

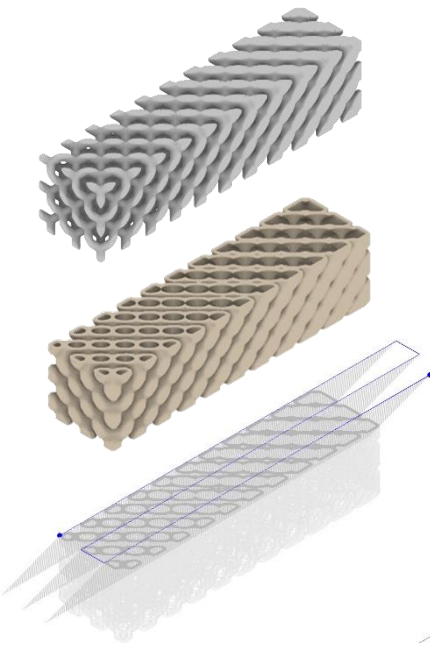
Zero-waste production of lightweight concrete structures using water-soluble sand formworks



In the framework of the Research Subproject 12 of the DFG-funded Priority program SPP 2187: Adaptive modularized constructions made in flux, the Institute for Lightweight Structures and Conceptual Design (ILEK) together with the Institute for Control Engineering (ISW) have developed a zero-waste production technology for lightweight concrete structures using water-soluble sand formworks. During the project, the prototypical powder-bed-based production unit was designed and built on campus Vaihingen.

Current research foci are:

- Life-cycle assessment of the developed production method in comparison to alternative digital production technologies for lightweight concrete structures
- Improvement of the robustness of the production process, including trajectory planning
- Production of formwork and concrete prototypes
- Testing of produced components



Work tasks:

- Literature and normative study of the Life-cycle assessment measurement criteria
- Investigation on resource and energy consumption of the process, gathering of process data
- Life-cycle assessment of the process
- Production parameter studies
- Supervision of the machine while operation
- Preparation of formwork and casting of concrete



Skills required:

- Interest in additive manufacturing in construction
- Basic knowledge in digital design (Rhino/ Grasshopper) is beneficial
- Basic knowledge of python scripting is beneficial
- Very good English or German skills
- Independent work

If you are interested, please apply to:

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