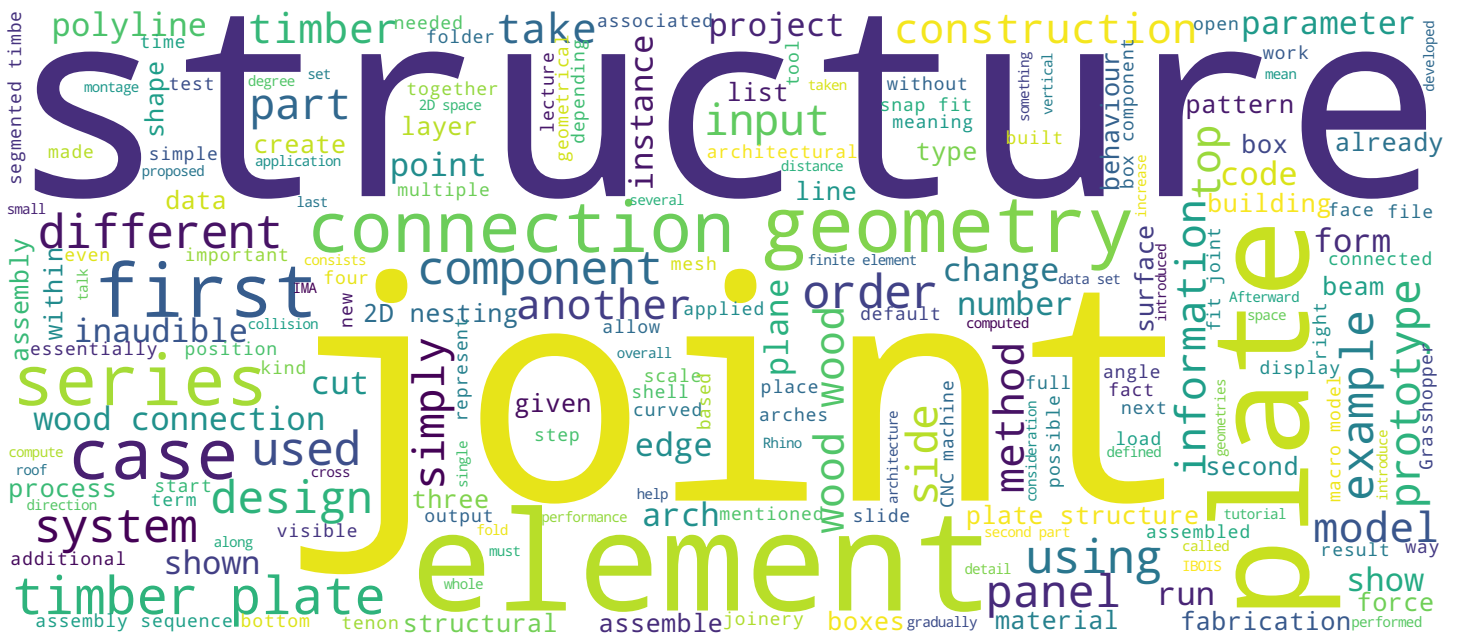




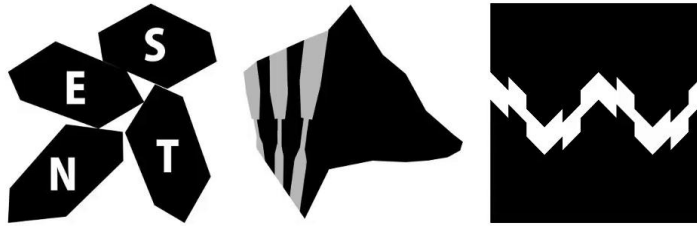
CNC Fabrication



Requirements:

- ☐ OpenNest
- ☐ Raccoon
- ☒ compass_wood (Rhino3d Grasshopper versions)

