

Project acronym: WOOL2LOOP  
Full project title: Mineral wool waste back to loop with advanced sorting, pre-treatment, and alkali activation  
Grant Agreement no: 821000  
Call / Topic: H2020 CE-SC5-07-2018-2019-2020 Raw materials innovation for the circular economy: sustainable processing, reuse, recycling and recovery schemes

### D 5.7 Online 3D printing platform

Version: 1.0  
Update: /  
Due date of deliverable: 31 July 2021  
Actual submission date: 03.09.2021  
Lead Partner of the deliverable: Zavod 404  
  
Start date of project: 1 June 2019  
Duration: 42 months  
Coordinator: Saint-Gobain Finland Oy

Project funded by the Horizon 2020 Programme		
Dissemination level		
PU	Public	X
CO	Confidential, only for members of the consortium (including the Commission Services)	

### **D5.7 Online 3D printing platform**

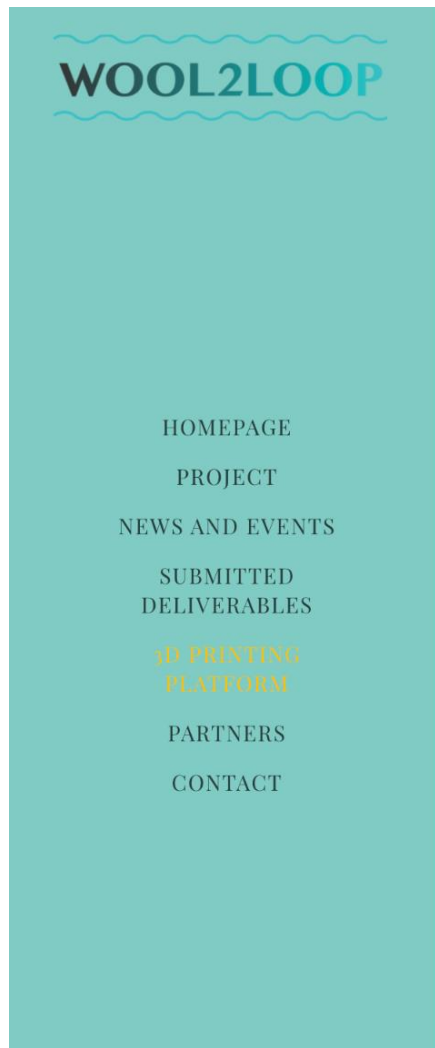
Online 3D printing platform is used as an outreach tool in order to increase awareness of the 3D printing possibilities of geopolymers. Users can either choose between three preloaded models (acoustic panel, doric column or benchy) or they can upload their own 3D models. Visualization tool enables preview of the uploaded design in two different modes (solid and x-ray) and allows users to rotate and inspect details of the selected design. Instantly after the upload smart analyzer returns information about the model, such as total volume, mass and dimensions of the printed material and an estimated time for 3D printing. These details are calculated based on material properties of different mixes, which can be also selected by users after the upload.

If users want to learn more about the possibilities of 3D printing, they can contact members of the WOOL2LOOP consortium who are involved in the 3D printing process through the form at the bottom of the web page. They can select which partner they would like to contact with an inquiry or a question. With the e-mail, a 3D model uploaded by the user is also submitted to the partner and becomes accessible through a private link.

Platform is developed as a headless application, with back-end separated from front-end, for providing a reliable and modern web solution. Backend is built using Go language and is responsible for providing all technological functionalities of the platform. 3D models are instantly submitted to the database, where the algorithms process each uploaded file (stl model) and calculate desired data, based on properties of material mix. Front-end (built with React and other libraries) then access to this data using API protocols and display it in a web application integrated to a WOOL2LOOP website.

