

Circular MakerLab SÕÕR

SÕÕR Circular MakerLab is a working platform for testing and applying circular material practices through structured workshop methodologies and open lab use by model: EDUCATION - EXPERIMENTATION - ACCESS.

The project has developed and implemented repeatable formats such as:

- 3D Clay Printing as a Circular Prototyping Method
- Monthly Makerlab
- Biomaterial Library
- Bio-material Driven Workshop: Navigating in Change
- Public Co-creation sessions
- Exhibitions

3D Clay Printing as a Circular Prototyping Method

Workshop for Educators and Designers

Participants were introduced to 3D clay printing as a teaching tool that combines science, design, and sustainability. They learnt how to integrate circular material thinking into curricula and design practice, using accessible tools and hands-on exercises. The method strengthened their capacity to guide students in connecting digital technologies with environmental awareness. This brought SÕÕR together with Pallas University of Applied Sciences and we co-created two courses together.



Workshop Method for Students

Students from Pallas University of Applied Sciences engaged in a prototyping cycle: conceptualising cylinder as an artefact, preparing material mixtures, printing and influencing the outcome from personal design perspective, and combining it into future group exhibition. This process built practical and analytical skills while developing critical thinking about material use, waste, and distributed production systems. It also increased confidence, as participants move from concept to tangible outcome within a short timeframe.



Workshop Method for Makers

For makers, the method focused on experimentation and application of 3D printing method. Participants test different material compositions, printing parameters, and structural solutions, developing prototypes that can evolve into real products or installations. The emphasis is on iteration, problem-solving, and adapting digital tools to circular materials.



Workshop (February 2026) on 3D clay printed flower pots.

Workshop Method for Teambuilding

In collaborative settings, 3D clay printing is used as a tool for collective problem-solving. Participants work in teams to design and produce shared objects or modular systems. The process fosters communication, creativity, and a sense of ownership, while introducing circular principles in an accessible and engaging way.



Conference organisers from Tartu City learning about 3D printing as workshop method and co-creating a design for 3D printed piece together (December 2025).

Monthly Makerlabs

Monthly MakerLab is a community-based circular experimentation format where participants regularly come together to explore, test, and develop material solutions using local resources. Operating as a membership-based model, it creates continuity and commitment, allowing participants to move beyond one-time workshops into ongoing practice and iterative learning.



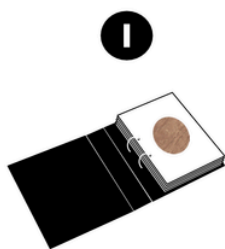
Each session focuses on a specific material or technique—such as 3D printing with eggshell-based mixtures or developing composites from used coffee grounds collected from local restaurants. Participants work hands-on with these materials, testing recipes, adjusting parameters, and documenting results.

Biomaterial Library

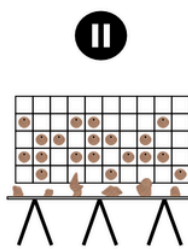
The Biomaterial Library is an open knowledge system that collects, documents, and shares material recipes, samples, and processes developed through the SÕÕR MakerLab. Combining a physical archive with a digital platform, it enables designers, students, and the wider community to access, replicate, and further develop circular material solutions.

The library is continuously expanded through workshops, lab experiments, and academic collaborations. Also, biodesign specific terminology in Estonian language is developed through this work, which is valuable culturally.

MATERJALIDE RAAMATUKOGU



RETSEPTIRAAMAT
ehk "EMARAAMAT"



**FÜÜSILINE
VÄLJAPANEK**



**DIGITAALNE
ARHIIV**



RETSEPT / RECIPE

Kuupäev / Date

Töö nimetus / Work Title

Ees- ja perekonnanimi / Full name

Kontakt (e-mail ja telefon) / Contact

Koostisosad + kogused / Ingredients + quantities

Kogus / Quantity Koostisosa / Ingredient Tüüp / Type

Vahendid / Equipment





Currently, students from Pallas University of Applied Sciences are developing new materials and speculative applications as part of their coursework, contributing directly to the library. Selected works will be presented as installations at the I Land Sound Festival, bringing experimental biomaterials into a public and cultural context.

