Open Call 1

-

Innovate with Recycled Reinforced Polymers: Open Call for Designers and Artists

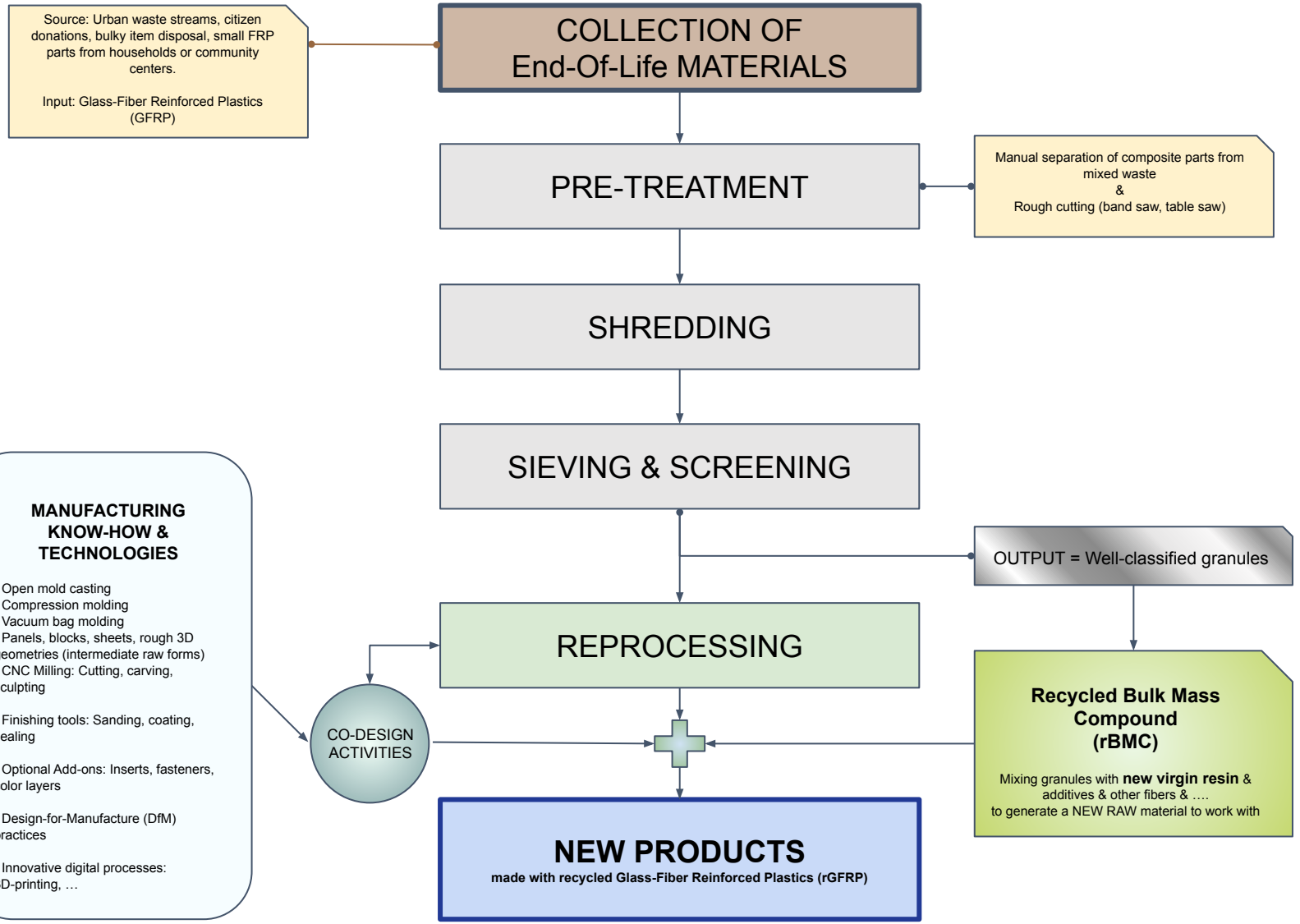
Annex A

-

Design Process & Products

Visual examples and suggestions

PROCESS

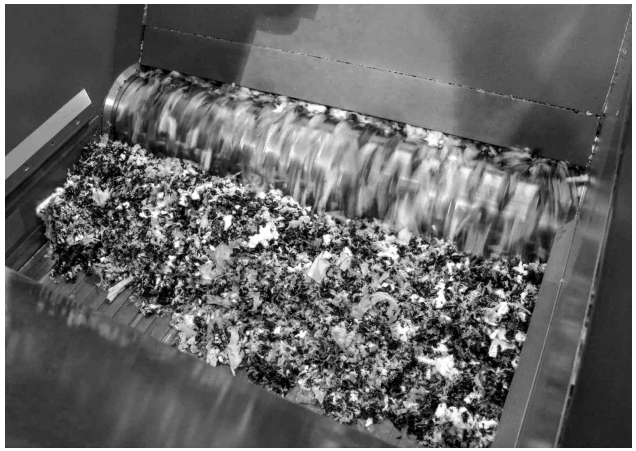

Source: Urban waste streams, citizen donations, bulky item disposal, small FRP parts from households or community centers.
Input: Glass-Fiber Reinforced Plastics (GFRP)
COLLECTION OF End-Of-Life MATERIALS
PRE-TREATMENT
Manual separation of composite parts from mixed waste
&
Rough cutting (band saw, table saw)
SHREDDING
SIEVING & SCREENING
OUTPUT = Well-classified granules
MANUFACTURING KNOW-HOW & TECHNOLOGIES
- Open mold casting
- Compression molding
- Vacuum bag molding
- Panels, blocks, sheets, rough 3D geometries (intermediate raw forms)
- CNC Milling: Cutting, carving, sculpting
- Finishing tools: Sanding, coating, sealing
- Optional Add-ons: Inserts, fasteners, color layers