The platform has been created and published at <https://www.wool2loop.eu/en/3d-printing/>

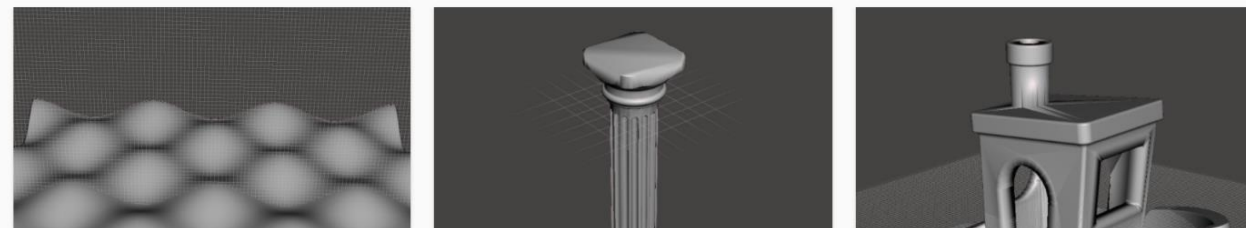
SCREENSHOTS OF THE PLATFORM:




### 3D printing

3D printing is one of the product demonstration areas within the WOOL2LOOP project. Project partners are designing and testing the printability of different geopolymer mixtures which contain reclaimed insulation materials from construction sites. The material is first separated from other waste and then milled. With proper mixing ratios and the adaptation of the printing technology new geometries can be manufactured that otherwise could not be made with traditional techniques.

#### Step 1: Select preloaded 3D models or upload your own





HOMEPAGE  
PROJECT  
NEWS AND EVENTS  
SUBMITTED DELIVERABLES  
3D PRINTING PLATFORM  
PARTNERS  
CONTACT

### Step 2: Select object material

MIX 1 - 50% STONE WOOL, 50% GLASS WOOL

MIX 2 - 25% STONE WOOL, 75% GLASS WOOL

MIX 3 - 75% STONE WOOL, 25% GLASS WOOL

FILE NAME: Doric column

VOLUME: 121.57 L

MASS: 218.82 kg

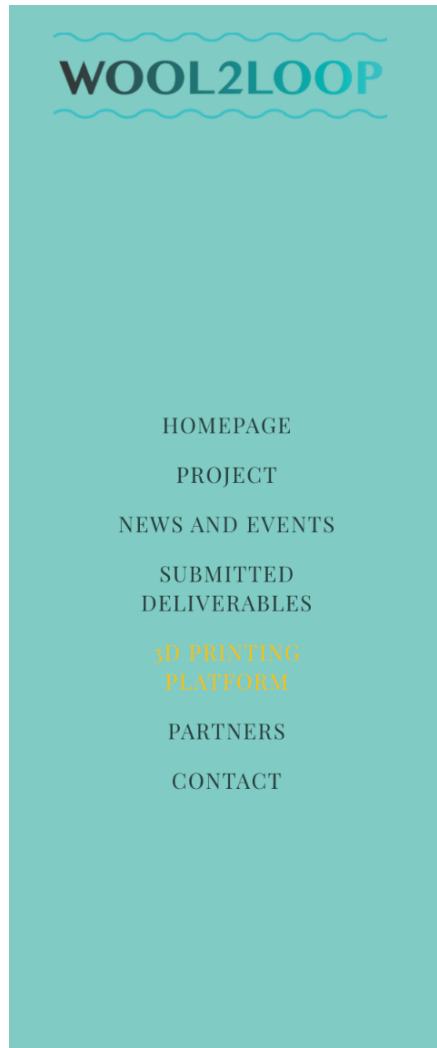
PRINT TIME: 243.13 h

DIMENSIONS: 194.56 cm x 41.66 cm x 41.66 cm

SOLID

X-RAY





## Partners

**XtreeE<sup>®</sup>**  
The large-scale 3<sup>d</sup>

### XTREEE

Xtreee is a platform that enables developers, designers, architects, engineers, construction companies and manufacturers to design and produce optimized structures that suits its advanced large-scale 3D printing technology.

  
**TU Delft**

### TU DELFT

The Microlab at TUDELFT is a fundamental research lab in which the projects have strong links with experimenting & modelling. Cement-based systems (e.g. concrete) is our primary area of research. Co-operation in research on other building materials and production methods such as 3D printing can be discussed.



### Zavod 404

A private research facility dedicated to design, construct and evaluate 3D printing systems for various areas of implementation. We specialize in development of additive deposition machinery for the laboratory and small scale production.

You can submit your 3D model to the selected partner and make an inquiry

Recipient company

XTREEE

