

LightVolume

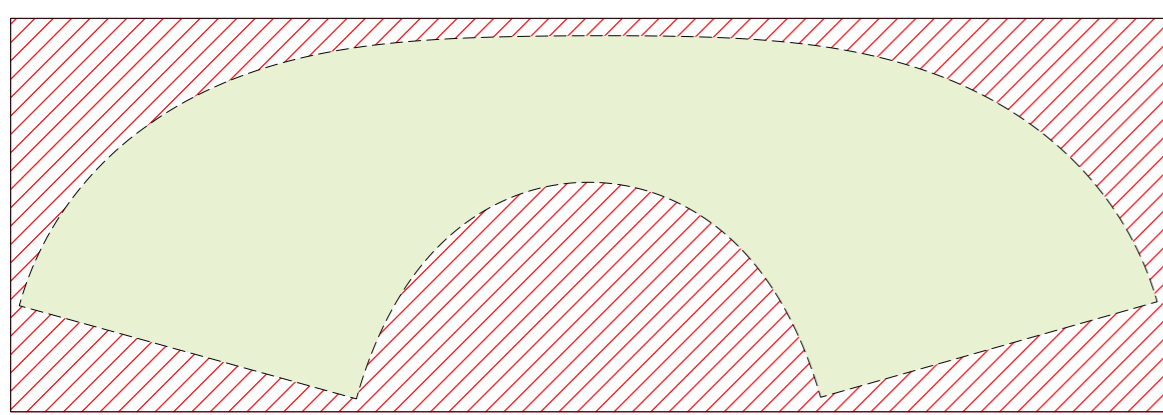
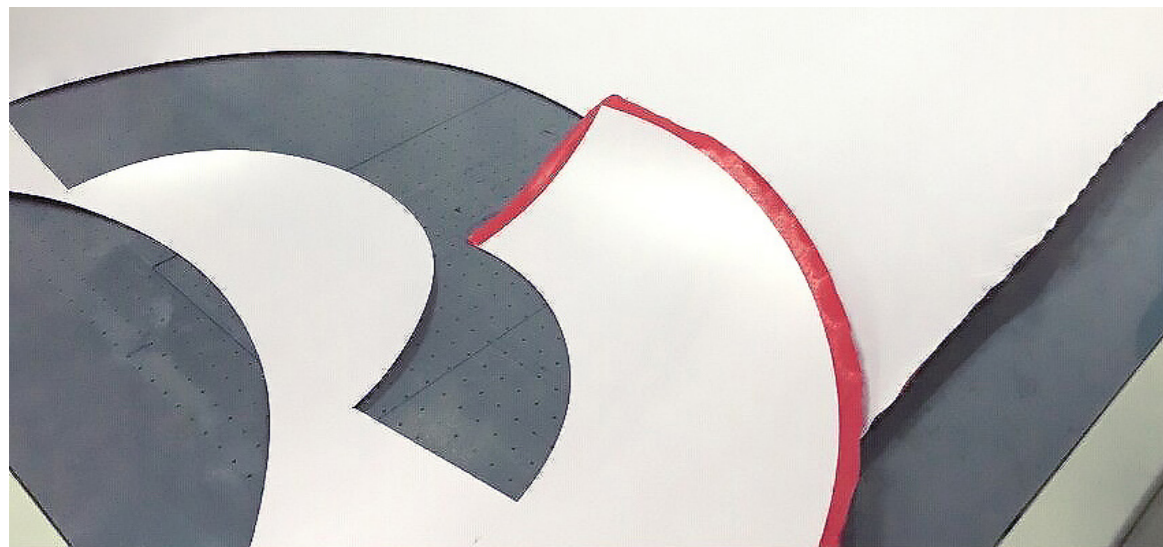
Plastic waste within the lampshade industry

