

3DTY Demonstration 06 – Lamp shades

Design: Severi Salmirinne / REDU

Printed by: Savonia University of Applied Sciences, REDU

Demonstrating different materials from Brightplus. Brightplus is a Finnish material manufacturer specialized in sustainable bio-based plastics. Brightplus Loimu C73 is a rigid bioplastic with 99.5% biobased content. It is available in both transparent and white version. Link to Brightplus website: <https://brightplus.com/bioplastics/>.

Part geometries were generated using algorithmic modeling in Rhino Grasshopper and printed in horizontal orientation.

C73 flows quite well and has a melting temperature of 178 °C. Heat dissipation of the material is somewhat slow. It is typically not a problem with single wall structures with sufficient layer time, but with thicker print geometries or short layer times, significant external cooling may be required to avoid excessive melting and layer collapse.

Material is also susceptible to warping when cooling down during the printing process in typical industrial hall conditions without chamber. When printing large structures, it is important to ensure good adhesion to print bed.

For these demonstration parts, warping was not an issue due the part geometry. However, because the geometry was rather small (= short layer time), external cooling was required, as well as the use of variable print speed to keep the interlayer temperature in suitable range.

Print info: Panel

Material: Brightplus Loimu C73M1 (Transparent, White)

Dimensions: 50 x 50 x 500

Weight: 2 kg

Print time: 2 h min

Software: Rhino Grasshopper

Extruder: CEAD robotextruder

Robot: KUKA KR-120 R2700

Nozzle size: 3 mm

Layer height: 2 mm

Wall thickness: 4 mm

Print speed: 15-25 mm / sec

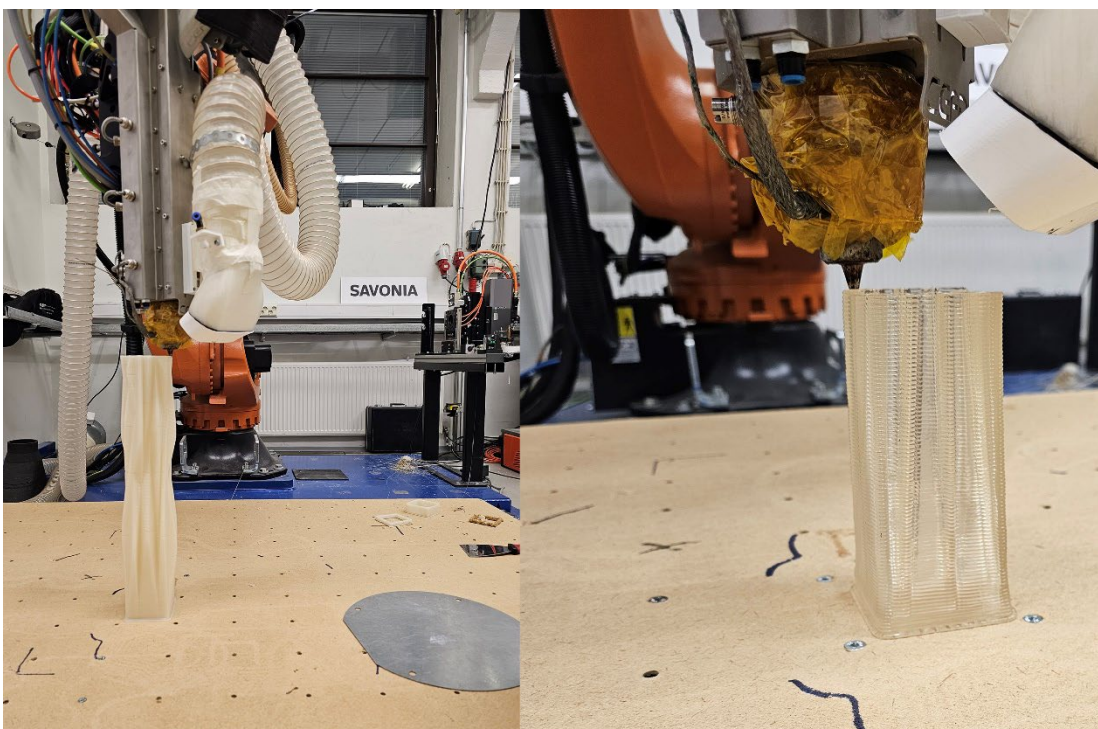


Figure 1. Parts were printed in horizontal orientation with variable printing speed.