

# Structural design based on performance applied to development of a lattice wind tower

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**Abstract.** This paper studies the process of parametric and algorithmic design, integrating structural analysis and design for the generation of complex geometric structures. This methodology is based on the Performative Model, where the shape is generated using performance criteria. In the approach, the development of complex structures is only possible by reversing the process of thinking to generate the form with established parameters for geometry, material and loading aspects. Thus, the structural engineer no longer only participates in the evaluation phase but also appears in the early stages, creating a process of exploration and production of common knowledge among architects and engineers. To research performance-based design, the development of a conceptual lattice for a wind tower is proposed. Thus, a system is made to generate geometries using Rhinoceros software, the Grasshopper plugin, and the VB programming language, integrated with stress analysis through the Scan & Solve plugin.

**Keywords.** Structural Design, Parametric and Algorithm Architecture, Structural Analysis, Performative Model, Lattice Wind Tower.