■ Advanced Timber Plate Structural Design



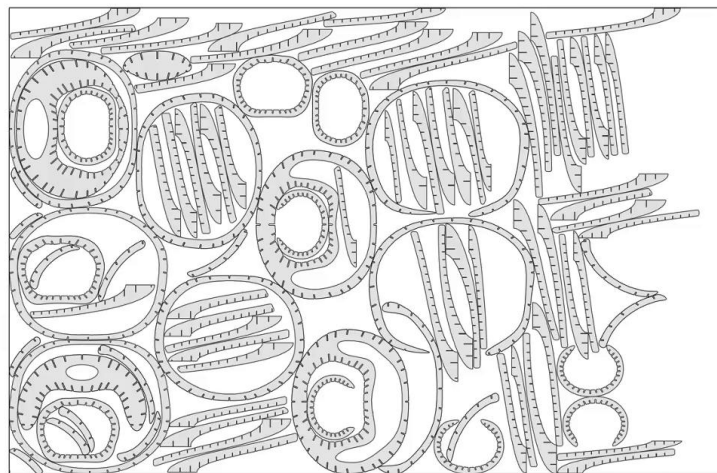
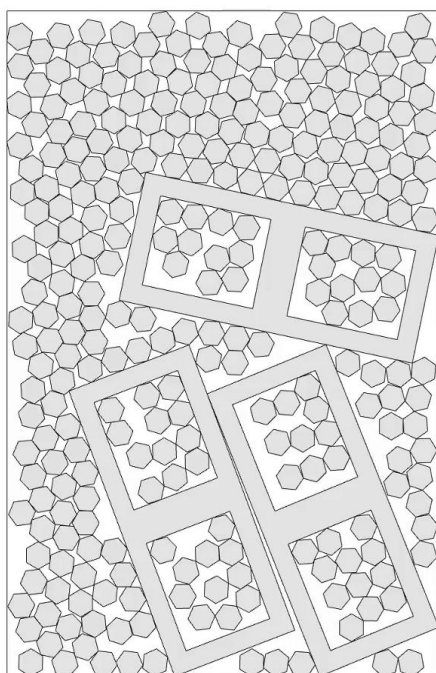
In this lecture we're going to talk about the fabrication process that is composed from two parts: the 2D nesting, and the CNC fabrication. This will conclude this lecture. What we need in order to run these codes, we need to have an OpenNest, plugin that is used for 2D nesting, then we need the CNC plugin, and then we can use the compass_wood that was used before.

Notes

Summary



0m 04s

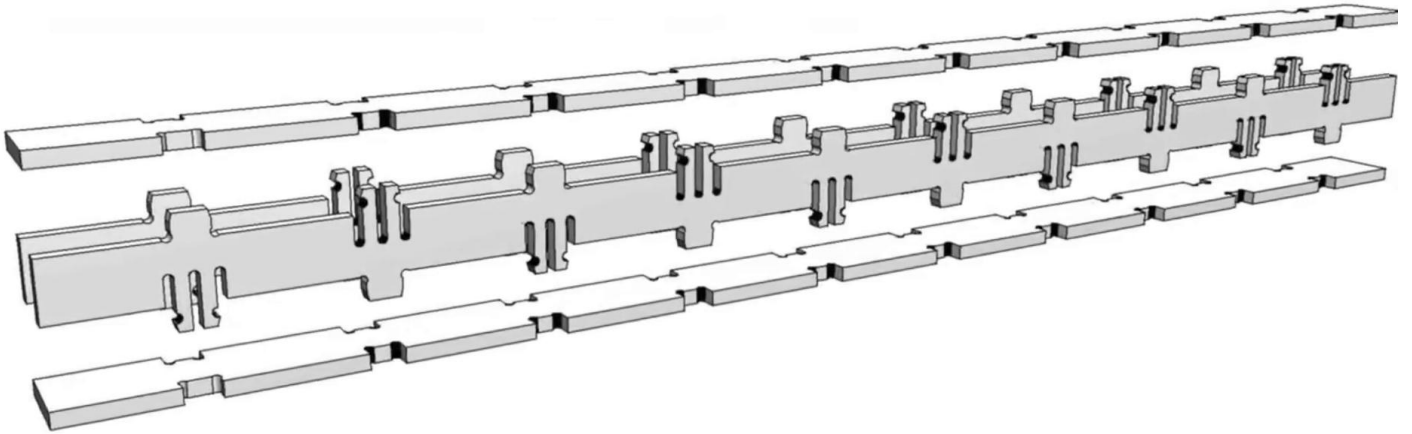


The 2D nesting, it is a procedure that helps you to orient shapes from 3D space to 2D space. You can see here a series of hexagons that are oriented optimally to a flat rectangular sheet of paper or timber plate. These are several samples that were used before when you essentially save as much material as you can.