- Design-for-Manufacture (DfM) practices
- Innovative digital processes: 3D-printing, …
REPROCESSING
CO-DESIGN ACTIVITIES
Recycled Bulk Mass Compound (rBMC)
Mixing granules with new virgin resin & additives & other fibers & ….
to generate a NEW RAW material to work with
NEW PRODUCTS
made with recycled Glass-Fiber Reinforced Plastics (rGFRP)

End-Of-Life MATERIALS TO BE REUSED

Examples:

- Sailboats and motorboats
- Bathtubs and showers
- Water tanks
- Wind turbine blades
- Sports equipment (fishing rods, bows, skis)
- Protective helmets (motorcycle, bicycle, construction)
- Water park slides
- Outdoor furniture
- Components of medical equipment (operating tables, housings)
- Decorative statues and sculptures
- Rock wool panels

A NEW MATERIAL



Mixing together the grinded old material with new virgin resin, a new Bulk Mass Compound is created!

Research, experimentation and different trials are encouraged!

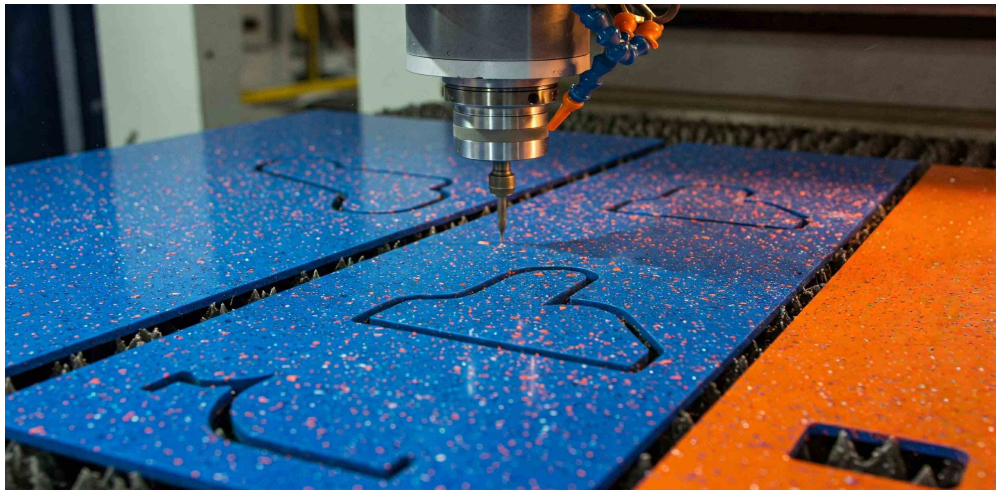
You can experiment with:

