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Furnishing The Envelope; 3D Printed Construction Unit as Furniture

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Abstract : The paper presents the construction unit that was proposed as a result of researching and finding solutions for challenges of the traditional masonry unit. The concept of 'unit as arrangements of cells' was investigated in four categories of structure, handling and assembly, thermal characteristics and weather ability which resulted in construction unit as an independent system which shapes a part of the envelope. Comparing to the traditional wall systems in which the system is in layers, the part system is a monolithic piece by itself. Even though the overall wythe-10 inches- is less than the combined layers-14 inches- in a traditional wall system, it is still seen as a spatial component. The component as a furnishing of envelope is discussed from material application point of view. The algorithm definition of the arrangement cells crafts the relationship between cells and functionality with material. This craft is realized as the envelope furnishing. Three alternative materials in relation to furnishing the envelope are discussed for printing the construction unit; transparent plastic, opaque plastic and glass. The qualities vary in the four categories, however this paper focuses on the visual qualities of materials applied. In a diagram the qualities of the materials are compared in relation to each other.

Keywords : furnishing envelope, 3D printed construction unit, opaque plastic, transparent plastic, glass
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