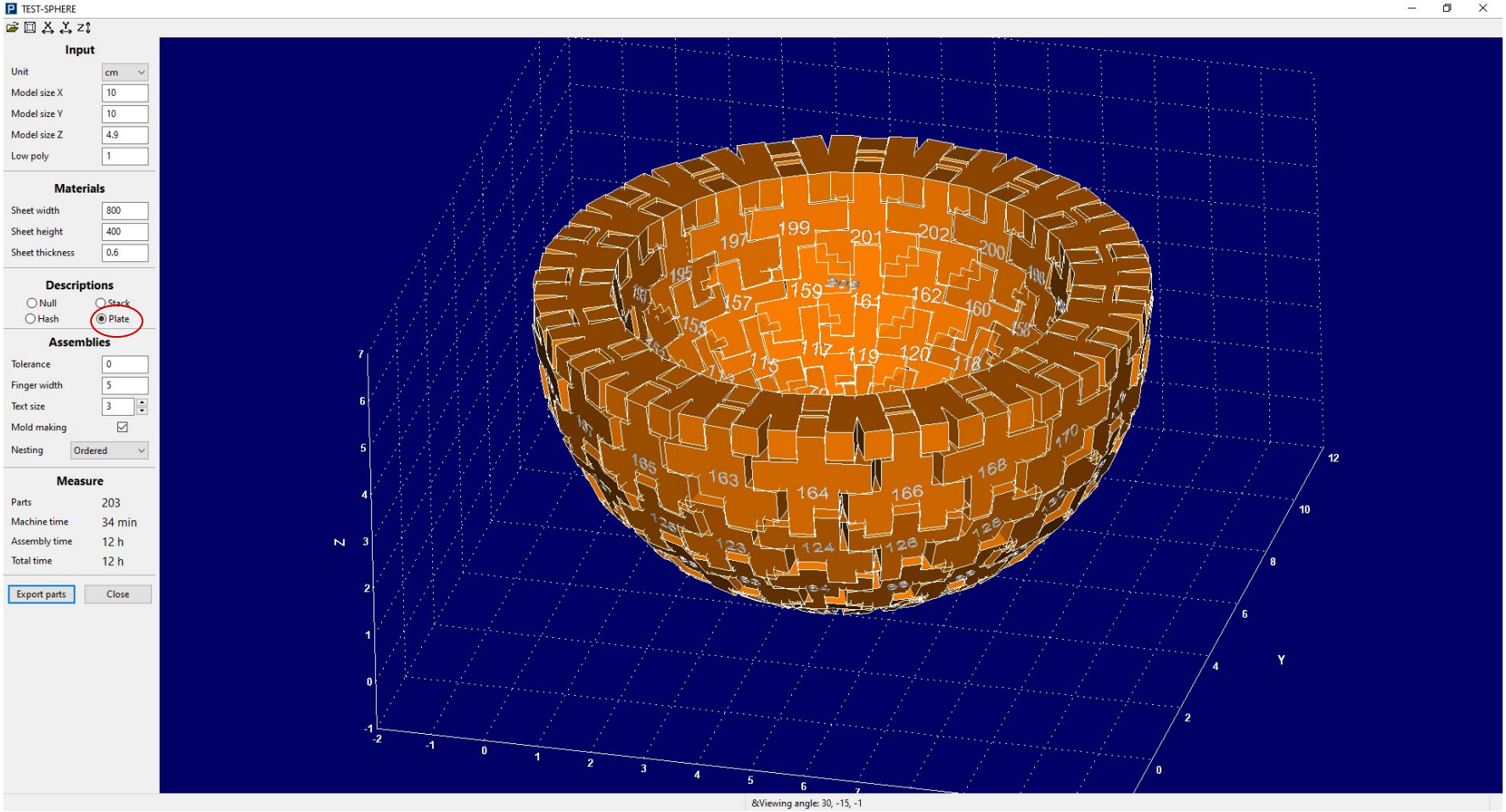




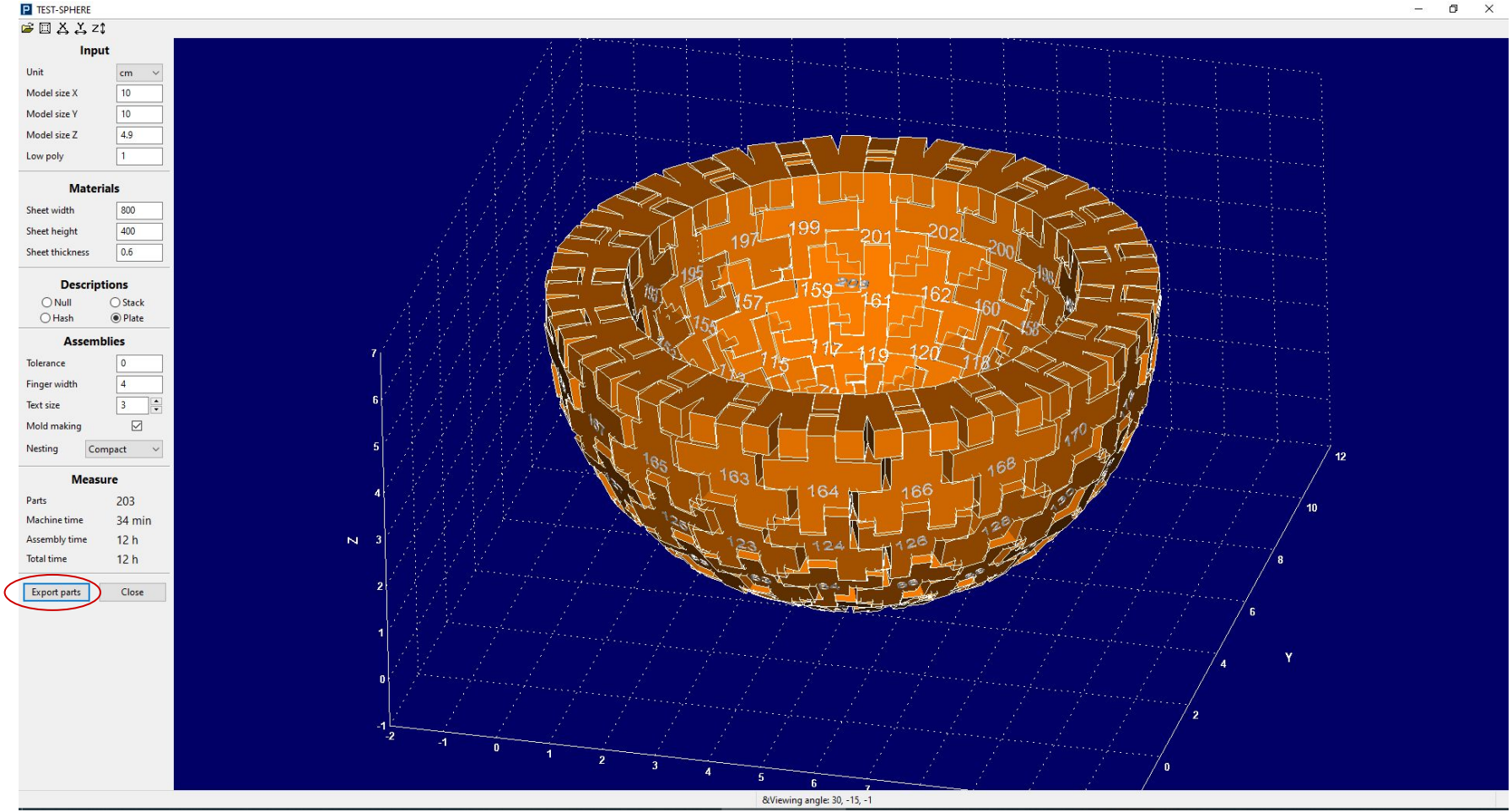
open > TEST-SPHERE.stl



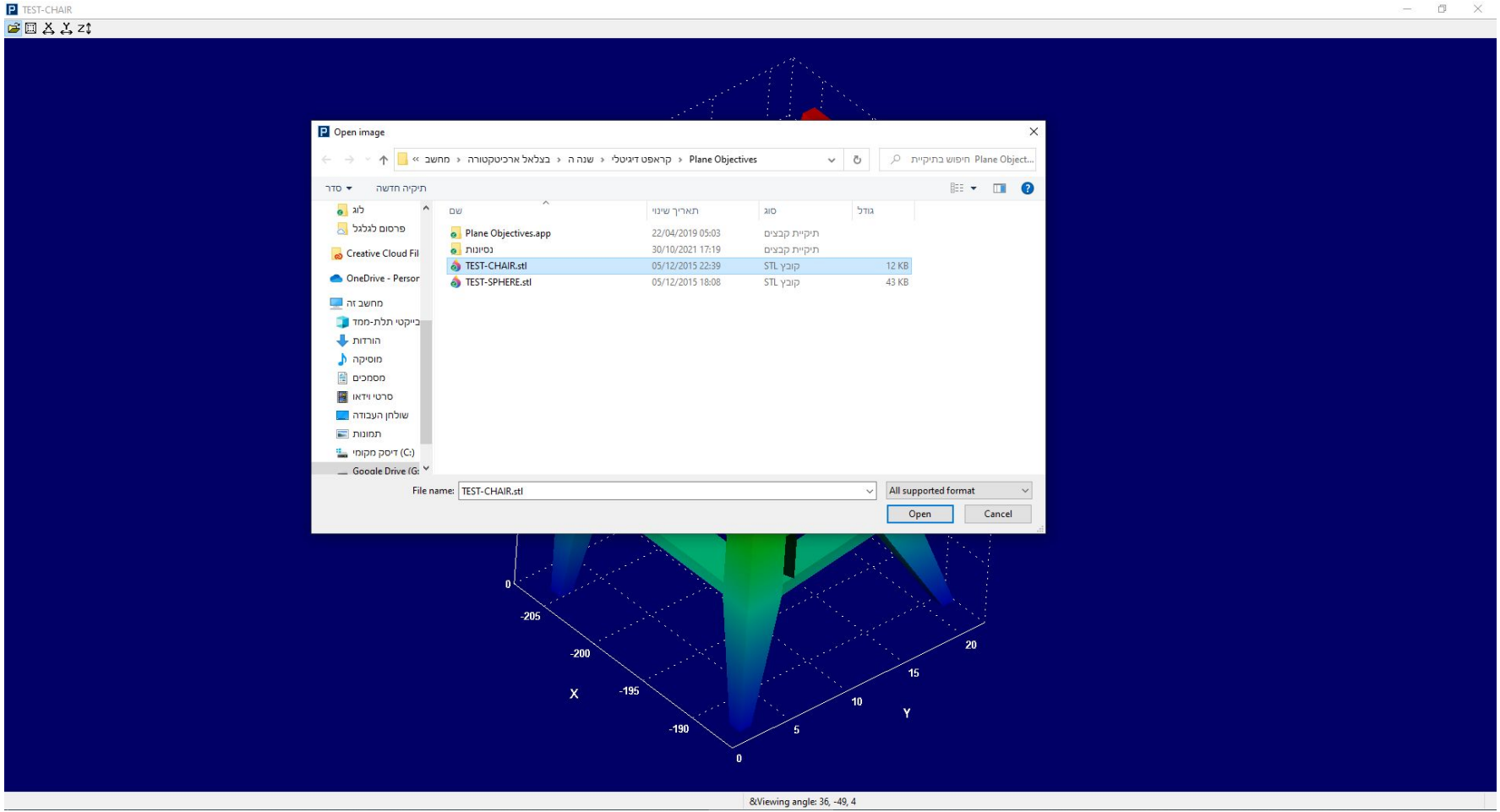
Select unit > Centimeter


TEST-SPHERE
Input
Unit
cm
Model size X
10
Model size Y
10
Model size Z
4.9
Low poly
1
Materials
Sheet width
800
Sheet height
400
Sheet thickness
0.6
Descriptions
Null
Stack
Hash
Plate
Assemblies
Tolerance
0
Finger width
5
Text size
3
Mold making
Nesting
Ordered
Measure
Parts
203
Machine time
34 min
Assembly time
12 h
Total time
12 h
Export parts
Close
Z
Y
&Viewing angle: 30, -15, -1