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Waste

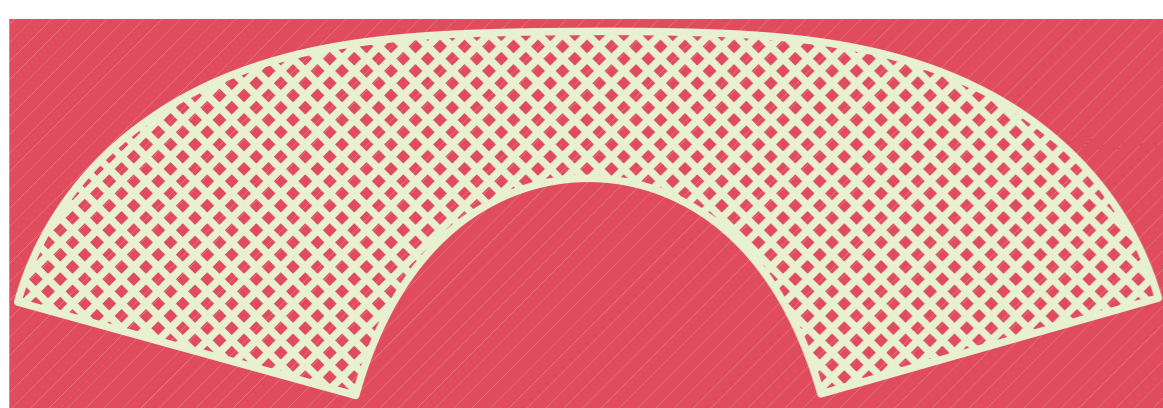
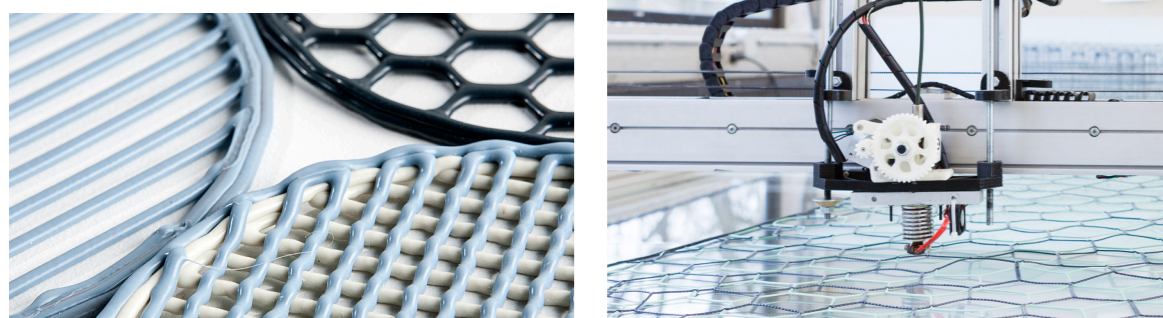
The actual fabrication process within the lampshade industry produces up to 45% of plastic waste.



45% waste

3D printing

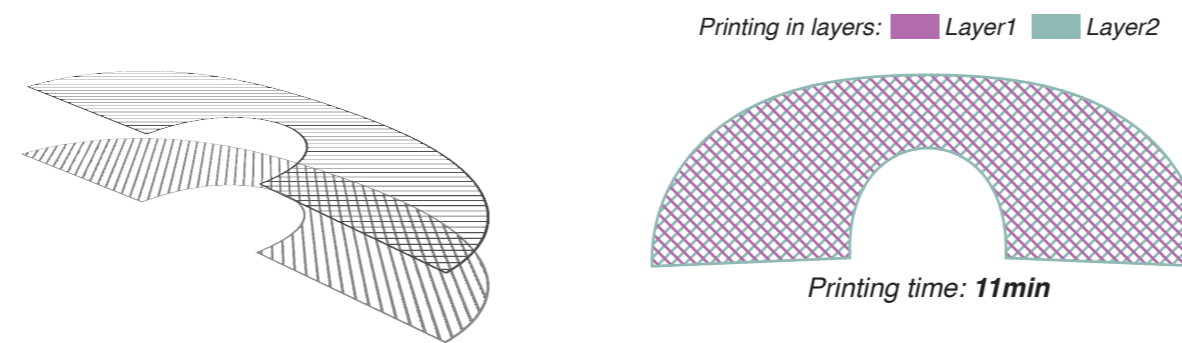
3d printing the pattern straight onto the fabric instead of cnc cutting it can save 60% of plastic. The other 40% is replaced by a sustainable one (biodegradable Algae/PLA).