Notes

Summary





If this principle were to be used

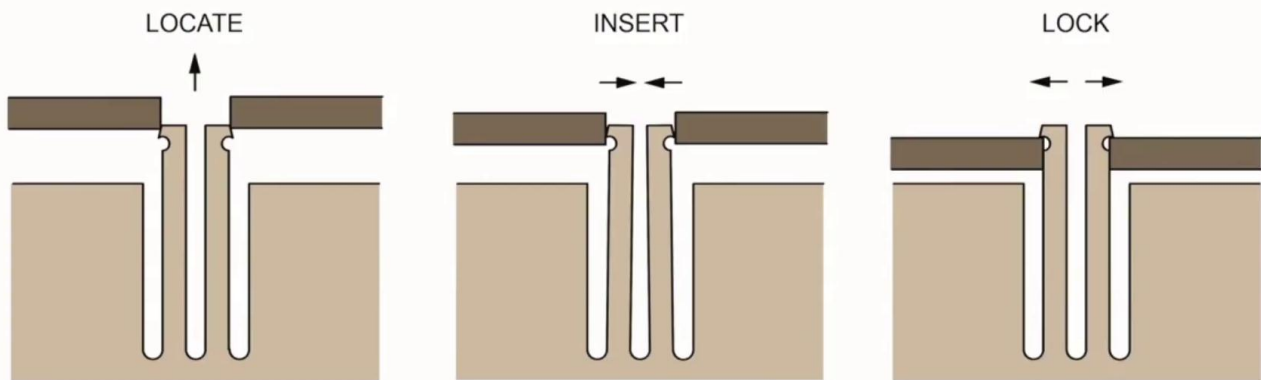
This cone was developed longer time ago, because we needed the specific tool for a project called Nabucco Opera in Lausanne Cathedral. We needed to orient the plates that are visible on the screen from this geometrical 3D orientation to a 2D. After there's orientation in the 2D space, we need to have as optimal packing as possible in order to run our CNC machine. The CNC procedure can have a lot of sub-routines such as drilling, indexing, cutting, milling, and so on. Afterwards all these steps are finished, you can assemble those plates into a series of components that are interconnected together. Finally you can see a prototype, a real structure that was built in Lausanne Church. This is the segmented timber spiral that has the joinery that had this fabrication and nesting strategies that were mentioned before. It also showed additional, I would say, innovation that had a snap-fit joint.

Notes

Summary



SNAP-FIT JOINTS : INTEGRATED MECHANICAL ATTACHMENT FOR STRUCTURAL WOOD PANELS



that can assemble two pieces of wood

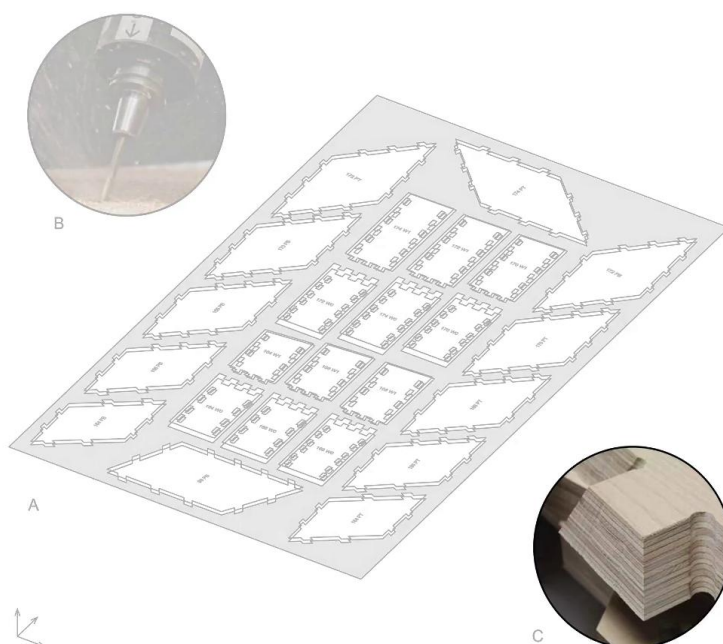
Then elements are connected using tenons, and also the snap fit-joints that can be assembled and disassembled.

