

USE OF DERELAXATION DEVICES IN PRESTRESSED TIMBER STRUCTURES

ALEXANDER ROZHKOV¹, IVAN INZHUTOV²

¹ Candidate of Technical Sciences, Civil Engineering Institute of Siberian Federal University, 82, Pr. Svobodny, Krasnoyarsk, Russia, labsfu@yandex.ru

² Prof., Dr. of Technical Sciences, Director of Civil Engineering Institute of Siberian Federal University, 82, Pr. Svobodny, Krasnoyarsk, Russia, ivaninzhutov@gmail.com

The task aimed at increasing the technical level and quality of structures and buildings, their use efficiency, reduction in materials consumption and cost has always remained the most important goal in building production.

One of the ways to solve this problem is the use of elements prestressing in building structures and derelaxation devices for keeping the assigned prestressing.

It is known that in the process of operation, change in physical and mechanical properties of timber takes place which can be associated firstly with creepage stipulating substantial compliance in pin-joints of structures. Furthermore, favorable stress relaxation is not always typical of timber. In connection with this to keep the structure initial properties that had been assigned in advance in design and construction it is desirable to control its stress-strain state taking into account regulation of prestressing losses.

The authors hold that a positive effect can be achieved at the expense of using derelaxation devices providing prestressing forces tracking to control deformation (“tracking forces”).

Similar technical solutions related to derelaxation devices can be used in structures subject to dynamic or seismic loads. The devices besides prestressing forces tracking to control deformation can serve as dampers – dampening devices to die out and prevent oscillations in the system.

Keywords: prestressing, derelaxation devices, stress-strain state control, tracking forces, dampers.