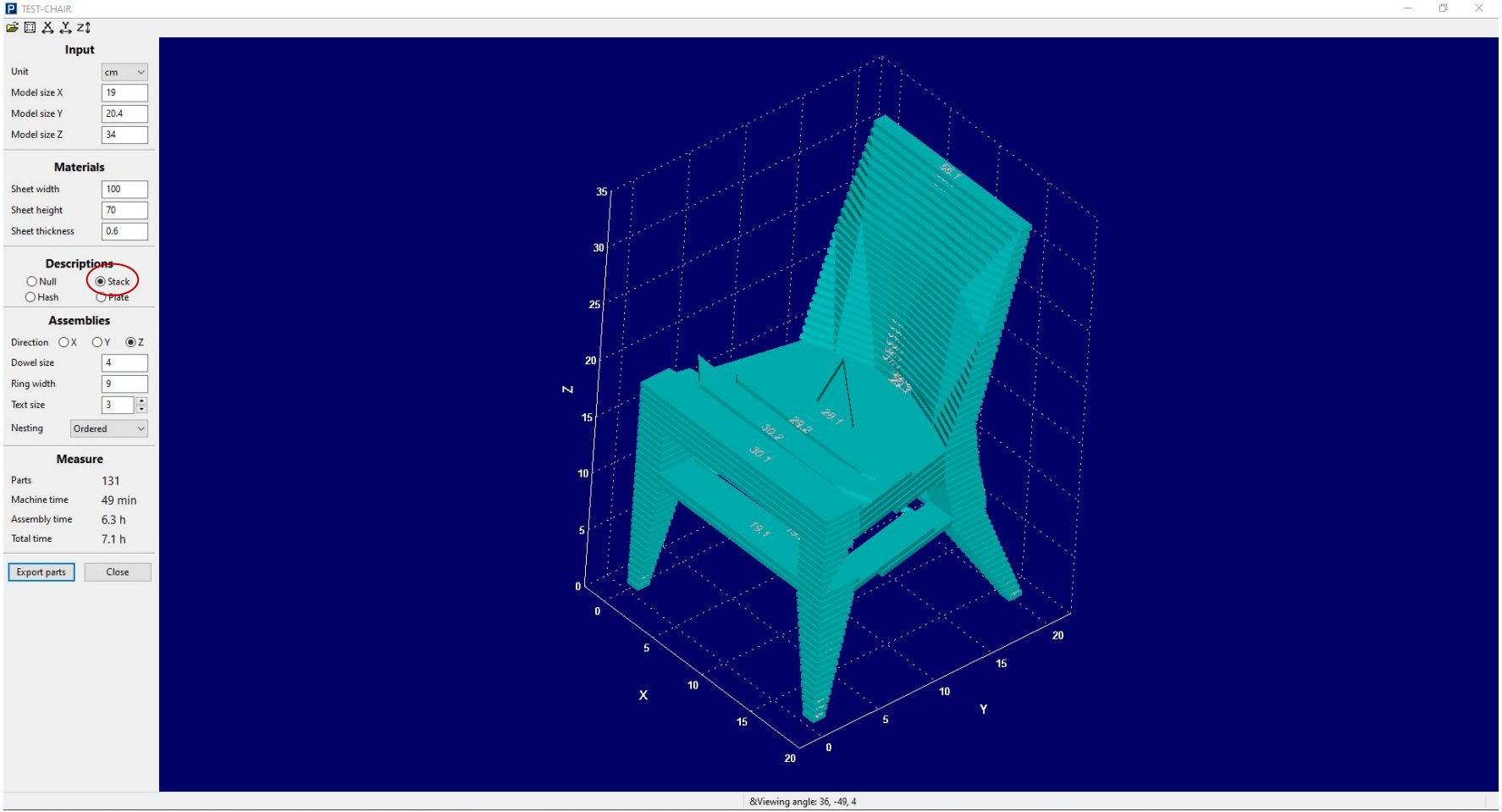
plate



Export parts



open > TEST-CHAIR.stl


TEST-CHAIR
Input
Unit
cm
Model size X
19
Model size Y
20.4
Model size Z
34
Materials
Sheet width
100
Sheet height
70
Sheet thickness
0.6
Descriptions
Null
Stack
Hash
Plate
Assemblies
Direction
X
Y
Z
Dowel size
4
Ring width
9
Text size
3
Nesting
Ordered
Measure
Parts
131
Machine time
49 min
Assembly time
6.3 h
Total time
7.1 h
Export parts
Close
Z
X
Y
&Viewing angle: 36, -49, 4

stack

Break

Assignment 4: basic shape

Generate a captivating 3D form using Rhino and select two techniques for transforming it into a 2D template. Employ these approaches to convert the form into a 2D template and organize files suitable for laser cutting.
Finally, construct two models using available cardboard and wood materials.

Tips for good laser files

1. Calculate the material thickness
2. Make sure your polygons are closed
3. 'Overkill' in Autocad to eliminate double lines
4. Reduce lines as much as possible
5. Explode text and edit into single lines. Then 'join'
6. Save as DXF
7. Make sure your design fits in the material and machine dimensions.


NORDESTIC


visit: www.softplecture.com
Email: s.mohsen.hosseiny@gmail.com

References

Woods cutting- robots
mePed Quadruped Robot
Jelly Kinematic Pavilion

Wood cutting- kinetic puzzles
Ugears Models
Strandbeests

What we did in the cutting assignment
Construction Disruption

Hashing - Very Large Scale
Hashing | Digital Design Fabrication Group
Labs | Digital Design Fabrication Group

Spiral bowls
Laser cut, shape-conforming spiral bowls by gorgonaut - Thingiverse

Websites with free files
Templates and Designs for Laser Engraving and Cutting: Great Websites and Software that Will Make You A Better Creator

In the upcoming session,
we'll delve into the exploration of specialized materials. Feel free to bring along any materials you'd like to experiment with during the lesson.