- **different grinded granulate sizes**
- **using different virgin resin natures (polyester, vinyl ester, epoxy, phenolic,...)**
- **adding pigments**
- **mixing with fresh glass fiber / beads**
- **adding additives (antimicrobial, UV-resistant, Fire-retardant, ...)**
- **adding other filler materials (Elastomeric Particles for flexibility, Thermally Conductive Ceramic, Natural Fibers or Powders, Bio-based Mineral Fillers such as eggshell powder and seashell powder, ...)**

Intermediate Goods - sheets, blocks, simple shapes

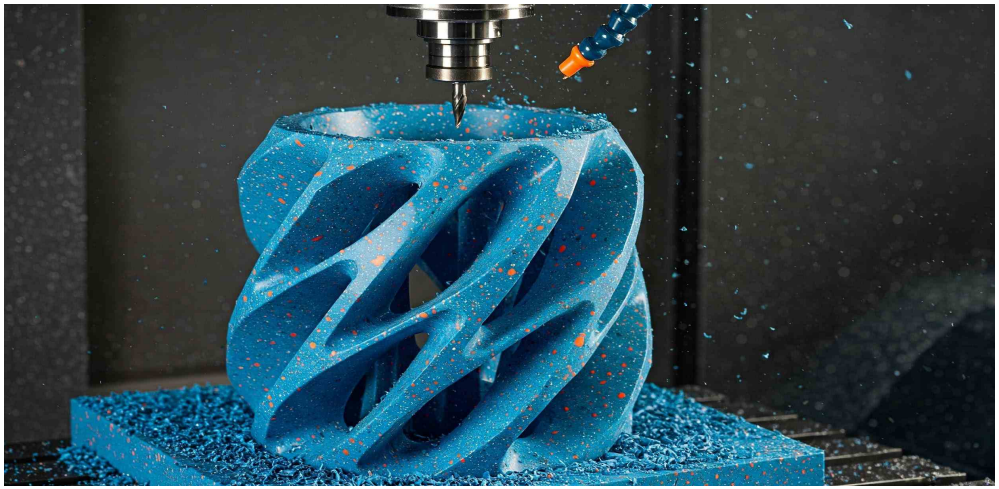
These intermediate products can be used as material supply and semi-finished products for a second transformation stage.

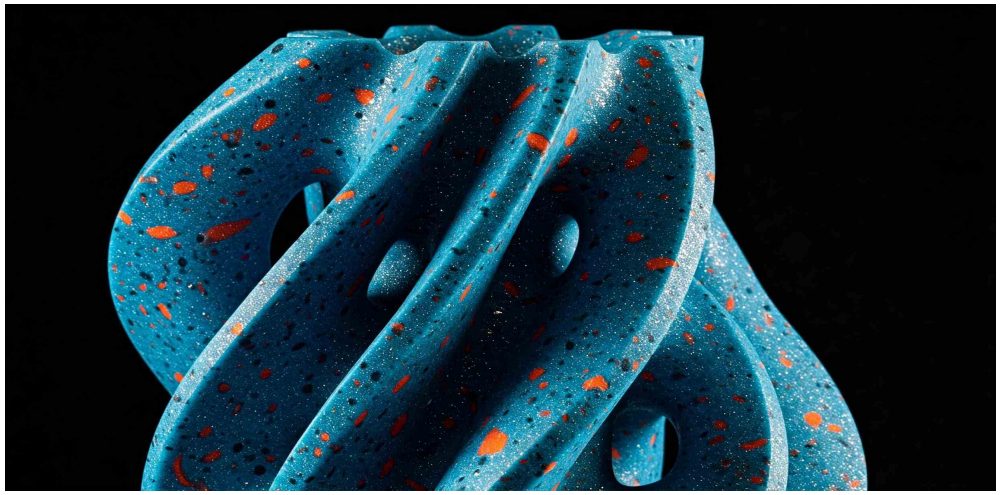
Finished Goods - Sheets additional processing