60% saved area

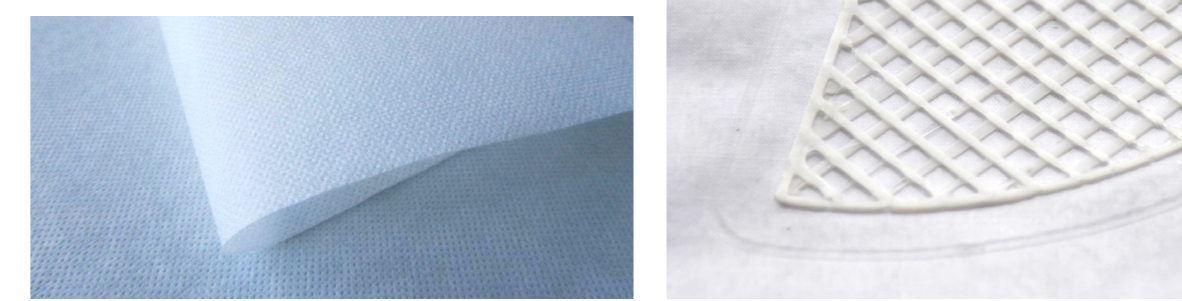
Digital process

CAD file system to configure the printer's path in order to reduce printing time.




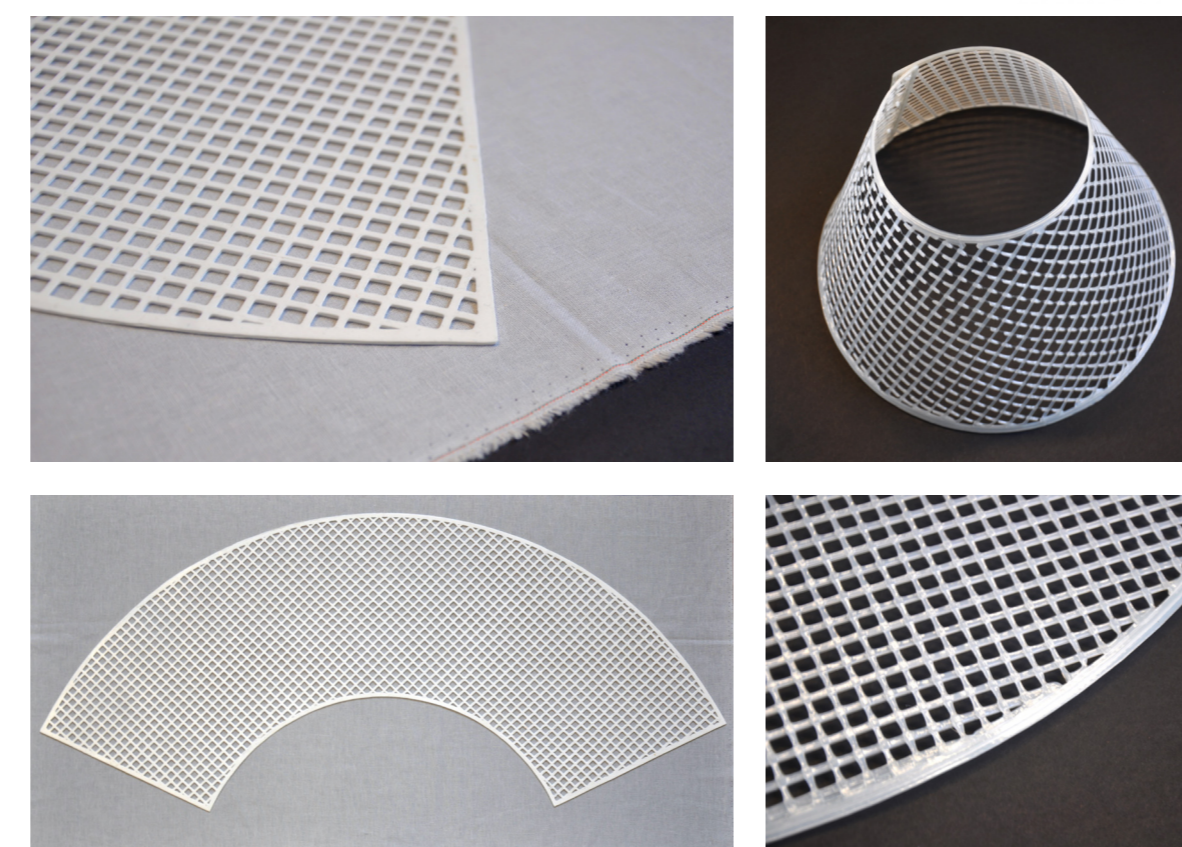
3D printing on fabric

The fabric is laminated on a thermo-adhesive backing. While printing, the heated extruded plastic coming out of the nozzle sticks to the fabric. That technique can be used with a wide range of fabrics.



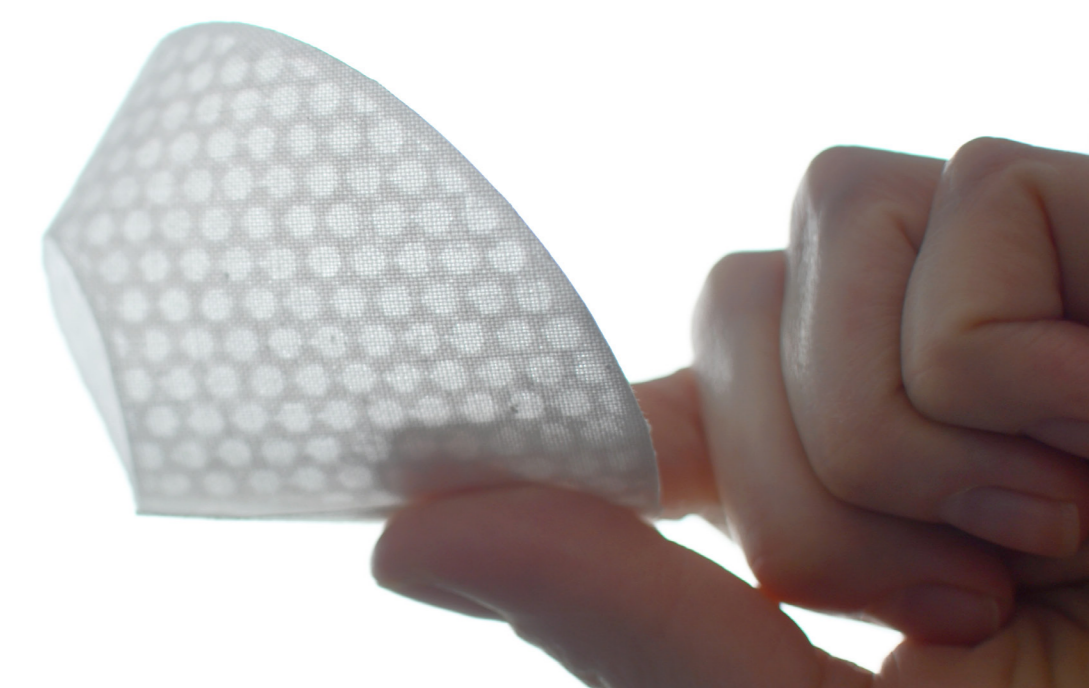
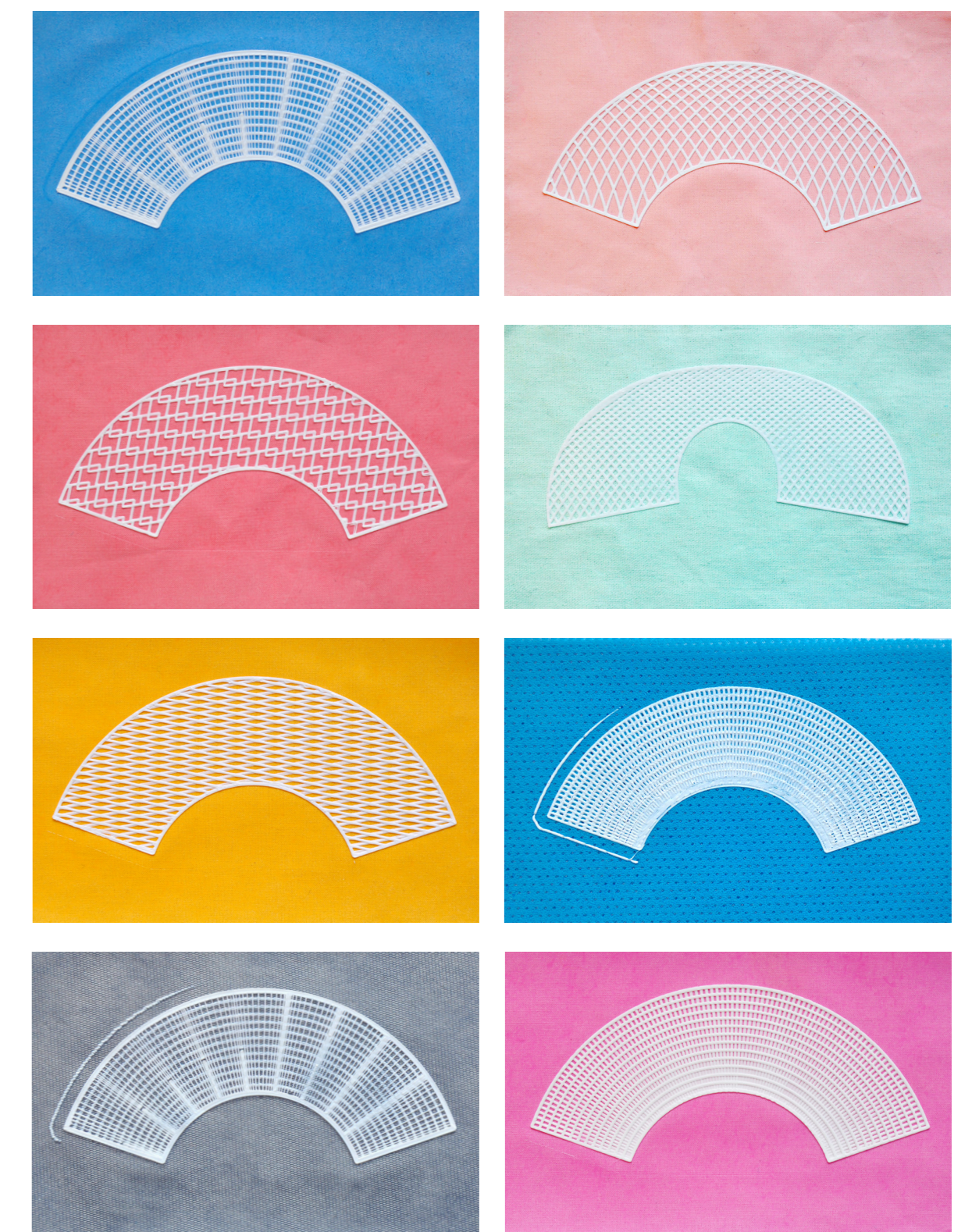
1:1 Prototypes

Scale 1:1 prototypes made with a robot-based 3d Printer. 



Patterns

Scaled 3D printed meshes on various fabrics using a makerbot printer.



This ongoing research is based on developing a new way of producing lampshades by 3D printing recyclable PLA straight onto fabric in order to reduce plastic waste.

From one-off to large batch, the production of lampshades involves a significant amount of plastic waste. Usually, a large roll of PVC adhesive backing is cut with a CNC machine in order to obtain any desired flat pattern. It results of a substantial waste of plastic off-cuts that are not reusable or recyclable.

The research is based on developing a way to tackle that issue and reconsider the production process in an eco-friendly perspective.

The principle is to 3D print the digital pattern straight onto the fabric instead of using a CNC cutting machine. The main benefit is that 55% of plastic can be saved and the 45% replaced by a sustainable one (biodegradable Algae/PLA). The fabric is laminated with a thermo-adhesive backing and, while printing, the heated extruded plastic sticks to the fabric.

The ongoing work exhibited during the last Dutch Design week consists of test samples (scaled and 1:1 size) showing the various techniques that could lead to the development of a large-scale 3D printer (approx. 120cmx120cm) specially tailored for the lampshade industry.