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Mass customization with additive manufacturing: new perspectives for multi performative building components in architecture

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Abstract

Innovative production methods and advanced manufacturing techniques slowly but certainly seem to find a way to be introduced in Architecture thanks to the progressive tools for computational design which enhance digital fabrication processes and programming. In this context Mass Customization refers to the possibility to evolve from already existing systems to the novel ones that can be personalized, without increasing their cost and causing the new technologies to emerge.

Among various manufacturing techniques, Additive Manufacturing (AM) is considered a revolutionary technology that offers a new freedom in Architecture and expands the range of possibilities for design, production and performances of novel architectural forms, construction systems and materials employed. The main advantage of Additive Manufacturing is the quasi total freedom in organizing material deposition, where the matter can be placed only where structurally needed and in that way provide interesting scenarios in the optimization of construction components and new forms of printed tectonics.

This paper will analyse an experimental case study of a 3d printed clay brick designed and manufactured with innovative technologies in order to respond to the new requirements of market and introduce new perspectives of Mass Customization with Additive Manufacturing for the design of Multi Performative Building Components.

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Keywords: Mass customization; computational design; multi performative building components; additive manufacturing.