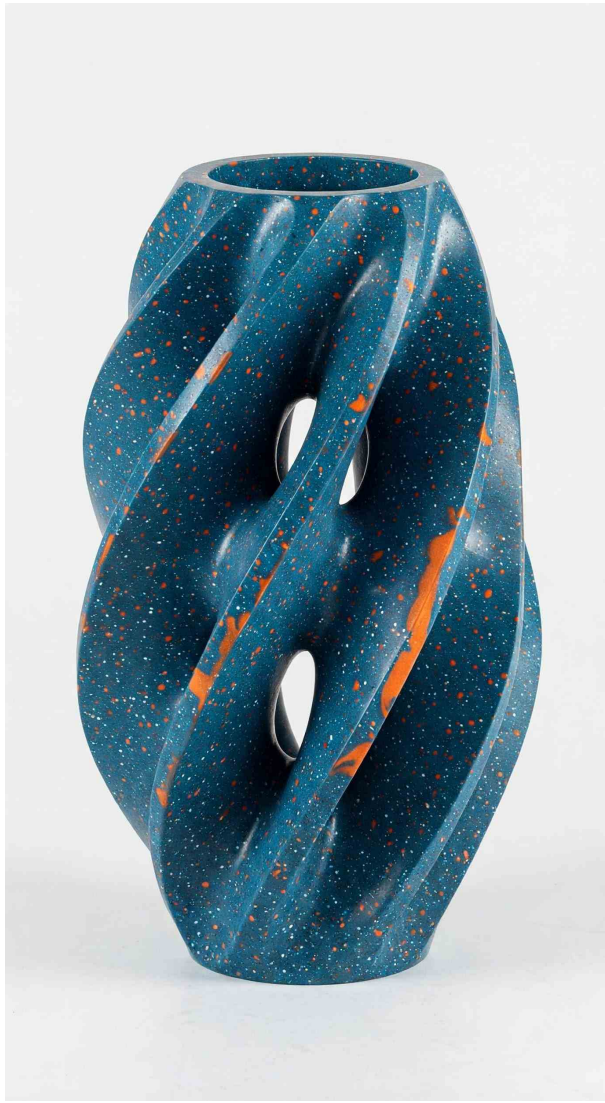


Planar sheets are cut by hand with power tools and with the CNC router; these separate pieces will later be assembled into the desired object.

Finished Goods - Blocks additional processing





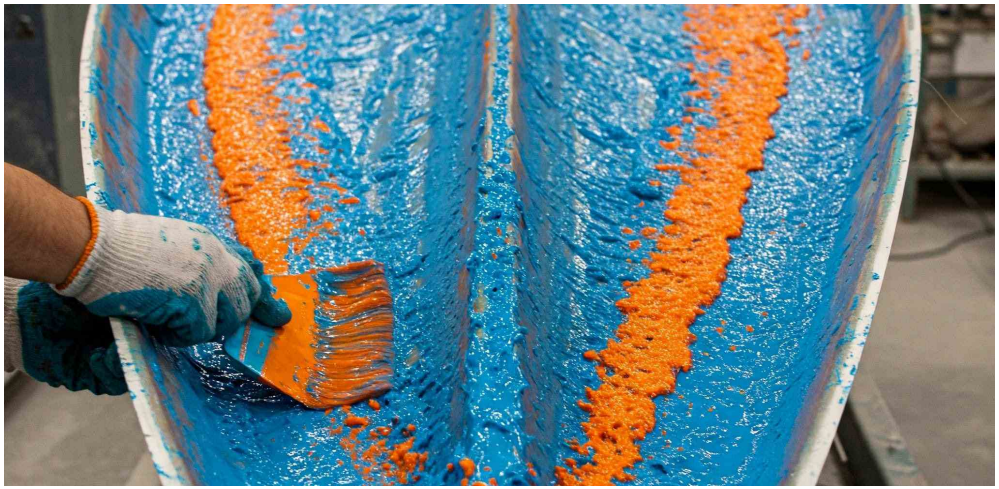


Blocks of completely cured material are milled with the help of the 3+ axis CNC router to manufacture complex geometries.

