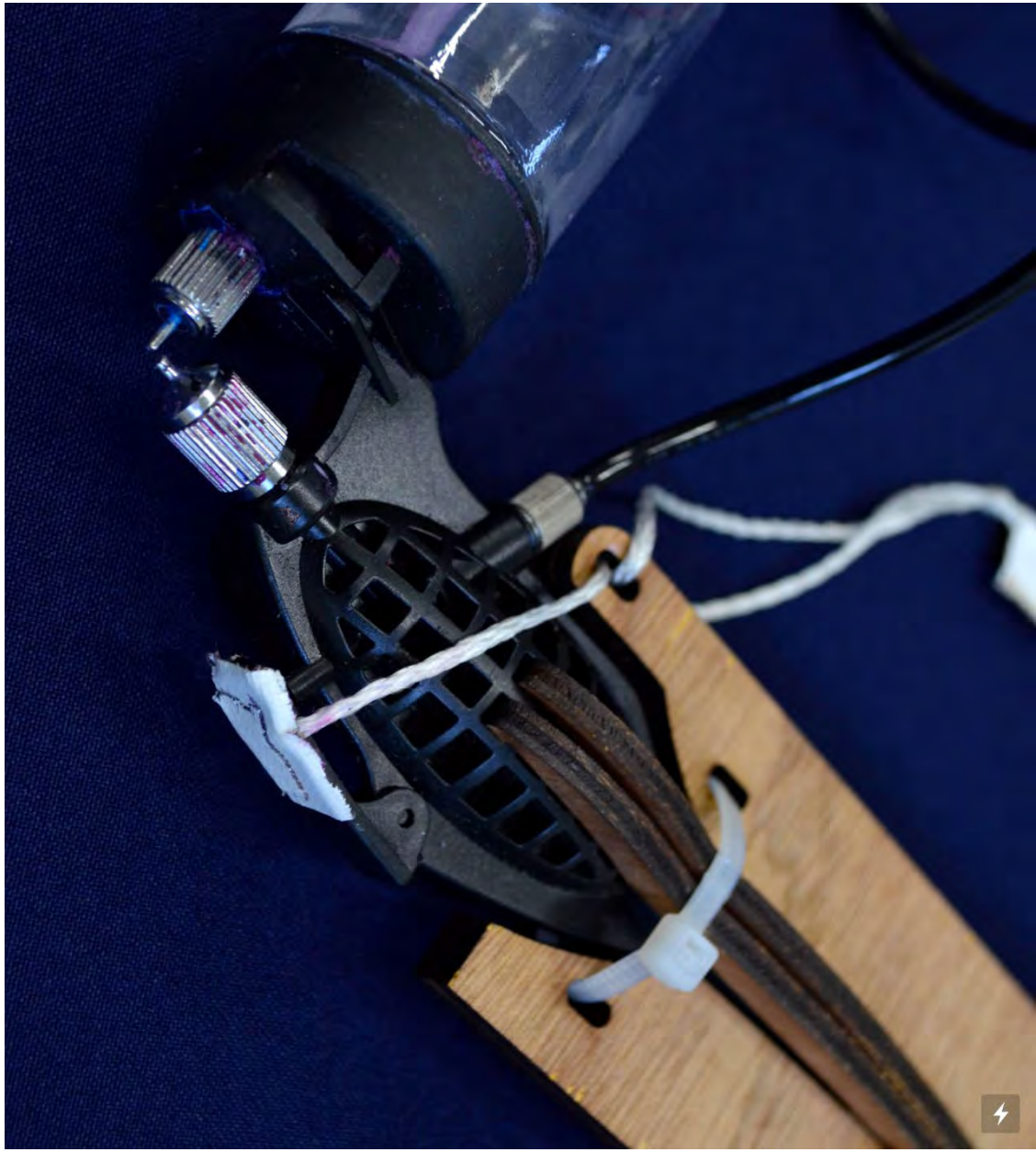
CNC air-BRUSH

THE TOOL!
We developed a magical tool for the cnc milling machine. You connect the tool to the machine and compressor.

Things we learned:
- needs to be sturdy
- nozzle alignment is key for a good line
- air pressure needs to be precise
- pressure in the system needs to be constant



First baby steps

First we needed to make sure the paint was fluid enough for us to use, this was a small material research proces on its own.

We did the first tests with the air-brush not connected to the machine.
Becomming familliar with the air-brush itself.

Calibration

In order to print sharp images we need to fill in the variables wich are height, pressure and nozzle precision. We made a test sheet to find out these variables.

Line experiments

Now that we know the variables we can start working with some lines. Trying out some paterns we discovered that speed is important for the sharpness and thickess of the line. With slower movements u use more paint therefore the line increases in widthness.

Swirl test

The paint is very important for a concistend line.This because of the pressure within the air-brush machine. We found out that the pressure was best at 50% paint cappacity in the reservoir.

Type test

For our prints we used special air-brush paint but we ran into several problems. The paint is drying very quickly and this constipates the nozzle tip. To solve this problem u need to reduce the paint with special reducer serum. For the best concistentie we use a 50/50% ratio.

On the radar

We ran into the problem of seeing dots at the starting position of the machine. We tried several possible solitions such as timing and ramping. It didn't work with the air-brush machine we used. So we embraced it, and try to involve it in the designs.

Smile!

At this moment in the procces we knew our boundries. Now we could think about the opportunities of the designs.

Textile test

Now we needed to know how the paint response on different surfaces. Textile work especially well. We see an oppertunitie in 3 dimensional or deformt shapes such as folds or twists.

Off-surfaces

We tried different materials, some worked some didn’t. For instance printing on chrome did not work because the mixture of paint is waterbased and repels of the surface.

The workflow ↓ ↓ ↓

↳step 1

Preperation tool

- place the tool on the cnc
- set-up airpressure. (3khp)
- calibration height (5cm)
- set-up zero point

↳step 2

Paint

- 50% auto-air collors waterbased
- 50% “4012 high performance reducer”

↳step 3

V-carve software

- open vector - select toolpath
- select airbrush option - line thickness
- depht as measrured with calibration
- safe toolpath

↳step 4

CNC software

- open saved v-carve file
- reference move without z axis
- speed axis movement (100 mmps)

↳step 5

Reload

- reservoir fill half way
- place paint reservoir on tool
- manual check the air-brush (nozzle)
- place meterial - press start!

↳step 6

Pay attention

- pause if reservoir is empty
- repeat step 5 and press on play aggain