



Effects of Changes in Moisture Content in Reinforced Glulam Beams

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Summary:

Reinforcement in glulam beams in form of screws or rods can restrict the free shrinkage or swelling of the wood material. The objective of the project presented was to evaluate the influence of such reinforcement on the magnitude of moisture induced stresses. For this purpose, experimental studies were carried out in combination with analytical considerations on the basis of the finite-element method. Taking into account the influence of relaxation processes, the results indicate that a reduction of timber moisture content of 3 - 4 % around threaded rods, positioned perpendicular to the grain, can lead to critical stresses with respect to moisture induced cracks. In addition, a substantial mutual influence of adjacent reinforcing elements has been identified. A reduction of the distance between the reinforcement thus results in a lower tolerable reduction of timber moisture content around the reinforcement.

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