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Growing Architecture, Technical Product Harvesting of Near Net Shape Building Components

Authors : Franziska Moser, Martin Trautz, Anna-Lena Beger, Manuel Löwer, Jörg Feldhusen, Jürgen Prell, Alexandra Wormit, Björn Usadel, Christoph Kämpfer, Thomas-Benjamin Seiler, Henner Hollert

Abstract : The demand for bio-based materials and components in architecture has increased in recent years due to society's heightened environmental awareness. Nowadays, most components are being developed via a substitution approach, which aims at replacing conventional components with natural alternatives who are then being processed, shaped and manufactured to fit the desired application. This contribution introduces a novel approach to the development of bio-based products that decreases resource consumption and increases recyclability. In this approach, natural organisms like plants or trees are not being used in a processed form, but grow into a near net shape before then being harvested and utilized as building components. By minimizing the conventional production steps, the amount of resources used in manufacturing decreases whereas the recyclability increases. This paper presents the approach of technical product harvesting, explains the theoretical basis as well as the matching process of product requirements and biological properties, and shows first results of the growth manipulation studies.

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