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# Enhancing performance of timber-concrete composite floors by a dovetail splice joint

<b>Title of the dissertation</b>	Dovetail splice joint - a continuity connection for two-way timber-concrete composite plates
<b>Contents of the dissertation</b>	In modern timber construction, demand for long spans and light structures has led to floor serviceability issues. One solution is to design the floors as timber-concrete composite (TCC) structures, characterized by for example high stiffness. Recently, interest in two-way TCC plates has arisen due to potential for even higher stiffness and a larger freedom of support placement. The two-way plates can be fabricated by using cross-bonded wood panels. However, a stiff connection between timber panels is essential for effective two-way systems. In this thesis, a novel stiff connection, a dovetail splice joint, that requires no use of steel or glueing, is proposed.
	The main aims of the work were to investigate the mechanical behaviour of the new dovetail splice joint and its performance as a lateral continuity connection in two-way LVL-concrete composite floors. The research consisted of three main parts: (i) investigations of the shear behaviour of timber-concrete contacts and development of a related contact model, (ii) investigations of the behaviour of the dovetail splice joint under axial in-plane loads and (iii) investigations of the performance of two-way TCC floor plates with the dovetail splice joint. Methodologically, the work combines experiments and numerical modelling.
	The results indicate that the joint can achieve a high stiffness, making it applicable for the intended purpose. Based on the experimental and numerical results, the jointed timber panels in a TCC plate could be treated as a continuous layer.
<b>Field of the dissertation</b>	Civil Engineering
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<b>Opponent</b>	Professor Stefan Winter, Technical University of Munich, Germany
<b>Supervisor</b>	Professor Gerhard Fink, School of Engineering, Aalto University, Finland
<b>Electronic dissertation</b>	<a href="https://aaltodoc.aalto.fi/handle/123456789/114151">https://aaltodoc.aalto.fi/handle/123456789/114151</a>
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