Bio-material Driven Workshop: Navigating in Change

Navigating in Change is a material-driven method that approaches uncertainty not as a problem to solve, but as a condition to work with. Instead of starting from fixed outcomes, the process evolves through continuous interaction with materials—observing their behaviors, limits, and potentials as guides for decision-making.

By embracing iteration, unpredictability, and sensory feedback, the method shifts design from control to collaboration with matter. It enables new pathways to emerge through doing, where each material response informs the next step, allowing change to become a productive force rather than a constraint.

Rooted in a circular understanding of change, this practice is not driven by instrumental goals but by values. It prioritizes asking why over how, encouraging deeper reflection on purpose, meaning, and relationships—rather than focusing solely on efficiency or outcomes.



The method was implemented through a workshop with Estonian Academy of Arts Circular Design students, providing insight into how speculative approaches can be integrated into their practice and how material exploration can guide critical and future-oriented design thinking.

Co-creation Sessions and Open Doors

The co-creation sessions are designed as open, hands-on experiences that introduce circular thinking through direct engagement with materials and processes.

In August 2025, during the Aparaaditehas Festival, SÕÕR organised a series of nature-driven workshops for the public where participants explored plant-based dyeing using locally sourced vegetation and repurposed textiles. Participants took part, transforming discarded fabrics into naturally dyed pieces while learning about material cycles, waste reduction, and alternative production methods. These sessions provided an accessible entry point into circular design, fostering awareness, creativity, and a sense of connection to both materials and place.



In addition, SÕÕR had regularly hosted Open Doors events during Aparaaditehas' Gallery Nights, where visitors were introduced to the lab's most recent developments—from new biomaterials and prototypes to ongoing experiments. These events create transparency, invite dialogue, and allow a wider audience to engage with circular practices in an informal and approachable way.

Exhibitions

SÕÕR also acts as a space for conversations and exhibitions that address circularity from cultural, material, and societal perspectives. Through exhibitions, public discussions, and open events, the lab creates a platform where ideas around sustainability, material use, and alternative production models can be explored, shared, and critically reflected upon.



“Aeglane piste” (“Slow Stitch”) was a participatory social sculpture exhibited in SÕÕR in April 2025 that invited visitors to slow down and reflect on the culture of speed through hands-on embroidery. The work evolved through co-creation, as participants contributed to a shared textile using repurposed materials and tools.

Lab overview

The MakerLab (address: Kastani 50, Tartu) is available for both individual and group use through a flexible access model. Individuals can rent the space to independently develop materials, prototypes, or research projects, while groups - such as teams, organisations, or educational cohorts - can use the lab for workshops, collaborative sessions, or tailored programmes. This open access ensures that the infrastructure supports both focused personal work and collective experimentation.

Lab Kitchen (Material Processing & Analysis):

- Precision scale, thermometer, microscope, and various measuring tools
- Magnetic stirrer and test tubes for controlled material mixing
- Shredder, kiln, and heat press for processing and transforming materials
- Containers and mixing tools in various sizes for experimentation

Prototyping Equipment:

- Jetclay 3D printers adapted for bio-based materials (e.g. clay, mycelium, and experimental mixtures)
- 3D scanner for capturing and developing forms

Production & Fabrication Tools:

- Temperature-controlled drying chamber (darkroom/tent)
- Soft material processing tools (sewing machine, textile tools, pliers, scissors, awls, cutting mats, etc.)
- Hand and power tools (saw, drill, hammer, etc.)

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Materials:

- Biopolymers & Natural Binders (cellulose-based materials, lignin, alginates and agar)
- Organic & Bio-based Resources (starch and lignocellulosic sugars, mycelium cultures, plant-based and biodegradable raw materials)
- Additives & Processing Agents (plasticisers, surfactants, acids and household additives)
- Mineral & Structural Components (calcium carbonate, gypsum, clay)