Finished Goods - Compression Moulding of rBMC

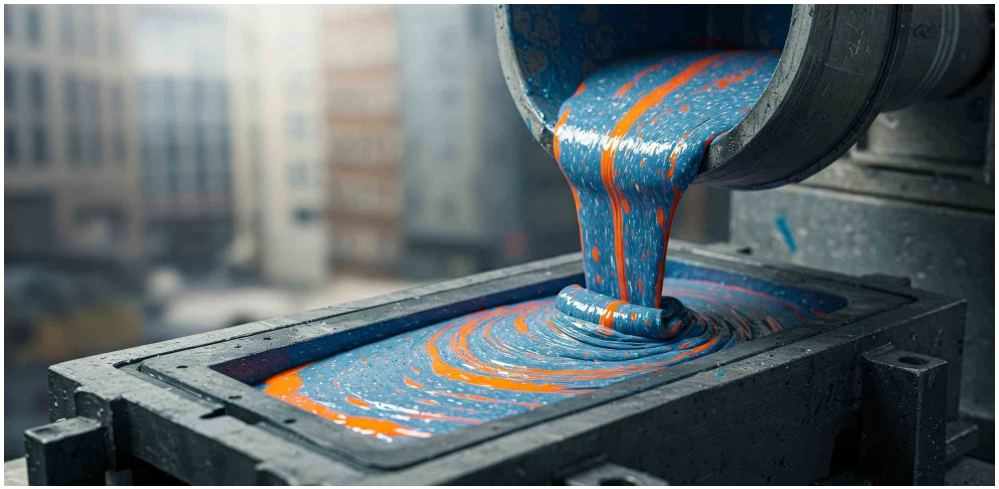
Example: a custom designed mould, manufactured with 3D-printing technologies and used to accommodate rBMC into it and give life to the digital design that was conceived from the beginning.

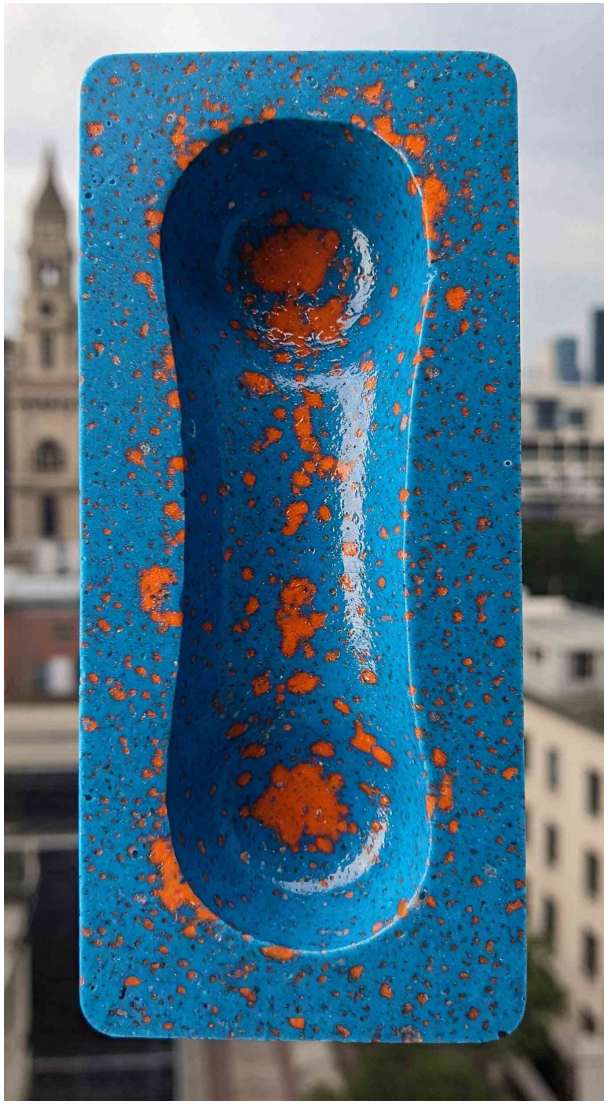
Finished Goods - Layup of rBMC & Vacuum Forming



