



Development of Steel-Timber Composite System for Large Scale Construction

<https://research.thinkwood.com/en/permalink/catalogue1696>

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Year of Publication: 2016

Country of Publication: Austria

Format: Conference Paper

Material: CLT (Cross-Laminated Timber)
LVL (Laminated Veneer Lumber)

Application: Beams

Topic: Mechanical Properties
Connections

Keywords: Short-term
Ultimate Limit States
Push-Out Tests
Failure Modes
Four Point Bending Test
Strength
Stiffness

Language: English

Conference: World Conference on Timber Engineering

Research Status: Complete

Notes: August 22-25, 2016, Vienna, Austria
p. 4322-4331

Summary:

In this paper a novel and efficient structural system, that comprises steel beams and prefabricated timber slabs is developed and tested under short-term service and ultimate limit state loading conditions. In the proposed steeltimber composite (STC) system, bolt and coach screws are employed to transfer shear between steel beam and prefabricated timber slab and provide a composite connection. A series of experimental push-out tests were carried out on cross-banded LVL-Steel and CLT-Steel hybrid specimens to investigate the behaviour of different connection types. Furthermore, the load-deflection response of full-scale STC beams was captured by conducting 4-point bending tests on STC beams. The failure modes of connections and composite beams have been monitored and reported. The results illustrate advantages of using timber panels in conjunction with steel girders in terms of increasing strength and stiffness of composite beams

Online Access: Free

Resource Link

<http://hdl.handle.net/20.500.12708/172>