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Improvement of Creep Resisting Performance of Kanawa-tsugi (Japanese Traditional Beam to Beam Joint) by Using the Recovery-property of Compressed Sugi Komisen

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Abstract: A very important problem that cannot be overlooked is the occurrence of long term relaxation on the contact stress and creep of Japanese traditional joints. This research to gain understanding and improving creep of Kanawa-tsugi (Japanese traditional beam to beam joint), was focused on improving the degree of coupling in the joint by the recovery property of compressed sugi komisen (wooden square key) by introducing compressed sugi as the komisen material. It was verified that the joint with compressed komisen inserted showed less relaxation of the contact stress. It maintained over 59% of initial stress to the last cycle even though being exposed to cyclic humidity change (shirakashi komisen : 19%). Also, the creep of compressed sugi komisen by influence of cyclic humidity change was relatively lower than that of shirakashi one. It was concluded that compressed wood gives good performance as a type of key or wedge fastener and it maintains large cross-direction stresses due to its low stress-relaxation in company with its recovery property.

Keywords: compressed wood, contact stress, creep, relaxation of stress, Kanawa-tsugi

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