

Satchel

Design and functions:

The development of the project started in August and after some time the group thought of different ways to increase the volume of the backpack. After a few weeks of development we decided to build the outer shelf which is able to move like a flap using a special 4-point-mechanism. The mechanism was first drawn in CAD, then a prototype was built using the laser cutter and thin plywood.



After some smaller improvements the new CAD-data was sent to a special metal worker who lasered the mechanical parts from 2mm thick brass and gave it to our group for a good price and nice quality.

Materials:

The decision which materials we should use was a tough one from the beginning. We always had to choose between the parameters of design, functionality and weight.

Of course, the main parts had to be somehow made from wooden material, so we thought of different ways on how to combine them to create a steady but light-weight construction. Very fast the group (working on the outer shelf of the backpack) focused on a form bending with multiple layers of veneer, because it combines the best characteristics of the previous mentioned parameters.



We did some experiments and decided on splitting the straight and the rounded parts. The rounded "corners" of the shelf are now made from 10 layers of ash veneer glued into form using a special polyurethane-glue.



The straight parts are made from so called "airplane-plywood" (1mm thick plywood made from 3 layers of veneer) and multiple layers of veneer to create a 5mm thin, steady and strong board.

To connect the rounded corners and the airplane-boards, we built multiple jigs to create a precise lap-joint between these two pieces using the spindle moulder. After some time we developed a better technique and were also able to angle the lap-joint a little bit to make it even stronger.