Uncured material paste is manually laid up on top of new fiberglass sheet placed inside a mould; vacuum bagging is then used to properly cure the resin and rBMC to give life to a new high-performance object.

Finished Goods - Casting of rBMC

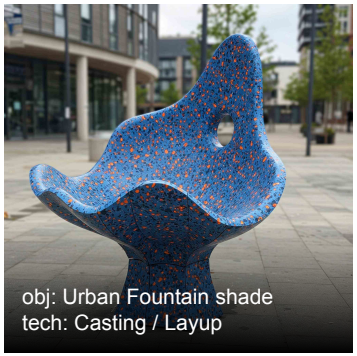


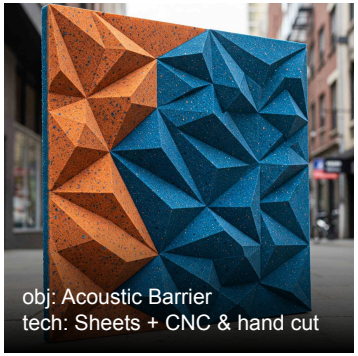


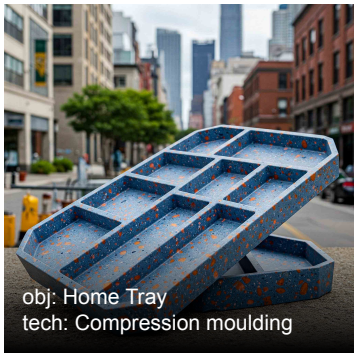
Uncured material paste is poured inside a custom designed and manufactured mould; later on, the curing process is perfectioned and controlled inside the curing oven adjusting pressure and temperature.

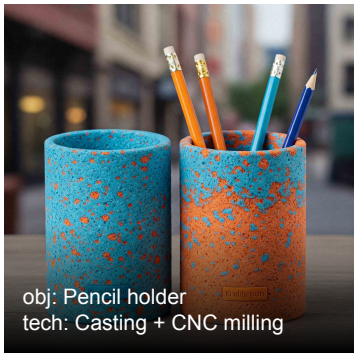
Objects Examples that can be manufactured with rGFRP

