



Timber Trusses Made of European Beech LVL

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Author: Kobel, Peter
Frangi, Andrea
Steiger, René

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Summary:

This paper presents an experimental and analytical investigation on the application of laminated veneer lumber (LVL) made of European beech wood (*fagus sylvatica* L.) in timber truss structures. Particular focus is laid on developing improved design approaches for dowel-type connections and on promoting ductile failure behaviour, as the connections in timber trusses are generally governing the performance of the whole structure. Embedment tests were carried out in order to assess the embedment strength values for beech LVL, which are necessary to design dowel-type connections. The results showed higher values for beech LVL, as compared to estimations using existing formulas from design codes. A series of tensile connection tests showed that, using cross-layered beech LVL, ductile dowel-type connections with high load-carrying capacities can be designed, given that premature brittle failures are prevented. Lastly, tests on full truss structures confirmed that the favourable behaviour of dowel-type connections in cross-layered beech LVL can be implemented in truss systems, improving the global behaviour of the whole structural element.

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