

**Exercise#2 Design and Fabricate “Lamp Shade” for LED Light**  
<http://fab.sfc.keio.ac.jp/lab/?p=2024>



## **\*Introduction**

FabLab Netherland Movie

## **\*Preparation**

- Papers (for mockup, prototyping)
- Acrylic Sheets
- LED Lamp
- USB Memory = USB Stick (can be bought in SFC Coop)

## **\*Deadline**

- next Thursday (October 13<sup>th</sup>).
- Each group has to make 5-10 minutes presentation in front of teachers. Tell us your concept, story and design process and show us the actual product.

–I recommend the schedule as follows:

Thursday- Monday: sketch, draw, make a mockup with papers and make vector data

Tuesday- Wednesday: Fabricate it with the laser cutter and assemble it.

(I will tell you the reason why I recommend later)

## **\*Process**

**Step.1** Installing the Free “Vector Drawing” Software

[Inkscape \(wikipedia\)](#)

[Inkscape \(software download\)](#)

**Step.2** Sketch your design and Make Paper-Mockup

**Step.3** Draw the outline of parts using InkScape

**Step.4** Save your vector data in the format of “SVG”, and move it with USB Stick

Sample Data

**Step.5** Go to SFC Fabrication Studio in front of the gym

Note that: SFC Fabrication Studio is available only from Monday to Thursday, AM9:15-12:00 and PM13:00-16:45.

We cannot use on weekends. Please arrange your schedule carefully. The Fab Master is Mr. Kakizaki

e-mail : kakizaki ( a ) sfc.keio.ac.jp

**Step.6** Turn on the mini Lenovo PC and external Screen.

Note that: the mini Lenovo PC is very slow. It often frustrates us. But don't be in a haste.

**Step.7** Insert USB Stick into mini Lenovo PC.

- Start “Adobe Illustrator” from the program menu.
- Open your SVG file from a usb stick

**Step.8** Data Arrangement with Adobe Illustrator

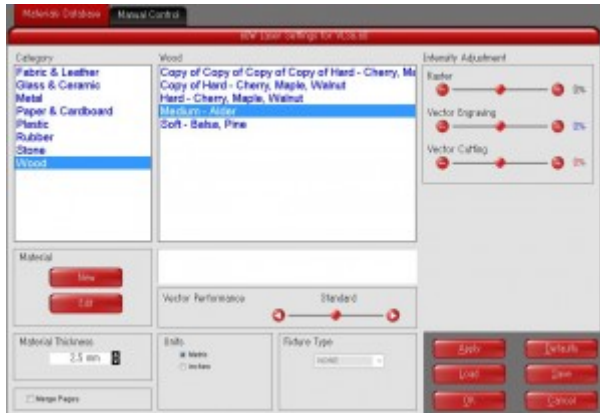
- The laser cutter is capable of both “Cutting” and “Engraving”.
- “Engraving” is interesting but it's not important for this assignment. (We have to skip this method. If you want to try, it's up to you. )
- We have to set the lines which we want to cut out as follows.
  - Strokewidth = 0.01, Color Red=255, Green =0,Blue=0
  - In advance of that, we have to set colormode to RGB. (File Menu ==> Color Mode)
  - Print ==> Print

**Step.9** Start “CUP” by clicking an icon on the desktop

- When “CUP” starts up, the lasercutter also starts up at the same time. You could hear the motor noise somehow.
- Turn on three different switches. White box (for the compressor), Black box (for the lasercutter) and Gray machine (for the vacuum).



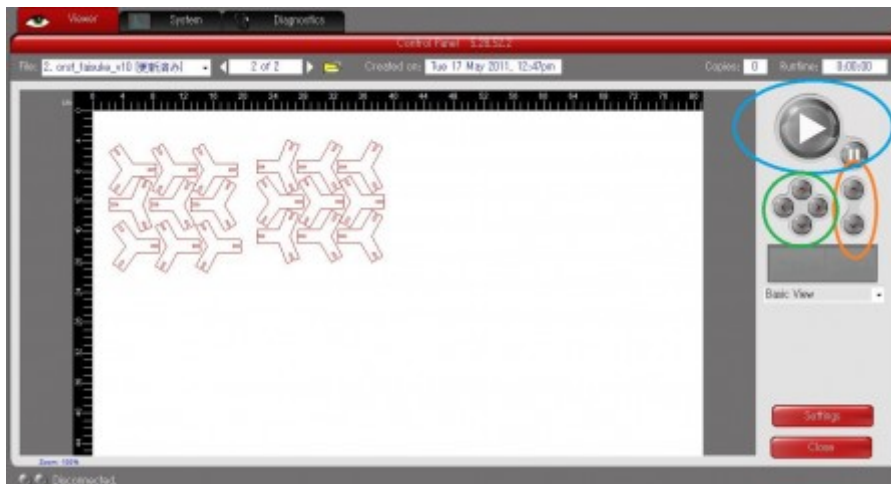
—[setting] ==> [material database] ==> Choose your material and set the thickness.



—Set the material onto a plate. The origin is UPPER-LEFT.

—select [Focus View] and indicate one point on the material. Use the focus-tool and set the appropriate height by using orange arrow keys.





—select [Relocate View] and set your data to the best position.

—Confirm everything. Is everything OK? Is everything Safe? If yes, please press [PLAY] button (Green).

**Step.10** If you need another/different materials, you can buy at

Konan Tsujido

(This is in the middle of SFC and JR Tsujido. Take a bus bound for Tsujido from SFC and get off on “Komayose” station)

Royal HomeCenter Fujisawa

Konan Ofuna

## **Laser Cutter Examples**

[Example Blog1](#)

[Example Blog2](#)

### **4 Dangerous Points**

(1) Don't cut PVC. It's TOXIC. Sometimes acrylic sheets are covered with transparent sheets, made by PVC. Please remove these sheets before cutting except the case that sheets are apparently made by paper.

(2) Please pay attention on setting a focus. Using focus tool, we have to set appropriate focus. If you avoid this process, materials will be burnt and fire will come out.

(3) Please switch on the compressor and vacuum. If you avoid this process, bad smells will come out and damage your health.

(4) Please set material parameters and the thickness every time. And re-confirm it. If the parameters are different, materials will be burnt and fire will come out.

### **Hiroya Tanaka**

htanaka (a) sfc.keio.ac.jp

I will be free on next Tuesday from morning to 18:00PM. If you need my help, please e-mail me in advance.