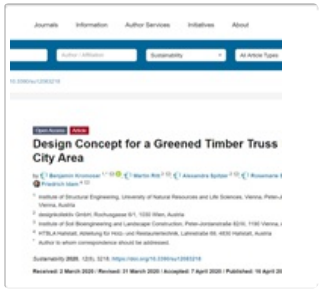

Design Concept for a Greened Timber Truss Bridge in City Area

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Summary:

Properly designed wooden truss bridges are environmentally compatible construction systems. The sharp decline in the erection of such structures in the past decades can be led back to the great effort needed for design and production. Digital parametric design and automated prefabrication approaches allow for a substantial improvement of the efficiency of design and manufacturing processes. Thus, if combined with a constructive wood protection following traditional building techniques, highly efficient sustainable structures are the result. The present paper describes the conceptual design for a wooden truss bridge drawn up for the overpass of a two-lane street crossing the university campus of one of Vienna's main universities. The concept includes the greening of the structure as a shading design element. After an introduction, two Austrian traditional wooden bridges representing a good and a bad example for constructive wood protection are presented, and a state of the art of the production of timber trusses and greening building structures is given as well. The third part consists of the explanation of the boundary conditions for the project. Subsequently, in the fourth part, the conceptual design, including the design concept, the digital parametric design, the optimization, and the automated prefabrication concept, as well as the potential greening concept are discussed, followed by a summary and outlook on future research.

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