

Licensing Opportunity

Ultrathin formwork for reinforced concrete structures

Summary

A thin layered shell acts as a formwork for reinforced concrete structures. The geometric freedom is significantly expanded while structural steel reinforcements can easily be incorporated.

Background

Formworks for concrete structures are usually bulky as they have to support the pressure from the slowly hardening concrete. Their price also increases very quickly when customized structures are required.

Invention

The new formwork minimizes material waste and allows a maximum of geometric freedom with contour detailed with a millimeter scale resolution. The formwork is printed layer by layer, while simultaneously casting a fast hardening concrete into the printed shell. The rates of shell printing, concrete casting and hardening are synchronized to avoid formwork failure due to hydrostatic pressure from the concrete. The concrete hardening also stabilizes the thin shell against buckling instability. This synergy and its digital control are at the heart of this technology. The use of recyclable shells can further minimize material waste and cost.

Features & Benefits

- Structurally optimized concrete elements
- Cost saving as material is only placed where needed
- Fast vertical building rate

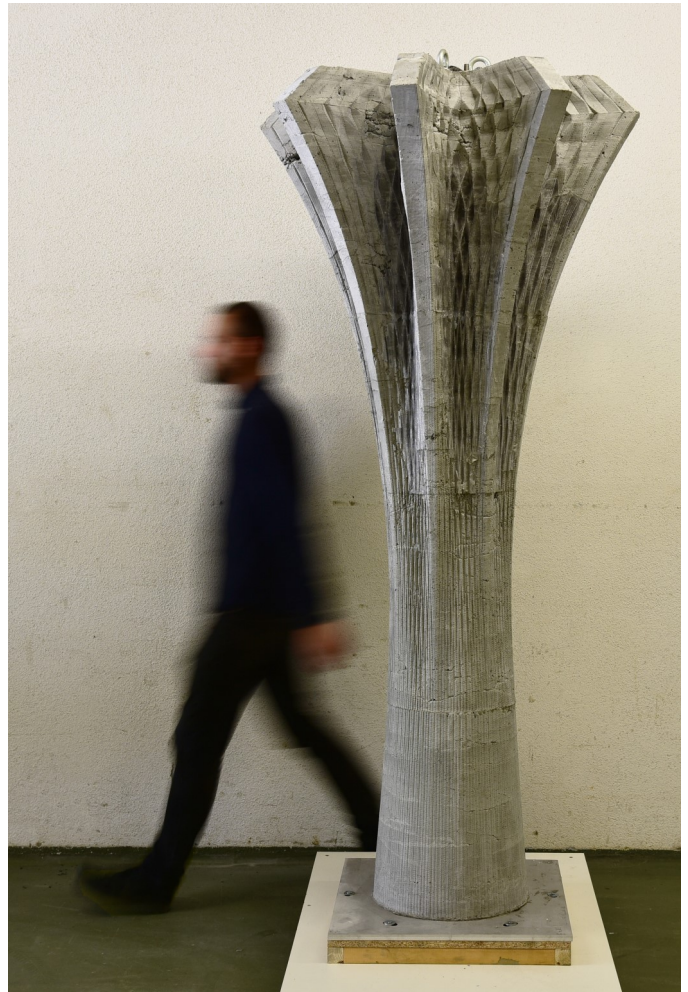
Fields of Application

- Freeform concrete structures
- Load-bearing, reinforced columns

Patent Status

- Patent pending, EP3501769 (A1)

Technology Readiness Level



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Reference: 2017-018
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