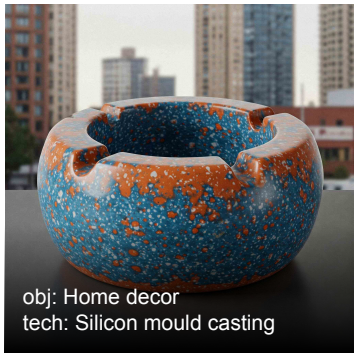

obj: Urban Tree Vases
tech: Casting / CNC milling

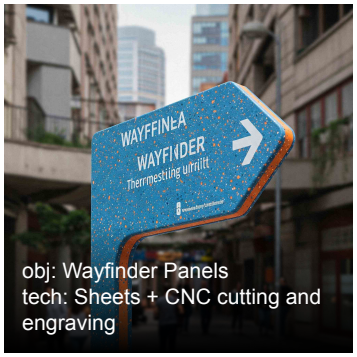

obj: Urban Fountain shade
tech: Casting / Layup


obj: Acoustic Barrier
tech: Sheets + CNC & hand cut


obj: Home Tray
tech: Compression moulding

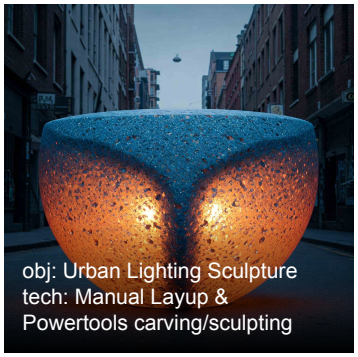

obj: Pencil holder
tech: Casting + CNC milling

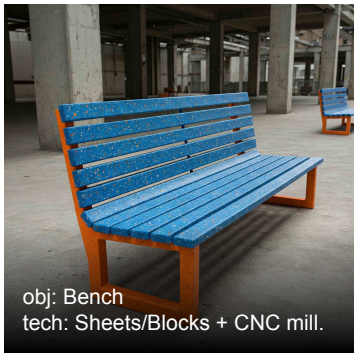

obj: Home decor
tech: Silicon mould casting



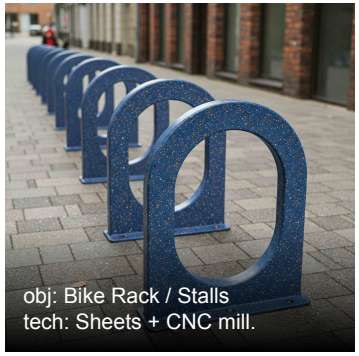
obj: Wayfinder Panels
tech: Sheets + CNC cutting and engraving


obj: Traffic Bollard / Sculpture
tech: Casting & CNC milling

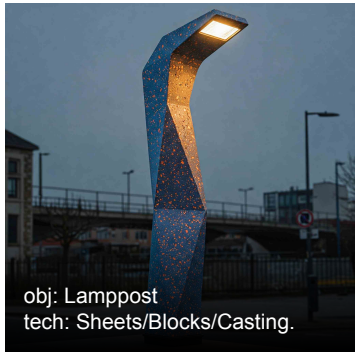

obj: Urban Lighting Sculpture
tech: Manual Layup & Powertools carving/sculpting

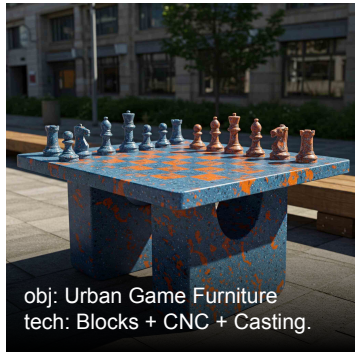

obj: Bench
tech: Sheets/Blocks + CNC mill.


obj: Litter boxes
tech: Sheet + CNC + Vacuum forming


obj: Bike Rack / Stalls
tech: Sheets + CNC mill.


obj: Organizer / Display
tech: Sheets/Blocks + CNC mill.


obj: Lamppost
tech: Sheets/Blocks/Casting.


obj: Urban Game Furniture
tech: Blocks + CNC + Casting.

General Framework

Project Scope, Expectations, and Production “boundaries”

Projects submitted under the YouRban Open Calls are expected to present a comprehensive vision, integrating creative, technical, and sustainability aspects with the ambition to serve as exemplary, scalable models for local, circular, and sustainable production. Proposals should clearly demonstrate how the designer’s or artist’s conceptual vision is inherently aligned with the objectives of the YouRban initiative—namely, the promotion of regenerative design and the upcycling of reinforced polymers within urban contexts (namely: Milan) and/or urban/domestic scales (namely: Barcelona).

The outcomes developed during the 8-months residency period and 10-days Live Pilots events will serve as proof-of-concept demonstrators. These will reflect both the original ideas submitted at the application stage and their evolution throughout the 8-month co-creation and prototyping process.

Please note that the YouRban Consortium does **not require or expect full-scale or serial production as part of the residency**. Furthermore, the materials and resources provided through the project and by FabLabs / Urban Factories are intended solely to support pilot activities and artistic residencies prototyping/production activities. While participants will have access to recycled material and technical infrastructure, the scope of physical production will be determined in alignment with each project's specific characteristics and feasibility.

The production volume of **final outputs is to be considered as limited edition or prototype-level**, to be defined collaboratively with the assigned Urban Factory plus the whole YouRban partners consortium and based on available resources, technical constraints, and creative intent.