Notes

Summary



2m 08s

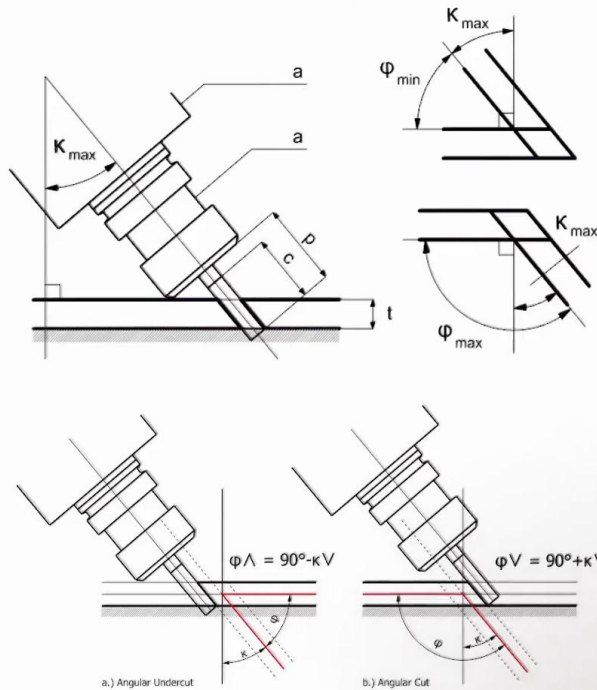


This is the actual assembly sequence when a series of seats were inserted into a stand, and also the back parts. Finally, there is the segmented spiral that is second part of the project. So let's get started on a simple tutorial for the 2D nesting process. The second part of the tutorial will show how to use the CNC application that we employ at IBOIS EPFL, essentially, how to use fiber access cutting tool, including elements such as notches that are visible here.

Notes

Summary



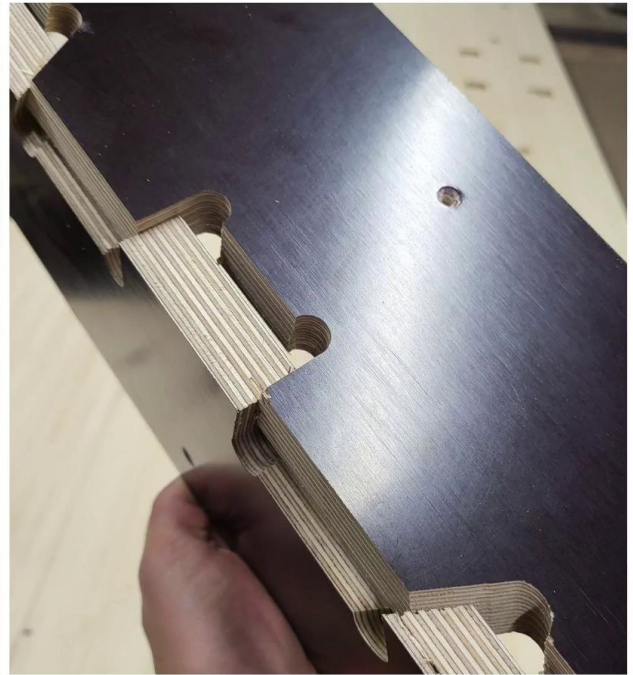


Including additional cases where we need to consider the safety factor, because there is a possibility to collide of the table, so we need to consider certain angles of collision.

Notes

Summary





If everything is working fine, you can actually cut a series of plates and you can assemble them together. Let's start a tutorial.

Notes

Summary

